

MORNINGSIDE DRIVE EXTENSION FROM FORT KING ROAD TO US HIGHWAY 301

ROUTE STUDY AND POND SITING ANALYSIS AND REPORT

(Report 1 of 2)

Work Order No.: X11196.10

Task Order No.: EDO20-036



**Pasco County Board of County Commissioners/
Pasco County Engineering Services/
Project Management
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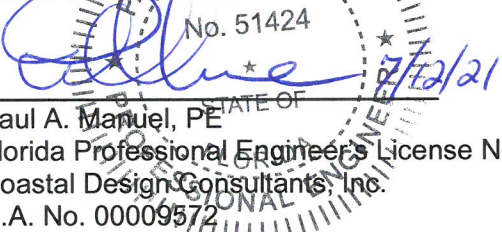
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Engineer's Certification

I, Paul A. Manuel, PE No. 51424, certify that I currently hold an active Professional Engineer's license in the State of Florida and am competent through education, experience, and examination to provide professional engineering services in the civil engineering disciplines contained in this report. I further certify that this report was prepared under my responsible charge as defined in Chapter 61G15-18.001 F.A.C. and that all statements, conclusions, and recommendations made herein are true and correct to the best of my knowledge and ability.



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Executive Summary

Morningside Drive is a two-lane roadway generally running east-west in the Dade City area of Pasco County, Florida. It currently exists in two separate segments: from State Road 52 (SR 52) to Fort King Road (west segment) and from east of United States Highway 301 (US 301)/US Highway 98 (US 98) to Old Lakeland Highway (east segment). The west segment right-of-way (R/W) is owned by the City of Dade City, but is maintained by Pasco County. The east segment is owned and maintained by Pasco County.

Pasco County and the City of Dade City have completed a Route Study and Pond Siting Analysis to identify viable alignments to connect the two segments within the study area with corresponding roadway and stormwater management facilities improvements. The proposed roadway segment will provide additional east-west vehicular traffic flows with adequate capacity and operational roadway improvements to Morningside Drive to sustain a Level of Service (LOS) of D or better during the Design Year of 2045.

In addition to the No-Build Alternative, three Build Alternative Routes were developed and considered for this project, as follows:

- **No-Build Alternative:** The No-Build Alternative assumes that the Morningside Drive Extension from Fort King Road to US 301/US 98 will not be constructed.
- **Build Alternative Route A (Northern Route):** This alternative route was developed to optimally utilize the available upland area and parcels of property owners who have indicated that they support the proposed extension. The total length of the proposed roadway is 6,302 LF or 1.19 miles.
- **Build Alternative Route B (Southern Route):** This alternative is a straighter route, although this route is slightly curved to avoid a wetland area containing pockets of open waters. The total length of the proposed roadway is 5,885 LF or 1.10 miles.
- **Build Alternative Route C (Straight Route):** This alternative extends the east segment of Morningside Drive to the west in an almost tangent alignment until it intersects with Fort King Road and continues on Fort King Road until it reaches the intersection with the Morningside Drive west segment. The total length of the proposed roadway is 6,310 LF or 1.20 miles.

Build Alternative Route C would result in some of the same wetland and floodplain impacts as Build Alternative Routes A and B, plus it would require improving a 2,200-foot long segment of Fort King Road to complete the connection to the west segment of Morningside Drive. For this and the constraints listed below, Build Alternative Route C was removed from consideration:

- A direct connection between the two Morningside Drive segments is functionally more efficient in accommodating the travel needs in the area of the project.
- It is not consistent with Pasco County's MOBILITY 2045 plan which includes a direct connection to US 301/US 98.
- It does not accommodate direct access to US 301 and areas beyond by AdventHealth Hospital emergency services.
- Fort King Road is a substandard roadway and would require significant and costly improvements to accommodate the substantial increase in traffic volumes that will result from Build Alternative Route C. In addition, improvements to Fort King Road would require

acquisition of additional right-of-way (R/W) which will cause property impacts and increase costs.

The future traffic conditions analysis established that a two-lane typical section will adequately accommodate the projected design year (2045) traffic volumes at an acceptable Level of Service (LOS D or better). Rural typical cross sections (with open drainage) and urban typical cross sections (with curb and gutter and closed drainage system) were developed for a two-lane roadway with 12-foot travel lanes, five-foot paved shoulders, an 8- to 12-foot multi-use path on the north side and a 5- to 6-foot sidewalk on the south side.

Based upon consideration of safety, costs, property impacts, and environmental impacts, the wider R/W rural typical cross section was considered a less viable alternative as compared to the more narrower R/W urban roadway typical cross section; therefore, the rural typical cross section is not carried forward in the development and analysis of the Build Alternative Routes.

Using the urban roadway typical cross section, as the preferred option, there were four urban typical cross sections created to address the various conditions through the project study area.

- **AdventHealth Hospital Parcel:** A constrained section requiring 62-feet of R/W was used in the vicinity of the AdventHealth Hospital site in an effort to minimize the roadway's impact on the hospital's parking and other facilities. This section consists of two 12-foot travel lanes, 5-foot paved shoulders, an 8-foot multi-use path on the north side, and a 6-foot sidewalk on the south side with curb and gutter throughout.
- **From AdventHealth Hospital to Hardy Trail:** 73-feet of R/W which includes two 12-foot travel lanes, 5-foot paved shoulders, an 8-foot multi-use path on the north side, and a 5-foot sidewalk on the south side with curb and gutter throughout.
- **Hardy Trail to US 301 Intersection:** 77-feet of R/W which includes two 12-foot travel lanes, 5-foot paved shoulders, a 12-foot multi-use path on the north side, and a 5-foot sidewalk on the south side with curb and gutter throughout.
- **US 301 Intersection:** 94-feet of R/W which includes 12-foot travel lanes, 5-foot paved shoulders, a 12-foot multi-use path on the north side, a 5-foot sidewalk on the south side, a right-turn and a left-turn lane with curb and gutter throughout.

The four typical cross section segments were applied to Build Alternative Routes A and B along with potential stormwater management facilities and floodplain compensation areas (to address drainage requirements and floodplain impacts).

Another consideration was the proposed configuration of the intersection of Morningside Drive and Fort King Road. The two configurations analyzed were a signalized intersection and a roundabout.

Based on the evaluation, the roundabout configuration is considered the more viable alternative due to the following reasons:

- Environmental
 - Less noisy due to avoidance of stop-and-go traffic conditions
 - If landscaping is provided, more aesthetically pleasing
- Safety
 - Conducive to traffic calming
 - Intersection still operates in power outages, no need for police to direct traffic

- Property Impacts
 - Less R/W needed
- Costs
 - Lower construction costs
 - Lower R/W acquisition costs
 - Lower maintenance costs

The development of a roadway extension must take into consideration the stormwater runoff created by the new impervious area of the roadway and the impacts that runoff can have on the existing conditions and floodplain area. A preliminary drainage analysis was conducted to address the proposed location options for the stormwater management facilities (SMF) and floodplain compensation areas (FPC) required for the construction of the Morningside Drive Extension project.

The Build Alternative Routes, Intersection Configuration, Stormwater Management Facilities, and Floodplain Compensation Areas were analyzed based on safety, costs, property impacts, and environmental impacts. The summary of the analysis developed in this Route Study and Pond Siting Analysis is shown in the Alternative Evaluation Matrix in **Table 32 Alternatives Evaluation Matrix**.

The No-Build and the Build Alternative Routes were presented to the local residents, property owners, and other interested parties in a Public Informational Open House held on May 6, 2021, which was attended by approximately 40 people. Comment response forms were received at the open house and in the ten-day response period from 15 residents. The comments included approval of Build Alternative Route A, questions on Build Alternative Route C, and concerns about how the proposed roadway will affect the current flooding issues within and in the vicinity of the project study area. The documentation related to the open house and the comment forms are provided in **Appendix 14 Publix Informational Open** House Documents.

Based on input received during and following the Public Informational Open House, refinements to the Build Route Alternative included the addition of a pedestrian crossing on the AdventHealth Hospital site to allow access to AdventHealth facilities on the northside of Morningside Drive and discussions on potentially moving SMF1-A further to the east.

A pre-application meeting with the Southwest Florida Water Management District (SWFWMD) was held on June 14, 2021 to discuss the Morningside Drive Extension project. The pre-application meeting notes are provided in **Appendix 16 SWFWMD Pre-Application Meeting Notes**.

Based on the study findings, Build Alternative Route A with a roundabout at the intersection of Morningside Drive and Fort King Road, stormwater management facilities (SMF1-A and SMF2-A), and floodplain compensation area (FPC2) are recommended as the preferred Build Alternative Route for the Morningside Drive Extension. This alternative provides the highest level of services and:

- ✓ Is consistent with the Pasco County MPO MOBILITY 2045 LRTP which identifies Morningside Drive from Fort King Road to US 301/US 98 as a funded project scheduled for construction in 2025.
- ✓ Enhances safety for motorists, bicyclists, and pedestrians through the use of urban typical cross sections, the addition of a sidewalk and a multi-use trail, the addition of shoulders

and the construction of a roundabout at the intersection of Morningside Drive and For King Road.

- ✓ Impacts the same number properties as the Build Route Alternative B, which include impacts to one residential site and two improved commercial sites.
- ✓ Impacts the least area of wetland (4.63 acres) that will require mitigation.
- ✓ Has the lowest total estimated R/W acquisition costs (\$1,713,600).
- ✓ Has the lowest total estimated construction costs (\$6,527,400) and the lowest estimated total project cost at \$12,401,800.
- ✓ Was well received by the public at large and key stakeholders.

The Recommended Alternative provides a two-lane urban curb and gutter typical cross section which requires a minimum 62-feet of R/W in the vicinity of the AdventHealth Hospital; 73-feet of R/W from AdventHealth Hospital to Hardy Trail, 77-feet of R/W from Hardy Trail to near the US 301 Intersection; and 94-feet of R/W at the US 301 Intersection. All typical cross sections include 12-foot travel lanes, 5-foot paved shoulders, an 8- to 12-foot multi-use path on the north side, and a 5- to 6-foot sidewalk on the south side. The design speed for the Morningside Drive Extension is 45 miles per hour (MPH) with a posted speed of 30 MPH. The estimated total capital cost of the Recommended Alternative is \$12,400,000.

1.0 Introduction

1.1 Project Description

Morningside Drive is a two-lane roadway generally running east-west in the Dade City area of Pasco County, Florida. It currently exists in two separate segments: from State Road 52 (SR 52) to Fort King Road (west segment) and from east of United States Highway 301 (US 301)/US Highway 98 (US 98) to Old Lakeland Highway (east segment). The west segment right-of-way (R/W) is owned by the City of Dade City, but is maintained by Pasco County. The east segment is owned and maintained by Pasco County.

This Route Study and Pond Siting Analysis and Report (RSPSAR) seeks to identify viable alignments to connect the two segments within the study area shown in the following figure (reference **Figure 1 Study Area Map**) and recommend the most suitable alternative.

The study area is a mix of unincorporated Pasco County and City of Dade City land area. In **Figure 1 Study Area Map**, the limits of the City of Dade City are overlaid in blue and the AdventHealth Dade City hospital site (as a key stakeholder in the project) is shown located on the east side of Fort King Road, south of the intersection with Morningside drive.

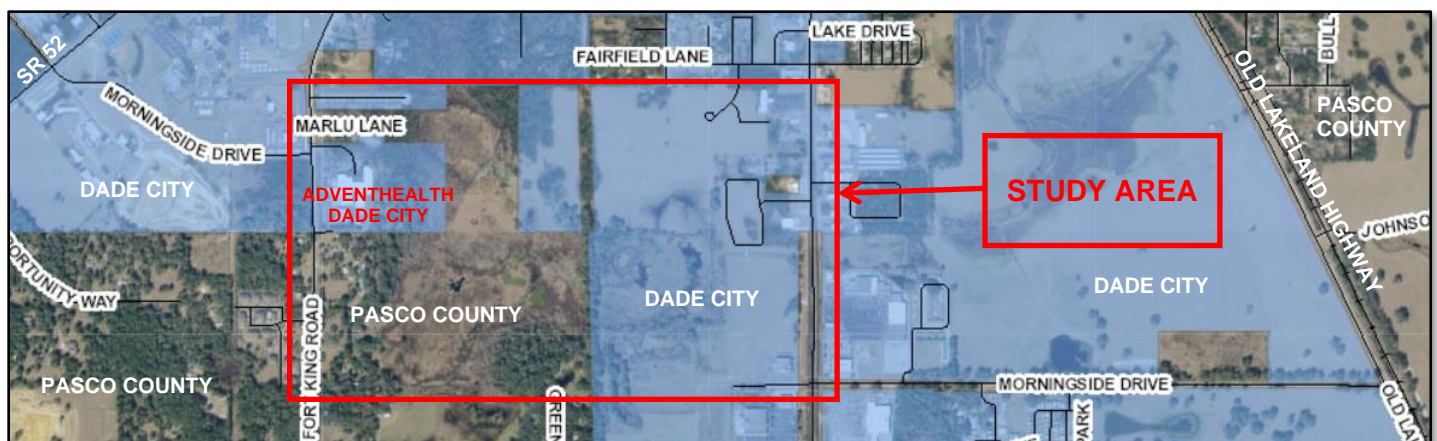


Figure 1 Study Area Map

[Base aerial maps provided by Pasco County Mapper web site, <https://www.arcgis.com/apps/webappviewer/index.html?id=16d0b8ac89b44da18a2aa2b1104232dd/> downloaded April 12, 2021]

The objective of the Morningside Drive Extension project is to provide an additional connector road centrally located in Dade City between and parallel to two existing east-west oriented arterial roadways, Clinton Avenue and Meridian Avenue (SR 52) which connect the north-south collector Fort King Road with US 301/US 98. With close to 2.8 miles between Clinton Avenue and Meridian Avenue, there remains a large gap between east-west connectors that creates longer trip times and response times for emergency services and additional congestion within Dade City.

The project study area is over approximately 65 acres of land with portions within 23 separate parcels. The proposed extension of Morningside Drive will relieve traffic congestion on Clinton Avenue and Meridian Avenue by providing additional eastbound and westbound travel options for area residents and visitors. The proposed roadway will also provide opportunities for new

development within the area, provide enhanced response times for emergency services and serve as a corridor for future extension of utility services.

The purpose of the RSPSAR is to develop and evaluate potential route alignments to connect Morningside Drive from Fort King Road to US 301/US 98 and recommend the most advantageous alignment to be advanced to Design, Right-of-Way Acquisition, and Construction Phases.

1.2 Project Purpose and Need

The project will provide additional options to accommodate east-west vehicular traffic flows with adequate capacity and operational roadway improvements to Morningside Drive to sustain a Level of Service (LOS) of D or better during the Design Year of 2045. The current gap in the Morningside Drive roadway requires traffic to travel from Fort King Road north to Howard Avenue (2.8± miles) or south to Clinton Avenue (3.5± miles) to reach the section of Morningside Drive west of US 301/US 98. These detours affect the local population and especially affect the availability of emergency personnel to access AdventHealth Hospital Dade City located on the southeast corner of the intersection of Morningside Drive and Fort King Road.

1.3 Project Consistency with Long-Range Transportation Plans

1.3.1 City of Dade City

The City of Dade City “2020 Comprehensive Plan” does not specifically reference the Morningside Drive Extension from Fort King Road to US 301/US 98. However, the City of Dade City’s “Five Year Capital Improvement Plan” has included the Morningside Drive Extension Phase 2 from Fort King Road to US 301/US 98 project with projected funding expenditures in fiscal years 20-21, 21-22, and 24-25; reference **Figure 2 City of Dade City CIP Excerpt.**

PAVEMENT MANAGEMENT, PARK SYSTEM, CAPITAL EQUIPMENT/OTHER CAPITAL IMPROVEMENTS								
Figure 1: Schedule of Capital Improvements, FY 20-21 to FY 24-25								
Project Number	Project Name	Funding Source	FY20-21	FY21-22	FY22-23	FY23-24	FY24-25	
			1	2	3	4	5	
Year			Planned	Planned	Planned	Planned	Planned	
Pavement Management / Roadway Capital Improvements								
21	Improvements (paving, resurfacing, sidewalks)	Penny for Pasco	\$ 485,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	
		Total Project Cost	\$ 485,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 200,000	\$ 1,285,000
22	Sidewalks	Penny for Pasco	\$ 200,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	
		Total Project Cost	\$ 200,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 300,000
23	Morningside Drive Phase 2 (301 to Ft. King Road)	Fees		\$ 500,000				
		State of Florida Appropriation	\$ 320,000	\$ 2,500,000	\$ 2,180,000			
		Total Project Cost	\$ 320,000	\$ 3,000,000	\$ 2,180,000	\$ -	\$ -	\$ 5,500,000
Total Pavement Project Costs:		Total Costs:	\$ 1,005,000	\$ 3,225,000	\$ 2,405,000	\$ 225,000	\$ 225,000	\$ 7,085,000

Figure 2 City of Dade City CIP Excerpt

[Excerpt from page 80 of the City of Dade City “Five Year Capital Improvement Plan” in the City of Dade City Operating Budget Fiscal Year 2020/2021; available at:

<http://cms.revize.com/revize/dadecity/FY20-21%20Budget%20Book%20v3.2.pdf>.]

1.3.2 Pasco County

The Pasco County Metropolitan Planning Organization’s (MPO) “Mobility 2045 Long-Range Transportation Plan” Summary Report identifies Morningside Drive from Fort King Road to US 301/US 98, as Project No. 3088. The project is listed as a two-lane, undivided roadway using County General Transportation Funds. The project location is clouded and shown in **Figure 3 Excerpt from MPO Roadways Plan** and the project schedule and funding estimates are shown in **Figure 4 Excerpt from MPO Roadways Schedule**.

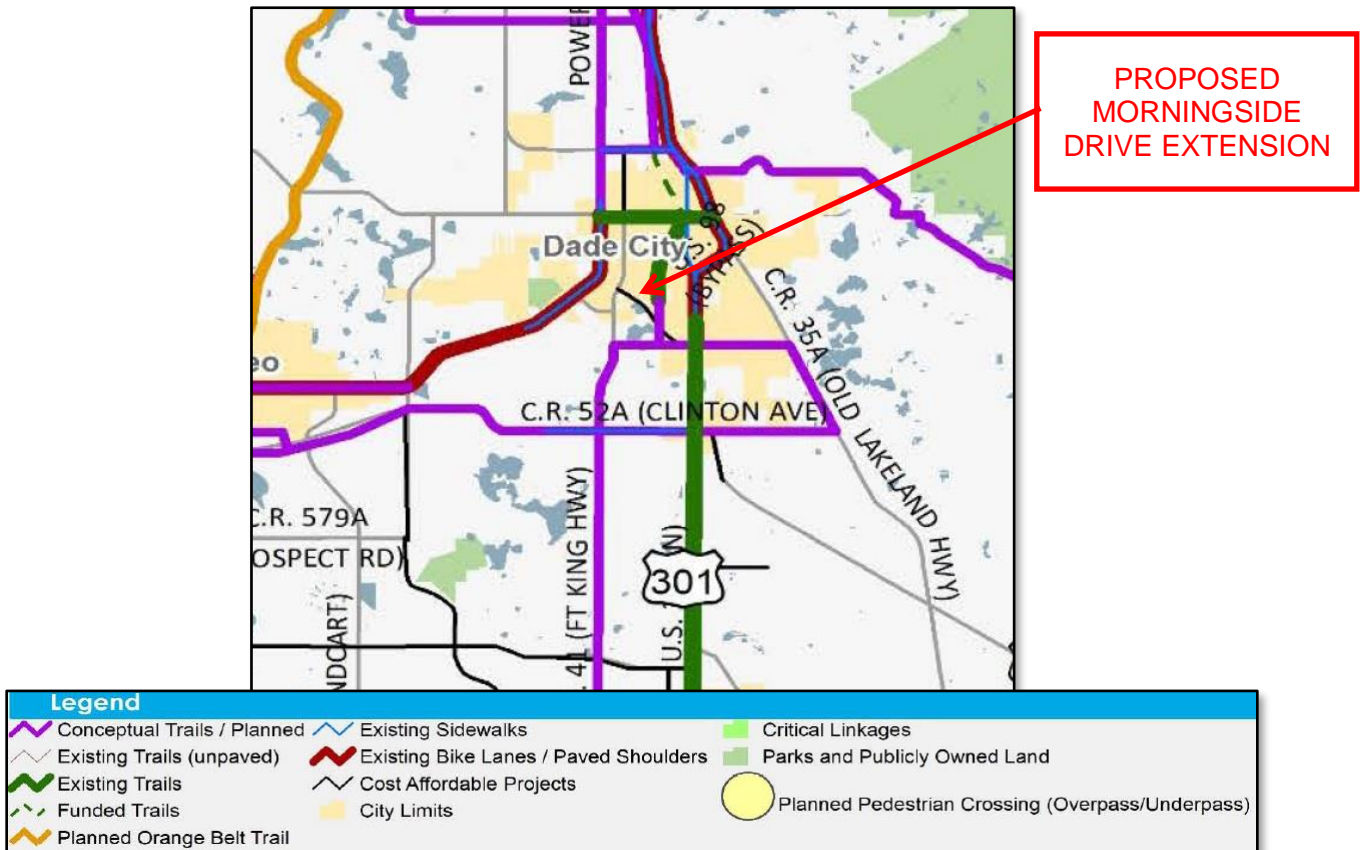


Figure 3 Excerpt from MPO Roadways Plan

[Excerpt from page 4-7 of the 2045 Long Range Transportation Plan prepared for Pasco County Metropolitan Planning Organization, published March 2020; available at [https://www.pascocountyfl.net/DocumentCenter/View/60487/West-Central-Florida-Regional-Long-Range-Transportation-Plan-2045-?bidId=.](https://www.pascocountyfl.net/DocumentCenter/View/60487/West-Central-Florida-Regional-Long-Range-Transportation-Plan-2045-?bidId=)]

2.0 Existing Conditions

2.1 Topography

The subject study area for the Morningside Drive Extension project can be classified as rolling hills with elevations ranging from approximately 72+ feet to 102+ feet NAVD88. The center of the study area is mostly lowlands with elevations in the low 70’s, reference **Figure 5 Topographic and Wetland Map** which shows the project area topography and wetland layer per Pasco Mapper.

Project Number	On Street	From	To	2019 Lanes	2045 Lanes	Project Development & Environment / Design			Right of Way			Construction			Total Cost
						Source	Timing	Cost	Source	Timing	Cost	Source	Timing	Cost	
SR 54/56 Corridor Improvements															
3188	SR 54	US 41				SIS	2019 - 2024	\$8,505,130	SIS	2019 - 2024	\$28,615,500	SIS	2026 - 2030	\$189,921,952	\$227,042,582
3189	SR 54	Collier Pkwy				SIS	2031 - 2035	\$15,000,000	SIS	2031 - 2035	\$30,000,000	SIS	2036 - 2045	\$217,600,000	\$262,600,000
												CoGen	2036 - 2045	\$10,000,000	\$10,000,000
												CoMF	2025	\$4,110,600	\$4,110,600
												CoMF	2026 - 2030	\$19,639,100	\$19,639,100
												CoMF	2031 - 2035	\$19,815,900	\$19,815,900
												CoMF	2036 - 2045	\$37,988,600	\$37,988,600
												OARC	2025	\$4,040,575	\$4,040,575
												OARC	2026 - 2030	\$14,285,334	\$14,285,334
												OARC	2031 - 2035	\$9,529,911	\$9,529,911
												OARC	2036 - 2045	\$8,768,018	\$8,768,018
												TMA	2031 - 2035	\$10,000,000	\$10,000,000
												TMA	2036 - 2045	\$5,000,000	\$5,000,000

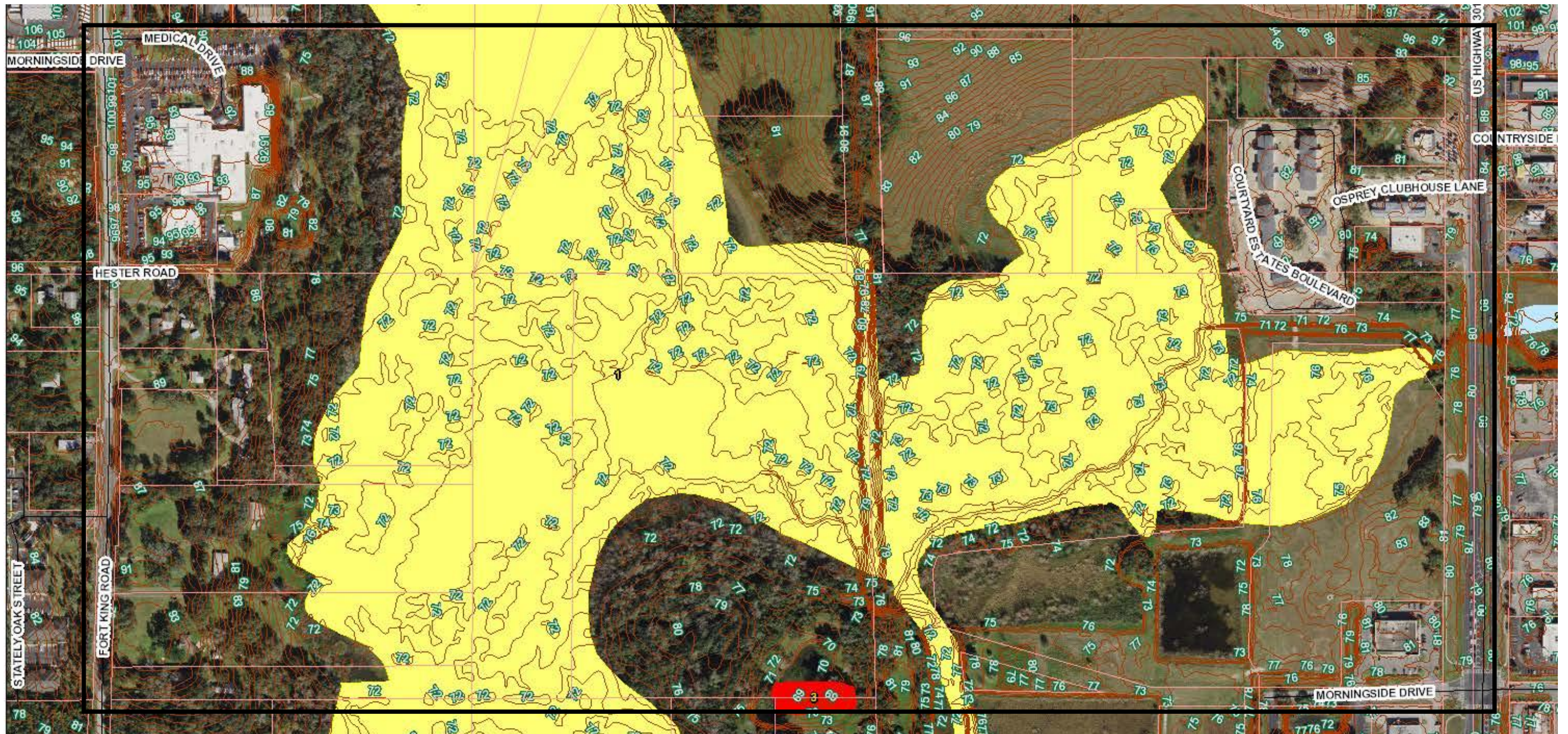
Future Corridor Improvements
 Alternative improvements within the SR 54/56 corridor will be evaluated as part of ongoing Vision 54/56 corridor assessment and will include, but not necessarily be limited to, premium transit improvements, overpasses, and/or elevated lanes, and alternative intersection designs. In addition, future corridor assessment will include significant public engagement regarding alternative improvements to the SR 54/56 corridor.

County Roads

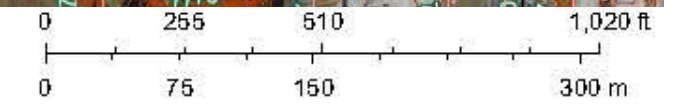
3133	20th St	CR 54	Pretty Pond Rd	00	2U	CoGen	2036 - 2045	\$1,064,323	CoGen	2036 - 2045	\$6,655,618	CoGen	2036 - 2045	\$16,370,392	\$24,090,333
3117	23rd St	North Ave	Otis Allen Rd	00	2U	CoGen	2036 - 2045	\$2,120,774	CoGen	2036 - 2045	\$13,262,024	CoGen	2036 - 2045	\$32,619,737	\$48,002,536
3092	Boyette Road Realignment	SR 54	Boyette Rd	00	4D	CoGen	2036 - 2045	\$3,250,429	CoGen	2036 - 2045	\$20,314,073	CoGen	2036 - 2045	\$49,971,466	\$73,535,968
3167	Boyette Rd	Boyette Rd Realignment	Overpass Rd	2U	4D	CoGen	2036 - 2045	\$1,303,853	CoGen	2036 - 2045	\$8,148,639	CoGen	2036 - 2045	\$20,045,193	\$29,497,686
3106a	Boyette Rd Ext	Overpass Rd	McKendree Rd	00	2U	CoGen	2031 - 2035	\$1,979,335	CoGen	2031 - 2035	\$12,377,541	CoGen	2031 - 2035	\$30,444,232	\$44,801,107
3014a	Bruce B Downs Loop Rd	SR 581	Wiregrass Ranch Blvd	00	4D	CoGen	2026 - 2030	\$605,370	CoGen	2026 - 2030	\$3,785,427	CoGen	2026 - 2030	\$9,312,492	\$13,703,290
3014b	Bruce B Downs Loop Rd	Wiregrass Ranch Blvd	SR 54	00	4D	CoGen	2036 - 2045	\$869,442	CoGen	2036 - 2045	\$5,436,690	CoGen	2036 - 2045	\$13,374,749	\$19,680,882
3080	Chancey Rd / Ext	Mansfield Rd	Morris Bridge Rd	00	4D	CoGen	2036 - 2045	\$6,333,824	CoGen	2036 - 2045	\$39,605,877	CoGen	2036 - 2045	\$97,434,020	\$143,373,720
3113	Coats Rd	Chancey Rd	Oldwoods Ave	00	2U	CoGen	2031 - 2035	\$1,289,870	CoGen	2031 - 2035	\$8,066,047	CoGen	2036 - 2045	\$26,239,381	\$35,595,297
3067a	Collier Parkway	S of Bell Lake Rd	Hale Rd	4D	4D	Completed	Completed		Completed	Completed		CoGen	2019 - 2024	\$10,217,488	\$10,217,488
3067b	Collier Parkway	Hale Rd	Parkway Blvd	2U	4D	Completed	Completed		Completed	Completed		CoGen	2019 - 2024	\$6,685,250	\$6,685,250
3028a	CR 578 (County Line Rd)	East Rd	Shady Hills Rd	2U	4D	CoGen	2036 - 2045	\$2,922,480	CoGen	2036 - 2045	\$18,279,030	CoGen	2036 - 2045	\$32,440,190	\$66,161,700
3069	County Line Rd	Dale Mabry	US 41 (Land O' Lakes Blvd)	2U	4D	CoGen	2031 - 2035	\$521,511	CoGen	2031 - 2035	\$3,261,865	CoGen	2036 - 2045	\$10,611,167	\$14,394,543
3010	County Line Rd	US 41 (Land O' Lakes Blvd)	SR 581	2U	4D	CoGen	2031 - 2035	\$4,845,960	CoGen	2031 - 2035	\$30,309,683	CoGen	2036 - 2045	\$119,100,371	\$154,256,014
3152a	CR 539 Ext (Overpass Rd / Kossik Rd)	CR 579 (Handcart Rd)	US 301	00	2U	CoGen	2031 - 2035	\$1,821,250	CoGen	2031 - 2035	\$1,894,100	CoGen	2031 - 2035	\$20,944,375	\$24,659,725
3152b	CR 539 Ext (Overpass Rd / Kossik Rd)	CR 579 (Handcart Rd)	US 301	2U	4D	CoGen	2031 - 2035	\$1,821,250	CoGen	2031 - 2035	\$1,894,100	CoGen	2036 - 2045	\$27,700,625	\$31,415,975
3032	CR 587 (Moon Lake)	Ridge Rd	S of SR 52	2U	4D	CoGen	2019 - 2024	Completed	CoGen	2019 - 2024	\$2,000,000	CoGen	2026 - 2030	\$70,974,942	\$72,974,942
3098	Curley Rd (Realignment)	SR 54	Curley Rd	00	4D	CoGen	2025	\$1,390,234	CoGen	2025	\$8,688,488	CoGen	2031 - 2035	\$27,839,021	\$37,917,743
3099	Curley Rd	Meadow Pointe Blvd Ext.	Overpass Rd	2U	4D	CoGen	2019 - 2024	\$684,000	CoVOPH	2025	\$471,240	CoGen	2026 - 2030	\$10,600,000	\$11,755,240
												CoVOPH	2026 - 2030	\$5,600,000	\$5,600,000
3103	Curley Rd	Overpass Rd	Clinton Ave Ext	2U	4D	CoGen	2019 - 2024	\$3,116,000	CoGen	2025	\$2,146,760	CoGen	2026 - 2030	\$73,800,000	\$79,062,760
3173	Daughtry Rd ext	Wire Rd	Old Lakeland Highway	00	2U	CoGen	2036 - 2045	\$2,269,623	CoGen	2036 - 2045	\$14,192,824	TMA	2036 - 2045	\$34,909,169	\$51,371,616
3206	Decubellis Road (III)	Little Road	Starkey Blvd	2U	4D	CoGen	2019 - 2024	\$250,000	CoGen	2019 - 2024	\$358,378	CoGen	2019 - 2024	\$10,098,424	\$10,706,802
3205	Decubellis Road (II)	Starkey Blvd	Town Center	2U	4D	Completed	Completed		CoGen	2019 - 2024	\$215,000	CoGen	2019 - 2024	\$10,000,116	\$10,215,116
3095	Eiland Blvd	CR 579 (Handcart Rd)	Fort King Hwy	2U	4D	CoGen	2031 - 2035	\$2,893,232	CoGen	2036 - 2045	\$23,893,400	CoGen	2036 - 2045	\$58,780,601	\$85,567,233
3137	Eiland Blvd	Fort King Hwy	Gall Blvd	2U	4D	CoGen	2036 - 2045	\$206,480	CoGen	2036 - 2045	\$1,289,292	CoGen	2036 - 2045	\$3,171,813	\$4,667,586
3170	Greenslope Dr Ext	Kossik Rd	Bailey Hill Rd	00	2U	CoGen	2031 - 2035	\$534,668	CoGen	2031 - 2035	\$3,337,392	CoGen	2031 - 2035	\$8,211,759	\$12,083,819
3179	Hicks Rd	Denton Ave	New York Ave	00	2U	CoGen	2026 - 2030	\$685,415	CoGen	2031 - 2035	\$5,032,993	CoGen	2031 - 2035	\$12,379,326	\$18,097,734
3132	Keefer Rd	Curley Rd	Fort King Rd	00	2U	CoGen	2036 - 2045	\$4,827,391	CoGen	2036 - 2045	\$30,187,531	CoGen	2036 - 2045	\$74,250,307	\$109,265,230
3171	Keefer Rd ext / Bailey Hill Rd	Fort King Rd	Gall Blvd	00	2U	CoGen	2036 - 2045	\$1,093,616	CoGen	2036 - 2045	\$6,838,794	CoGen	2036 - 2045	\$16,820,935	\$24,753,344
3207	Little Road	Trinity Blvd	S of SR 54	4D	6D	CoGen	2019 - 2024	\$211,361	Completed	Completed		CoGen	2019 - 2024	\$5,872,388	\$6,083,749
3003	Little Rd	Old County Rd 54	Decubellis Rd	4D	6D	CoGen	2031 - 2035	\$2,724,885	CoGen	2031 - 2035	\$17,020,931	CoGen	2031 - 2035	\$41,866,309	\$61,612,125
3104a	McKendree Rd / Kenton Rd Ext	Overpass Rd	SR 52	00	2U	Dev	2031 - 2035	\$3,012,093	Dev	2031 - 2035	\$29,985,317	Dev	2031 - 2035	\$46,329,145	\$79,326,556
3144a	Meadow Pointe Blvd	Hillsborough / Pasco County Line Rd	Oldwoods Ave	2U	4D	CoGen	2031 - 2035	\$730,112	Completed	Completed		CoGen	2031 - 2035	\$11,215,490	\$11,945,602
3144b	Meadow Pointe Blvd	Oldwoods Ave	SR 56	2U	4D	CoGen	2031 - 2035	\$333,312	Completed	Completed		CoGen	2031 - 2035	\$5,120,115	\$5,453,427
3097	Meadow Pointe Blvd	SR 56	SR 54	2U	4D	CoGen	2031 - 2035	\$2,478,528	CoGen	2019 - 2024	\$9,984,693	CoGen	2036 - 2045	\$50,355,241	\$62,818,461
3163	Morgan Rd / Hunt Rd	SR 54	US 41 (Land O' Lakes Blvd)	00	2U	CoGen	2036 - 2045	\$920,915	CoGen	2036 - 2045	\$5,758,844	CoGen	2036 - 2045	\$14,164,653	\$20,844,412
3088	Morningside Drive	Fort King Rd	US 301	00	2U	CoGen	2019 - 2024	\$570,838	CoGen	2019 - 2024	\$3,569,670	Other (TBD)	2025	\$10,448,302	\$14,588,810
3118	North Ave	21st St	23rd St	00	2U	CoGen	2036 - 2045	\$275,561	CoGen	2036 - 2045	\$1,723,189	CoGen	2036 - 2045	\$4,238,416	\$6,237,166
3075	Old Pasco Rd	Wesley Chapel Blvd	SR 52	2U	4D	CoGen	2025	\$3,614,564	CoGen	2026 - 2030	\$28,970,472	CoGen	2026 - 2030	\$66,586,934	\$105,411,969
						TRIP	2025	\$740,000				TRIP	2026 - 2030	\$5,500,000	\$5,500,000

Figure 4 Excerpt from MPO Roadways Schedule

[Excerpt from page 4-9 of the 2045 Long Range Transportation Plan prepared for Pasco County Metropolitan Planning Organization, published March 2020; available at <https://www.pascocountyfl.net/DocumentCenter/View/60487/West-Central-Florida-Regional-Long-Range-Transportation-Plan-2045-?bidId=>]



- Parcels
- Railroad
- Roads
- Wetlands
 - 1
 - 2
 - 3
- Topo 1ft Contours



J Edwards, SWFWMD

Figure 5 Topographic and Wetland Map

[Base map from Pasco Mapper website; available at <https://www.arcgis.com/apps/webappviewer/index.html?id=16d0b8ac89b44da18a2aa2b1104232dd>.

The subject study area along with lowlands area contains two (2) historic lake systems, Hester Lake and Tank Lake. Tank Lake has an east and a west area that are hydrologically connected; reference **Figure 6 Topographic Map with Existing Lakes**.

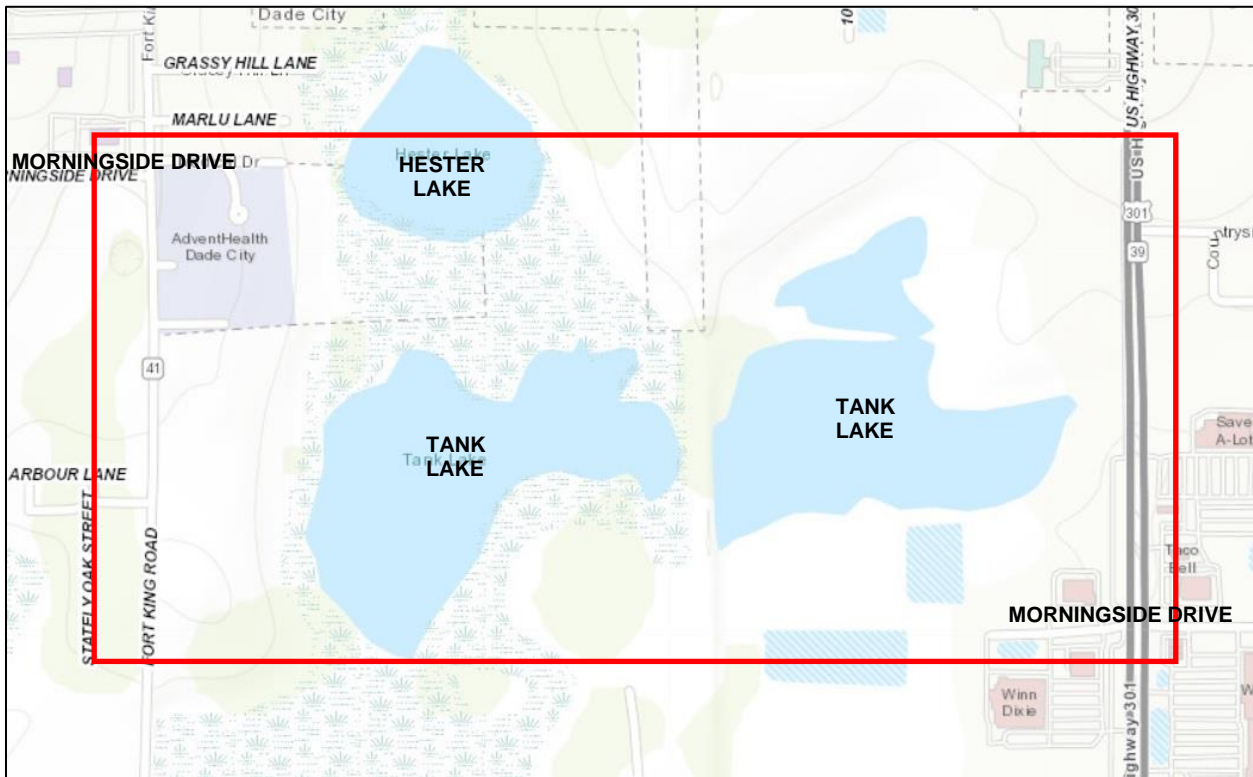


Figure 6 Topographic Map with Existing Lakes

[Base map from Pasco Mapper website; available at <https://maps.pascopa.com/>; downloaded April 12, 2021.]

2.2 Wetlands

2.2.1 National Wetland Inventory

The US Fish and Wildlife Service (USFWS) is the principal US Federal agency tasked with providing information to the public on the status and trends of our Nation's wetlands. The USFWS National Wetlands Inventory (NWI) is a publicly available resource that provides detailed information on the abundance, characteristics, and distribution of US wetlands. NWI data are used by natural resource managers, within the USFWS and throughout the Nation, *to promote the understanding, conservation, and restoration of wetlands.*

The following wetland information was obtained from the NWI. It is noted that the listed wetland acreages are estimated for the project area; reference **Table 1 Project Area NWI Wetland Table** and **Figure 7 NWI Wetland Map**.

WETLAND CODE	WETLAND TYPE	CLASSIFICATION	ESTIMATED ACRES WITHIN THE PROJECT AREA (Acres)
PAB3H	Hester Lake	Palustrine, Aquatic Bed, Rooted Vascular, Permanently Flooded	11.2
PEM1F	Freshwater Emergent Wetland	Palustrine, Emergent, Persistent, Semi-Permanently Flooded	44.7
PSS1C	Freshwater Forested/Shrub Wetland	Palustrine, Scrub-shrub, Broad-leaved Deciduous, Seasonally Flooded	69.41
L1UBH	Lake	Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded	33.31
TOTAL			158.6± Acres

Table 1 Project Area NWI Wetland Table

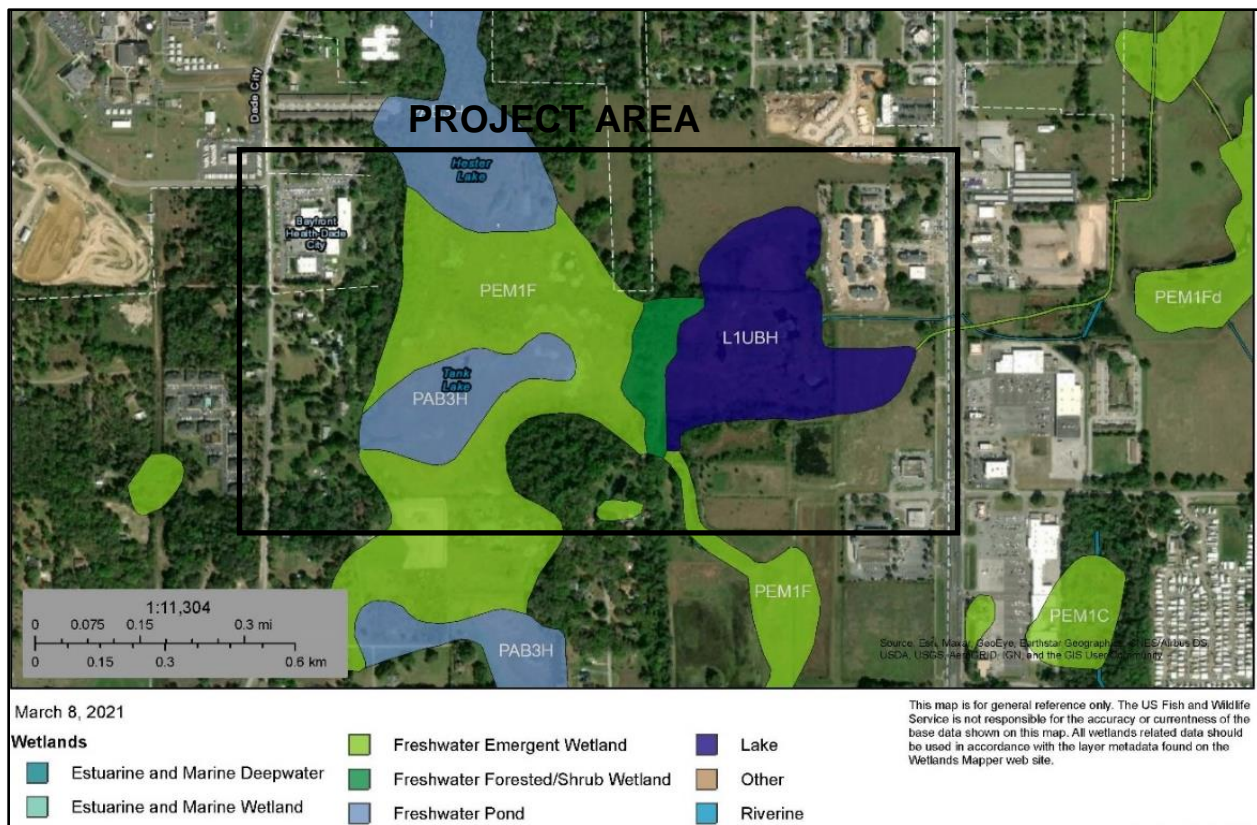


Figure 7 NWI Wetland Map

[US Fish and Wildlife Service's National Wetlands Inventory (NWI); <https://www.fws.gov/wetlands/data/Mapper.html>; downloaded March 8, 2021.]

2.2.2 Pasco County

A majority of the lowland area in the subject study area is classified as Class 1 Wetland area per the Pasco County criteria, reference **Figure 5 Topographic and Wetland Map**. Pasco County protects Category I wetlands with an exception for construction of public roads. The County's Comprehensive Plan defines Category I wetlands as "those wetlands which meet at least one (1) of the following criteria:

- Any wetland of any size that has a hydrological connection (not man-made) to natural surface water bodies, such as natural lakes, rivers, and springs.
- Any wetland of any size that has a direct connection to the Floridan aquifer by way of an open sinkhole or spring.
- Any wetland of any size that is within a lake littoral zone.
- Any isolated, uninterrupted wetland 100 acres or larger.
- Any wetland of any size that provides critical habitat for Federal and/or State-listed threatened or endangered species."

Most Category I wetlands in Pasco County are either part of, or are connected to, a lake, pond, river, creek, or the Gulf of Mexico, or are a swamp or marsh that is 100 acres or larger. The wetland areas in this project area are hydrologically connected to Tank Lake and Hester Lake.

2.3 Land Use

The west segment of Morningside Drive, west of Fort King Road, borders commercial, industrial, institutional, recreational, and agricultural land. The east segment of Morningside Drive borders commercial, high density residential, and agricultural lands. The area in between the existing two segments, with the exception of some industrial land near US Highway 301, is undeveloped and can be classified as Cropland, Fresh Water Marshes, Lakes and Streams, and Reservoirs; reference **Figure 8 Land Use Classifications Map**.

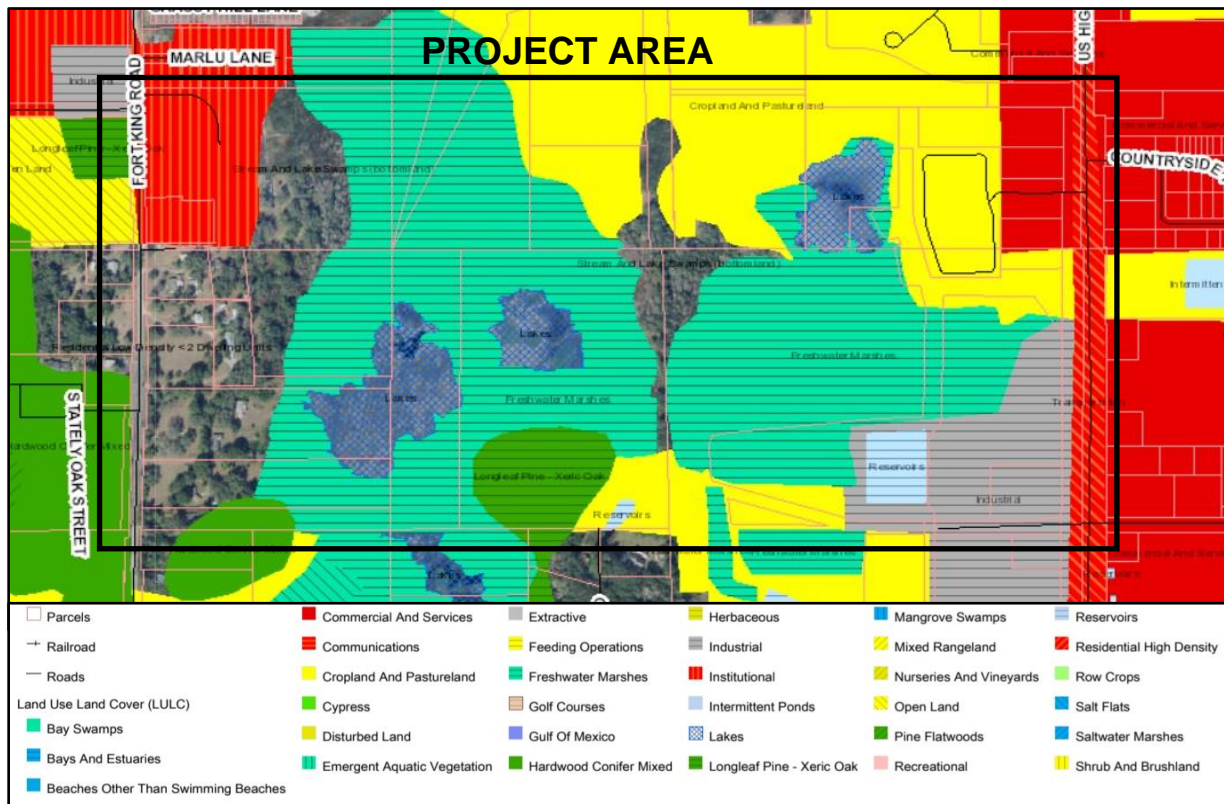


Figure 8 Land Use Classifications Map

[Base map from Pasco Mapper website; available at <https://maps.pascopa.com/>; downloaded April 12, 2021.]

2.4 Flood Zone

The area proposed for construction activity is located mostly within the flood zone classification of “AE” (77.0 FT) and the remainder in a flood zone classification of “X” per the Pasco County Mapper Flood Zone layer based on the Federal Emergency Management Agency’s (FEMA) National Flood Hazard Layer; reference **Figure 9 FEMA Flood Zone Map**.

The FEMA zones are generated based on national standards for flood risk. This system does not utilize specific, localized data to create regional models; therefore, the information generated is for flood insurance purposes and not specific enough for design purposes.

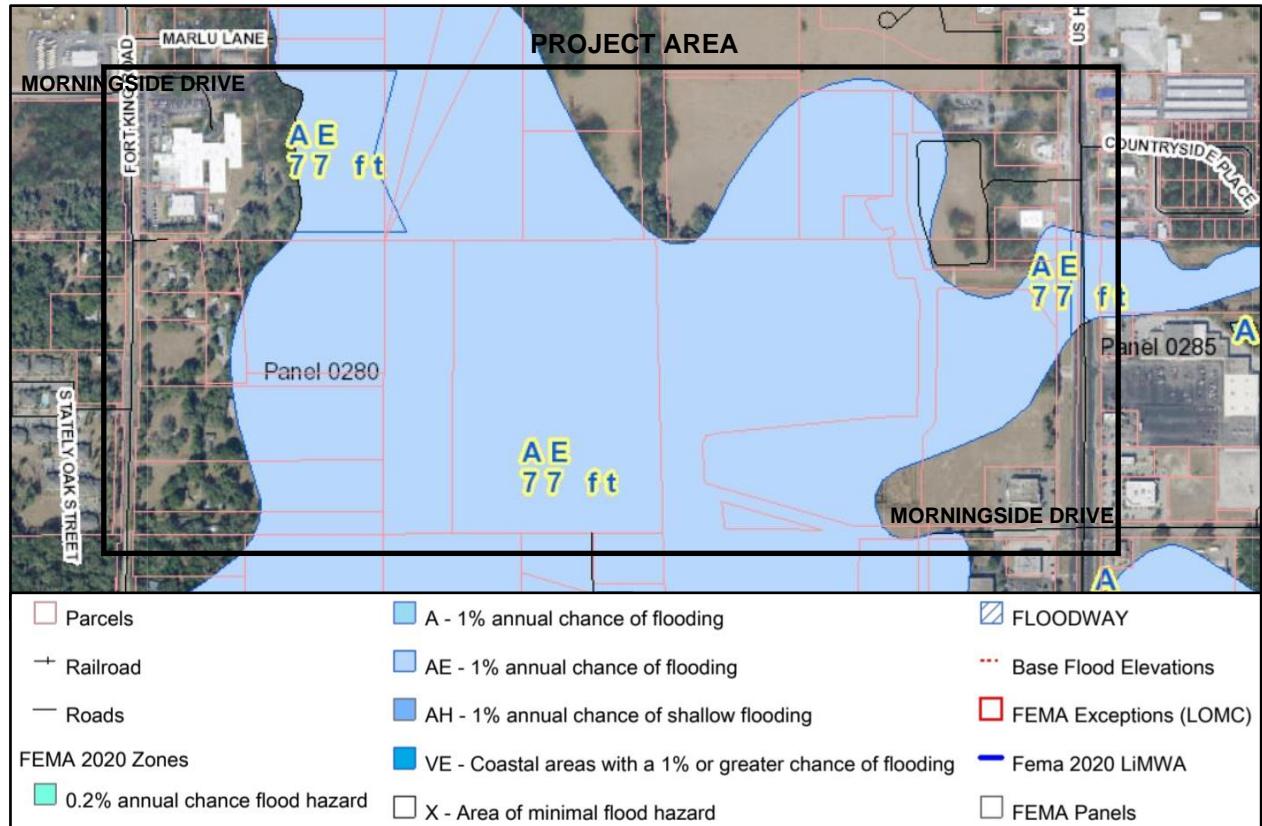


Figure 9 FEMA Flood Zone Map

[Base map from Pasco Mapper website; available at <https://www.arcgis.com/apps/webappviewer/index.html?id=16d0b8ac89b44da18a2aa2b1104232dd.>]

2.5 Floodplain

The Southwest Florida Water Management District (SWFWMD) Watershed Management Program has compiled the Lidar data and the latest 100-year, 24-hour flood elevations into the Duck Lake Regional Watershed Study to determine the approximate floodplain areas in the watershed. The subject study area as a part of the Duck Lake Watershed is shown in **Figure 10 SWFWMD Watershed Floodplain Map**.

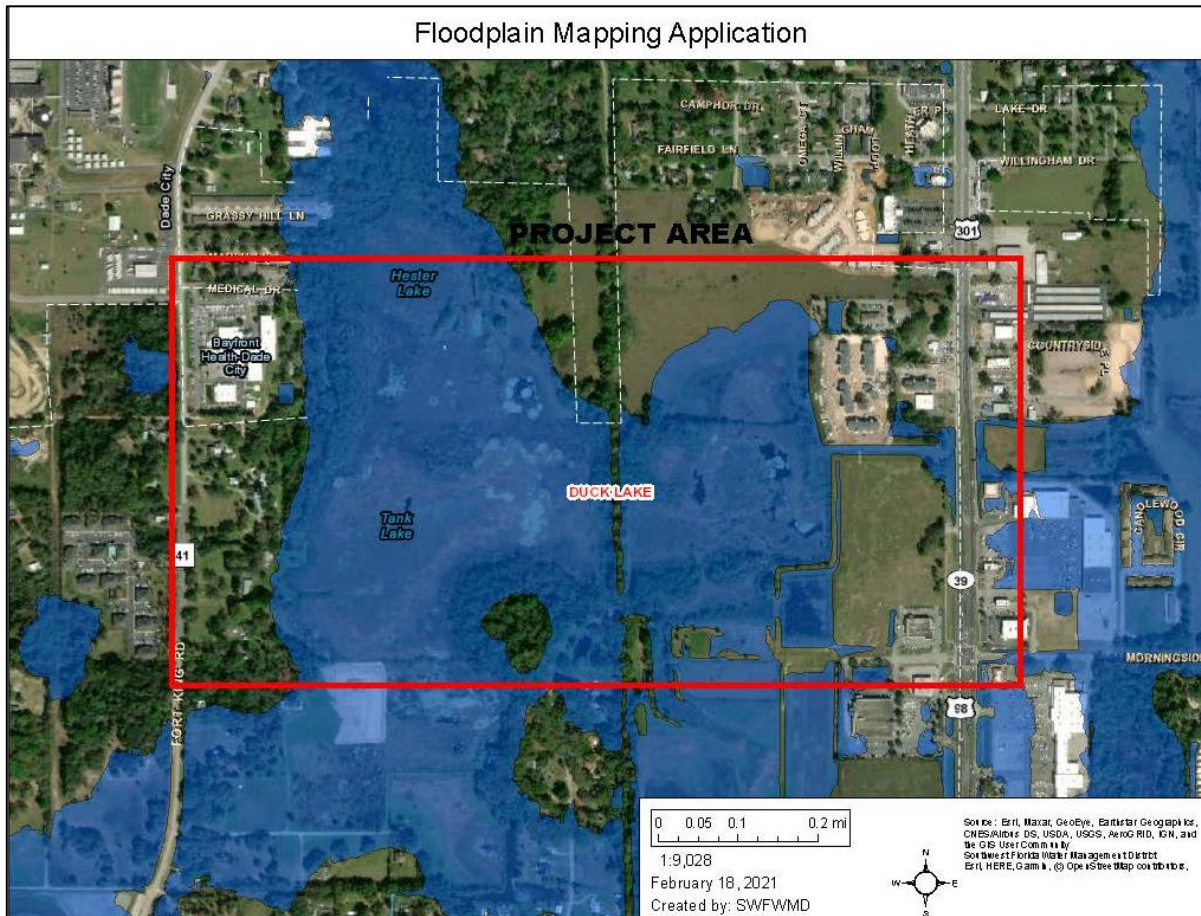


Figure 10 SWFWMD Watershed Floodplain Map

[Base Map from the SWFWMD Watershed Management Program Floodplain Mapper; available at https://www.SWFWMD.state.fl.us/projects/floodplain_viewer.]

2.6 Water Quality

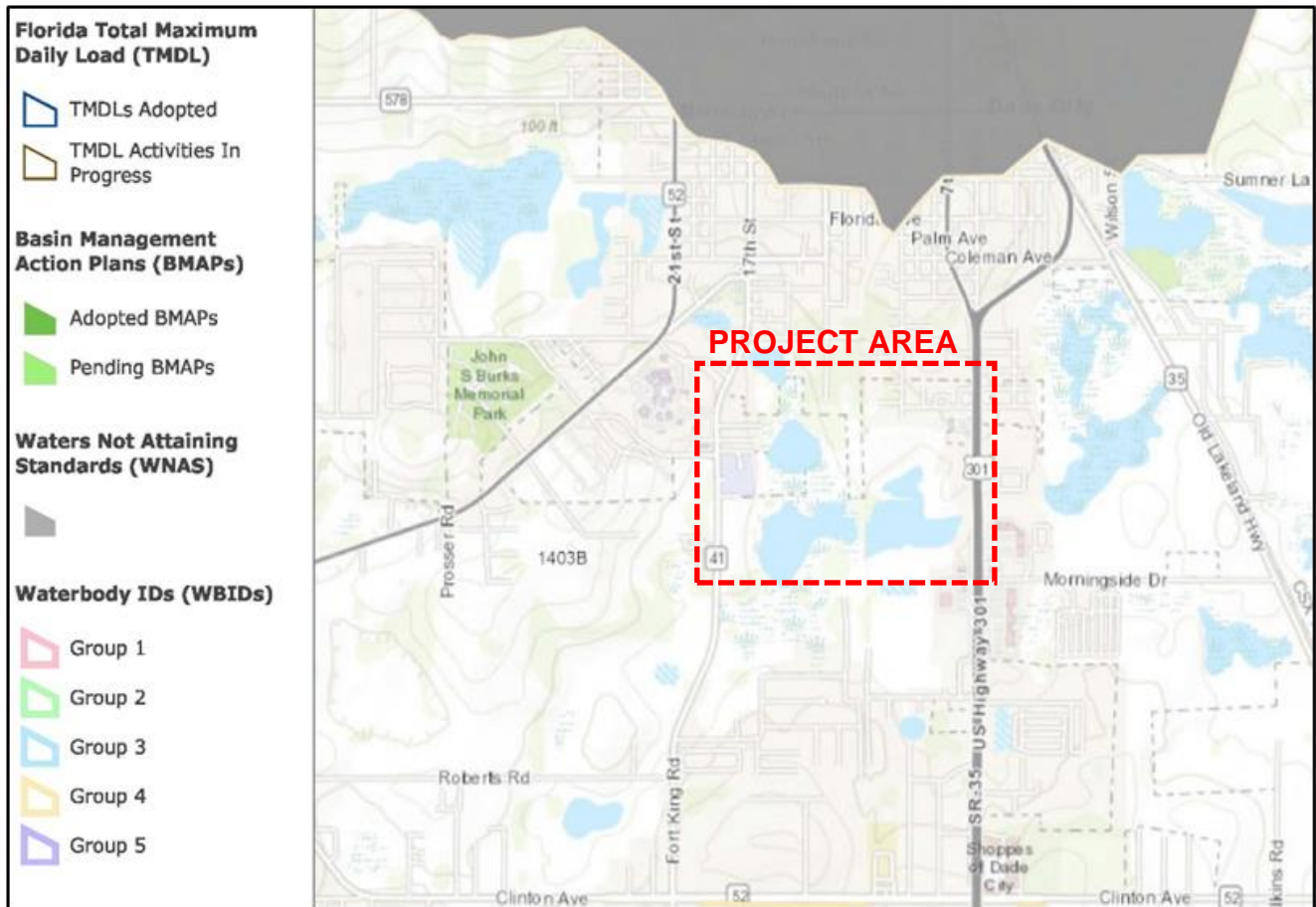
The subject study area is not currently part of an “impaired water body” identified under the FDEP Integrated Water Resource Monitoring Network (IWRM); reference **Figure 11 Water Quality Assessment Map**, so only standard water quality provisions are applicable. The stormwater management facilities (SMF)’s for this project will be designed as wet ponds providing for the 14-day residency requirement.

Undisturbed surface water / wetland features downstream of the project shall be protected from water quality impacts as follows:

- Temporary erosion / sediment control measures (consisting primarily of silt fence and/or synthetic bales) shall be installed prior to initiation of land disturbing activities as shown on the Stormwater Pollution Prevention Plan (SWPP) / Construction Surface Water Management Plan (CSWMP) note and detail sheets of construction plans.
- Permanent erosion / sediment control measures (consisting of restored vegetation and drainage retention swales) shall be in place and operational at the completion of land disturbing activities.

Figure 11 Water Quality Assessment Map

[Florida Department of Environmental Protection Watershed Assessment Section, Water Quality



Assessments, TMDLs, and BMAP; <https://fdep.maps.arcgis.com/home/webmap/viewer.html?webmap=1b4f1bf4c9c3481fb2864a415fbeca77>; downloaded March 8, 2021.]

2.7 Soils and Groundwater

The subject study area contains eight soil types as defined by the United States Department of Agriculture (USDA), Natural Resources Conservation Service Web Soil Survey. The soils map is shown in **Figure 12 Soils Map**. The soil types are listed below and further described in **Appendix 1 Soils Report**.

- **06 Tavares sand, 0 to 5 percent slopes** – is located on flatwoods, ridges, and knolls on marine terraces. The parent material consists of eolian or sandy marine deposits. Depth to restrictive feature is more than 80 inches. The natural drainage class is Moderately well drained. Hydrologic Soil Group: A. Depth to Seasonal High-Water Table (SHWT): 3.5-6.0 ft.
- **08 Sellers mucky loamy fine sand** – is located on drainageways and depressions on marine terraces. The parent material consists of sandy marine deposits. Depth to restrictive feature is more than 80 inches. The natural drainage class is very poorly drained. Hydrologic Soil Group: A/D. Depth to SHWT: +2-0 ft.
- **23 Basinger fine sand, depressional, 0 to 1 percent slopes** – is located on depressions on marine terraces. The parent material consists of sandy marine deposits. Depth to restrictive layer is greater than 80 inches. The natural drainage class is very poorly drained. Hydrologic Soil Group: A/D. Depth to SHWT: +2.0 to -1.0 ft.
- **32 Lake fine sand, 0 to 5 percent slopes** – is located on ridges and hills on marine terraces. The parent material consists of sandy marine deposits. Depth to restrictive feature is more than 80 inches. The natural drainage class is excessively drained. Hydrologic Soil Group: A. Depth to SHWT: >6.0 ft.
- **38 Urban Land, 0 to 2 percent slopes** – is located on flatwoods, hills, ridges, knolls and rises on marine terraces. No parent material. The natural drainage class is not ranked. Hydrologic Soil Group. Urban soil group areas are previously disturbed and mixed with other types of soils and cannot be classified to determine soil characteristics.
- **43 Arredondo fine sand, 0 to 5 percent slopes** – is located on hills and ridges marine terraces. The parent material consists of sandy and loamy marine deposits. Depth to restrictive feature is more than 80 inches. The natural drainage class is well drained. Hydrologic Soil Group: A. Depth to SHWT: > 6.0 ft
- **70 Placid fine sand** – is located on drainageways on marine terraces. The parent material consists of sandy marine deposits. Depth to restrictive feature is more than 80 inches. The natural drainage class is very poorly drained. Hydrologic Soil Group: A/D. Depth to SHWT: 0.0 to -1.0 ft.
- **99 Water**



Figure 12 Soils Map

[Soils Map is from the Custom Soil Resources Report for Pasco County, FL Morningside Drive Extension as provided by the United State Department of Agriculture Natural Resources Conservation Services through their online Web Soil Survey (WSS); <https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>; created and downloaded February 16, 2021.]

2.8 Roadway Network and Typical Cross sections

2.8.1 Morningside Drive from SR 52 to Fort King Road

Morningside Drive west of Fort King Road: Morningside Drive on the west side of the study area exists as a two-lane urban section roadway providing connection from SR-52 to Fort King Road. This connection provides access to the County Fairgrounds, westside public school bus compound, and a back-entrance access to Pasco High School.

This roadway segment was constructed in 2012 and provides two 12-foot travel lanes, curb, and gutter, and a 5-foot sidewalk located along the northern side. This roadway was developed within a 65-foot wide R/W section. Each end of the roadway segment (SR-52 and Fort King Road) is operating under a STOP-sign controlled intersection. This section of Morningside Drive is maintained by Pasco County and is classified as a Residential roadway. Construction Plans for this section of Morningside Drive were located. An excerpt from the construction plans showing the Cover Page, Typical Cross Sections, and Roadway Profile are provided in **Appendix 2 Morningside Drive West Plans Excerpt**. The posted speed limit is 30 miles per hour.



Figure 13 Morningside Drive West Pictures

Intersection of Morningside Drive and Fort King Road: Fort King Road and Morningside Drive intersection is currently a three-leg intersection with STOP-sign control on Morningside Drive. The AdventHealth Hospital Dade City driveway is located immediately to the north side of this intersection, and on the east side of Fort King Road. There are no exclusive turn lanes on Fort King Road. There is an exclusive eastbound left-turn lane on Morningside Drive. The hospital's access driveway, which also serves as the emergency room access driveway, is located south of the intersection, on the east side of Fort King Road.

Fort King Road: Fort King Road exists as a two-lane rural section roadway that runs north-south from the City of Zephyrhills into the City of Dade City. The existing Fort King Road R/W width is approximately 60 to 80-feet wide with two 12-foot wide asphalt paved travel lanes. Fort King Road is functionally classified as an Arterial roadway. The existing posted speed limit on Fort King Road in the vicinity of the Morningside Drive intersection is 35 MPH but changes to 45 MPH just south of the intersection along the frontage of the AdventHealth Hospital Dade City property.



Figure 14 Fort King Road Picture

[Picture provided by Google Maps; <https://www.google.com/maps>; downloaded March 8, 2021.]

2.8.2 Morningside Drive at US Highway 301

US 301/US 98 north and south of Morningside Drive: US 301 exists as a four-lane divided highway that runs north-south. This section of US 301 is classified as an arterial road with a 220-foot R/W that is maintained by the Florida Department of Transportation (FDOT). An excerpt from the construction plans including the Cover Page, Typical Cross Sections, and Roadway Profile is provided in **Appendix 3 Roadway Plans Excerpt for US 301**.



Figure 15 US Highway 301 Picture

Morningside Drive west of US 301/US 98: Morningside Drive on the west side of US 301/US 98 is a two-lane rural section roadway within a heavily developed commercial area. The R/W varies from 60 feet to 78 feet wide and is maintained by Pasco County. The roadway segment is situated at a signalized intersection at US 301/US 98 and dead ends into vacant property at the western terminus. The owner of the vacant property has contemplated an extension of the Morningside Drive corridor and has expressed interest in working with the City of Dade City & Pasco County in developing the roadway to the west. This section of roadway does not currently contain sidewalks, bike lanes, or paved shoulders. The posted speed limit is 30 MPH.

Morningside Drive east of US Highway 301/US 98: Morningside Drive continues east of the US 301/US 98 intersection as a two-lane rural section and provides connection to another arterial connector in the area, Old Lakeland Highway (County Road 35-Alternate). The posted speed limit on this segment is 45 MPH.

Intersection of Morningside Drive and US 301/US 98: US 301/US 98 and Morningside Drive form a four-leg intersection that is currently signalized with a box span wire formation including pedestrian crossing and signage. There are exclusive northbound and southbound left-turn lanes and a southbound right-turn lane on US 301/US 98. The Morningside Drive leg on the east side of US 301/US 98 has an exclusive right-turn lane and a shared left-turn/through lane. There is an existing retail center driveway located on the west side of this intersection and aligns with Morningside Drive located on the east side of this intersection. This driveway has exclusive eastbound left and right turn lanes and a through lane. Copies of the Cover and Signalization Plan Sheet are provided in **Appendix 4 MSD & US HWY 301 Signal Plan Excerpt**.

2.9 Pedestrian and Bicycle Facilities

The roadways in the project area have existing pedestrian and bicycle facilities as follows:

- **Morningside Drive West of Fort King Road:** Existing 5-foot concrete sidewalk on the north side of the roadway.
- **Fort King Road:** No existing pedestrian and bicycle facilities.
- **Morningside Drive West of US 301/US 98:** No existing pedestrian and bicycle facilities.
- **Morningside Drive East of US 301/US 98:** No existing pedestrian and bicycle facilities.
- **US 301/US 98:** Existing 5-foot concrete sidewalks on both the west and east side of the roadway.

The Pasco County Metropolitan Planning Organization’s (MPO) “Mobility 2045 Long-Range Transportation Plan” Summary Report identifies the following proposed pedestrian and bicycle facilities in the vicinity of project area, reference **Figure 16 Excerpt from MPO Trails Plan**.

- Extension of Hardy Trail from its southern terminus on the northside of the project area to Morningside Drive.
- Conceptual Trail for Morningside Drive.
- Conceptual Trail for Clinton Avenue (Clinton Avenue currently has 5-foot sidewalks on the north and south sides of the roadway).

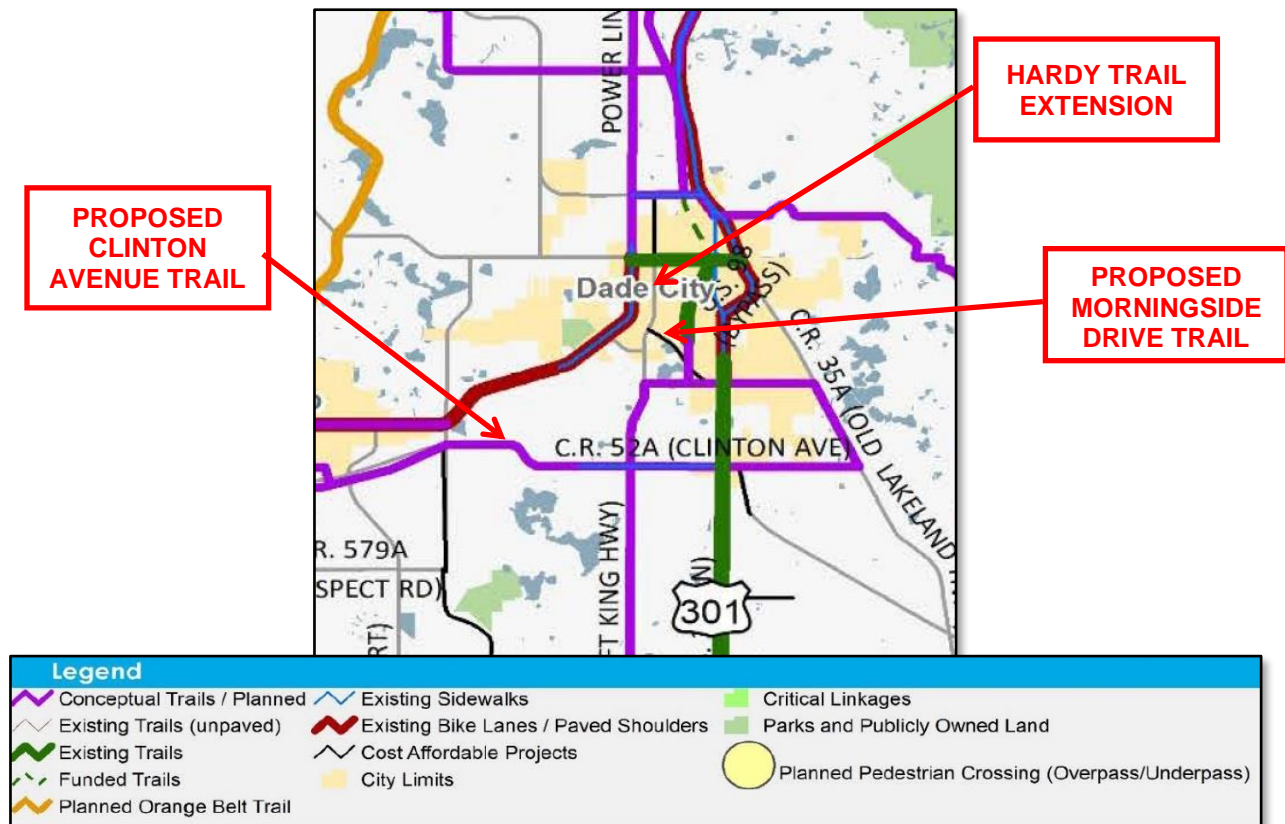


Figure 16 Excerpt from MPO Trails Plan

[Excerpt from page 4-15 of the 2045 Long Range Transportation Plan prepared for Pasco County Metropolitan Planning Organization, published March 2020; available at <https://www.pascocountyfl.net/DocumentCenter/View/60487/West-Central-Florida-Regional-Long-Range-Transportation-Plan-2045-?bidId=>.]

2.10 Existing Traffic Volumes

The existing Average Annual Daily Traffic (AADT) volumes were obtained, by Lincks & Associates in the process of preparing the Traffic Technical Memorandum (TTM) for the Morningside Drive Extension project, by applying the weekly Seasonal Factor (SF) and Axle Correction Factor, as documented in FDOT's Florida Traffic Information Online to the Average Daily Counts (ADT) and provided in the TTM's Appendix C. The existing year AADT calculations for the roadway segments adjacent to the Morningside Drive intersection are listed in **Table 2 Existing Year 2020 AADT Calculations**.

EXISTING YEAR AADT CALCULATIONS	
Roadway Segment	Existing year AADT
Fort King Road north of Morningside Drive	5,510
Fort King Road south of Morningside Drive	6,464
Morningside Drive west of Fort King Road	2,606
Morningside Drive east of US 301/US 98	2,784
US 301/US 98 north of Morningside Drive	24,879
US 301/US 98 south of Morningside Drive	26,577

Table 2 Existing Year 2020 AADT Calculations

The existing year 2020 AADT volumes are depicted in **Figure 17 Existing Year 2020 AADT Volumes**.

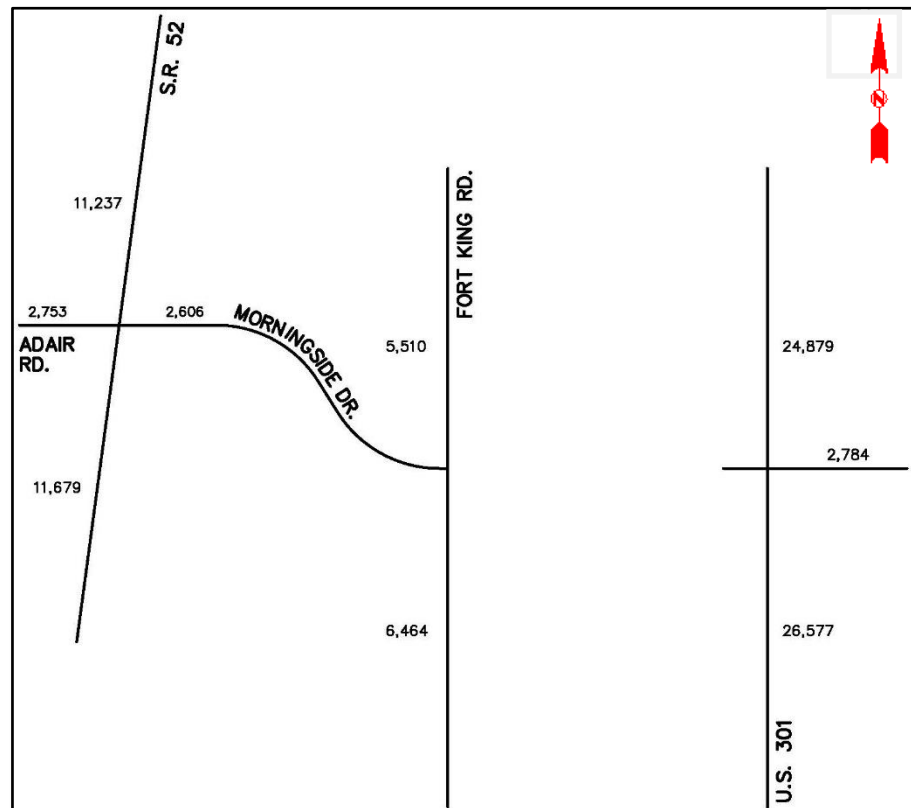


Figure 17 Existing Year 2020 AADT Volumes

The existing AM and PM peak hour turning movement volumes at key intersections are shown in **Figure 18 Existing Year 2020 AM/PM Turning Movement Volumes**. The existing AM and PM peak hour turning movement counts were converted to peak season utilizing FDOT peak season adjustment factors, as shown in TTM Figure 2-5.

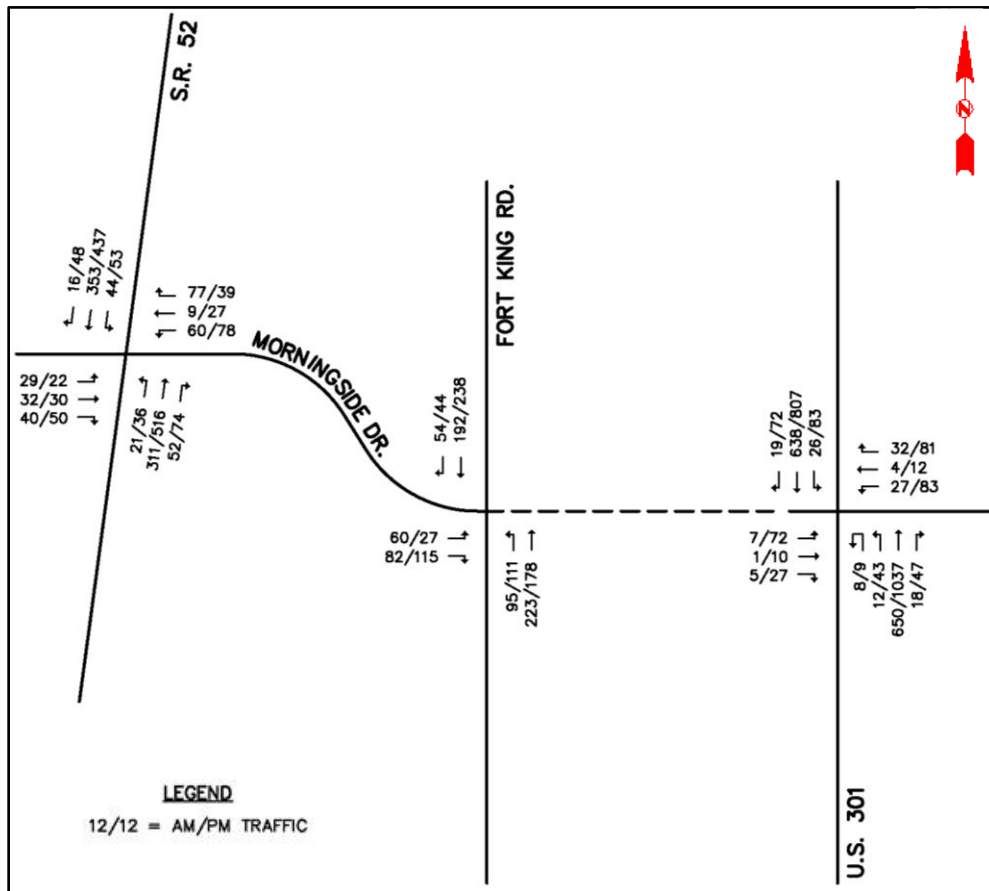


Figure 18 Existing Year 2020 AM/PM Turning Movement Volumes

A complete copy of the Traffic Technical Memorandum prepared by Lincks & Associates is provided in **Appendix 5 Traffic Technical Memorandum**.

2.11 Existing Conditions Traffic Operations Analysis

Under the TTM by Lincks & Associates, traffic operations analysis for the AM and PM peak hours were conducted to document the levels of service (Level of Service) within the study area for the Existing Year (2020). Level of Service is a qualitative measure of traffic operations. Level of Service designations range from A to F, with Level of Service A representing the best operating conditions and Level of Service F representing the worst operating conditions. The existing conditions analysis was performed using the methodologies described in Chapters 18 and 19, signalized and unsignalized intersections of the Transportation Research Board (TRB) Special Report, the 2010 Highway Capacity Manual, and HCS Software for unsignalized intersections and SYNCHRO for signalized intersections.

An intersection capacity analysis was conducted for the following intersections:

- Morningside Drive/Adair Road and SR 52
- Morningside Drive and Fort King Road
- Morningside Drive and US 301/US 98

The peak hour turning movement volumes were used to perform the operational analysis. Level of Service Standard D or better, for each movement was considered acceptable for the purpose of the analysis.

As shown in TTM's Table 2-3, the intersections operate within an acceptable Level of Service during AM and PM peak hours except for the following movements:

- Morningside Drive and SR 52/Adair Road intersection
 - Eastbound left, through and right movements during the AM and PM peak hours
 - Westbound through and right movements during PM peak hour
 - Westbound left movement during AM and PM peak hours
- Morningside Drive and Fort King Road
 - Eastbound left movement during the AM peak hour

2.12 Utilities

2.12.1 Utility Coordination

The Morningside Drive Extension project consists of providing a connection between the Morningside Drive intersection at Fort King Road and the Morningside Drive intersection at US 301/US 98. The study area located in between these two locations consists mainly of private property with private utility service connections.

In November of 2020, the Sunshine 811 organization was contacted to identify all utilities located within the existing Morningside Drive R/W as well as those within the Fort King Road and US 301/US 98 R/W within the vicinity of their Morningside Drive intersections. All existing utility providers were contacted and provided a conceptual layout for the roadway extension. The following is a list of utility providers contacted:

- Century Link
- Charter Communications
- City of Dade City (Water, Sewer, & Reclaimed Water)
- Pasco County Utilities
- Pasco County Traffic Operations
- Tampa Electric Company (TECO)
- TECO People's Gas
- Zayo Group (fiber optic communications)

2.12.2 Locations of Existing Utilities

2.12.2.1 Morningside Drive West & Fort King Road Intersection

Century Link

Century Link has overhead and buried cable along the west and east sides of Fort King Road. Relocation of Century Link lines may be required with this project.

Charter Communications

No utilities located within the subject area.

City of Dade City Utilities

Dade City has an existing water main and an existing force main located along the eastern R/W line of Fort King Road. Potential relocation at conflict areas may be required.

Pasco County Utilities

No Pasco County utilities are located within the subject area.

Tampa Electric Company (TECO)

TECO has an existing 1200 kV overhead electrical distribution lines located along the western R/W of Fort King Road. Relocation of the power poles at the proposed intersection is anticipated.

TECO People's Gas

TECO People's Gas has an existing transmission main running along the western R/W line of Fort King Road. The gas mains do not appear to conflict with the proposed project.

Zayo Group

Zayo Group does not have any utilities located within the Fort King Road R/W.

2.12.2.2 Morningside Drive Extension between Fort King Road and US 301/US 98

The majority of the land area making up the proposed routes for the Morningside Drive Extension project between Fort King Road and US 301/US 98 is comprised of undeveloped agricultural lands.

Century Link

Century Link has existing underground service to AdventHealth Hospital Dade City within the location of the proposed Morningside Drive R/W. Relocation of Century Link lines may be required with this project.

Charter Communications

No utilities located within subject area.

City of Dade City Utilities

The hospital site includes a 4-inch force main running along the northern boundary of the site as well as a lift station located at the eastern edge of the parking lot. Gravity sewer is provided from the hospital building to the existing lift station and will be required to run under the proposed Morningside Drive Extension project. The proposed roadway alignments will be designed as to not require relocation of the existing lift station.

Pasco County Utilities

No Pasco County utilities are located within the subject area.

Tampa Electric Company (TECO)

TECO provides site lighting and distribution to the hospital facility. Relocation of the onsite lighting will be required with this project.

TECO People's Gas

TECO People's Gas provides a service connection to the hospital located south of the proposed Morningside Drive Extension. The gas mains do not appear to conflict with the proposed project.

Zayo Group

Zayo Group does not have any utilities located within the subject area.

2.12.2.3 Morningside Drive & US 301/US 98 Intersection

Century Link

Century Link has overhead and buried cable along both the west and east sides of US 301/US 98 as well as the south side of the existing Morningside Drive roadway. Relocation of Century Link lines may be required with this project.

Charter Communications

No utilities located within subject area.

City of Dade City Utilities

Dade City has an existing 8-inch water main running along the southern R/W line of Morningside Drive. This line will require relocation with the roadway project.

Dade City has an existing 12-inch water main and 8-inch force main running along the western R/W of US 301/US 98. These lines will not require relocation with this project.

Pasco County Utilities

No Pasco County utilities are located within the subject area.

Tampa Electric Company (TECO)

TECO has an existing 13.2 KV overhead electrical distribution lines along the western R/W line of US 301/US 98 as well as along the southern R/W line for Morningside Drive. Relocation of the Morningside Drive electrical lines may be required with this project.

TECO People's Gas

TECO People's Gas has an existing transmission lines along US 301/US 98 on both the east and west sides of the R/W. There are no TECO gas mains running within the Morningside Drive R/W. The gas mains do not appear to conflict with the proposed project.

Zayo Group

Zayo Group has an underground fiber optic cable running along the eastern side of the US 301/US 98 R/W. The fiber optic cable does not appear to conflict with the proposed project.

2.12.3 Future Utility Accommodation

It is anticipated that the proposed R/W width will provide future accommodations for potable water, sanitary sewer, electric, gas, cable, and fiber optic facilities. No specific utility extensions are contemplated with this project.

3.0 Future Traffic Conditions

A Traffic Technical Memorandum (TTM) was developed by Lincks & Associates, Inc. in coordination with Pasco County. The final TTM was submitted on February 25, 2021 and subsequently approved. The TTM documents the traffic operational analysis results at the intersections relevant to the Morningside Drive Expansion project. A complete copy of the TTM is included as **Appendix 5 Traffic Technical Memorandum** and the summary of the analysis is included below.

3.1 Design Year Traffic Volume Projections

The following methodology was utilized to obtain the Directional Design Hour Volumes (DDHV) for the intersections in the study area.

- 1) The average growth rate was applied to existing peak season turning movement counts to obtain the initial DDHV's.
- 2) The Design Year 2045 Model ADT for the new segment of Morningside Drive was converted to AADT based on Model Output Conversion Factor (MOCF) and further converted to AM and PM DDHV by applying appropriate K and D factors.
- 3) The final Design Year 2045 turning movements were estimated utilizing the combination of model approach DDHV's for new segment of Morningside Drive, the estimated growth rate, and the general expected travel patterns in the area.
- 4) The corresponding AADTs were calculated utilizing PM peak hour volumes and $K= 0.09$ and rounded to the nearest 10th.

Figure 19 Design Year 2045 DDHV and AADT Predictions depicts the Design Year 2045 Directional Design Hour Volumes (DDHVs) used in the analysis and the corresponding AADT volumes.

3.2 Traffic Analysis Summary

Level of Service and capacity analysis of the Design Year (2045) conditions were conducted for the following intersections and segments:

Intersections

- Morningside/Adair Road and SR 52
- Morningside Drive and Fort King Road
- Morningside Drive and US 301/US 98

Segments

- Morningside Drive/Adair Road from SR 52 to Fort King Road
- Morningside Drive from Fort King Road to US 301/US 98
- Morningside Drive from US 301/US 98 to Old Lakeland Highway

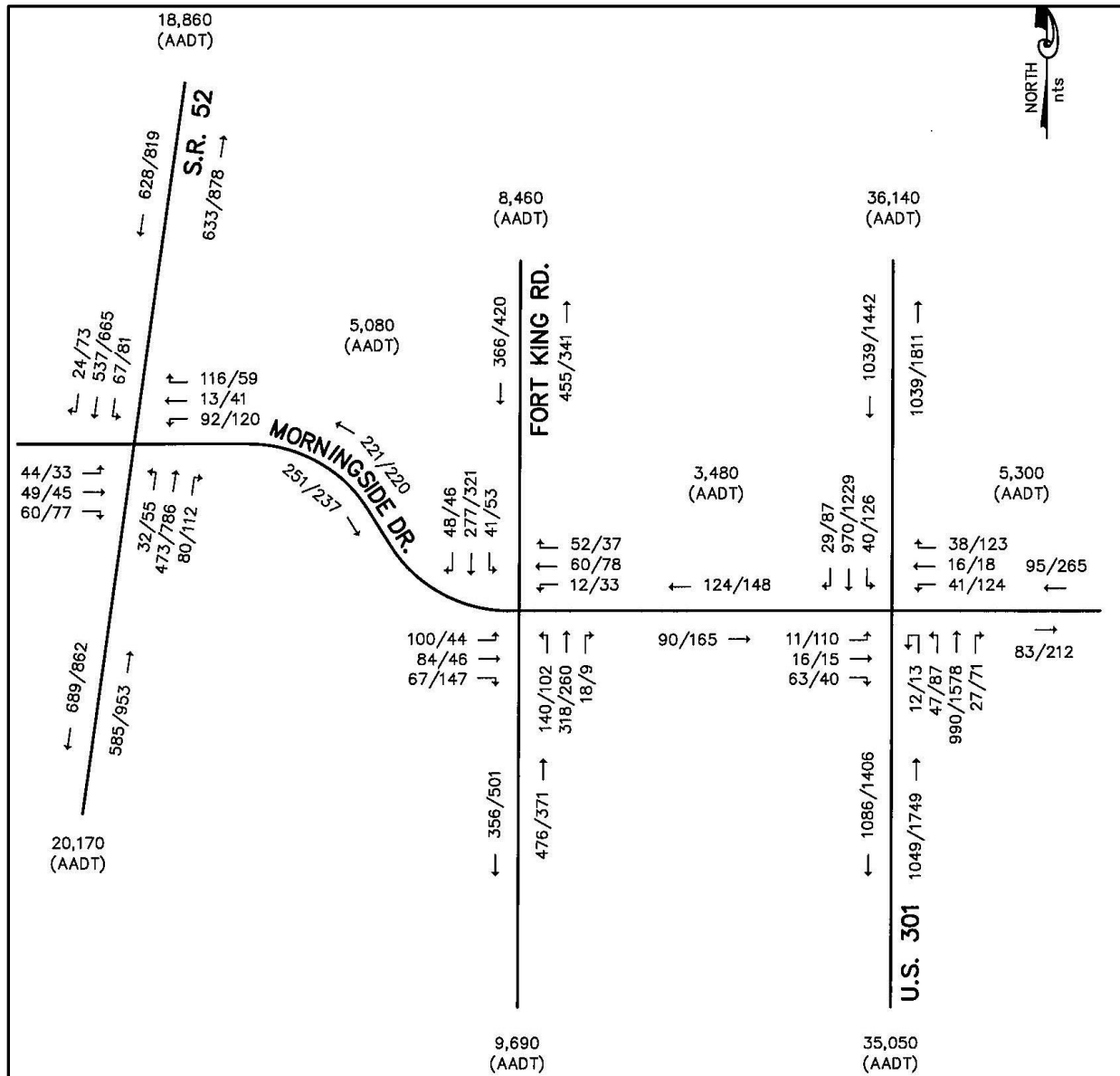


Figure 19 Design Year 2045 DDHV and AADT Predictions

A summary of the results and conclusions follows below.

3.2.1 Intersections

Morningside Drive/Adair Road and SR 52

Unsignalized (Option A)

- Operates at unsatisfactory Levels of Service during the AM and PM peak hours with the existing geometry and projected Design Year (2045) peak hour traffic volumes.

Signalized (Option B)

- Operates at acceptable Levels of Service with the existing geometry and with Design Year (2045) peak hour traffic volumes. A signal warrants analysis will need to be conducted.

Morningside Drive and Fort King Road

Unsignalized (Option A)

- Operates at unsatisfactory Levels of Service during the AM and PM peak hours with the existing geometry and with Design Year (2045) peak hour traffic volumes.
- Even with improvements (i.e., addition of left-turn lanes, etc.), operates at unsatisfactory Levels of Service during the AM and PM peak hours with Design Year (2045) peak hour traffic volumes.

Signalized (Option B)

- Operates at acceptable Levels of Service during the AM and PM peak hours with improved geometry and with Design Year (2045) peak hour traffic volumes. A signal warrants analysis will need to be conducted.

Roundabout (Option C)

- Operates at acceptable Levels of Service during the AM and PM peak hours with one-lane roundabout and with Design Year (2045) peak hour traffic volumes.

Morningside Drive and US 301/US 98

Signalized (Option B)

- Operates at acceptable Levels of Service during the AM and PM peak hours with existing geometry and with Design Year (2045) peak hour traffic volumes.

3.2.2 Segments

Morningside Drive from SR 52 to Fort King Road

Capacity analysis indicates that this segment should operate at an acceptable Level of Service during AM and PM peak hours through the Design Year (2045) as a two-lane undivided roadway.

Morningside Drive from Fort King Road to US 301/US 98

Capacity analysis indicates that this segment should operate at an acceptable Level of Service during the AM and PM peak hours through the Design Year (2045) as a two-lane undivided roadway.

Morningside Drive from US 301/US 98 to Old Lakeland Highway

Capacity analysis indicates that this segment should operate at an acceptable Level of Service during the AM and PM peak hours through the Design Year (2045) as a two-lane undivided roadway.

4.0 Engineering Analysis

4.1 Typical Cross Sections

As discussed in Section 3.2.2, a two-lane typical section will adequately accommodate the projected Design Year (2045) traffic volumes at an acceptable Level of Service (LOS D or better). Rural (with open drainage) and urban (with curb and gutter and closed drainage system) two-lane roadway typical cross sections with 12-foot travel lanes, five-foot paved shoulders, 8- to 12-foot multi-use path on the north side and a 5-foot sidewalk on the south side were developed for the Build Alternative Routes. A maximum of 1:3 back slopes was assumed to be utilized to grade down or up to existing surface elevations.

4.1.1 Rural Roadway Typical Cross Section

The proposed Rural Roadway Typical Cross Section has 115-feet of R/W that includes 12-foot travel lanes, 5-foot paved shoulders, a 12-foot multi-use path on the north side, a 5-foot sidewalk on the south side, and an open drainage system using drainage swales; reference **Figure 20 Rural Roadway Typical Cross Section**.

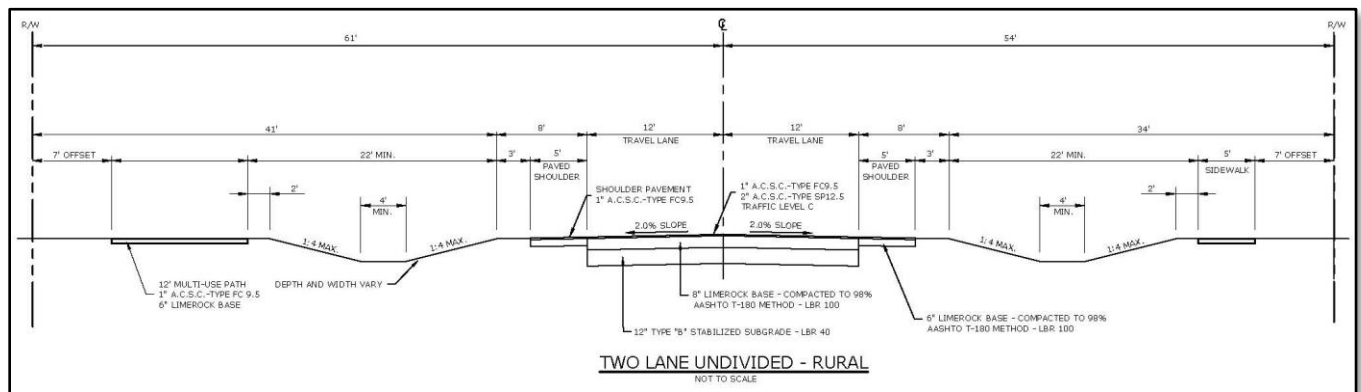


Figure 20 Rural Roadway Typical Cross Section

4.1.2 Urban Roadway Typical Cross section

The proposed Urban Roadway Typical Cross section has 77-feet of R/W that includes 12-foot travel lanes, 5-foot paved shoulders, a 12-foot multi-use path on the north side, a 5-foot sidewalk on the south side, and a closed drainage system using curb and gutter throughout; reference **Figure 21 Urban Roadway Typical Cross Section**.

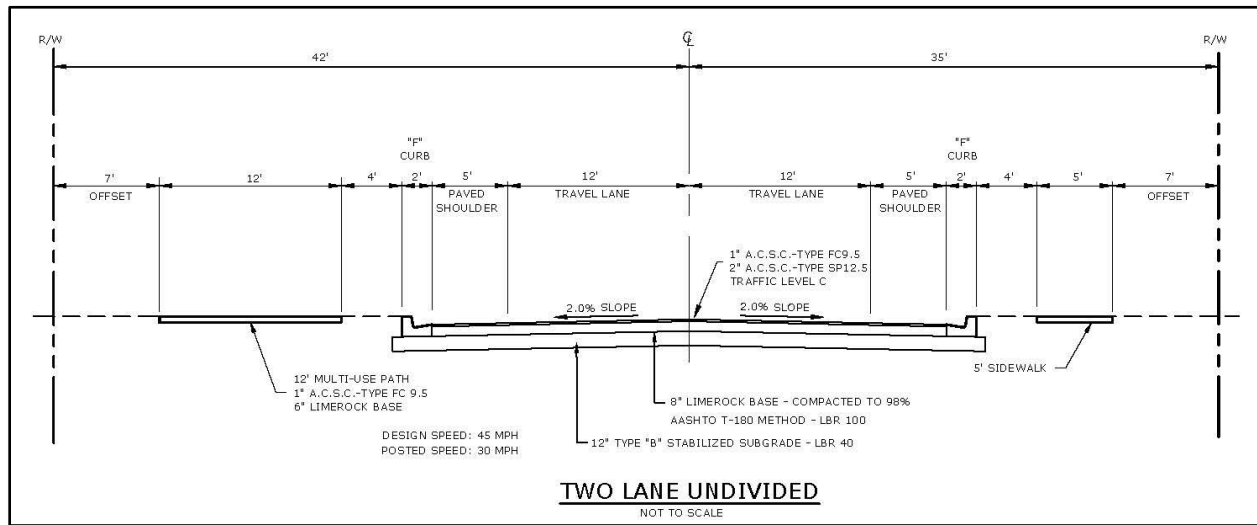


Figure 21 Urban Roadway Typical Cross Section

4.1.3 Typical Cross Section Evaluations

4.1.3.1 Safety

The proposed rural and urban typical cross sections were compared regarding safety for both the vehicle and the pedestrian use of the R/W. Statistics provide data showing that rural roads do create more fatalities resulting from greater vehicle speeds and diminished driver awareness as compared to urban roadway sections. These statistics are largely influenced by the rural setting, perhaps more so than the road section itself. An urban roadway section that includes curb and gutter has been shown to effectively narrow driving conditions which can provide a traffic calming affect; therefore, reducing driving speed.

The larger width of the rural R/W provides greater spacing between the travel lane and sidewalk/multi-use path used by pedestrians as compared to the urban section. This spacing between vehicle and pedestrian does provide safety benefits for pedestrians; however, other factors of the rural roadway such as greater crossing lengths, the potential of greater vehicle speeds, and diminished driver awareness can counter the pedestrian proximity issue with urban streets.

4.1.3.2 Costs

Opinions of Probable Cost were developed on a linear foot basis to compare the two typical cross section alternatives (115-foot and 77-foot); reference the cost comparison below in **Table 3 Typical Cross Section Comparison**. A comparison of the opinion of probable cost to acquire and construct one linear foot of the rural typical cross section R/W is approximately \$973; for the urban typical cross section, the cost is \$786.

4.1.3.3 Property Impacts

The rural roadway typical cross section has 115 feet of R/W where the urban roadway typical cross section has a 77-foot R/W which reduces the impacts to the properties along the proposed roadway route by requiring less land area for the roadway R/W and proposed SMF.

The rural roadway typical cross section would not reduce the area needed for SMFs. Pasco County requires a separation between design high water and bottom of base making stormwater retention in the R/W not advantageous.

4.1.3.4 Environmental Impacts

One of the major factors considered in accessing the use of the rural or urban section for the Morningside Drive Extension is the environmental impacts of the proposed roadway. Due to the use of roadside swales to collect and transport stormwater, the rural section by nature requires more R/W than the urban section. Most of the Morningside Drive Extension project requires traversing floodplain and wetland areas. The wetland system connects to both upstream and downstream aquatic resources and any impacts will require permitting with both the Florida Department of Environmental Protection (FDEP) and SWFWMD.

SWFWMD requires that a minimum of a 15-foot, average 25-foot wide, undisturbed upland buffer be provided around wetlands to ensure that adjacent land uses do not cause secondary impacts to the functions of the wetland system. In addition, Hester Lake is considered a Category 1 wetland by the City of Dade City and Pasco County. The final design will need to comply with the Dade City Conservation Element Policy CON 1.6.6 which regulates development in Category 1 wetlands and Pasco County Land Development Code Section 805.4.E in regarding wetland impact and public roadways. These two documents include the establishment of upland buffers in excess of SWFWMD requirements: Dade City requirement is for 30 feet (Policy Con 1.6.5) and Pasco County is for 25 feet (Chapter 805.5 LDC).

In order to obtain authorization to construct the project, demonstration of efforts to avoid and minimize wetland impacts will need to be provided to FDEP and SWFWMD.

4.1.3.5 Conclusion

Based upon consideration of safety, costs, property impacts, and environmental impacts listed above, the wider right-of-way rural typical cross section is considered to be a less viable alternative as compared to the more narrower right-of-way urban roadway typical cross section; therefore, the rural typical cross section is not carried forward in the development and analysis of the build alternative routes.

MORNINGSIDE ROAD EXTENSION					
TYPICAL CROSS SECTION COMPARISSION (PER LINEAR FOOT)					
ITEM	DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE	AMOUNT
TYPICAL SECTION - RURAL - 115' RW - PER FOOT CONSTRUCTION COST					
1	Right-of-Way (115' wide)	115	SF	\$0.35	\$40.25
2	Right-of-Way Wetland Mitigation (115' wide)	115	SF	\$4.30	\$494.50
3	Embankment (assume 5' of vertical fill is required)	21.29	CY	\$9.50	\$202.26
4	Type B Stabilization - Travel Lanes	2.78	SY	\$5.25	\$14.60
5	Optional Base Group 6 (8" Limerock) - Travel Lanes	2.78	SY	\$22.00	\$61.16
6	2" Superpave Asphaltic Concrete, Traffic Level C	2.66	SY	\$10.85	\$28.86
7	Optional Base Group 4 (6" Limerock) - Shoulders	1.22	SY	\$17.50	\$21.35
8	1" Asphaltic Concrete Friction Course, Traffic Level C	3.78	SY	\$7.60	\$28.73
9	Optional Base Group 4 (6" Limerock) - Trail	1.44	SY	\$17.50	\$25.20
10	1" Asphaltic Concrete Friction Course, Traffic Level B - Trail	1.33	SY	\$5.40	\$7.18
11	Concrete Sidewalk, 4" Thick	0.56	SY	\$54.00	\$30.24
12	Performance Turf, Sod (Bahia)	7.11	SY	\$2.60	\$18.49
				SUBTOTAL	\$972.81
TYPICAL SECTION - URBAN - 77' RW - PER FOOT CONSTRUCTION COST					
1	Right-of-Way (77' wide)	77	SF	\$0.35	\$26.95
2	Right-of-Way Wetland Mitigation (77' wide)	77	SF	\$4.30	\$331.10
3	Embankment (assume 5' of vertical fill is required)	14	CY	\$9.50	\$135.47
4	Type B Stabilization - Travel Lanes	4.33	SY	\$5.25	\$22.73
5	Optional Base Group 6 (8" Limerock) - Travel Lanes	3.78	SY	\$22.00	\$83.16
6	2" Superpave Asphaltic Concrete, Traffic Level C	3.78	SY	\$10.85	\$41.01
7	1" Asphaltic Concrete Friction Course, Traffic Level C	3.78	SY	\$7.60	\$28.73
8	Optional Base Group 4 (6" Limerock) - Trail	1.44	SY	\$17.50	\$25.20
9	1" Asphaltic Concrete Friction Course, Traffic Level B - Trail	1.33	SY	\$5.40	\$7.18
10	Concrete Curb & Gutter, Type F	2.00	LF	\$23.75	\$47.50
11	Concrete Sidewalk, 4" Thick	0.56	SY	\$54.00	\$30.24
12	Performance Turf, Sod (Bahia)	2.44	SY	\$2.60	\$6.34
				SUBTOTAL	\$785.62

Table 3 Typical Cross Section Comparison

4.1.4 Selected Typical Sections

Using the Urban Roadway Typical Cross Section as the preferred option, there were four (4) urban typical cross sections created to address the various conditions through the project study area.

AdventHealth Hospital Parcel - A constrained section requiring 62-feet of R/W was used in the vicinity of the AdventHealth Hospital site in an effort to minimize the roadway’s impact on the hospital’s parking and other facilities. This section consists of two 12-foot travel lanes, 5-foot paved shoulders, an 8-foot multi-use path on the north side, and a 6-foot sidewalk on the south side with curb and gutter throughout; reference **Figure 22 AdventHealth Hospital Typical Cross Section**.

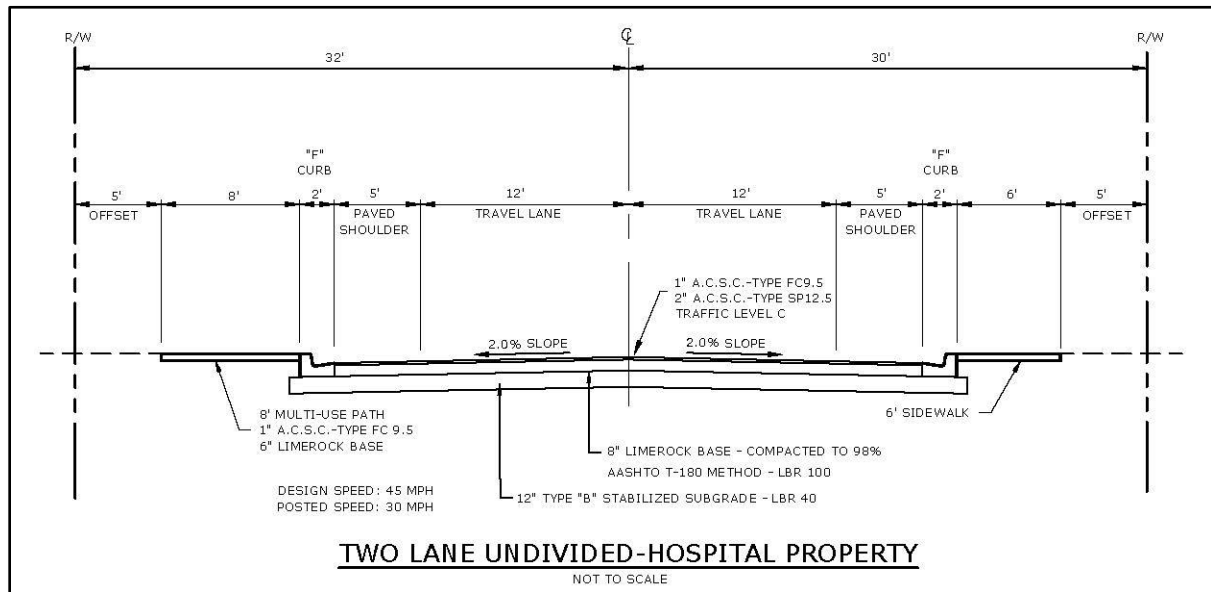


Figure 22 AdventHealth Hospital Typical Cross Section

From AdventHealth Hospital to Hardy Trail - 73-feet of R/W which includes two 12-foot travel lanes, 5-foot paved shoulders, an 8-foot multi-use path on the north side, and a 5-foot sidewalk on the south side with curb and gutter throughout; reference **Figure 23 AdventHealth Hospital to Hardy Trail Typical Cross Section**.

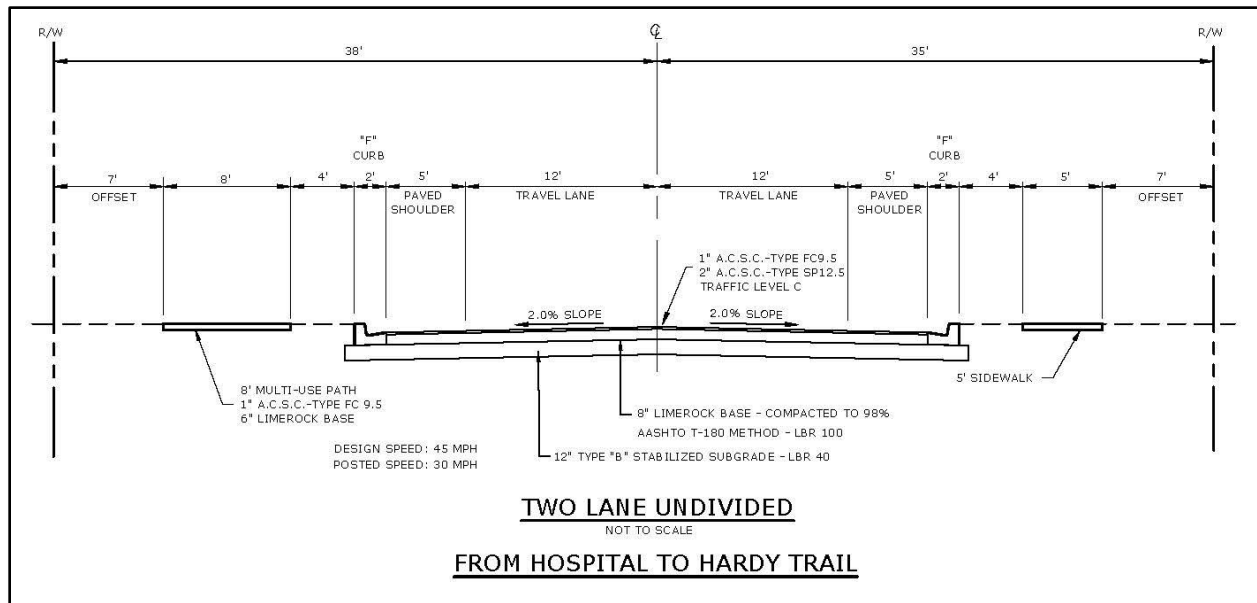


Figure 23 AdventHealth Hospital to Hardy Trail Typical Cross Section

Hardy Trail to US 301 Intersection - 77-feet of R/W which includes two 12-foot travel lanes, 5-foot paved shoulders, a 12-foot multi-use path on the north side, and a 5-foot sidewalk on the south side with curb and gutter throughout; reference **Figure 24 Hardy Trail to US 301 Typical Cross Section**.

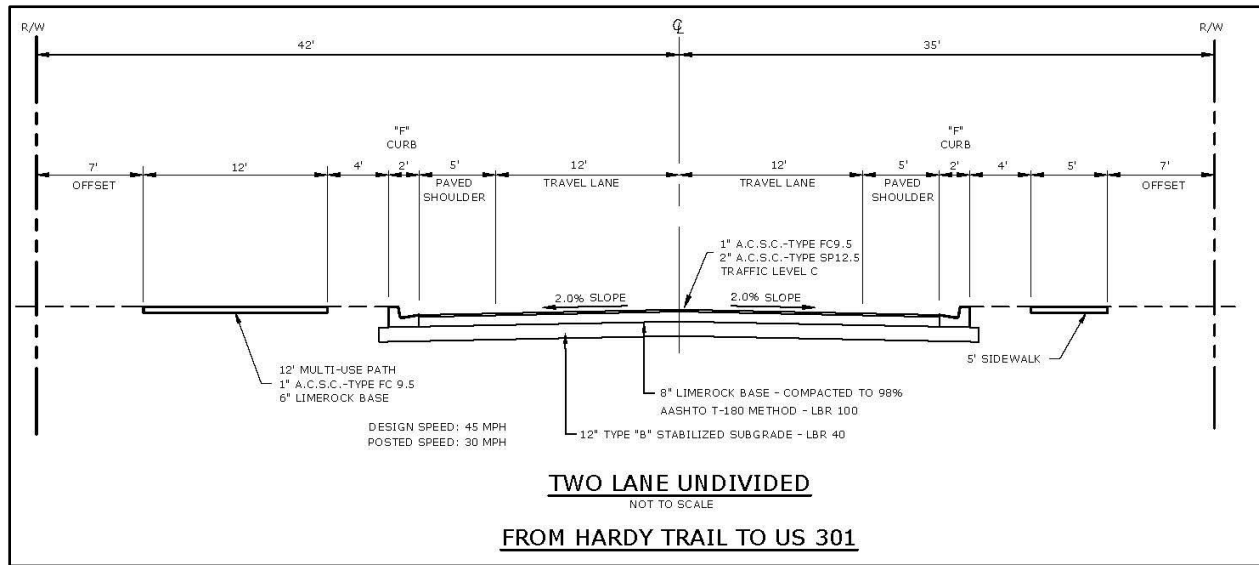


Figure 24 Hardy Trail to US 301 Typical Cross Section

US 301 Intersection: 94-feet of R/W which includes 12-foot travel lanes, 5-foot paved shoulders, a 12-foot multi-use path on the north side, a 5-foot sidewalk on the south side, a right and left turn lane with curb and gutter throughout; reference **Figure 25 US 301 Intersection Typical Cross Section**.

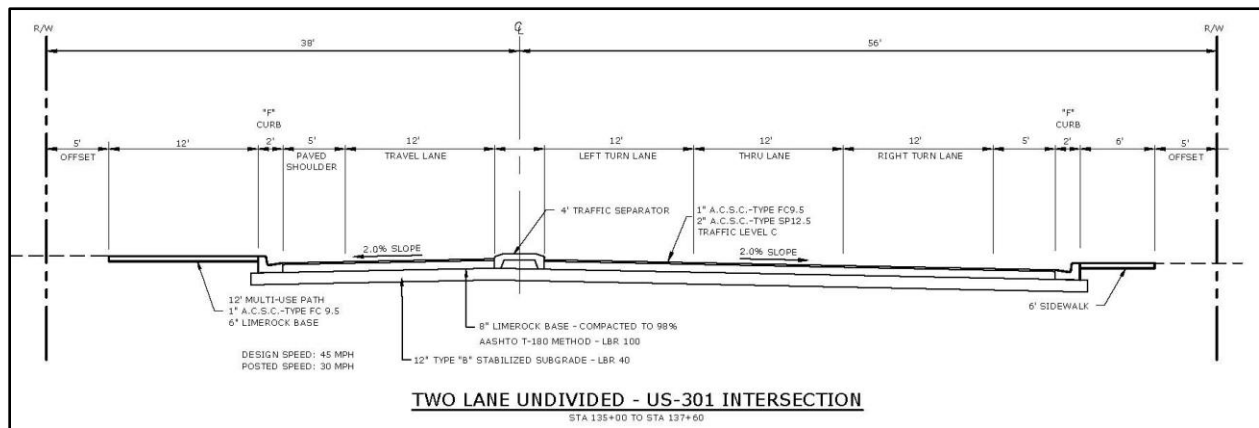


Figure 25 US 301 Intersection Typical Cross Section

Full size copies of the four Typical Cross Section details are provided in **Appendix 6 Typical Cross Sections**.

4.2 Design Criteria

The proposed Morningside Drive Extension will be designed in accordance with the criteria, guidelines and provisions established by the City of Dade City, Pasco County, the FDOT and the American Association of State Highway and Transportation Officials (AASHTO). The design criteria used in the study phase for development for the alignment alternatives and typical cross sections are presented in **Table 4 Design Criteria**. The Morningside Drive Extension will be designed with a 45 MPH design speed and posted at 30 MPH.

DESIGN CRITERIA		
Design Element	Proposed Value	Source
Facility Type	Minor Collector 2-Lane Road	City of Dade City
Context Classification	C2T – Rural Town	FDM, Table 200.4.1
Functional Classification	Minor Collector - Rural	Based on existing rural Morningside Drive shown in 2010 Urban Area Boundaries and Federal Functional Classification Map for Pasco County
Design Speed	45 mph	FGB, Table 3-1 FDM, Table 201.5.1
Posted Speed	30 mph	
Design Vehicle	Predominant – SU-40 Control Vehicle – WB-62	AASHTO Table 9-29 FGB, Table 3-2 FDM, Section 201.6
Lane Widths	12 feet – travel lane 5 feet - paved shoulder	FGB, Table 3-10 FDM, Table 210.2.1 City of Dade City Pasco Design Standards
Longitudinal Grade	6% max. at 45 mph	FGB, Table 3-7 FDM, Table 210.10.1
Max. Change in Grade	0.70% without a vertical curve at 45 mph	FGB, Table 3-8 FDM, Table 210.10.2
Pavement Cross Slope	2% for travel lanes	FGB, C.7.b.2 Pasco LDC 901.6-4
Driveway Slope	Max. 10% Commercial Max. 28% Residential	FDM – 214.4
Roadside Slopes	1:4 or flatter, 1:3 (max.) within the clear zone	FGB, C.7.f.2 FDM 215
Roadway Elevation	1 foot above 100-year flood elevation (min.)	
Min. Stopping Site Distance	varies	FGB, Table 3-3 FDM, Table 210.11.1
Lane Shifts	8 degrees max. at 30 mph 3 degrees max. at 45 mph	FDM, Table 212.7.1
Horizontal Curves	8 deg 15 min. (max.) at 45 mph 680 feet min. radius (Urban based on $e_{max}=0.05$)	FGB, Table 3-5 FDM, Table 210.9.2
Crest Vertical Curve	K = 98 (min.) at 45 mph L = 3 x Design Speed (min.)	FGB, Table 3-9 FDM, Table 210.10.3
Sag Vertical Curve	K = 79 (min.) at 45 mph L = 3 x Design Speed (min.)	FGB, Table 3-9 FDM, Table 210.10.3

Superelevation – Urban	Emax = 0.05	FGB, Table 3-5
Control Radius	Predominant – SU-40 Occasional – WB-62 Control Radius = 75 ft (min.)	FDM, Table 212.9.2
Horizontal Clear Zone	24 feet at 45 mph	FDM, Table 215.2.1
Min. Vertical Clearance	16.5 feet	FGB, C.7.j.4.(b)
Pavement Structure Design	Subbase: 12" (LBR 40) Base: 8" (LBR 100) Asphalt: Min. 3" Type SP	PC LDC, 901.6 Major Collector: Min. 3.70 SN, with 3" asphalt
Pond Design Criteria	varies	DC LDC, Section 6.7 SWFWMD
Peak Stormwater Runoff	SCS Calculations	DC LDC, Section 6.7 SWFWMD Volume II Chapter 4.2a & b
Drainage System Design Storm Frequency	10-year – General Design 25-year – Outfalls	FDOT Drainage Manual Section 3.3, Table 3.1
Cross Drains Design Storm Frequency	50-year	FDOT Drainage Manual Section 4.3.1, Table 4.1
Minimum Pipe Sizes		FDOT Drainage Manual Section 3.10.1
cross drains	18-inch	
storm sewer	18-inch	
side drains	18-inch	
box culvert	Designed to have sufficient capacity	
STORMWATER QUANTITY:		
Closed Basin Allowable Discharge	Post-development volume no more than pre-development volume for 24-hour, 100-year storm	SWFWMD* Volume II Part III, Chapter 3.1
STORMWATER QUALITY:		
Wet Detention Treatment Volume	One inch of runoff from contributing area	SWFWMD* Volume II Part IV, Chapter 4.1a
Dry Retention; Detention w/ Effluent Filtration Treatment Volume	Runoff from first one inch of rainfall (one-half inch for drainage areas less than 100 acres)	SWFWMD* Volume II Part IV, Chapter 4.1b And Chapter 4.5
On-Line & Off-Line Treatment Volume	Runoff from first one inch of rainfall (one-half inch for drainage areas less than 100 acres)	SWFWMD* Volume II Part IV, Chapter 4.1b And Chapter 4.5

Notes:

DC LDC = City of Dade City Land Development Code

PC LDC = Pasco County Land Development Code

FGB = Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways

(2016 Edition), FDOT (Commonly Referred to as the "Florida Greenbook")

FDOT = Standard Plans (FY 2020-21)

FDM = FDOT Design Manual (FY20-21)

FDOT DRAIN = FDOT Drainage Manual (2020)

AASHTO = A Policy on Geometric Design of Streets and Highways (2018)

SWFWMD = Environmental Resource Permitting Info Manual

Table 4 Design Criteria

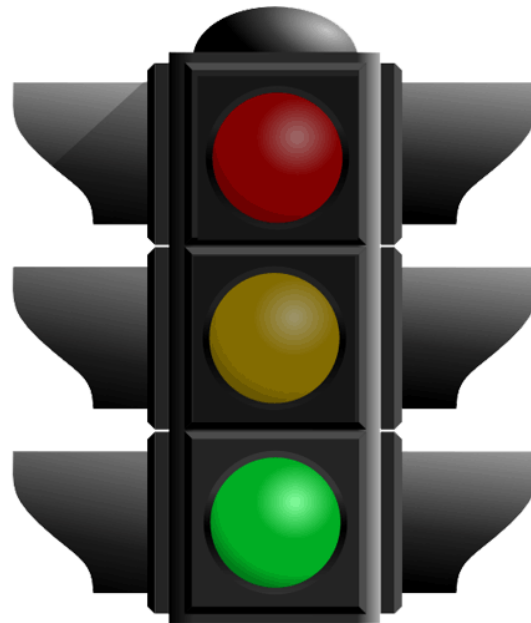
4.3 Intersection of Morningside Drive and Fort King Road

For the intersection of Morningside Drive and Fort King Road this study analyzes two (2) potential intersection configurations, a four-way signalized intersection and a roundabout.

4.3.1 **Signalized Intersection**

Per FDOT, signals are essential traffic control devices at intersections and other key locations on Florida's roads and highways. Their primary purpose is the effective regulation of traffic movements to provide a safe, orderly flow for both vehicles and pedestrians. Both, FDOT and Pasco County utilize signal systems that reflect many important advances in both equipment technology and operation.

Traffic signals are electronically operated traffic control devices which alternately direct traffic to stop and to proceed. Traffic signals are designed to ensure an orderly flow of traffic, provide an opportunity for pedestrians or vehicles to cross an intersection and help to reduce the number of conflicts between vehicles entering intersections from different directions.



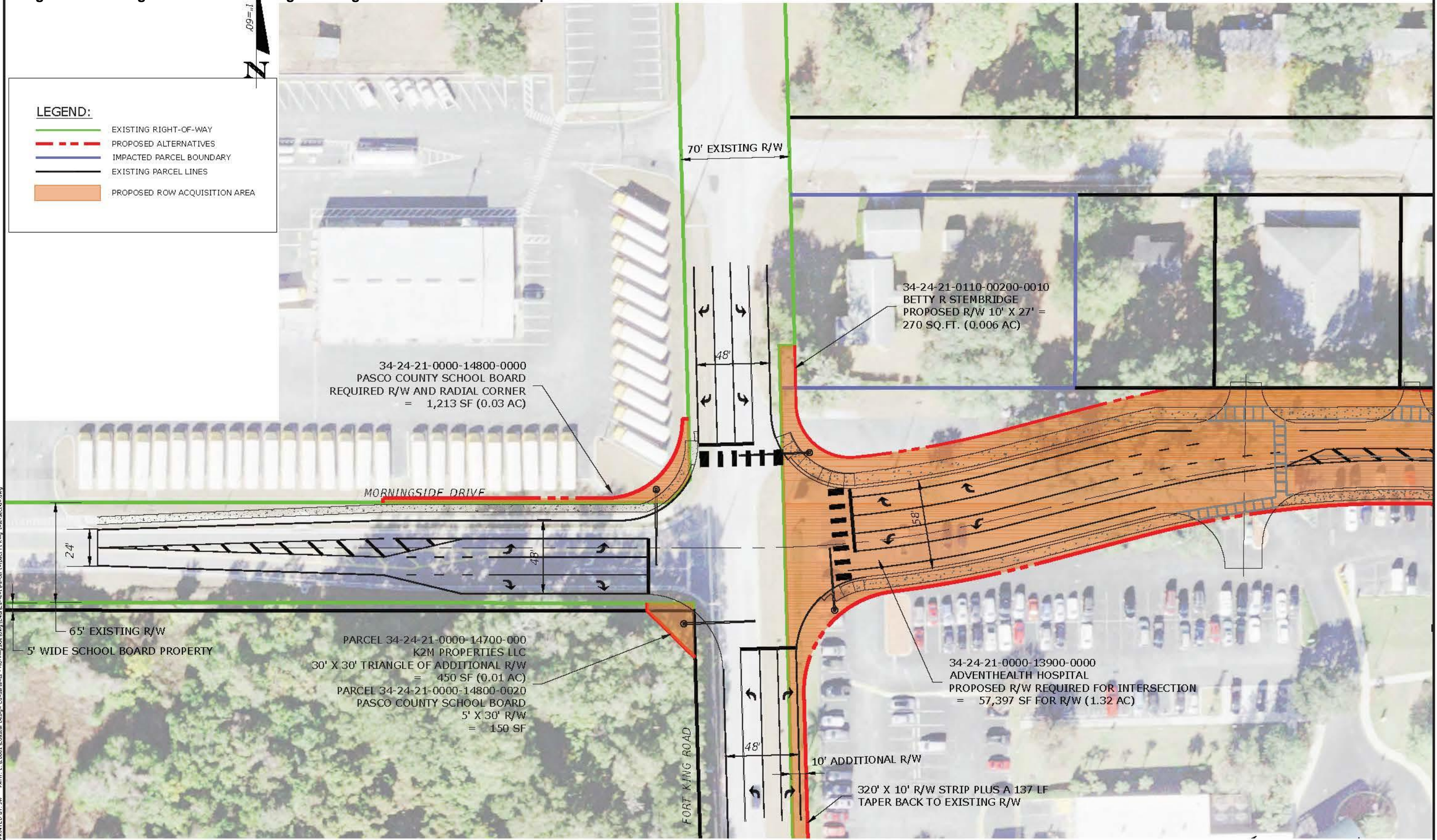
Traffic responsive controllers change the lights according to the amount of traffic in each direction. These controllers use sensors (inductive loops in the roadway or video detection) to detect the number of vehicles and automatically adjust the length of the green time to allow as many vehicles as possible through the intersection before responding to the presence of vehicles on another approach. Some intersections include microcomputer traffic controllers makes the signalized intersection much more efficient, thereby reducing time-consuming delays.

The conceptual plan for the signalized intersection of Morningside Drive and Fort King Road is shown in **Figure 26 Morningside Drive & Fort King Road Signalized Intersection Conceptual Plan**. This plan allows for right- and left-turn lanes on all four (4) legs of the intersection; therefore, the proposed R/W width along the AdventHealth Hospital site would increase from 62 feet to 89 feet near the intersection.

4.3.2 **Roundabout**

Per the U.S. Department of Transportation's Federal Highway Administration (FHWA), a roundabout is a type of circular intersection, but is quite unlike a neighborhood traffic circle or large rotary. Roundabouts have been proven safer and more efficient than other types of circular intersections.

Figure 26 Morningside Drive & Fort King Road Signalized Intersection Conceptual Plan



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REVISIONS		DATE	NAME
NO.	DATE	DESCRIPTION	
	11/xx/20		DESIGNED BY:
	11/xx/20		DRAWN BY:
	11/xx/20		CHECKED BY:
	11/xx/20		SUPERVISED BY:

COASTAL
DESIGN CONSULTANTS
7026 Little Road,
New Port Richey, FL 34653

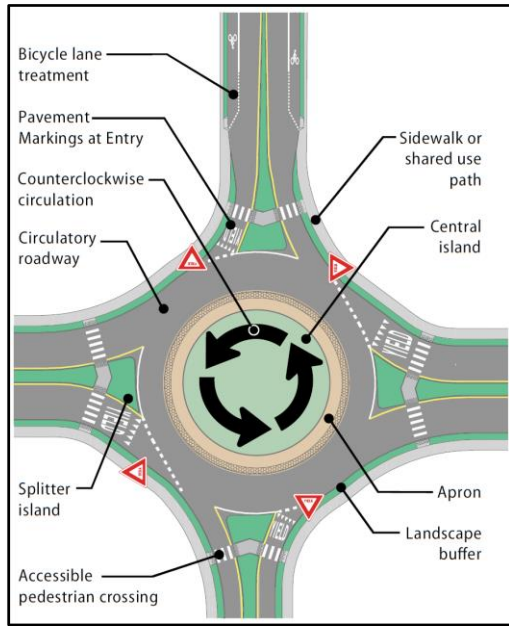
Coastal
engineering & science, inc.
3880 Consultant Boulevard
Troy, AL 36060

PASCO COUNTY
ENGINEERING SERVICES

PASC
COUNTY FLORIDA
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MORNINGSIDE DRIVE EXTENSION
MORNINGSIDE DR & FORT KING RD
SIGNALIZED INTERSECTION IMPACTED
PARCEL EXHIBIT

SHEET NO.
DR FIG 8
SHT 1 OF 4



Roundabouts have certain distinguishing features and characteristics (as shown in **Figure 27 Roundabout Exhibit**). While these noted features are common to many roundabouts, they are not always present, as roundabouts are adapted to the context of the location. In fact, roundabouts do not even need to be perfectly circular! Successful roundabouts come in all shapes and sizes (oval-, teardrop-, peanut- and dog bone- shaped). Some have as few as three legs and others as many as six.

The potential roundabout conceptual plan is shown in **Figure 28 Morningside Drive & Fort King Road Roundabout Conceptual Plan**. This plan does not require turn lanes due to the nature of the roundabouts; therefore, the proposed R/W width along the AdventHealth Hospital site would only increase from 62 feet to 69-feet near the intersection, therefore having less impacts on the hospital's parking facilities.

Figure 27 Roundabout Exhibit

[Roundabout Exhibit was from the U.S. Department of Transportation's Federal Highway Administration (FHWA) website; available at <https://safety.fhwa.dot.gov/intersection/innovative/roundabouts/>.]

4.3.3 Intersection Configuration Evaluation

4.3.3.1 Intersection Safety

Signalized Intersection

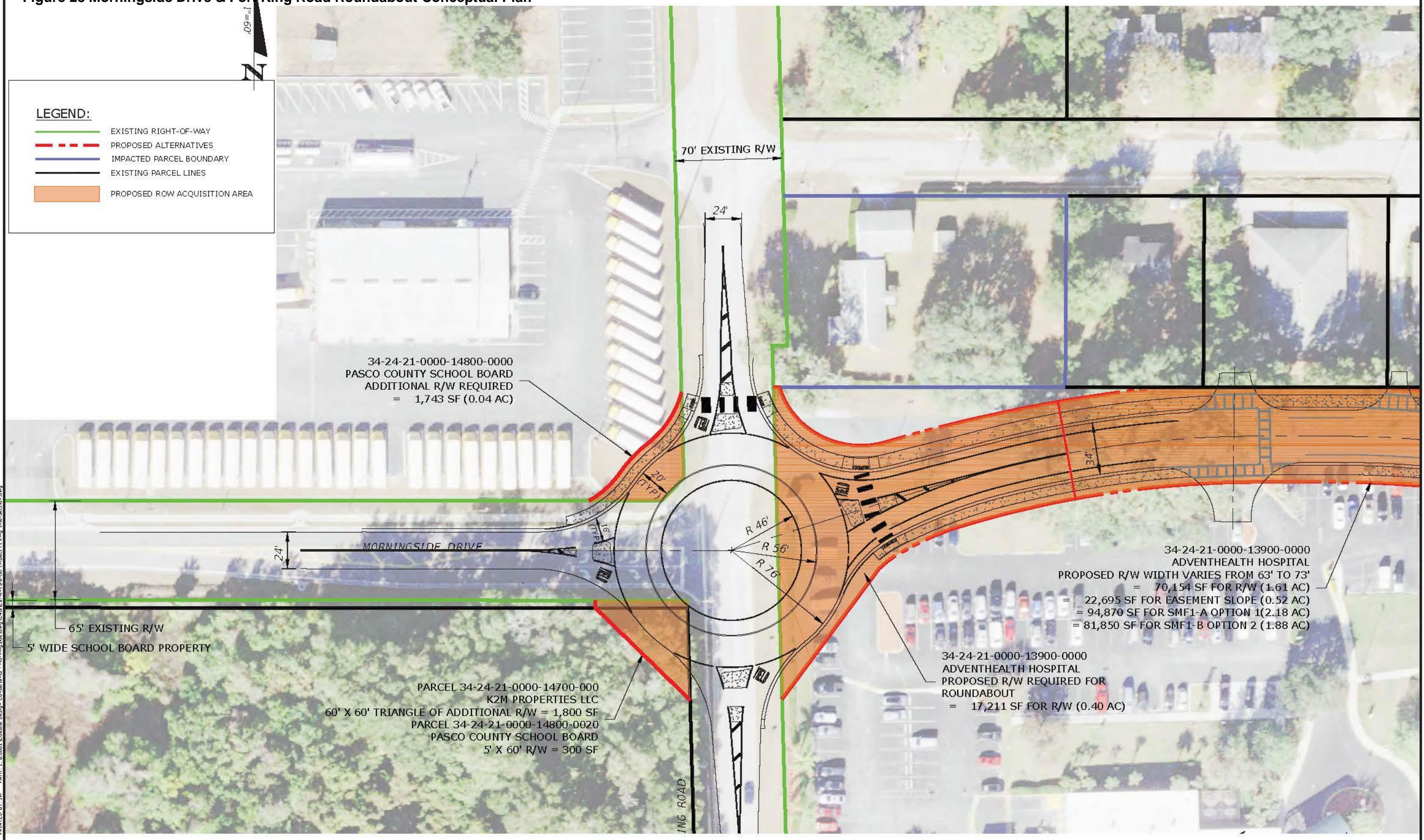
A signalized intersection offers maximum control at intersections by:

- Relaying messages of both what to do and what not to do.
- Assigning right-of-way to conflicting movements of traffic at an intersection by permitting conflicting streams of traffic to share the same intersection by means of time separation.
- Providing for the orderly movement of conflicting flows by alternately assigning right of way to various traffic movements.
- Interrupting extremely heavy flows to permit the crossing of minor traffic movements that could not otherwise move safely through an intersection.

When properly timed, a traffic signal increases the traffic handling capacity of an intersection, and when installed under conditions that justify its use, a signal is a valuable device for improving the safety and efficiency of both pedestrian and vehicular traffic. In particular, signals may reduce certain types of accidents, most notably, right-angle (broadside) collisions.

Intersections are designed points of conflict in all roadway systems. All modes of traffic cross paths as they travel through or turn from one route to another. Where different paths separate, cross or join are known as conflict points, and these are always present at intersections. Limiting the number of conflict points at an intersection not only reduces the frequency and severity of crashes, but also improves the overall operation and mobility.

Figure 28 Morningside Drive & Fort King Road Roundabout Conceptual Plan



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REVISIONS		DATE	NAME	DESIGNED BY:
NO.	DATE	DESCRIPTION	11/xx/20	-----
			11/xx/20	-----
			11/xx/20	-----
			11/xx/20	PAUL MANUEL, P.E.

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 ENGINEERING SERVICES

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MORNINGSIDE DRIVE EXTENSION
MORNINGSIDE DR & FORT KING RD
 ROUNDABOUT INTERSECTION
 IMPACTED PARCEL EXHIBIT

SHEET
 NO.
DR FIG 8
 SHT 2 OF 4

Some of the disadvantages of a signalized intersection include:

- ✓ Greater need for continuous operations and maintenance activities and their associated costs.
- ✓ Need for larger tracts of land to contain the approach lanes and any corresponding turn lanes.
- ✓ May increase speeding as drivers try to “beat the light change”.
- ✓ More noise due to increased traffic stop-and-go conditions, especially when heavy vehicle traffic is high.
- ✓ The severity of crashes is higher as vehicles enter the intersection at higher speeds.

Roundabout

Roundabouts can provide lasting benefits and value in many ways. They are often safer, more efficient, less costly, and more aesthetically appealing than conventional intersection designs. Furthermore, roundabouts are an excellent choice to complement other transportation objectives – including Complete Streets, multimodal networks, and corridor access management – without compromising the ability to keep people and freight moving through towns, cities, and regions, and across the Nation. The FHWA Office of Safety identified roundabouts as a Proven Safety Countermeasure because of their ability to substantially reduce the types of crashes that result in injury or loss of life. Roundabouts are designed to improve safety for all users, including pedestrians and bicycles.

Per FDOT and the FHWA, roundabouts are increasingly becoming more popular due to the benefits that they provide. These benefits include:

- Safety
 - Conducive to traffic calming
 - Fewer crashes, 90% fewer fatalities and 75% fewer injuries
 - Fewer severe crashes
 - 10 to 40% fewer pedestrian/bicycle crashes
 - Roundabouts are safer for beginner and elderly drivers
 - Can be used in multiple road intersections
- Time Savings
 - 30 to 50% increase in traffic capacity for intersection, less delay waiting at stops and signals
- Environmentally Friendly
 - Reduce pollution (from cars not waiting at traffic signals), reduce noise, reduce fuel consumption
 - Roundabout islands can be landscaped with native plants and trees
- Save Money
 - Without traffic signals, no cost for traffic signals and yearly maintenance
 - Intersection still operates in power outages; no need for police to direct traffic
 - Roundabouts can help improve sales at nearby businesses as more people can walk or easily drive to locations compared to traditional intersections
 - Can act as a marker to a business

Some of the disadvantages of a roundabout include:

- ✓ A roundabout may not regulate traffic well with intersecting roads with a greater variance in traffic flow; for example, a car trying to enter the roundabout from a minor side street

may have to wait to enter the roundabout due to heavier traffic flows from a busier main road.

- ✓ Roundabouts require more land at the intersection itself to develop.
- ✓ Roundabouts may be confusing to inexperienced drivers.

Roundabout Versus Signalized Intersections Conflict Points

Most significantly, roundabouts REDUCE the types of crashes where people are seriously hurt or killed by 78-82% when compared to conventional stop-controlled and signalized intersections, per the AASHTO Highway Safety Manual.

By reducing the number and severity of conflict points, and because of the lower speeds of vehicles moving through the intersection, roundabouts are a significantly safer type of intersection. The diagrams below in **Figure 29 Pedestrian-Vehicle Conflict Comparison** are excerpted from “Roundabouts: An Informational Guide, Second Edition (published as NCHRP Report 672)” illustrates the difference in conflict points between a conventional, four-legged intersection and an equivalent single lane roundabout. There are 32 conflict points associated with a conventional intersection – 8 merging (or joining), 8 diverging (or separating) and 16 crossing. In contrast, there are only 8 total conflict points at an equivalent roundabout – 4 merging and 4 diverging. Not only are conflict points halved with the roundabout, the type of conflicts that remain are the same-direction variety, which result in substantially less severity, and as a result, less likelihood of injury. The reduction of both the total number of conflict points and their severity is also true for pedestrians, also shown below in diagrams excerpted from the Guide.

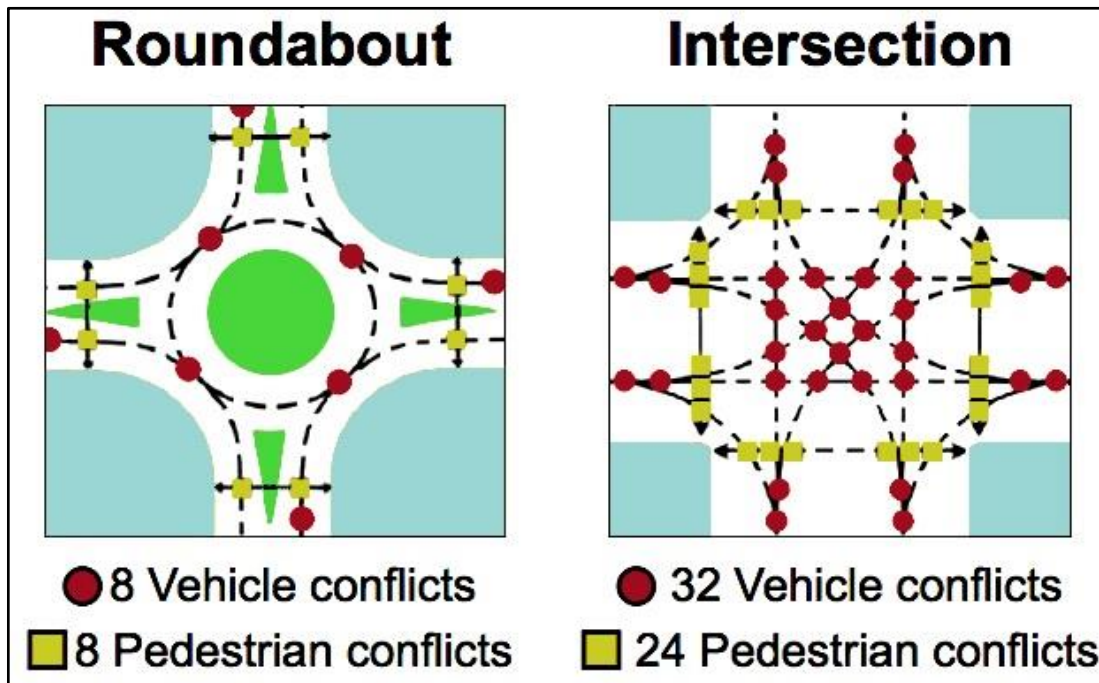


Figure 29 Pedestrian-Vehicle Conflict Comparison

[Vehicle Conflict Point Comparison and Pedestrian Vehicle Conflict Comparison Exhibits were from the U.S. Department of Transportation’s Federal Highway Administration (FHWA) website; available at [https://safety.fhwa.dot.gov/intersection/innovative/roundabouts/.](https://safety.fhwa.dot.gov/intersection/innovative/roundabouts/)]

4.3.3.2 Intersection Costs

Opinions of Probable Cost were developed to compare the construction cost of the signalized intersection versus the roundabout; reference **Table 6 Signalized Intersection Opinion of Probable Cost** and **Table 7 Roundabout Opinion of Probable Cost**. The comparison of the Opinions of Probable Cost shows that the signalized intersection will cost approximately \$1,338,000 to construct, whereas the roundabout will cost \$903,000; a cost savings of approximately \$435,000. This savings does not include the savings from avoiding the yearly costs for operating the traffic signal.

The estimated costs to acquire the land for the signalized intersection versus the roundabout are shown in **Table 8 Intersection Configuration Property Impacts and Acquisition Costs**. The comparison of the land acquisition costs shows that the signalized intersection will cost approximately \$288,000 to acquire the land and the roundabout is \$158,000; a cost savings of approximately \$130,000 in favor of the roundabout.

4.3.3.3 Intersection Property Impacts

The property impacted by proposed signalized intersection and the roundabout are shown in **Table 8 Intersection Configuration Property Impacts and Acquisition Costs**. The number of parcels impacted by the signalized intersection and the roundabout are five and four, respectfully.

4.3.3.4 Intersection Environmental Impacts

The matrix showing the various environmental impacts created by the signalized intersection vs. the roundabout are shown in **Table 5 Intersection Configuration Environmental Impact Matrix**.

EVALUATION FACTOR	SIGNALIZED INTERSECTION	ROUNDABOUT
Encroachment in Floodplain?	No	No
Impacts to Wetlands?	No	No
Impacts to Listed/Protected Species?	Very Low	Low
Topography Compatible? Yes or No	Yes	Yes

Table 5 Intersection Configuration Environmental Impact Matrix

As shown in the above table, there are no major environmental impacts with either the installation of a signalized intersection or roundabout at Morningside Drive and Fort King Road intersection. The only slight difference is in the Listed Species because more area is needed for the roundabout in an undeveloped, wooded area.

4.3.3.5 Intersection Conclusion

Based on the analysis of safety, costs, impacts, and environmental impacts listed above, a roundabout design configuration is considered the more viable alternative as compared to the signalization of the intersection of Morningside Drive and Fort King Road. Therefore, the signalized design configuration for the intersection is not carried forward in the analysis of the Build Alternative Routes. The Build Alternative Route Conceptual Plans only show the roundabout configuration.

**Morningside Drive and Fort King Intersection
Signalized Intersection Alternative**

Roadway					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	110-1-1	CLEARING AND GRUBBING	1.8	AC \$21,080.42	\$37,944.76
2	110-4-10	REMOVAL OF EXISTING CONCRETE	680	SY \$18.73	\$12,736.40
3	120-1	REGULAR EXCAVATION	1200	CY \$6.89	\$8,268.00
4	120-6	EMBANKMENT	2800	CY \$16.08	\$45,024.00
5	160-4	TYPE B STABILIZATION	5200	SY \$5.13	\$26,676.00
6	285-709	OPTIONAL BASE, BASE GROUP 09	5000	SY \$18.86	\$94,300.00
7	327-70-1	MILLING EXIST. ASPH. PAVT., 1" AVG DEPTH	4800	SY \$2.58	\$12,384.00
8	334-1-53	SUPERPAVE ASPHALTIC CONC., TRAFFIC C	1080	TN \$96.48	\$104,198.40
9	337-7-43	ASPH. CONC. FC, TRAFFIC C, FC-9.5, PG 76-22	540	TN \$102.42	\$55,306.80
10	520-1-10	CONCRETE CURB & GUTTER, TYPE F	1600	LF \$23.85	\$38,160.00
11	522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	845	SY \$41.81	\$35,329.45
12	570-1-2	PERFORMANCE TURF (SOD)	7000	SY \$3.30	\$23,100.00
Total Roadway Cost:					\$493,427.81
Drainage					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
13		Estimated offsite Drainage Items not included in Roadway above			\$250,000.00
Total Drainage Cost:					\$250,000.00
Signing & Pavement Marking					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
14	711-11-123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK AND ROUNDABOUT	240	LF \$2.35	\$564.00
15	711-11-125	THERMOPLASTIC, STD., WHITE, SOLID, 24"	144	LF \$4.21	\$606.24
16	711-11-224	THERMOPLASTIC, STANDARD, YELLOW, SOLID, 18" FOR DIAGONAL OR CHEVRON	96	LF \$3.59	\$344.64
17	711-11-170	THERMOPLASTIC, STD., WHITE, ARROW	16	EA \$139.00	\$2,224.00
18	711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	0.80	GM \$4,159.92	\$3,327.94
19	711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	0.25	GM \$4,207.55	\$1,051.89
20	706-1-1	RETRO-REFLECTIVE PAVEMENT MARKERS	100	EA \$4.39	\$439.00
Total Signing and Pavement Marking Cost:					\$8,557.70
Signing, Lighting & Signalization					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
21	700-1-11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	1	AS \$331.91	\$331.91
22	700-1-12	SINGLE POST SIGN, F&I GROUND MOUNT, 12-20 SF	4	AS \$976.58	\$3,906.32
23	700-2-14	MULTI- POST SIGN, F&I GROUND MOUNT, 31-50 SF	1	AS \$4,589.05	\$4,589.05
24	630-2-11	CONDUIT, F&I, OPEN TRENCH	750	LF \$7.13	\$5,347.50
25	630-2-12	CONDUIT, F&I, DIRECTIONAL BORE	250	LF \$21.37	\$5,342.50
26	632-7-1	SIGNAL CABLE-NEW OR RCO, FUR & INSTALL	1	PI \$5,622.65	\$5,622.65
27	635-2-11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	16	EA \$733.00	\$11,728.00
28	639-1-112	ELECTRICAL POWER SERVICE, F&I, OVERHEAD METER PURCHASED BY CONTRACTOR FROM POWER COMPANY	1	AS \$2,357.91	\$2,357.91
29	639-2-1	ELECTRICAL SERVICE WIRE, FURNISH & INSTALL	60	LF \$7.17	\$430.20
30	649-21-6	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 50'	4	EA \$42,595.41	\$170,381.64
31	650-1-14	VEHICULAR TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 3 SECTION, 1 WAY	12	AS \$1,073.39	\$12,880.68
32	653-1-12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	2	AS \$1,238.82	\$2,477.64
33	660-4-11	VEHICLE DETECTION SYSTEM, VIDEO, F&I, CABINET EQUIPMENT	1	EA \$9,515.49	\$9,515.49
34	660-4-12	VEHICLE DETECTION SYSTEM, VIDEO, F&I, ABOVE GROUND EQUIPMENT	4	EA \$4,751.79	\$19,007.16
35	665-1-11	PEDESTRIAN DETECTOR, FURNISH & INSTALL, STANDARD	2	EA \$292.53	\$585.06
36	670-5-111	TRAFFIC CONTROLLER ASSEMBLY, F&I, NEMA, 1 PREEMPTION	1	AS \$35,213.79	\$35,213.79
37	700-5-21	INTERNALLY ILLUMINATED SIGN, FURNISH & INSTALL OVERHEAD MOUNT, UP TO 12 SF	1	EA \$3,404.71	\$3,404.71
38	700-5-22	INTERNALLY ILLUMINATED SIGN, FURNISH & INSTALL, OVERHEAD MOUNT, 12-18 SF	3	EA \$4,134.13	\$12,402.39
Total Signing, Lighting & Signalization Cost:					\$305,524.60
Mobilization & Traffic Control					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
39	101-1	MOBILIZATION	10% of Overall		\$105,751.01
40	102-2	MAINTENANCE OF TRAFFIC	10% of Overall		\$105,751.01
Total Mobilization and MOT Cost:					\$105,751.01
PROJECT SUBTOTAL					\$1,163,261.12
CONTINGENCY FOR CONSTRUCTION OVERRUNS/CLAIMS NOT INCLUDING MOT (15% of Overall)					\$174,489.17
TOTAL ESTIMATED COSTS INCLUDING CONTINGENCY					\$1,337,750.29

Table 6 Signalized Intersection Opinion of Probable Cost

**Morningside Drive and Fort King Intersection
Round-a-Bout Intersection Alternative
OPINION OF PROBABLE COST**

Roadway					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	110-1-1	CLEARING AND GRUBBING	0.4	AC \$21,080.42	\$7,378.15
2	110-4-10	REMOVAL OF EXISTING CONCRETE	480	SY \$18.73	\$8,990.40
3	120-1	REGULAR EXCAVATION	3800	CY \$6.89	\$26,182.00
4	120-6	EMBANKMENT	3800	CY \$16.08	\$61,104.00
5	160-4	TYPE B STABILIZATION	3000	SY \$5.13	\$15,390.00
6	285-709	OPTIONAL BASE, BASE GROUP 09	3000	SY \$18.86	\$56,580.00
7	327-70-1	MILLING EXIST. ASPH. PAVT., 1" AVG DEPTH	1680	SY \$2.58	\$4,334.40
8	334-1-53	SUPERPAVE ASPHALTIC CONC., TRAFFIC C, PG 76-22	500	TN \$96.48	\$48,240.00
9	337-7-43	ASPH. CONC. FC, TRAFFIC C, FC-9.5, PG 76-22	250	TN \$102.42	\$25,605.00
10	520-1-7	CONCRETE CURB & GUTTER, TYPE E	500	LF \$22.70	\$11,350.00
11	520-1-10	CONCRETE CURB & GUTTER, TYPE F	1250	LF \$23.85	\$29,812.50
12	522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	690	SY \$41.81	\$28,848.90
13	570-1-2	PERFORMANCE TURF (SOD)	5800	SY \$3.30	\$19,140.00
Total Roadway Cost:					\$342,955.35
Drainage					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
14		Estimated offsite Drainage Items not included in Roadway above			\$250,000.00
Total Drainage Cost:					\$250,000.00
Pavement Marking					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
15	711-11-123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK AND ROUNDABOUT	240	LF \$2.35	\$564.00
16	711-11-125	THERMOPLASTIC, STD., WHITE, SOLID, 24"	75	LF \$4.21	\$315.75
17	711-11-224	THERMOPLASTIC, STANDARD, YELLOW, SOLID, 18" FOR DIAGONAL OR CHEVRON	96	LF \$3.59	\$344.64
18	711-11-170	THERMOPLASTIC, STD., WHITE, ARROW	16	EA \$139.00	\$2,224.00
19	711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	0.88	GM \$4,159.97	\$3,660.77
20	711-16-102	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 8"	0.36	GM \$5,721.83	\$2,059.86
21	711-16-131	THERMOPLASTIC, STANDARD-OPEN GRADED ASPHALT SURFACES, WHITE, SKIP, 6",10-30 SKIP OR 3-9 LANE DROP	0.33	GM \$1,500.00	\$495.00
22	711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	0.88	GM \$4,207.55	\$3,702.64
23	706-1-1	RETRO-REFLECTIVE PAVEMENT MARKERS	200	EA \$4.39	\$878.00
Total Pavement Marking Cost:					\$14,244.67
Signing, Lighting & Signalization					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
24	700-1-13	SINGLE POST SIGN, F&I GROUND MOUNT, 21-30 SF	9	AS \$1,456.03	\$13,104.27
25	700-1-14	SINGLE POST SIGN, F&I GROUND MOUNT, 31-50 SF	3	AS \$1,983.85	\$5,951.55
26	715-1-13	LIGHTING CONDUCTORS, F&I, INSULATED, NO 4 TO NO 2	2330	LF \$2.15	\$5,009.50
27	715-4-14	LIGHT POLE COMPLETE, FURNISH & INSTALL STANDARD POLE STANDARD FOUNDATION, 45' MOUNTING HEIGHT	4	EA \$5,242.00	\$20,968.00
28	715-500-1	POLE CABLE DISTRIBUTION SYSTEM, FURNISH AND INSTALL, CONVENTIONAL	4	EA \$578.28	\$2,313.12
Total Signing, Lighting & Signalization Cost:					\$47,346.44
Mobilization & Traffic Control					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
29	101-1	MOBILIZATION	10% of Overall		\$65,454.65
30	102-2	MAINTENANCE OF TRAFFIC	20% of Overall		\$130,909.29
Total Mobilization and MOT Cost:					\$130,909.29
PROJECT SUBTOTAL					\$785,455.74
CONTINGENCY FOR CONSTRUCTION OVERRUNS/CLAIMS NOT INCLUDING MOT (15% of Overall)					\$117,818.36
TOTAL ESTIMATED COSTS INCLUDING CONTINGENCY					\$903,274.11

Table 7 Roundabout Opinion of Probable Cost

SIGNALIZED INTERSECTION PROPERTY VALUES													
Parcel No.	Property Information				Property Values ^{(2) (4) (5)}			Intersection Area				Potential Damage Estimates (\$) ⁽⁶⁾	TOTALS
	PIN	Use	Gross Area (Pasco GIS) (Acres) ⁽⁰⁾	(Wetland Area (NWI) (Acres) ⁽¹⁾	Total Property Value	Upland Land Value (\$/Acre)	Low Land Land Value (\$/Acre)	Upland (Acres)	Wetland (Acres)	Total (Acres)	Total (\$) ⁽³⁾		
1	34-34-21-0000-13900-0000	Hospital	20.38	6.65	\$9,024,019	\$ 143,748	\$ 98,010	1.320	-	1.320	\$216,312	\$50,000	\$266,312
20	34-24-21-0000-14800-0000	Bus Compound	8.83	-	\$ 421,785	\$ 19,602	\$ -	0.028	-	0.028	\$622	\$20,000	\$20,622
21	34-24-21-0220-00900-0000	Vacant	0.08	-	\$ 2,500	\$ 76,230	\$ -	0.003	-	0.003	\$299		\$299
22	34-24-21-0000-14700-0000	Vacant	9.31	1.06	\$ 239,856	\$ 43,560	\$ 2,500	0.010	-	0.010	\$513		\$513
23	34-24-21-0110-00200-0010	SFR	0.56	-	\$ 48,706	\$ 19,166	\$ -	0.006	-	0.006	\$135		\$135
								1.362	0.00	1.37	\$217,747	\$70,000	\$287,747

ROUNDBOUT PROPERTY VALUES													
Parcel No.	Property Information				Property Values ^{(2) (4) (5)}			Intersection Area				Potential Damage Estimates (\$) ⁽⁶⁾	TOTALS
	PIN	Use	Gross Area (Pasco GIS) (Acres) ⁽⁰⁾	(Wetland Area (NWI) (Acres) ⁽¹⁾	Total Property Value	Upland Land Value (\$/Acre)	Low Land Land Value (\$/Acre)	Upland (Acres)	Wetland (Acres)	Total (Acres)	Total (\$) ⁽³⁾		
1	34-34-21-0000-13900-0000	Hospital	20.38	6.65	\$9,024,019	\$ 143,748	\$ 98,010	0.395	-	0.395	\$64,748	\$50,000	\$114,748
20	34-24-21-0000-14800-0000	Bus Compound	8.83	-	\$ 421,785	\$ 19,602	\$ -	0.040	-	0.040	\$894	\$40,000	\$40,894
21	34-24-21-0220-00900-0000	Vacant	0.08	-	\$ 638	\$ 76,230	\$ -	0.007	-	0.007	\$599		\$599
22	34-24-21-0000-14700-0000	Vacant	9.31	1.06	\$ 239,856	\$ 43,560	\$ 2,500	0.041	-	0.041	\$2,052		\$2,052
								0.483	0.00	0.483	\$68,292	\$90,000	\$158,292

- (0) Parcel lot areas are based on the GIS parcel lines that are imported into AutoCAD and used for area calculations. In general County Property Appraisers input into GIS the deed info for parcel boundaries in state plane coordinates so the GIS lines should be the most accurate calculation without getting actual survey data for each parcel.
- (1) Wetland Areas based on the National Wetland Inventory (NWI) areas.
- (2) Estimated Property Values are based on the property values for uplands and low areas as assigned by the Pasco County Property Appraiser.
- (3) The acquisition Estimates, as stated herein, are calculated based on the value of the part taken, as determined by records of the Pasco County Property Appraiser, plus 40%. No calculation has been included for potential severance damages or potential business damages to the remainder property, or other Estimates peculiar to Florida eminent
- (4) The price per acre of lowland, wetlands, wasteland, etc. was valued at \$2,500 per acre on parcels.
- (5) The land values do not consider costs associated with eminent domain procedures which could increase the land costs by 3x.
- (6) Potential damage estimate based on Opinion of Probable Cost to replace the affected areas.

Table 8 Intersection Configuration Property Impacts and Acquisition Costs

4.4 Route Alignment Alternatives

Three potential build route alignment alternatives were developed and evaluated, along with the No-Build Alternative in this study.

The three potential Build Alternative Routes were developed based on the following criteria:

- Avoid or minimize impacts to existing wetlands. All three Build Alternative Routes traverse large areas of wetlands and habitats. Build Alternative Routes were developed in ways to either avoid or minimize impacts to these wetlands and habitats.
- Avoid or minimize impacts to open water. There are several existing open water ponds located in the study area. The three Build Alternative Routes avoid these areas of open water. Additional detail can be seen in **Figure 30 Build Alternatives Route Base Map**.
- Minimize impacts to the Floodplain. The Build Alternative Routes were defined with the minimization of floodplain impacts in mind. Routes follow the higher contours where possible to eliminate or reduce the amount of required fill and impact to the floodplain within the basin.
- Minimize number of parcels impacted. The Build Alternative Routes were developed with the aim to reduce the number of parcels impacted by the project. **Figure 30 Build Alternatives Route Base Map** provides a graphical display of the parcels impacted with each alternative.
- Minimize impacts to structures. The Build Alternative Routes were developed with the aim to avoid impacts to existing structures including residential homes, commercial buildings, lift stations, etc.

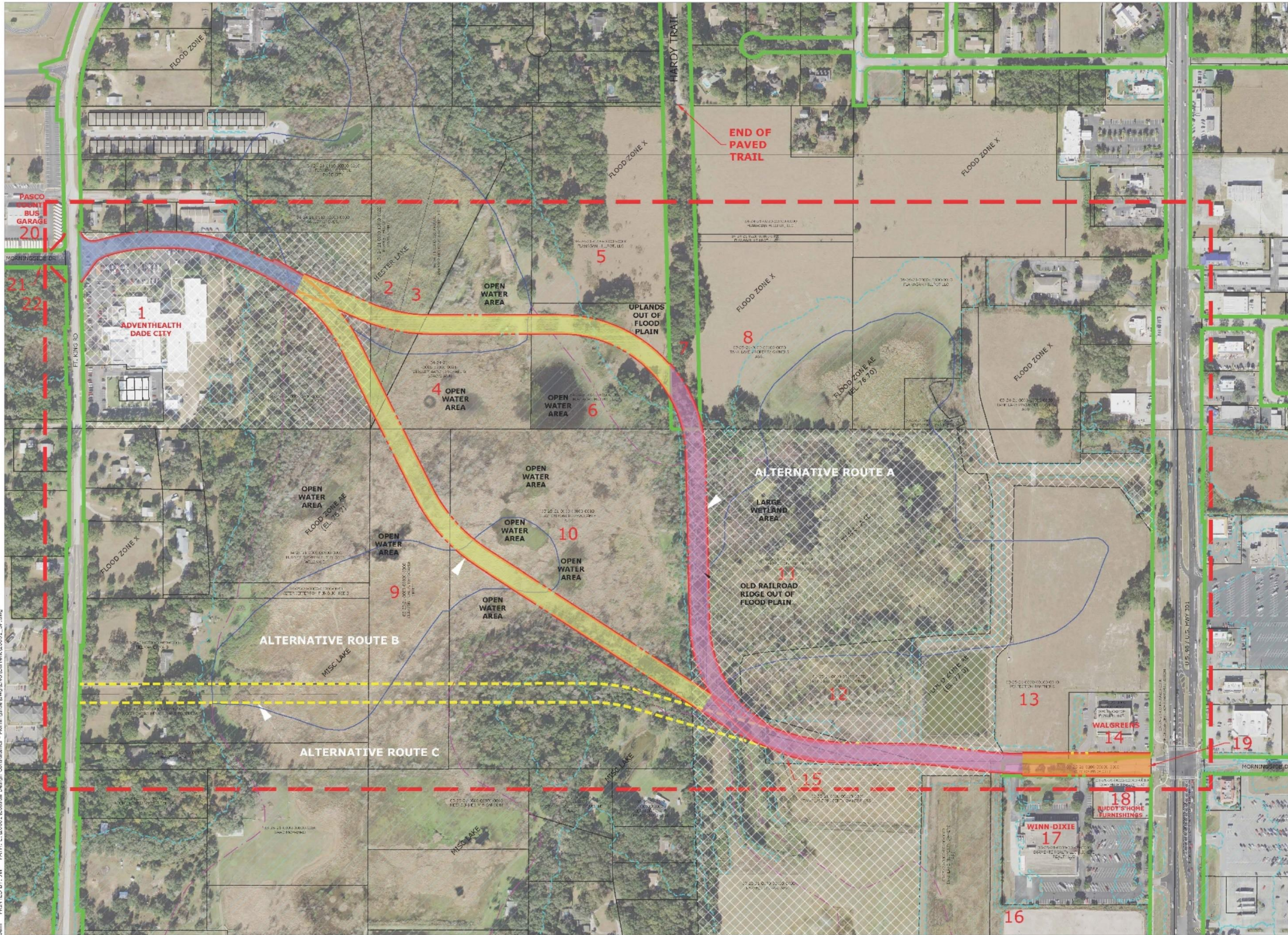
The alternatives were evaluated and compared based on several factors, including:

- Quality of traffic operations and safety
- Costs for right-of-way (R/W) acquisition, construction, etc.
- Property Impacts (number of properties, relocations, business impacts, etc.)
- Environmental Impacts (floodplain, wetlands, species, etc.)
- Input from the public (stakeholders, citizens, etc.)

4.4.1 **No-Build Alternative**

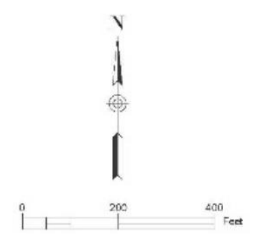
The No-Build Alternative assumes that the Morningside Drive Extension from Fort King Road to US 301/US 98 will not be constructed. This alternative:

- Would save the cost of final design, construction and R/W acquisition associated with the Morningside Drive Extension project.
- Would result in no impacts to wetlands, floodplains, or other environment resources.
- Would not provide traffic congestion relief to the east-west arterials of Meridian Avenue and Clinton Avenue.
- Would not reduce response times for emergency services, including AdventHealth Hospital.



- LEGEND:**
- DUCK LAKE WATERSHED FLOOD ZONE AE (EL. 76.70) DATED 03/29/2018
 - EXISTING RIGHT-OF-WAY
 - PROPOSED RIGHT-OF-WAY (ROUTES A & B)
 - ROUTE C RIGHT-OF-WAY
 - FLOOD PLAIN BOUNDARY
 - LAKE BOUNDARY
 - PARCEL LINES
 - WETLAND BOUNDARY
 - STUDY AREA
 - COOPERATIVE PARCEL OWNERS
 - 62-FT WIDE R/W SECTION
 - 73-FT WIDE R/W SECTION
 - 77-FT WIDE R/W SECTION
 - 94-FT WIDE R/W SECTION

NOTE: WETLAND AND LAKE BOUNDARIES ARE BASED ON THE NATIONAL WETLAND INVENTORY AND ARE ESTIMATES



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REVISIONS		DATE	NAME
NO.	DESCRIPTION		
		11/xx/20	
		11/xx/20	
		11/xx/20	
		11/xx/20	PAUL MANUEL, P.E.

DESIGNED BY:	 COASTAL DESIGN CONSULTANTS 7026 Little Road, New Port Richey, Fl 34653	 888 Cavallotti Boulevard Brooksville - Florida 34601	PASCO COUNTY ENGINEERING SERVICES	 PASCO COUNTY FLORIDA OPEN SPACES. VIBRANT PLACES.	MORNINGSIDE DRIVE EXTENSION	SITE INFLUENCES MAP	SHEET NO.
DRAWN BY:							
CHECKED BY:							
SUPERVISED BY:							

Figure 30 Build Alternative Routes Base Map

4.4.2 Build Alternative Route A (Northern Route)

Build Alternative Route A (Northern Route) was chosen to best utilize the available upland area and parcels of property owners who have shown support for the proposed extension; reference **Appendix 7 Build Alternative Route A Conceptual Plans** which shows the proposed roadway, related features, and existing utilities. The total length of the proposed roadway is 6,302 LF or 1.19 miles. This alternative will impact 18 properties of which 6 include wetland impacts, and 10 include floodplain impacts. Parcel #1, Parcel #11, Parcel #12, and Parcel #13, as depicted in **Figure 30 Build Alternative Routes Base Map**, are property owners who have expressed interest in working with Dade City to create a direct Morningside Drive-to-Morningside Drive connection. Build Alternative Route A aims to maximize use of these parcels with its alignment selection.

4.4.3 Build Alternative Route B (Southern Route)

Build Alternative Route B (Southern Route) is a straighter route, although this route is slightly curved approximately mid-distance to avoid a wetland area containing pockets of open waters; reference **Appendix 8 Build Alternative Route B Conceptual Plans** which shows the proposed roadway, related features, and existing utilities. The total length of the proposed roadway is 5,885 LF or 1.1 miles. This alternative will impact 16 properties of which 7 include wetland impacts, and 8 include floodplain impacts. Parcel #1, Parcel #12, and Parcel #13, as depicted in **Figure 30 Build Alternative Routes Base Map**, are property owners who have expressed interest in working with Dade City to create a direct Morningside Drive-to-Morningside Drive connection. Build Alternative Route B aims to maximize use of these parcels with its alignment selection.

4.4.4 Build Alternative Route C (Straight Alignment)

Previous roadway corridor studies for the area considered providing a direct extension for the Morningside Drive East segment to Fort King Road. Under this improvement scenario, travelers from Morningside Drive east of Fort King Road to Morningside Drive west of US 301, and vice versa, would utilize a 2,200-foot long segment of Fort King Road. Build Alternative Route C was removed from further consideration for the following reasons:

- A direct connection between the two existing Morningside Drive segments is desired by the City of Dade City to provide a consistent east-west transportation corridor for the area.
- The direct Morningside Drive to Morningside Drive connection has been defined as a future project in the MOBILITY 2045 plan. Build Alternative Route C would be inconsistent with the MOBILITY 2045 plan.
- AdventHealth Hospital Dade City is desirous of a direct connection to US 301/US 98 to aid in reducing emergency medical response times.
- Parcel #1, Parcel #11, and Parcel #13 are properties near the existing Morningside Drive Build Alternative Routes A and B. Location of these parcels in relationship to the identified routes can be found in **Figure 30 Build Alternative Routes Base Map**. The owners of these properties have expressed interest in working with Dade City to create a direct Morningside Drive-to-Morningside Drive connection.
- Fort King Road is a substandard County arterial with constrained R/W. The existing roadway does not meet current design standards and would require significant improvements to accommodate the substantial increase in traffic volumes created by an offset connection of the existing Morningside Drive segments through Fort King Road.

4.5 Access Management

The Morningside Drive Extension improvements will be consistent with the County's Access Management Standards¹ as defined in Section 901 of the Land Development Code. The proposed Morningside Drive Extension is functionally classified as a collector roadway with a posted speed limit of less than 45 MPH. The County's access management standards for the proposed roadway are as follows:

- Corner Clearance/Connection Spacing: 440 feet
- Traffic Signal Spacing: 2,640 feet

Adequate access points will be constructed to the AdventHealth Hospital's parking facilities as the roadway traverses this property. The existing driveway connections on Morningside Drive west of US 301/US 98 will remain. Driveway connections and other access points will be determined as adjacent properties develop along the selected alternative route.

4.6 Utility Accommodation

It is anticipated that the proposed R/W width will be able to accommodate future utilities such as potable water, sanitary sewer, electric, gas, cable, and fiber optic facilities. No specific future utility extensions are contemplated within the scope of this project.

4.7 Alternatives Evaluation

4.7.1 Build Alternative Routes Long-Range Transportation Plan

Both, Build Alternative Route A and Build Alternative Route B are in compliance with the Pasco County's MPO Long-Range Transportation Plan. The No-Build Alternative is not in compliance with the Long-Range Transportation Plan.

4.7.2 Build Alternative Routes Safety

Both, Build Alternative Route A and Build Alternative Route B are proposing the same typical section and using the same design criteria in compliance with current regulatory standards; therefore, the two Build Alternative Routes do not differentiate by any measurable safety aspects.

4.7.3 Build Alternative Routes Costs

4.7.3.1 Build Alternative Routes Construction Costs

Opinions of Probable Construction Cost were developed to compare the construction cost per linear foot of the 62-foot, 73-foot, 77-foot, and 94-foot wide roadway typical cross sections, which are respectively shown in the following Tables:

Table 9 62-foot R/W Section Opinion of Probable Cost
Table 10 73-foot R/W Section Opinion of Probable Cost
Table 11 77-foot R/W Section Opinion of Probable Cost
Table 12 94-foot R/W Section Opinion of Probable Cost

¹ The City of Dade City follows the Pasco County Standards for Access Management.

**Morningside Drive Extension - Hospital Property
62-FOOT RIGHT OF WAY SECTION**

Roadway		OPINION OF PROBABLE COST				
ITEM	PAY ITEM	ITEM	QUANTITY		UNIT PRICE	AMOUNT
	104-10-3	SEDIMENT BARRIER	200.0	LF	\$1.65	\$330.00
	110-1-1	CLEARING AND GRUBBING	0.1	AC	\$21,080.42	\$3,000.43
	110-4-10	REMOVAL OF EXISTING CONCRETE	200	SY	\$18.73	\$3,746.00
	120-1	REGULAR EXCAVATION	230	CY	\$6.89	\$1,582.15
	120-6	EMBANKMENT	230	CY	\$16.08	\$3,692.44
	160-4	TYPE B STABILIZATION	478	SY	\$5.13	\$2,451.00
	285-701	OPTIONAL BASE, BASE GROUP 01	94	SY	\$11.07	\$1,045.50
	285-709	OPTIONAL BASE, BASE GROUP 09	378	SY	\$18.86	\$7,124.89
	327-70-1	MILLING EXIST. ASPH. PAVT., 1" AVG DEPTH	711	SY	\$2.58	\$1,834.67
	334-1-53	SUPERPAVE ASPHALTIC CONC., TRAFFIC A	7	TN	\$91.95	\$674.30
	334-1-53	SUPERPAVE ASPHALTIC CONC., TRAFFIC C	42	TN	\$98.56	\$4,095.72
	337-7-43	ASPH. CONC. FC, TRAFFIC C, FC-9.5, PG 76-22	21	TN	\$102.42	\$2,128.06
	520-1-10	CONCRETE CURB & GUTTER, TYPE F	200	LF	\$23.85	\$4,770.00
	522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	67	SY	\$41.81	\$2,787.33
	425-1331	INLETS, CURB, TYPE P-3, <10'	0.01	EA	\$5,977.95	\$39.85
	430-174-118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"S/CD	15	LF	\$76.63	\$1,149.45
	430-174-124	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 24"S/CD	65	LF	\$89.25	\$5,801.25
	430-982-129	MITERED END SECTION, OPTIONAL ROUND, 24" CD	0.001	LF	\$1,923.55	\$2.14
	570-1-2	PERFORMANCE TURF (SOD)	111	SY	\$3.30	\$366.67
	711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	0.04	GM	\$4,159.92	\$157.24
	711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	0.04	GM	\$4,207.55	\$159.05
	706-1-1	RETRO-REFLECTIVE PAVEMENT MARKERS	5	EA	\$4.39	\$21.95
Total Signing and Pavement Marking Cost:						\$46,630.08

Mobilization & Traffic Control						
ITEM	PAY ITEM	ITEM	QUANTITY		UNIT PRICE	AMOUNT
	101-1	MOBILIZATION	10% of Overall			\$4,663.01
	102-2	MAINTENANCE OF TRAFFIC	10% of Overall			\$4,663.01
Total Mobilization and MOT Cost:						\$4,663.01

PROJECT SUBTOTAL	\$51,293.09
CONTINGENCY FOR CONSTRUCTION OVERRUNS/CLAIMS NOT INCLUDING MOT (15% of Overall)	\$7,693.96
TOTAL ESTIMATED COSTS INCLUDING CONTINGENCY PER 100 LF	\$58,987.05
TOTAL ESTIMATED COSTS INCLUDING CONTINGENCY PER LINEAR FOOT	\$589.87

Assumptions:

1. Quantities listed in table above are per 100 LF of roadway
2. Embankment - Assume 1' of import fill is required on Hospital site
3. Estimate does not include Morningside Drive at Fort King Road round-a-bout intersection cost
4. Inlets and storm pipe assume two inlets every 300 LF and MES every 900 LF

Table 9 62-foot R/W Section Opinion of Probable Cost

**Morningside Drive Extension - From Hospital Property to Hardy Trail
73-FOOT RIGHT OF WAY SECTION (NO UNSUITABLE MATERIAL)**

Roadway		OPINION OF PROBABLE COST				
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT	
	104-10-3	SEDIMENT BARRIER	200.0	LF	\$1.65	\$330.00
	110-1-1	CLEARING AND GRUBBING	0.2	AC	\$21,080.42	\$3,532.76
	120-1	REGULAR EXCAVATION	270	CY	\$6.89	\$1,862.85
	120-6	EMBANKMENT	1352	CY	\$16.08	\$21,737.78
	160-4	TYPE B STABILIZATION	478	SY	\$5.13	\$2,451.00
	285-701	OPTIONAL BASE, BASE GROUP 01	100	SY	\$11.07	\$1,107.00
	285-709	OPTIONAL BASE, BASE GROUP 09	378	SY	\$18.86	\$7,124.89
	334-1-53	SUPERPAVE ASPHALTIC CONC., TRAFFIC A	7	TN	\$91.95	\$674.30
	334-1-53	SUPERPAVE ASPHALTIC CONC., TRAFFIC C	42	TN	\$98.56	\$4,095.72
	337-7-43	ASPH. CONC. FC, TRAFFIC C, FC-9.5, PG 76-22	21	TN	\$102.42	\$2,128.06
	520-1-10	CONCRETE CURB & GUTTER, TYPE F	200	LF	\$23.85	\$4,770.00
	522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	56	SY	\$41.81	\$2,322.78
	425-1331	INLETS, CURB, TYPE P-3, <10'	0.01	EA	\$5,977.95	\$39.85
	430-174-118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"S/CD	15	LF	\$76.63	\$1,149.45
	430-174-124	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 24"S/CD	65	LF	\$89.25	\$5,801.25
	430-982-129	MITERED END SECTION, OPTIONAL ROUND, 24" CD	0.001	LF	\$1,923.55	\$2.14
	570-1-2	PERFORMANCE TURF (SOD)	244	SY	\$3.30	\$806.67
	711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	0.04	GM	\$4,159.92	\$157.24
	711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	0.04	GM	\$4,207.55	\$159.05
	706-1-1	RETRO-REFLECTIVE PAVEMENT MARKERS	5	EA	\$4.39	\$21.95
Total Signing and Pavement Marking Cost:						\$59,944.73

Mobilization & Traffic Control					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
	101-1	MOBILIZATION	10% of Overall		\$5,994.47
	102-2	MAINTENANCE OF TRAFFIC	1% of Overall		\$599.45
Total Mobilization and MOT Cost:					\$599.45

PROJECT SUBTOTAL	\$60,544.18
CONTINGENCY FOR CONSTRUCTION OVERRUNS/CLAIMS NOT INCLUDING MOT (15% of Overall)	\$9,081.63
TOTAL ESTIMATED COSTS INCLUDING CONTINGENCY PER 100 LF	\$69,625.80
TOTAL ESTIMATED COSTS INCLUDING CONTINGENCY PER LINEAR FOOT	\$696.26

Assumptions:

1. Quantities listed in table above are per 100 LF of roadway
2. Embankment - Assume 5' of import fill is required
3. Inlets and storm pipe assume two inlets every 300 LF and MES every 900 LF

Table 10 73-foot R/W Section Opinion of Probable Cost

**Morningside Drive Extension - From Hospital Property to Hardy Trail
77-FOOT RIGHT OF WAY SECTION (NO UNSUITABLE MATERIAL)**

Roadway		OPINION OF PROBABLE COST				
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT	
	104-10-3	SEDIMENT BARRIER	200.0	LF	\$1.65	\$330.00
	110-1-1	CLEARING AND GRUBBING	0.2	AC	\$21,080.42	\$3,726.34
	120-1	REGULAR EXCAVATION	285	CY	\$6.89	\$1,964.93
	120-6	EMBANKMENT	1426	CY	\$16.08	\$22,928.89
	160-4	TYPE B STABILIZATION	522	SY	\$5.13	\$2,679.00
	285-701	OPTIONAL BASE, BASE GROUP 01	144	SY	\$11.07	\$1,599.00
	285-709	OPTIONAL BASE, BASE GROUP 09	378	SY	\$18.86	\$7,124.89
	334-1-53	SUPERPAVE ASPHALTIC CONC., TRAFFIC A	11	TN	\$91.95	\$1,011.45
	334-1-53	SUPERPAVE ASPHALTIC CONC., TRAFFIC C	42	TN	\$98.56	\$4,095.72
	337-7-43	ASPH. CONC. FC, TRAFFIC C, FC-9.5, PG 76-22	21	TN	\$102.42	\$2,128.06
	520-1-10	CONCRETE CURB & GUTTER, TYPE F	200	LF	\$23.85	\$4,770.00
	522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	56	SY	\$41.81	\$2,322.78
	425-1331	INLETS, CURB, TYPE P-3, <10'	0.01	EA	\$5,977.95	\$39.85
	430-174-118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"S/CD	15	LF	\$76.63	\$1,149.45
	430-174-124	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 24"S/CD	65	LF	\$89.25	\$5,801.25
	430-982-129	MITERED END SECTION, OPTIONAL ROUND, 24" CD	0.001	LF	\$1,923.55	\$2.14
	570-1-2	PERFORMANCE TURF (SOD)	244	SY	\$3.30	\$806.67
	711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	0.04	GM	\$4,159.92	\$157.24
	711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	0.04	GM	\$4,207.55	\$159.05
	706-1-1	RETRO-REFLECTIVE PAVEMENT MARKERS	5	EA	\$4.39	\$21.95
Total Signing and Pavement Marking Cost:						\$62,488.64

Mobilization & Traffic Control					
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
	101-1	MOBILIZATION	10% of Overall		\$6,248.86
	102-2	MAINTENANCE OF TRAFFIC	1% of Overall		\$624.89
Total Mobilization and MOT Cost:					\$624.89

PROJECT SUBTOTAL					\$63,113.53
CONTINGENCY FOR CONSTRUCTION OVERRUNS/CLAIMS NOT INCLUDING MOT (15% of Overall)					\$9,467.03
TOTAL ESTIMATED COSTS INCLUDING CONTINGENCY PER 100 LF					\$72,580.56
TOTAL ESTIMATED COSTS INCLUDING CONTINGENCY PER LINEAR FOOT					\$725.81

Assumptions:

1. Quantities listed in table above are per 100 LF of roadway
2. Embankment - Assume 5' of import fill is required
3. Inlets and storm pipe assume two inlets every 300 LF and MES every 900 LF

Table 11 77-foot R/W Section Opinion of Probable Cost

**Morningside Drive Extension - Existing Morningside, West of US 301
94-FOOT RIGHT OF WAY SECTION**

Roadway		OPINION OF PROBABLE COST				
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT	
	104-10-3	SEDIMENT BARRIER	200.0	LF	\$1.65	\$330.00
	110-1-1	CLEARING AND GRUBBING	0.2	AC	\$21,080.42	\$4,549.03
	110-4-10	REMOVAL OF EXISTING CONCRETE	200	SY	\$18.73	\$3,746.00
	120-1	REGULAR EXCAVATION	348	CY	\$6.89	\$2,398.74
	120-6	EMBANKMENT	348	CY	\$16.08	\$5,598.22
	160-4	TYPE B STABILIZATION	517	SY	\$5.13	\$2,650.50
	285-701	OPTIONAL BASE, BASE GROUP 01	139	SY	\$11.07	\$1,537.50
	285-709	OPTIONAL BASE, BASE GROUP 09	689	SY	\$18.86	\$12,992.44
	327-70-1	MILLING EXIST. ASPH. PAVT., 1" AVG DEPTH	400	SY	\$2.58	\$1,032.00
	334-1-53	SUPERPAVE ASPHALTIC CONC., TRAFFIC A	11	TN	\$91.95	\$1,011.45
	334-1-53	SUPERPAVE ASPHALTIC CONC., TRAFFIC C	71	TN	\$98.56	\$6,986.81
	337-7-43	ASPH. CONC. FC, TRAFFIC C, FC-9.5, PG 76-22	35	TN	\$102.42	\$3,630.22
	520-1-10	CONCRETE CURB & GUTTER, TYPE F	200	LF	\$23.85	\$4,770.00
	522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4" THICK	67	SY	\$41.81	\$2,787.33
	425-1331	INLETS, CURB, TYPE P-3, <10'	0.01	EA	\$5,977.95	\$39.85
	430-174-118	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 18"S/CD	15	LF	\$76.63	\$1,149.45
	430-174-124	PIPE CULVERT, OPTIONAL MATERIAL, ROUND, 24"S/CD	65	LF	\$89.25	\$5,801.25
	430-982-129	MITERED END SECTION, OPTIONAL ROUND, 24" CD	0.001	LF	\$1,923.55	\$2.14
	570-1-2	PERFORMANCE TURF (SOD)	111	SY	\$3.30	\$366.67
	711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	0.04	GM	\$4,159.92	\$157.24
	711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	0.04	GM	\$4,207.55	\$159.05
	706-1-1	RETRO-REFLECTIVE PAVEMENT MARKERS	5	EA	\$4.39	\$21.95
Total Signing and Pavement Marking Cost:						\$61,387.85

Mobilization & Traffic Control						
ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT	
	101-1	MOBILIZATION	10% of Overall		\$6,138.79	
	102-2	MAINTENANCE OF TRAFFIC	10% of Overall		\$6,138.79	
Total Mobilization and MOT Cost:						\$6,138.79

PROJECT SUBTOTAL					\$67,526.64
CONTINGENCY FOR CONSTRUCTION OVERRUNS/CLAIMS NOT INCLUDING MOT (15% of Overall)					\$10,129.00
TOTAL ESTIMATED COSTS INCLUDING CONTINGENCY PER 100 LF					\$77,655.63
TOTAL ESTIMATED COSTS INCLUDING CONTINGENCY PER LINEAR FOOT					\$776.56

Assumptions:

1. Quantities listed in table above are per 100 LF of roadway
2. Embankment - Assume 1' of import fill is required on Hospital site
3. Estimate does not include Morningside Drive at Fort King Road round-a-bout intersection cost
4. Inlets and storm pipe assume two inlets every 300 LF and MES every 900 LF

Table 12 94-foot R/W Section Opinion of Probable Cost

The construction costs for the developed cross sections are heavily affected by impacts to the existing wetlands and earthwork required to construct the roadway. Minimization of cost can be accomplished by reducing the roadway corridor footprint as it traverses the study area. The cross sections selected for evaluation on this project represent the minimum width required to accommodate the roadway and pedestrian elements identified for this route. The costs calculated for each cross section represent the linear foot construction cost associated with the sections proposed for use on this project.

The estimated cost per linear foot for each of the typical cross sections were:

- 62-Foot - \$590/LF
- 73-Foot - \$696/LF
- 77-Foot - \$727/LF
- 94-Foot - \$777/LF

These typical cross section costs were applied to the amount of LF of each cross section type within the limits of Build Alternative Routes A and B. The comparison of the Opinions of Probable Cost shows that Build Alternative Route A will cost approximately \$4,604,800 to construct the R/W and slope easements and Build Alternative Route B will cost approximately \$4,222,400 to construct the R/W and slope easements.

4.7.3.2 Build Alternative Routes R/W Acquisition Impacts and Costs

The R/W Acquisition and Opinion of Probable of Cost for Build Alternative Routes A and B are summarized in **Table 13 R/W Acquisition and Estimate Summary Table**. The Opinions of Probable Construction Cost show that Build Alternative Route A will impact 13 properties and will cost approximately \$1,339,000 to acquire the land for the R/W and slope easements. Build Alternative Route B will impact 12 properties and will cost approximately \$1,434,700 to acquire the land for the R/W and slope easements.

4.7.4 Build Alternative Route Utility Impacts

Both, Build Alternative Routes A and B will have the same utility impacts (if any) located near the intersections of Morningside Drive with Fort King Road and US 301/US 98, given the proposed intersection improvements for both alternatives are the same and the existing utilities are only located near the above mentioned intersections.

ROUTE A - RIGHT-OF-WAY & SLOPE EASEMENT PROPERTY VALUES

Parcel No.	Property Information Parent Tracts				Property Values ^{(2) (4) (5)}			Right-of-Way Areas					Slope Easement Areas				Potential Damage Estimates (\$) ⁽⁶⁾	TOTALS
	PIN	Use	Gross Area (Pasco GIS) (Acres) ⁽⁰⁾	(Wetland Area (NWI) (Acres) ⁽¹⁾	Total Property Value	Upland Land Value (\$/Acre)	Low Land Land Value (\$/Acre)	Area #	Upland (Acres)	Wetland (Acres)	Total (Acres)	Total (\$) ⁽³⁾	Upland (Acres)	Wetland (Acres)	Total (Acres)	Total (\$) ⁽³⁾		
1	34-24-21-0000-13900-0000	Hospital	20.38	6.65	\$ 9,024,019	\$ 143,748	\$ 98,010	R/W-A1	1.40	0.61	2.01	\$365,447	0.17	0.35	0.52	\$58,741	\$350,000.00	\$872,197
2	34-24-21-0000-13800-0022	Vacant	5.05	4.55	\$ 6,446	\$ 2,500	\$ 2,500	R/W-A2	-	0.19	0.19	\$665	-	0.11	0.11	\$275	-	\$3,440
3	34-24-21-0000-13800-0020	Vacant	5.10	3.10	\$ 25,728	\$ 2,500	\$ 2,500	R/W-A3	-	0.18	0.18	\$630	-	0.10	0.10	\$250	-	\$3,380
4	34-24-21-0000-13800-0021	SFR	10.05	8.42	\$ 178,392	\$ 2,500	\$ 2,500	R/W-A4	-	0.75	0.75	\$2,625	-	0.41	0.41	\$1,025	-	\$6,150
6	34-24-21-0220-00900-0000	Vacant	6.79	2.23	\$ 38,766	\$ 15,680	\$ 2,500	R/W-A5	0.99	0.10	1.09	\$22,082	0.19	0.05	0.24	\$3,104	-	\$27,687
8	34-24-21-0220-00800-0000	Vacant	11.29	2.56	\$ 102,497	\$ 15,680	\$ 2,500	R/W-A8	0.003	-	0.00	\$66	-	-	-	-	-	\$2,566
10	03-25-21-0000-00800-0000	Vacant	31.77	21.72	\$ 46,156	\$ 13,320	\$ 2,500	R/W-A10	0.01	-	0.01	\$186	0.01	-	0.01	\$133	-	\$2,820
11	03-25-21-0000-00100-0000	Vacant	75.63	33.46	\$ 837,463	\$ 2,500	\$ 2,500	R/W-A11	1.23	1.81	3.04	\$10,640	0.21	0.59	0.80	\$2,000	-	\$15,140
12	03-25-21-0000-00100-0070	Vacant	13.98	2.14	\$ 6,090	\$ 2,500	\$ 2,500	R/W-A12	0.61	-	0.61	\$2,135	0.14	-	0.14	\$350	-	\$4,985
13	03-25-21-0000-00100-0040	Vacant	13.07	2.95	\$ 1,376,340	\$ 165,000	\$ 2,500	R/W-A13	0.19	-	0.19	\$43,890	-	-	-	-	-	\$46,390
14	03-25-21-0000-00100-0030	Store	2.15	0.00	\$ 1,780,059	\$ 435,600	\$ 218,671	R/W-A14	0.19	-	0.19	\$115,870	-	-	-	-	-	\$334,541
15	03-25-21-0000-00100-0090	Vacant	0.67	0.00	\$ 2,500	\$ 2,500	\$ 2,500	R/W-A15	0.44	-	0.44	\$1,540	0.06	-	0.06	\$150	-	\$4,190
16	03-25-21-0000-00100-0050	Vacant	11.58	0.00	\$ 1,299,280	\$ 165,000	\$ 2,500	R/W-A16	0.05	-	0.05	\$11,550	0.01	-	0.01	\$1,650	-	\$15,700
									5.11	3.64	8.75	\$577,326	0.79	1.61	2.40	\$67,678	\$350,000	\$1,339,185

ROUTE B - RIGHT-OF-WAY & SLOPE EASEMENT PROPERTY VALUES

Parcel No.	Property Information Parent Tracts				Property Values ^{(2) (4) (5)}			Right-of-Way Areas					Slope Easement Areas				Potential Damage Estimates (\$) ⁽⁶⁾	TOTALS
	PIN	Use	Gross Area (Pasco GIS) (Acres) ⁽⁰⁾	(Wetland Area (NWI) (Acres) ⁽¹⁾	Total Property Value	Upland Land Value (\$/Acre)	Land Value (\$/Acre)	Area #	Upland (Acres)	Wetland (Acres)	Total (Acres)	Total (\$) ⁽³⁾	Upland (Acres)	Wetland (Acres)	Total (Acres)	Total (\$) ⁽³⁾		
1	34-24-21-0000-13900-0000	Hospital	20.38	6.65	\$ 9,024,019	\$ 143,748	\$ 98,010	R/W-A1	1.43	1.00	2.43	\$424,997	0.48	0.15	0.63	\$117,181	\$350,000	\$990,188
2	34-24-21-0000-13800-0022	Vacant	5.05	4.55	\$ 6,446	\$ 2,500	\$ 2,500	R/W-A2	-	0.12	0.12	\$420	0.00	0.05	0.05	\$175	-	\$3,095
3	34-24-21-0000-13800-0020	Vacant	5.10	3.10	\$ 25,728	\$ 2,500	\$ 2,500	R/W-A3	-	0.06	0.06	\$210	0.00	0.03	0.03	\$105	-	\$2,815
4	34-24-21-0000-13800-0021	SFR	10.05	8.42	\$ 178,392	\$ 2,500	\$ 2,500	R/W-A4	-	0.18	0.18	\$630	0.00	0.08	0.08	\$280	-	\$3,410
9	03-25-21-0000-00800-0080	Vacant	10.64	10.64	\$ 2,132	\$ 2,500	\$ 2,500	R/W-A9	-	0.85	0.85	\$2,975	0.00	0.42	0.42	\$1,470	-	\$6,945
10	03-25-21-0000-00800-0000	Vacant	31.77	21.72	\$ 46,156	\$ 13,320	\$ 2,500	R/W-A10	-	2.13	2.13	\$7,455	0.00	1.10	1.10	\$3,850	-	\$13,805
11	03-25-21-0000-00100-0000	Vacant	75.63	33.46	\$ 837,463	\$ 2,500	\$ 2,500	R/W-A11	0.95	0.36	1.31	\$4,585	0.22	0.13	0.35	\$1,225	-	\$8,310
12	03-25-21-0000-00100-0070	Vacant	13.98	2.14	\$ 6,090	\$ 2,500	\$ 2,500	R/W-A12	0.61	-	0.61	\$2,135	0.06	-	0.06	\$210	-	\$4,845
13	03-25-21-0000-00100-0040	Vacant	13.07	2.95	\$ 1,376,340	\$ 165,000	\$ 2,500	R/W-A13	0.19	-	0.19	\$43,890	-	-	-	-	-	\$46,390
14	03-25-21-0000-00100-0030	Store	2.15	0.00	\$ 1,780,059	\$ 435,600	\$ 218,671	R/W-A14	0.19	-	0.19	\$115,870	-	-	-	-	-	\$334,541
15	03-25-21-0000-00100-0090	Vacant	0.67	0.00	\$ 2,500	\$ 2,500	\$ 2,500	R/W-A15	0.40	-	0.40	\$1,400	0.02	-	0.02	\$70	-	\$3,970
16	03-25-21-0000-00100-0050	Vacant	11.58	0.00	\$ 1,299,280	\$ 165,000	\$ 2,500	R/W-A16	0.05	-	0.05	\$11,550	0.01	-	0.01	\$2,310	-	\$16,360
									3.82	4.70	8.52	\$616,117	0.79	1.96	2.75	\$126,876	\$350,000	\$1,434,674

- (0) Parcel lot areas are based on the GIS parcel lines that are imported into AutoCAD and used for area calculations. In general County Property Appraisers input into GIS the deed info for parcel boundaries in state plane coordinates so the GIS lines should be the most accurate calculation without getting actual survey data for each parcel
- (1) Wetland Areas based on the National Wetland Inventory (NWI) areas.
- (2) Estimated Property Values are based on the property values for uplands and low areas as assigned by the Pasco County Property Appraiser.
- (3) The acquisition Estimates, as stated herein, are calculated based on the value of the part taken, as determined by records of the Pasco County Property Appraiser, plus 40%. No calculation has been included for potential severance damages or potential business damages to the remainder property, or other Estimates peculiar to Florida eminent domain law.
- (4) The price per acre of lowland, wetlands, wasteland, etc. was valued at \$2,500 per acre on parcels.
- (5) The land values do not consider costs associated with eminent domain procedures which could increase the land costs by 3x.
- (6) Potential damage estimate based on Opinion of Probable Cost to replace the affected areas.

Table 13 R/W Acquisition and Estimate Summary Table

4.7.5 Build Alternative Routes Environmental Impacts

4.7.5.1 Wetland Impacts

A wetland enhancement, restoration, creation and/or preservation project that serves to offset unavoidable wetland impacts is known as wetland mitigation or compensatory mitigation. The ecological benefits of a mitigation project should compensate for the functional loss resulting from the permitted wetland impact. The Uniform Mitigation Assessment Method (UMAM) provides a standardized procedure for assessing the ecological values and functions of wetlands and other surface waters. Compensatory mitigation activities may include, but are not limited to, onsite mitigation, offsite mitigation, Regional Offsite Mitigation Areas (R.O.M.A) and the purchase of mitigation credits from permitted mitigation banks. A breakdown of habitat types and available credits for each bank permitted by the department is available on the FDEP Mitigation Bank Ledger page.

Recommendations:

The project Built Alternative Routes will need to consider avoidance and minimization of potential, permanent jurisdictional wetland impacts. Based on the extent of estimated wetland areas within the two route alternatives, Build Alternative Route A appears to be the best Build Alternative Route for avoiding and minimizing wetland impacts.

The wetland impacts and mitigation estimates for Build Alternative Routes A and B are shown in **Table 14 Build Alternative Route Wetland Impacts Summary Table**.

BUILD ALTERNATIVE ROUTE	ESTIMATED WETLAND ACRES	ESTIMATED WETLAND BANK CREDITS NEEDED	ESTIMATED MITIGATION BANK CREDIT FEE
A	5.25	7.5	\$1,350,000
B	6.66	9.51	\$1,712,600

Table 14 Build Alternative Route Wetland Impacts Summary Table

Proposed permanent wetland impacts to jurisdictional wetlands, within the project, require that project alternatives provide for and discuss avoidance and minimization of potential, permanent wetland impacts. Based on the aerial extent of estimated wetland areas within the two Built Alternative Routes, Build Alternative Route A, is the most favorable for avoiding and minimizing the proposed wetland impacts. Build Alternative Route A has less wetland impacts, and the estimated mitigation bank purchase fee is less at approximately \$1,350,000. The estimated mitigation cost for Build Alternative Route B is approximately \$1,712,600.

Build Alternative Route A also traverses along an abandoned railroad bed, while Build Alternative Route B is positioned directly through the center, or portions thereof, of environmentally sensitive areas of Tank Lake and Hester Lake. In the opinion of the environmentalist, Build Alternative Route A may be easier to permit through the regulatory agencies and cheaper to construct compared to Build Alternative Route B.

4.7.5.2 Cultural Resources

Results of Records Research

An inquiry to the Florida Department of Historical Resources Master Site File was completed on February 16, 2021, for the review of previously recorded cultural resource sites within and

adjacent to the proposed project. The results of the inquiry confirmed that there are no previously recorded sites within the project area; reference **Appendix 9 Emailed on Cultural Resources** containing correspondence from Eman M. Vovsi, Ph.D. of the Florida Department of State

Impacts to Cultural Resources

There are no anticipated impacts to cultural resources by either of the Build Alternative Routes under consideration. As jurisdictional wetlands will be permitted for impact in coordination with the applicable regulatory agencies, the agencies may request that a Phase 1 Cultural Resources Survey be conducted within the proposed project limits.

4.7.5.3 Floodplains

Floodplain information was obtained from FEMA and SWFWMD as described in **Sections 2.4 Flood Zone** and **2.5 Floodplain**, respectively. According to information gathered, the majority of the proposed project lies within the 100-year floodplain. It should be noted that the FEMA maps round up the 100-year flood stage to elevation 77.0 feet, but the actual SWFWMD regional modeling data calculated it at 76.70 feet. This is important because impacts to the floodplain will be based on providing compensation up to the 76.70-foot elevation and not the 77.00-foot value.

Floodplain impacts for this project were calculated based on acreage impacted by the road R/W and stormwater management pond areas. The floodplain compensation will be on an equivalent cup-for-cup basis.

Impacts to the floodplain are expected for each Build Alternative Route in the development of the R/W and Slope Easements; reference **Table 15 R/W and Slope Easement Floodplain Impact**. Build Alternative Route A has slightly less impacts at 43,920 cubic yards than Build Alternative Route B with 45,974 cubic yards.

BUILD ALTERNATIVE ROUTE	FLOODPLAIN IMPACT
A	43,920 CY
B	45,974 CY

Table 15 R/W and Slope Easement Floodplain Impact

4.7.5.4 Impacts to Natural Areas and Protected Species

There are many plant and animal species that are threatened with extinction or exist in greatly reduced numbers, partly as a result of human activities. The Endangered Species Act (ESA) of 1973 established a national program for the conservation and protection of threatened and endangered species of plants and animals and the preservation of habitats upon which they depend. Section 7 of the ESA requires federal agencies to consult with the USFWS or the National Marine Fisheries Service (NMFS), as appropriate, to ensure that the actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any federally listed threatened or endangered species or result in the destruction or adverse modification of critical habitat. According to the federal regulations, mitigation measures or reasonable and prudent alternatives must be implemented which essentially reduce an impact to minimal levels when a proposed project cannot avoid critical habitat areas.

Threatened or Endangered Species Information

Scientific databases, including the Florida Natural Areas Inventory (FNAI), were reviewed for protected wildlife species, which have the potential to be within or near the proposed project. The project area was also reviewed for the presence of suitable habitat for protected federal and state listed species. Field reviews of suitable and preferred habitat were conducted to identify listed species occurring or potentially occurring in the proposed project area; reference **Table 16 Listed Species Likelihood Table**.

Species	Status		Estimated Likelihood of Occurrence				Comments
	FWC	FWS	Observed	Expected	Possible	Unlikely	
BIRDS							
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Protected but not listed					X	Not detected. Marginal suitable habitat is present in the area.
Florida Sandhill Crane (<i>Grus Canadensis pratensis</i>)	T	--			X		Not detected. Suitable habitat is present.
Florida Burrowing Owl (<i>Athene cunicularia floridana</i>)	T	--				X	Not detected. Marginal habitat is present in the area.
Red-cockaded Woodpecker (<i>Picoides borealis</i>)	E	E				X	Not detected. Suitable habitat is not present.
Little blue heron (<i>Egretta caerulea</i>)	T	--		X			Not detected. Suitable habitat is present.
Tri-colored heron (<i>Egretta tricolor</i>)	T	--		X			Not detected. Suitable habitat is present.
Wood Stork (<i>Mycteria Americana</i>)	T	T			X		Not detected. Marginal habitat is present.
Southeastern American Kestrel (<i>Falco sparverius Paulus</i>)	T	--				X	Not detected. Suitable habitat is present adjacent to the proposed project.
Florida Scrub Jay (<i>Aphelocoma coerulescens</i>)	--	T				X	Not detected. Suitable habitat does not exist.
Least Tern (<i>Sternula antillarum</i>)	T	--				X	Not detected. Suitable habitat does not exist.
Little Blue Heron (<i>Egretta caerulea</i>)	T	--			X		Not detected. Marginal habitat is present in the area.
Marian's Marsh Wren (<i>Cistothorus palustris Mariana</i>)	T					X	Not detected. Suitable habitat does not exist.
Piping Plover (<i>Charadrius melodus</i>)	--	T				X	Not detected. Suitable habitat does not exist.
Reddish Egret (<i>Egretta rufescens</i>)	T	--				X	Not detected. Suitable habitat does not exist
Roseate Spoonbill (<i>Platalea ajaja</i>)	T	--				X	Not detected. Marginal habitat is present in the area.
Tri-Colored Heron (<i>Egretta tricolor</i>)	T	--			X		Not detected. Suitable habitat does exist
MAMMALS							
None							
REPTILES							
Gopher Tortoise (<i>Gopherus Polyphemus</i>)	T	C			X		Not detected. Gopher tortoise burrows were not observed on project site. Suitable habitat is marginally present.

Florida Pine Snake (<i>Pituophis melanoleucus mugitus</i>)	T	--				X	Not detected. Suitable habitat is marginal.
Short-tailed Snake (<i>Stilosoma extenuatum</i>)	T	--				X	Not detected. Suitable habitat is marginal.
Eastern indigo snake (<i>Drymarchon corais couperi</i>)	--	T				X	Not detected. Gopher tortoise burrows and very large areas to support this species are not present.
American alligator (<i>Alligator mississippiensis</i>)	--	T (SA)		X			Not detected. Marginal habitat is present.
AMPHIBIANS							
Eastern diamondback rattlesnake (<i>Crotalus adamanteus</i>)	--	UR				X	This species is under review for Federal listing. Not detected. Suitable habitat is present
PLANTS							
Incised Groove-bur (<i>Agrimonia incisa</i>)	T	--				X	Not detected
Britton's Beargrass (<i>Nolina brittoniana</i>)	E	E				X	Not detected
Nodding Pinweed (<i>Lechea cernua</i>)	T	--				X	Not detected
Many-flowered Grass Pink (<i>Calopagan multiflorus</i>)	T	--				X	Not detected
Sand Butterfly Pea (<i>Centrosema Arenicola</i>)	E	--				X	Not detected
Ashe's Savory (<i>Calamintha ashei</i>)	T	--				X	Not detected
Scrub Buckwheat (<i>Eriogonum longifolium</i>)	E	T				X	Not detected
Florida Spiny-pod (<i>Matelea floridana</i>)	E	--				X	Not detected
Pygmy Pipes (<i>Monotropsis reynoldsiae</i>)	E	--				X	Not detected
Celestial Lily (<i>Nemastylis floridana</i>)	E	--				X	Not detected
Florida Mountain Mint (<i>Pycnanthemum floridanum</i>)	T	--				X	Not detected
Craighead's Nodding-caps (<i>Triphora craigheadii</i>)	E	--				X	Not detected

Table 16 Listed Species Likelihood Table

4.7.5.5 Listed Species

Florida Gopher Tortoise – State Listed - Threatened

Gopher tortoises prefer well-drained, sandy soils found in habitats such as longleaf pine sandhills, xeric oak hammocks, scrub, pine flatwoods, dry prairies, and coastal dunes. They are also found in a variety of disturbed habitats including pastures and urban areas. Suitable gopher tortoise habitat contains well-drained sandy soils for digging burrows and nesting, abundant herbaceous plants for forage, and open, sunny areas with sparse canopy for nesting and basking. Periodic natural fires historically played an important role in many of the habitats where tortoises are found, as fire reduces canopy cover and promotes growth of herbaceous forage plants. When fire is suppressed from these environments, the habitat may become unsuitable for gopher tortoises. Prescribed fire is frequently used today to maintain these habitats.

As most of the proposed project area is comprised of wetlands and floodplain, these areas are not suitable habitat for the gopher tortoise. **Preliminary review of the proposed project area did not indicate any gopher tortoise burrows.** During permitting of the proposed project, a 100% gopher tortoise burrow survey of the project area is recommended.

Bald Eagle – Federally and State Protected

The Bald Eagle (*Haliaeetus leucocephalus*) was removed from the endangered species list in 2007; however, the eagles are protected under the Federal Migratory Bird Treaty Act, the Federal Bald and Golden Protection Act (1940), and the State Bald Eagle Management Plan (FWC, 2008). The Florida Fish and Wildlife Conservation Commission – Bald Eagle Nest Locator website (2017) was reviewed to determine if Bald Eagle nests are in the vicinity of the proposed project. The FWC eagle nest locator website confirmed that there is a Bald Eagle nest, approximately 2.64 miles northwest from the project site, near the Pasco Hernando College, off Blanton Road.

Although Tank Lake is called a lake, Tank Lake is a shrubby environmental feature, with no large open water areas to support bald eagles and **there have been no observations of eagle activity in the area of the proposed project and this avian species is unlikely to occur.**

Florida Sandhill Crane: State Listed - Threatened

Florida sandhill cranes occur from southern Georgia, primarily in the Okefenokee Swamp, to the Everglades. However, most of the population is in peninsular Florida from Alachua County, in the north, to the northern edge of the Everglades in the south. Sandhill cranes rely on shallow marshes for roosting and nesting and open upland and wetland habitats for foraging. Suitable crane habitat occurs where most vegetation is less than 50 cm (20 in) high. Cranes in north Florida spent 86% of their time in 4 habitat types: pasture, freshwater marsh, pasture– marsh transition, and pasture–forest transition. A pair's average home range is about 450 ha (1,100 ac). Home ranges overlap but core nesting areas are defended from other cranes and vary from 120 to 250 ha (300 to 635 ac).

No Florida Sandhill Cranes were found during the environmental review but may frequent the adjacent upland pastures for occasional foraging.

Florida Burrowing Owl: State Listed – State Listed - Threatened

Burrowing owls inhabit open-type habitats that offer short groundcover. Historically, these habitat requirements were met by native dry prairies that covered much of central Florida; however, due to human development in natural areas there has been a range expansion into north and south Florida. More recently, burrowing owls have turned to pastures, agricultural fields, golf courses, airports, schools, and vacant lots in residential areas as most native open habitats have been converted by humans to these new uses.

Although some marginal habitat exists in the vicinity of the proposed project area, no burrowing owls or their burrows were found.

Red Cockaded Woodpecker: Federally Listed - Endangered

RCWs inhabit 90 - 100-year-old longleaf pine, pond pine, pitch pine, and Virginia pine ecosystems from North Carolina, south to Florida, and west to Texas. In Florida, the RCW inhabits slash, longleaf, and loblolly pines.

The proposed project area does not contain the habitat needed to support Red Cockaded Woodpeckers and None were found in the project area.

Wood Stork: Federally Listed – Threatened

Wood storks nest in mixed hardwood swamps, sloughs, mangroves, and cypress domes/strands in Florida. They forage in a variety of wetlands including both freshwater and estuarine marshes, although limited to depths less than 10-12 inches. The wood stork breeds in Florida, Georgia, South Carolina, and North Carolina. Non-breeding wood storks have an extensive range throughout North America, to northern Argentina in South America.

No wood storks were found during the environmental review but may occasionally visit areas of receding water for foraging.

Little Blue Heron: State Listed - Threatened

Little blue herons inhabit fresh, salt, and brackish water environments in Florida including swamps, estuaries, ponds, lakes, and rivers. In the U.S., the little blue heron can be found from Missouri, east to Virginia, down to Florida, and west to Texas. In peninsular Florida they are relatively common and widespread but somewhat rare in the Panhandle. Outside of the U.S, the little blue heron can be found in Cuba, both coasts of Mexico and Central America, down into central South America.

No Little Blue Herons were detected during the environmental review but may occasionally visit the area for foraging.

Marian's Marsh Wren: State Listed – Threatened

Marian's marsh wren inhabits marshes dominated by black needle rush (*Juncus roemarianus*) and cordgrass (*Spartina alterniflora*) on the Florida Gulf coast. This marsh wren species can be found from Pasco to Escambia County, Florida, and into southwest Alabama.

The proposed project site does not have the desirable habitat for this species. No Marian's Marsh Wrens were detected within or adjacent to the proposed project area.

Least Tern: State Listed – Threatened

Not only are the birds extremely susceptible to nest disturbance, but they have also lost extensive nesting habitat to beach development and increased human activity there. Least terns are colony nesters, meaning they nest in a group, which allows them to exchange information about food sources, as well as to detect and mob predators. An entire colony can be easily destroyed by predation by red foxes, raccoons, dogs, and house cats, by human trampling, or by catastrophic storms.

In the past couple of decades, due to habitat loss, least terns have taken to nesting on flat roofs, especially gravel ones. The Florida Fish and Wildlife Conservation Commission has developed an educational pilot program being implemented in Pinellas county. The program is to help business (or home) owners educate their customers about having tolerance for least terns that are 'squatting' on their flat, gravel roofs. A poster was developed to promote the public educational project.

Least terns do respond quickly to improved habitat, such as the removal of beach vegetation or the dumping of dredged sand. Least tern populations seem to be slowly rising, although they are still listed as 'threatened' by the state. At many nesting areas, signs warn people against entering colonies, many of which are roped off during breeding season.

The least tern inhabits areas along the coasts of Florida including estuaries and bays, as well as areas around rivers in the Great Plains (Florida Natural Areas Inventory 2001). In Florida, the least tern can be found throughout most coastal areas. Outside of Florida, least terns are found along the U.S. Atlantic Coast, mid-Atlantic states, and down from Mexico to northern Argentina (Florida Natural Areas Inventory 2001).

The proposed project area does not have the habitat to support this species and No Least Terns were detected.

Piping Plover: Federally Listed – Threatened

Piping plovers inhabit sandy beaches, sand flats, and mudflats along coastal areas (Florida Natural Areas Inventory 2001). The species can be found along the Gulf Coast states and Mexico, along the Atlantic Coast from Florida to Newfoundland, and west to northern Michigan and Wisconsin. The nesting range extends from southern Canada to Nebraska (Florida Natural Areas Inventory 2001).

The proposed project area does not have the habitat to support this species and No Piping Plovers were detected.

Reddish Egret: State Listed – Threatened

Reddish egrets inhabit coastal areas, mainly on estuaries near mangroves, and lagoons, but they can also be found on dredge spoiled islands (Florida Natural Areas Inventory 2001). This species can be found year-round on the coasts from Florida to the extreme northwest coast of Mexico, and also on the coasts from extreme southern California to Costa Rica, and extreme northwest Mexico to Belize during the winter.

The proposed project area does not have the habitat to support this species and No Reddish Egrets were detected.

Roseate Spoonbill: State Listed – Threatened

The roseate spoonbill is a resident breeder in South America, generally east of the Andes, and coastal areas of Central America, the Caribbean, and the Gulf of Mexico. Mangrove islands and occasionally dredge-spoil islands are the suitable nesting habitat for the species. In Florida, the species is found in Florida Bay, Tampa Bay, and Brevard County. This avian species has been occasionally seen in natural and created wetlands in southern Pasco County but is more occasionally found along coastal areas.

The proposed project area does not have the habitat to support this species and No Roseate Spoonbills were detected.

Tri-Colored Heron: State Listed – Threatened

Tricolored herons inhabit fresh and saltwater marshes, estuaries, mangrove swamps, lagoons, and river deltas. They can be found from Massachusetts, down through the Gulf of Mexico and Caribbean, to northern Brazil. Breeding sites can also be found on the Pacific Coast from Baja California down to Ecuador. Tricolored herons are widespread, permanent residents in Florida, although they are less common in some parts of the Panhandle.

The proposed project area does have the habitat to support this species, but No Tri-colored Herons were detected.

Eastern Indigo Snake: Federally Listed – Threatened

Eastern indigo snakes inhabit pine flatwoods, hardwood forests, moist hammocks, and areas that surround cypress swamps. They can be found throughout Peninsular Florida and southeastern Georgia.

Although some marginal habitat exists, no eastern indigo snakes were found during the environmental review. Indigo snakes require very large areas of undeveloped uplands and wetlands and gopher tortoise burrows for support and refuge. The proposed project area does not have the habitat to support this species and its unlikely to occur.

American Alligator: Federally Listed – Designated Threatened Due to Similarity of Appearance

Historically, alligators were depleted from many parts of their range as a result of market-hunting and habitat loss. Forty years ago, many people believed this unique reptile would never recover. In 1967, under a law that preceded the Endangered Species Act of 1973, the alligator was listed as endangered, meaning it was considered in danger of extinction throughout all or a significant portion of its range.

A combined effort by the U.S. Fish and Wildlife Service and State wildlife agencies in the South saved these unique animals. The Endangered Species Act prohibited alligator hunting, allowing the species to rebound in numbers in many areas where it had been depleted. As it began to make a comeback, States established alligator monitoring programs and used the information to ensure that numbers continued to increase. In 1987, the Fish and Wildlife Service pronounced the American alligator fully recovered and consequently removed the animal from the list of endangered species.

Although the American alligator is secure, some related animals—such as several species of crocodiles and caimans — are still in trouble. For this reason, the Fish and Wildlife Service continues to protect the alligator under the ESA classification as “threatened due to similarity of appearance.” The Service thus regulates the harvest of alligators and legal trade in the animals, their skins, and products made from them, as part of efforts to prevent the illegal take and trafficking of endangered “look-alike” reptiles.

Alligators typically like fairly deep, open water areas for feeding on fish, amphibians, and waterfowl. Since Tank Lake and the surrounding area does not have deep, open water areas, it is unlikely but possible alligators may exist in the area. No alligators were found during the environmental review.

4.7.5.6 Fish and Wildlife Resources

In addition to the concern for threatened or endangered species, the applicant should take into account impacts on all fish and wildlife resources in the planning and construction of projects. Unnecessary adverse impacts should be avoided.

Fish and Wildlife Resource Information

Fish and wildlife occurrences are minimal in the area. Wildlife tracks and observances in the vicinity of the project include the following:

- White tailed deer (*Odocoileus virginianus*)
- Raccoon (*Procyon lotor*)
- Armadillo (*Dasyus novemcintus*)

Wild turkey (*Meleagris gallopavo*)
Black birds

Impacts to Fish and Wildlife

Impacts to these wildlife species by this project's Build Alternative Routes will be temporary and negligible.

4.7.5.7 Contamination Sites

Contaminated Sites Records Research

The FDEP's Map Direct Waste Clean-up Mapping System was reviewed for listed contaminated sites in the vicinity of the project. One site was listed as being in or near the proposed project site on Parcel #12. (reference **Figure 30 Build Alternative Routes Base Map**). This listed site was issued an FDEP Site Rehabilitation Completion Order on May 28, 2020; reference **Appendix 10 FDEP Site Rehabilitation Completion Order**. The property owner was released from any further obligation to conduct site rehabilitation at the facility for petroleum product contamination associated with the discharge. In the event concentrations of contaminants of concern are detected above the levels approved by the FDEP Order, the FDEP will reevaluate the contamination and make a determination as to whether the increase is due to a new release or from a previously reported release.

Impacts to Contaminated Sites

The site has been closed by the FDEP. Both Build Alternative Routes A and B will impact this listed site. Coordination with the FDEP regarding this closed contamination site is recommended prior to permitting the selected build route.

4.7.5.8 Social Resources

Social resources such as hospitals, libraries, parks, etc. may experience a slight increase in visitation but the primary benefit from this proposed roadway is the decrease in travel time, to and from AdventHealth Hospital (13100 Fort King Road) for emergency services.

4.7.5.9 Land Use Changes

Existing land use within and adjacent to the proposed project include the following and there are no anticipated changes to the area Future Land Use.

LAND USE CODE	LAND USE DESCRIPTIONS
PSP	Public/Semi Public
R3	Medium Density Residential
RES - 6	Single Family, 6 Units Per Acre
R/O/R	Residential, Office, Retail
R/OS	Recreation, Open Space
GC	General Commercial
IH	Industrial Heavy
AR	Agriculture Residential
AG	Agriculture

Table 17 Land Use Code Table

4.7.6 Build Alternative Routes Temporary and Permanent Easements

Both, Build Alternative Routes A and B will have similar Temporary and Permanent Easements as both routes affect nearly the same number of parcels; however, Build Alternative Route B as the longer route requires more land acquisition for slope easements; reference **Table 18 Easement Impacts Summary Table**. Both Build Alternative Routes A and B impact 10 parcel; however, Build Alternative Route A requires less area at 2.40 acres with an estimated acquisition cost of \$67,678 than Build Alternative Route B does with 2.75 acres and an estimated acquisition cost of \$90,626.

EASEMENT IMPACTS	ALTERNATIVE ROUTE A	ALTERNATIVE ROUTE B
Number of Properties Impacted	10	10
Total Area for Proposed Slope Easements	2.4 Acres	2.75 Acres
Acquisition Cost Estimate for Slope Easements	\$67,678	\$90,626

Table 18 Easement Impacts Summary Table

4.7.7 Build Alternative Routes Business Relocations, Impacts, and Estimated Costs

Both, Build Alternative Route A and Build Alternative Route B will not require the relocation of any businesses. Both routes will impact several businesses and a public school bus compound. However, given these impacts occur where the intersection improvements to the intersections of Morningside Drive with Fort King Road and US 301/US 98 are proposed and proposed improvements at these intersections the same for both routes, the relative cost associated with the impacts are the same. A summary of the property impacts and estimated costs is provided in **Table 13 R/W Acquisition and Estimate Summary Table**.

4.7.8 Build Alternative Routes Residential Relocations and Estimated Costs

Both, Build Alternative Routes A and B have one existing residential property (Parcel #4 on **Figure 30 Build Alternative Routes Base Map**), The impacts to the residential property do not affect parcel access or any of the existing structures located on the property. There is no anticipated relocation associated with the land acquisition required from this parcel.

5.0 Drainage Analysis and Pond Siting Evaluation

5.1 Purpose

The following preliminary Drainage Analysis and Pond Siting Evaluation is in conformance with SWFWMD policies and criteria, pursuant to Florida Administrative Code (F.A.C.) 40D-40 and the application requirements for a Standard General Environmental Resource Permit (ERP) and the United States Army Corps of Engineers (USACE) requirements. This drainage analysis and pond siting report along with the drainage exhibits and figures address the proposed location options of the stormwater management facilities (SMF) and floodplain compensation areas (FPC) required for the construction of the Morningside Drive Extension project.

Design parameters for this project shall include Dade City Commercial Code Compliance Review, Pasco County Land Development Code and SWFWMD ERP approval requirements.

5.2 Project Description

The Morningside Drive Extension project is proposed to provide a connection from the existing Morningside Drive intersection at Fort King Road to the Morningside Drive intersection at US 301/US 98. The project evaluates two potential build alignment alternatives, Build Alternative Route A and Build Alternative Route B, for connection between these two points; reference **Figure 30 Build Alternative Routes Base Map** for an aerial map overlaid with both route alternatives. **Appendix 7 Build Alternative Route A Conceptual Plans** and **Appendix 8 Build Alternative Route B Conceptual Plans** provide for smaller-scale illustrations of each alternative route with existing features and utilities shown for reference.

The project is located on approximately 30 acres of land divided within twenty-three separate parcels. The western end of the project for both Build Alternative Routes A and B is adjacent to Parcel #1, owned by AdventHealth Hospital Dade City, and will require revisions to the hospital's existing parking lot and drainage system. The east end of the project is located on R/W owned by Dade City (Parcel #19) for the short road section between the Parcel #14 and Parcel #17 developments. The remainder of both routes is located on undeveloped land, most of which is designated as floodplain and wetlands with small portions in wooded uplands. The project includes the R/W for the new road, areas for the proposed SMFs, parking lot modifications, floodplain compensation areas, and drainage and slope easements.

There are three road segments considered for analysis on this project, for each of the alternative routes under consideration. The first segment is a constrained section requiring 62-feet of R/W to be constructed adjacent the AdventHealth Hospital (Parcel #1) property. This section consists of two 12-foot travel lanes, 5-foot paved shoulders, an 8-foot multi-use path on the north side, and 6-foot sidewalk on the south side with curb and gutter throughout.

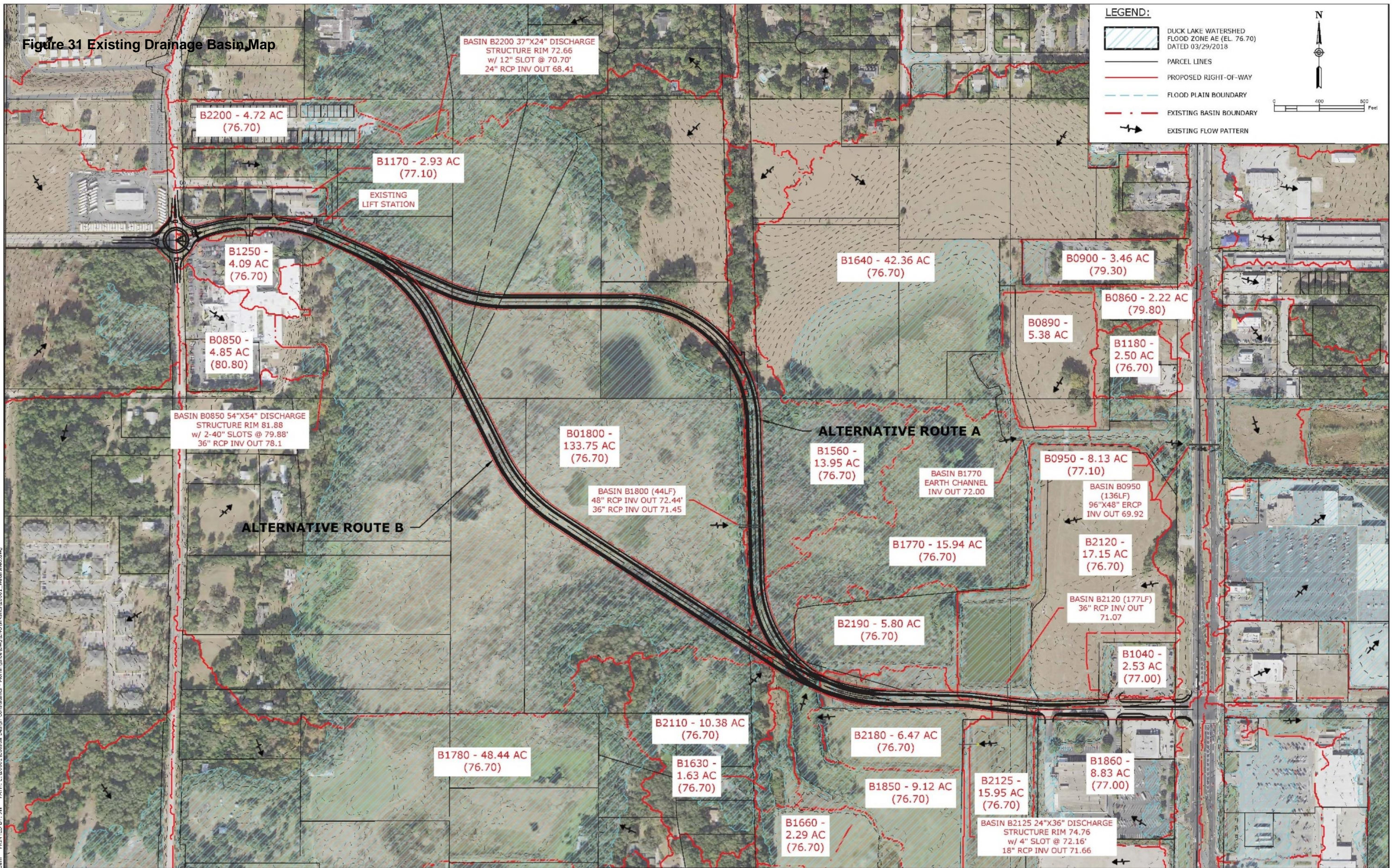
The second segment extends from the AdventHealth Hospital site to the future connection point of the Hardy Trail. This segment provides for additional separation from the back of curb to the sidewalk or trail in addition to a larger offset from the back of sidewalk or trail to the proposed right of way line. This segment requires 73-feet of R/W and includes 12-foot travel lanes, 5-foot paved shoulders, an 8-foot multiuse path on the north side, and a 5-foot sidewalk on the south side with curb and gutter throughout.

The third segment is proposed from the Hardy Trail to the connection with the existing Morningside Drive on the east side of the study area. This segment assumes the connection of the Hardy Trail and allows continuation of the trail to east for a connection with US 301. This segment requires 77-feet of R/W and includes 12-foot travel lanes, 5-foot paved shoulders, a 12-foot multiuse path on the north side, and a 5-foot sidewalk on the south side with curb and gutter throughout.

5.3 Basin Maps

The project area is within multiple basins in the Duck Lake Watershed, which is a SWFWMD approved watershed. The new road segment will traverse several basins, each with its own small drainage area that when storm events reach the 100-year stage, all become interconnected with a storm stage of 76.70 feet. Reference **Figure 31 Existing Drainage Basin Map** showing the Build Alternative Routes overlaid on existing basin layout. The proposed route/ SMF/FPC configuration maps showing the Build Alternative Routes options are shown in **Figure 32 Build Alternative Route A Drainage Map** and **Figure 33 Build Alternative Route B Drainage Map**.

Figure 31 Existing Drainage Basin Map



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NO.	DESCRIPTION	DATE	NAME
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		11/xx/20	PAUL MANUEL, P.E.

DESIGNED BY:
DRAWN BY:
CHECKED BY:
SUPERVISED BY:

7026 Little Road,
 New Port Richey, FL 34653
 03/18/2021

PASCO COUNTY
ENGINEERING SERVICES

OPEN SPACES. VIBRANT PLACES.







MORNINGSIDE DRIVE EXTENSION

EXISTING BASINS MAP

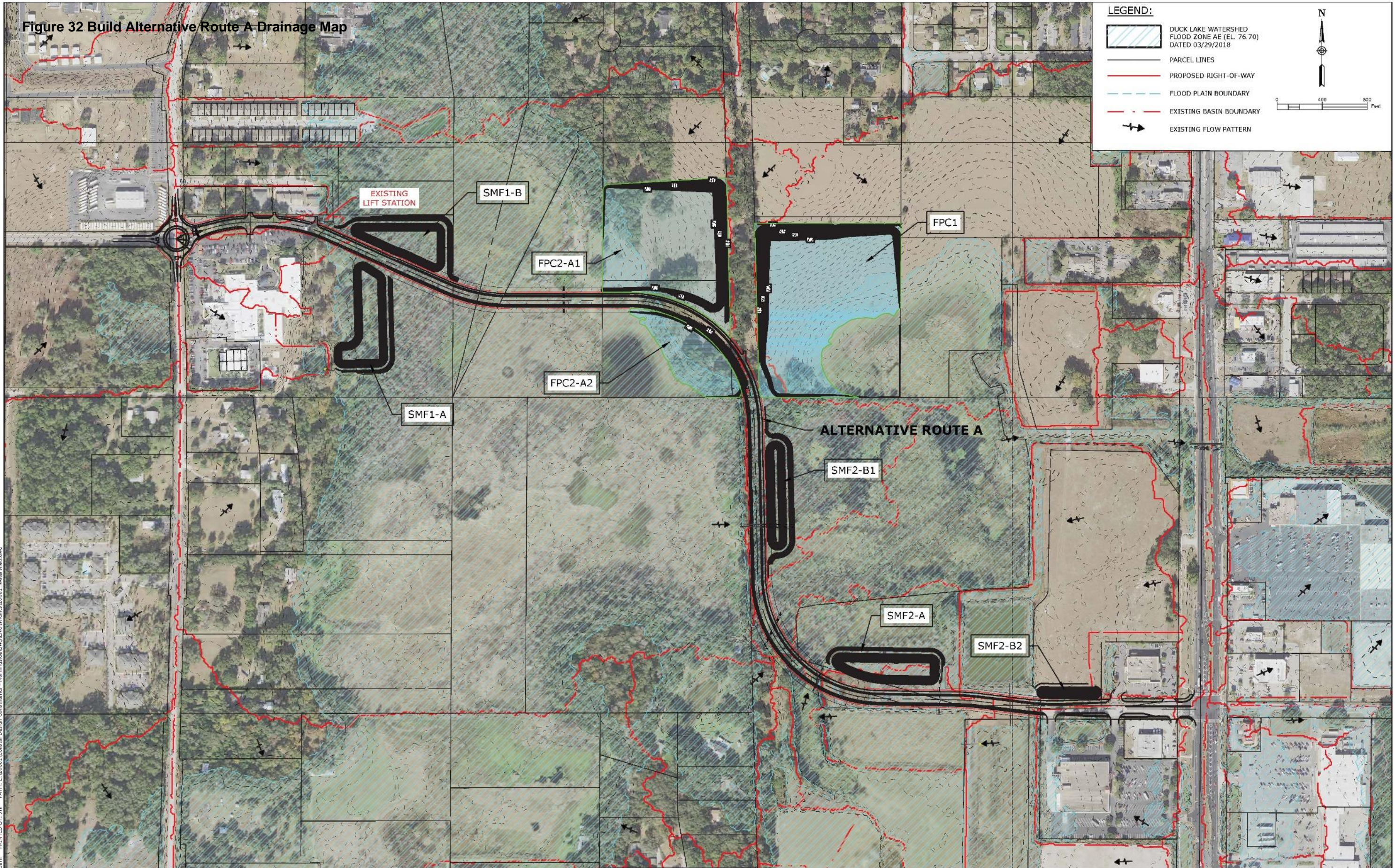
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SHT 1 OF 1

Figure 32 Build Alternative Route A Drainage Map

LEGEND:

-  DUCK LAKE WATERSHED FLOOD ZONE AE (EL. 76.70) DATED 03/29/2018
-  PARCEL LINES
-  PROPOSED RIGHT-OF-WAY
-  FLOOD PLAIN BOUNDARY
-  EXISTING BASIN BOUNDARY
-  EXISTING FLOW PATTERN

N
0 400 800 Feet



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	11/xx/20		PAUL MANUEL, P.E.

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 CHECKED BY:
 SUPERVISED BY:



7026 Little Road,
New Port Richey, FL 34653



388 Candlelight Boulevard
Bokalee, FL 34609
03/18/2021

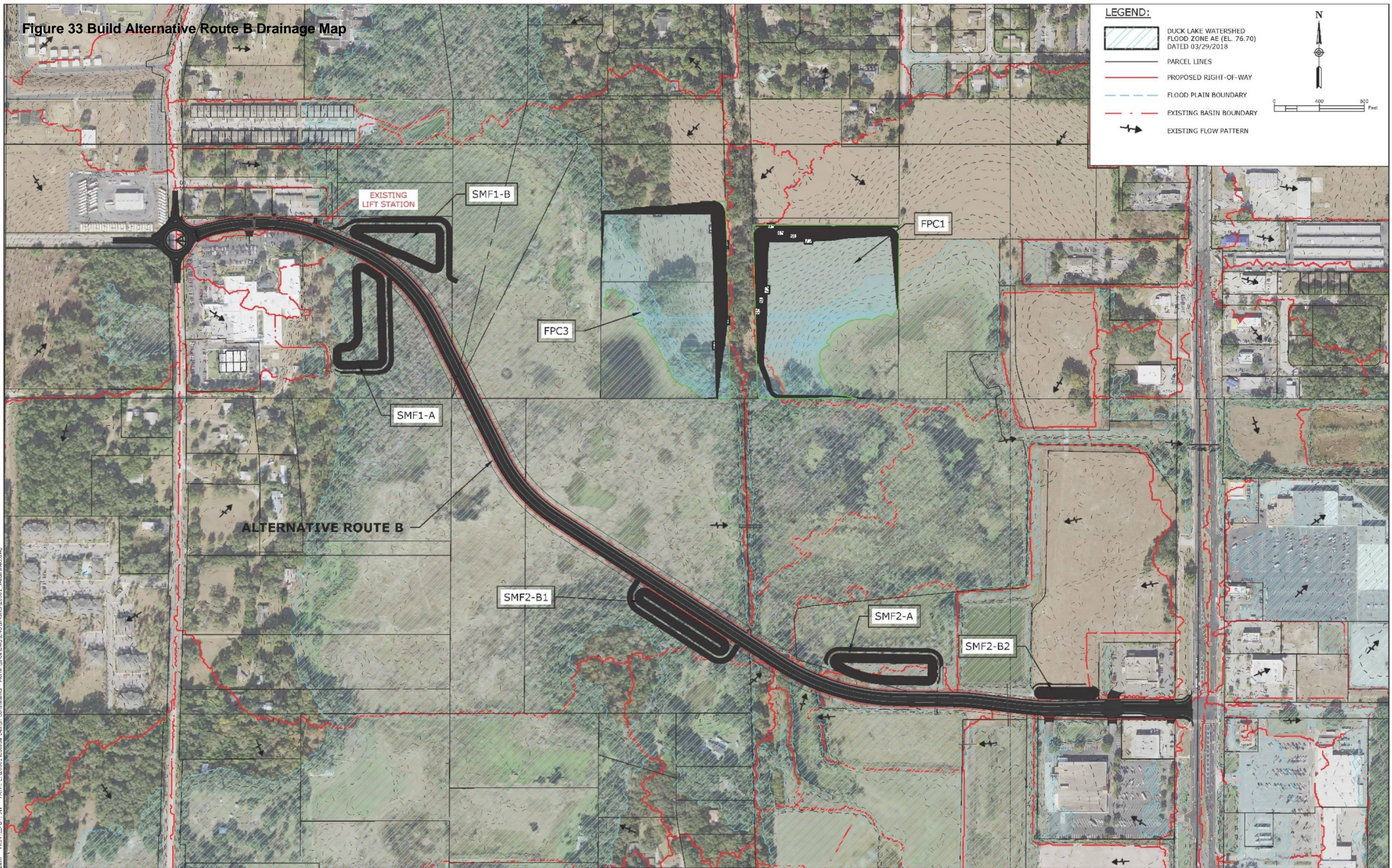
PASCO COUNTY
 ENGINEERING SERVICES



MORNINGSIDE DRIVE EXTENSION
PROPOSED ROUTE A

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Figure 33 Build Alternative Route B Drainage Map



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	11/xx/20		PAUL MANUEL, P.E.

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ENGINEERING SERVICES



MORNINGSIDE DRIVE EXTENSION

PROPOSED ROUTE B

SHEET NO.
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SHT 1 OF 1

5.4 Drainage Analysis

5.4.1 Assumptions and Methodology

The site is located within the Duck Lake Watershed (DLW) which is a SWFWMD Governing Board approved watershed and model. There are several existing parcels within the study area which have previous Environmental Resources Protection (ERP) permits on file with SWFWMD. Unfortunately, many of these previous permits are pre-2000's or were withdrawn and/or never constructed with little or no available data on SWFWMD WMIS system to download and reference. Tank Lake West Commercial was found to be the only development permitted after 2000, with the latest revision date of 2006 (permit #44019713.002). There was another minor modification revision in 2018 but that was well outside of the project area and developed a piece of the property that was already master planned for improvements. All previous applications were done before the DLW and analyzed small pieces of the overall basins.

These previous calculations have been superseded by the DLW that was SWFWMD approved in 2018 and is now recognized as best available data and model. SWFWMD LIDAR data from 2007 that was used in the DLW was acquired and used along with basin boundaries, floodplains and the approved ICPR watershed model for creating the pre- and post-site-specific watershed models. The project is in the middle of a large contributing basin system, in which, basin after basin stage up and discharge downstream until the whole drainage area is backed up and stages up to a common flood stage. Ultimately, the area discharges to the Withlacoochee River after traveling through multiple basins. The basins receive flow from surrounding areas north and south before going through a large earth channel and 96"x48" culvert under US 301/US 98 and to the east towards the river. Since the contributing basins and areas are so extensive, the entire DLW model was ran to verify the flood stage. A condensed version was subsequently used to calculate the sizes of the SMFs. Data was extracted from the DLW AdICPR3 model for drainage areas within the project area and used for pre- and post-development scenarios; this is discussed more in-depth below. Reference **Appendix 7 Build Alternative Route A Conceptual Plan** and **Appendix 8 Build Alternative Route B Conceptual Plan** for conceptual layouts for both alternative routes. The pre- and post-drainage modeling calculations are provided in **Appendix 11 Drainage Calculations**.

For modeling and sizing of wet detention SMFs, different SHWT values were assumed for each pond. The SHWT to the west for SMF1-A and SMF1-B was assumed at 74.00 feet based on elevations on record for the Parcel #1 existing SMF adjacent to the site and soil characteristics. The SHWT to the east for SMF2-A and SMF2-B² was based on the Tank Lake Commercial, which was permitted and had on record a SHWT of 72.17 feet. To be conservative, an elevation of 73.00 feet was assumed for SMF sizing.

For mitigation of the floodplain impacts to the 100-year, 24-hour stage caused by the proposed road section, two mitigation site options were analyzed to provide floodplain compensation. All proposed floodplain compensation sites are directly connected to the basin's depression that acts as the stormwater storage area. This area, per visual inspection along with analysis of LIDAR data and the DLW model discharge elevations, has a SHWT of 72.00 feet.

² SMF2-B utilizes two separate SMF facilities working together to accomplish the same result as a single SMF facility; therefore, the two facilities are referenced as one SMF.

5.4.2 Predevelopment Analysis

The project areas fall within or have a small portion of the new right-of-way within eleven basins from the DLW (B1170, B1250, B1560, B1770, B1800, B1850, B1860, B2120, B2125, B2180 & B2190); reference **Figure 31 Existing Drainage Basin Map** for existing basin layout with alternative routes overlaid for reference.

Seven of the identified eleven basins (B1170, B1770, B1850, B1860, B2120, B2125 and B2180) will have very little impact from the proposed roadway routes. They will have only small areas removed from their original basin area as part of the road impact and will not experience any changes to the depressional low points within each basin.

Also, most of the effected basins stage to the same 76.70-foot elevation (B1250, B01560, B1770, B1800, B1850, B2120, B2125, B2180 and B2190) in the 100-year event. Basin B1170 is a small residential road with a SMF at the east end that stages to 77.10 feet before discharging into B1800. Basin B1860 is Parcel #17 that also has its own SMF and drainage system that stages to 77.00 feet before discharging into B2120. As stated above, all these basins stage up to the same elevation and eventually discharge downstream at the same time to the east under US 301/US 98 and towards the Withlacoochee River through a series of cascading basins.

Given all of that, data was reviewed and extracted from the DLW model for effected basins to create pre-development basins for each alternative route proposed. The same post-development areas that will contribute to the site SMFs were used for pre-development modeling, so that appropriate runoff rates and discharge volumes could be obtained for post-modeling.

5.4.3 Post-development Drainage

The proposed stormwater management system shall consist of two or three wet-detention pond systems, depending on the SMF option approved that will collect contributing areas on- and off-site. For both, Build Alternative Routes A and B, the east basin SMF options are SMF1-A or SMF1-B, both of which are proposed to be located on the AdventHealth Hospital (Parcel #1) property. The breaking point between the east and west basin is roughly in the middle of the new road segment located at the large radius. The west basin SMF options are SMF2-A for Build Alternative Route A and SMF2-B for Build Alternative Route B. The SMF2-B option will require two smaller SMF systems equally separated based on grading and slope for storm piping to discharge to the SMFs. The difference between Build Alternative Route A and Build Alternative Route B is that SMF2-B is located on different parcels for each route. Both proposed routes are designed with alignments through the AdventHealth Hospital's (Parcel #1) existing parking lot, so the new western end drainage basin will include a proposed relocated parking lot along with the Parcel #1 contributing basin runoff into the new SMF which is proposed to be located east of the proposed parking lot either on the north or south side of the new road segment, depending on the SMF option selection. Both routes also connect at the same eastern end of US 301/US 98 between Parcel #17 and Parcel #14 where the existing road section will be improved. SMF2-A includes a pond located at the southern half of basin B2190 (Portion of Parcels #11, 12, and 15). For Build Alternative Route A, SMF2-B1 is located along the north-south section on Parcel #11 and SMF 2-B2 is located on Parcel #13. For Build Alternative Route B, SMF2-B1 is located along the northwest-southeast section on Parcel #10 and SMF 2-B2 is located behind Parcel #14 on Parcel #13; reference **Figure 32 Build Alternative Route A Drainage Map** and **Figure 33 Build Alternative Route B Drainage Map** for the SMF options.

Both alternative routes and the SMF configurations will require the extension or modification to existing drainage features like overland links and basin connecting pipes, so that systems still act as they did before the proposed roadway. Basin B1800 has an existing pipe which links with basin B01560 and an overland weir link with B1770. The new road section will require the pipes to be lengthened and the overland flow to B1770 will be matched by creating a low point and installing an inlet and pipe to mimic the existing flow and rate, so basin B1800 does not stage higher than historically. Basins B1850 and B2180 also discharge into B2190, and since a portion of B2190 is used for a SMF, those basins are to be re-routed by proposed inlets and pipes to the unused areas of B2190, so existing flow conditions are maintained as much as possible.

5.4.4 SMF Design Constraints

Based on review of existing site conditions, DWL AdICPR model, the watershed report, and the proposed use of the site, it was determined that wet detention ponds would be most suitable for the encountered soil conditions. The pond sizes were calculated using practices accepted by SWFWMD as follows:

- Seasonal High-Water Table (SHWT) approximated from previous permits adjacent to the site, soil type data and ICPR model values for the site. For the west SMF, an assumption of elevation 74.00 feet NGVD was used. For the east basin, an elevation of 73.00 feet NGVD was used.
- Water Quality - Wet ponds were designed to meet conservation design methods. Normal pool is designed to hold the 1" treatment volume and 14-day residence volume below the normal pool elevation.
- Wet ponds were designed to provide the required minimum pond area at normal pool elevation per conservation design method.
- Wet ponds V notch weirs were designed to drain ½" of runoff with no more than 10" of head based on an average flow rate within a 24-hour period. The drainage system was designed to hold below the weir orifice the pre- vs post-volume difference in runoff from the 100-year/24-hour storm event.
- Water Quantity – Proposed SMFs were designed to store the required increased amount of runoff due to the new roadway in each pond above the NWL and below the weir, so that the 25-year/24-hour runoff rate and 100-year/24-hour volume discharge are both less than existing conditions.
- Historic floodplain compensation within the proposed R/W will be provided by digging out an area adjacent to the project to mitigate for the volume between existing grade and the 100-year/24-hour flood stage (76.70 feet).
- Stormwater Detention Pond Configuration – Stormwater ponds are designed with 15-foot wide berms to allow maintenance and slopes to not exceed 4:1. Weir structures are designed to meet pre- vs post-storage requirements and road section profiles are set so that adequate slope and drainage to the pond systems are achieved.

5.5 SMF Site Options

Based on engineering review of proposed and existing conditions, taking into consideration contours, floodplains, existing and proposed drainage connections and overall parcel acquisition, the most optimal and most viable locations for SMFs have been chosen and are provided in **Figure 32 Build Alternative Route A Drainage Map** and **Figure 33 Build Alternative Route B**

Drainage Map. SMF locations vary slightly for the two Build Alternative Routes under consideration. Two alternative SMF configurations, as described above in the “Post-Development Drainage” section of this report, were developed for each alternative road route. Although both Build Alternative Routes differ in length, soil type and basin area disturbed, the unique features of each route are consistent with the sizing requirements provided in the selected treatment ponds. Build Alternative Route A is slightly longer and impacts additional existing basins but is in an area having soils more conducive to infiltration. While Build Alternative Route B is shorter, this route is traversing wetlands and poor soil types requiring larger stormwater treatment areas than what would typically be required.

Build Alternative Route A has different SMF options for the east and west segments of the project. The SMF options for the western segment of the project are SMF1-A or SMF1-B, both of which are proposed to be located on the Parcel #1 property on the south and north sides of the proposed roadway, respectively. These SMFs were designed to not only contain half of the proposed road stormwater but also the contributing areas from the Parcel #1 site. The SMF options for the east basin are SMF2-A (a single larger SMF area) or SMF2-B1&B2 (two smaller SMF areas). SMF2-A is located on the northside of the proposed roadway near the eastern end on portions of Parcels #11, 12, and 15 and has been designed to handle the proposed east road section stormwater. SMF2-B1 is located on a long slender section of raised ground previously used for a staging site on Parcel #11 and is designed to handle the middle section stormwater of the proposed roadway. SMF2-B2 in the east section of proposed road is located on the northside Parcel #13 and will contain just the proposed road segment that drains to it; reference **Appendix 7 Build Alternative Route A Conceptual Plans** for the Build Alternative Route A SMF options.

Built Alternative Route B has same options for the east and west portions of the project. The western roadway segment SMF options are SMF1-A or SMF1-B, both of which are proposed to be located on Parcel #1 on the south and north sides of the proposed roadway, respectively. These SMFs were designed to not only contain half of the proposed road stormwater but also the contributing areas from the Parcel #1 site. The east basin SMF options are SMF2-A (a single larger SMF area) or SMF2-B1 and SMF2-B2 (two smaller SMF areas). SMF2-A is located on the northside of the proposed roadway near the eastern end of the proposed roadway on portions of Parcels #11, 12, and 15 and has been designed to handle the stormwater from the eastern segment of the road. SMF2-B1 is located on a long slender section on the south side of the proposed roadway (Parcel #10) and is designed to handle the stormwater of the middle segment of the proposed roadway. SMF2-B2 in the eastern segment of the proposed road is located on Parcel #13 and will contain just the proposed road segment that drains to it; reference **Appendix 8 Build Alternative Route B Conceptual Plans** for the various Build Alternative Route B SMF options.

These SMF options were chosen because they offer ease of drainage connection and minimize floodplain impacts while they are still being located close to the basin depressions. It should also be pointed out that most of these SMF locations are located on properties whose owners have shown interest in making this project happen and willing to work with Dade City/Pasco County on easements and property acquisitions.

5.5.1 SMF Safety

The SMF sites for Build Alternative Routes A and B were designed using criteria in compliance with current regulatory standards; therefore, the SMF alternatives do not differentiate by any measurable safety aspects.

5.5.2 SMF Costs

5.5.2.1 SMF Construction

Opinions of Probable Cost were developed to compare the construction cost of each SMF for each Build Alternative Route; reference **Table 20 Build Alternative Route A SMFs Opinion of Probable Costs** and **Table 21 Build Alternative Route B SMFs Opinion of Probable Costs**.

For Build Alternative Route A, the estimated cost to construct the eastern SMF site for SMF1-A is approximately \$339,000 and SMF1-B is slightly higher at \$347,900. The estimated cost to construct the western SMF facilities for SMF2-A1&2 is approximately \$298,700 and SMF2-B1&2 is higher at \$315,000.

For Build Alternative Route B, the estimated cost to construct the eastern SMF site for SMF1-A is approximately \$337,000 and SMF1-B is higher at \$375,000. The estimated cost to construct the western SMF facilities for SMF2-A is approximately \$297,000 and SMF2-B1&2 is lower at \$277,200.

Based on the Opinions of Probable Cost for the construction of the potential SMF sites, SMF1A and SMF2-A are the best options for Build Alternative Route A. For Build Alternative Route B, the best SMF options are SMF1-A and SMF-B1&2.

5.5.2.2 SMF R/W Acquisition

The R/W Acquisition and Opinion of Probable of Cost are for the SMF sites are summarized in **Table 19 SMF R/W Acquisition Summary Table**.

BUILD ROUTE ALTERNATIVE A		BUILD ROUTE ALTERNATIVE B	
SMF	Acquisition Cost	SMF	Acquisition Cost
SMF1-A	\$379,000	SMF1-A	\$350,000
SMF1-B	\$281,000	SMF1-B	\$355,000
SMF2-A	\$7,500	SMF2-A	\$7,300
SMF2-B ³	\$111,000	SMF2-B ⁴	\$120,500

Table 19 SMF R/W Acquisition Summary Table

The comparison of the Opinions of Probable Cost for Build Alternative Route A shows that SMF1-B was estimated to cost less to acquire than the SMF1-A site and the cost to acquire SMF2-A1&A2 is much lower than the acquisition cost for SMF2-B1&B2.

The comparison of the Opinions of Probable Cost for Build Alternative Route B shows that SMF1-A was estimated to cost slightly less to acquire than the SMF1-B site and the cost to acquire SMF2-A1&A2 is much lower than the acquisition cost for SMF2-B1&B2.

³ SMF2-B utilizes two separate SMF facilities working together to accomplish the same result as a single SMF facility; therefore, the two facilities are referenced as one SMF.

⁴ SMF2-B utilizes two separate SMF facilities working together to accomplish the same result as a single SMF facility; therefore, the two facilities are referenced as one SMF.

**Morningside Drive Extension - Route A
STORMWATER MANAGEMENT FACILITIES (SMF)**

SMF1-A

OPINION OF PROBABLE COST

ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	720 LF	\$1.65	\$1,188.00
2	110-1-1	CLEARING AND GRUBBING	2.18 AC	\$21,080.42	\$45,955.32
3	120-1	REGULAR EXCAVATION	13,604 CY	\$6.89	\$93,728.99
4	120-4	SUBSOIL EXCAVATION	10,312 CY	\$12.17	\$125,502.23
5	570-1-2	PERFORMANCE TURF (SOD)	18,992 SY	\$3.30	\$62,674.13
6		CONTROL STRUCTURE/OVERFLOW WEIR	1 EA	\$10,000.00	\$10,000.00
SMF1-A SUBTOTAL					\$339,048.66

SMF1-B

ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	900 LF	\$1.65	\$1,485.00
2	110-1-1	CLEARING AND GRUBBING	1.92 AC	\$21,080.42	\$40,474.41
3	120-1	REGULAR EXCAVATION	2,962 CY	\$6.89	\$20,408.73
4	120-4	SUBSOIL EXCAVATION	18,102 CY	\$12.17	\$220,296.47
5	570-1-2	PERFORMANCE TURF (SOD)	16,727 SY	\$3.30	\$55,199.23
6		CONTROL STRUCTURE/OVERFLOW WEIR	1 EA	\$10,000.00	\$10,000.00
SMF1-B SUBTOTAL					\$347,863.84

SMF2-A

ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	875 LF	\$1.65	\$1,443.75
2	110-1-1	CLEARING AND GRUBBING	2.13 AC	\$21,080.42	\$44,901.29
3	120-1	REGULAR EXCAVATION	26,288 CY	\$6.89	\$181,127.49
4	120-4	SUBSOIL EXCAVATION	0 CY	\$12.17	\$0.00
5	570-1-2	PERFORMANCE TURF (SOD)	18,557 SY	\$3.30	\$61,236.65
6		CONTROL STRUCTURE/OVERFLOW WEIR	1 EA	\$10,000.00	\$10,000.00
SMF2-A SUBTOTAL					\$298,709.18

SMF2-B1

ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	850 LF	\$1.65	\$1,402.50
2	110-1-1	CLEARING AND GRUBBING	1.33 AC	\$21,080.42	\$28,036.96
3	120-1	REGULAR EXCAVATION	0 CY	\$6.89	\$0.00
4	120-4	SUBSOIL EXCAVATION	14,591 CY	\$12.17	\$177,572.31
5	570-1-2	PERFORMANCE TURF (SOD)	11,587 SY	\$3.30	\$38,236.97
6		CONTROL STRUCTURE/OVERFLOW WEIR	1 EA	\$10,000.00	\$10,000.00
SMF2-B1 SUBTOTAL					\$255,248.73

SMF2-B2

ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	450 LF	\$1.65	\$742.50
2	110-1-1	CLEARING AND GRUBBING	0.46 AC	\$21,080.42	\$9,696.99
3	120-1	REGULAR EXCAVATION	3,785 CY	\$6.89	\$26,077.82
4	120-4	SUBSOIL EXCAVATION	0 CY	\$12.17	\$0.00
5	570-1-2	PERFORMANCE TURF (SOD)	4,008 SY	\$3.30	\$13,224.82
6		CONTROL STRUCTURE/OVERFLOW WEIR	1 EA	\$10,000.00	\$10,000.00
SMF2-B2 SUBTOTAL					\$59,742.13

Table 20 Build Alternative Route A SMFs Opinion of Probable Costs

Date 3/22/2021

Morningside Drive Extension - Route B
STORMWATER MANAGEMENT FACILITIES (SMF)

OPINION OF PROBABLE COST

ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	720 LF	\$1.65	\$1,188.00
2	110-1-1	CLEARING AND GRUBBING	2.13 AC	\$21,080.42	\$44,901.29
3	120-1	REGULAR EXCAVATION	13,604 CY	\$6.89	\$93,731.56
4	120-4	SUBSOIL EXCAVATION	10,312 CY	\$12.17	\$125,497.04
5	570-1-2	PERFORMANCE TURF (SOD)	18,557 SY	\$3.30	\$61,236.65
6		CONTROL STRUCTURE/OVERFLOW WEIR	1 EA	\$10,000.00	\$10,000.00
SMF1-A SUBTOTAL					\$336,554.54

SMF1-B

ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	900 LF	\$1.65	\$1,485.00
2	110-1-1	CLEARING AND GRUBBING	2.46 AC	\$21,080.42	\$51,857.83
3	120-1	REGULAR EXCAVATION	2,962 CY	\$6.89	\$20,408.73
4	120-4	SUBSOIL EXCAVATION	18,102 CY	\$12.17	\$220,301.34
5	570-1-2	PERFORMANCE TURF (SOD)	21,432 SY	\$3.30	\$70,724.02
6		CONTROL STRUCTURE/OVERFLOW WEIR	1 EA	\$10,000.00	\$10,000.00
SMF1-B SUBTOTAL					\$374,776.92

SMF2-A

ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	875 LF	\$1.65	\$1,443.75
2	110-1-1	CLEARING AND GRUBBING	2.09 AC	\$21,080.42	\$44,058.08
3	120-1	REGULAR EXCAVATION	26,288 CY	\$6.89	\$181,124.32
4	120-4	SUBSOIL EXCAVATION	0 CY	\$12.17	\$0.00
5	570-1-2	PERFORMANCE TURF (SOD)	18,208 SY	\$3.30	\$60,086.66
6		CONTROL STRUCTURE/OVERFLOW WEIR	1 EA	\$10,000.00	\$10,000.00
SMF2-A SUBTOTAL					\$296,712.81

SMF2-B1

ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	825 LF	\$1.65	\$1,361.25
2	110-1-1	CLEARING AND GRUBBING	1.32 AC	\$21,080.42	\$27,826.15
3	120-1	REGULAR EXCAVATION	6,802 CY	\$6.89	\$46,864.49
4	120-4	SUBSOIL EXCAVATION	7,679 CY	\$12.17	\$93,459.11
5	570-1-2	PERFORMANCE TURF (SOD)	11,500 SY	\$3.30	\$37,949.47
6		CONTROL STRUCTURE/OVERFLOW WEIR	1 EA	\$10,000.00	\$10,000.00
SMF2-B1 SUBTOTAL					\$217,460.48

SMF2-B2

ITEM	PAY ITEM	ITEM	QUANTITY	UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	450 LF	\$1.65	\$742.50
2	110-1-1	CLEARING AND GRUBBING	0.46 AC	\$21,080.42	\$9,696.99
3	120-1	REGULAR EXCAVATION	3,785 CY	\$6.89	\$26,077.82
4	120-4	SUBSOIL EXCAVATION	0 CY	\$12.17	\$0.00
5	570-1-2	PERFORMANCE TURF (SOD)	4,008 SY	\$3.30	\$13,224.82
6		CONTROL STRUCTURE/OVERFLOW WEIR	1 EA	\$10,000.00	\$10,000.00
SMF2-B2 SUBTOTAL					\$59,742.13

Table 21 Build Alternative Route B SMFs Opinion of Probable Costs

5.5.3 SMF Property Impacts

The SMF sites and the properties they impact are summarized in **Table 22 SMF Property Impacts Table**.

BUILD ROUTE ALTERNATIVE A	
SMF	Properties Impacted
SMF1-A	1
SMF1-B	1
SMF2-A1&A2	2
SMF2-B1&B2	2
BUILD ROUTE ALTERNATIVE B	
SMF	Properties Impacted
SMF1-A	1
SMF1-B	1
SMF2-A	2
SMF2-B	2

Table 22 SMF Property Impacts Table

For Build Alternative Route A, the SMF options for the west side of the project area (SMF1-A and SMF1-B) will impact 1 property each. The SMF options for the east side of the project area (SMFs-A1&A2 and SMF1-B1&B2) will impact two properties each.

For Build Alternative Route B, the SMF options for the west side of the project area (SMF1-A and SMF1-B) will impact 1 property each. The SMF options for the east side of the project area (SMFs-A1&A2 and SMF1-B1&B2) will impact two properties each.

Based on the number of properties impacted by the potential SMF sites, both Build Alternative Routes will impact the same number of properties.

5.5.4 SMF Environmental Impacts

The wetland impacts and mitigation estimates for Build Alternative Routes A and B SMFs are shown in **Table 23 SMF Wetland Impacts Summary**. This table shows that there are the same wetland impacts with Build Alternative Route A and B when SMF1-A and SMF2-A are the preferred SMF alternative for both routes.

BUILD ALTERNATIVE ROUTE A			
SMF	ESTIMATED WETLAND AREA (ACRES)	ESTIMATED WETLAND BANK CREDITS NEEDED	ESTIMATED MITIGATION BANK CREDIT PURCHASE
SMF1-A	0.94	1.34	\$241,700
SMF1-B	1.65	2.36	\$424,300
SMF2-A	-	-	-
SMF2-B	1.33	1.90	\$342,000
BUILD ALTERNATIVE ROUTE B			
SMF1-A	0.94	1.34	\$241,700
SMF1-B	2.19	3.13	\$563,143
SMF2-A	-	-	-
SMF2-B	0.70	1	\$180,000

Table 23 SMF Wetland Impacts Summary

5.5.5 Conclusion

STORMWATER MANAGEMENT FACILITY (SMF)	BUILD ALTERNATIVE ROUTE A			
SMF #	SMF1-A	SMF1-B	SMF2-A	SMF2-B
Number of Properties Impacted	1	1	2	2
Total SMF Acquisition Area	2.18	1.92	2.13	1.79
Mitigation Estimate for SMF	\$241,700	\$424,300	\$0	\$342,000
Acquisition Estimate for SMF	\$378,500	\$280,700	\$7,500	\$111,000
Construction Estimate for SMF	\$339,000	\$347,900	\$298,900	\$315,000
TOTAL ESTIMATE FOR SMF	\$959,200	\$1,052,900	\$306,400	\$768,000

STORMWATER MANAGEMENT FACILITY (SMF)	BUILD ALTERNATIVE ROUTE B			
	SMF1-A	SMF1-B	SMF2-A	SMF2-B
Number of Properties Impacted	1	1	2	2
Total SMF Acquisition Area	2.18	2.46	2.09	1.78
Mitigation Estimate for SMF	\$241,700	\$563,100	\$0	\$180,000
Acquisition Estimate for SMF	\$349,900	\$354,800	\$7,300	\$120,300
Construction Estimate for SMF	\$336,600	\$374,800	\$296,700	\$277,200
TOTAL ESTIMATE FOR SMF	\$928,200	\$1,292,700	\$304,000	\$577,500

Based on the safety, costs, impacts, and environmental impacts listed above, the SMF options recommended are as follows:

Build Alternative Route A

- SMF1-A (Further Evaluation Needed)
- SMF1-B (Further Evaluation Needed)
- SMF2-A (Preferred)
- SMF2-B (Not Recommended)

Build Alternative Route B

- SMF1-A (Further Evaluation Needed)
- SMF1-B (Further Evaluation Needed)
- SMF2-A (Preferred)
- SMF2-B (Not Recommended)

SMF2-B for both Build Alternative Routes A and B are not included in the final evaluation matrix due to the excessive costs associated with the Land Acquisition, Wetland Mitigation, and Construction of these sites over the SMF2-A sites.

5.6 Floodplain Impacts

Build Alternative Route A results in a floodplain impact of 43,920 cubic yards while Build Alternative Route B has a slightly larger impact at 45,974 cubic yards of volume impacted when assessing the fill required from elevation 76.70 feet NGVD to the existing ground elevation. The Seasonal High-Water Table (SHWT) estimated for use in floodplain compensation calculations was assumed at elevation 72.00 feet. This elevation was chosen since it is the predominant SHWT elevation throughout the wetlands in the surrounding basins (B1560, B1640 and B1800

has a positive outfall to downstream basins at elevation 72.00 feet. Geotechnical evaluation will be required for this project to confirm the SHWT during the Design Phase.

Three separate floodplain compensation (FPC) site options have been reviewed and identified as the most appropriate locations for compensation for the Build Alternative Routes under consideration. FPC1 is located east of the Hardy trail on Parcel #8 and provides a total of 46,235 cubic yards of compensating storage, reference **Figure 34 FPC1 Proposed for Build Alternative Routes A & B**. FPC2-A1 and FPC2-A2 work together as one FPC area (FPC-2) and are located on both the north and south side of Build Alternative Route A situated on Parcel #5 and #6, reference **Figure 35 FPC2 Proposed for Build Alternative Route A**. These two interconnected FPC areas provide a total of 44,210 cubic yards of compensating volume to be used for Build Alternative Route A. FPC3 is located on Parcels #5 and #6 and provides a total of 46,253 cubic yards of compensating storage for Build Alternative Route B, reference **Figure 36 FPC3 Proposed in Build Alternative Route B**. Figures 34 through 36 depict the separate FPC options that can be utilized to achieve the required compensation. These figures show what the potential grading will look like to achieve the calculated storage volumes. FPC areas are graded at 3:1 side slope to achieve maximum storage volume. The FPC site locations were selected based on several factors such as vicinity to proposed road section and existing floodplain area; interested property owners willing to see this project complete; and maximization of the floodplain compensation amount while maximizing useable cut volumes at each location. Locations were chosen because of the good USDA NRC soil classification as they are more likely to be reused for fill in the new road section minimizing offsite soil import and export, thus reducing earthwork costs.

Build Alternative Route A requires a total of 43,920 cubic yards of floodplain compensation. Compensation for this fill volume can be achieved with the selection of either FPC1 or FPC2.

Build Alternative Route B requires a total of 45,974 cubic yards of floodplain compensation. Compensation for this fill volume can be achieved with selection of either FPC1 or FPC3.

BUILD ALTERNATIVE ROUTE A		
AREA NAME	TOTAL AREA (AC.)	COMPENSATION AVAILABLE (CY)
FPC1	11.29	46,235 CY
FPC2	10.76	44,210 CY

BUILD ALTERNATIVE ROUTE B		
AREA NAME	TOTAL AREA (AC.)	COMPENSATION AVAILABLE (CY)
FPC1	11.29	46,235 CY
FPC3	12.58	46,253 CY

Table 24 Floodplain Compensation Alternative Sites

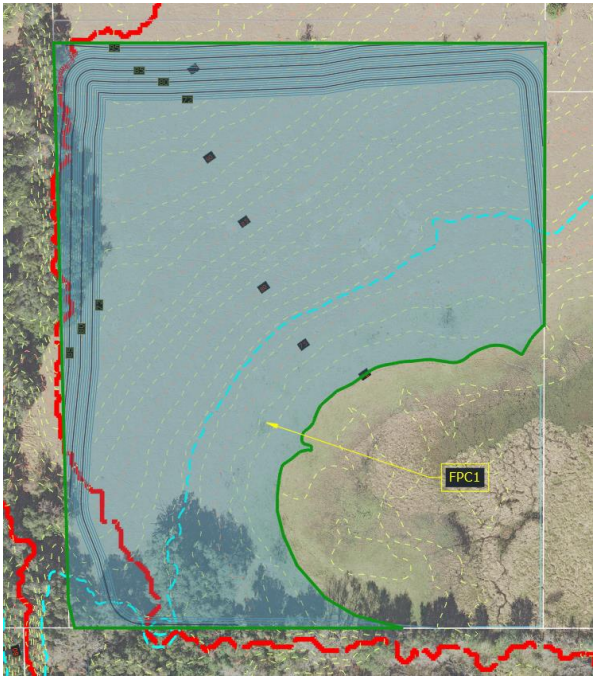


Figure 34 FPC1 Proposed for Build Alternative Routes A & B

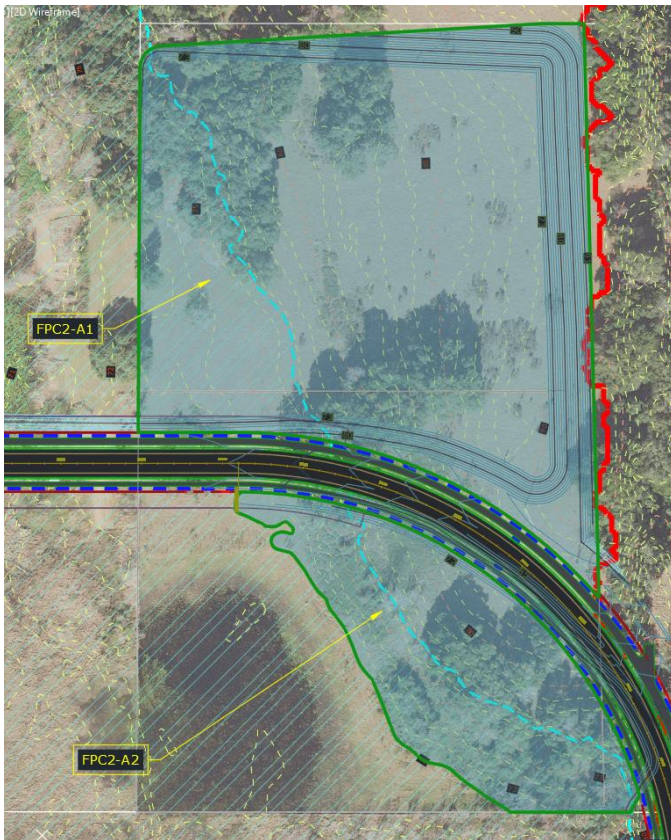


Figure 35 FPC2 Proposed for Build Alternative Route A



Figure 36 FPC3 Proposed in Build Alternative Route B

5.6.1 FPC Safety

The FPC sites for Build Alternative Routes A and B were designed using criteria in compliance with current regulatory standards; therefore, the FPC site options do not differentiate by any measurable safety aspects.

5.6.2 FPC Costs

5.6.2.1 FPC Construction

Opinions of Probable Cost were developed to compare the construction costs of each FPC for the Build Alternative Routes; reference **Table 25 FPC Alternative Opinion of Probable Costs.**

**Morningside Drive Extension
FLOODPLAIN COMPENSATION AREAS**

FPC1 OPINION OF PROBABLE COST						
ITEM	PAY ITEM	ITEM	QUANTITY		UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	2800	LF	\$1.65	\$4,620.00
2	110-1-1	CLEARING AND GRUBBING	11.29	AC	\$21,080.42	\$237,997.94
3	120-1	REGULAR EXCAVATION	86,509	CY	\$6.89	\$596,046.77
4	120-4	SUBSOIL EXCAVATION	25,368	CY	\$12.17	\$308,728.99
5	570-1-1	PERFORMANCE TURF (SEED&MULCH)	540,972	SY	\$0.89	\$481,464.76
FPC1 SUBTOTAL						\$1,628,858.46
FPC2						
ITEM	PAY ITEM	ITEM	QUANTITY		UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	2250	LF	\$1.65	\$3,712.50
2	110-1-1	CLEARING AND GRUBBING	11.25	AC	\$21,080.42	\$237,154.73
3	120-1	REGULAR EXCAVATION	91,623	CY	\$6.89	\$631,280.83
4	120-4	SUBSOIL EXCAVATION	4,415	CY	\$12.17	\$53,733.45
5	570-1-1	PERFORMANCE TURF (SEED&MULCH)	539,055	SY	\$0.89	\$479,758.95
FPC2-A1 SUBTOTAL						\$1,405,640.45
FPC3						
ITEM	PAY ITEM	ITEM	QUANTITY		UNIT PRICE	AMOUNT
1	104-10-3	SEDIMENT BARRIER	2800	LF	\$1.65	\$4,620.00
2	110-1-1	CLEARING AND GRUBBING	11.39	AC	\$21,080.42	\$240,105.98
3	120-1	REGULAR EXCAVATION	80,892	CY	\$6.89	\$557,345.11
4	120-4	SUBSOIL EXCAVATION	19,693	CY	\$12.17	\$239,665.18
5	570-1-1	PERFORMANCE TURF (SEED&MULCH)	555,686	SY	\$0.89	\$494,560.73
FPC2-A1 SUBTOTAL						\$1,536,296.99

Table 25 FPC Alternative Opinion of Probable Costs

For Build Alternative Route A, the estimated cost to construct FPC1 is approximately \$1,629,000 and \$1,405,600 for FPC2-A.

For Build Alternative Route B, the estimated cost to construct FPC1 is approximately \$1,629,000 and \$1,536,300 for FPC3.

Based on the Opinions of Probable Costs for the construction of the potential FPC sites, FPC2 is the best options for Build Alternative Route A and FPC3 is the best option for Build Alternative Route B.

5.6.2.2 FPC R/W Acquisition

The R/W Acquisition and Opinion of Probable of Costs for the FPC sites are summarized in **Table 26 FPC Property Values Summary**.

For Build Alternative Route A, the approximate cost to acquire the land for FPC1 is \$200,000 and slightly more at \$209,000 for FPC2-A1&A2.

For Build Alternative Route B, the approximate cost to acquire the land for FPC1 is \$200,000 and slightly more at \$209,000 for FPC3-A1&A2.

ROUTE A - FLOODPLAIN COMPENSATION PROPERTY VALUES

Property Information					Property Values ^{(2) (4) (5)}			FPC Areas				
Parcel No.	PIN	Use	Gross Area (Pasco GIS) (Acres) ⁽⁰⁾	(Wetland Area (NWI) (Acres) ⁽¹⁾	Total Property Value	Upland Land Value (\$/Acre)	Low Land Land Value (\$/Acre)	FCP #	Upland (Acres)	Wetland (Acres)	Total (Acres)	Total (\$) ⁽³⁾
8	34-24-21-0220-00800-0000	Vacant	11.29	2.56	\$ 102,497	\$ 15,680	\$ 2,500	FPC1	8.73	2.56	11.29	\$200,601
5	34-24-21-0220-01000-0000	Vacant	10.24	-	\$ 99,148	\$ 15,680	\$ 2,500	FPC2-A1	5.79	-	5.79	\$127,102
6	34-24-21-0220-00900-0000	Vacant	6.79	2.23	\$ 38,766	\$ 15,680	\$ 2,500	FPC2-A2	3.38	2.08	5.46	\$81,478

ROUTE B - FLOODPLAIN COMPENSATION PROPERTY VALUES

Property Information					Property Values ^{(2) (4) (5)}			FPC Areas				
Parcel No.	PIN	Use	Gross Area (Pasco GIS) (Acres) ⁽⁰⁾	(Wetland Area (NWI) (Acres) ⁽¹⁾	Total Property Value	Upland Land Value (\$/Acre)	Low Land Land Value (\$/Acre)	FCP #	Upland (Acres)	Wetland (Acres)	Total (Acres)	Total (\$) ⁽³⁾
8	34-24-21-0220-00800-0000	Vacant	11.29	2.56	\$ 102,497	\$ 15,680	\$ 2,500	FPC1	8.73	2.56	11.29	\$200,601
5	34-24-21-0220-01000-0000	Vacant	10.24	-	\$ 99,148	\$ 15,680	\$ 2,500	FPC3-A1	4.60	-	4.60	\$100,979
6	34-24-21-0220-00900-0000	Vacant	6.79	2.23	\$ 38,766	\$ 15,680	\$ 2,500	FPC3-A2	4.56	2.23	6.79	\$107,906

- (0) Parcel lot areas are based on the GIS parcel lines that are imported into AutoCAD and used for area calculations. In general County Property Appraisers input into GIS the deed info for parcel boundaries in state plane coordinates so the GIS lines should be the most accurate calculation without getting actual survey data for each parcel.
- (1) Wetland Areas based on the National Wetland Inventory (NWI) areas.
- (2) Estimated Property Values are based on the property values for uplands and low areas as assigned by the Pasco County Property Appraiser.
- (3) The acquisition Estimates, as stated herein, are calculated based on the value of the part taken, as determined by records of the Pasco County Property Appraiser, plus 40%. No calculation has been included for potential severance damages or potential business damages to the remainder property, or other Estimates peculiar to Florida eminent domain law.
- (4) The price per acre of lowland, wetlands, wasteland, etc. was valued at \$2,500 per acre on parcels.
- (5) The land values do not consider costs associated with eminent domain procedures which could increase the land costs by 3x.

Table 26 FPC Property Values Summary

Based on the Opinions of Probable Cost for the construction of the potential FPC sites, FPC1 is the best option for Build Alternative Route A. FPC1 is also the best option for Build Alternative Route B.

5.6.3 FPC Property Impacts

The FPC property impacts are summarized in **Table 27 FPC Property Impacts Table**.

BUILD ALTERNATIVE ROUTE A	
FPC	Properties Impacted
FPC1	1
FPC2	2
BUILD ALTERNATIVE ROUTE B	
FPC	Properties Impacted
FPC1	1
FPC3	2

Table 27 FPC Property Impacts Table

For Build Alternative Route A, FPC1 will impact one property; FPC2 will impact two properties.

For Build Alternative Route B, FPC1 will impact one property; FPC3 will impact two properties.

Based on the number of properties impacted by the potential FPC sites, FPC1 is the best option for Build Alternative Routes A and B.

5.6.4 FPC Environmental Impacts

The wetland impacts and mitigation estimates for Build Alternative Routes A & B FPCs are shown in **Table 28 FPC Wetland Impacts Summary**.

BUILD ALTERNATIVE ROUTE A			
FPC	ESTIMATED WETLAND ACRES	ESTIMATED WETLAND BANK CREDITS NEEDED	ESTIMATED MITIGATION BANK CREDIT PURCHASE
FPC1	2.56	3.66	\$658,300
FPC2	2.08	2.97	\$262,100

BUILD ALTERNATIVE ROUTE B			
FPC	ESTIMATED WETLAND ACRES	ESTIMATED WETLAND BANK CREDITS NEEDED	ESTIMATED MITIGATION BANK CREDIT PURCHASE
FPC1	2.56	3.66	\$658,300
FPC3	2.23	3.19	\$573,400

Table 28 FPC Wetland Impacts Summary

For Build Alternative Route A, FPC2 impacts 2.08 acres of wetland area for an estimated wetland mitigation cost of \$262,100 which is lower than the potential impacts and costs for FPC1.

For Build Alternative Route B, FPC3 impacts 2.23 acres of wetland area for an estimated wetland mitigation cost of \$573,400 which is lower than the potential impacts and costs for FPC1.

Based on the wetland impacts and their respective wetland mitigation costs, FPC2 is the best option of Build Alternative Route A and FPC3 is the best option for Build Alternative Route B.

5.6.5 FPC Conclusion

FLOODPLAIN COMPENSATION AREA	BUILD ALTERNATIVE ROUTE A	
FPC #	FPC1	FPC2
Number of Properties Impacted	1	2
Total FPC Acquisition Area	11.29	11.25
Mitigation Estimate for FPC	\$658,300	\$262,100
Acquisition Estimate for FPC	\$200,600	\$208,600
Construction Estimate for FPC	\$1,628,900	\$1,405,600
TOTAL ESTIMATE FOR FPC	\$2,487,900	\$1,876,300

FLOODPLAIN COMPENSATION AREA	BUILD ALTERNATIVE ROUTE B	
FPC #	FPC1	FPC3
Number of Properties Impacted	1	2
Total FPC Acquisition Area	11.29	11.39
Mitigation Estimate for FPC	\$658,300	\$573,429
Acquisition Estimate for FPC	\$200,600	\$208,900
Construction Estimate for FPC	\$1,628,900	\$1,536,300
TOTAL ESTIMATE FOR FPC	\$2,487,900	\$2,318,629

Based on the safety, costs, impacts, and environmental impacts listed above, the FPC options recommended are as follows:

- Build Alternative Route A
 - FPC1 (Not Recommended)
 - FPC2 (Preferred)
- Build Alternative Route B
 - FPC1 (Not Recommended)
 - FPC3 (Preferred)

6.0 Permits

6.1 Permitting Agency Coordination

Section 404 of the Clean Water Act established a Federal permitting program that regulates activities in wetlands. Section 404 requires that anyone proposing to deposit dredged or fill material into “Waters of the United States”, including wetlands, must obtain a permit from the USACE, the agency responsible for administering Section 404 permitting process for such activities.

During Florida’s 2018 legislative session, a bill was passed that gave DEP authority to begin the public rulemaking process to better protect the state's wetlands and surface waters by assuming the federal dredge and fill permitting program under section 404 of the federal Clean Water Act within certain waters. The rulemaking process was completed on July 21, 2020. Through this process, Chapter 62-331, F.A.C., “State 404 Program,” was created to bring in the requirements of federal law not already addressed by the existing Environmental Resource Permitting (ERP) program. Minor changes were also made to the ERP rules in Chapter 62-330, F.A.C., to facilitate assumption.

State assumption of the 404 Program will provide a streamlined permitting procedure within which both federal and state requirements are addressed by state permits. This will provide greater certainty to the regulated community, conserve resources of both applicant and regulator, and afford the state greater control over its natural resources while complying with federal law. The State 404 Program is a separate program from the existing Environmental Resource Permitting Program (ERP), and projects within state-assumed waters will require both an ERP and a State 404 Program authorization. Efficiency will come from the fact that approximately 85% of review requirements overlap between programs, eliminating duplicative review.

The State 404 Program will apply to any project proposing dredge or fill activities within state assumed waters. Such projects include but are not limited to single family residences; commercial developments; utility projects; environmental restoration and enhancement; linear transportation projects; governmental development; certain agricultural and silvicultural activities; and in-water work within assumed freshwater bodies such as boat ramps, living shorelines, and other shoreline stabilization.

6.2 Required Permits Identification

It is anticipated that construction of this project will require issuance of the following permits:

- Southwest Florida Water Management District (SWFWMD) Environmental Resource Permit (ERP).
- Florida Department of Environmental Protection (FDEP) State 404 Authorization.
- City of Dade City Right-of-Way Use Permit for Morningside Drive
- Pasco County Right-of-Way Use Permit for Fort King Road
- Application for a Florida Department of Transportation Right-if-Way Use Permit for US 301/US 98.

7.0 Proposed Build Alternative Route Cost Estimates

7.1 Roadway & Slope Easements

The summary of the potential Roadway & Slope Easements construction costs for Build Alternative Routes A and B is provided in **Table 29 Roadway & Slope Easement Opinion of Probable Costs**.

For Build Alternative Route A, the total roadway length is 6,475 Linear Feet (LF). Proposed is a 62 to 94-foot R/W width, which includes two 12-foot travel lanes, a 5- or 6-foot concrete sidewalk and an 8- or 12-foot concrete multi-use path. The total estimated R/W acquisition and construction cost is \$5,623,600.

For Alternative B, the total roadway length is 5,885 Linear Feet (LF). Proposed is a 62 to 94-foot R/W width, which includes two 12-foot travel lanes, a 5- or 6-foot concrete sidewalk and an 8- or 12-foot concrete multi-use path. The total estimated R/W acquisition and construction cost is \$5,523,000.

7.2 Stormwater Management Facility Sites

The summary of the potential Stormwater Management Facilities construction costs for both Build Alternative Routes A and B is provided in **Table 30 Stormwater Management Facilities Opinion of Probable Costs**.

For Build Alternative Route A:

- SMF1-A is a 2.18-acre stormwater management facility with a total estimated R/W acquisition and construction cost of \$457,500.
- SMF1-B is a 1.92-acre stormwater management facility with a total estimated R/W acquisition and construction cost of \$555,800.
- SMF2-A is a 2.13-acre stormwater management facility with a total estimated R/W acquisition and construction cost of \$298,700.
- SMF2-B is a 1.79-acre stormwater management facility with a total estimated R/W acquisition and construction cost of \$482,600.

For Build Alternative Route B:

- SMF1-A is a 2.18-acre stormwater management facility with a total estimated R/W acquisition and construction cost of \$455,000.
- SMF1-B is a 2.46-acre stormwater management facility with a total estimated R/W acquisition and construction cost of \$582,700.
- SMF2-A is a 2.09-acre stormwater management facility with a total estimated R/W acquisition and construction cost of \$296,800.
- SMF2-B is a 1.78-acre stormwater management facility with a total estimated R/W acquisition and construction cost of \$365,400.

7.3 Floodplain Compensation

The summary of the potential Floodplain Compensation Areas construction costs for both Build Alternative Routes A and B is provided in **Table 31 Floodplain Compensation Opinion of Probable Costs**.

BUILD ALTERNATIVE ROUTE A - RIGHT-OF-WAY & SLOPE EASEMENT CONSTRUCTION ESTIMATES															
Right-of-Way Areas			Slope Easement Areas			Wetland Mitigation Estimates		Muck Removal Estimate		Right-of-Way Construction Estimates					Total Intersection, Roadway, and Slope Easements Estimate
Upland (Acres)	Wetland (Acres)	Total (Acres)	Upland (Acres)	Wetland (Acres)	Total (Acres)	Estimated Credits ⁽¹⁾	Mitigation Estimate (\$) ⁽²⁾	Excavation Area (CY) ⁽³⁾	Excavation Estimate (\$) ⁽⁴⁾	62' R/W (LF) (\$589.87)	73' R/W (LF) (\$696.26)	77' R/W (LF) (\$725.81)	94' R/W (LF) (\$776.56)	Roadway Construction Estimate (\$) ⁽⁵⁾	
6.41	3.64	10.05	0.79	1.61	2.40	7.50	\$1,350,000	29,362.67	\$357,344	\$506,108	\$1,100,787	\$1,949,526	\$1,048,356	\$4,604,777	\$6,312,121
BUILD ALTERNATIVE ROUTE B - RIGHT-OF-WAY & SLOPE EASEMENT CONSTRUCTION ESTIMATES															
			Slope Easement Areas			Wetland Mitigation Estimates		Muck Removal Estimate		Right-of-Way Construction Estimates					Total Intersection, Roadway, and Slope Easements Estimate
Upland (Acres)	Wetland (Acres)	Total (Acres)	Upland (Acres)	Wetland (Acres)	Total (Acres)	Estimated Credits ⁽¹⁾	Mitigation Estimate (\$) ⁽²⁾	Muck Removal Area (CY) (3)	Excavation Estimate (\$) ⁽⁴⁾	62' R/W (LF) (\$589.87)	73' R/W (LF) (\$696.26)	77' R/W (LF) (\$725.81)	94' R/W (LF) (\$776.56)	Roadway Construction Estimate (\$) ⁽⁵⁾	
4.72	4.70	9.42	0.79	1.96	2.75	9.51	\$1,712,571	37,913.33	\$461,405	\$425,296	\$458,835	\$2,289,931	\$1,048,356	\$4,222,418	\$6,396,395

- (1) One (1) acre of wetland impact typically equates to an approximate 0.7 mitigation credit purchase. The actual number of credits required will be based on a Uniform Mitigation Assessment Method (UMAM) prepared by a professional environmentalist.
- (2) In August 2020, an average for dual mitigation credit for the SWFWMD and the United States Corp of Army Engineers (USACE) is \$180,000 per credit.
- (3) Assume 5' of excavation and removal for right of way construction through wetlands.
- (4) Muck Removal Estimates at \$ 12.17 per cubic yard.
- (5) Construction Estimates: Per the various typical cross section price per linear foot.

Table 29 Roadway & Slope Easement Opinion of Probable Costs

BUILD ALTERNATIVE ROUTE A - STORMWATER MANAGEMENT FACILITIES CONSTRUCTION ESTIMATES												
SMF Areas				Wetland Mitigation		Muck Removal Cost		SMF Construction Costs				Total SMF Costs
SMF #	Upland (Acres)	Wetland (Acres)	Total (Acres)	Estimated Credits ⁽¹⁾	Mitigation Estimates (\$) ⁽²⁾	Muck Removal Area (CY) (3)	Muck Removal Estimates (\$) (4)	Excavation Area (CY) ⁽³⁾	Excavation Estimates (\$) ⁽⁵⁾	Construction Costs ⁽⁶⁾	Drainage Structure Outfall	
SMF1-A	1.24	0.94	2.18	1.34	\$241,714	10,312	\$125,502	13,604	\$93,729	\$109,817	\$10,000	\$580,763
SMF1-B	0.27	1.65	1.92	2.36	\$424,286	18,102	\$220,296	2,962	\$20,408	\$97,159	\$10,000	\$772,149
SMF2-A	2.13	-	2.13	-	-	-	-	26,288	\$181,127	\$107,582	\$10,000	\$298,709
SMF2-B	0.46	1.33	1.79	1.90	\$342,000	14,590.99	\$177,572	3,785	\$26,078	\$91,341	\$20,000	\$656,991
BUILD ALTERNATIVE ROUTE B - STORMWATER MANAGEMENT FACILITIES CONSTRUCTION ESTIMATES												
SMF Areas				Wetland Mitigation		Muck Removal Cost		SMF Construction Costs				Total SMF Costs
SMF #	Upland (Acres)	Wetland (Acres)	Total (Acres)	Estimated Credits ⁽¹⁾	Mitigation Estimates (\$) ⁽²⁾	Muck Removal Area (CY) (3)	Muck Removal Estimates (\$) (4)	Excavation Area (CY) ⁽³⁾	Excavation Estimates (\$) ⁽⁵⁾	Construction Costs ⁽⁶⁾	Drainage Structure Outfall	
SMF1-A	1.24	0.94	2.18	1.34	\$241,714	10,312	\$125,502	13,604	\$93,732	\$107,326	\$10,000	\$578,274
SMF1-B	0.27	2.19	2.46	3.13	\$563,143	18,102	\$220,301	2,962	\$20,409	\$124,067	\$10,000	\$937,920
SMF2-A	2.09	-	2.09	-	-	-	-	26,288	\$181,126	\$105,588	\$10,000	\$296,715
SMF2-B	1.08	0.70	1.78	1.00	\$180,000	7,679.47	\$93,459	10,587	\$72,942	\$90,801	\$20,000	\$457,203

- (1) One (1) acre of wetland impact typically equates to an approximate 0.7 mitigation credit purchase. The actual number of credits required will be based on a Uniform Mitigation Assessment Method (UMAM) prepared by a professional environmentalist.
- (2) In August 2020, an average for dual mitigation credit for the SWFWMD and the United States Corp of Army Engineers (USACE) is \$180,000 per credit.
- (3) Excavation depth ranges from 6' to 9' deep based on design
- (4) Muck Removal Estimates at \$ 12.17 per cubic yard
- (5) Regular Excavation Costs at \$6.89 per cubic yard
- (6) Construction Costs: Sediment Barrier \$1.65/LF + Clearing & Grubbing \$21,080.42/AC + Performance Turf \$0.89/SY

Table 30 Stormwater Management Facilities Opinion of Probable Costs

BUILD ALTERNATIVE ROUTE A - FLOODPLAIN COMPENSATION CONSTRUCTION ESTIMATES

FPC Areas			Wetland Mitigation		Muck Removal		FPC Construction			Total FPC Estimates (\$)	
FPC #	Upland (Acres)	Wetland (Acres)	Total (Acres)	Estimated Credits ⁽¹⁾	Mitigation Estimates (\$) ⁽²⁾	Muck Removal Area (CY) (3)	Muck Removal Estimates (\$) (4)	Excavation Area (CY) ⁽³⁾	Excavation Estimates (\$) ⁽⁵⁾		Construction Estimates (\$) ⁽⁶⁾
FPC1	8.73	2.56	11.29	3.66	\$658,286	25,368	\$308,729	86,509	\$596,047	\$724,083	\$2,287,144
FPC2	9.17	2.08	11.25	2.97	\$262,080	4,415.00	\$53,731	91,623	\$631,282	\$720,627	\$1,667,720

BUILD ALTERNATIVE ROUTE B - FLOODPLAIN COMPENSATION CONSTRUCTION ESTIMATES

FPC Areas			Wetland Mitigation		Muck Removal		FPC Construction			Total FPC Estimates (\$)	
FPC #	Upland (Acres)	Wetland (Acres)	Total (Acres)	Estimated Credits ⁽¹⁾	Mitigation Estimates (\$) ⁽²⁾	Muck Removal Area (CY) (3)	Muck Removal Estimates (\$) (4)	Excavation Area (CY) ⁽³⁾	Excavation Estimates (\$) ⁽⁵⁾		Construction Estimates (\$) ⁽⁶⁾
FPC1	8.73	2.56	11.29	3.66	\$658,286	25,368	\$308,729	86,509	\$596,047	\$724,083	\$2,287,144
FPC3	9.16	2.23	11.39	3.19	\$573,429	19,693.00	\$239,664	80,892	\$557,346	\$739,287	\$2,109,726

- (1) One (1) acre of wetland impact typically equates to an approximate 0.7 mitigation credit purchase. The actual number of credits required will be based on a Uniform Mitigation Assessment Method (UMAM) prepared by a professional environmentalist.
- (2) In August 2020, an average for dual mitigation credit for the SWFWMD and the United States Corp of Army Engineers (USACE) is \$180,000 per credit.
- (3) Volume for FPC areas based on CAD interpretation of proposed grades to existing LIDAR grades
- (4) Muck Removal Estimates at \$ 12.17 per cubic yard
- (5) Regular Excavation Costs at \$6.89 per cubic yard
- (6) Construction Costs: Sediment Barrier \$1.65/LF + Clearing & Grubbing \$21,080.42/AC + Performance Turf \$0.89/SY

Table 31 Floodplain Compensation Opinion of Probable Costs

For Build Alternative Route A:

- FPC1 is a 11.29-acre floodplain compensation facility with a total estimated R/W acquisition and construction cost of \$1,951,400.
- FPC2 is a 11.25-acre stormwater management facility with a total estimated R/W acquisition and construction cost of \$1,667,700.

For Build Alternative Route B:

- FPC1 is a 11.29-acre floodplain compensation facility with a total estimated R/W acquisition and construction cost of \$1,951,400.
- FPC2 is a 11.39-acre stormwater management facility with a total estimated R/W acquisition and construction cost of \$1,817,300.

8.0 Public Involvement

8.1 Coordination with Major Stakeholders

8.1.1 District School Board of Pasco County

The Morningside Drive Extension project team met with the District School Board of Pasco County (DSBPC) on March 1, 2021 to discuss the potential impacts to the DSBPC's Bus compound located on the northwest corner of the intersection of Morningside Drive and Fort King Road. After the meeting, both intersection improvement configurations were revised to address the DSBPC's concerns. The revised intersection exhibits were provided to the DSBPC for further consideration on March 11, 2021. The DSBPC provided an email with their preferred intersection configuration of the signalized intersection on March 11, 2021. Copies of the correspondence with the DSBPC are provided in **Appendix 12 DSBPC Correspondence**.

8.1.2 AdventHealth Hospital and City of Dade City

The Morningside Drive Extension project team met with AdventHealth Hospital and the City of Dade City on December 2, 2020, March 1, 2021, and May 18, 2021 to discuss the potential impacts to the hospital's property and facilities site located on the southeast corner of the intersection of Morningside Drive and Fort King Road. After the March 2021 meeting, both intersection improvement configurations were revised to address their concerns. The revised intersection exhibits were provided to AdventHealth Hospital and Dade City for further consideration on March 22, 2021. The third meeting was held to discuss the results of the Public Workshop, answer questions on the potential impacts to the hospital site, and the schedule moving forward. AdventHealth and the project team discussed enlarging and moving SMF1-A to the east to allow for stormwater capacity to accommodate future improvements on the hospital site. AdventHealth and the project team agreed to share AutoCAD files to assist with the development of the proposed parking lot to accommodate the parking area lost by the addition of the Morningside Drive Extension and other potential hospital site improvements. AdventHealth Hospital indicated in the meeting that they preferred Build Route Alternative A with the roundabout and SMF1-A moved to the east. Copies of the correspondence with AdventHealth Hospital are provided in **Appendix 13 AdventHealth Correspondence**.

8.2 Public Informational Open House Overview

A Public Informational Open House was held on May 6, 2021 at City of Dade City, Commission Chambers at City Hall – 38020 Meridian Ave, Dade City, FL 34655 from 5:30 p.m. to 7:30 p.m. The purpose of the meeting was to inform interested parties of the proposed roadway extension and pond siting alternatives for Morningside Drive Extension from Fort King Road to US Highway 301/US Highway 98. Invitation letters were sent in advance of the meeting to all property owners within 300 feet of either of the Build Alternative Routes under consideration. A Public Notice was also published in The Zephyrhills News on April 22, 2021 and in the Tampa Bay Times on May 2, 2021.

The meeting was attended by approximately 40 people including County staff, Coastal Design Consultants, and local citizens. At the public informational open house, County staff presented the conceptual plans concerning the alternatives that were studied and an evaluation matrix comparing these alternatives based on several key factors (costs, environmental impacts, etc.). County and Coastal Design Consultants staff addressed questions presented by the public.

Comment response forms were received at the open house and in the ten-day response period from 15 residents. The comments included preference for Build Alternative Route A, questions on Build Alternative Route C, and concerns about how the proposed roadway will affect the current flooding issues in the vicinity of the project study area.

Appendix 14 Public Informational Open House Documents includes the following documents from the public workshop:

- Notice Sent to the property owners for the Public Informational Open House on April 15, 2021
- Copy of the Certificate of Mailing for the Public Workshop notice
- Copy of the public notice affidavit from The Zephyrhills News
- Copy of the public notice affidavit from Tampa Bay Times
- Copy of the sign-in sheets from the Public Workshop on May 6, 2021
- Copies of the Public Workshop Statement/Response for Morningside Drive Extension Road received from the public

8.3 Conceptual Design Changes Based on Public Involvement

A pedestrian cross walk was added to allow AdventHealth personnel to access to one of their existing facilities located on the north side of the proposed Morningside Drive Extension.

8.4 Pre-Application Meeting with SWFWMD

A pre-application meeting with the Southwest Florida Water Management District (SWFWMD) was held on June 14, 2021 to discuss the Morningside Drive Extension project. The meeting included discussions on the following topics:

1. Environment
2. Site Information
3. Water Quantity
4. Water Quality
5. Sovereign Lands
6. Operations and Maintenance
7. Application Type and Fee
8. Other relevant discussion items

The pre-application meeting notes cover the topics referenced above and the related project requirements per topic. The pre-application meeting notes are provided in **Appendix 16 SWFWMD Pre-Application Meeting Notes**.

9.0 Evaluation Matrix and Comparative Analysis

9.1 Evaluation Matrix

An evaluation matrix was prepared to summarize the costs and impacts associated with the Build Alternative Routes A & B, the SMF sites, and the FPC sites; reference **Table 32 Alternatives Evaluation Matrix**.

The total project costs for the Build Alternatives are as follows

BUILD ALTERNATIVE ROUTE	COSTS
Build Alternative Route A with SMF1-A, SMF2-A, and FPC2	\$12,501,800
Build Alternative Route A with SMF1-B, SMF2-A, and FPC2	\$13,923,300
Build Alternative Route B with SMF1-A, SMF2-A, and FPC2	\$14,478,000
Build Alternative Route B with SMF1-B, SMF2-A, and FPC2	\$15,048,100

9.2 Comparative Analysis

Based on the information in the Alternative Evaluation Matrix, Build Alternative Route A is more desirable than Build Alternative Route B due to:

- Lower land acquisition costs.
- Lower muck removal costs.
- Lower construction costs
- Lower total acreage of wetland impacts
- Lower wetland mitigation costs
- Lower total acreage of floodplain impacts
- Lower floodplain compensation costs

10.0 Recommendations

10.1 Recommendations

Build Alternative Route A with a roundabout at the intersection of Morningside Drive and Fort King Road, stormwater management facilities SMF1-A and SMF2-A, and floodplain compensation area FPC2 is recommended as the preferred Build Alternative Route for the Morningside Drive Extension project, reference **Appendix 15 Build Alternative Route A 30% Construction Plans**.

10.2 Basis of Recommendation

The primary factors for selecting Build Alternative Route A with the roundabout, SMF1-A and SMF2-A, and FPC2 as the recommended alternative are listed below.

ALTERNATIVES EVALUATION MATRIX

	NO BUILD	ALTERNATIVE A		ALTERNATIVE B	
		With SMF1-A, SMF2-A, FPC2	With SMF1-B, SMF2-A, FPC2	With SMF1-A, SMF2-A, FPC3	With SMF1-B, SMF2-A, FPC3
Opinion of Probable Costs					
Land Acquisition	\$0.00	\$1,713,592	\$1,994,592	\$2,159,192	\$2,163,992
Wetland Mitigation	\$0.00	\$1,612,100	\$2,036,386	\$2,527,700	\$2,849,100
Muck Removal	\$0.00	\$411,044	\$631,344	\$826,905	\$921,705
Construction	\$0.00	\$6,527,400	\$6,875,200	\$6,498,315	\$6,536,515
Design Cost (10%)	\$0.00	\$855,054	\$954,293	\$985,292	\$1,030,732
CEI Cost (15%)	\$0.00	\$1,282,582	\$1,431,440	\$1,477,938	\$1,546,098
Total Cost	\$0.00	\$12,401,772	\$13,923,255	\$14,475,342	\$15,048,142
Right-of-Way Impacts					
Parcels Affected	0	17	17	17	17
Roundabout Right-of-Way Required (Acres)	0	0.483	0.48	0.48	0.48
Road Right-of-Way Required (Acres)	0	2.4	2.40	4.71	4.71
SMF Right-of-Way Required (Acres)	0	4.31	4.05	4.27	4.55
FPC Right-of-Way Required (Acres)	0	11.25	11.25	11.39	11.39
Total Right-of-Way Required (Acres)	0	18.44	18.18	20.853	21.133
Potential Business and Residential Impacts					
Residences Impacted	0	1	1	1	1
Businesses Impacted	0	2	2	2	2
Potential Residential Impact Damages	\$0	\$0	\$0	\$0	\$0
Potential Business Impact Damages	\$0	\$440,000	\$440,000	\$440,000	\$440,000
Natural/Physical Impacts					
Impacts to Wetlands Requiring Mitigation (Acres)	None	4.63	5.34	5.92	7.17
Floodplain Impacts (Cubic Yards)	None	43,920	43,920	45,974	45,974
Potential Threatened & Endangered Species Involvement	None	Temporary	Temporary	Temporary	Temporary
# of Probable Contaminated Sites Potentially Involved	None	1	1	1	1
# of Known Cultural Resources Sites Potentially Impacted	None	None	None	None	None
Level of Service					
Projected 2045 LOS AM/(PM) at Morningside Drive	F / (F)	C / (C)	C / (C)	C / (C)	C / (C)
Projected 2025 LOS AM/(PM) at Morningside Drive	F / (F)	C / (C)	C / (C)	C / (C)	C / (C)
Safety Impacts					
Enhances Safety for Motorists, Bicyclists, & Pedestrians	NO	YES	YES	YES	YES
Consistency with Long Range Transportation Plan (LRTP)					
Option is Consistent with LRTP	NO	YES	YES	YES	YES

Table 32 Alternatives Evaluation Matrix

10.2.1 Long-Range Planning

Build Alternative Route A with the roundabout, SMF1-A and SMF2-A, and FPC2 is consistent with the Pasco County MPO MOBILITY 2045 LRTP which identifies Morningside Drive from Fort King Road to US 301/US 98 as a funded project scheduled for construction in 2025.

10.2.2 Safety

Build Alternative Route A with the roundabout, SMF1-A and SMF2-A, and FPC2 enhances safety for motorists, bicyclists, and pedestrians through the use of urban typical cross sections, the addition of shoulders, a sidewalk and a multi-use trail, and the construction of a roundabout at the intersection of Morningside Drive and For King Road.

10.2.3 Property Impacts

Build Alternative Route A with the roundabout, SMF1-A and SMF2-A, and FPC2 impacts the same number properties as the other Build Route Alternatives including impacts to one residential site and two improved commercial sites.

10.2.4 Environmental Impacts

Build Alternative Route A with the roundabout, SMF1-A and SMF2-A, and FPC2 impacts the least number of wetland (4.63 acres) that will require mitigation. It also impacts the least volume of floodplain, therefore requiring less compensation.

10.2.5 R/W Acquisition Costs

Build Alternative Route A with the roundabout, SMF1-A and SMF2-A, and FPC2 has the lowest total estimated R/W acquisition costs (\$1,713,600).

10.2.6 Construction Costs

Build Alternative Route A with the roundabout, SMF1-A and SMF2-A, and FPC2 has the lowest total estimated construction costs (\$6,527,400) and the lowest total project estimate at \$12,401,800.

10.2.7 Public Comments

With few exceptions, Build Alternative Route A with the roundabout, SMF1-A and SMF2-A, and FPC2 was well received by the public at large. The largest concern of the general public was addressing known flooding issues in the vicinity of the project area. The construction of the preferred Built Alternative with the stormwater management facilities and the floodplain compensation area should help to alleviate some of the flooding.

11.0 Reference Materials Used in this Analysis

- Pasco County Property Appraiser Records
- Pasco County Land Development Code
- Pasco County Comprehensive Plan
- Pasco County Pasco Mapper Records
- Pasco County Zoning Records
- Pasco County Utilities Atlas Maps
- “Feasibility Report on Potential Roadway Corridor, US 301 to State Road 52”; prepared by Coastal Engineering Associates, Inc.; published August 2008
- “Morningside Drive – Fort King to US 301; Baseline Ecological Studies Summary Report and Petition for Formal Determination of Jurisdiction of the Landward Extent of Wetlands and Other Surface Waters”, prepared by Stantec Consulting Services, Inc.; published September 2014
- “Morningside Drive – Fort King to US 301; Permitting and Mitigation Strategy Report; prepared by Stantec Consulting Services, Inc.; published October 2014
- “Mobility 2045 Long Range Transportation Plan” Summary Report; prepared by Pasco County Metropolitan Planning Organization’s (MPO); published March 2020
- FDOT Drainage Manual, January 2021
- FDOT Drainage Design Guide, January 2021
- Florida Administrative Code (F.A.C.) Chapter 62-25, 330, 343
- Southwest Florida Water Management District, *Environmental Resource Permit Information Manual*. Found at: <http://www.SWFWMD.state.fl.us/permits/erp/>
- United States Department of Agriculture, *Urban Hydrology for Small Watersheds, Technical Release-55, Second Edition*. June 1986.
- Jammal and Associates, Inc., *Stormwater Retention Pond Infiltration Analyses in Unconfined Aquifers*, March 1989.
- SWFWMD LiDAR data (NAVD88; 2007)
- SWFWMD, Duck Lake Watershed Analysis (2018)
- SWFWMD Environmental Resource Permit (ERP) 44019713.002
- SWFWMD Environmental Resource Permit (ERP) 40007198.001
- SWFWMD Environmental Resource Permit (ERP) 44019747.007
- Florida State University – Florida Natural Areas Inventory
- Biodiversity Matrix Report, U.S. Fish and Wildlife Service (USFWS)
- Florida Fish and Wildlife Conservation Commission (FWC)
- Wildlife Surveys conducted by qualified personal of Coastal Engineering Associates, Inc. in the area of the proposed project.

12.0 Appendices

(under separate cover)

- Appendix 1 Soils Report
- Appendix 2 Morningside Drive West Plans Excerpt
- Appendix 3 Roadway Plans Excerpt for US 301
- Appendix 4 MSD & US HWY 301 Signal Plan Excerpt
- Appendix 5 Traffic Technical Memorandum
- Appendix 6 Typical Cross Sections
- Appendix 7 Build Alternative Route A Conceptual Plans
- Appendix 8 Build Alternative Route B Conceptual Plans
- Appendix 9 Emailed on Cultural Resources
- Appendix 10 FDEP Site Rehabilitation Completion Order
- Appendix 11 Drainage Calculations
- Appendix 12 DSBPC Correspondence
- Appendix 13 AdventHealth Correspondence
- Appendix 14 Publix Informational Open House Documents
- Appendix 15 Build Alternative Route A 30% Construction Plans
- Appendix 16 SWFWMD Pre-Application Meeting Notes