Preliminary Engineering Report

Florida Department of Transportation

District Five

Neptune Road Project Development and Environment Study

Limits of Project: Partin Settlement Road to US 192

Osceola County, Florida

Financial Management Number: 445415-1

ETDM Number: 14402

Date: August 2020

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016 and executed by FHWA and FDOT.

DRAFT
Preliminary Engineering Report

Neptune Road PD&E Study

FPID: 445415-1
PS-18-9905-DG
ETDM: 14402
Federal Aid Project Number: N/A

Prepared for:

Osceola County, Florida
Department of Transportation and Transit
1 Courthouse Square, Suite 3100
Kissimmee, FL 34741

AUGUST 2020

Prepared by:

Kimley-Horn and Associates, Inc

PROFESSIONAL ENGINEER CERTIFICATION
PRELIMINARY ENGINEERING REPORT

Project: Neptune Road Project Development & Environment (PD&E) Study
ETDM Number: 14402
Financial Project ID: 445415-1

This preliminary engineering report contains engineering information that fulfills the purpose and need for the Neptune Road Project Development & Environment Study from Partin Settlement Road to US 192 in Osceola County, Florida. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Kimley-Horn and Associates, Inc., and that I have prepared or approved the evaluation, findings, opinions, conclusions or technical advice for this project.

S. Clifton Tate, P.E.
FL P.E. No. 43148

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1.0 PROJECT SUMMARY

1.1 PROJECT DESCRIPTION

This project involves a 3.9-mile segment of Neptune Road extending from Partin Settlement Road to US 192 in Osceola County. The section east of the St. Cloud canal (approximately 1.1 miles in length) is within the City of St. Cloud. From Partin Settlement Road to Old Canoe Creek Road, the proposed project improves the existing 2-lane roadway to a 4-lane, divided roadway with a curbed median, with bicycle and pedestrian facilities (i.e., bike lanes, shared use path(s), and/or sidewalks). From Old Canoe Creek Road to US 192, the project widens the existing 2-lane roadway to 4-lanes with sidewalks. Bridge structures are to be replaced and stormwater management facilities will be evaluated. **Exhibit 1-1** illustrates the project location and **Exhibit 1-2** illustrates the project limits.

Exhibit 1-1: Project Location

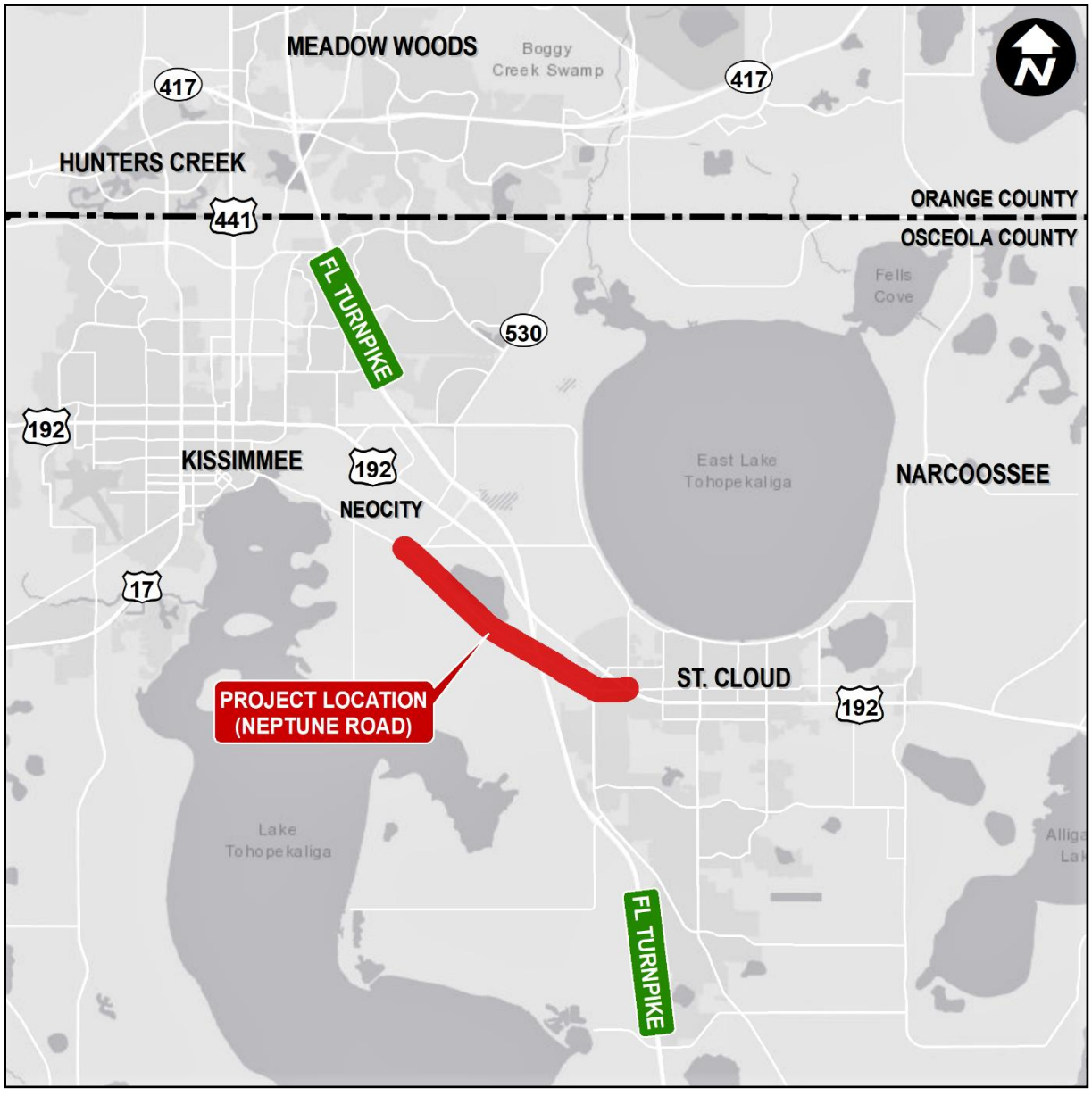
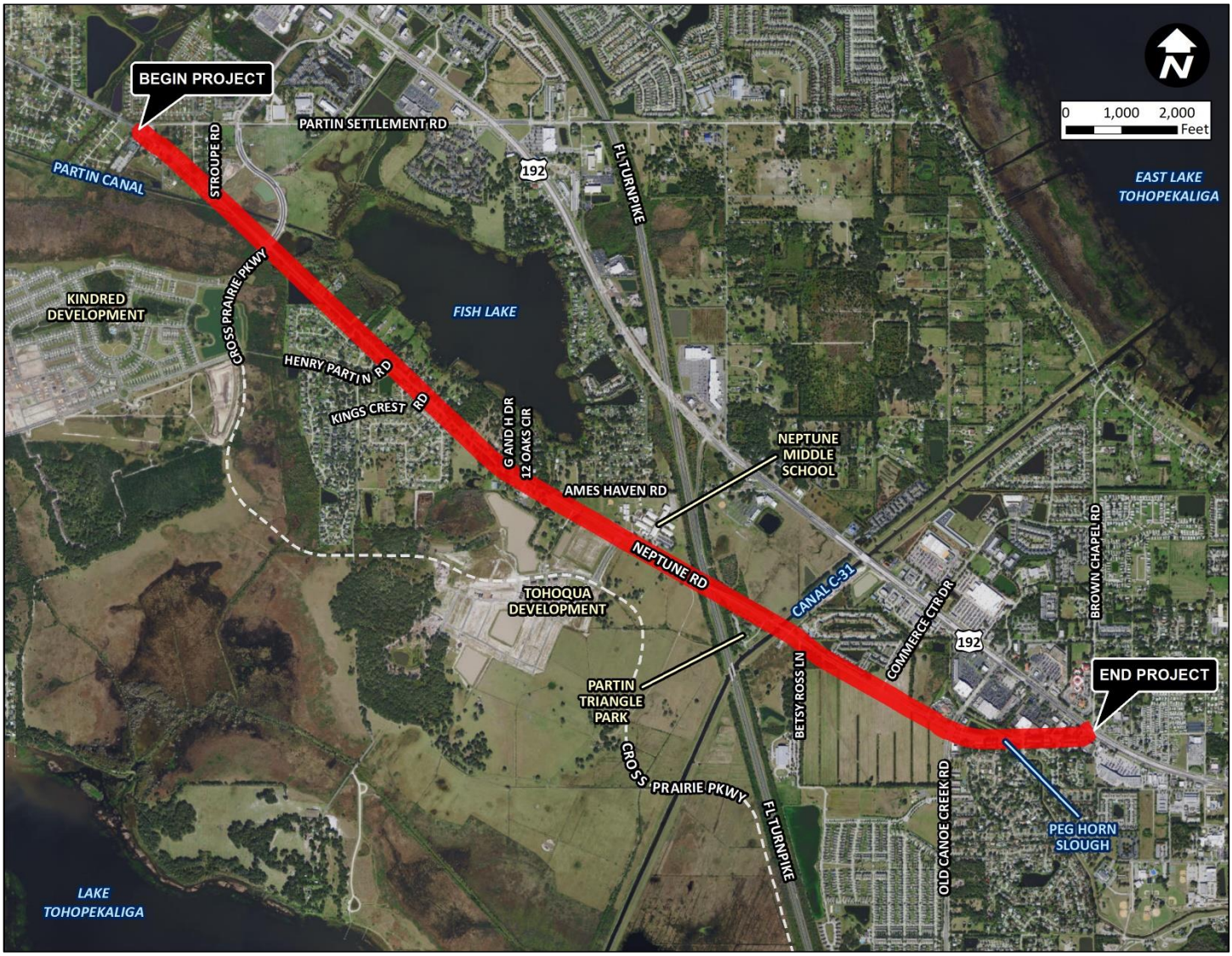


Exhibit 1-2: Project Limits



1.2 PURPOSE AND NEED

The purpose of the project is to address capacity and safety issues along the 3.9-mile segment of Neptune Road.

The need for the project is based on capacity and safety.

Capacity

The 2018 annual average daily traffic (AADT) volume on Neptune Road, between Partin Settlement Road and Old Canoe Creek Road was 25,000 resulting in a volume to capacity (V/C) ratio of 1.41, which indicates over capacity operating conditions resulting in significant delay at signalized intersections. The 2045 traffic volumes on Neptune Road between Partin Settlement Road and US 192 are projected to range between 14,000 and 32,000 AADT, resulting in over capacity conditions for the entire corridor with V/C ratios ranging from 1.04 to 1.93.

Safety

A total of 195 crashes were reported for the five-year period (January 1, 2013 through December 31, 2017), including three fatal crashes and 109 injury crashes, which resulted in three fatalities and 187 injuries. The number of reported crashes per year nearly doubled over the five-year period:

- 28 crashes in 2013
- 22 crashes in 2014
- 33 crashes in 2015
- 57 crashes in 2016
- 55 crashes in 2017

A crash type analysis was conducted and the predominant crash type along the corridor was the rear-end crash (47.7 percent). Approximately 49 percent of the rear-end collisions occurred at-fault in the westbound direction and 30 percent occurred at-fault in the eastbound direction. Rear-end crashes occurred along the entire length of the corridor but were most concentrated along the sections in the vicinity of Ames Haven Road, as well as at the Commerce Center Drive and Stroupe Road intersections. The next most common crash types were left-turn crashes (14.4 percent) and run-off-the-road (ROTR) crashes (13.3 percent). Left-turn crashes were most concentrated at the intersection of Neptune Road at Stroupe Road, and ROTR crashes were most concentrated along the section of Neptune Road near Ames Haven Road.

1.3 COMMITMENTS

Osceola County commits to the following measures:

1. The US Fish and Wildlife Service (USFWS) *Standard Protection Measures for the Eastern Indigo Snake* during construction will be implemented.

2. Eagle nest monitoring will take place during design and permitting to determine the current location and status of the two nests documented along the corridor and to confirm no new nests are present. Coordination with USFWS Migratory Bird Division will occur following the updated survey, when the current condition of the nests is known. Minimization measures for the bald eagle should include restrictions on construction timing, contractor education to avoid impacts to nests, creating a visual buffer between construction activities and the nest, and shielding of lights so they do not shine directly on the nest.

3. Pre-construction surveys for Florida sandhill crane, southeastern American kestrel, Florida burrowing owl, and gopher tortoises will be conducted and impacts, if any, coordinated with the Florida Fish and Wildlife Conservation Commission (FWC).

4. Consistent with the June 2012 FWC Black Bear Management Plan, garbage and food debris will be properly removed during construction to eliminate possible sources of food that could encourage and attract bears. Nuisance bears will be reported to the FWC at the Wildlife Alert Hotline at 1-888-404-3922.

5. The project limits are within the designated boundaries of the Biscayne Sole Source Aquifer and may cause impact to the aquifer system when the project's bridge foundations are installed and/or when construction dewatering is undertaken. These potential impacts shall be adequately reduced or properly mitigated through management practices.

1.4 ALTERNATIVES ANALYSIS SUMMARY

The Alternatives Analysis is described in Section 4.0. Alternatives included a No-Build Alternative, a Transportation System Management and Operations Alternative, and Build Alternatives. The build alternatives include provisions for bicycles, pedestrians and automobiles. Transit is not currently provided along Neptune Road and it is not planned to be provided. LYNX provides transit (bus) services along US 192, which runs parallel to Neptune Road.

The project was divided into two segments as a divided roadway will be considered for the segment west of Old Canoe Creek Road and an undivided roadway will be considered east of Old Canoe Creek Road. Two build alternatives were developed for the two segments:

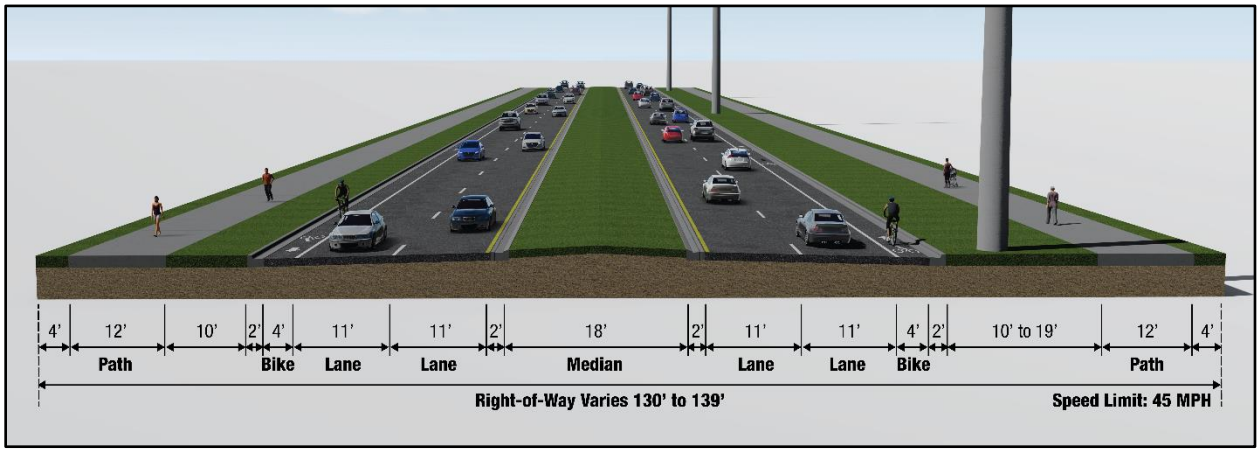
- From Partin Settlement Road to Old Canoe Creek Road – Build Alternatives 1 and 2.
- From Old Canoe Creek Road to US 192 – Build Alternatives A and B

The build alternatives for the two segments are compatible; therefore, the alternatives for the full length of the project are Alternatives 1A, 1B, 2A, and 2B.

1.4.1 ALTERNATIVE 1

To minimize impacts on the south side of Neptune Road, Alternative 1 involves widening primarily to the north, from Partin Settlement Road to west of Ames Haven Road. From west of Ames Haven Road to Old Canoe Creek Road, the widening would occur on both sides of Neptune Road. From Partin Settlement Road to Old Canoe Creek Road, Alternative 1 includes a 4-lane divided roadway (with 11-foot lanes), a 22-foot raised median, 4-foot bicycle lanes in each direction, curb and gutter, a 10-foot planting strip (varies due to existing power transmission pole locations) on both sides, 12-foot shared use path on both sides, and a 4-foot clear area adjacent to each shared use path. This typical section would require between 130 and 139 feet of right-of-way (depending on the location of the existing power transmission poles). **Exhibit 1-3** illustrates this typical section between Partin Settlement Road and Old Canoe Creek Road. The existing right-of-way varies in width and location within the typical section. The posted speed limit for this section would be 45 MPH.

Exhibit 1-3: Build Alternative 1 Typical Section

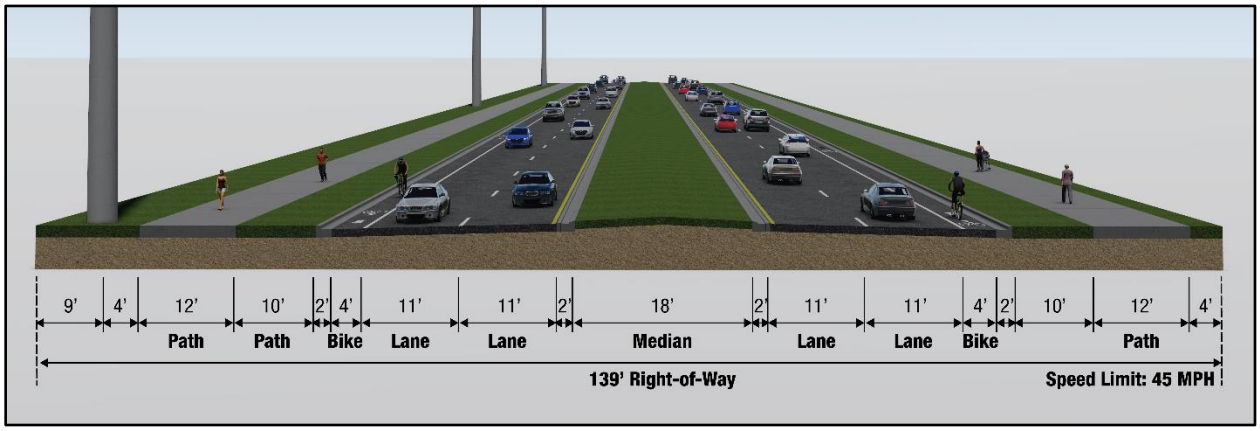


1.4.2 ALTERNATIVE 2

To minimize impacts on the north side of Neptune Road, Alternative 2 involves widening primarily to the south, from Partin Settlement Road to west of Ames Haven Road. This would require relocation of the power transmission poles from the south side of Neptune Road to the north side of Neptune Road, from Partin Settlement Road to west of Ames Haven Road. From west of Ames Haven Road to Old Canoe Creek Road, the widening would occur on both sides of Neptune Road.

The typical section for Alternative 2 is basically the same as for Alternative 1, with the difference being that Alternative 2 includes relocating power transmission poles. From Partin Settlement Road to Old Canoe Creek Road, Alternative 2 includes a 4-lane divided roadway (with 11-foot lanes), a 22-foot raised median, 4-foot bicycle lanes in each direction, curb and gutter, a 10-foot planting strip on both sides, 12-foot shared use path on both sides, and a 4-foot clear area adjacent to each shared use path. The existing power transmission poles would be relocated to the north side of the shared use path within a 9-foot envelope. This typical section would require 139 feet of right-of-way. **Exhibit 1-4** illustrates this typical section between Partin Settlement Road and Old Canoe Creek Road. The existing right-of-way varies in width and location within the typical section. The posted speed limit for this alternative would be 45 MPH.

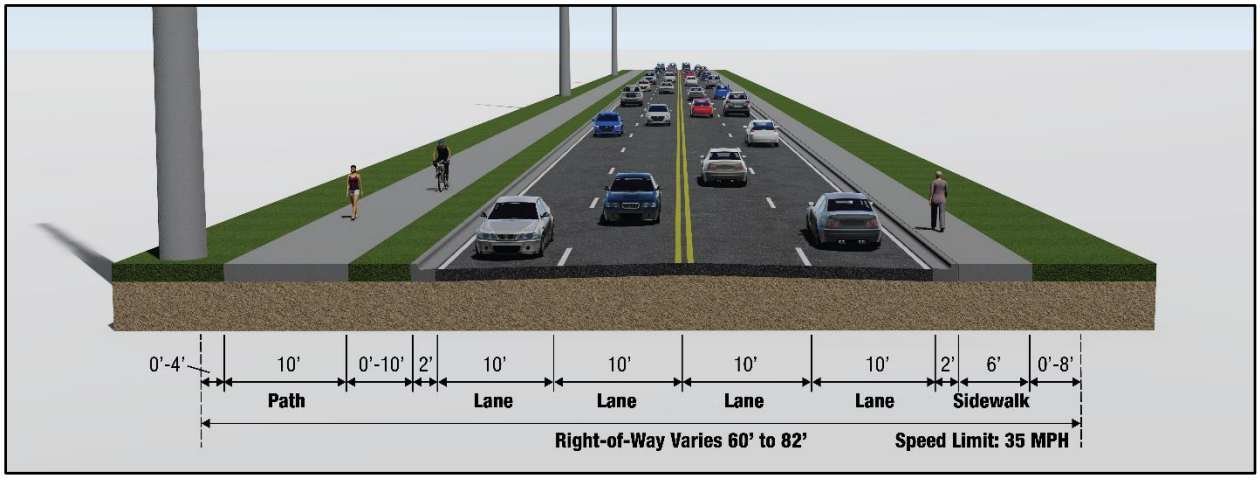
Exhibit 1-4: Build Alternative 2 Typical Section



1.4.3 ALTERNATIVE A

From Old Canoe Creek Road to US 192, Alternative A includes a 4-lane undivided roadway (with 10-foot lanes), curb and gutter, a 10-foot planting strip on both sides (where possible within the existing right-of-way), a 10-foot shared use path with a 4-foot clear area (where possible within the existing right-of-way) on the north side, and a 6-foot sidewalk on the south side. This typical section would require between 60 and 82 feet of right-of-way and is anticipated to be constructed within the existing right-of-way. **Exhibit 1-5** illustrates this typical section between Old Canoe Creek Road and US 192. The existing right-of-way varies in width and location within the typical section. The posted speed limit for this alternative would be 35 MPH.

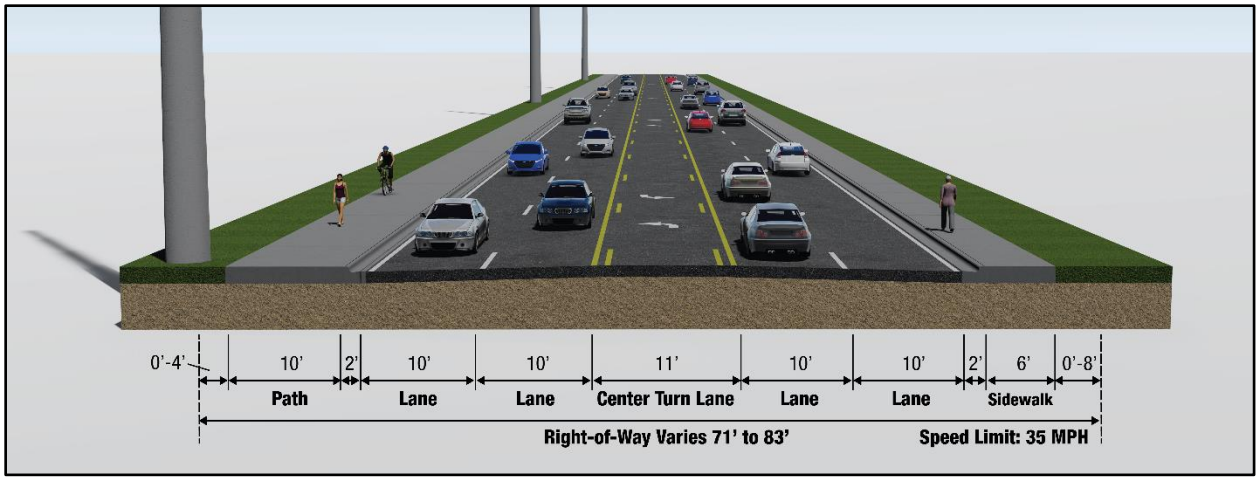
Exhibit 1-5: Build Alternative A Typical Section



1.4.4 ALTERNATIVE B

From Old Canoe Creek Road to US 192, Alternative B includes a 5-lane roadway (with 10-foot travel lanes and an 11-foot two-way left turn lane), curb and gutter, a 10-foot planting strip on both sides (where possible within existing right-of-way), a 10-foot shared use path with a 4-foot clear area (where possible within existing right-of-way) on the north side, and a 6-foot sidewalk on the south side. This typical section would require between 71 and 83 feet of right-of-way. **Exhibit 1-6** illustrates this typical section between Old Canoe Creek Road and US 192. The existing right-of-way varies in width and location within the typical section. The posted speed limit for this alternative would be 35 MPH.

Exhibit 1-6: Build Alternative B Typical Section



A matrix which compares the alternatives using relevant physical, natural, social and cultural environment considerations is presented in **Table 1-1**.

Table 1-1: Evaluation Matrix of Alternatives

PD&E Considerations	No-Build	Partin Settlement Road to Old Canoe Creek Road		Old Canoe Creek Road to US 192	
		1 (North)	2 (South)	A (4-Lane)	B (5-Lane)
Residential Parcels (Improved + Vacant = Total)	0	49 + 26 = 75	42 + 16 = 58	0 + 0 = 0	0 + 0 = 0
Non-Residential Parcels (Improved + Vacant = Total)	0	6 + 2 = 8	5 + 1 = 6	0 + 0 = 0	4 + 0 = 4
Potential Relocations (Residential + Non-Residential = Total)	0	9 + 0 = 9	25 + 0 = 25	0 + 0 = 0	0 + 0 = 0
Potential Contamination Parcels (Low + Medium + High Risk = Total)	0	6 + 3 + 0 = 9	6 + 3 + 0 = 9	15 + 1 + 0 = 16	15 + 1 + 0 = 16
Wildlife & Habitat	None	No Adverse Effects	No Adverse Effects	No Adverse Effects	No Adverse Effects
Bald Eagle Nest	None	2 within 660-foot buffer	2 within 660-foot buffer	1 within 330-foot buffer	1 within 330-foot buffer
Wetland (WL) & Surface Water (SW) Impacts	None	2.6 ac. WL, 2.0 ac. SW	3.1 ac. WL, 2.7 ac. SW	0 ac. WL, 0.03 ac. SW	0 ac. WL, 0.05 ac. SW
Floodplains	None	(Zone AE - 0.7 ac., Zone A - 11.2 acre)	(Zone AE - 0.7 ac., Zone A - 13.3 acre)	(Zone AE - 0.2 ac., Zone A - 0 acre)	(Zone AE - 0.2 ac., Zone A - 0 acre)
Potential Section 4(f) Use	No	Yes (park, trail, and sports fields)	Yes (park, trail, and sports fields)	No	No
Community Facilities	None	6 (police dept., park, school, trail, 2 churches)	6 (police dept., park, school, trail, 2 churches)	3 (2 group care facilities, pre-school)	3 (2 group care facilities, pre-school)
Volume/Capacity Ratio	1.04 to 1.93	0.90 to 1.10	0.90 to 1.10	0.57	0.48
Construction Cost	0	$39,029,000	$40,301,000	$3,267,000	$3,461,000
Right-of-Way Cost	0	TBD	TBD	TBD	TBD
Total Project Costs to County [1]	0	$39,029,000	$40,301,000	$3,267,000	$3,461,000
Utility Relocations by Others	0	$2,336,000	$4,205,000	$0	$0
Total Project Costs [1]	0	$41,365,000	$44,506,000	$3,267,000	$3,461,000

Notes: [1] Excluding Right-of-Way Costs

Alternative 1 would require right-of-way from 75 residential parcels. Of the 75 residential parcels, 49 are improved (have existing residences) and 26 are vacant. Alternative 2 would require right-of-way from 58 residential parcels. Of the 58 residential parcels, 42 are improved and 16 are vacant. No additional right-of-way is anticipated to be acquired for Alternative A. No residential parcels are impacted by Alternative B.

Alternative 1 would require right-of-way from eight non-residential parcels. Of these parcels, six are improved (have existing buildings) and two are vacant. Alternative 2 would require right-of-way from six

non-residential parcels. Of these parcels, five are improved and one is vacant. No additional right-of-way is anticipated to be acquired for Alternative A. Alternative B would require right-of-way from four non-residential parcels. Of the four non-residential parcels, four are improved.

Alternative 1 would require right-of-way from 75 residential parcels and eight non-residential parcels. Of the improved residential parcels, nine are expected to require relocation. Of the existing non-residential buildings, none are expected to require relocation. Alternative 2 would require right-of-way from 58 residential parcels and six non-residential parcels. Of the existing improved residential parcels, twenty-five are expected to require relocation. Of the existing non-residential buildings, none are expected to require relocation. No residential or non-residential relocations are anticipated for Alternative A. Alternative B would require right-of-way from four non-residential parcels. Of the existing non-residential buildings, none are expected to require relocation.

Both Alternatives 1 and 2 impact six potential low-risk contamination parcels, three potential medium-risk contamination parcels and no potential high-risk parcels. Both Alternatives A and B impact 15 potential low-risk contamination parcels, one potential medium-risk contamination parcels and no potential high-risk parcels.

None of the alternatives are expected to have adverse effects on wildlife or habitat.

Both Alternative 1 and 2 are within the 660-foot buffer of two existing bald eagle nests. Both Alternative A and B are within the 330-foot buffer of an existing bald eagle nest.

Both Alternative 1 and 2 have medium impacts to wetlands and surface water. Alternative 1 impacts 2.6 acres of wetlands and 2.2 acres of surface waters. Alternative 2 impacts 3.1 acres of wetlands and 2.4 acres of surface waters. Both Alternative A and B have no impacts to wetlands and minimal impacts to surface waters. Alternative A impacts 0.03 acre of surface waters and Alternative B impacts 0.05 acre of surface waters.

Both Alternative 1 and 2 have medium impacts to floodplains. Alternative 1 impacts 0.7 acre of Zone AE and 11.2 acres of Zone A. Alternative 2 impacts 0.7 acre of Zone AE and 13.3 acres of Zone A. Both Alternative A and B have minimal impacts to floodplains. Alternative A impacts 0.2 acre of Zone AE and Alternative B impacts 0.2 acre of Zone AE.

Both Alternative 1 and 2 have potential impacts to Partain Triangle Park and Boat Ramp, Neptune Road Pathway and Neptune Middle School Sports Fields. Neither Alternative A or B impact a Section 4(f) use. Avoidance alternatives were considered but it was determined that the No Build Alternative is the only alternative that would completely avoid impacts to Section 4(f) properties. Impacts were minimized by widening to both sides of the road for the segment where Neptune Middle School is on the north and Partin Triangle Park and Boat Ramp is on the south. The impacts to the Neptune Middle School fields is considered a de minimis impact and the proposed improvements, which include sidewalks and bike lanes, would enhance the access to the Section 4(f) properties. The impact to the Partin Triangle Park and Boat Ramp is No Use and the impact to the Neptune Road Pathway is Exception.

Both Alternative 1 and 2 impact six community facilities, including the St. Cloud Police station, Partin Triangle Park, Neptune Middle School, Neptune Road Pathway and two places of worship. Both Alternatives A and B impact three community facilities, including two group care facilities and a pre-school.

The No-Build Alternative would result in volume to capacity (V/C) ratios of between 1.04 and 1.93 in 2045. Alternatives 1 and 2 reduce the V/C ratio on the segment from Partin Settlement Road to Old Canoe Creek Road to between 0.90 and 1.10. Alternatives A and B reduce the V/C ratio on the segment from Old Canoe Creek Road to US 192 to 0.57 and 0.48, respectively. It should be noted that Osceola takes a different approach to transportation than many local governments. The County uses Mobility Indicators to assess performance and to program improvements. These indicators are not the typical automobile centric measures of effectiveness (MOEs). The only roadway operational MOE for programming improvements is V/C (V/C is one of 16 factors considered). The County is focused on creating an environment which is supportive to non-automobile travel. This results in V/C ratios greater than 1.0 being acceptable to the County.

The projected cost (excluding right-of-way costs) for Alternative 1 is approximately $41.37 million, which includes $39.03 million in construction costs and $2.34 million in utility costs by others. The projected cost (excluding right-of-way costs) for Alternative 2 is approximately $44.51 million, which includes $40.30 million in construction costs and $4.21 million in utility costs by others. The projected cost (excluding right-of-way costs) for Alternative A is approximately $3.37 million, and the cost (excluding right-of-way costs) for Alternative B is approximately $3.46 million.

There are four combinations of alternatives for the full project, from Partin Settlement Road to US 192: Alternative 1A, 1B, 2A or 2B. Alternative 1A is projected to cost the least, at $44.63 million, followed by Alternative 1B at $44.83 million, Alternative 2A at $47.77 million and Alternative 2B at $47.97 million. As noted above, none of these costs include right-of-way.

1.5 DESCRIPTION OF PREFERRED ALTERNATIVE

Alternative 1(North)B(5-Lane) with adjustments to reduce impacts was identified as the Preferred Build Alternative. Advantages associated with the adjusted Alternative 1 (North) segment, from Partin Settlement Road to Old Canoe Creek Road, include:

- Least potential residential relocations (9 compared to 25)
- Least improved residential parcels impacted (41 compared to 42)
- Similar vacant residential parcels impacted (18 compared to 16)
- Less impacts to wetlands (2.0 acres compared to 3.3)
- Similar impacts to surface waters (2.8 acres compared to 2.7)
- Less impacts to floodplains (11.2 acres Zone A compared to 13.3)
- Lower construction cost ($41.4 million compared to $44.5 million)

Advantages associated with the adjusted Alternative B (5-Lane) segment, from Old Canoe Creek Road to US 192, include:

- Lower volume to capacity ratio in 2045 (0.9 compared to 1.0)

There are some disadvantages to the adjusted Alternative B (5-Lane) segment, including:

- Higher construction cost ($3.5 million compared to $3.3 million)
- More impacts to exiting commercial parcels (3 compared to 0)
- Higher impacts to surface waters (0.05 acre compared to 0.03 acre)

The improved operating conditions are expected to offset these disadvantages.

1.6 LIST OF TECHNICAL DOCUMENTS

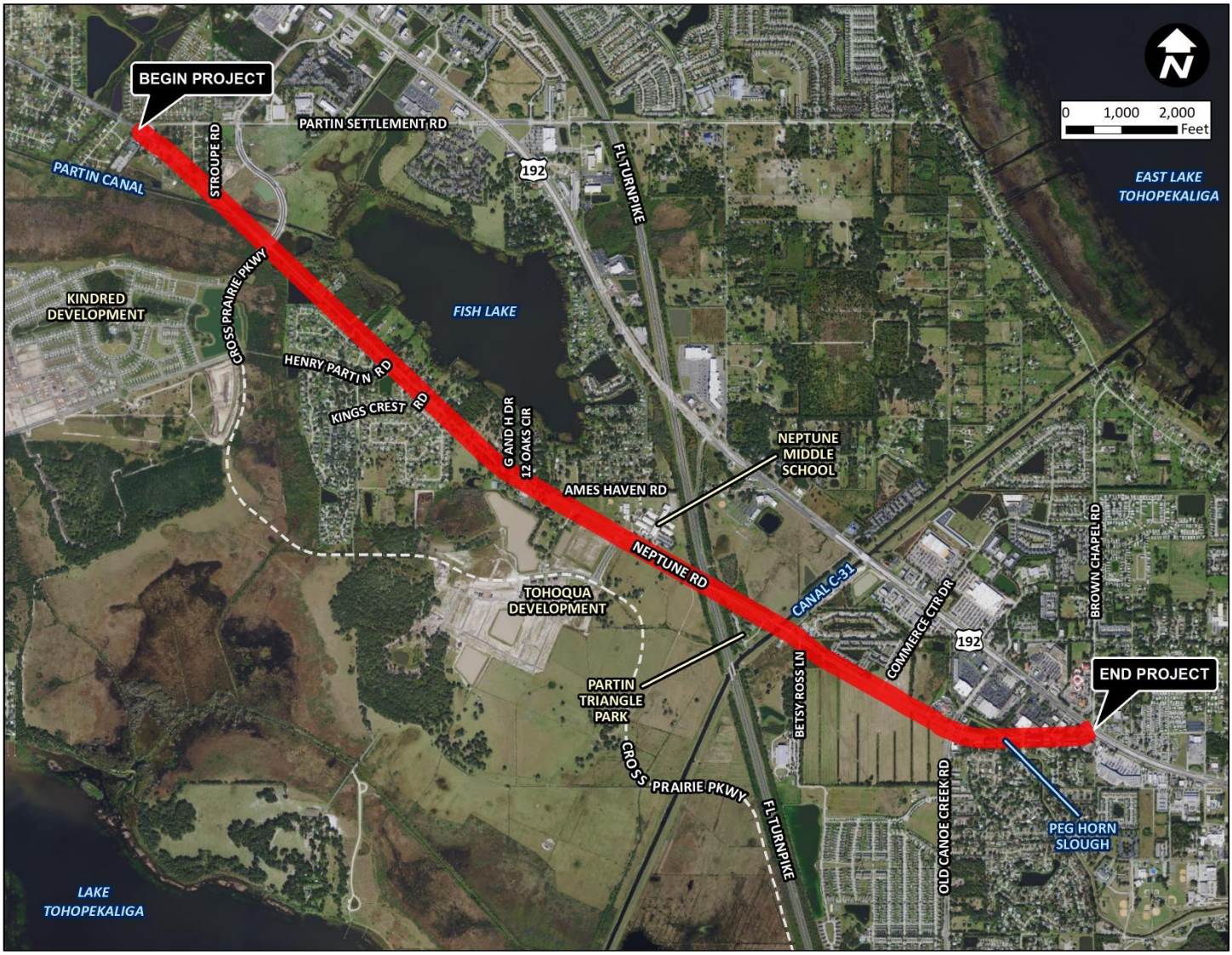
Additional technical documents prepared as part of the PD&E include:

- Typical Section Package, June 2020, Kimley-Horn and Associates, Inc.
- Project Traffic Analysis Report, March 2020, Kimley-Horn and Associates, Inc
- Contamination Screening Evaluation Report, January 2020, Kimley-Horn and Associates, Inc.
- Pond Siting Report, February 2020, Osceola Engineering, Inc.
- Location Hydraulics Report, February 2020, Osceola Engineering, Inc.
- Water Quality Impact Evaluation, November 2019, Kimley-Horn and Associates, Inc.
- Utility Assessment Report, September 2019, Inwood Consulting Engineers, Inc.
- Natural Resources Evaluation, July 2020, Kimley-Horn and Associates, Inc.
- Air Quality Screening Analysis Technical Memo, July 2019, Inwood Consulting Engineers, Inc.
- Noise Study Report, February 2020, Inwood Consulting Engineers, Inc.
- Type 2, Categorical Exclusion, July 2020, Kimley-Horn and Associates, Inc.
- Cultural Resources Assessment Survey, October 2019, SEARCH

2.0 EXISTING CONDITIONS

The study area for the Neptune Road Project Development & Environment (PD&E) Study is illustrated on **Exhibit 2-1**. The study area extends from Partin Settlement Road to US 192.

Exhibit 2-1: Study Area



2.1 ROADWAY CONDITIONS

The existing typical section for Neptune Road, from Partin Settlement Road to Old Canoe Creek Road, is two 11-foot lanes with an 8-foot to 10-foot wide shared use path on one side. West of Ames Haven Road, the shared use path is on the south side of Neptune Road. East of Ames Haven Road, the shared use path is on the north side of Neptune Road. The path material is concrete in some sections and asphalt in other sections. From Old Canoe Creek Road to US 192, the typical section is two 11-foot wide lanes with an 8-foot wide shared use path on the north side of Neptune Road. Neptune Road widens to provide additional turn lanes at:

- Partin Settlement Road
- Cross Prairie Parkway
- Sugar Cane Drive
- Henry Partin Road
- Kings Crest Road
- Neptune Middle School / Tohoqua Boulevard
- Neptune Middle School (eastern driveway)
- Partin Triangle Park (right-turn lane)
- Commerce Center Drive
- St. Cloud Police Department driveway
- Old Canoe Creek Road
- Ponderosa Drive
- St. Cloud Square (right-turn lane)
- US 192

2.2 RIGHT-OF-WAY

The existing right-of-way for Neptune Road, from Partin Settlement Road to Old Canoe Creek Road, generally ranges from 60 feet to 110 feet. From Old Canoe Creek Road to US 192, the right-of-way is generally 60 feet, with additional right-of-way at intersections where turn lanes are provided.

2.3 ROADWAY CLASSIFICATION & CONTEXT CLASSIFICATION

Neptune Road is classified as an Urban Minor Arterial from Partin Settlement Road to Old Canoe Creek Road and as an Urban Minor Collector from Old Canoe Creek Road to US 192. Partin Settlement Road is classified as an Urban Major Collector. Old Canoe Creek Road is classified as an Urban Minor Arterial south of Neptune Road and as an Urban Local roadway north of Neptune Road. US 192 is classified as an Urban Principal Arterial – Other.

As determined by the Florida Department of Transportation, the Context Classification for Neptune Road is C3R – Suburban Residential from Partin Settlement Road to Old Canoe Creek Road, and C3C – Suburban Commercial from Old Canoe Creek Road to US 192.

2.4 ADJACENT LAND USE

Property line data was obtained from the Osceola County Property Appraiser. Existing land uses include primarily single-family residential from Partin Settlement Road to Old Canoe Creek Road, with Neptune Middle School just west of the Florida's Turnpike overpass and Neptune Elementary School located just east of the Florida's Turnpike overpass. There is multi-family residential on the north side of Neptune Road between Canal C-31 and Commerce Center Drive. From Old Canoe Creek Road to US 192, the existing land use is primarily commercial.

Exhibits 2-2 through 2-5 illustrate the existing land use designations along the corridor.

Exhibit 2-2: Existing Land Use Map (1 of 4)

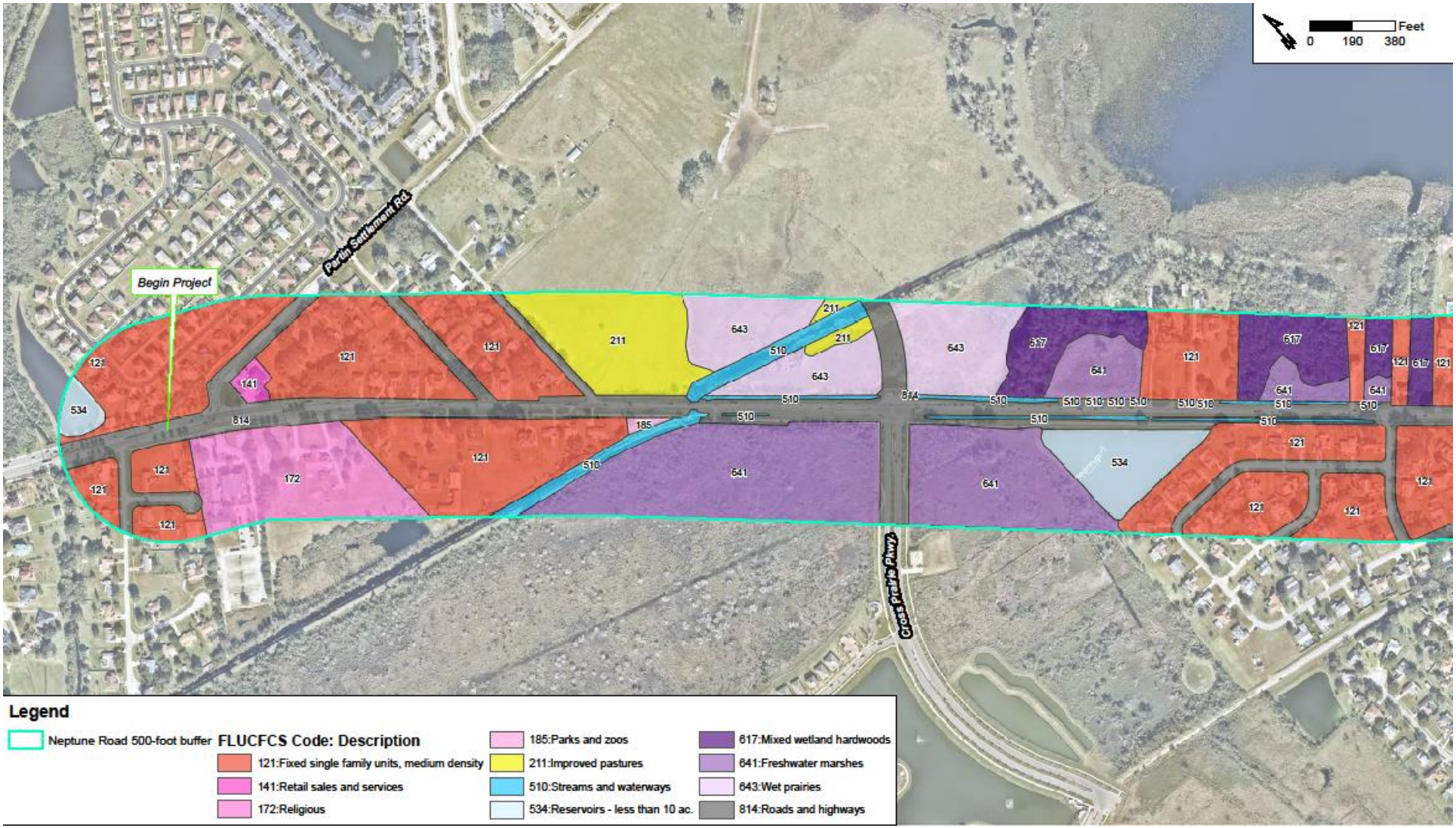


Exhibit 2-3: Existing Land Use Map (2 of 4)

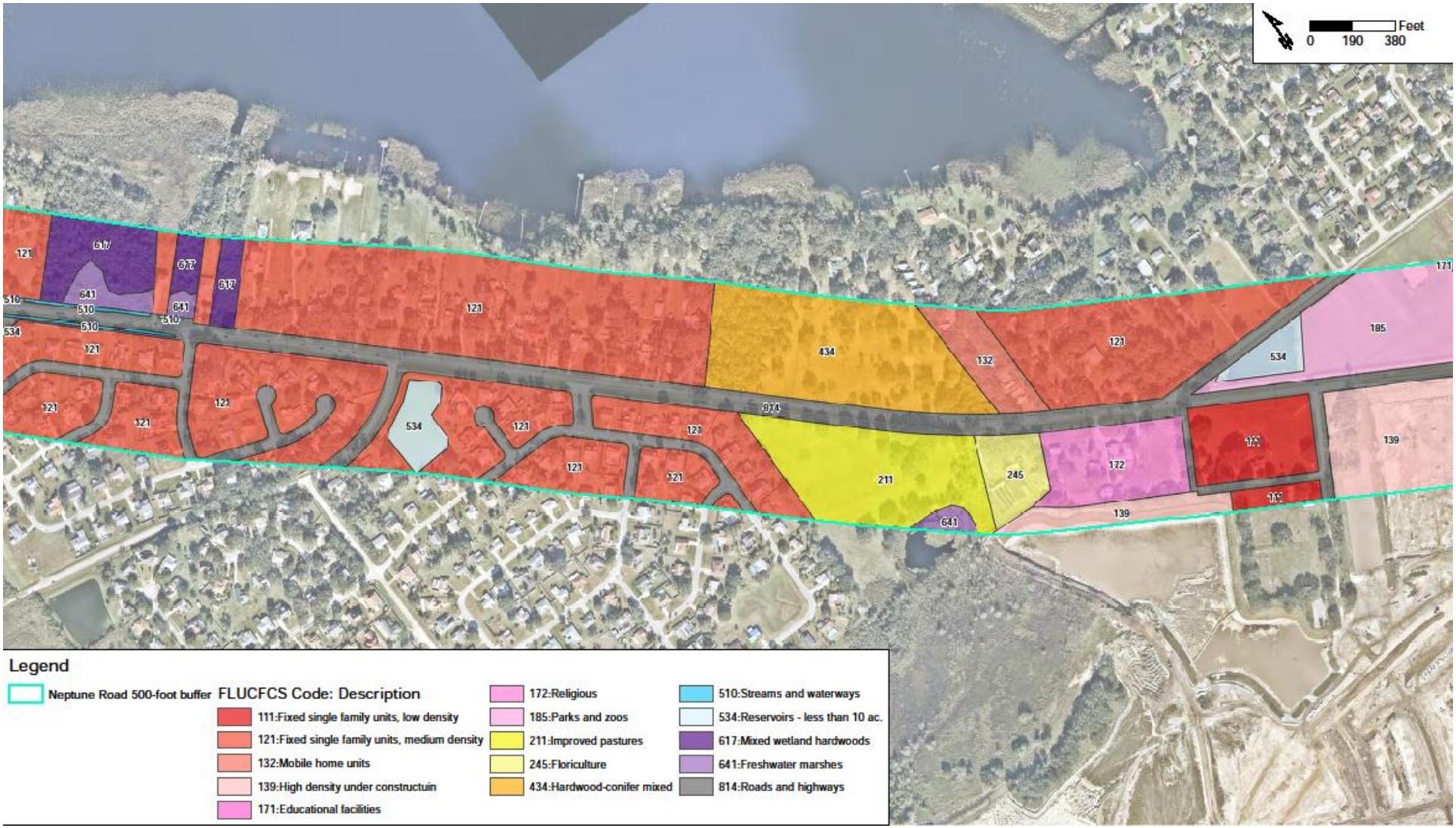


Exhibit 2-4: Existing Land Use Map (3 of 4)

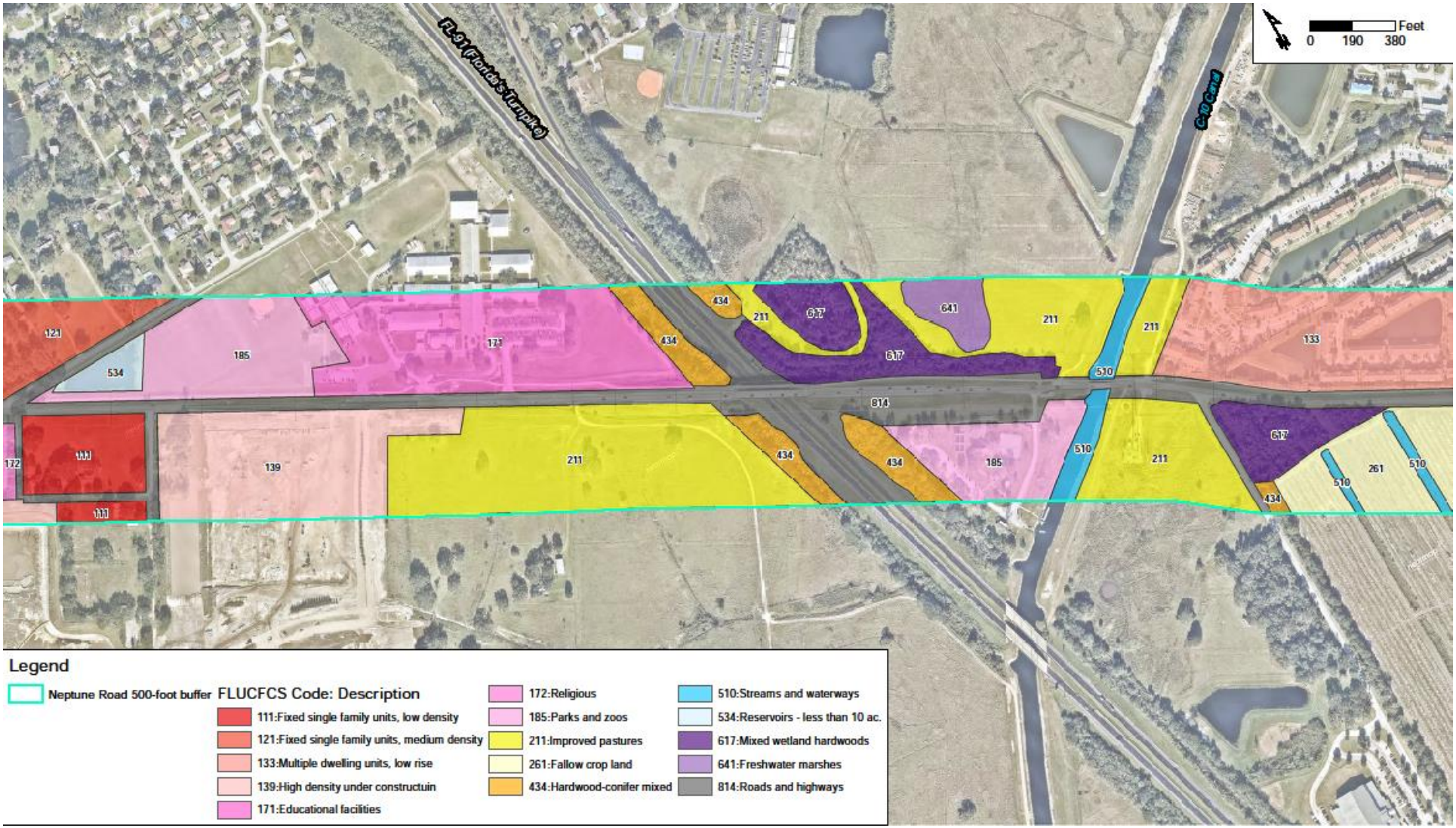
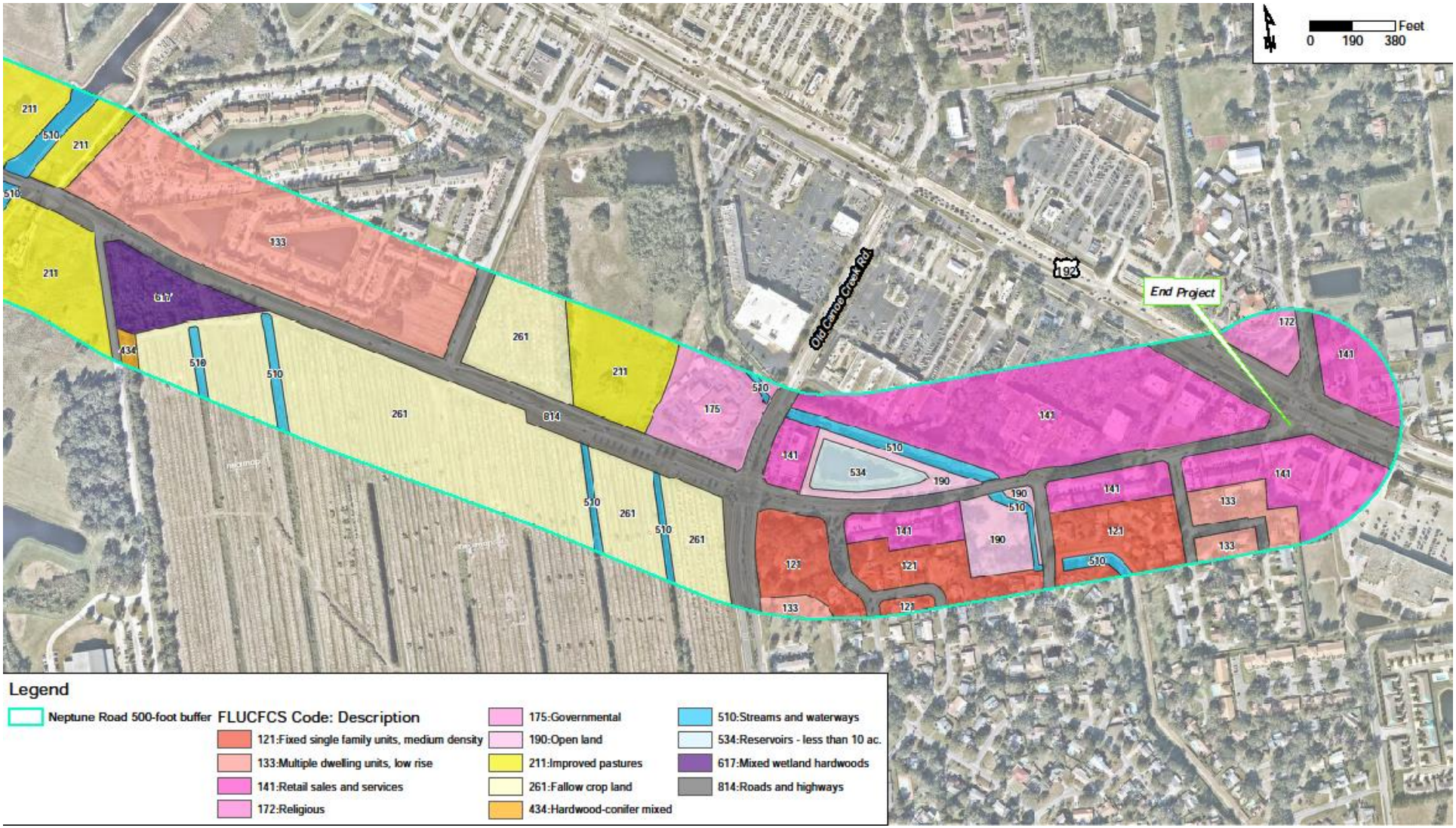


Exhibit 2-5: Existing Land Use Map (4 of 4)



2.5 ACCESS MANAGEMENT CLASSIFICATION

Osceola County utilizes the same Access Management Classification system as the Florida Department of Transportation (FDOT); however, Neptune Road has not been designated with a specific classification. West of Partin Settlement Road (which has been widened to a divided 4-lane road), Neptune Road has the characteristics of Access Class 7. Access Class 7 represents minimal access management with full median openings spaced at 660 feet.

As part of the Neptune Road PD&E, Osceola County proposes to establish the following access management classifications:

- Neptune Road, from Partin Settlement Road to Old Canoe Creek Road – Class 5
- Neptune Road, from Old Canoe Creek Road to US 192 – Class 7

2.6 DESIGN AND POSTED SPEED

The design speeds and posted speed limits for Neptune Road are shown in **Table 2-1**.

Table 2-1: Roadway Design Speeds and Posted Speed Limits

Neptune Road	Design Speed	Posted Speed Limit
Partin Settlement Road to 0.4 mile south of Partin Settlement Road	45[1]	40
0.4 mile south of Partin Settlement Road to Sergeant Graham Drive	55[1]	50
School Zone at Neptune Middle School	N/A	20
Sergeant Graham Drive to Old Canoe Creek Road	45[1]	40
Old Canoe Creek Road to US 192	40[1]	35

Notes:

[1] Design speed estimated as 5 mph above posted speed

2.7 VERTICAL AND HORIZONTAL ALIGNMENTS

Existing plans or surveys with vertical geometry are not available. The existing vertical geometry is slightly rolling with low points and high points varying by seven to ten feet through the corridor. There is a significant high point where Neptune Road crosses over Florida's Turnpike.

The existing horizontal alignment consists of a series of tangents with minor deflections and horizontal curves from Partin Settlement Road to US 192. **Tables 2-2 and 2-3** describe the existing roadway horizontal alignment.

Table 2-2: Existing Horizontal Points of Deflection

Deflection No.	B/L Survey Station	Deflection Angle (Degrees)
1	45+20.75	0.64
2	50+00.00	0.73
3	69+61.49	0.03
4	90+62.26	0.14
5	113+50.51	0.16
6	122+23.98	5.35
7	133+23.58	0.60
8	137+29.98	0.27

Table 2-3: Existing Horizontal Curvature

Curve No.	Radius (ft)	Length (ft)	B/L Survey PC Station	B/L Survey PT Station
1	2084.54	557.79	32+31.83	37+89.61
2	3716.38	468.79	117+55.19	122+23.98
3	1432.69	233.41	180+48.28	182+81.69
4	1432.69	237.79	186+51.34	188+89.13
5	1333.99	725.07	214+63.66	221+88.73
6	164.36	168.02	238+21.53	239+89.55

2.8 PEDESTRIAN ACCOMMODATIONS

The Neptune Road Path (formerly designated as the Bill Johnston Memorial Pathway) extends from Partin Settlement Road to US 192. The Neptune Road Path ranges in width from 8 to 10 feet. From Partin Settlement Road to Ames Haven Road, the path is on the south side of Neptune Road. Just east of Ames Haven Road, the path crosses to the north side of Neptune Road at an unsignalized crosswalk.

Approximately 1000 feet of 5-foot wide sidewalk is provided on the north side of Neptune Road, east of Partin Settlement Road.

There are two shelters adjacent to the path, with benches and trash cans. One is marked as the Bertha Partin Memorial Rest Stop. The other shelter is located just east of the crosswalk at Ames Haven Road.

2.9 BICYCLE FACILITIES

Besides the Neptune Road Path, there are no bicycle facilities on either side of Neptune Road.

2.10 TRANSIT FACILITIES

No bus service is provided on Neptune Road within the study area.

2.11 PAVEMENT CONDITION

The existing pavement is generally in good condition. Shared use path pavement conditions vary from good to poor. Most of the asphalt portions are in poor condition and most of the concrete portions are in good condition. Between Ames Haven Road and Old Canoe Creek Road, the shared use path is typically asphalt in good to moderate condition. Between Old Canoe Creek Road and US 192, the shared use path is concrete that varies from good to poor condition. Additional pavement evaluation will be conducted during the design phase.

2.12 TRAFFIC VOLUMES AND OPERATIONAL CONDITIONS

A summary of the existing traffic volumes is shown in **Table 2-4**. Values for D were calculated based on the hourly volume count data. Standard values for K were used based on area type. For reference, the measured K value is shown in the table below.

Table 2-4: Existing (2018) Traffic Volumes

ROADWAY SEGMENT	2018 ADT	Average Peak Hour Volume	Peak Hour NB/EB	Peak Hour SB/WB	Measured K Factor	Measured D Factor	Axle Adj. Factor	Seasonal Adj. Factor	2018 AADT
Mainline									
Neptune Road									
West of Partin Settlement Rd	35,634	3,043	1,334	1,709	8.5%	56%	0.99	0.98	35,000
Partin Settlement Rd to Cross Prairie Pkwy	25,368	2,315	1,555	760	9.1%	67%	0.99	0.99	25,000
Cross Prairie Pkwy to Old Canoe Ck Rd	24,520	1,985	1,165	820	8.1%	59%	0.99	0.99	24,000
Old Canoe Ck Rd to US 192 (4-Lane)	11,515	1,280	369	911	11.1%	71%	0.99	0.98	11,000
East of US 192 (Brown Chapel Rd)	4,244	382	165	217	9.0%	57%	0.99	0.99	4,200
Other Study Area Roadways									
Partin Settlement Road									
West of Neptune Rd (Church)	509	99	41	58	19.4%	59%	0.99	0.98	500
Neptune Rd to US 192	13,452	1,162	474	688	8.6%	59%	0.99	0.98	13,000
East/North of US 192	14,119	7,100	4,100	3,000	50.3%	58%	0.99	0.99	14,000
Cross Prairie Parkway									
South of Neptune Rd	3,717	296	141	155	8.0%	52%	0.99	0.99	3,600
Old Canoe Creek Road									
US 192 to Neptune Rd	19,212	1,515	681	834	7.9%	55%	0.99	0.98	19,000
Neptune Rd to Kissimmee Park Rd	32,050	2,478	1,104	1,374	7.7%	55%	0.99	0.98	31,000
US 192									
Shady Ln to Partin Settlement Rd	37,107	2,970	1,485	1,485	8.0%	50%	0.99	0.99	36,000
Old Canoe Creek Rd to Neptune Rd	37,428	2,541	1,316	1,225	6.8%	52%	0.99	0.98	36,000
Neptune Rd to Columbia Ave	42,056	2,881	1,397	1,484	6.9%	52%	0.99	0.98	41,000

Arterial speed and arterial level of service measures were calculated for Neptune Road for the AM and

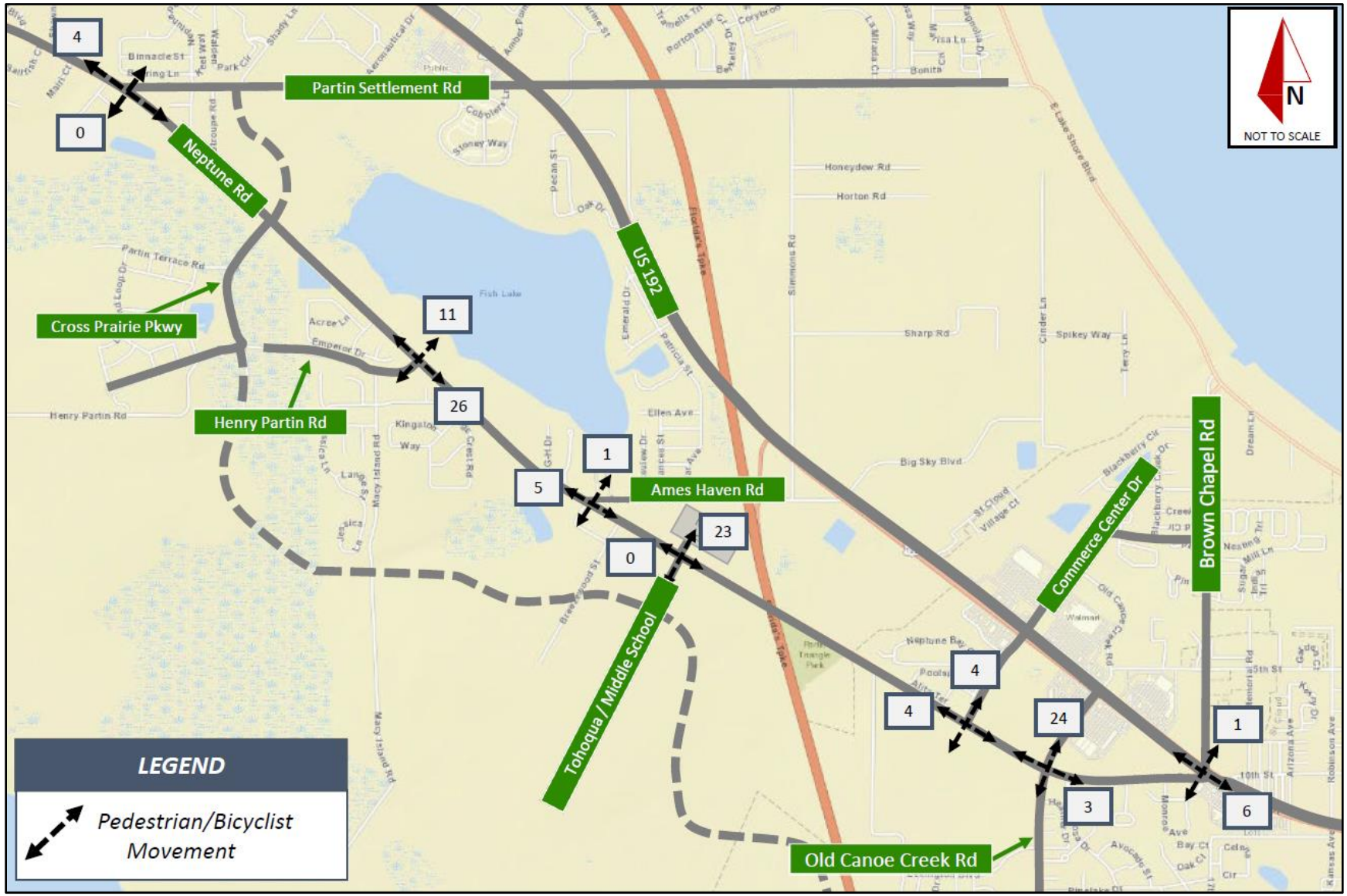
PM peak-hour periods. **Table 2-5** shows the existing peak-hour operating conditions within the study area, which are level of service (LOS) C during both periods.

Table 2-5: Existing Roadway Operational Conditions

Year / Time Period	No-Build			
	Speed (mph)		LOS	
	EB	WB	EB	WB
AM Peak Hour				
2018	31	33	C	C
PM Peak Hour				
2018	28	32	C	C

Daily pedestrian and bicycle counts were conducted and are illustrated on **Exhibit 2-6**. The highest pedestrian volumes occurred at the intersections of Neptune Road at Old Canoe Creek Road and Neptune Road at Henry Partin Road. The highest bicycle volumes occurred at the intersections of Neptune Road at Old Canoe Creek Road, Neptune Road at Tohoqua/Neptune Middle School, and Neptune Road at Henry Partin Road.

Exhibit 2-6: Daily Pedestrian and Bicyclist Counts



Truck percentages were calculated for both daily (T_{24}) and peak hour (T_f) conditions. Historical T_{24} values from FDOT's count site 928063 (located on Neptune Road, east of Old Canoe Creek Road) range from 4.1% to 5.8%, with an average value of 5.11%. Based on this information, the T_f was estimated as 2.56%.

2.13 INTERSECTION LAYOUT AND TRAFFIC CONTROL

An intersection and signalization inventory was conducted for Neptune Road. **Table 2-6** summarizes major study area intersections and their type of control. Neptune Road is considered west-to-east and Neptune Road turn lanes are underlined.

Table 2-6: Intersection Summary

Intersection with Neptune Road	Type	Intersection Control Type	Turn Lanes	Crosswalks
Partin Settlement Road	Plus	Signalized	NBL, SBL, EBL, WBL	All Approaches
Cross Prairie Parkway	Plus	Signalized	NBL, SBL, EBR, EBL, WBL, WBR	NB Approach
Sugar Cane Drive	T	Unsignalized	WBL	NB Approach
Henry Partin Road	T	Unsignalized	NBL, NBR, EBR, WBL	NB Approach
Kings Crest Road	T	Unsignalized	NBL, NBR, WBL	NB Approach
G and H Drive	T	Unsignalized	None	None
Twelve Oaks Circle	T	Unsignalized	None	None
Ames Haven Road	T	Unsignalized	None	WB Approach
Neptune Middle School / Tohoqua Boulevard	Plus	Signalized	NBL, SBL, EBR, EBL, WBR, WBL	All Approaches
Neptune Middle School	T	Unsignalized	SBR, SBL, EBL, WBR,	SB Approach
Partin Triangle Park	T	Unsignalized	EBR	WB Approach
Betsy Ross Lane	T	Unsignalized	None	None
Commerce Center Drive	T	Unsignalized	SBL, SBR, EBL, WBR	SB Approach
St. Cloud Police Department	T	Unsignalized	EBL, WBR	SB Approach
Old Canoe Creek Road	Plus	Signalized	NBL, SBL, EBR, EBL, WBR, WBL	All Approaches
Ponderosa Drive	T	Unsignalized	NBL, NBR, EBR, WBL	None
Franklin Street	Plus	Unsignalized	NBL, NBR, SBR, WBR	SB Approach
Monroe Avenue	Plus	Unsignalized	None	None
US 192 (Note – this intersection is currently under construction)	Plus	Signalized	NBL, NBR, SBL, SBR, EBL, EBR, WBL, WBR	NB and SB Approaches

Intersection analyses were conducted in Trafficware's Synchro 10.0 Software. Existing signal timings from Osceola County were incorporated into the analysis for the study intersections where available. **Table 2-7** provides a summary of existing intersection performance under AM and PM conditions.

Table 2-7: Existing (2018) Intersection Operational Conditions

No Build		Existing Year 2018			
Study Intersection and Scenario	Traffic Control	Overall Delay (Sec/Veh)	Overall LOS	Max V/C	Mvmt.
AM Peak-Hour					
Partin Settlement Rd	Signalized	57.0	E	1.18	EBL
Cross Prairie Pkwy	Signalized	-	-	-	-
Henry Partin Rd	Unsignalized	0.9	A	0.25	NBL
Ames Haven Rd	Unsignalized	3.2	A	0.64	SBL
Tohoqua / Neptune Middle	Signalized	26.6	C	0.86	WBT
Commerce Center Dr	Unsignalized	6.8	A	0.84	SBL
Old Canoe Creek Rd	Signalized	195.5	F	2.67	NBL
US 192	Signalized	33.8	C	0.85	NBL
PM Peak-Hour					
Partin Settlement Rd	Signalized	49.5	D	1.11	EBL
Cross Prairie Pkwy	Signalized	-	-	-	-
Henry Partin Rd	Unsignalized	1.4	A	0.43	NBL
Ames Haven Rd	Unsignalized	3.3	A	0.75	SBL
Tohoqua / Neptune Middle	Signalized	25.1	C	0.94	EBT
Commerce Center Dr	Unsignalized	56.7	E	3.33	SBL
Old Canoe Creek Rd	Signalized	72.7	F	1.06	SBT
US 192	Signalized	42.9	D	0.91	SBT

2.14 RAILROAD CROSSINGS

There are no railroad crossings within the project limits.

2.15 CRASH DATA AND SAFETY ANALYSIS

Historical crash data was obtained for a five-year period from January 1, 2013 to December 31, 2017. The crash data was obtained from the University of Florida's Signal Four Analytics online crash database, which compiles statewide crash data from the Florida Highway Patrol (FHP), as well as from local law enforcement agencies. The data was analyzed to identify specific crash patterns and locations that may indicate a potential safety problem within the study area. The proposed roadway improvements were also reviewed to identify any potential safety implications to the corridor. The study area includes Neptune Road, from Partin Settlement Road to US 192, and the cross-street influence areas of 250 feet in each direction. Only extracted crash data was reviewed, and except for bicycle/pedestrian crashes and fatal crashes, the corresponding crash reports and narratives were not. The summary crash data tables are included in **Appendix A**.

The primary safety concerns along the study corridor are rear-end crashes and lane-departure crashes. The roadway improvements for this project include widening the roadway, constructing a median, and installing sidewalks and bicycle facilities (i.e., bicycle lanes, shared use paths). Widening the roadway would provide an additional lane in each direction to allow motorists to bypass turning traffic that is

slowing or stopping, reducing the susceptibility to rear-end crashes. Additionally, constructing a median would likely aid in reducing lane-departure, crossover, and head-on crashes by providing a physical barrier. These collision factors were involved in two of the three fatal crashes that occurred. Providing sidewalks and bicycle facilities would improve safety on the corridor for non-motorists by separating vulnerable roadway users from vehicular traffic.

2.15.1 HISTORICAL CRASH ANALYSIS

A total of 195 crashes were reported for the five-year period, including three fatal crashes and 109 injury crashes, resulting in three fatalities and 187 injuries. **Table 2-8** summarizes the total number of crashes that occurred within the study area.

The number of reported crashes per year nearly doubled over the five-year history, from 28 in 2013 to 55 in 2017. The rate of increase was greater than the increase in the traffic volume; however, there is no clear reason for the increase in crashes. It is possible that the increasing level of congestion leads to more aggressive driving, which results in the greater number of crashes.

Table 2-8: Summary of Crashes

Year	Total Number of Crashes	Number of Injury Crashes	Number of Fatal Crashes	Number of Dark Crashes	Number of Wet Crashes	Number of Bike/Ped Crashes
2013	28	17	0	8	3	0
2014	22	15	0	3	5	0
2015	33	22	0	6	2	2
2016	57	27	1	6	6	0
2017	55	28	2	15	4	3
Total	**195**	**109**	**3**	**38**	**20**	**5**
Average per Year	39.0	21.8	0.6	7.6	4.0	1.0
Percent		*55.9%*	*1.5%*	*19.5%*	*10.3%*	*2.6%*

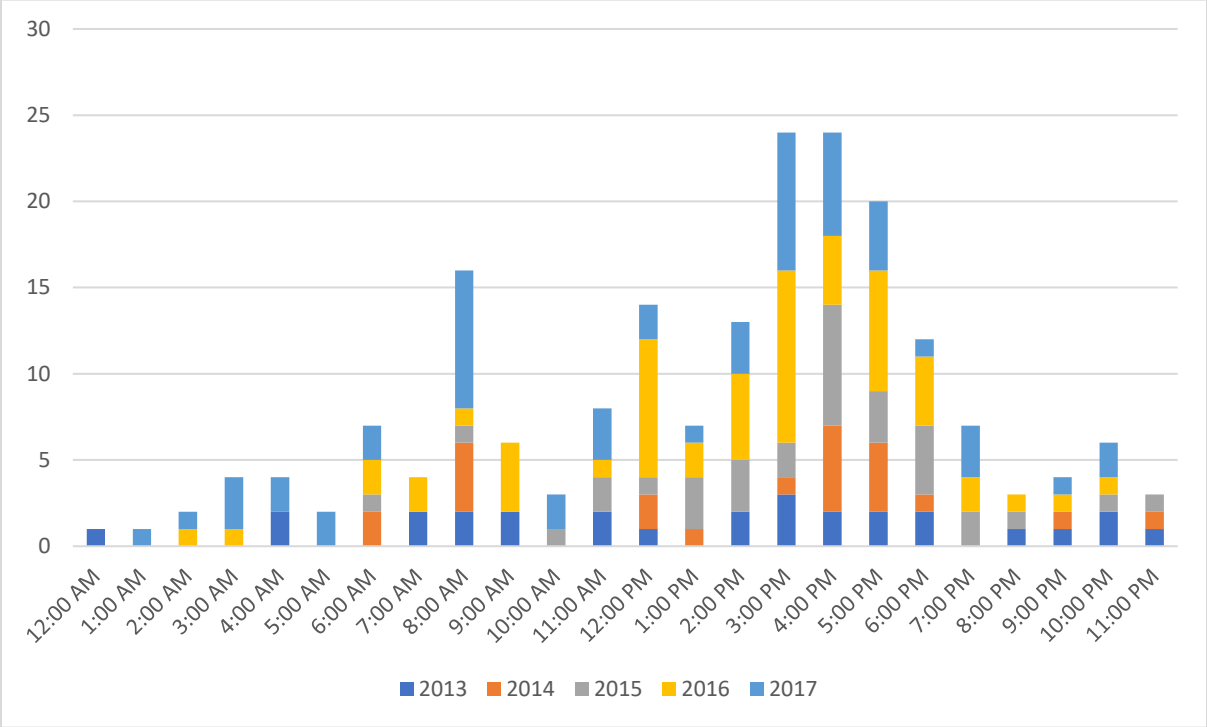
The crash data was organized to determine any significant trends in the circumstances involved in the crashes. The following observations were made:

- Nearly 20 percent of the crashes occurred during dark conditions, and an additional 3 percent occurred during dawn/dusk conditions. Because of the frequency of dark crashes, this corridor may benefit from lighting.
- Approximately 10 percent of the crashes occurred on wet pavement.
- Over 29 percent of the crashes were attributed to distracted driving.
- Seven crashes involved a driver under the influence of drugs or alcohol.
- Approximately 17 percent of the crashes were single-vehicle crashes.
- Over 91 percent of the crashes occurred along Neptune Road, while the remaining 9 percent of crashes occurred on side streets intersecting with Neptune Road. The at-fault direction of

crashes along Neptune Road was evenly distributed between the eastbound and westbound directions.

- The frequency in crashes peaked from 3:00 PM to 6:00 PM, which includes the evening peak hour. A smaller peak in crash frequency occurred from 8:00 AM to 9:00 AM, as depicted on **Exhibit 2-7**.
- The reported total of estimated property and vehicular damages was $1,376,915.
- The estimated economic loss based on crash severity, using crash cost estimates provided in the Roadway Safety Design Bulletin 14-12 Table 23.5.2 FDOT KABCO Crash Costs, was $55,236,782.

Exhibit 2-7: Crashes by Time of Day



A crash type analysis was conducted and the predominant crash type along the corridor was the rear-end crash (47.7 percent). Approximately 49 percent of the rear-end collisions occurred at-fault in the westbound direction and 30 percent occurred at-fault in the eastbound direction. **Table 2-9** summarizes the crashes by type. Rear-end crashes occurred along the entire length of the corridor but were most concentrated along the sections in the vicinity of Ames Haven Road, as well as at the Commerce Center Drive and Stroupe Road intersections. The next most common crash types were left-turn crashes (14.4 percent) and run-off-the-road (ROTR) crashes (13.3 percent). Left-turn crashes were most concentrated at the intersection of Neptune Road at Stroupe Road, and ROTR crashes were most concentrated along the section of Neptune Road near Ames Haven Road. Note that the connection to Stroupe Road has been removed and Stroupe Road now ends as a cul-de-sac near Neptune Road. These changes remove concerns associated with related crashes at this former intersection. Since it was previously a high-crash location, it is described further herein.

Table 2-9: Summary of Crashes by Type

Crash Type	2013	2014	2015	2016	2017	Total	Percent
Rear-End	18	10	16	25	24	93	47.7%
Left-Turn	2	3	9	9	5	28	14.4%
Run-off-the-Road	4	3	3	9	7	26	13.3%
Angle	0	2	0	6	4	12	6.2%
Sideswipe	2	0	1	4	3	10	5.1%
Head-On	0	1	0	1	2	4	2.1%
Pedestrian	0	0	1	0	2	3	1.5%
Bicycle	0	0	1	0	1	2	1.0%
Other	2	3	2	3	7	17	8.7%

Three pedestrian crashes and two bicycle crashes were reported along the study corridor during the five-year period. The crash report narratives and diagrams were reviewed for further analysis and are summarized below (including the Florida Department of Highway Safety and Motor Vehicles crash report number):

- 84241364: In 2015, an eastbound motorist was traveling along Neptune Road while a pedestrian was standing along the south side of the roadway, approximately 600' west of US 192. The pedestrian stepped into the roadway and walked into the side of the trailer that the vehicle was towing.
- 85133314: In 2015, a northbound bicyclist was attempting to cross Neptune Road within the marked Florida Trail crosswalk at Ames Haven Road. An eastbound motorist failed to observe the crossing and struck the bicyclist.
- 85499435: In 2017, a bicyclist was attempting to cross Neptune Road from the Partin Triangle Park to the Florida Trail using the marked crosswalk at the park entrance. A westbound motorist failed to observe the crossing and struck the bicyclist.
- 85546125: In 2017, a pedestrian was walking along the westbound travel lane of Neptune Road, west of Henry Partin Road, during dark conditions (note that the sidewalk is on the other side of the road). A westbound motorist failed to see the pedestrian walking and struck the pedestrian with the vehicle's sideview mirror.
- 87065190: In 2017, a pedestrian was traveling northwest-bound along US 192, attempting to cross the western leg of Neptune Road within the marked crosswalk. A northbound motorist struck the pedestrian while making a left turn from US 192 onto Neptune Road westbound.

2.15.2 FATAL CRASH REVIEW

Three fatal crashes were reported over the five-year history. The crash report narratives and diagrams were reviewed for further analysis and are summarized below (including the Florida Department of Highway Safety and Motor Vehicles crash report number):

- 85308111: In 2016, approximately 0.4 mile west of Commerce Center Drive, an eastbound motorist left the travel lane and crossed over into the westbound travel lane. A westbound motorist was unable to avoid a collision and struck the eastbound motorist head-on. The passenger of the eastbound (at-fault) vehicle expired due to injuries sustained.
- 85576310: In 2017, approximately 900 feet west of Ames Haven Road, an eastbound motorist who was driving under the influence of alcohol was driving in the wrong lane (in the westbound travel lane) during dark conditions. A westbound motorist struck the eastbound vehicle. The driver of the eastbound vehicle expired due to injuries sustained.
- 85592389: In 2017, at the intersection of Neptune Road at Stroupe Road, a southbound motorist who was under the influence of alcohol attempted a left-turn movement onto Neptune Road directly in the path of a westbound motorist during dark conditions. The westbound vehicle collided with the southbound vehicle, and the driver of the southbound vehicle expired due to injuries sustained. Note that the connection to Stroupe Road has been removed.

2.15.3 CRASH CONCENTRATIONS

The crash data was analyzed to determine the predominant spot locations where crashes occurred during the five-year period. Of the 195 crashes reported along the corridor, 145 were reported to have occurred within 250 feet of an intersection. The intersection experiencing the highest frequency of crashes was the side-street, stop-controlled intersection at Stroupe Road (23 crashes). The intersection with the second highest frequency of crashes was the signalized intersection at Old Canoe Creek Road (21 crashes). The intersection-related crashes are summarized by intersection and represented graphically on **Exhibit 2-8**.

Crash trends at the intersections with the highest crash occurrences (at Stroupe Road and at Old Canoe Creek Road) are further analyzed as follows:

Neptune Road at Stroupe Road
Note that the connection to Stroupe Road has been removed, so crashes related to the intersection will no longer occur. The intersection of Neptune Road and Stroupe Road experienced 23 crashes over the five-year history. Nine of the crashes were rear-end crashes, and six of the crashes were left-turn crashes. One head-on crash, as well as a fatal angle crash, also occurred at this intersection. Six of the crashes occurred during dark conditions, and two occurred on wet pavement. Nine of the crashes occurred at-fault in the southbound direction.

Neptune Road at Old Canoe Creek Road
The intersection of Neptune Road and Old Canoe Creek Road experienced a total of 21 crashes over the five-year history. Seven rear-end crashes and six left-turn crashes were reported. Seven of the crashes occurred during dark conditions, and two occurred on wet pavement. Two crashes at the intersection involved a driver under the influence of alcohol.

2.15.4 CRASH COMPARISON TO STATEWIDE AVERAGES

Crashes along segments of Neptune Road were compared to the statewide averages of crashes on comparable facilities based on the functional classification. The classification used for comparison is the Suburban 2-3 Lane, 2-way, undivided facility, which has an average statewide crash rate of 1.236 crashes per million vehicle miles traveled. Crash rates for segments of Neptune Road are shown in **Table 2-10**.

As shown in the table, crashes on Neptune Road are higher than statewide averages for comparable facilities. The higher crash rates are likely influenced by congestion and traffic volumes that are relatively high.

Exhibit 2-8: Summary of Crashes by Location

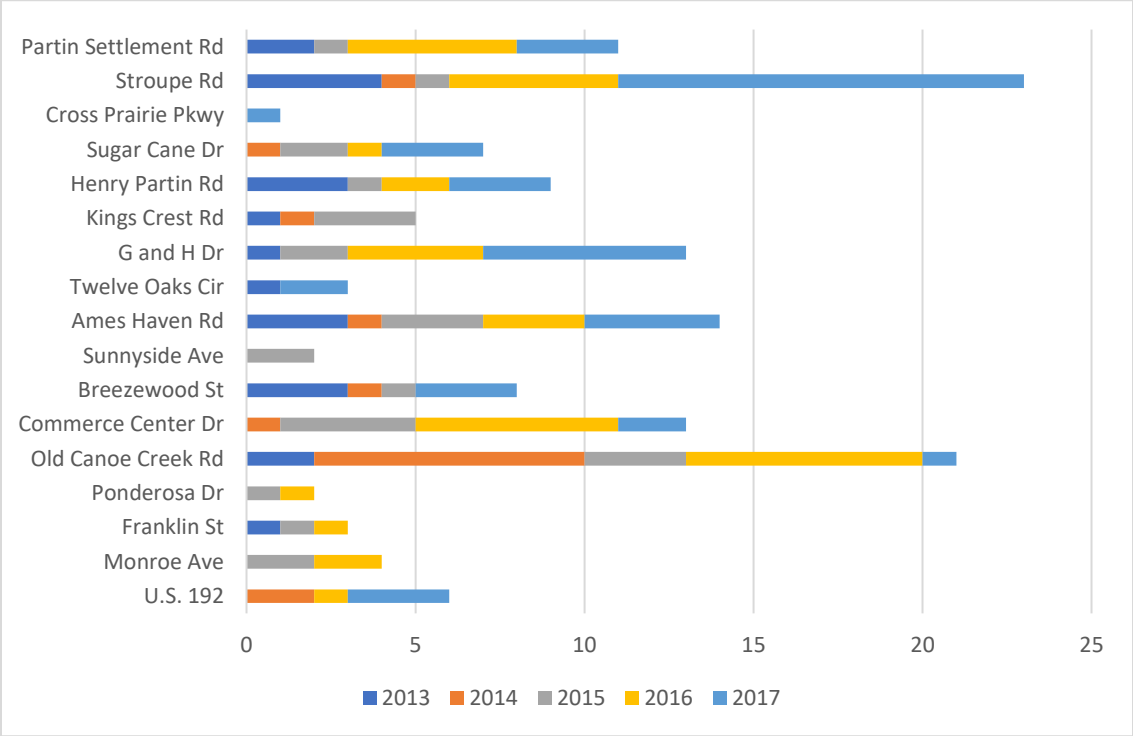


Table 2-10: Crash Rates (per million vehicle miles traveled) on Neptune Road

Segment	2018 AADT	Crashes (2013-2017)	Length (mi)	5-Year Segment Crash Rate (crashes per million vmt)
Partin Settlement Road to Cross Prairie Parkway	26,000	46	0.573	**1.693**
Cross Prairie Parkway to Old Canoe Creek Road	24,000	138	2.87	**1.098**
Old Canoe Creek Road to US 192	21,000	35	0.486	**1.881**

2.15.5 CRASH EXPECTANCY

Converting a two-lane, undivided roadway to a four-lane, divided roadway is desirable from a safety perspective because the configuration separates opposing traffic, provides a larger recovery area for out-of-control vehicles, allows space for speed-change lanes, and provides storage of left-turning and U-turning vehicles. Since pedestrians and bicyclists are more susceptible to injury than vehicle occupants when involved in a crash, they are considered vulnerable roadway users. The sidewalks, bicycle lanes, and shared use paths included in this project further separate pedestrians and bicyclists from vehicular traffic.

Providing sidewalks and shared use paths is likely to reduce pedestrian crashes that occur when a motor vehicle strikes a pedestrian walking along a roadway, which more often occur during dark conditions on roadways without sidewalks or shared use paths. Providing dedicated bicycle lanes is likely to reduce bicycle-vehicle crashes, as well as total crashes on roadway segments. Pavement markings on the sides of a roadway better delineate travel lanes and bicycle lanes and appear to reduce erratic maneuvers by both drivers and bicyclists. Dedicated bicycle lanes also lead to higher levels of comfort for both bicyclists and motorists.

The Federal Highway Administration (FHWA) Crash Modification Factors Clearinghouse website was reviewed to determine expected impacts to historical crash trends when implementing the roadway improvements considered in this project. A crash modification factor (CMF) is an estimated proportion of crashes remaining after implementation of a given countermeasure. A CMF less than one equals an expected reduction in crash frequency. CMFs are rated with a star quality rating that indicates the quality or confidence in the results of the studies producing the CMFs. Star ratings are assigned on a scale of one star to five stars, with five stars indicating the highest and most reliable rating. CMFs with a star rating of less than three were not included in this analysis. The Clearinghouse lists the following CMFs relevant to this project:

- CMF ID 4103: 0.410 CMF for injury-severity vehicle/bicycle crashes for installation of cycle tracks or bicycle lanes, separated from motor vehicle traffic (3-star rating)
- CMF ID 7566: 0.341 CMF for all crashes for conversion of urban and rural two-lane roadways to four-lane divided roadways (4-star rating)

Based on these CMFs and the given crash history along the study corridor, the number of crashes along the corridor can be expected to decrease by 128 crashes over a period of five years. **Table 2-11** summarizes the applied CMFs, historical number of crashes, and expected number of crashes.

Table 2-11: Crash Expectancy by CMF

Countermeasure	CMF	Applied to	Historical Number of Crashes	Expected Number of Crashes
Install bicycle lanes	0.410	Injury-severity Bicycle/Vehicle Crashes	2	1
Convert two-lane roadway to four-lane, divided roadway	0.341	All Crashes	193	66
Sum			**195**	**67**

2.16 DRAINAGE

Neptune Road, from Partin Settlement Road to US 192, lies within the Fish Lake and Lake Tohopekaliga Basins. Stormwater runoff is generally captured and conveyed to these lakes by roadside ditches that outfall to the Partin Canal, Canal C-31, and Peg Horn Slough.

Stormwater runoff from the portion of the roadway located west of Florida's Turnpike is conveyed to these lakes via open ditches and the Partin Canal.

The portion of the roadway located east of Florida's Turnpike drains to Lake Tohopekaliga via the Peg Horn Slough and Canal C-31.

The only portion of the existing roadway that drains to a permitted stormwater management facility is located at the intersection of Neptune Road and Old Canoe Creek Road. The remainder of the stormwater runoff discharges directly to Fish Lake and Lake Tohopekaliga.

2.17 SOILS AND GEOTECHNICAL DATA

The Natural Resources Conservation Service (NRCS) Soil Survey for Osceola County indicates that eleven soil types are present within the 3.9-mile long urban corridor:

- Adamsville sand, 0 to 2 percent slopes
- Basinger fine sand, 0 to 2 percent slopes
- Delray loamy fine sand, depressional
- Immokalee fine sand, 0 to 2 percent slopes
- Myakka fine sand, 0 to 2 percent slopes
- Placid find sand, frequently ponded, 0 to 1 percent slopes
- Placid variant fine sand
- Samsula muck, frequently ponded, 0 to 1 percent slopes
- Smyrna fine sands, 0 to 2 percent slopes
- Wabasso fine sand, 0 to 2 percent slopes
- Wauchula fine sand

The predominant soils in the corridor are sands, characterized as poorly-drained, nearly level to gently sloping, and located in broad flatwoods and narrow ridge areas. The NRCS-estimated seasonal high groundwater levels for these soils range from 0.5 to 3.5 feet below the natural ground surface. These materials are generally appropriate for roadway embankment support but can be sensitive to moisture content and difficult to dry and compact during construction.

Delray loamy fine sand, Placid fine sand, frequently ponded, and Samsula muck, frequently ponded are present in topographic depressions and wetlands within the corridor. These soil types are comprised of sand, loam, and herbaceous (organic/muck) deposits. Drainage in these soil types is typically very limited due to the silt fines in the sand and loam and decayed organic material in the muck. The NRCS-estimated seasonal high groundwater levels for these soils range from two feet of ponded water in the wet season to about one-foot below the natural ground surface. These materials have limitations for roadway construction. Muck is generally unsuitable for embankment support and typically requires removal and replacement with engineered fill.

The soils present within the project corridor are generally identified by a dual hydrologic soil Group A/D. Group A soils are used to identify drained areas and Group D soils represent undrained areas. Group A soils possess low runoff potential due to their sandy, permeable nature. Group D soils have high runoff potential due to a shallow groundwater table and/or impervious near-surface silt and clay fines. Group A soils can be conducive to stormwater infiltration and design of dry retention ponds. Group D soils indicate poor infiltration characteristics and are more conducive to design of wet detention ponds.

2.18 UTILITIES

A total of 14 utility providers were identified through coordination with Sunshine 811 as having utilities within the project area. **Table 2-12** provides a list of the utility providers from that coordination.

In accordance with Part 2, Chapter 21 of the *PD&E Manual*, the utility providers listed in the table were notified of the proposed improvements and provided concept plans to identify the location of their utilities within the project area. Additional information about the utilities impacted by the Preferred Alternative are provided in Section 6.1.10. Additional information is also provided in the Utility Assessment Package.

Based on information from existing right-of-way maps, several utilities are located in easements along the project. Utility providers that have facilities identified in easements include Florida Gas Transmission, Orlando Utilities Commission distribution and transmission, Kissimmee Utility Authority distribution and transmission, and communication facilities under-built on the existing power poles. Since relocations of facilities located in easements would likely be eligible for reimbursement, all measures will be taken to avoid impacting facilities identified in lands of compensable interest. Utility coordination should continue to be performed during the final design phase of the project to clearly identify all utility easements and potential reimbursable relocations on the project.

Table 2-12: Summary of Utility Providers

Utility Agency/Owner	Contact	Address
AT&T Corporation (buried fiber)	Greg Jacobson (813) 342-0512	6015 Benjamin Road, Suite 306 Tampa, FL 33634
Florida Public Utilities (distribution gas)	Gary Hardy 863-224-3786	1705 7th Street SW Winter Springs, FL 33880
City of St. Cloud (water/wastewater/reuse)	Veronica Miller (407) 957-7265	1300 9th Street St. Cloud, FL 34769
Charter Communications (CATV/phone/fiber)	Marvin Usry (407) 532-8509	3767 All American Boulevard Orlando, FL 32810
Florida Gas Transmission (30" & 24" trans. pipeline)	Joe Sanchez (407) 838-7171	2405 Lucien Way, Suite 200 Maitland, FL 32751
TOHO Water Authority (water/wastewater/reuse)	George Eversole	101 N Church Street Kissimmee, FL 34741
CenturyLink (phone/fiber)	Ty Leslie (407) 814-5293	33 N Main Street Winter Garden, FL 34787
Osceola County Traffic (fiber/traffic)	Rick Cole (407) 742-0623	3850 Old Canoe Creek Road St. Cloud, FL 34769
Summit Broadband (phone/fiber)	Aaron Pickle (321) 356-2995	4558 SW 35th Street, Suite 100 Orlando, FL 32811
KUA-Electric (distribution electric)	Felix Escobar (407) 933-7777	1701 W Carroll Street Kissimmee, FL 34741
KUA-Transmission (transmission electric)	Jeff Santos	1701 W Carroll Street Kissimmee, FL 34741
OUC-Electric (distribution electric)	Vince Montgomery 407-434-4149	6003 Pershing Avenue Orlando, FL 32822
OUC-Transmission (transmission electric)	Dan Slack 407-434-4125	6003 Pershing Avenue Orlando, FL 32822
AT&T Distribution (phone)	Alan Reynolds (407) 351-8180	5100 Steyr Street Orlando, FL 32819

2.19 LIGHTING

Lighting is provided on Neptune Road, from Partin Settlement Road to approximately 900 feet east of Partin Settlement Road. East of this location, lighting is provided for the Neptune Road Path only until Old Canoe Creek Road. The intersection of Neptune Road and Old Canoe Creek Road has lighting, but lighting is not provided between Old Canoe Creek Road and US 192.

2.20 SIGNS

Traffic signs along Neptune road are consistent with typical signage on similar facilities. Regulatory, warning, and guide signs are located throughout the corridor, including signage associated with pedestrian crosswalks and school zones. Unique signage includes signs for the Florida Trail and Partin Triangle Park. Any improvements or modifications to Neptune Road will include design of signing and pavement markings based on the updated conditions.

There are no major overhead traffic signs located within the study limits.

2.21 AESTHETIC FEATURES

There are trees in the median just west of Old Canoe Creek Road. There are low level bushes and shrubs in the medians east and west of Old Canoe Creek Road. Landscaping within the medians is maintained by the County. Existing lighting is described in Section 2.19. Other than the median treatments and lighting, there are no aesthetic features (i.e., landscaping) provided along Neptune Road.

2.22 BRIDGES AND STRUCTURES

Neptune Road has three mainline bridge structures that carry Neptune Road over waterways and Florida's Turnpike. Two of these are typical bridges and the third is a box culvert with a span exceeding twenty feet. All culverts with spans exceeding twenty feet are classified as bridges for design purposes. Additionally, three pedestrian bridge structures span waterways and Florida's Turnpike along the corridor. **Table 2-13** summarizes the span lengths, deck widths, lane and shoulder widths, and superstructure types of these bridges.

Table 2-13: Existing Structure Facilities

Facility	Bridge No.	No. of Spans	Bridge Length (ft)	Max. Span Length (ft)	Deck Width (ft)	Lane/Shoulder Widths (ft)	Superstrucutre Type
Neptune Road over St. Cloud Canal C-31	924049	5	100	20	25.5	2'-0" Shoulder, 2-10'-0" lanes, 2'-0" Shoulder	Concrete Flat Slab
Pedestrian Bridge over St. Cloud Canal C-31	N/A	4*	150*	40*	12*	10'-6" Multi-use path	Concrete Flat Slab
Neptune Road over Florida's Turnpike	920044	4	256	79.1	33.8	2'-0" Shoulder, 2-12'-0" lanes, 2'-0" Shoulder	Prestressed Concrete Girder
Pedestrian Bridge over Florida's Turnpike	924185	3	316	138.1	12	10'-6" Multi-use path	Prestressed Concrete Girder
Neptune Road over Fish Lake Canal	924008	3	24	8	N/A	2-12'-0" Lanes	Concrete Box Culvert
Pedestrian Bridge over Fish Lake Canal	N/A	1	70*	70*	9*	10'-6" Multi-use path	Steel Truss w/ Timber deck

* Values determined by field measurements

The horizontal and vertical clearances for the structures are summarized in **Table 2-14**. Only the bridges spanning navigable waterways or other roadways will have clearance information. Neptune Road over Florida's Turnpike does not currently meet vertical clearance requirements for roadways, and Neptune Road over St. Cloud Canal C-31 does not meet vertical clearance over a navigable waterway.

Table 2-14: Existing Structure Clearances

Facility	Bridge No.	Horizontal Clearance to Substructure (ft)	Vertical Clearance (ft)
Neptune Road over Florida's Turnpike	920044	8'-0" to Piers 1 and 3 and 18'-0" to Pier 2 (Median Pier)	16.1
Pedestrian Bridge over Florida's Turnpike	924185	8'-0" to Piers 1 and 3 and 18'-0" to Pier 2 (Median Pier)	17.8
Neptune Road over St. Cloud Canal C-31	924049	N/A – not over road or railroad	5.0*

*Vertical clearance based on assumption of 1'-0" thick slab. This value is based on the minimum design thickness found in the American Association of State Highway and Transportation Officials (AASHTO) Load and Resistance Factor Design (LRFD) Bridge Design Specifications.

The current conditions and year of construction for the structures along the corridor are summarized in **Table 2-15**. Information was obtained through the most recent inspection reports available. The sufficiency rating is derived from a formula that evaluates many factors to determine the viability of the structure to remain in place. A rating of 100% represents a fully sufficient bridge, while a rating of 0% represents a deficient bridge. One bridge along the corridor, Neptune Road over St. Cloud Canal C-31, is considered functionally obsolete. Functionally obsolete means the bridge no longer meets current road design standards, i.e., narrow lane widths could create a functionally obsolete structure. If a structure is deemed functionally obsolete and has a sufficiency rating less than 50, the bridge qualifies for replacement with federal bridge funds.

Table 2-15: Existing Structure Conditions

Facility	Bridge No.	Sufficiency Rating	Overall NBI Rating[1]					Year Built
			Deck	Super-structure	Sub-structure	Culvert	Channel	
Neptune Road over St. Cloud Canal C-31[2]	924049	54.51	7	7	5	N/A	6	1957
Pedestrian Bridge over St. Cloud Canal C-31	N/A	N/A	7	7	7	N/A	7	2005
Neptune Road over Florida's Turnpike	920044	74.1	6	6	7	N/A	N/A	1963
Pedestrian Bridge over Florida's Turnpike	924185	N/A	7	8	7	N/A	N/A	2005
Neptune Road over Fish Lake Canal	924008	96	N/A	N/A	N/A	6	7	1959
Pedestrian Bridge over Fish Lake Canal	N/A	N/A	7	8	8	N/A	7	2005

Notes:

[1]National Bridge Inventory (NBI) Rating: 9 (Excellent), 8 (Very Good), 7 (Good), 6 (Satisfactory), 5 (Fair)

[2] This structure is considered Functionally Obsolete

Bridges 50 years of age or older may be considered historic and placed on the National Register of Historic Places (NRHP). None of the structures along the corridor are listed on the NRHP. Based on the results of the Cultural Resource Assessment Survey, on December 20, 2019 the State Historic Preservation Officer concurred that the proposed improvements to Neptune Road will have no adverse effect on any listed, or eligible for listing, resources in the National Register of Historic Places.

When a structure is load rated, safe load carrying capacities are determined, and in the event the carrying capacity of the structure is below standard Florida Legal loads, the structure will be posted with a maximum load. All structures along this corridor currently do not require posting.

2.23 EXISTING ENVIRONMENTAL CONDITIONS

The assessment of natural and biological features, wetlands, and threatened and endangered species within the study area included a review of the following data and documents within a 500-foot buffer[1] of the existing road:

- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), *Soil Survey of Osceola County, Florida*
- Historical aerial photography from the FDOT Aerial Photo Look-up System (APLUS) and Publication of Archival Library and Museum Materials (PALMM)
- Habitat and species-specific information obtained from the USFWS, the Florida Fish and Wildlife Conservation Commission (FWC), Florida Fish and Wildlife Research Institute (FWRI), Florida Geographic Data Library (FGDL), and the Florida Natural Areas Inventory (FNAI)
- The Hydric Soils of Florida Handbook (2007)
- The US Geological Survey (USGS) 7.5-Minute Quadrangle maps
- The USFWS National Wetland Inventory (NWI) maps
- The USGS Groundwater Atlas of the United States
- The Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM)
- FNAI Standard Data Report for the study area
- USFWS Information for Planning and Consultation (IPaC) Trust Resources Report for the study area
- United States Environmental Protection Agency (USEPA) Sole Source Aquifer Program maps
- Review of books and other technical reports for each of the listed species evaluated in this biological assessment
- Review of agency comments on the Advance Notification Package (Distributed on August 31, 2018) and the Efficient Transportation Decision Making (ETDM) screening conducted on August 27, 2019 (ETDM #14402)

In addition to the review of databases, reports and other resources, field reconnaissance was conducted on November 30, 2018 and February 19, 2019. Caracara surveys were conducted from January 2019 through April 2019. A Florida bonneted bat roost and acoustic survey was conducted May 2020 through June 2020 with no evidence of the species within the project limits.

[1] **Habitat was reviewed within a 1500-meter buffer to determine suitable habitat for crested caracara surveys.**

2.23.1 EXISTING AND FUTURE LAND USE

2.23.1.1 EXISTING LAND USE

Existing land use within the study area was determined through the interpretation of 1" = 100' scale aerial photography, review of land cover GIS data from SFWMD and field reconnaissance. Existing land use was mapped based on the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999) for the study area and is depicted in **Exhibits 2-9 through 2-12**.

2.23.1.2 FUTURE LAND USE

Future land use (FLU) was determined based on a review of GIS data from Osceola County. FLU for the study area is depicted on **Exhibits 2-13 through 2-16**. The study area is partially developed with residential and commercial land uses. However, there is some agriculture land uses remaining within the study area. The FLU shows these agriculture areas as either mixed use or low density residential. As described in the purpose and need (Section 3.0 – Transportation Demand), much of the study area is located within the County's East of Lake Toho Conceptual Master Plan and there are two Development of Regional Impacts (DRIs) under construction adjacent to Neptune Road. The population in Osceola County, specifically in Kissimmee and surrounding communities, is growing which is indicative on the FLU maps.

2.23.1.3 HABITAT AND VEGETATIVE COVER

Land covers within the study area have been assigned habitat classifications per the FLUCFCS. The study area contains twenty-one land cover classes. A FLUCFCS map is included (see **Exhibits 2-9 through 2-12**), and a description by FLUCFCS type, and calculated total acreages are provided in **Table 2-16**.

Table 2-16: Summary of Land Cover/Land Use within the Study Area

FLUCFCS Code	FLUCFCS Type	Description	Acres
111	Fixed single family units, low density	This land use consists of low density, rural single-family residences found in the central portion of the study area, south of Neptune Road.	5.2
121	Fixed single family units, medium density	This land use type consists of medium density, single family residences. This category encompasses most of the residential land use found throughout the study area.	111.4
132	Mobile home units	This land use consists of G & H Mobile Home Park, located between Neptune Road and Fish Lake within the study area.	2.6
133	Multiple dwelling units, low rise	This land use consists of apartment buildings and duplexes scattered between Florida's Turnpike and US 192.	21.4
139	High density under construction	This land use consists of Tohoqua, a residential community which is currently under construction. This site is located on the south side of Neptune Road, facing Neptune Middle School.	14.7
141	Retail sales and services	This land use consists of several shopping centers within the study area, with most being located between Old Canoe Creek Road and US 192.	29.2
171	Educational facilities	This land use designation is for Neptune Middle School, located north of Neptune Road and adjacent to and west of Florida's Turnpike	15.5
172	Religious	This land use encompasses various churches and associated facilities. Religious facilities are found scattered throughout the study area.	12.1
175	Governmental	This land use consists of a St. Cloud Police Department station at the corner of Old Canoe Creek Road and Neptune Road.	4.4
185	Parks and zoos	This category includes two Osceola County parks located within the study area, Partin Triangle Neighborhood Park and Boat Ramp and Neptune Middle School Sports Fields.	15.3
190	Open land	This land use consists of undeveloped, inactive areas within the study area with no structures or indication of intended use. This parcel is located on the eastern end of Neptune Road.	3.9
211	Improved pastures	This land use consists of open prairie utilized by cattle. Vegetation observed was predominated by bahia grass (*Paspalum notatum*), with scattered cogon grass (*Imperata cylindrica*) and cabbage palms (*Sabal palmetto*). This land use occurs throughout the study area.	53.9
245	Floriculture	This land use consists of areas dedicated to the cultivation of decorative flowering plants. Within the study area, this consists of the Tom Ritter Orchids nursery, found adjacent to and south of Neptune Road.	2.2
261	Fallow crop land	This land use type consists of harvested, inactive agricultural fields within the study area.	30.4

Data compiled by Kimley-Horn and Associates, Inc. 2019

Table 2-16: Summary of Land Cover/Land Use within the Study Area (continued)

FLUCFCS Code	FLUCFCS Type	Description	Acres
434	Hardwood-conifer mixed	This land use consists of various upland forested areas scattered along Florida's Turnpike and Neptune Road. Canopy vegetation included live oak (*Quercus virginiana*) and slash pine (*Pinus elliotti*). Other vegetation observed included Brazilian pepper (*Schinus terebinthifolius*), cabbage palms, and beggarticks (*Bidens spp.*).	17.8
510	Streams and waterways	This category includes various drainage features that run through the study area, such as roadside ditches and SFWMD canals. Vegetation observed along the banks of these ditches included cattail (*Typha spp*.), pickerelweed (*Pontederia cordata*), and torpedograss (*Panicum repens*).	10.1
534	Reservoirs less than 10 acres	This category includes man-made stormwater pond areas serving various developments along Neptune Road. Vegetation observed included cattail and St. Augustine grass (*Stenotaphrum secundatum*) along the edges of the ponds.	8.1
617	Mixed wetland hardwoods	This forested wetland community occurs in several areas throughout the study area. The canopy observed included bald cypress (*Taxodium distichum*) and red maple (*Acer rubrum*), with a scattered shrub layer consisting of Brazilian pepper, Carolina willow (*Salix caroliniana*) and elderberry (*Sambucus canadensis*). The herb stratum includes Virginia chainfern (*Woodwardia virginica*) and marsh fern (*Thelypteris palustris*).	18.5
641	Freshwater marshes	This herbaceous wetland community occurs throughout the study area. Vegetation observed included softrush (*Juncus spp.)*, maidencane (*Panicum hemitomon*), primrose willow (*Ludwigia peruviana*), elderberry, saltbush (*Baccharis hamifolia*), and scattered red maple.	26.8
643	Wet prairies	This herbaceous wetland community is located between the Partin canal and Neptune Road. These areas were historically used as cattle pasture. Vegetation observed included maidencane, softrush, torpedograss , and arrowhead (*Sagittaria lancifolia*).	10.8
814	Roads and highways	This land use consists of roads and associated ROW that are located throughout the study area.	80.1
		Grand Total	**494.4**

Land cover and land uses based on the Florida Land Use, Cover and Forms Classification System (FLUCFCS). Acreage is based on the 500-foot study area boundary.

Data compiled by Kimley-Horn and Associates, Inc. 2019

Exhibit 2-9: FLUCFCS Map (1 of 4)

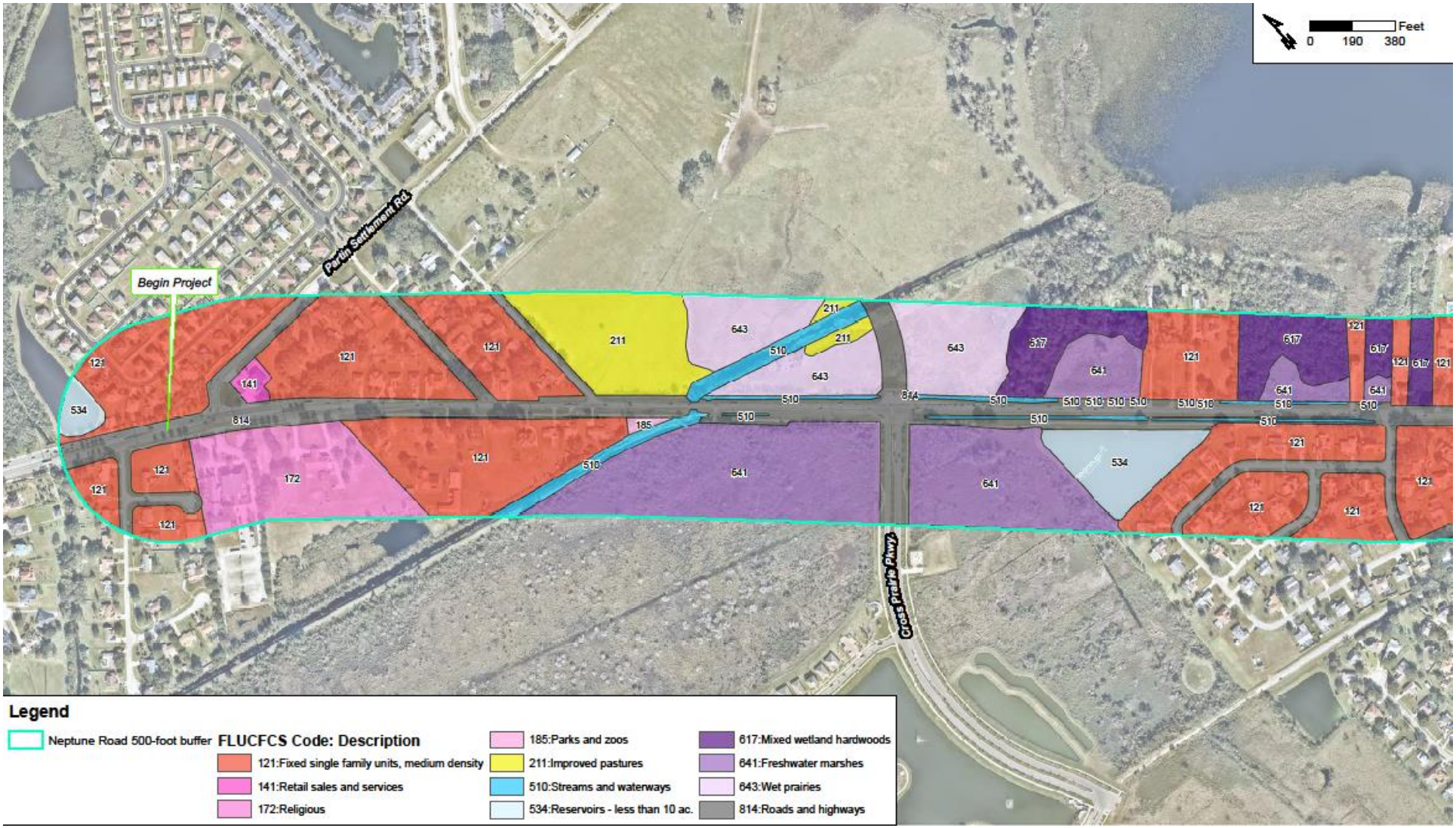


Exhibit 2-10: FLUCFCS Map (2 of 4)

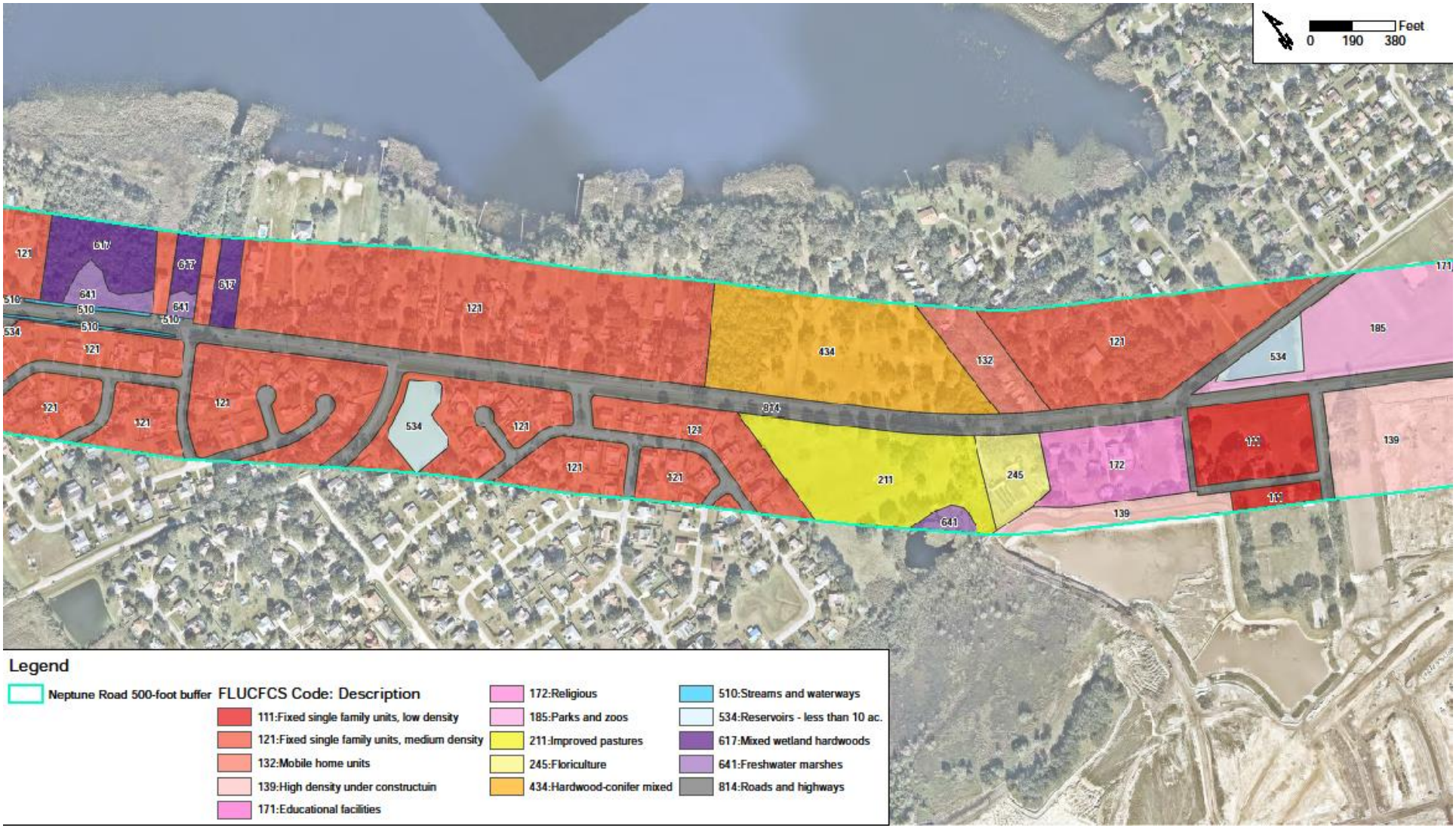


Exhibit 2-11: FLUCFCS Map (3 of 4)

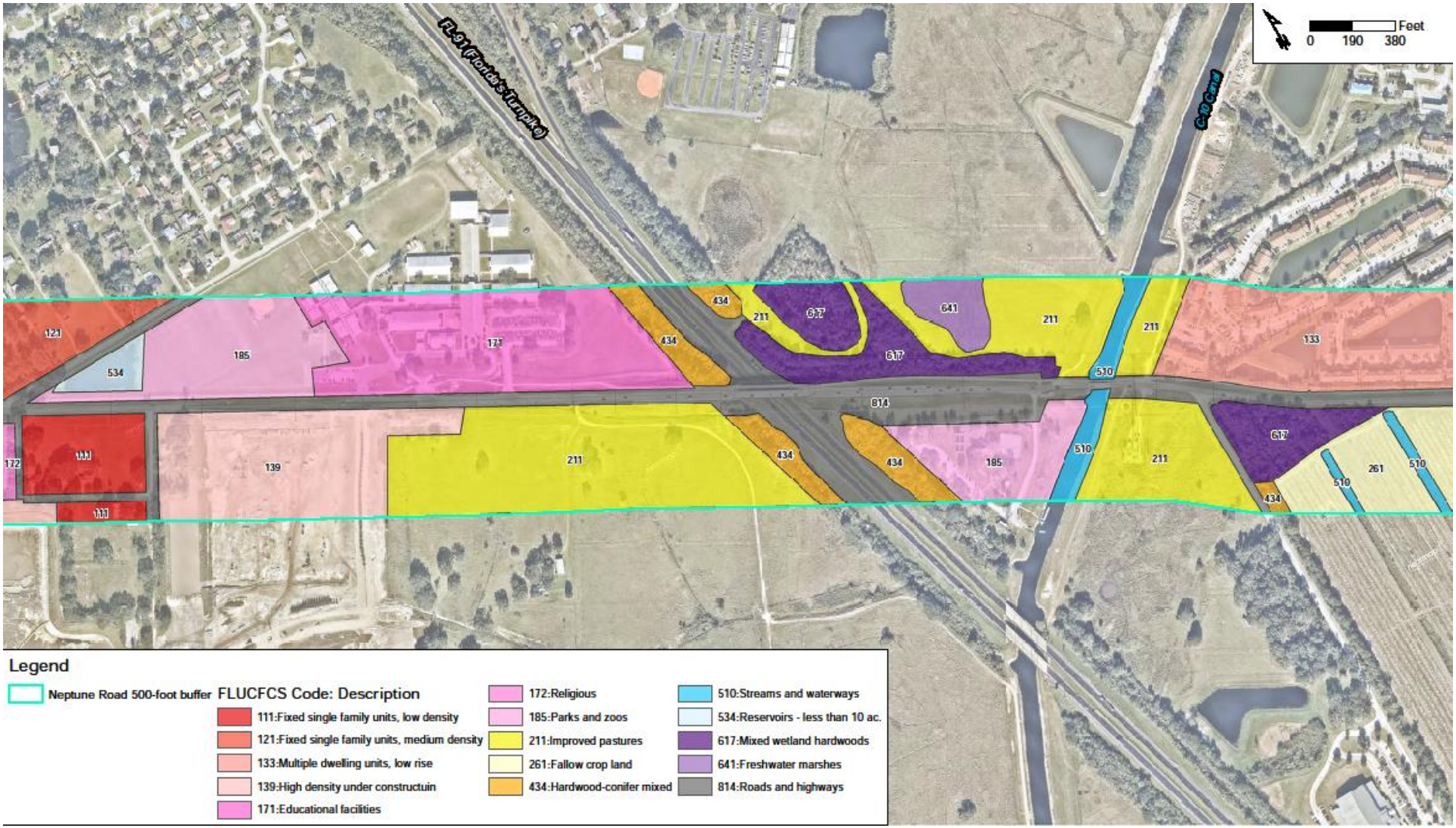


Exhibit 2-12: FLUCFCS Map (4 of 4)

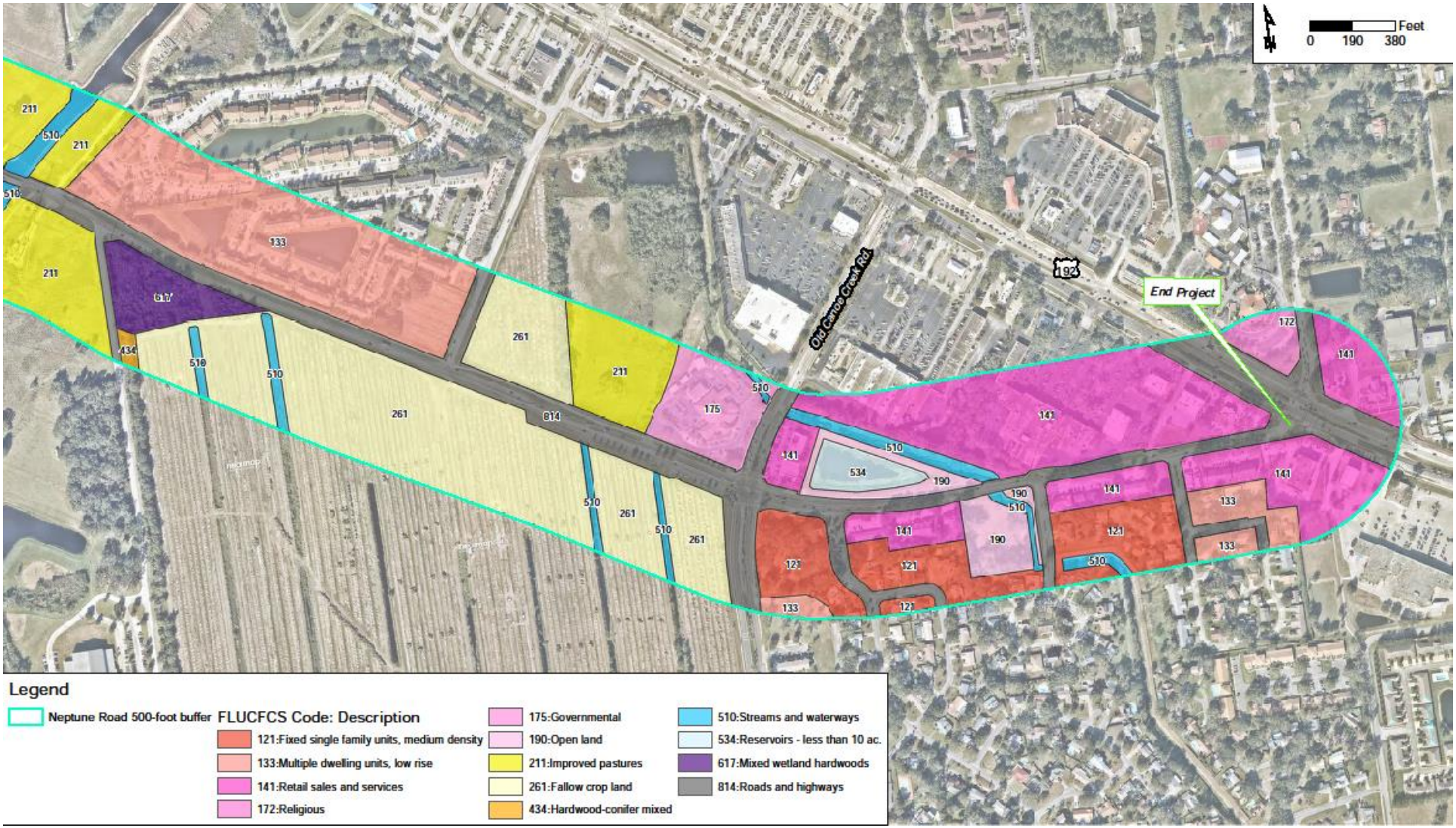


Exhibit 2-13: Osceola County FLU Map (1 of 4)

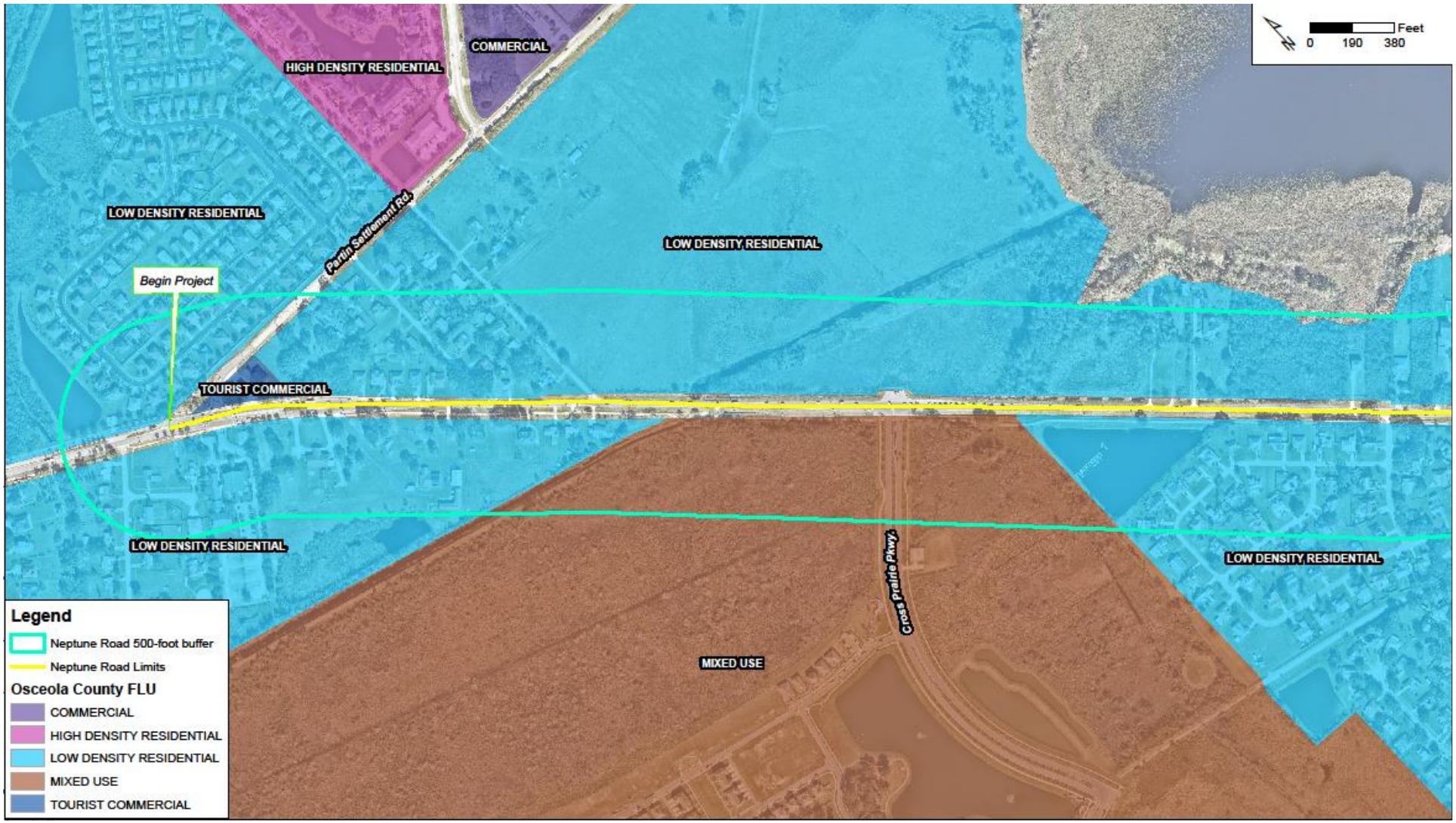


Exhibit 2-14: Osceola County FLU Map (2 of 4)

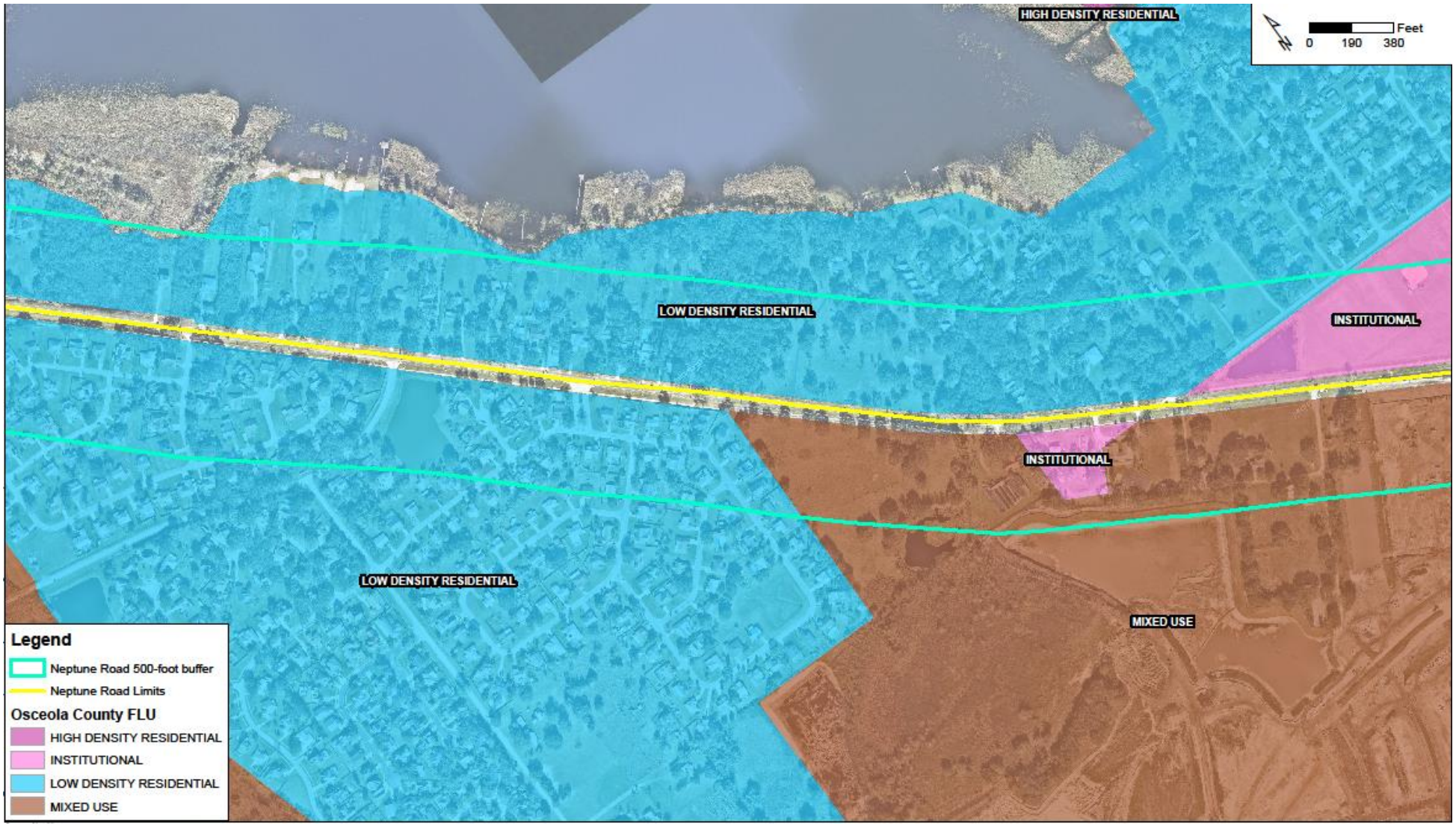


Exhibit 2-15: Osceola County FLU Map (3 of 4)

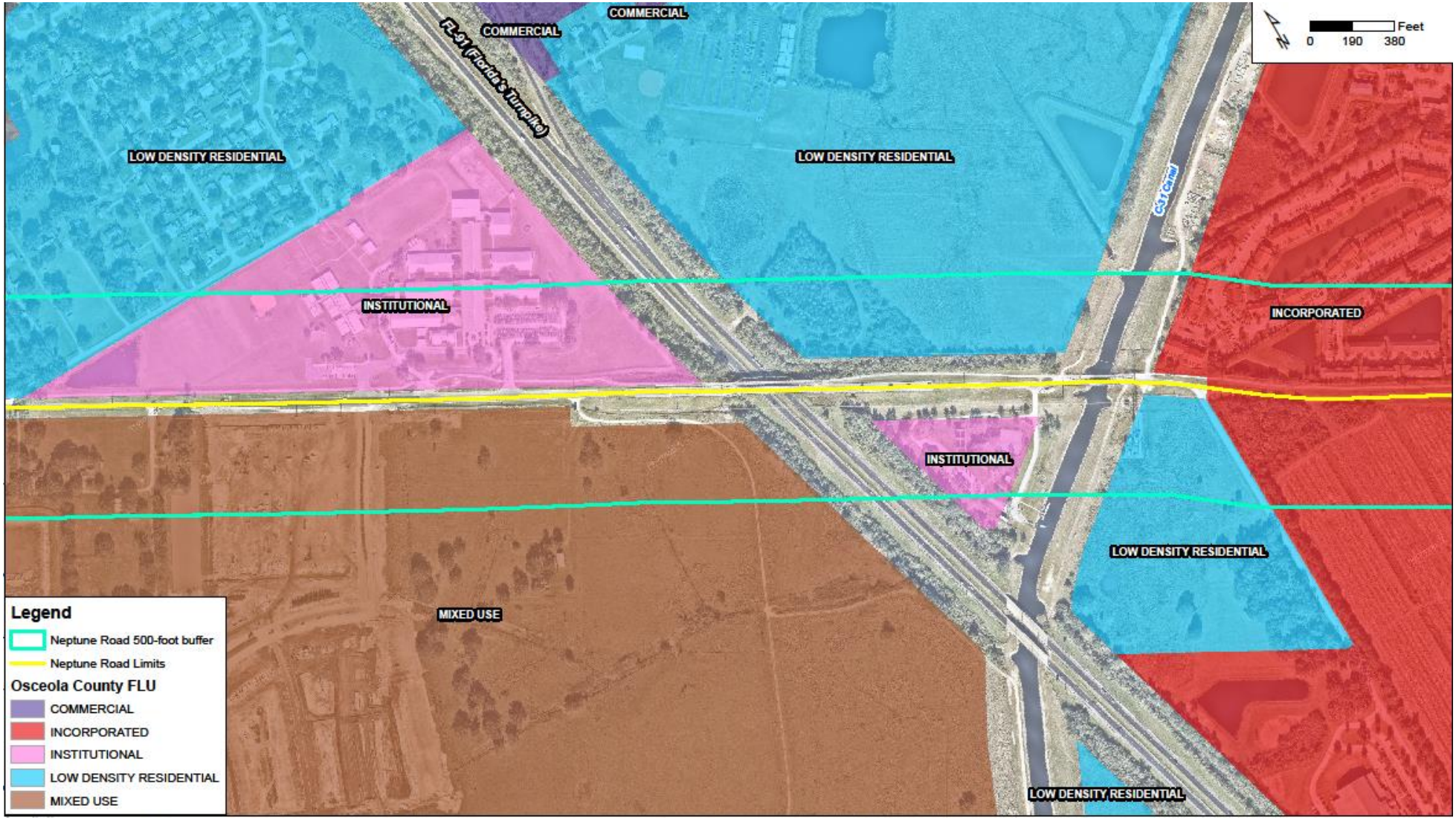
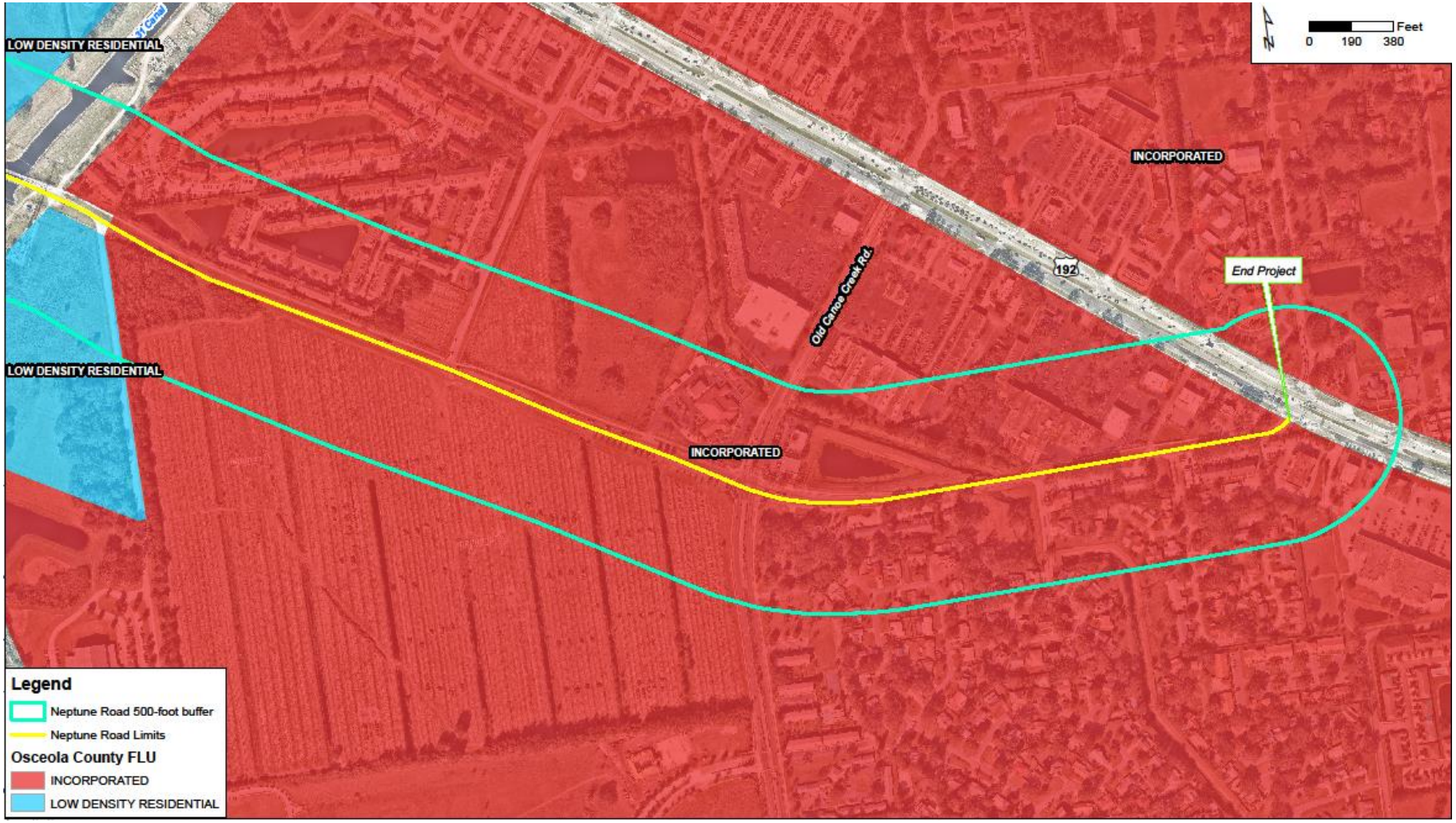


Exhibit 2-16: Osceola County FLU Map (4 of 4)



2.23.1.4 SOILS

Based on a review of the USDA/NRCS Soil Survey for Osceola County, there are twenty (20) major soil types within the study area. **Table 2-17** includes a summary of the soil types found in the study area (see **NRCS Soils Map** - **Exhibits 2-17 through 2-20**).

Table 2-17: NRCS Soils Identified in the Study Area in Osceola County

Soil ID Number	Soil Name	% of soil within study area	Parent Material	Drainage Class	Water Capacity	Hydraulic Conductivity	Depth to Restrictive Feature	Groundwater Depth
1	Adamsville sand	1.24	Sandy marine deposits	Somewhat poorly drained	Low	rapid	>80 inches	18 to 42 inches
5	**Basinger fine sand**	**3.32**	**Sandy marine deposits**	**Poorly drained**	**Low**	**Very rapid**	**>80 inches**	**6 inches**
9	Cassia Fine Sand	0.57	Sandy marine deposits	Somewhat poorly drained	Low	Moderately rapid	>80 inches	18 to 42 inches
10	**Delray Loamy Fine Sand, Depressional**	**5.01**	**Sandy and loamy marine deposits**	**Very poorly drained**	**Low**	**Moderately rapid**	**>80 inches**	**0 inches**
15	**Hontoon Muck**	**0.01**	**Herbaceous organic material**	**Very poorly drained**	**Very high**	**Very rapid**	**>80 inches**	**0 inches**
16	Immokalee Fine Sand	26.13	Sandy marine deposits	Poorly drained	Low	Moderately rapid	>80 inches	6-18 inches
17	**Kaliga Muck**	**0.38**	**Herbaceous organic material over stratified loamy marine deposits**	**Very poorly drained**	**Very high**	**Moderately slow to moderately high**	**>80 inches**	**0-6 inches**
22	Myakka Fine Sand	21.03	Sandy marine deposits	Poorly drained	Very low	Moderately rapid	>80 inches	6-18 inches
23	Myakka-Urban Land Complex	<0.01	Sandy marine deposits	Poorly drained	Very low	Moderately rapid	>80 inches	6-18 inches
24	Narcoossee Fine Sand	0.06	Sandy marine deposits	Moderately well drained	Very low	Rapid	>80 inches	24-42 inches

Bold denotes hydric soils.
There is 0.45% of the project area within water, which was not included in the table.

Table 2-17: NRCS Soils Identified in the Study Area in Osceola County (continued)

Soil ID Number	Soil Name	% of soil within study area	Parent Material	Drainage Class	Water Capacity	Hydraulic Conductivity	Depth to Restrictive Feature	Groundwater Depth
32	**Placid Fine Sand, Depressional**	**9.99**	**Sandy marine deposits**	**Very poorly drained**	**Low**	**Rapid**	**>80 inches**	**0-6 inches**
33	Placid Variant Fine Sand	0.50	Sandy marine deposits	Somewhat poorly drained	Low	Rapid	>80 inches	18-42 inches
34	Pomello Fine Sand, 0-5% Slopes	0.13	Sandy marine deposits	Moderately well drained	Low	Moderately rapid	>80 inches	24-42 inches
36	**Pompano Fine Sand**	**0.08**	**Sandy marine deposits**	**Poorly drained**	**Low**	**Rapid**	**>80 inches**	**3-18 inches**
38	**Riviera Fine Sand**	**0.01**	**Sandy and loamy marine deposits**	**Poorly drained**	**Moderate**	**Moderately rapid**	**>80 inches**	**3-18 inches**
39	**Riviera Fine Sand, Depressional**	**0.02**	**Sandy and loamy marine deposits**	**Very poorly drained**	**Low**	**Moderately rapid**	**>80 inches**	**0-6 inches**
40	**Samsula Muck**	**10.21**	**Herbaceous organic material over sandy marine deposits**	**Very poorly drained**	**Very high**	**Rapid**	**>80 inches**	**0-6 inches**
42	Smyrna Fine Sand	6.38	Sandy marine deposits	Poorly drained	Low	Moderately rapid	>80 inches	6-18 inches
45	Vero Fine Sand	3.41	Sandy and loamy marine deposits	Poorly drained	Moderate	Rapid	>80 inches	6-18 inches
46	Wauchula Fine Sand	11.06	Sandy and loamy marine deposits	Poorly drained	Moderate	Moderately low to moderately rapid	>80 inches	6-18 inches

Bold denotes hydric soils.
There is 0.45% of the project area within water, which was not included in the table.

Data Compiled by Kimley-Horn and Associates, Inc. 2019

Exhibit 2-17: NRCS Soils Map (1 of 4)

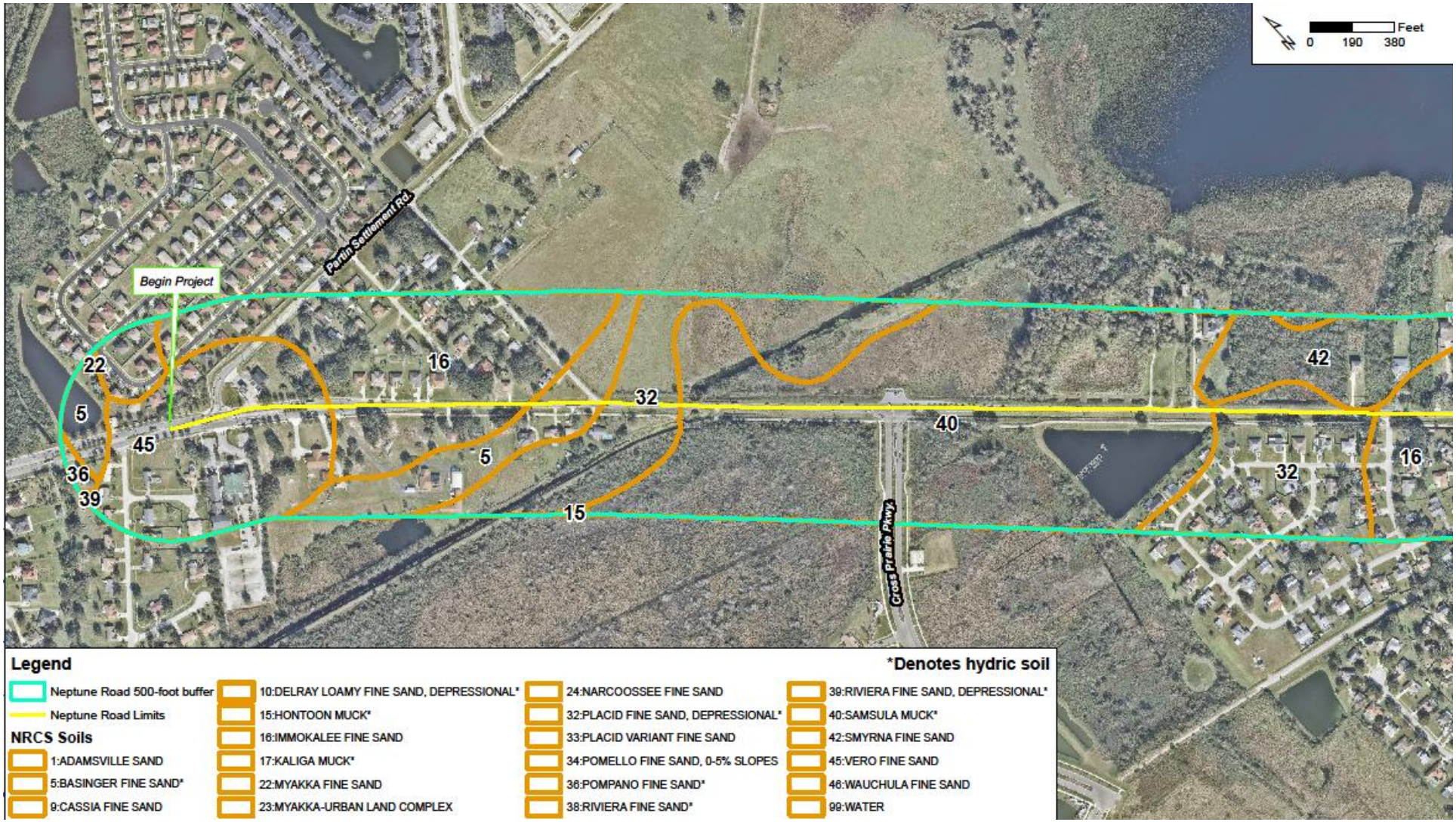


Exhibit 2-18: NRCS Soils Map (2 of 4)

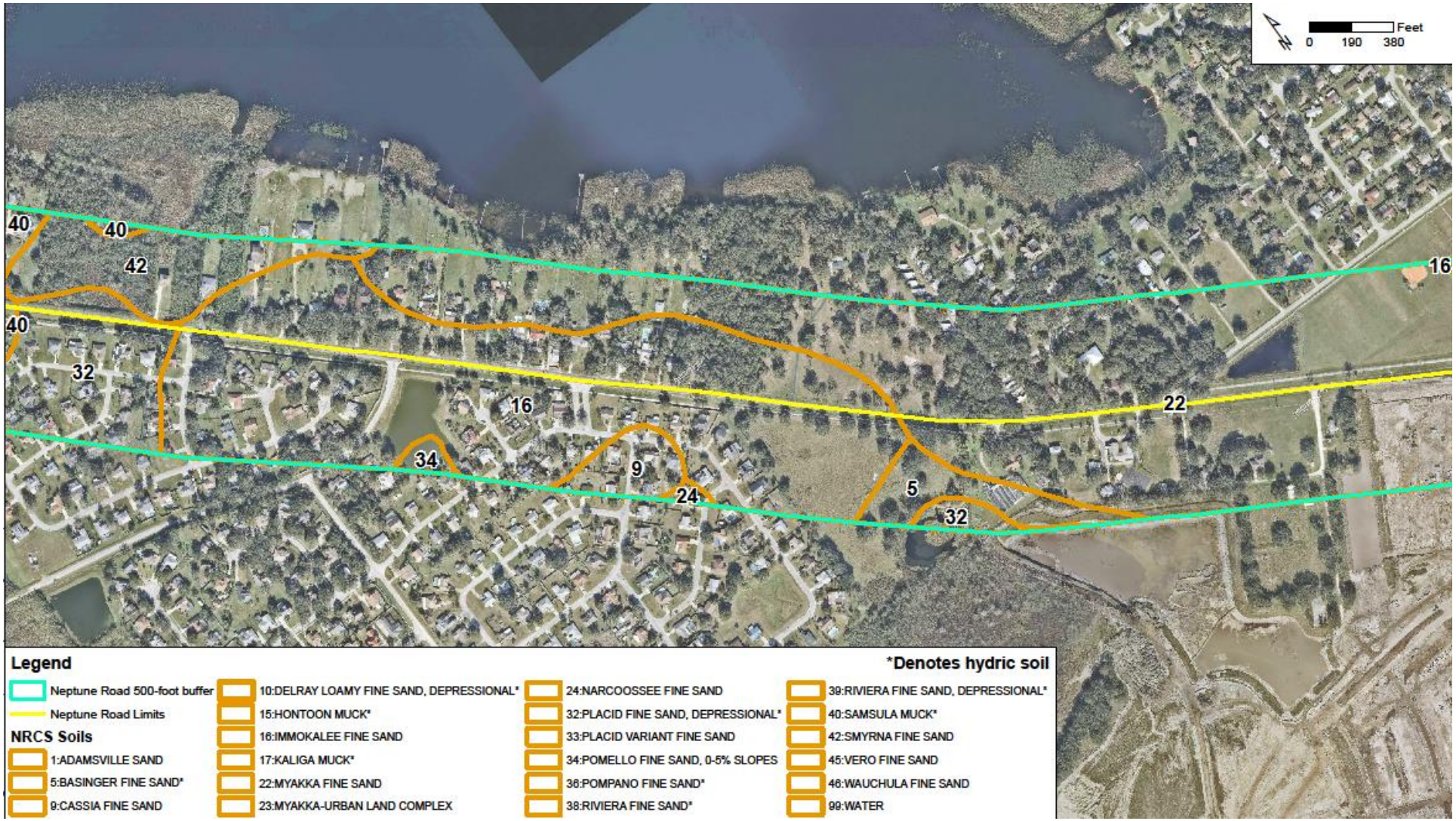


Exhibit 2-19: NRCS Soils Map (3 of 4)

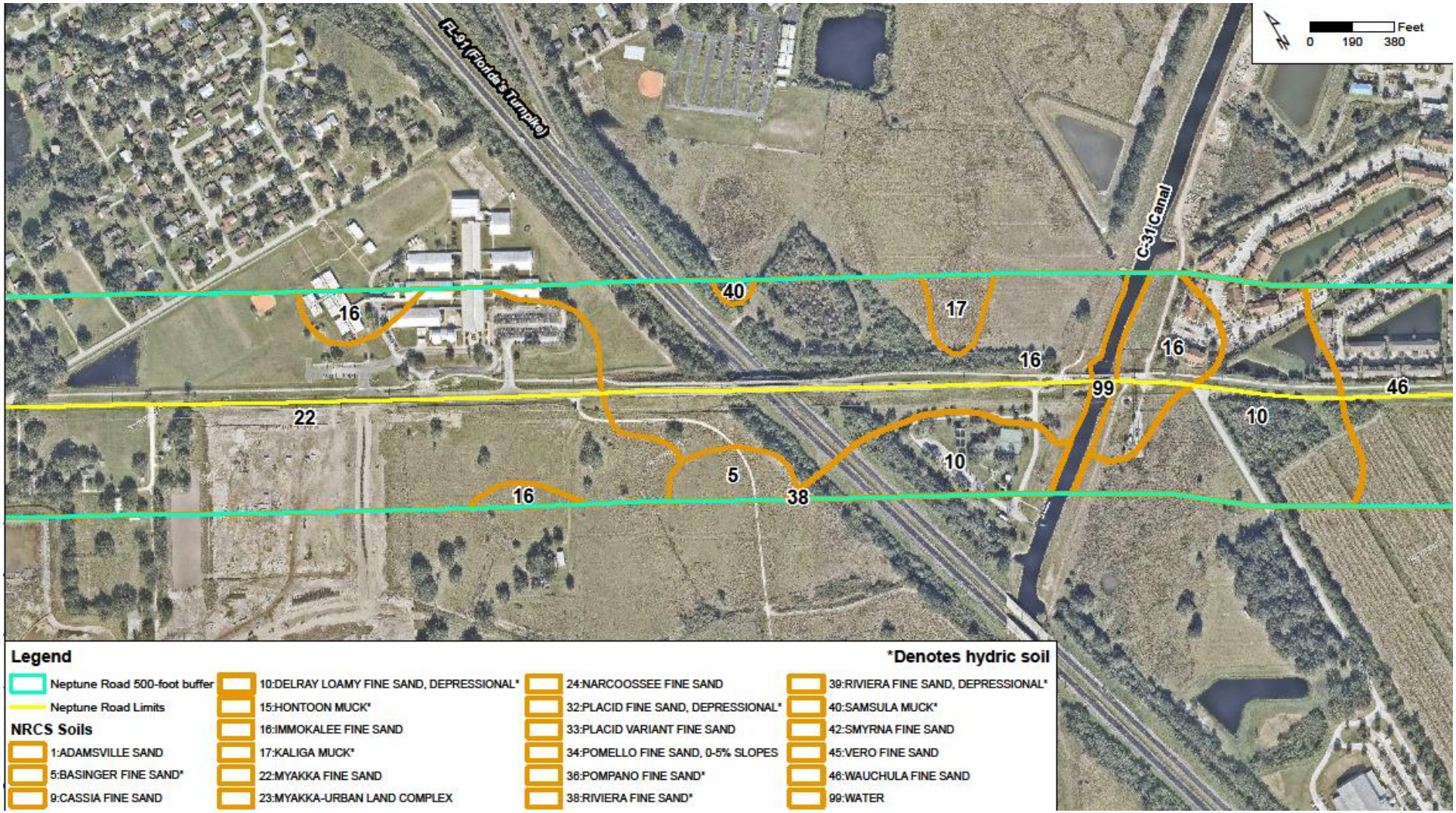
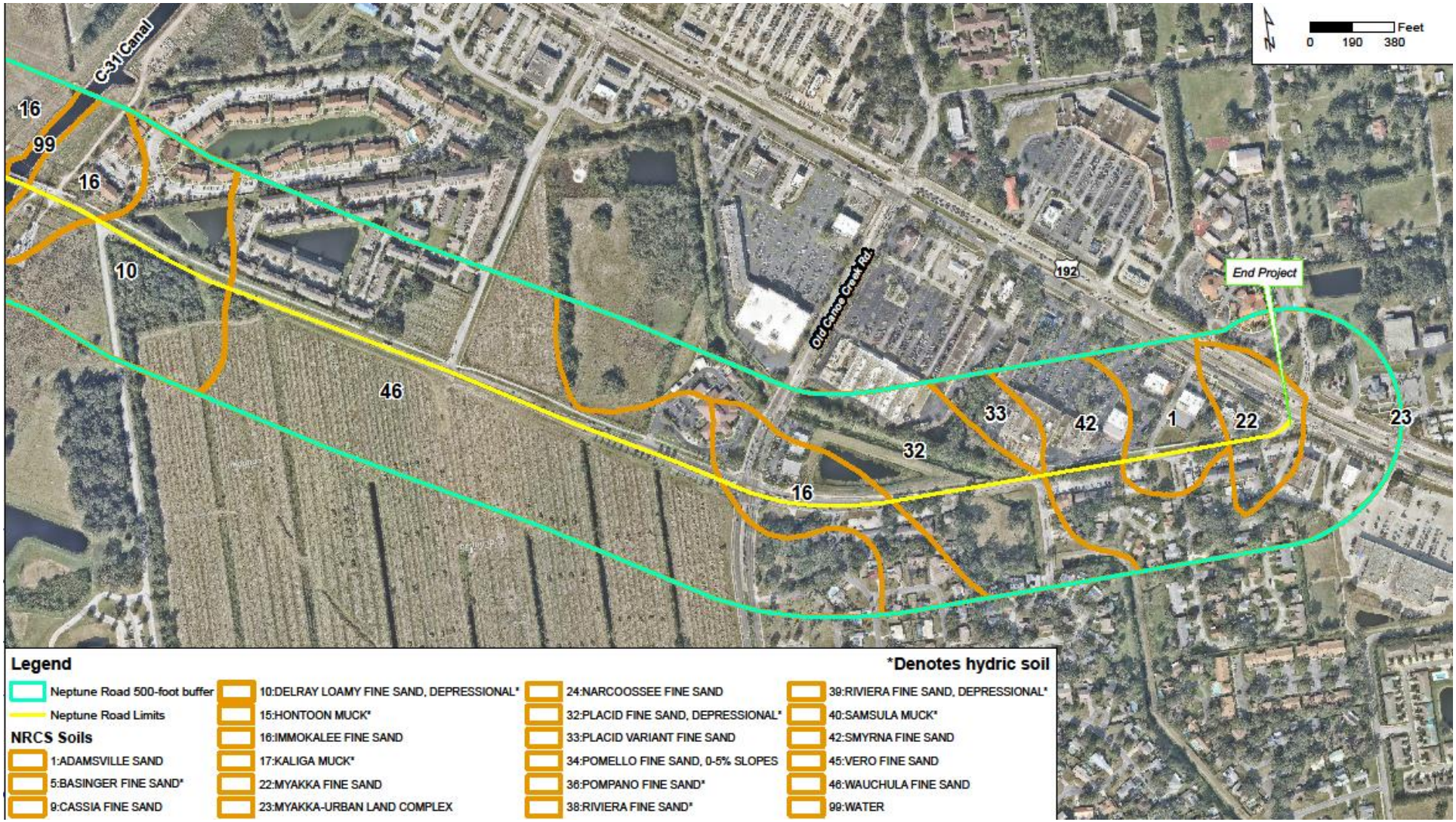


Exhibit 2-20: NRCS Soils Map (4 of 4)



Of the twenty (20) soil types mapped within the study area, nine (9) are designated hydric soils (*Hydric Soils of Florida Handbook*, Fourth Edition, 2007). These soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation. In addition, five (5) of the non-hydric soil types within the study area may contain hydric inclusions within the lower elevation areas. These soils include: Adamsville Sand, Immokalee Fine Sand, Placid Variant Fine Sand, Smyrna Fine Sand, and Vero Fine Sand.

2.23.2 EXISTING SOCIAL CONDITIONS

According to the Sociocultural Data Report for the project, utilizing the 2017 American Community Survey (ACS), there is a total population of 1,012 and a minority population of 58.99% for Census Block Groups 120970429002, 120970431001, 120970432041, and 120970432031. Race and Ethnicity is characterized as follows: White Alone (73.62%), Black or African American Alone (9.68%), Native Hawaiian and Other Pacific Islander Alone (0%), Asian Alone (4.55%), American Indian or Alaska Native Alone (0.20%), Some Other Race Alone (8.20%), Claimed 2 or More Races (3.85%), Hispanic or Latino of Any Race (45.26%), and Not Hispanic or Latino (54.74%). For comparison, Osceola County is 74.40% White, 51.60% Hispanic, and 65.83% Minority.

The 2017 ACS data indicate the median household income is $41,502 and 15.89% of the households are below the poverty level. For comparison, Osceola County has a median household income of $47,343 and 16.70% of households are below the poverty level. Lastly, the 2017 ACS data indicate that for individuals aged 5 and over, 6.09% speak English Not Well or Not at All.

2.23.3 EXISTING CULTURAL CONDITIONS

2.23.3.1 SECTION 4(F)

There are three Section 4(f) resources within the study area: Neptune Middle School Sports Fields, Partin Triangle Park and Boat Ramp and the Neptune Road Pathway. The Section 4(f) resources are displayed on **Exhibit 2-21**.

Exhibit 2-21: Section 4(f) Resources

2.23.3.2 HISTORIC SITES/DISTRICT

A Cultural Resources Assessment Survey (CRAS) for the Neptune Road PD&E Study from Partin Settlement Road to US 192, Osceola County, Florida was completed in October 2019. The Area of Potential Effects (APE) was defined to include the existing and proposed Neptune Road right-of-way and was extended to the back or side property lines of parcels adjacent to the right-of-way, or a distance of no more than 328 feet (100 meters) from the maximum right-of-way line. The archaeological survey was conducted within the existing and the proposed right-of-way. The historic structure survey was conducted within the entire APE.

The architectural survey resulted in the identification and evaluation of 40 historic resources within the Neptune Road APE, including two previously recorded resources and 38 newly recorded resources. The previously recorded resources include one historic canal (8OS02752) and one historic railway (8OS02822). The newly recorded resources include one historic mobile home park (8OS02983); two historic canals (8OS02981 and 8OS02982); three historic bridges (8OS02942-8OS02944); and 32 historic structures (8OS02945-8OS02976).

One resource within the Neptune Road APE is National Register of Historic Places (NRHP)-eligible. A segment of the St. Cloud Canal (8OS02752) was determined NRHP-eligible by the Florida State Historic Preservation Officer (SHPO) on April 24, 2014 (SEARCH 2014). That segment of the St. Cloud Canal (8OS02752) is considered significant under Criterion A for its association with land reclamation activities in Osceola County, which helped spur the development of the county, and Criterion C as an example of a nineteenth-century canal. Based on the historic context and the results of the present survey, SEARCH recommends that the segment of the St. Cloud Canal (8OS02752) within the Neptune Road APE eligible as contributing to the overall NRHP-eligible St. Cloud Canal (8OS02752).

A portion of the St. Cloud and Sugar Belt Railway (8OS02822) was determined ineligible for the NRHP by SHPO on September 4, 2015 (Dickinson and Wayne 2015). It is the opinion of SEARCH that the section of the St. Cloud and Sugar Belt Railway (8OS02822) within the Neptune Road APE remains ineligible for the NRHP due to a lack of historic integrity. The remaining 38 historic resources within the Neptune Road APE are recommended ineligible due to a lack of historic significance.

2.23.3.3 ARCHAEOLOGICAL SITES

The archaeological survey consisted of a thorough pedestrian survey within the current and proposed project right-of-way, which included the excavation of 39 subsurface tests. Ground disturbance resulting from buried utilities and drainage features prevented subsurface archaeological testing throughout much of the APE. Of the 39 excavated shovel tests, nine were positive for cultural material, resulting in the documentation of one new archaeological site, 8OS02984. Site 8OS02984 is recommended ineligible for the NRHP based on the level of disturbance and the unremarkable nature of the artifact assemblage.

2.23.3.4 RECREATION AREAS

Several recreational resources are accessed from the project corridor. Access to the Partin Triangle Park and Boat Ramp is located at the eastern end of the project area, near the C-31 Canal. Partin Triangle Park includes tennis courts, pavilions, a dog park, airboat rides, a playground, and a boat ramp. Neptune Middle School Sports Fields are also accessed from Neptune Road and include a baseball field and two soccer fields. The Neptune Road Pathway is a recreational pathway that runs parallel to Neptune Road.

It primarily runs on the south side of Neptune Road, but switches to the north side from Ames Haven Road to Old Canoe Creek Road.

2.23.4 EXISTING PHYSICAL CONDITIONS

2.23.4.1 HIGHWAY TRAFFIC NOISE

A Noise Study was conducted for the proposed project in accordance with Code of Federal Regulations, Title 23, Part 772 (23 CFR 772) Procedures for Abatement of Highway Traffic Noise and Construction Noise using methodology established by FDOT in the Project Development and Environment Manual, Part 2, Chapter 18 (FDOT, January 14, 2019) and FDOT's Traffic Noise Modelling Practitioner's Handbook (FDOT, January 2016). Predicted noise levels were produced using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) version 2.5. A total of 197 noise sensitive areas were identified and evaluated for potential traffic noise related impacts for the existing, future no-build, and future build conditions.

2.23.4.2 AIR QUALITY

The project is located in an air quality attainment area, Osceola County, so an air quality screening consistent with the National Ambient Air Quality Standards was not required. The proposed project is anticipated to decrease congestion which is also anticipated to decrease idling time for vehicles which may have an overall positive benefit to air quality in the project area.

2.23.4.3 CONTAMINATION

The Contamination Screening Evaluation Report (CSER), dated November 2019, prepared for this project identified and evaluated known or potential contamination sites, identified recommendations concerning these sites, and described possible impacts to the proposed project. A total of 24 sites were assigned Contamination Risk Potential Ratings. A "Low Risk" rating was assigned to 21 of the sites and three sites were assigned a rating of "Medium Risk." There were no High-risk sites identified within the proposed project right-of-way for any alternative considered in the study.

3.0 DESIGN CONTROLS AND CRITERIA

3.1 ROADWAY CONTEXT CLASSIFICATION

The roadway context classification for Neptune Road was established by FDOT as C3R-Suburban Residential from Partin Settlement Road to Old Canoe Creek Road and C3C-Suburban Commercial from Old Canoe Creek Road to US 192.

3.2 DESIGN CONTROL AND CRITERIA

Design and construction criteria for the proposed improvement, at a minimum, shall meet all County standards (Florida Greenbook) for the design of such roadways and *A Policy on Geometric Design of Highways and Streets*, 6th edition, AASHTO, 2011. In addition, the recommended standard practices as set forth in the 2019 FDOT Design Manual, and Standard Plans – FY 2019-20, FDOT, were considered.

Ultimately, FDOT approved the Typical Section Package, including variations for bicycle lanes.

The design criteria described in **Table 3-1** was used in the development of alternatives.

Table 3-1: Design Criteria Matrix

Design Element	Urban Section 45 MPH / 35 MPH Design Speed	Source
General		
Context Classification	C3	FDOT
Access Classification	N/A	
Posted Speed	45 MPH / 35 MPH	Osceola County
Design Speed	45 MPH / 35 MPH	
Design Year	2045	
Roadway Cross Section		
Lane Width	11 ft / 10 ft, 11 ft. 2-Way Left Turn	Table 210.2.1
Bike Lane	7 ft Buffered	223.2.1.1 [1]
	4 ft	Ch. 9, B-1 [2]
Shared Use Path	12 ft	224.4 [1]
Minimum Lateral Offset	4 ft from face of curb	Table 215.2.2 [1]
Median Width	22 ft	Table 210.3.1 [1]
Sidewalk Width	6 ft min	Table 222.1.1 [1]
Cross Slope	0.02	Figure 210.2.1 [1]
Curb and Gutter (Edge)	Type F	
Curb and Gutter (Median)	Type E	
Tie-down Slopes	1:2 max	
Bridge Cross Section		
Lane Width	Same as approach	260.2 [1]
Bike Lane	Same as approach	260.2.1 [1]
Sidewalk Width	Same as approach	260.2.2 [1]
Shared Use Path	Same as approach	260.2.2 [1]
Cross Slope	0.02	260.4 [1]
Horizontal Alignment		
Minimum Length of Curve	675 ft / N/A	Table 210.8.1 [1]
Maximum Curvature @ e=NC	2° 45' (R = 2,083') / N/A	Table 2.10.9.2 [1]
Vertical Alignment		
Maximum Grade	6% / 7%	Table 210.10.1 [1]
Minimum Distance Between VPI's	250 ft	210.10.1.1 [1]
Minimum Grade	0.30%	210.10.1.1 [1]
Vertical Curve K Values	K = 98 / 47 (Crest)	Table 210.10.3 [1]
	K = 79 / 49 (Sag)	Table 210.10.3 [1]
Minimum Length of Vertical Curves	135 / 105 ft (Crest)	Table 210.10.4 [1]
	135 / 105 ft (Sag)	Table 210.10.4 [1]

Note:

[1] FDOT Design Manual, 2019, Florida Department of Transportation

[2] Florida Greenbook, 2018, Florida Department of Transportation

4.0 ALTERNATIVES ANALYSIS

4.1 PREVIOUS PLANNING STUDIES

There have been no previous planning studies.

4.2 NO-BUILD ALTERNATIVE

The No-Build Alternative is an option where the proposed project activity (i.e., widening Neptune Road) would not take place. The No-Build Alternative provides the baseline for establishing environmental impacts of the build alternatives.

4.3 TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS ALTERNATIVE

A Transportation System Management and Operations (TSM&O) Alternative generally provides short-term improvements that extend the service life of the facility. TSM&O Alternatives include activities and strategies designed to optimize the performance and utilization of the existing infrastructure through implementation of systems, services, and projects to preserve the capacity and improve the security, safety, and reliability of the transportation system. Example TSM&O strategies include upgrades or additions to the existing facility, such as arterial traffic management systems, traffic incident management, work zone traffic management, road weather management, traveler information services, congestion pricing, parking management, traffic control, commercial vehicle operations, transit priority signals systems, and freight management.

The No-Build Alternative already includes providing the maximum number of lanes (through and turn lanes) at the signalized intersections; therefore, the existing intersections have already been optimized and the analysis of No-Build conditions is representative of a TSM&O Alternative. Additional through lanes would need to be added to provide the needed capacity and transportation demand identified in the purpose and need for the project. Therefore, no standalone TSM&O Alternative was considered; however, TSM&O strategies will be incorporated into the build alternatives.

4.4 FUTURE CONDITIONS

A Project Traffic Analysis Report (PTAR) has been prepared to provide design traffic volumes and traffic in support for this PD&E Study. The PTAR considered existing traffic volumes and patterns, as well as historic trends and future developments. Future traffic demands on Neptune Road were projected and evaluated for the no-build and build alternatives. A summary of the PTAR findings are provided below with additional details provided in the PTAR.

Under No Build conditions, Neptune Road is anticipated to remain a 2-lane facility. Therefore, it is anticipated that it would have the same generalized peak hour directional service volumes as the existing condition. **Table 4-1** shows the anticipated annual average daily traffic (AADT) volume and the directional design hour volumes (DDHV) for each analysis year. **Table 4-2** summarizes the projected speed and level of service (LOS) for each analysis year. Both directions are projected to operate at LOS E by 2045.

Table 4-1: Future Traffic Volumes – No-Build Alternative

ROADWAY SEGMENT	No Build AADT	Directional Design Hour Volumes (DDHV)
EXISTING YEAR - 2018		
Neptune Road		
Partin Settlement Rd to Cross Prairie Pkwy	25,000	1,303
Cross Prairie Pkwy to Old Canoe Ck Rd	24,000	1,251
Old Canoe Ck Rd to US 192 (4-Lane)	11,000	573
OPENING YEAR - 2025		
Neptune Road		
Partin Settlement Rd to Cross Prairie Pkwy	27,000	1,400
Cross Prairie Pkwy to Old Canoe Ck Rd	26,000	1,400
Old Canoe Creek Road to US 192	12,000	630
DESIGN YEAR - 2045		
Neptune Road		
Partin Settlement Rd to Cross Prairie Pkwy	32,000	1,700
Cross Prairie Pkwy to Old Canoe Ck Rd	31,000	1,600
Old Canoe Creek Road to US 192	14,000	730

Table 4-2: Future Operating Conditions – No-Build Alternative

Year / Time Period	No-Build			
	Speed (mph)		LOS	
	EB	WB	EB	WB
AM Peak Hour				
2018	31	33	C	C
2025	26	24	D	D
2045	23	22	D	D
PM Peak Hour				
2018	28	32	C	C
2025	27	30	D	C
2045	17	19	E	E

Under Build conditions, Neptune Road is anticipated to be widened to a 4-lane urban facility. The section from Old Canoe Creek Road to US 192 was considered as either a 4-lane undivided facility or as a 5-lane facility. **Table 4-3** shows the anticipated AADT and DDHV for each analysis year. Arterial performance measures of speed and level-of-service, based on Synchro outputs, are shown in **Table 4-4** summarizes the projected speed and LOS for each analysis year. Operating conditions under the Build scenario represent a major improvement over the No-Build Alternative.

Table 4-3: Future Traffic Volumes – Build Alternative

ROADWAY SEGMENT	Build AADT	Directional Design Hour Volumes (DDHV)
EXISTING YEAR - 2018		
Neptune Road		
Partin Settlement Rd to Cross Prairie Pkwy	25,000	1,303
Cross Prairie Pkwy to Old Canoe Ck Rd	24,000	1,251
Old Canoe Creek Rd to US 192	11,000	573
OPENING YEAR - 2025		
Neptune Road		
Partin Settlement Rd to Cross Prairie Pkwy	29,000	1,500
Cross Prairie Pkwy to Old Canoe Ck Rd	27,000	1,400
Old Canoe Ck Rd to US 192 (4-Lane)	12,000	630
Old Canoe Ck Rd to US 192 (5-Lane)	12,000	630
DESIGN YEAR - 2045		
Neptune Road		
Partin Settlement Rd to Cross Prairie Pkwy	42,000	2,200
Cross Prairie Pkwy to Old Canoe Ck Rd	34,000	1,800
Old Canoe Ck Rd to US 192 (4-Lane)	14,000	730
Old Canoe Ck Rd to US 192 (5-Lane)	14,000	730

Table 4-4: Future Operating Conditions – Build Alternatives

Year / Time Period	Build			
	Speed (mph)		LOS	
	EB	WB	EB	WB
AM Peak Hour				
2018	--	--	--	--
2025	27	27	C	C
2045	26	21	C	C
PM Peak Hour				
2018	--	--	--	--
2025	25	28	C	C
2045	21	22	D	C

4.5 BUILD ALTERNATIVES

Two build alternatives were developed for two segments:

- From Partin Settlement Road to Old Canoe Creek Road – Build alternatives 1 and 2
- From Old Canoe Creek Road to US 192 – Build alternatives A and B

The build alternatives for the two segments are compatible; therefore, the alternatives for the full length of the project are Alternatives 1A, 1B, 2A and 2B.

All build alternatives include provisions for bicycles, pedestrians and automobiles. Transit is not currently provided along Neptune Road and it is not planned to be provided. Transit (bus) is provided along US 192 which runs parallel to Neptune Road.

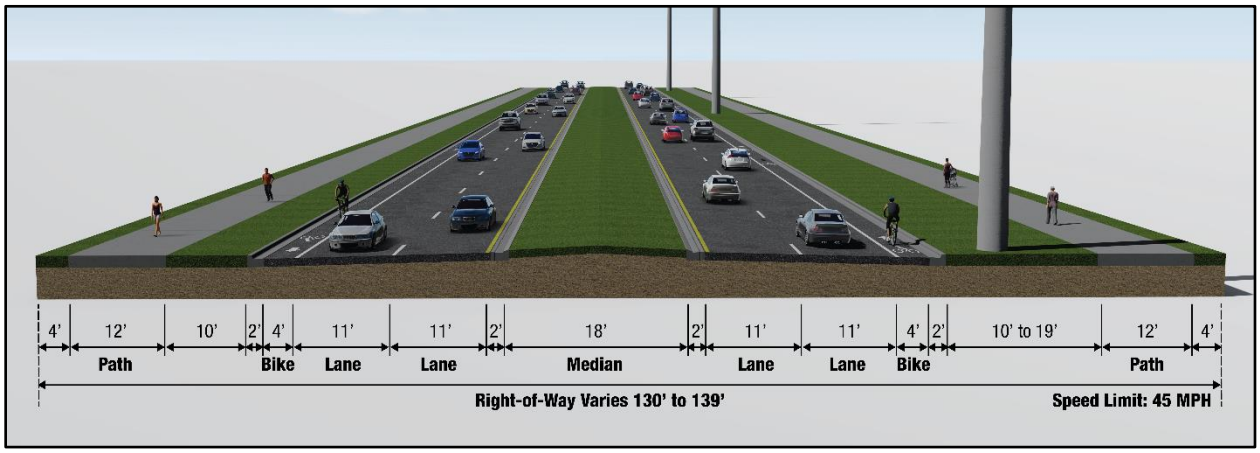
4.5.1 PARTIN SETTLEMENT ROAD TO OLD CANOE CREEK ROAD

4.5.1.1 ALTERNATIVE 1

4.5.1.1.1 Typical Section

To minimize impacts on the south side of Neptune Road, Alternative 1 involves widening primarily to the north, from Partin Settlement Road to west of Ames Haven Road. From west of Ames Haven Road to Old Canoe Creek Road, the widening would occur on both sides of Neptune Road. From Partin Settlement Road to Old Canoe Creek Road, Alternative 1 includes a 4-lane divided roadway (with 11-foot lanes), a 22-foot raised median, 4-foot bicycle lanes in each direction, curb and gutter, a 10-foot planting strip (varies due to existing power transmission pole locations) on both sides, 12-foot shared use path on both sides, and a 4-foot clear area adjacent to each shared use path. This typical section would require between 130 and 139 feet of right-of-way (depending on the location of the existing power transmission poles). **Exhibit 4-1** illustrates this typical section between Partin Settlement Road and Old Canoe Creek Road. The posted speed limit for this section would be 45 MPH.

Exhibit 4-1: Build Alternative 1 Typical Section



4.5.1.1.2 Horizontal and Vertical Alignment

The proposed horizontal and vertical alignments for Alternative 1 generally follow the corresponding alignments of the existing roadway as described in Section 2.1.8.

4.5.1.1.3 Conceptual Illustrations

Conceptual illustrations for Alternative 1 were developed and placed on display at the Alternatives Meeting for public review and comment. Conceptual illustrations for Alternative 1 are provided in **Appendix B**.

4.5.1.1.4 Right-of-Way and Relocations

From Partin Settlement Road to west of Ames Haven Road, the additional right-of-way for Alternative 1 would be acquired primarily on the north side of the existing roadway. From Ames Haven Road to Florida's Turnpike, additional right-of-way would be acquired from both the north and south sides of the road to avoid relocating Kissimmee Utility Authority (KUA) power transmission poles. From Florida's Turnpike to Old Canoe Creek Road, the additional right-of-way would be acquired primarily on the south side of the existing roadway.

Alternative 1 would require right-of-way from 75 residential parcels and eight non-residential parcels. Of the 75 residential parcels, 49 are improved and 26 are vacant. Of the existing residences, nine are expected to require relocation. Of the eight non-residential parcels, six are improved and two are vacant. Of the existing non-residential buildings, none are expected to require relocation.

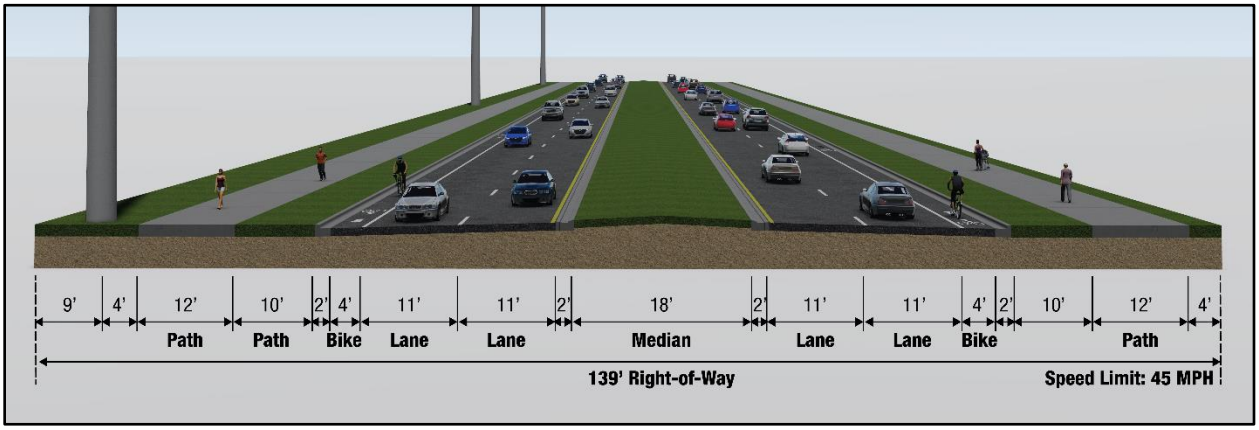
4.5.1.2 ALTERNATIVE 2

4.5.1.2.1 Typical Section

To minimize impacts on the north side of Neptune Road, Alternative 2 involves widening primarily to the south, from Partin Settlement Road to west of Ames Haven Road. This would require relocation of the power transmission poles from the south side of Neptune Road to the north side of Neptune Road, from Partin Settlement Road to west of Ames Haven Road. From west of Ames Haven Road to Old Canoe Creek Road, the widening would occur on both sides of Neptune Road.

The typical section for Alternative 2 is basically the same as for Alternative 1, with the difference being that Alternative 2 includes relocating power transmission poles. From Partin Settlement Road to Old Canoe Creek Road, Alternative 2 includes a 4-lane divided roadway (with 11-foot lanes), a 22-foot raised median, 4-foot bicycle lanes in each direction, curb and gutter, a 10-foot planting strip on both sides, 12-foot shared use path on both sides, and a 4-foot clear area adjacent to each shared use path. The existing power transmission poles would be relocated to the north side of the shared use path within a 9-foot envelope. This typical section would require 139 feet of right-of-way. **Exhibit 4-2** illustrates this typical section between Partin Settlement Road and Old Canoe Creek Road. The posted speed limit for this alternative would be 45 MPH.

Exhibit 4-2: Build Alternative 2 Typical Section



4.5.1.2.2 Horizontal and Vertical Alignment

The proposed horizontal and vertical alignments for Alternative 2 generally follow the corresponding alignments of the existing roadway as described in Section 2.1.8.

4.5.1.2.3 Conceptual Illustrations

Conceptual illustrations for Alternative 2 were developed and placed on display at the Alternatives Meeting for public review and comment. Conceptual illustrations for Alternative 2 are provided in **Appendix C**.

4.5.1.2.4 Right-of-Way and Relocations

From Partin Settlement Road to west of Ames Haven Road, the additional right-of-way for Alternative 2 would be acquired primarily on the south side of the existing roadway. From Ames Haven Road to Florida's Turnpike, additional right-of-way would be acquired from both the north and south sides of the road to avoid relocating power transmission poles. From Florida's Turnpike to Old Canoe Creek Road, the additional right-of-way would be acquired primarily on the south side of the existing roadway.

Alternative 2 would require right-of-way from 58 residential parcels and six non-residential parcels. Of the 58 residential parcels, 42 are improved and 16 are vacant. Of the existing residences, twenty-five are expected to require relocation. Of the six non-residential parcels, five are improved and one is vacant. Of the existing non-residential buildings, none are expected to require relocation.

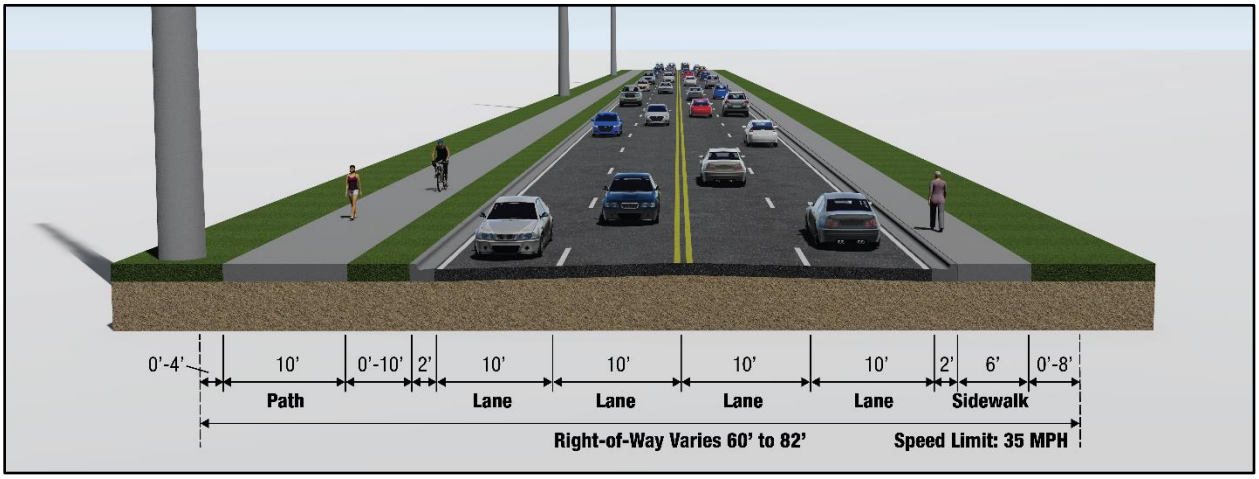
4.5.2 OLD CANOE CREEK ROAD TO US 192

4.5.2.1 ALTERNATIVE A

4.5.2.1.1 Typical Section

From Old Canoe Creek Road to US 192, Alternative A includes a 4-lane undivided roadway (with 10-foot lanes), curb and gutter, a 10-foot planting strip on both sides (where possible within the existing right-of-way), a 10-foot shared use path with a 4-foot clear area (where possible within the existing right-of-way) on the north side, and a 6-foot sidewalk on the south side. This typical section would require between 60 and 82 feet of right-of-way and is anticipated to be constructed within the existing right-of-way. **Exhibit 4-3** illustrates this typical section between Old Canoe Creek Road and US 192. The posted speed limit for this alternative would be 35 MPH.

Exhibit 4-3: Build Alternative A Typical Section



4.5.2.1.2 Horizontal and Vertical Alignment

The proposed horizontal and vertical alignments for Alternative A generally follow the corresponding alignments of the existing roadway as described in Section 2.1.8.

4.5.2.1.3 Conceptual Illustrations

Conceptual illustrations for Alternative A were developed and placed on display at the Alternatives Meeting for public review and comment. Conceptual illustrations for Alternative A are provided in **Appendix D**.

4.5.2.1.4 Right-of-Way and Relocations

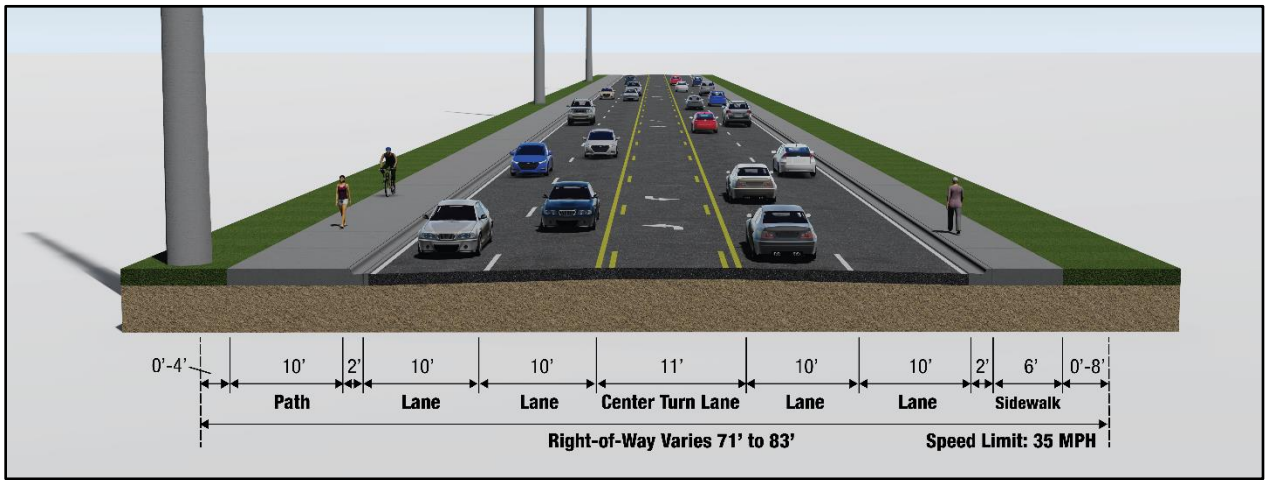
From Old Canoe Creek Road to US 192, no additional right-of-way is anticipated to be acquired for Alternative A, and no residential or non-residential relocations are anticipated.

4.5.2.2 ALTERNATIVE B

4.5.2.2.1 Typical Section

From Old Canoe Creek Road to US 192, Alternative B includes a 5-lane roadway (with 10-foot travel lanes and an 11-foot two-way left turn lane), curb and gutter, a 10-foot planting strip on both sides (where possible within existing right-of-way), a 10-foot shared use path with a 4-foot clear area (where possible within existing right-of-way) on the north side, and a 6-foot sidewalk on the south side. This typical section would require between 71 and 83 feet of right-of-way. **Exhibit 4-4** illustrates this typical section between Old Canoe Creek Road and US 192. The posted speed limit for this alternative would be 35 MPH.

Exhibit 4-4: Build Alternative B Typical Section



4.5.2.2.2 Horizontal and Vertical Alignment

The proposed horizontal and vertical alignments for Alternative B follow the alignment of the existing roadway as described in Section 2.1.8.

4.5.2.2.3 Conceptual Plans

Conceptual illustrations for Alternative B were developed and placed on display at the Alternatives Meeting for public review and comment. Conceptual illustrations for Alternative B are provided in **Appendix E**.

4.5.2.2.4 Right-of-Way and Relocations

From Old Canoe Creek Road to US 192, the additional right-of-way for Alternative B would be acquired primarily on the north side of the existing roadway.

Alternative B would require right-of-way from four non-residential parcels. Of the four non-residential parcels, four have existing buildings. Of the existing non-residential buildings, none are expected to require relocation.

4.6 COMPARATIVE ALTERNATIVES EVALUATION

The project is divided into two segments and there are two alternatives for each segment. Alternatives 1 and 2 apply to the segment from Partin Settlement Road to Old Canoe Creek Road. Alternatives A and B apply for the segment from Old Canoe Creek Road to US 192. Thus, there are four combinations of alternatives for the complete project from Partin Settlement Road to US 192:

- Alternative 1 and Alternative A (Alternative 1A)
- Alternative 1 and Alternative B (Alternative 1B)
- Alternative 2 and Alternative A (Alternative 2A)
- Alternative 2 and Alternative B (Alternative 2B)

A matrix which compares the alternatives to the needs identified in Section 1.2 is presented in **Table 4-5**. All build alternatives meet all of the needs. The No-Build Alternative does not meet any of the needs.

Table 4-5: Need Matrix of Alternatives

Need	No-Build	Alternative 1	Alternative 2	Alternative A	Alternative B
Capacity	No	Yes	Yes	Yes	Yes
Safety	No	Yes	Yes	Yes	Yes

A matrix which compares the alternatives using relevant physical, natural, social and cultural environment considerations is presented in **Table 4-6**. A description of each of the considerations included in the matrix is provided in the sections following the matrix.

Table 4-6: Evaluation Matrix of Alternatives

PD&E Considerations	No-Build	Partin Settlement Road to Old Canoe Creek Road		Old Canoe Creek Road to US 192	
		1 (North)	2 (South)	A (4-Lane)	B (5-Lane)
Residential Parcels (Improved + Vacant = Total)	0	49 + 26 = 75	42 + 16 = 58	0 + 0 = 0	0 + 0 = 0
Non-Residential Parcels (Improved + Vacant = Total)	0	6 + 2 = 8	5 + 1 = 6	0 + 0 = 0	4 + 0 = 4
Potential Relocations (Residential + Non-Residential = Total)	0	9 + 0 = 9	25 + 0 = 25	0 + 0 = 0	0 + 0 = 0
Potential Contamination Parcels (Low + Medium + High Risk = Total)	0	6 + 3 + 0 = 9	6 + 3 + 0 = 9	15 + 1 + 0 = 16	15 + 1 + 0 = 16
Wildlife & Habitat	None	No Adverse Effects	No Adverse Effects	No Adverse Effects	No Adverse Effects
Bald Eagle Nest	None	2 within 660-foot buffer	2 within 660-foot buffer	1 within 330-foot buffer	1 within 330-foot buffer
Wetland (WL) & Surface Water (SW) Impacts	None	2.6 ac. WL, 2.0 ac. SW	3.1 ac. WL, 2.7 ac. SW	0 ac. WL, 0.03 ac. SW	0 ac. WL, 0.05 ac. SW
Floodplains	None	(Zone AE - 0.7 ac., Zone A - 11.2 acre)	(Zone AE - 0.7 ac., Zone A - 13.3 acre)	(Zone AE - 0.2 ac., Zone A - 0 acre)	(Zone AE - 0.2 ac., Zone A - 0 acre)
Potential Section 4(f) Use	No	Yes (park, trail, and sports fields)	Yes (park, trail, and sports fields)	No	No
Community Facilities	None	6 (police dept., park, school, trail, 2 churches)	6 (police dept., park, school, trail, 2 churches)	3 (2 group care facilities, pre-school)	3 (2 group care facilities, pre-school)
Volume/Capacity Ratio	1.04 to 1.93	0.90 to 1.10	0.90 to 1.10	0.57	0.48
Construction Cost	0	$39,029,000	$40,301,000	$3,267,000	$3,461,000
Right-of-Way Cost	0	TBD	TBD	TBD	TBD
Total Project Costs to County [1]	0	$39,029,000	$40,301,000	$3,267,000	$3,461,000
Utility Relocations by Others	0	$2,336,000	$4,205,000	$0	$0
Total Project Costs [1]	0	$41,365,000	$44,506,000	$3,267,000	$3,461,000

Notes: [1] Excluding Right-of-Way Costs

4.6.1 RESIDENTIAL PARCELS

Alternative 1 would require right-of-way from 75 residential parcels. Of the 75 residential parcels, 49 are improved and 26 are vacant.

Alternative 2 would require right-of-way from 58 residential parcels. Of the 58 residential parcels, 42 are improved and 16 are vacant.

No additional right-of-way is anticipated to be acquired for Alternative A.

No residential parcels are impacted by Alternative B.

4.6.2 NON-RESIDENTIAL PARCELS

Alternative 1 would require right-of-way from eight non-residential parcels. Of these parcels, six are improved and two are vacant.

Alternative 2 would require right-of-way from six non-residential parcels. Of these parcels, five are improved and one is vacant.

No additional right-of-way is anticipated to be acquired for Alternative A.

Alternative B would require right-of-way from four non-residential parcels. Of the four non-residential parcels, four are improved.

4.6.3 POTENTIAL RELOCATIONS

Alternative 1 would require right-of-way from 75 residential parcels and eight non-residential parcels. Of the existing residences, nine are expected to require relocation. Of the existing non-residential buildings, none are expected to require relocation.

Alternative 2 would require right-of-way from 58 residential parcels and six non-residential parcels. Of the existing residences, twenty-five are expected to require relocation. Of the existing non-residential buildings, none are expected to require relocation.

No residential or non-residential relocations are anticipated for Alternative A.

Alternative B would require right-of-way from four non-residential parcels. Of the existing non-residential buildings, none are expected to require relocation.

4.6.4 POTENTIAL CONTAMINATION PARCELS

Both Alternatives 1 and 2 impact six potential low-risk contamination parcels, three potential medium-risk contamination parcels and no potential high-risk parcels.

Both Alternatives A and B impact 15 potential low-risk contamination parcels, one potential medium-risk contamination parcels and no potential high-risk parcels.

4.6.5 WILDLIFE AND HABITAT

None of the alternatives are expected to have adverse effects on wildlife or habitat.

4.5.6 BALD EAGLE NEST

Both Alternative 1 and 2 are within the 660-foot buffer of two existing bald eagle nests. Both Alternative A and B are within the 330-foot buffer of an existing bald eagle nest.

4.6.7 WETLAND AND SURFACE WATER IMPACTS

Both Alternative 1 and 2 have impacts to wetlands and surface water. Alternative 1 impacts 2.6 acres of wetlands and 2.2 acres of surface waters. Alternative 2 impacts 3.1 acres of wetlands and 2.4 acres of surface waters.

Both Alternative A and B have no impacts to wetlands; these alternatives do have impacts to surface waters. Alternative A impacts 0.03 acre of surface waters and Alternative B impacts 0.05 acre of surface waters.

4.6.8 FLOODPLAINS

Both Alternative 1 and 2 have impacts to floodplains. Alternative 1 impacts 0.7 acre of Zone AE and 11.2 acres of Zone A. Alternative 2 impacts 0.7 acre of Zone AE and 13.3 acres of Zone A.

Both Alternative A and B have impacts to floodplains. Alternative A impacts 0.2 acre of Zone AE and Alternative B impacts 0.2 acre of Zone AE.

4.6.9 SECTION 4(F) USE

Both Alternative 1 and 2 have potential impacts to Partin Triangle Park, Neptune Road Pathway and Neptune Middle School Sports Fields. Neither Alternative A or B impact a Section 4(f) use.

Avoidance alternatives were considered but it was determined that the No Build Alternative is the only alternative that would completely avoid impacts to Section 4(f) properties. Impacts were minimized by widening to both sides of the road for the segment where Neptune Middle School is on the north and Partin Triangle Park and Boat Ramp is on the south. The impacts to the Neptune Middle School Sports Fields is considered a de minimis impact and the proposed improvements, which include sidewalks and bike lanes, would enhance the access to the Section 4(f) properties. The impact to the Partin Triangle Park and Boat Ramp is No Use and the impact to the Neptune Road Pathway is Exception.

4.6.10 COMMUNITY FACILITIES

Both Alternative 1 and 2 impact six community facilities, including the St. Cloud Police station, Partin Triangle Park and Boat Ramp, Neptune Middle School, Neptune Road Pathway and two places of worship. Avoidance alternatives were considered but it was determined that the No-Build Alternative is the only alternative that would completely avoid impacts to community facilities. Impacts were minimized by widening to both sides of the road for the segment where Neptune Middle School is on the north, and Partin Triangle Park and Boat Ramp and a place of worship is on the south. No right-of-way is needed from the St. Cloud Police station or from the other place of worship.

Both Alternatives A and B impact three community facilities, including two group care facilities and a pre-school.

4.6.11 VOLUME TO CAPACITY RATIO

The No-Build Alternative would result in volume to capacity (V/C) ratios of between 1.04 and 1.93 in 2045. Alternatives 1 and 2 reduce the V/C ratio on the segment from Partin Settlement Road to Old Canoe Creek Road to between 0.90 and 1.10. Alternatives A and B reduce the V/C ratio on the segment from Old Canoe Creek Road to US 192 to 0.57 and 0.48, respectively.

4.6.12 COSTS

Note: These costs do not include right-of-way costs. Following the identification of the preferred alternative, right-of-way costs were estimated for the preferred alternative (see Section 6.1.16). Based on a qualitative assessment, it is estimated that right-of-way costs for Alternative 2 would be greater that for Alternative 1, and the right-of-way costs for Alternative B would be more than for Alternative A.

The projected cost for Alternative 1 is approximately $41.37 million, which includes $39.03 million in construction costs and $2.34 million in utility costs by others. The projected cost for Alternative 2 is approximately $44.51 million, which includes $40.30 million in construction costs and $4.21 million in utility costs by others.

The projected cost for Alternative A is approximately $3.37 million, and the cost for Alternative B is approximately $3.46 million.

There are four combinations of alternatives for the full project, from Partin Settlement Road to US 192: Alternative 1A, 1B, 2A or 2B. Alternative 1A is projected to cost the least, at $44.63 million, followed by Alternative 1B at $44.83 million, Alternative 2A at $47.77 million and Alternative 2B at $47.97 million. As noted above, none of these costs include right-of-way.

4.7 SELECTION OF THE PREFERRED ALTERNATIVE

Alternative 1(North)B(5-Lane) with adjustments to reduce impacts was identified as the Preferred Build Alternative. Advantages associated with the adjusted Alternative 1 (North) segment, from Partin Settlement Road to Old Canoe Creek Road, include:

- Least potential residential relocations (9 compared to 25)
- Least improved residential parcels impacted (41 compared to 42)
- Similar vacant residential parcels impacted (18 compared to 16)
- Less impacts to wetlands (2.0 acres compared to 3.3)
- Similar impacts to surface waters (2.8 acres compared to 2.7)
- Less impacts to floodplains (11.2 acres Zone A compared to 13.3)
- Same impacts to wildlife and habitat, bald eagle nest, potential Section 4(f) Uses, potential contamination sites, and community facilities
- Lower construction cost ($41.4 million compared to $44.5 million)

Advantages associated with the adjusted Alternative B (5-Lane) segment, from Old Canoe Creek Road to US 192, include:

- Lower volume to capacity ratio in 2045 (0.9 compared to 1.0)
- Same impacts to residential parcels, potential relocations, potential contamination sites, wildlife and habitat, Bald Eagle Nest, floodplains, potential Section 4(f) Uses, and community facilities

There are some disadvantages to the adjusted Alternative B (5-Lane) segment, including:

- Higher construction cost ($3.5 million compared to $3.3 million)
- More impacts to exiting commercial parcels (3 compared to 0)
- Higher impacts to surface waters (0.05 acre compared to 0.03 acre)

The improved operating conditions are expected to offset these disadvantages.

5.0 PROJECT COORDINATION AND PUBLIC INVOLVEMENT

5.1 AGENCY COORDINATION

An Advance Notification (AN) package was distributed to the agencies on August 31, 2018. Additionally, the project was screened through the Efficient Transportation Decision Making (ETDM) process on August 27, 2019 (ETDM #14402). Comments were received from several agencies, including:

- Federal Aviation Authority (FAA)
- Seminole Tribe of Florida (STOF)
- Natural Marine Fisheries Service (NMFS)
- US Environmental Protection Agency (USEPA)
- Florida Department of State (FDOS)
- Florida Department of Economic Opportunity (FDEO)
- South Florida Water Management District (SFWMD)
- US Army Corps of Engineers (USACE)
- Florida Department of Environmental Protection (FDEP)
- Florida Fish and Wildlife Conservation Commission (FWC)
- US Fish and Wildlife Service (USFWS)

The FAA determined the proposed project would have no impacts to surrounding public airports.

The STOF determined the proposed project does not fall within the STOF Area of Interest and requested a copy of the Cultural Resources Assessment Survey (CRAS).

The NMFS indicated that Essential Fish Habitat (EFH) would not be impacted and an EFH assessment is not required. Further, NMFS is unaware of any threatened or endangered species or critical habitat under NMFS' jurisdiction but indicated the project should be coordinated with the USFWS. NMFS did provide comments regarding the benefits of freshwater wetlands and if wetland impacts are unavoidable, sequential minimization and mitigation should take place pursuant to the Fish and Wildlife Coordination Act. Avoidance and minimization have been considered during the development of alternatives and described in the Natural Resource Assessment prepared for the project. Mitigation for unavoidable impacts would include purchase of mitigation credits in an approved mitigation bank.

The USEPA commented that the "selected site should avoid and minimize, to the maximum extent practicable, placement of fill into jurisdictional waters of the U.S., which include wetlands and streams. Additionally, consider that the potential increase in impervious surface may increase storm water runoff and may increase pollutants into nearby water bodies and wetlands because of the project". The USEPA recommended that the PD&E include a discussion of the stormwater collection and treatment mechanisms that would be designed to protect nearby wetlands, best management practices during construction and compensatory mitigation for unavoidable wetland impacts. It was suggested to prevent further fragmentation, degradation, and loss of wildlife habitat, preservation of the remaining habitat in the project area be considered. Avoidance and minimization have been considered during the development of alternatives and described in the Natural Resource Assessment prepared for the project. Mitigation for unavoidable impacts would include purchase of mitigation credits in an approved mitigation bank. Additionally, indirect effects are described in the Natural Resource Evaluation including potential construction impacts. Best Management Practices shall be employed during construction as

required by the National Pollutant Discharge Elimination Permit. A pond siting evaluation has been prepared to evaluate stormwater management facilities to meet the state water quality and quantity treatment requirements. The results of this evaluation are included in the Pond Siting Report.

FDOS commented that the project has the potential to impacts cultural resources within and adjacent to the proposed study area. A CRAS should be completed to document and assess NRHP eligibility for all cultural resources within the area of potential effect.

FDEO commented that the project has the potential to attract new development and create additional employment opportunities. Additionally, the project is included on the Osceola County future transportation map and is compatible with community development goals.

SFWMD stated that stormwater runoff should be treated, and a Water Quality Impact Analysis should be completed.

The USACE commented that there are several palustrine and riverine wetlands within the project study area. Wetland avoidance and minimization opportunities should continue to be emphasized throughout the planning process. There are three federally approved wetland mitigation banks that service the project study area.

FDEP commented that every effort should be made to treat stormwater runoff from the proposed road widening to prevent ground and surface water contamination. FDEP also stated that retrofitting of stormwater conveyance systems would help reduce impacts to water quality.

FWC commented that the following species could occur within the project area: Eastern indigo snake, American alligator, Audubon's crested caracara, wood stork, Florida pine snake, gopher tortoise, Southeastern American kestrel, Florida burrowing owl, Florida sandhill crane, little blue heron, tricolored heron, and roseate spoonbill. Two eagle nests (OS084 and OS169) are within the recommended buffer distance of 660 feet from the project site. New or irregular activities planned within 660 feet of a bald eagle nest should follow the USFWS Eagle Management Guidelines.

Initially, USFWS commented that the following species could occur within the project area: wood stork, eastern indigo snake, Everglade snail kite, Florida scrub-jay, red-cockaded woodpecker, and federally listed plants. Further coordination with USFWS included the potential for the Florida bonneted bat to occur within the project area based on the updated consultation area issued in October 2019.

There was additional coordination with FDOT regarding the Department’s review of the PD&E documents, application of the ETDM process, and their approval of the Typical Section Package.

There was also coordination with Florida’s Turnpike Enterprise regarding the Neptune Road bridge over the Turnpike.

5.2 PUBLIC INVOLVEMENT

A Comments and Coordination Report has been prepared which provides information about the public involvement efforts and results.

Public involvement efforts included:

- Newsletters
- Project Website
- Coordination with Stakeholders
- Alternatives Meeting
- Public Hearing
- Comments
- Presentations to the Osceola County Board of County Commissioners

5.2.1 NEWSLETTERS

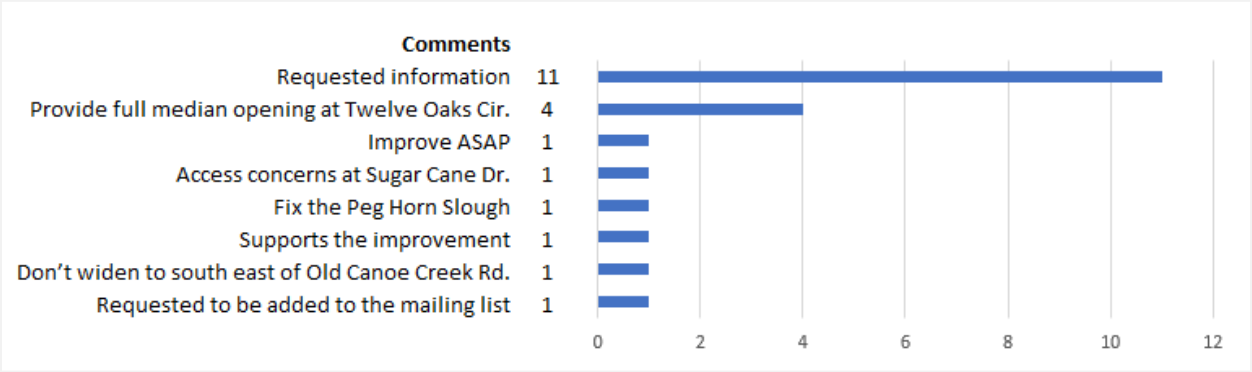
Three bilingual (English and Spanish) newsletters were prepared for the study and mailed to each property owner and occupant (if different from property owner) located along the corridor. The initial mailing list included properties within 300 feet of the corridor; however, the list was expanded to include adjacent neighborhoods with any properties within the 300-foot buffer. The newsletters were sent early in the study to provide notice of the initiation of the study, prior to the Alternatives Meeting to notify people of the meeting, and prior to the Public Hearing to notify people of the hearing.

5.2.2 PROJECT WEBSITE

A project website (ImproveNeptuneRoad.com) was created which provided updated information about the project. The website initially introduced the study and described the initial improvement concept, provided answers to Frequently Asked Questions (FAQs), identified the study schedule, provided contact information and provided an opportunity to provide comments. The FAQs were expanded during the study to include responses to additional questions from the public and the website was updated to include the various newsletters. Alternatives being considered were posted prior to the Alternatives Meeting and materials presented at the meeting were added following the meeting. The Preferred Alternative was posted after considering input from the Alternatives Meeting.

Exhibit 5-1 summarizes the 21 comments received from the project website (not including comments from seven people in response to the Alternatives Meeting which are included on **Exhibit 5-2**). Most comments were requesting additional information about the project, which was provided to them. Four comments requested a full median at Twelve Oaks Circle. Single comments were provided about the following: Improve Neptune Road as soon as possible (ASAP), Access concerns about Sugar Cane Drive, Fix the Peg Horn Sough, Supports the improvement, Don’t widen the portion east of Old Canoe Creek Road to the south side of the road, and Request to be added to the mailing list.

Exhibit 5-1: Comments from Website



Planned Activity: More detail about the Preferred Alternative will be posted prior to the Public Hearing and materials presented at the hearing will be added after the hearing.

5.2.3 COORDINATION WITH STAKEHOLDERS

The study team coordinated with various stakeholders during the study, including utility agencies/owners, Osceola County Schools, Florida's Turnpike and FDOT.

The study team met with the Kissimmee Utility Authority (KUA) to discuss the scope of the Neptune Road PD&E, anticipated alternatives and potential impacts to existing and planned KUA facilities. KUA maintains transmission lines on the south side of Neptune Road, from Partin Settlement Road to Florida's Turnpike, where the system connects to the Orlando Utility Commission (OUC) Transmission Facilities. The Study team also met with OUC to discuss to discuss the scope of the PD&E, anticipated alternatives and potential impacts to existing and planned OUC facilities. OUC maintains transmission lines from the previously described KUA lines, on the south side of Neptune Road east to Betsy Ross Lane, where the transmission lines cross over to the north side of Neptune Road and continue to the project study limits located at US 192. Additional coordination with these and other utility providers are described in the Utility Assessment Package.

The study team coordinated with Osceola County School staff regarding planned access changes to the Neptune Middle School and potential right-of-way impacts to school property. The planned changes to the school access are reflected in the PD&E study documentation.

The study team also coordinated with Florida's Turnpike regarding the planned widening of the Turnpike and the agreement for the Turnpike to construct new, longer Neptune Road bridges over the Turnpike which will accommodate the planned widening of the Turnpike. The Study team also coordinated with FDOT regarding the connection to US 192 and various traffic related items.

5.2.4 ALTERNATIVES MEETING

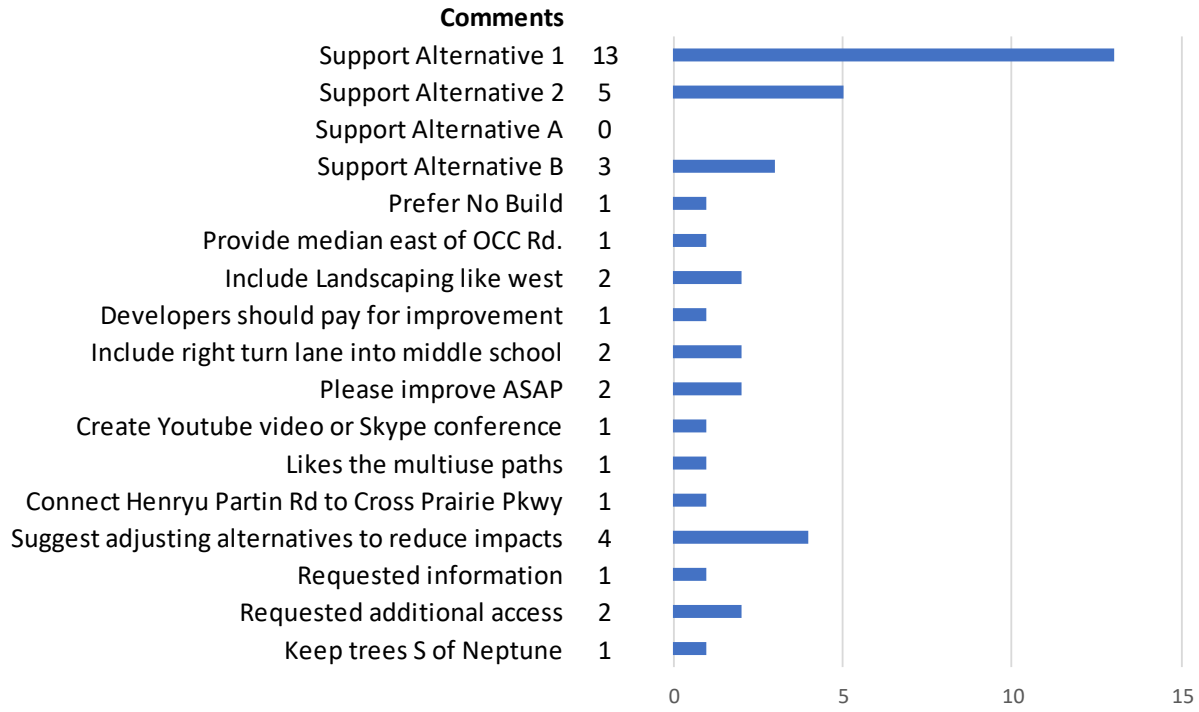
An Alternatives Meeting was held in the Commission Chambers of the Osceola County Administrative Building on April 11, 2019. A newspaper advertisement was placed in the Osceola News-Gazette on April 4, 2019. A news release was distributed to major media outlets on April 4, 2019. An ad was also placed in the FAR on March 28, 2019.

Public meeting invitation letters were sent on March 15, 2019, by email to 22 elected officials and their aides, as well as to 86 local, regional, state, and federal agency contacts. An additional 1,253 meeting invitation letters were mailed to property owners and tenants within the corridor on March 15, 2019. Meeting information was also posted on the study webpage.

Sixty-nine (69) people signed in at the Alternatives Meeting. A total of 29 written and emailed comments were received as of April 21, 2019, the end of the public meeting comment period.

Exhibit 5-2 summarizes the comments received. The sum of comments is more than 29 as some people commented on multiple items. For the segment from Partin Settlement Road to Old Canoe Creek Road, 13 people support Alternative 1 (north widening) with five supporting Alternative 2 (south). For the segment from Old Canoe Creek Road to US 192, no one supported Alternative A (4-lane) and three people supported Alternative B (5-lane). Two people prefer the No-Build Alternative. Four people suggested adjusting the alternatives to reduce impacts, two people support extensive landscaping, two people requested the improvement be constructed as soon as possible, and two people requested additional access to their property.

Exhibit 5-2: Comments Received from Alternatives Meeting



5.2.5 PUBLIC HEARING

To be completed following Public Hearing.

5.2.6 PRESENTATIONS TO THE OSCEOLA COUNTY BOARD OF COUNTY COMMISSIONERS

On May 13, 2019, the study team presented to the Osceola County Board of County Commissioners. The presentation included study methodology, alternatives evaluated, a comparison of the alternatives, results of the April 11, 2019 Alternatives Meeting, and comments from the public. Based on this information, the study team's preferred alternative was identified as Alternative 1 (North) for the segment from Partin Settlement Road to Old Canoe Creek Road, and Alternative B (5-Lanes) for the segment from Old Canoe Creek Road to US 192. Both segments will be further refined to reduce impacts. The Board asked questions about the Public Comments on the recommended preferred alternative and noted that widening to the south would increase utility relocation costs.

Presentation to the Board following the Public Hearing will be added following the hearing.

6.0 DESIGN FEATURES OF THE PREFERRED ALTERNATIVE

After considering the alternatives analysis described in Section 4 and the Stakeholder involvement in Section 5, the Preferred Alternative was identified as Alternative 1B (a combination of Alternative 1 with Alternative B), with modifications to reduce impacts. The changes to Alternative 1 involved revisions to the plans between Partin-Settlement Road and the Partin Canal to reduce impacts to adjacent parcels. This involved tying into the existing path on the south side of Neptune Road, west of the Partin Canal to avoid impacting adjacent parcels; and reducing the landscape buffer to avoid impacting the Chevron parcel. The changes to Alternative B involved eliminating the two-way left turn lane in the vicinity of Franklin Street to minimize Right-of-way impacts to the shopping center on the north side of Neptune Road.

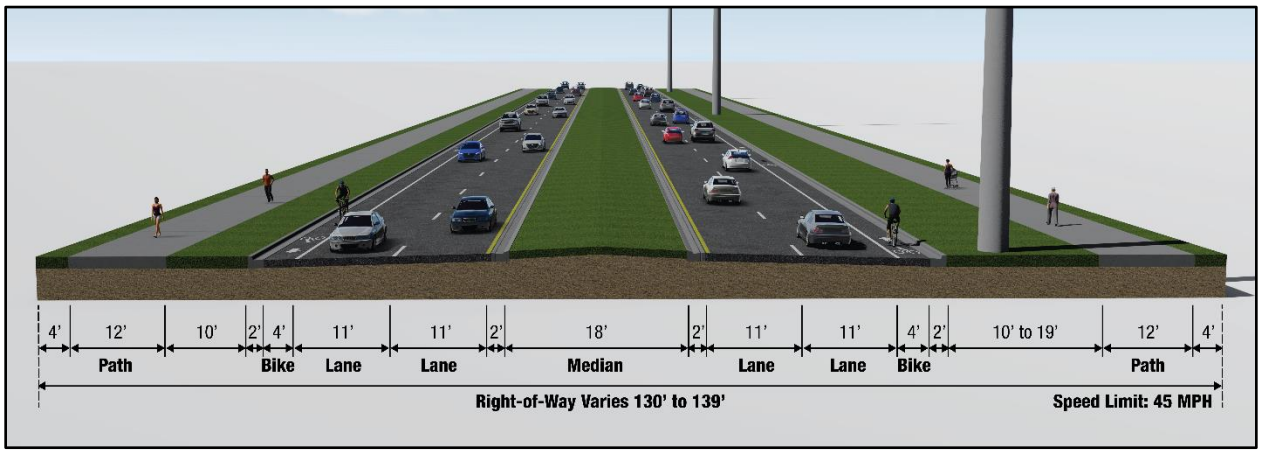
Concept plans for the Preferred Alternative are provided in **Appendix F**.

6.1 ENGINEERING DETAILS OF THE PREFERRED ALTERNATIVE

6.1.1 TYPICAL SECTION

From Partin Settlement Road to Old Canoe Creek Road, the Preferred Alternative includes a 4-lane divided roadway (with 11-foot lanes), a 22-foot raised median, 4-foot bicycle lanes in each direction, curb and gutter, a 10-foot planting strip (varies due to existing power transmission pole locations) on both sides, 12-foot shared use path on both sides, and a 4-foot clear area adjacent to each shared use path. This typical section would require between 130 and 139 feet of right-of-way (depending on the location of the existing power transmission poles). **Exhibit 6-1** illustrates this typical section between Partin Settlement Road and Old Canoe Creek Road. The posted speed limit for this section would be 45 MPH.

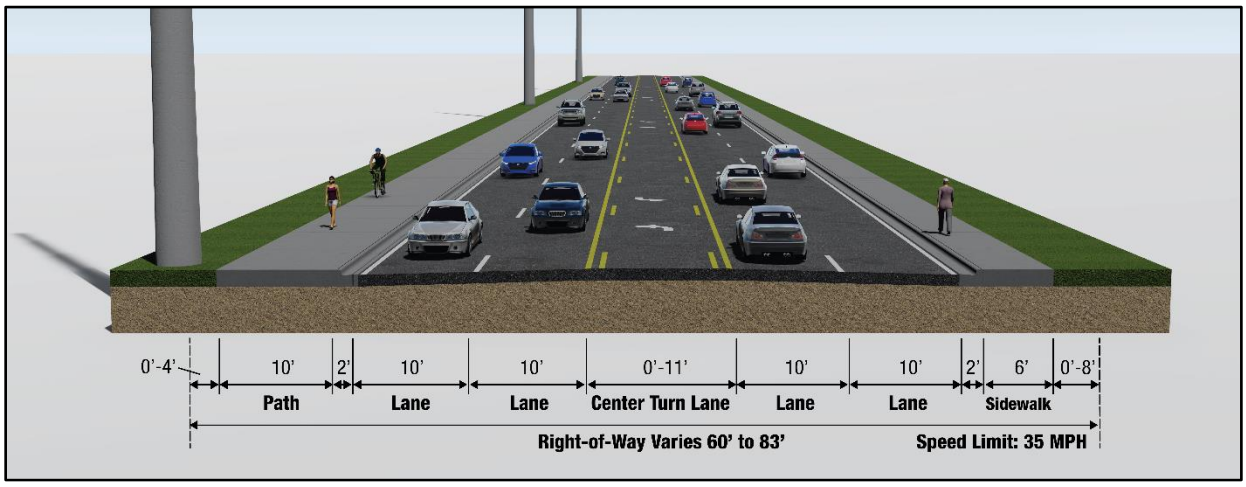
Exhibit 6-1: Preferred Alternative Typical Section, Partin Settlement Road to Old Canoe Creek Road



From Old Canoe Creek Road to US 192, the Preferred Alternative includes a 5-lane roadway (with 10-foot travel lanes and an 11-foot two-way left turn lane), curb and gutter, a 10-foot planting strip on both sides (where possible within existing right-of-way), a 10-foot shared use path with a 4-foot clear area (where possible within existing right-of-way) on the north side, and a 6-foot sidewalk on the south side. To avoid right-of-way impacts to the shopping center located on the north side of Neptune Road, the two-way left turn lane is not provided in the vicinity of the shopping center. The existing right-in/right-out only access restrictions would be maintained. This typical section would require between 60 and 83

feet of right-of-way. **Exhibit 6-2** illustrates this typical section between Old Canoe Creek Road and US 192. The posted speed limit for this alternative would be 35 MPH.

Exhibit 6-2: Preferred Alternative Typical Section, Old Canoe Creek Road to US 192



A copy of the typical section package is provided in **Appendix G**.

6.1.2 BRIDGES AND STRUCTURES

The project extends east from the intersection of Neptune Road and Partin Settlement Road to US 192 and contains two bridges and one large culvert. The two bridges along the corridor span the Partin Canal and Canal C-31. The bridge over Florida's Turnpike is being designed and constructed by Florida's Turnpike Enterprise and is not part of this report. The Canal C-31 bridge is a typical bridge while the Partin Canal bridge is a box culvert that meets the definition of a bridge. Per the FDOT Design Manual (FDM), any culvert with a span exceeding 20 feet is classified as a bridge structure and will be designed as such.

Possible foundation types for the bridges along the corridor include 18-inch and 24-inch square prestressed concrete piles and steel H-piles. The bridge spanning Canal C-31 is within a 1,000-foot radius of several structures. For this bridge, selection of the foundation system should give significant consideration to systems that reduce the potential for vibration and noise impacts. Therefore, low displacement piling, such as steel H-piles, may be more suitable for bridges within proximity of existing structures. Low displacement piles require lower impact hammer energy levels and thus create lower noise and vibration levels during installation.

Exhibit 6-3 illustrates a bridge key map for the preferred alternative. Each bridge is numbered sequentially from west to east. **Table 6-1** summarizes information about the bridges, including a cost estimate for each bridge.

Exhibit 6-3: Bridge Key Map

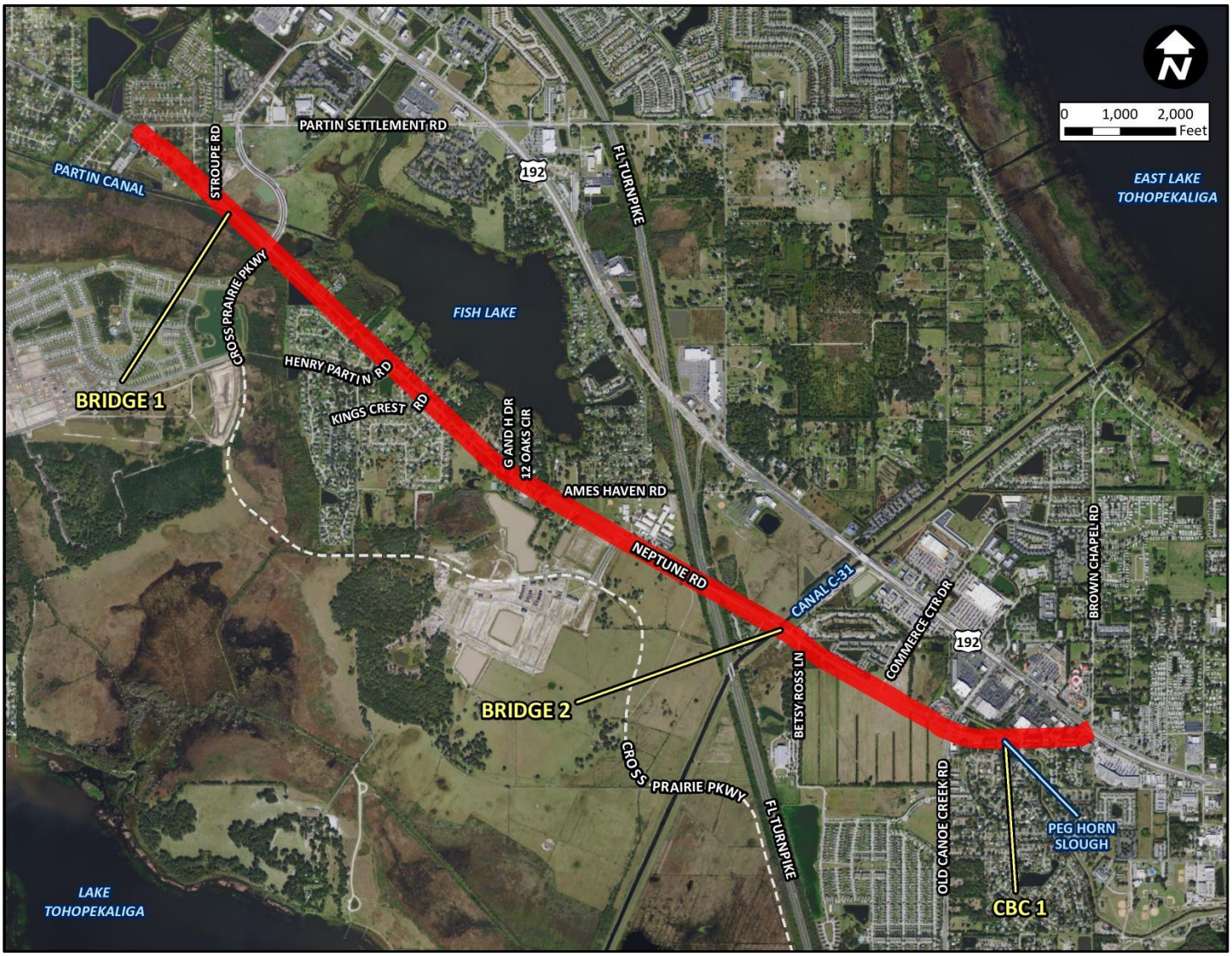


Table 6-1: Bridge Structures Cost Estimates

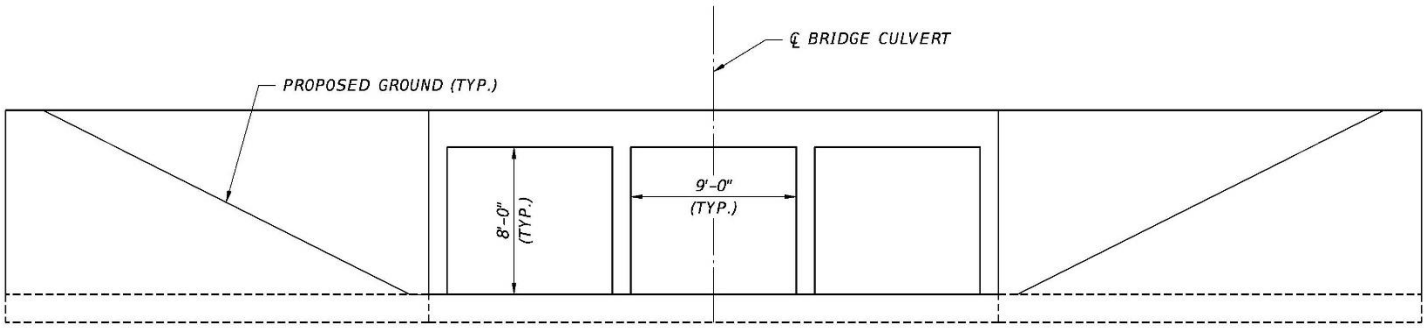
Bridge Location/ Description	Anticipated Super-strucutre Type	Max. Span Length (ft)	Anticipated Depth (ft)*	Anticipated Sub-structure Type	No. of Spans	Bridge Length (ft)**	Bridge Width (ft)***	Deck Area (SF)	$/SF	Estimated Cost
Neptune Road over Partin Canal	Concrete Box Culvert	8	9	N/A	3	24	185.5	N/A	N/A	$392,921
Neptune Road over Florida's Turnpike	Design under separate project									
Neptune Road over C-31 Canal	Concrete Flat Slab	29'-4"	2.5	Pile Bents	5	146.5	108.25	15859	135	$2,140,965

Note: Span Lengths and bridge areas have been rounded.
*For the box culvert, this is the depth of the culvert opening
** Measured along the roadway baseline
*** For the box culvert, this is the length along the Centerline of the culvert

6.1.2.1 BRIDGE 1: NEPTUNE ROAD OVER PARTIN CANAL

Bridge 2 is a box culvert that supports a 4-lane roadway carrying both eastbound and westbound Neptune Road traffic over Partin Canal. This culvert replaces an existing triple 8'x9' box culvert. The proposed culvert is a triple 8'x9' box culvert, skewed to match the existing canal centerline, with an approximate required length of 185'-6". The culvert typical section is displayed on **Exhibit 6-4**.

Exhibit 6-4: Bridge 1 Typical Section



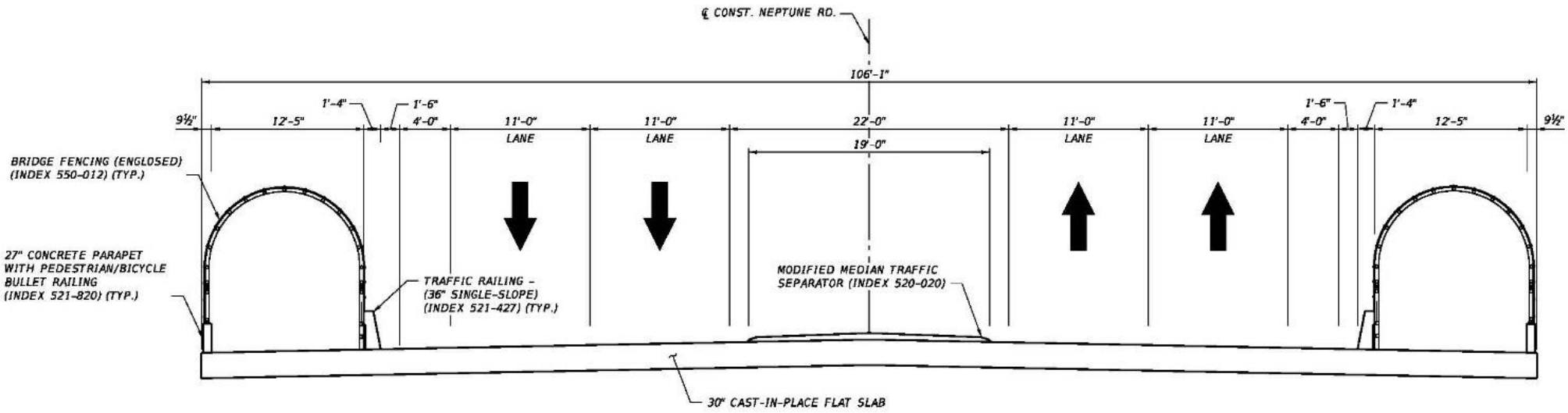
6.1.2.2 BRIDGE 2: NEPTUNE ROAD OVER CANAL C-31

Bridge 2 is a 4-lane structure carrying both eastbound and westbound Neptune Road traffic over Canal C-31. The bridge is a 5-span bridge skewed to match the alignment of the canal. The approximate required overall length for this bridge is 146'-6¾" with a maximum span of 29'-3¾". Based on the vertical clearance requirements of South Florida Water Management District (SFWMD) and the proposed roadway profile, a flat-slab is the recommended superstructure type for this structure.

The proposed bridge width is 106'-1" with four 11-foot lanes, two 4-foot bicycle lanes, two 1.5-foot outside shoulders, two 12-foot shared-use paths, and a 22-foot median with a 19-foot concrete traffic separator. The bridge typical section is displayed on **Exhibit 6-5**.

The anticipated substructure, for both intermediate and end abutments, are pile bents. The location of the bridge structure is within the 1,000-foot radius of existing structures, but these structures are on the limits of this range. Additionally, the existing bridge structure utilized concrete piling, therefore the use of prestressed concrete piling with vibration monitoring is recommended.

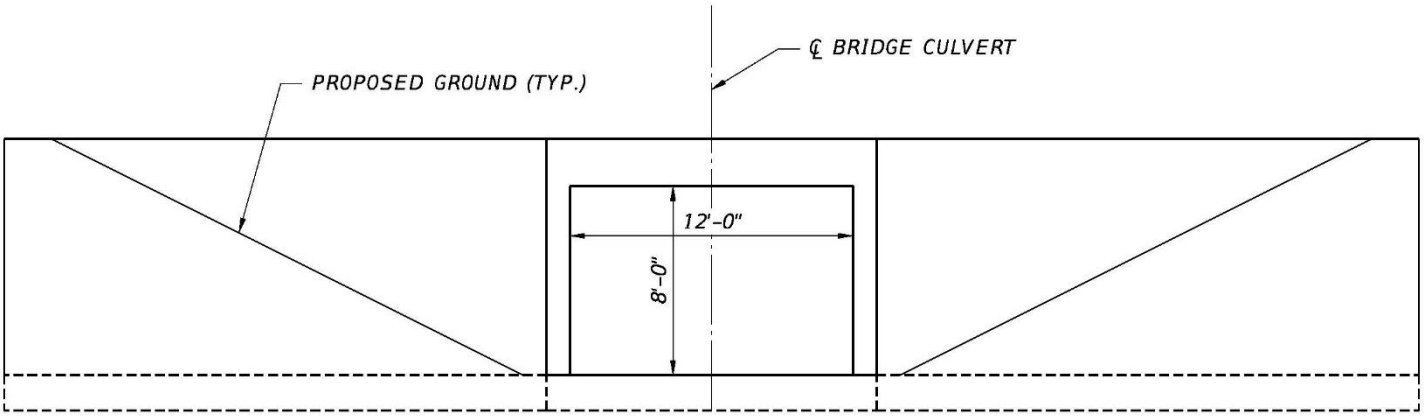
Exhibit 6-5: Bridge 2 Typical Section



6.1.2.3 CBC 1: MISCELLANEOUS STRUCTURE

Concrete Box Culvert (CBC) 1 is a box culvert that supports a 4-lane roadway carrying both eastbound and westbound Neptune Road traffic over Peg Horn Slough. This culvert replaces an existing 8'x12' box culvert. The proposed culvert is an 8'x12' single box culvert skewed to match the centerline of the canal and has an approximate required length of 102'-0". The culvert typical section is displayed on **Exhibit 6-6**. All culvert extensions or replacements shall meet FDM drop off criteria.

Exhibit 6-6: CBC 1 Typical Section



6.1.3 RIGHT-OF-WAY AND RELOCATIONS

From Partin Settlement Road to west of Ames Haven Road, the additional right-of-way for the Preferred Alternative would be acquired primarily on the north side of the existing roadway. From Ames Haven Road to Florida's Turnpike, additional right-of-way would be acquired from both the north and south sides of the road to avoid relocating KUA power transmission poles (this also represents the best fit for the widening of the bridge over the Turnpike, and it is the optimum alignment all things considered). From Florida's Turnpike to Old Canoe Creek Road, the additional right-of-way would be acquired primarily on the south side of the existing roadway. From Old Canoe Creek Road to US 192, the additional right-of-way would be acquired on the north side of the existing roadway.

The Preferred Alternative (including ponds) would require right-of-way from 61 residential parcels and 11 non-residential parcels. Of the 61 residential parcels, 41 are improved and 20 are vacant. Of the existing residences, nine are expected to require relocation. Of the 11 non-residential parcels, five are improved and six are vacant. Of the existing non-residential buildings, none are expected to require relocation.

6.1.4 HORIZONTAL AND VERTICAL GEOMETRY

The proposed horizontal and vertical alignments for the Preferred Alternative generally follow the corresponding alignments of the existing roadway as described in Section 2.1.8.

6.1.5 BICYCLE AND PEDESTRIAN ACCOMMODATIONS

From Partin Settlement Road to Old Canoe Creek Road, the Preferred Alternative includes 4-foot bicycle lanes in each direction and a 12-foot shared use path on both sides. From Old Canoe Creek Road, the Preferred Alternative includes a 10-foot shared use path on the north side of the road and a 6-foot sidewalk on the south side of the road. The Preferred Alternative connects with the existing shared use path extending west of Partin Settlement Road and the existing bicycle lanes extending south of Neptune Road on Old Canoe Creek Road. The provision of bicycle and pedestrian facilities are expected to improve safety along the corridor.

6.1.6 MULTI-MODAL ACCOMMODATIONS

No bus service is currently provided on Neptune Road and no bus service is planned in the future.

6.1.7 ACCESS MANAGEMENT

Osceola County utilizes the same Access Management Classification system as the Florida Department of Transportation (FDOT); however, Neptune Road has not been designated with a specific classification. West of Partin Settlement Road (which has been widened to a divided 4-lane road), Neptune Road has the characteristics of Access Class 7. Access Class 7 represents minimal access management with full median openings spaced at 660 feet.

As part of the Neptune Road PD&E, Osceola County proposes to establish the following access management classifications:

- Neptune Road, from Partin Settlement Road to Old Canoe Creek Road – Class 5
- Neptune Road, from Old Canoe Creek Road to US 192 – Class 7

6.1.8 INTERSECTION CONCEPTS

Intersection concepts are illustrated in the concept plans for the Preferred Alternative which are provided in **Appendix F**.

6.1.9 INTELLIGENT TRANSPORTATION SYSTEM AND TSM&O STRATEGIES AND TECHNOLOGIES

A separate document, Concept of Operations (ConOps) for the Intelligent Transportation System (ITS), has been prepared for the Preferred Alternative. The project proposes employing Transportation Systems Management and Operations (TSM&O) strategies and deploying ITS devices along Neptune Road, from Partin Settlement Road to US 192.

The ConOps describes the needs and goals associated with deploying and integrating field components that will establish an ITS which includes CCTV cameras, Bluetooth readers, and other devices. The device type and proposed locations of the ITS components used to facilitate traffic management will be identified during design, once consensus is reached by project stakeholders.

The ITS components of this project are in the preliminary planning stages and will require input and approval from the County Traffic Engineer and District TSM&O Engineer. Additionally, the stakeholders that will have an operational interest in the system will define various roles and responsibilities as the project progresses. Therefore, the ConOps will be a living document that will aid in building consensus with the project stakeholders.

6.1.10 UTILITIES

All of the utility providers and operators were contacted on June 1, 2019, and were provided conceptual plans and alternatives for review. Based on the conceptual plans, they were asked to assist in locating and identifying their existing facilities within the study area. They were also asked to provide an estimated cost for relocation of their facilities potentially impacted by the proposed roadway improvements being evaluated. Detailed information on the utility coordination documents, including information provided by the utility agency/owners (UAOs), is located in the project Utility Assessment Package, dated September 2019. A list of the UAOs and corresponding contact information is provided in **Table 6-2**.

Table 6-2: Summary of Utility Providers

Utility Agency/Owner	Contact	Address
AT&T Corporation (buried fiber)	Greg Jacobson (813) 342-0512	6015 Benjamin Road, Suite 306 Tampa, FL 33634
Florida Public Utilities (distribution gas)	Gary Hardy 863-224-3786	1705 7TH ST SW Winter Springs, FL 33880
City of St. Cloud (water/wastewater/reuse)	Veronica Miller (407) 957-7265	1300 9th Street St. Cloud, FL 34769
Charter Communications (CATV/phone/fiber)	Marvin Usry (407) 532-8509	3767 All American Blvd Orlando, Fl. 32810
Florida Gas Transmission (30", 24" & 20" trans. pipeline)	Joe Sanchez (407) 838-7171	2405 Lucien Way, Suite 200 Maitland, FL 32751
TOHO Water Authority (water/wastewater/reuse)	George Eversole	101 N. Church St. Kissimmee, FL 34741
CenturyLink (phone/fiber)	Ty Leslie (407) 814-5293	33 North Main Street Winter Garden, FL 34787
Osceola County Traffic (fiber/traffic)	Rick Cole (407) 742-0623	3850 Old Canoe Creek Road St. Cloud, FL 34769
Summit Broadband (phone/fiber)	Aaron Pickle (321) 356-2995	4558 SW 35th Street, Suite 100 Orlando, FL 32811
KUA-Electric (distribution electric)	Felix Escobar (407) 933-7777	1701 West Carroll Street Kissimmee, FL 34741
KUA-Transmission (transmission electric)	Jeff Santos	1701 West Carroll Street Kissimmee, FL 34741
OUC-Electric (distribution electric)	Vince Montgomery 407-434-4149	6003 Pershing Avenue, Orlando, FL 32822
OUC-Transmission (transmission electric)	Dan Slack 407-434-4125	6003 Pershing Avenue, Orlando, FL 32822
AT&T Distribution (phone)	Alan Reynolds (407) 351-8180	5100 Steyr Street Orlando, FL 32819

Most of the anticipated utility impacts occur within the existing Neptune Road right-of-way. Utility impacts on utility owned lands or utility easements include potential impacts to KUA-Electric, OUC-Electric, and all joint pole users attached to their pole line. The majority of the utility impacts that are outlined in this section are due to the construction of the proposed roadway widening, drainage piping, sidewalk, and shared use path. Other than roadway crossings, existing utilities that will be located under the proposed pavement are also identified as to be relocated. **Table 6-3** summarizes the anticipated costs of the utility relocations on the project.

Table 6-3: Utility Impacts and Estimated Relocation Cost

Utility Agency/Owner	Facilities Impacted	Estimated Relocation Cost [1]
AT&T Corporation	• No impacts anticipated	$0
Florida Public Utilities	• Impacts to approximately 550 LF of 2.5" GM east of Franklin Street	$20,000
City of St. Cloud	• Impacts to 11,000 LF of 12" WM from James Haven Road to US 192 • Impacts to approximately 11,000 LF of 4" and 8" FM from G and H Road to US 192 • Impacts to the 8" SS gravity line at Neptune Middle School	$1,370,000
Charter Communications	• Impacts to approximately 7,000 LF of aerial cable from Partin Settlement to US 192	$200,000
Florida Gas Transmission	• No impacts anticipated	$0
TOHO Water Authority	• Impacts to 3,100 LF of 8" WM from Partin Settlement Road to Cross Prairie Parkway • Impacts to 3,100 LF of 6" FM from Partin Settlement Road to Cross Prairie Parkway • Impacts to the 8" SS gravity line at Partin Settlement Road	$400,000
CenturyLink	• Impacts to approximately 15,000 LF of buried copper/fiber from Partin Settlement to US 192	$1,000,000
Osceola County Traffic	• To be included in project signalization design	$0
Summit Broadband	• Impacts to 1,000 LF of buried FOC	$100,000
KUA –Distribution Electric	• Impacts to 25 Distribution poles between Sta. 56+13 to Sta. 103+87	$250,000
KUA –Transmission Electric	• Impacts to 7 Transmission poles between Sta. 56+13 to Sta. 103+87	$700,000
OUC – Distribution Electric	• Impacts to 15 distribution poles from Turnpike to US 192	$150,000
OUC – Transmission Electric	• Impacts to 7 Transmission poles between Sta. 56+13 to Sta. 103+87	$500,000
AT&T Distribution	• Impacts to 1,600 LF of buried FOC from James Haven Road to Neptune Middle School • Impacts to 300 LF of buried FOC at US 192	$190,000
Non-reimbursable Total:		**$4,880,000**
Reimbursable Total:		**$0**
Utility Relocation Total:		**$4,880,000**

1. Information contained in this table is based on best available information and should be considered preliminary until verified through design survey during the design phase of the project.

6.1.11 DRAINAGE AND STORMWATER MANAGEMENT FACILITIES

Five stormwater management ponds are proposed as part of the Preferred Alternative. The Pond Siting Report (PSR) prepared for this project identified recommended pond sites for each basin. Neptune Road is a part of the overall Lake Okeechobee watershed with positive outfall to the Gulf of Mexico. Lake Okeechobee is a nutrient impaired water body. Consequently, any development in this watershed is required to provide 50% additional stormwater treatment volume in the associated stormwater ponds. This project does not discharge stormwater to an Outstanding Florida Water (OFW).

It should be noted that the recommendations were based on pond sizes determined from preliminary data, reasonable engineering judgment, and assumptions. Pond size requirements may change during final design as more detailed information on Seasonal High Water Table (SHWT), wetland hydrologic information, and final roadway profile become available.

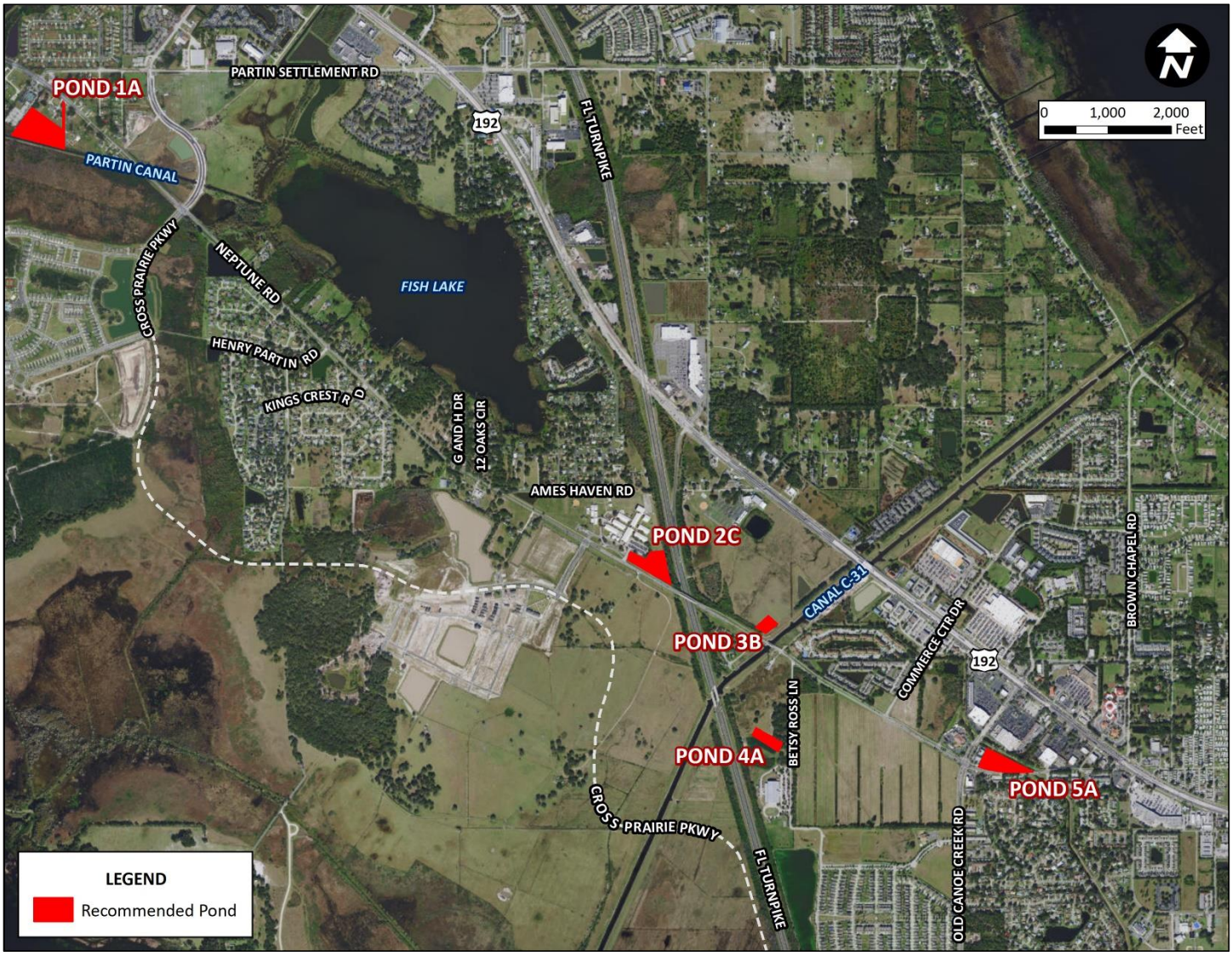
Design considerations for each pond site location included a desktop review of the best available data, which included hydraulic data, hydrology (land use cover, soil types, SHWT, etc.), contamination sites, wetland limits, wildlife sitings, archaeological or historical sites, and conservation areas. Recommended ponds are identified in **Table 6-4** and illustrated on **Exhibit 6-7**.

Table 6-4: Pond Summary for Preferred Alternative

Pond Site	Wetland Impacts	Known Habitat Impacts	Contam-ination Risk	Flood-plain Impact	Social Impacts	Utility Conflicts	# of Property Owners	Pond Right-of-Way Area (ac)
Pond 1A	Yes	Yes	Medium	Yes	No	No	2	5.77
Pond 2C	No	No	Low	No	Yes	No	1	6.43
Pond 3B	No	No	Low	No	No	No	1	0.80
Pond 4A	No	Yes	Low	No	Yes	No	1	1.03
Pond 5A	No	No	N/A	No	No	No	1	0.00

Note: Pond 5A is an existing pond which has been permitted for use to accommodate the widening of this portion of Neptune Road.

Exhibit 6-7: Recommended Ponds



6.1.12 FLOODPLAIN ANALYSIS

FEMA has designated the area in which the majority of the project falls as Zone X or areas outside of the 100-year flood zone. There is one location however where the proposed roadway would impact regulatory floodplains and two locations where new or modified bridge structures, and box culvert extensions, would impact regulatory floodways.

The one location where the proposed roadway widening would encroach into the 100-year floodplain is from the Partin Canal to Sugar Cane Drive. This area is designated as Zone A which are areas of 100-year flooding where the flood elevation has not been federally established. Roadway improvements within this segment would include elevating the roadway section to a level at, or above, the existing roadway resulting in impacts to the storage capacity of the floodplain. This can be categorized as a transverse encroachment. Flood elevations although not federally regulated have been identified by a local flood study and overtopping of the existing road is not anticipated in the 100-year 24-hour storm event. This project is not anticipated to have any impact on the base flood elevation, or the likelihood of flood risk.

There are two crossings of regulatory floodways. These are the crossings of Peg Horn Slough and the Canal C-31. “No Rise” analyses will need to be performed for these crossings to verify that the proposed crossings do not cause a rise in the floodway elevations. This would have to undergo the proper permitting per FEMA’s National Flood Insurance Program.

It is proposed to compensate for the encroachment within the 100-year floodplain within the proposed stormwater management facilities. This compensation will be provided by either the dynamic approach within the pond itself or by the “cup for cup” approach outside of the pond.

The Pond Siting Report prepared for the project includes several pond site alternatives. A detailed analysis will need to be performed during final design to determine if the pond sizes required to satisfy project treatment and attenuation requirements will be adequate to also meet compensating storage requirements, of if the ponds will be required to be expanded further.

6.1.13 TRANSPORTATION MANAGEMENT PLAN

Construction for the widening of Neptune Road can be accomplished as described below.

Partin Settlement Road to Old Canoe Creek Road
For the segment between Partin Settlement Road and Old Canoe Creek Road, phase one traffic would be maintained on the existing pavement, providing a single eastbound and westbound travel lane. One half of the proposed typical section would be constructed (future westbound).

During phase two, traffic would be shifted to the newly constructed pavement, providing a single eastbound and westbound travel lane. The second half of the proposed typical section would be constructed (future eastbound).

Old Canoe Creek Road to US 192
For the segment between Old Canoe Creek Road and US 192, phase one traffic would be maintained on the existing pavement, providing a single eastbound and westbound travel lane. One half of the proposed typical section (excluding the center turn lane) would be constructed (future westbound).

During phase two, traffic would be shifted to the newly constructed pavement, providing a single eastbound and westbound travel lane. The second half of the proposed typical section (excluding the center turn lane), would be constructed (future eastbound).

During phase three, eastbound traffic would be shifted to the outside lane of the newly constructed eastbound pavement and westbound traffic would be shifted to the outside lane of the newly constructed westbound pavement, providing a single eastbound and westbound travel lane. The center turn lane would be constructed.

6.1.14 SPECIAL FEATURES

Special features for this project include the shared use path in each direction, from Partin Settlement Road to Old Canoe Creek Road, and a shared use path on the north side of Neptune Road, from Old Canoe Creek Road to US 192. There is potential for a noise barrier on the north side of Neptune Road, from approximately 1,000-feet east of the Canal C-31 to approximately 400-feet west of Commerce Center Drive. A determination will be made during design regarding the noise barrier.

6.1.15 DESIGN VARIATIONS AND DESIGN EXCEPTIONS

A design variation was approved by FDOT for the use of 4-foot bicycle lanes plus 12-foot shared use paths (on both sides of Neptune Road) instead of providing 7-foot buffered bicycle lanes for the segment from Partin Settlement Road to Old Canoe Creek Road.

Another design variation was approved by FDOT for the provision of a shared use path in lieu of bicycle lanes on the segment from Old Canoe Creek Road to US 192.

Copies of the approved design variations are provided in **Appendix H**.

6.1.16 COST ESTIMATES

An updated construction cost estimate for the Preferred Alternative was developed using the FDOT Long Range Estimating System. In addition, right-of-way cost estimates were developed. **Table 6-5** summarizes the costs projected for the Preferred Alternative, including engineering, construction engineering and inspection (CEI), and utility relocations. In total, the projected cost for the project is approximately $61.3 million. The detailed cost estimates for this project are provided in **Appendix I**.

Table 6-5: Preferred Alternative Cost

Cost Element	Amount
Long Range Estimate - Construction	$ 35,862,000
Engineering/CEI (20%)	$7,172,000
Subtotal	$43,034,000
Right-of-Way Costs	$18,236,000
Projected Total Cost	$61,270,000

6.2 SUMMARY OF ENVIRONMENTAL IMPACTS OF THE PREFERRED ALTERNATIVE

6.2.1 FUTURE LAND USE

Future land use (FLU) was determined based on a review of Osceola Counties' Future Land Use GIS data. FLU for the study area is depicted on **Exhibits 6-8 through 6-11**. The study area is partially developed with residential and commercial land uses. However, there is some agricultural land uses remaining within the study area. The FLU shows these agricultural areas as either mixed use or low density residential. A portion of the study area is located within the County's East of Lake Toho Conceptual Master Plan and there are two Developments of Regional Impact under construction adjacent to Neptune Road which access Neptune Road via Cross Prairie Parkway and Tohoqua Boulevard. The population in Osceola County, specifically in Kissimmee and surrounding communities, is growing which is indicative on the FLU maps.

Exhibit 6-8: Osceola County FLU Map (1 of 4)

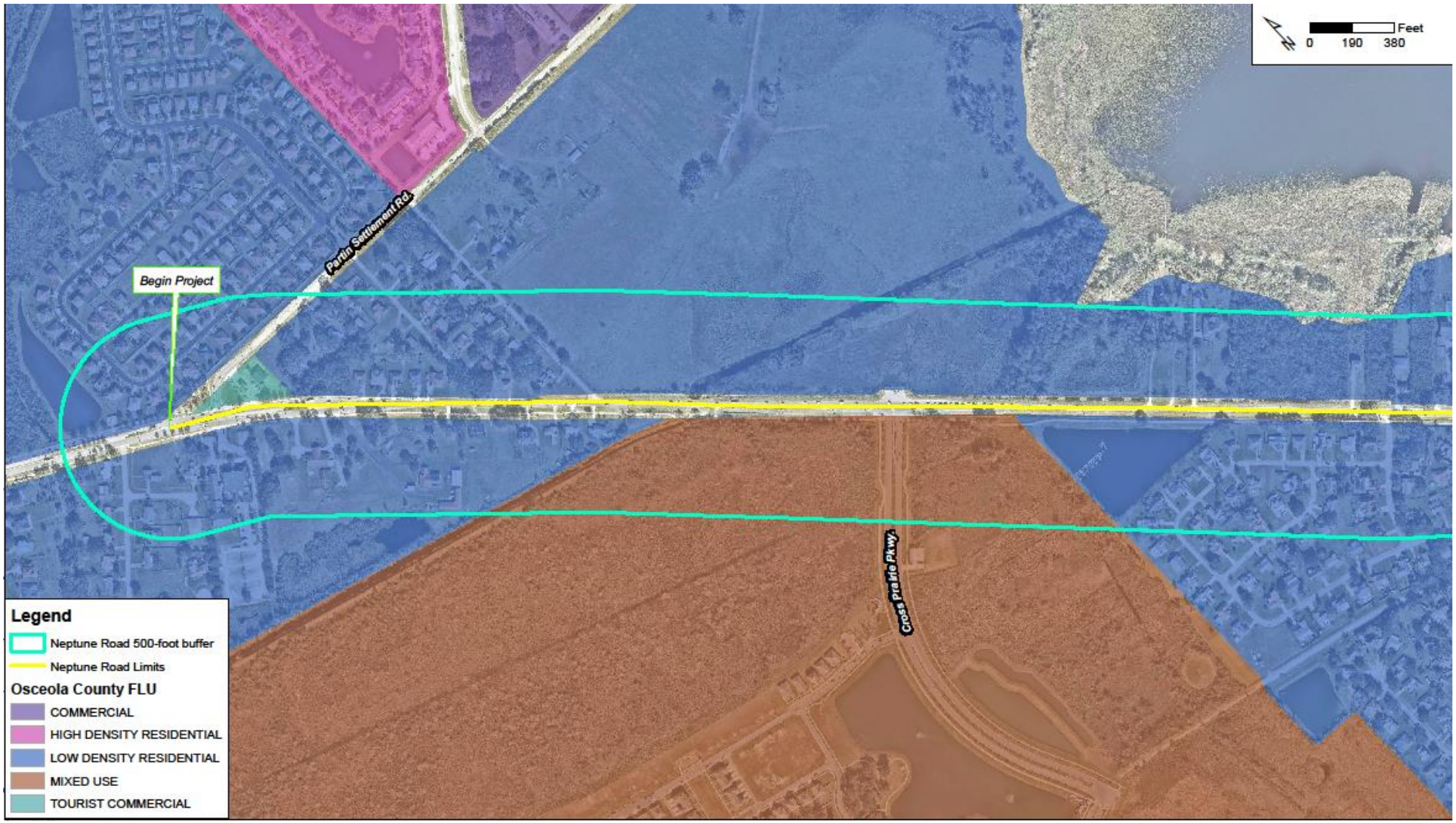


Exhibit 6-9: Osceola County FLU Map (2 of 4)

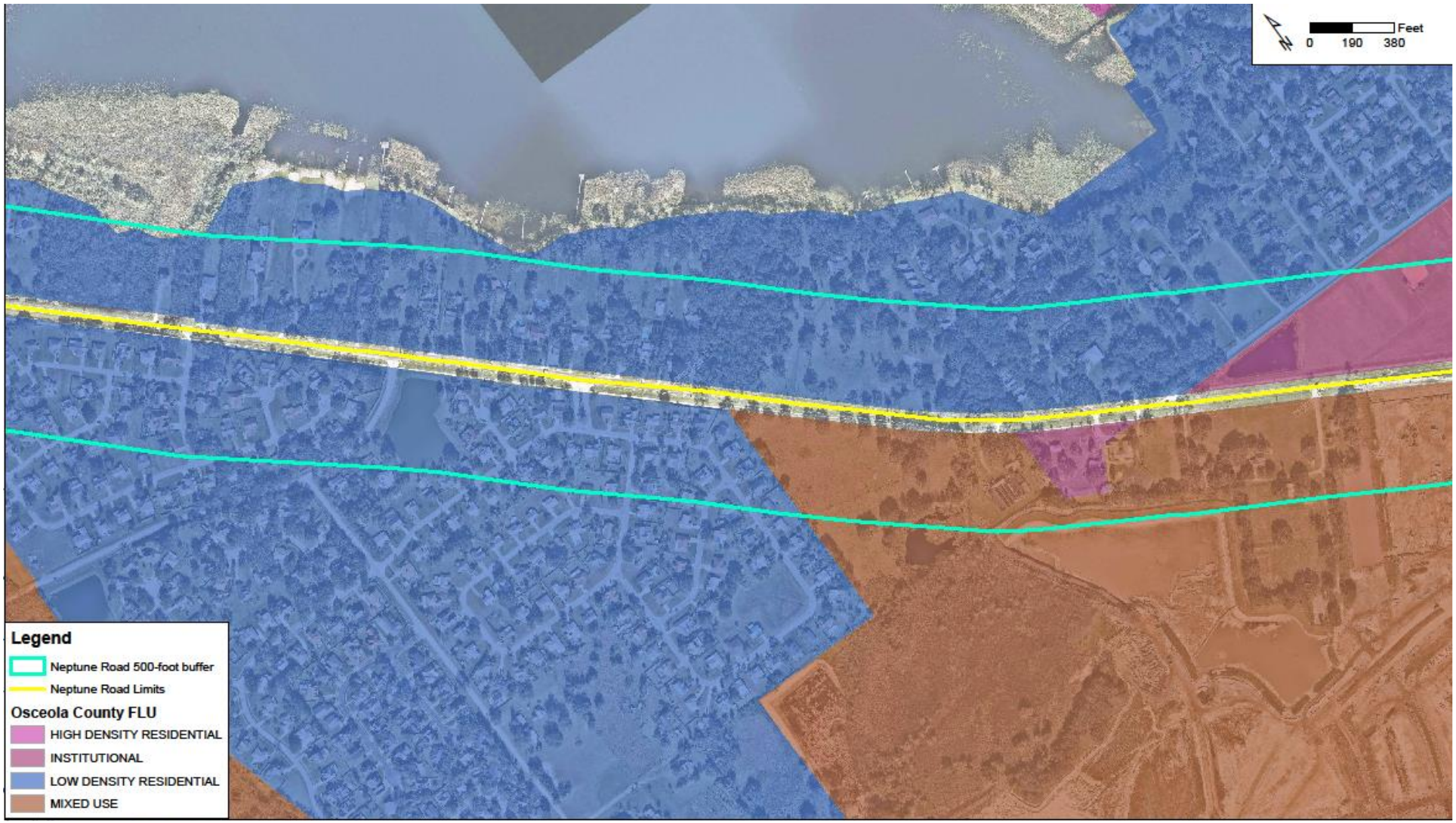


Exhibit 6-10: Osceola County FLU Map (3 of 4)

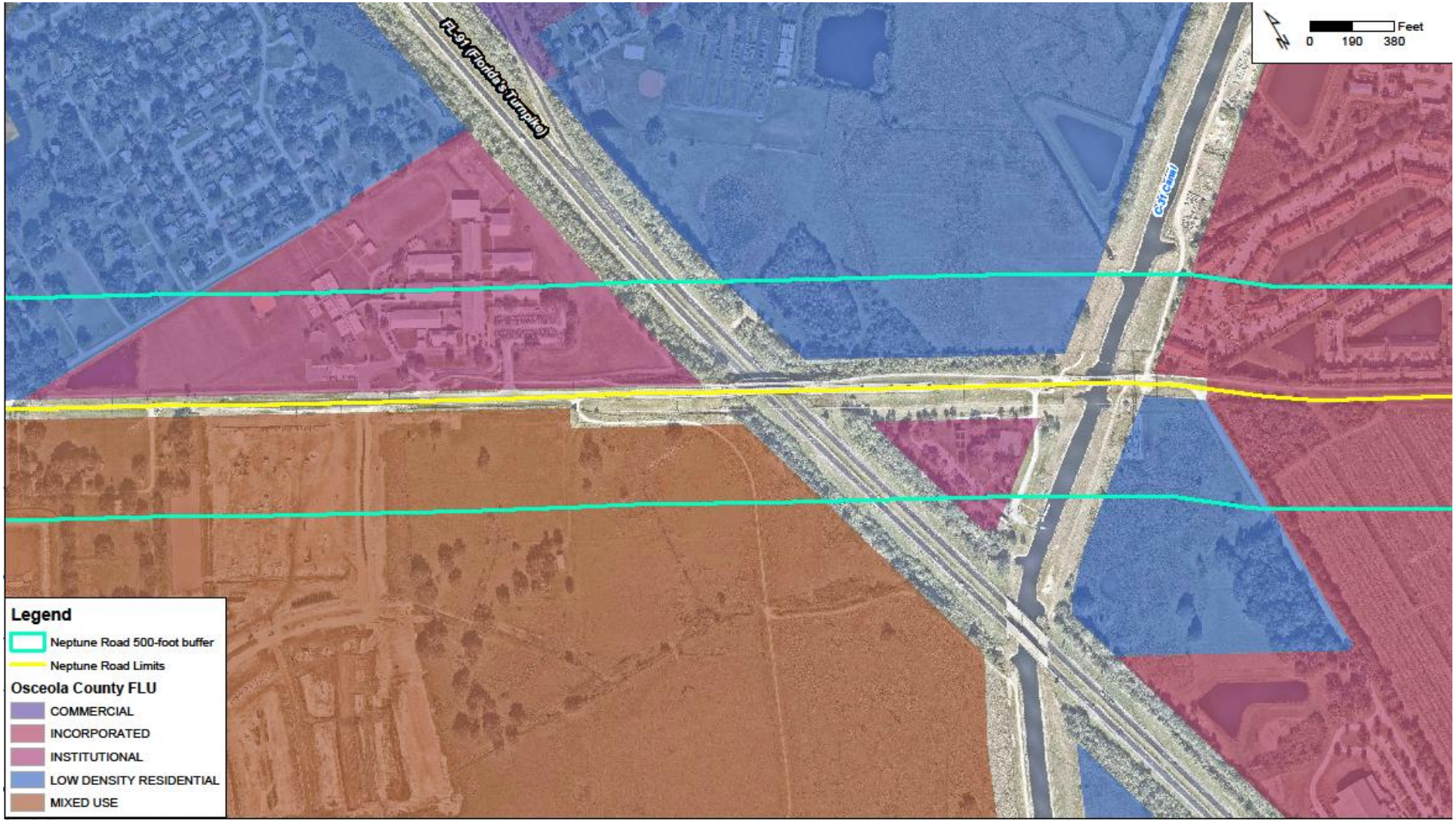


Exhibit 6-11: Osceola County FLU Map (4 of 4)

6.2.2 SECTION 4(F)

There are three Section 4(f) resources within the study area: Neptune Middle School Sports Fields, Partin Triangle Park and Boat Ramp and the Neptune Road Pathway. An exception was requested for the Neptune Road Pathway because the Pathway meets the criteria for an exception under 23 CFR Part 774 for the following reasons: the pathway occupies an existing transportation facility right-of-way without limitation to any specific location within that right-of-way and the continuity of the Pathway will be maintained with the Neptune Road widening project.

A Determination of Applicability was completed for the Neptune Middle School Sports Fields. Both Alternative 1 and 2 would require some right-of-way from Neptune Middle School, however neither alternative would impact any of the facilities within the Sports Fields. There is no permanent change in access, but dedicated left and right turn lanes, which would enhance access. The Sports Fields would remain open during construction. Therefore, it was recommended that the appropriate type of Section 4(f) documentation for this property is No Use.

A Determination of Applicability was completed for the Partin Triangle Park and Boat Ramp. Neither Alternative 1 or 2 would require right-of-way from the park and do not impact any of the facilities within the park. Access would be enhanced with the inclusion of the dedicated left turn lane and the reconstruction of the right turn lane and the construction of shared use paths on both sides of Neptune Road. The park would remain open during construction. Therefore, it was recommended that the appropriate type of Section 4(f) documentation for this property is No Use.

6.2.3 CULTURAL RESOURCES

A Cultural Resource Assessment Survey (CRAS) was conducted by SEARCH, Inc. for the four alternatives. The Area of Potential Effects (APE) was defined to include the existing and proposed Neptune Road right-of-way and was extended to the back or side property lines of parcels adjacent to the right-of-way, or a distance of no more than 328 feet (100 meters) from the maximum right-of-way line. The archaeological survey was conducted within the existing and the proposed right-of-way. The historic structure survey was conducted within the entire APE.

The archaeological survey consisted of a thorough pedestrian survey within the current and proposed project right-of-way, which included the excavation of 39 subsurface tests. Ground disturbance resulting from buried utilities and drainage features prevented subsurface archaeological testing throughout much of the APE. Of the 39 excavated shovel tests, nine were positive for cultural material, resulting in the documentation of one new archaeological site, 8OS02984. Site 8OS02984 is recommended ineligible for the National Register of Historic Places (NRHP) based on the level of disturbance and the unremarkable nature of the artifact assemblage.

The architectural survey resulted in the identification and evaluation of 40 historic resources within the Neptune Road APE, including two previously recorded resources and 38 newly recorded resources. The previously recorded resources include one historic canal (8OS02752) and one historic railway (8OS02822). The newly recorded resources include one historic mobile home park (8OS02983); two historic canals (8OS02981 and 8OS02982); three historic bridges (8OS02942-8OS02944); and 32 historic structures (8OS02945-8OS02976).

One resource within the Neptune Road APE is NRHP-eligible. A segment of the St. Cloud Canal (8OS02752) was determined NRHP-eligible by the Florida State Historic Preservation Officer (SHPO) on April 24, 2014 (SEARCH 2014). That segment of the St. Cloud Canal (8OS02752) is considered significant under Criterion A for its association with land reclamation activities in Osceola County, which helped spur the development of the county, and Criterion C as an example of a nineteenth-century canal. Furthermore, SEARCH recommends the portion of the St. Cloud Canal (8OS02752) within the Neptune Road APE locally significant under Criterion B for its association with Hamilton Disston, an important figure in Osceola County history. Based on the historic context and the results of the present survey, SEARCH recommends that the segment of the St. Cloud Canal (8OS02752) within the Neptune Road APE eligible as contributing to the overall NRHP-eligible St. Cloud Canal (8OS02752). A portion of the St. Cloud and Sugar Belt Railway (8OS02822) was determined ineligible for the NRHP by SHPO on September 4, 2015 (Dickinson and Wayne 2015). It is the opinion of SEARCH that the section of the St. Cloud and Sugar Belt Railway (8OS02822) within the Neptune Road APE remains ineligible for the NRHP due to a lack of historic integrity. The remaining 38 historic resources within the Neptune Road APE are recommended ineligible due to a lack of historic significance.

Within the Neptune Road APE, the St. Cloud Canal (8OS02752) runs northeast-southwest for 0.12 miles (0.2 kilometers) between Florida's Turnpike (State Road [SR] 91) and US 441 (SR 500) in Osceola County. Proposed improvements along the St. Cloud Canal (8OS02752) include the reconstruction of the two-lane road into a four-lane divided roadway on a new bridge across the canal. In addition, the project proposes incorporating an existing recreational trail (Neptune Road Trail), located to the north, into the new bridge and constructing a new trail to the southeast-southwest, which also will cross the new bridge. The proposed bridge is 140 feet (42.7 meters) long by 105 feet (32 meters) wide and includes three bents to be placed into the canal. None of the proposed improvements, including the new road and bridge over the St. Cloud Canal (8OS02752), will dramatically alter the integrity of the canal. Two bridges already span the canal within the Neptune Road APE, and they have not diminished the integrity of the canal. Based upon a review of the current plans, the proposed work will not involve rerouting of the canal, disruption of the canal, widening or loss of width or the severing of the canal from other waterways. While the proposed project will acquire 0.3 acres within the St. Cloud Canal right-of way, none of the proposed improvements will diminish the integrity of the St. Cloud Canal (8OS02752) or its ability to express the characteristics that make it eligible for listing in the NRHP. As such, the proposed improvements will have no adverse effect on 8OS02752. No further architectural work is recommended.

Based on the results of the CRAS, it is the opinion of SEARCH that the proposed improvements to Neptune Road will have no adverse effect on 8OS02752 or any other resources listed or eligible for listing in the NRHP. No further work is recommended.

6.2.4 WETLANDS

A wetlands evaluation was conducted, and the results are summarized in the Natural Resource Evaluation dated July 2020. Per the Wetlands Evaluation, two types of surface waters and three types of wetlands were identified within the study area. The following two tables summarize the direct (**Table 6-6**) and secondary impacts (**Table 6-7**) to surface waters and wetlands for the Preferred Alternative.

Table 6-6: Summary of Direct Wetland Impacts

SW/WL Number	FLUCFCS	Preferred Alt
SW 2	510	0.14
SW 3	510	1.57
SW 6	534	0.88
SW 7	510	0.12
SW 9	510	0.04
SW 10	510	0.01
SW 11	510	0.01
SW 13	510	0.04
Total Surface Water Impacts	**2.81**	
WL1	641	0.12
WL4	643	0.23
WL5	643	0.21
WL6	617	0.13
WL7	641	0.15
WL8	617	0.04
WL9	641	0.16
WL11	641	0.05
WL12	617	0.09
WL17	617	0.85
Total Wetland Impacts	**2.03**	
Grand Total Surface Water and Wetland Impacts	***4.84***	

Table 6-7: Secondary Impacts to Wetlands

WL Number	Preferred Alt
WL1	0.42
WL2	0.11
WL4	0.45
WL5	0.26
WL6	0.12
WL7	0.24
WL8	0.06
WL9	0.23
WL11	0.07
WL12	0.06
WL15	0.27
WL17	0.39
Total Secondary Wetland Impacts	***2.68***

A summary of the functional loss by Alternative are shown in **Table 6-8**.

Table 6-8: Potential Wetland Functional Loss

Alternative	FLUCFCS	Wetland Number	Direct Impacts (Acres)	UMAM Composite Score	Potential Functional Loss	Sum of Potential Functional Loss by Habitat Type
Preferred Alt	617	WL-6, WL-8, WL-12	0.26	0.57	0.15	Forested: 0.58
	617	WL-17	0.86	0.50	0.43	
	641	WL-1	0.12	0.50	0.06	Herbaceous: 0.41
	641	WL-7, WL-9, WL-11	0.36	0.57	0.21	
	643	WL-4	0.23	0.27	0.06	
	643	WL-5	0.21	0.37	0.08	

Wetland mitigation credits would be purchased from a mitigation bank that is permitted by SFWMD and US Army Corps of Engineers (USACE) to service the Lake Tohopekaliga Drainage Basin. The following banks are within the same drainage basin and service the project study area: Reedy Creek Mitigation Bank, Southport Ranch Mitigation Bank, and Florida Mitigation Bank. These three banks have both forested and herbaceous credits available for sale.

6.2.5 PROTECTED SPECIES AND HABITAT

A Protected Species and Habitat Assessment was conducted, and the results were summarized in the Natural Resource Evaluation, dated July 2020. Per the assessment, 21 federally-listed species and 22 state-listed species may occur within the study area. Pedestrian surveys for gopher tortoise burrows and listed plant species were conducted on November 30, 2018 and February 19, 2019. No gopher tortoises or listed plant species were observed within the alignments. Audubon's crested caracara surveys were conducted January through April 2019, documenting that crested caracaras are not nesting within the alignments of any of the alternatives. A Florida bonneted bat roost and acoustic survey was conducted May 2020 through June 2020 with no evidence of the species within the project limits. Effect determinations made for the federally listed species evaluated are shown in **Table 6-9**.

Table 6-9: Federally Listed Species Effects Determinations

Species	Effect Determination
Florida Panther	No effect
Florida bonneted bat	No effect
Audubon's Crested Caracara	May affect, not likely to adversely affect
Florida Scrub-Jay	No effect
Red-cockaded Woodpecker	No effect
Everglade Snail Kite	No effect
Wood Stork	May affect, not likely to adversely affect
Eastern Indigo Snake	May affect, not likely to adversely affect
Beautiful Pawpaw	No effect
Britton's Beargrass	No effect
Scrub Blazing Star	No effect
Florida Bonamia	No effect
Lewton's Polygala	No effect
Paper-like Nailwort	No effect
Pygmy Fringe Tree	No effect
Scrub Buckwheat	No effect
Scrub Lupine	No effect
Short-leaved Rosemary	No effect
Sandlace	No effect
Carter's Mustard	No effect
Wide-leaf Warea	No effect

Twenty-two FWC state-listed species were evaluated in this study. A 100% gopher tortoise survey will be conducted during design and permitting, and any gopher tortoises observed within 25 feet from construction would be relocated. The following additional surveys will be conducted during design and permitting for state listed species: southeastern American kestrel, Florida sandhill crane, and Florida burrowing owl. No adverse effects are anticipated to state listed species.

6.2.6 ESSENTIAL FISH HABITAT

The National Marine Fisheries Service (NMFS) indicated that Essential Fish Habitat (EFH) would not be impacted and an EFH assessment is not required.

6.2.7 HIGHWAY TRAFFIC NOISE

The Noise Study Report (NSR) was prepared for this project where a total of 210 receptor points representing 361 noise sensitive sites located adjacent to Neptune Road were evaluated for traffic noise related impacts associated with the widening of Neptune Road within the project limits. The results of the analysis indicate that existing (2019) exterior traffic noise levels are predicted to range from 52.1 dB(A) to 69.7.2 dB(A) at the 361 evaluated exterior noise sensitive sites adjacent to Neptune Road. Future year (2045) No-Build Alternative exterior traffic noise levels are predicted to range from 52.1 dB(A) to 69.7 dB(A). With the proposed widening, the exterior traffic noise levels for the future year (2045) build alternative are predicted to range from 53.1 dB(A) to 75.7 dB(A). The maximum increase at any noise sensitive site in the future build condition is 6.7 dB(A). This means that no noise sensitive sites are expected to experience a substantial increase in traffic noise compared to existing conditions.

In addition to residences (NAC B), Title 23 Code of Federal Regulations Part 772 specifies other Activity Categories addressing non-residential noise sensitive sites. Within the project limits, two impacts are predicted at non-residential noise sensitive sites. Noise barriers were evaluated for these impacted locations; however, the noise barriers were not able to provide a benefit to the impacted non-residential noise sensitive sites.

Noise levels at 66 residences are predicted to approach or exceed the NAC (i.e., 66 dB(A) for Activity Category B) established by the Federal Highway Administration (FHWA) for the Build condition. Noise barriers were evaluated for the impacted residential noise sensitive sites. The results of the noise barrier evaluation are summarized in **Table 6-10**. Noise barriers were determined to be a potentially cost reasonable noise abatement measure in one location, the Battaglia Townhomes in CNE WB07. Because a standard single barrier system in this location would require the relocation of up to 5 transmission power poles, a two-barrier system was analyzed that would leave all the transmission power poles in their current locations. This two-barrier system is predicted to provide a 7dB(A) benefit to one or more receptor and a 5 dB(A) benefit to two or more impacted receptors. This potential noise barrier system at the Battaglia Townhomes may be considered feasible and reasonable, contingent upon the following conditions:

- Final recommendations on the construction of abatement measures is determined during the project's final design and through the public involvement process;
- Detailed noise analyses during the final design process support the need, feasibility and reasonableness of providing abatement;
- Cost analysis indicates that the cost of the noise barrier(s) will not exceed the cost reasonable criterion;

- Community input supporting types, heights, and locations of the noise barrier(s) is provided to the county; and
- Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed and any conflicts or issues resolved.

Table 6-10: Noise Barrier Evaluation Summary

Common Noise Environment (CNE)	Number of Impacted Receptors	Barrier Approx. Begin Station	Barrier Approx. End Station	Optimized Preliminary Barrier Height (ft.)	Optimized Preliminary Barrier Length (ft.)	Preliminary Barrier Cost	Number of Benefited Receptors		Cost Per Benefited Receptor
							Impacted	Total	
Battaglia Townhomes (WB07)	24	188+75	192+35	10	360	$231,000	24	0	$9,625
		193+50	196+60	10	410				

6.2.8 CONTAMINATION

The Contamination Screening Evaluation Report (CSER), dated August 2019, prepared for this project identified and evaluated known or potential contamination sites, identified recommendations concerning these sites, and described possible impacts to the proposed project.

A total of 24 sites were assigned Contamination Risk Potential Ratings. A “Low Risk” rating was assigned to 21 of the sites and 3 sites were assigned a rating of “Medium Risk.” There were no High-risk sites identified within the proposed project right-of-way for any alternative considered in the study. The No-Build Alternative will have no contamination concerns. Alternative 1 may impact 6 low and 3 medium risk sites. Alternative 2 may impact 6 low and 3 medium risk sites. Alternative A may impact 15 low and 1 medium risk site. Alternative B may impact 15 low and 1 medium risk site. A total of 25 sites are listed for both segments (9 + 16) since one of the sites (the historical Kissimmee-St. Cloud Rail Line) appears in both segments of the project.

A total of 10 stormwater pond sites were also evaluated in the CSER. Ponds 1B, 2B, 2C, 3A, 3B, 4A, 5B, and 5C have been assigned as a “Low Risk”. Ponds 1A, 2A and 4B have been assigned a “Medium Risk.”

A Level II Contamination Assessments may be required for the three “Medium Risk” sites and the three “Medium Risk” pond sites depending on design and construction requirements.

APPENDIX A

Summary Crash Data Tables

Year	2013	2014	2015	2016	2017	Grand Total
Rear End	18	10	16	25	24	93
Left Turn	2	3	9	9	5	28
Angle		2		6	4	12
Other	1	2	1	3	1	8
Sideswipe, Same Direction	1		1	3	1	6
Hit Ditch	1		1	2	2	6
Hit Tree			1	3	1	5
Head On		1		1	2	4
Sideswipe, Opposite Direction	1			1	2	4
Other Single Vehicle			1		3	4
Ran Into Water/Canal	1			1	1	3
Pedestrian			1		2	3
Hit Sign Post	1			1	1	3
Hit Parked Vehicle		3				3
Overturned	1	1			1	3
Hit Curb				1	1	2
Right Turn					2	2
Bicycle			1		1	2
Hit Utility/Light Post				1		1
Hit Other Fixed Object					1	1
Hit Guardrail			1			1
Hit Fence	1					1
Grand Total	**28**	**22**	**33**	**57**	**55**	**195**

Year	2013	2014	2015	2016	2017	Grand Total
Dark - Lighted	5	3	2	4	7	21
Dark - Not Lighted	3		4	2	8	17
Dawn		2		1		3
Dusk	1		1	1		3
Grand Total	**9**	**5**	**7**	**8**	**15**	**44**

Year	2013	2014	2015	2016	2017	Grand Total
Dry	25	17	31	51	51	175
Wet	3	5	2	6	4	20
Grand Total	**28**	**22**	**33**	**57**	**55**	**195**

Year	2013	2014	2015	2016	2017	Grand Total
Sunday		2	4	4	6	16
Monday	5	5	3	8	6	27
Tuesday	4	3	3	11	4	25
Wednesday	4	3	5	6	8	26
Thursday	4	3	5	9	12	33
Friday	6	6	8	11	10	41
Saturday	5		5	8	9	27
Grand Total	**28**	**22**	**33**	**57**	**55**	**195**

Year	2013	2014	2015	2016	2017	Grand Total
Rear End						
E	4	3	6	7	8	28
N	2	2	1	3	2	10
S	2	1	1	2	3	9
W	10	4	8	13	11	46
Rear End Total						
Grand Total	**18**	**10**	**16**	**25**	**24**	**93**

Year	2013	2014	2015	2016	2017	Grand Total
Left Turn						
E	**2**		**2**	**1**	**1**	**6**
N		**2**	**3**	**3**		**8**
S			**3**	**4**	**2**	**9**
W		**1**	**1**	**1**	**2**	**5**
Left Turn Total						
Grand Total	**2**	**3**	**9**	**9**	**5**	**28**

Year	2013	2014	2015	2016	2017	Grand Total
Commerce Center Dr			1		1	2
Neptune Rd	25	16	30	53	54	178
Old Canoe Creek Rd	1	3	2	3		9
Partin Settlement Rd	1					1
SR 500		3		1		4
Stroupe Rd	1					1
Grand Total	**28**	**22**	**33**	**57**	**55**	**195**

Year	2013	2014	2015	2016	2017	Grand Total
Rear End						
E	4	3	6	7	8	28
N	2	2	1	3	2	10
S	2	1	1	2	3	9
W	10	4	8	13	11	46
Rear End Total						
Grand Total	**18**	**10**	**16**	**25**	**24**	**93**

Year	2013	2014	2015	2016	2017	Grand Total
Left Turn						
81996743	1					1
83315349	1					1
83756865		1				1
84240770		1				1
84241037		1				1
84241360			1			1
84241386			1			1
84241530			1			1
84241574			1			1
84241713			1			1
84241957				1		1
84871799			1			1
85110780			1			1
85230285			1			1
85235050			1			1
85278803				1		1
85382860				1		1
85385156				1		1
85421117				1		1
85421118				1		1
85499415					1	1
86532684				1		1
86776276				1		1
86776307				1		1
86813906					1	1
87105116					1	1
87130347					1	1
87132668					1	1
Left Turn Total	**2**	**3**	**9**	**9**	**5**	**28**
Grand Total	**2**	**3**	**9**	**9**	**5**	**28**

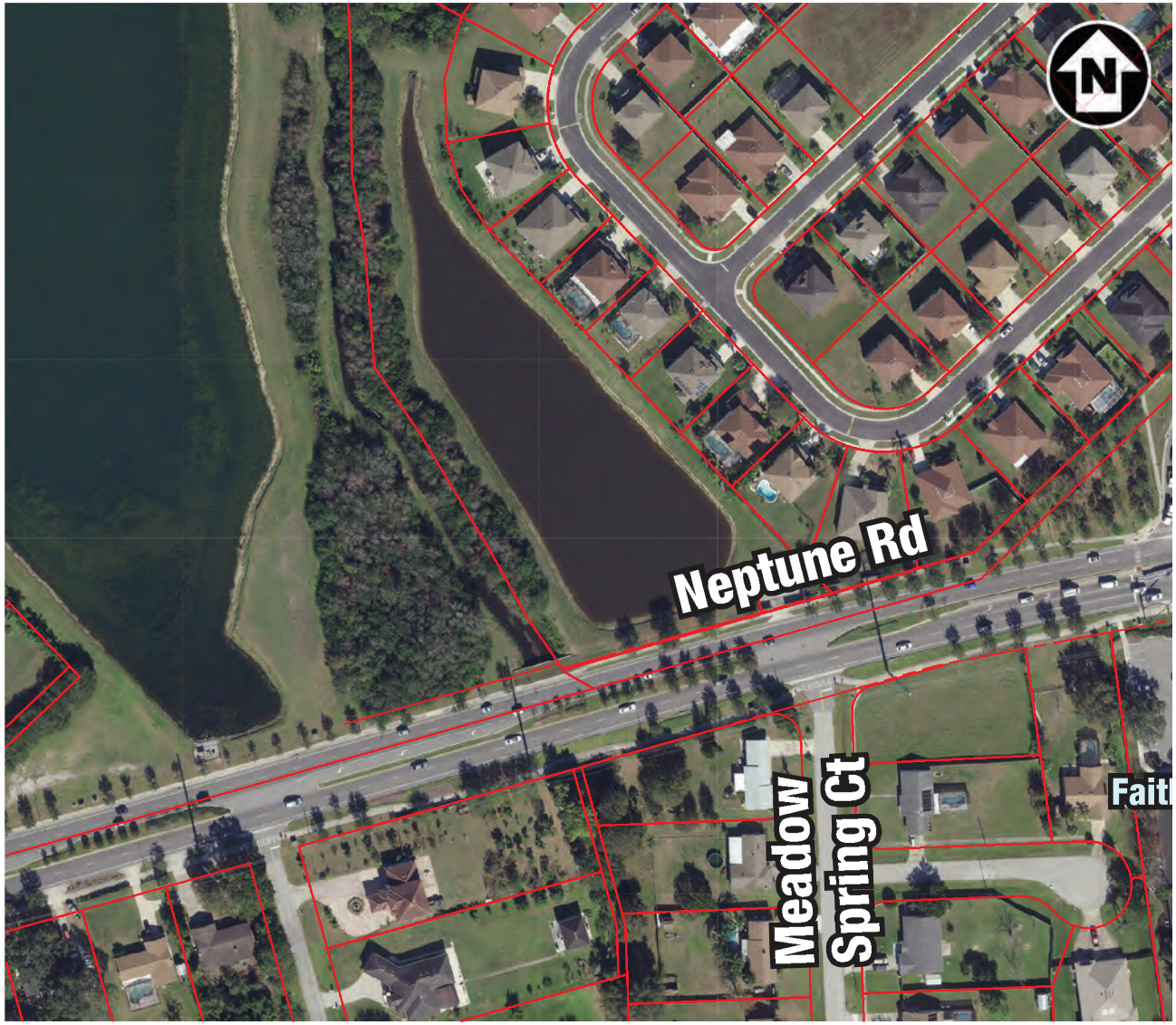
APPENDIX B

Conceptual Illustrations – Alternative 1

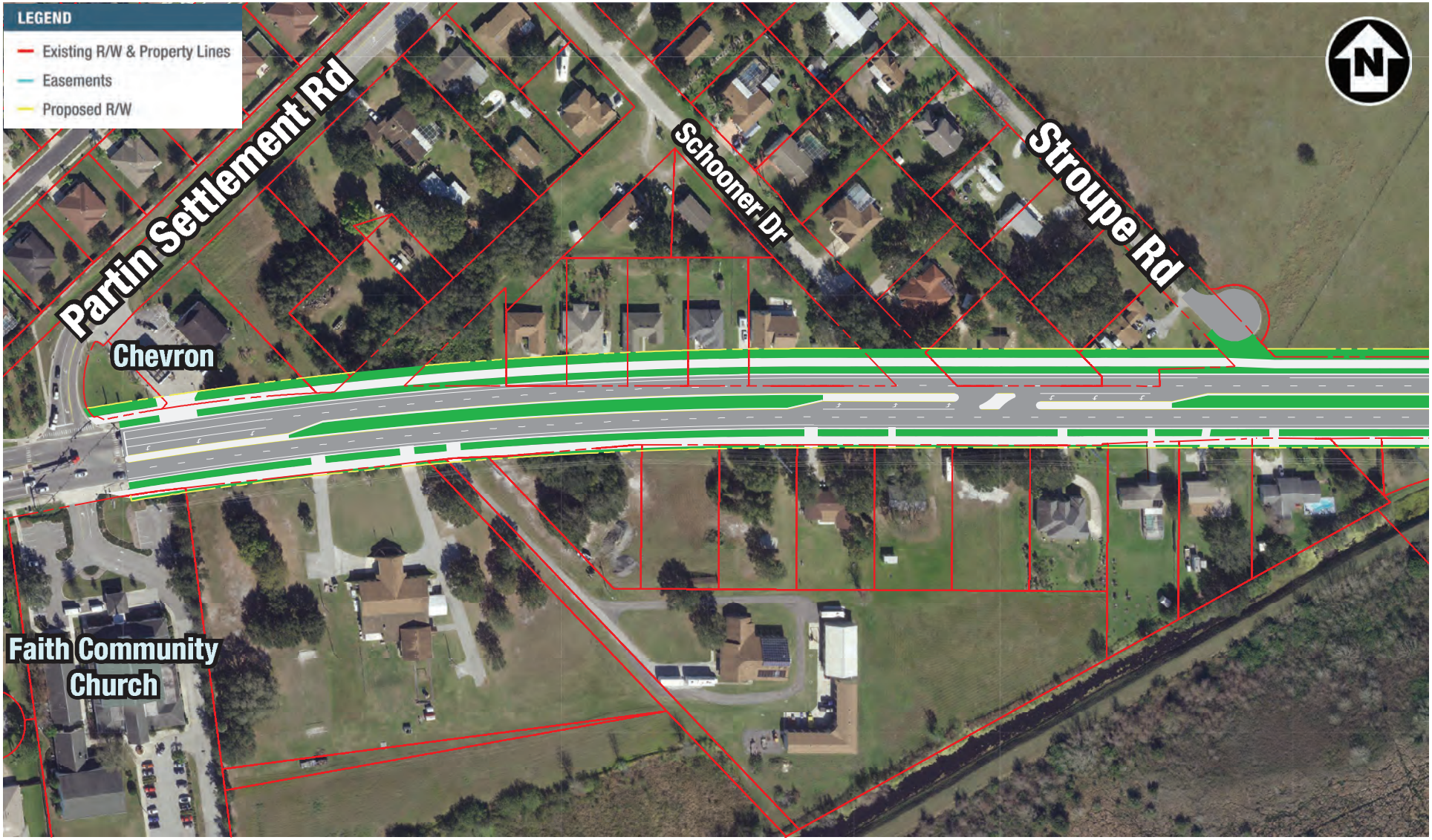
Alternative 1 from Partin Settlement Road to Ames Haven Road

LEGEND

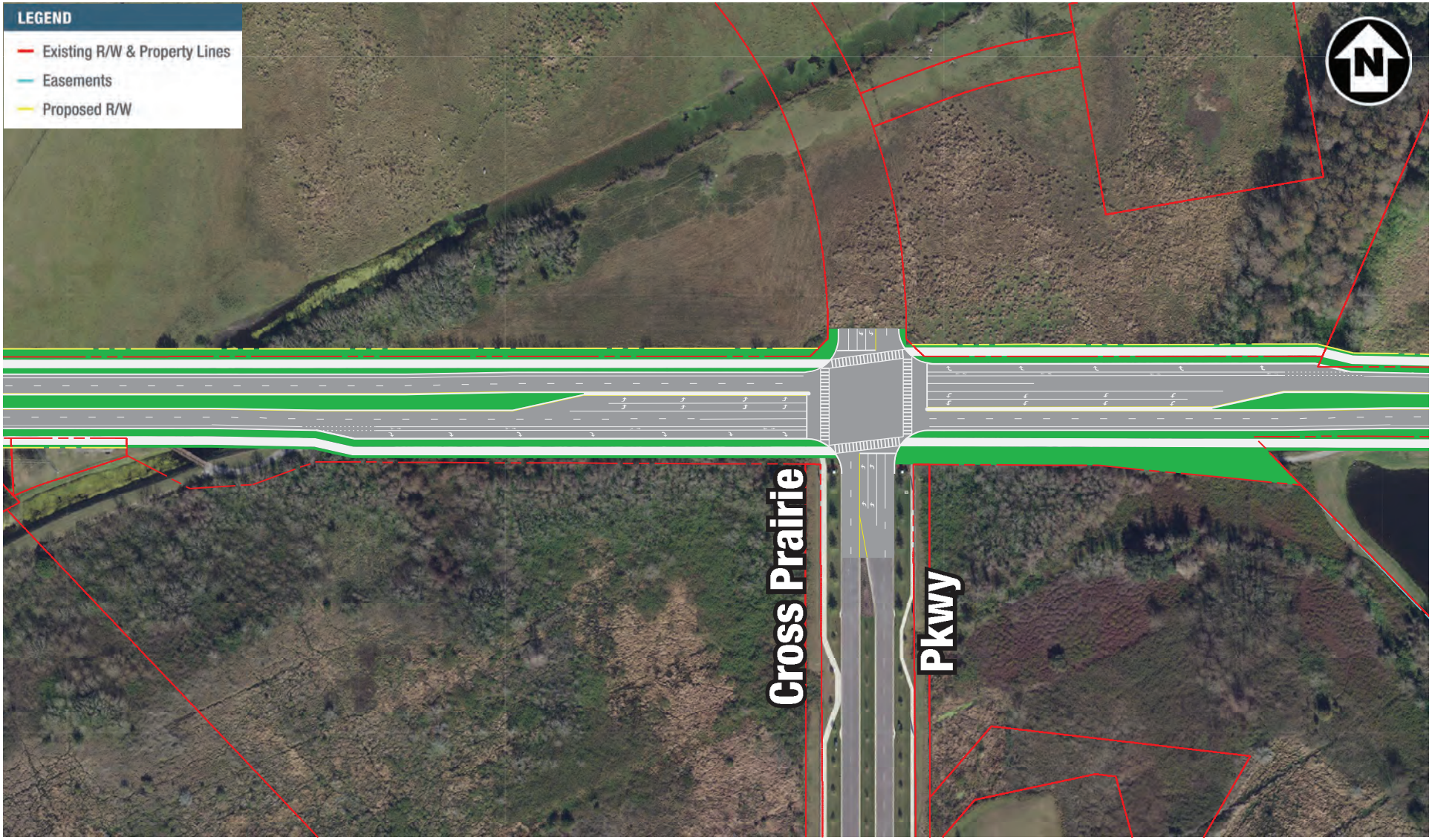
- Existing R/W & Property Lines
- Easements
- Proposed R/W



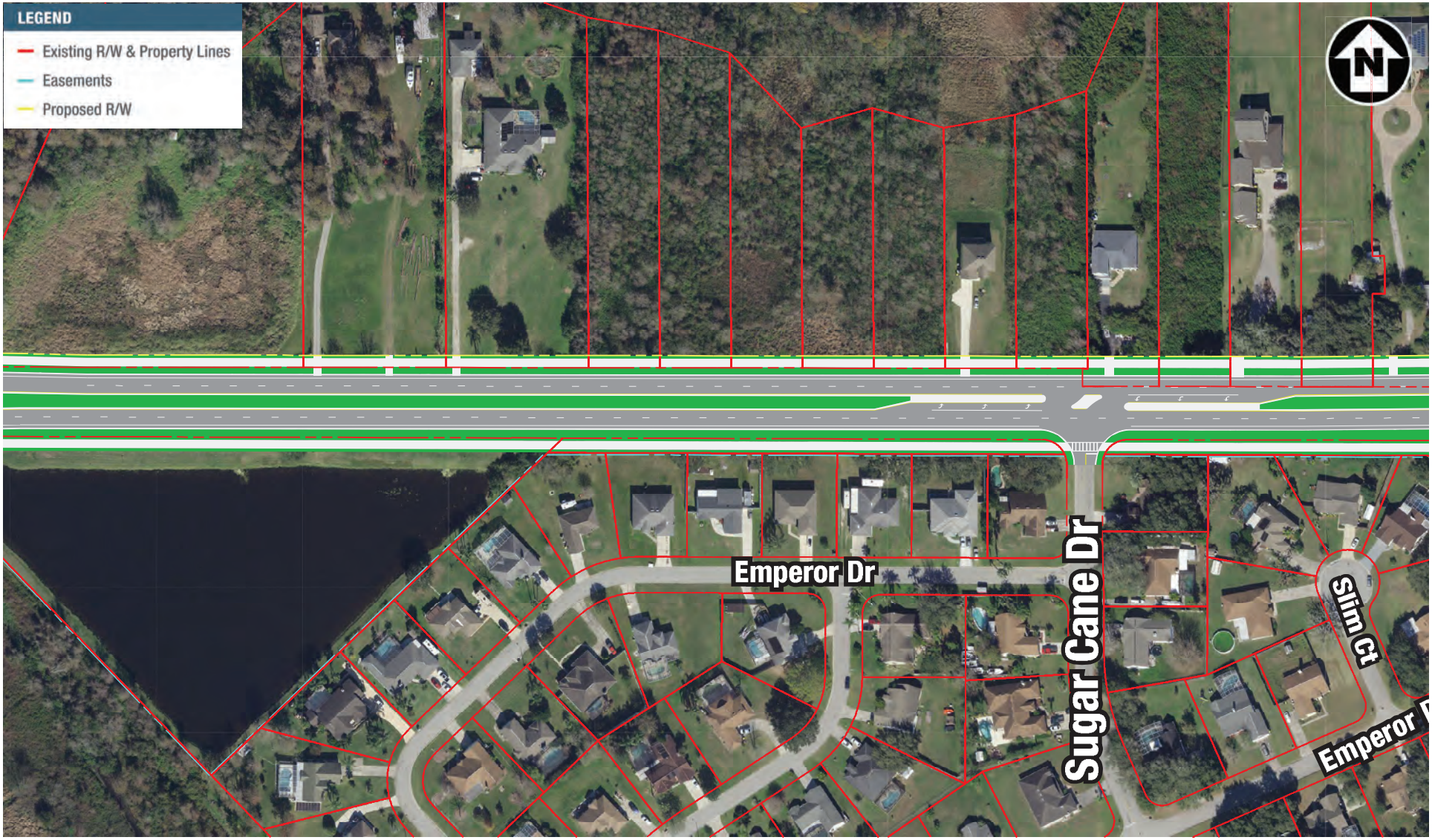
Alternative 1 from Partin Settlement Road to Ames Haven Road



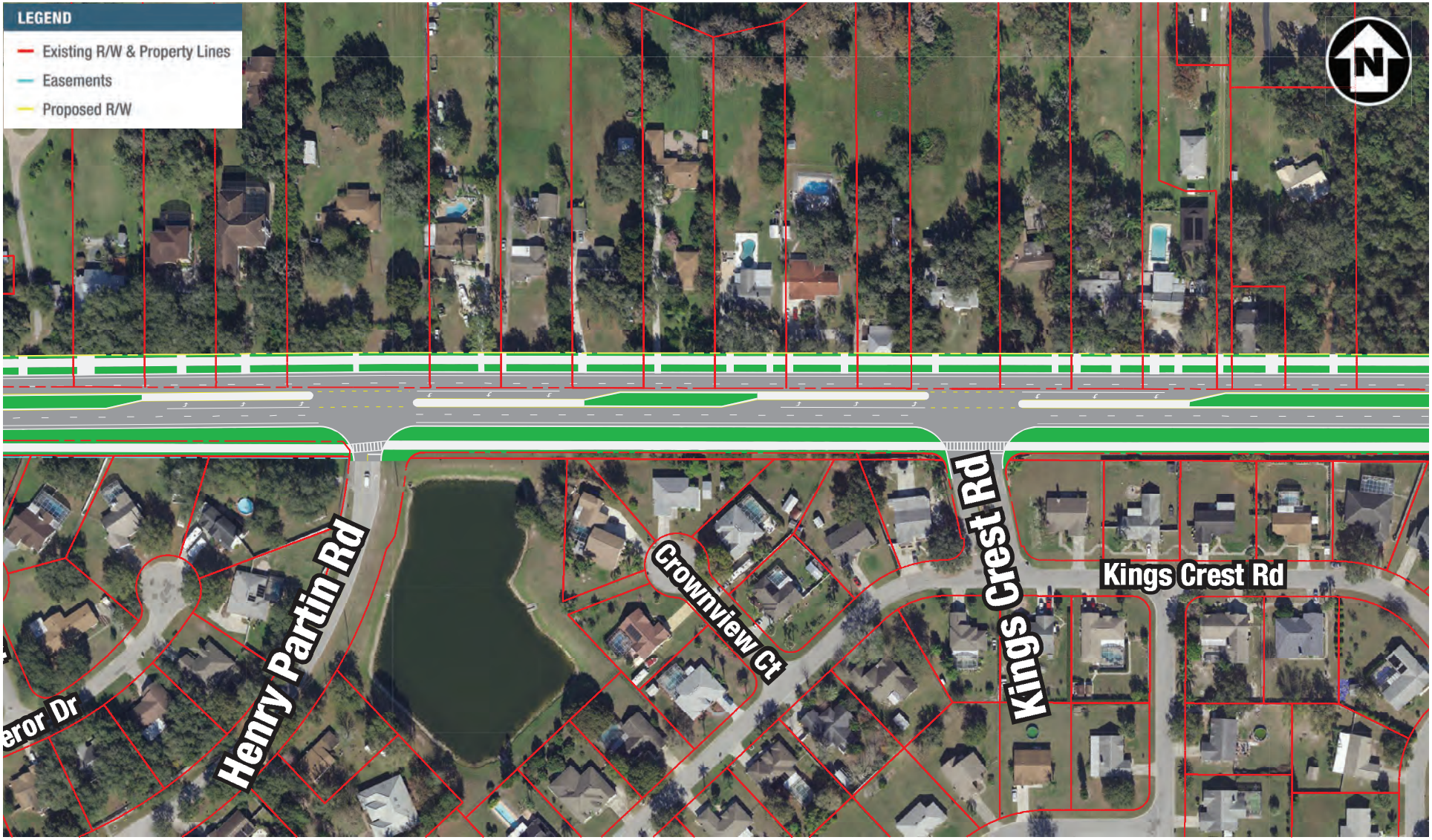
Alternative 1 from Partin Settlement Road to Ames Haven Road



Alternative 1 from Partin Settlement Road to Ames Haven Road

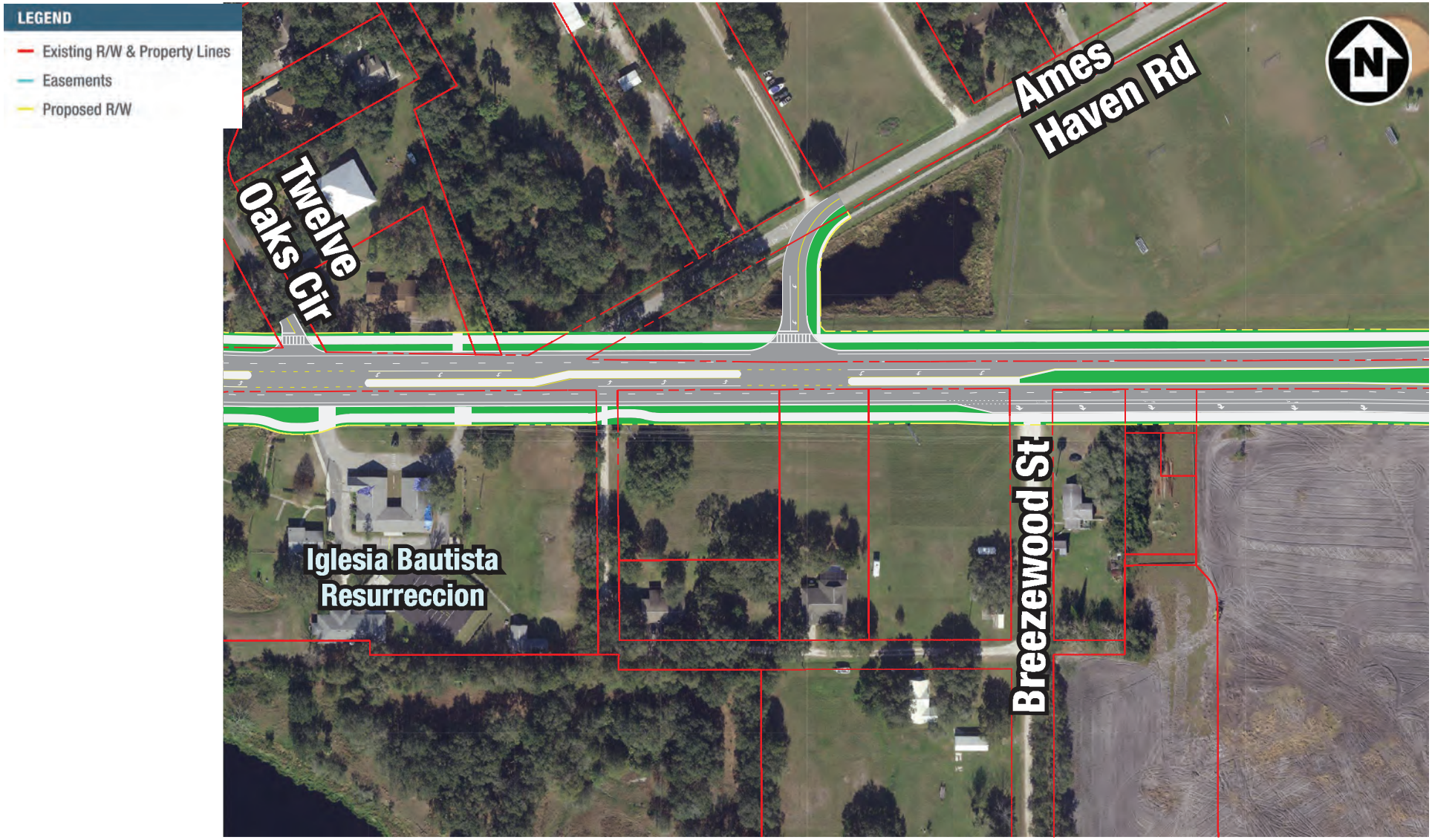


Alternative 1 from Partin Settlement Road to Ames Haven Road

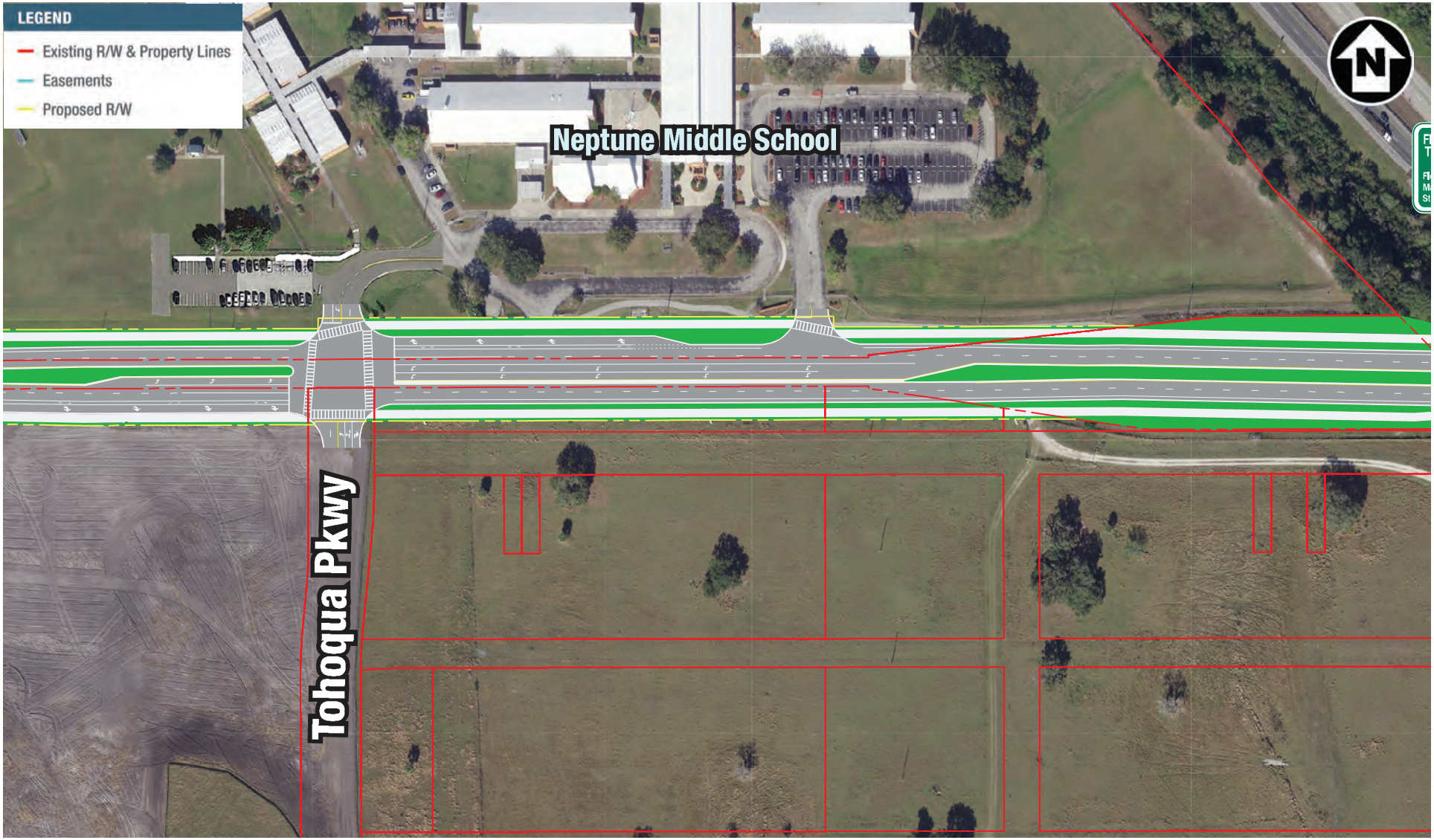


Alternative 1 from Partin Settlement Road to Ames Haven Road

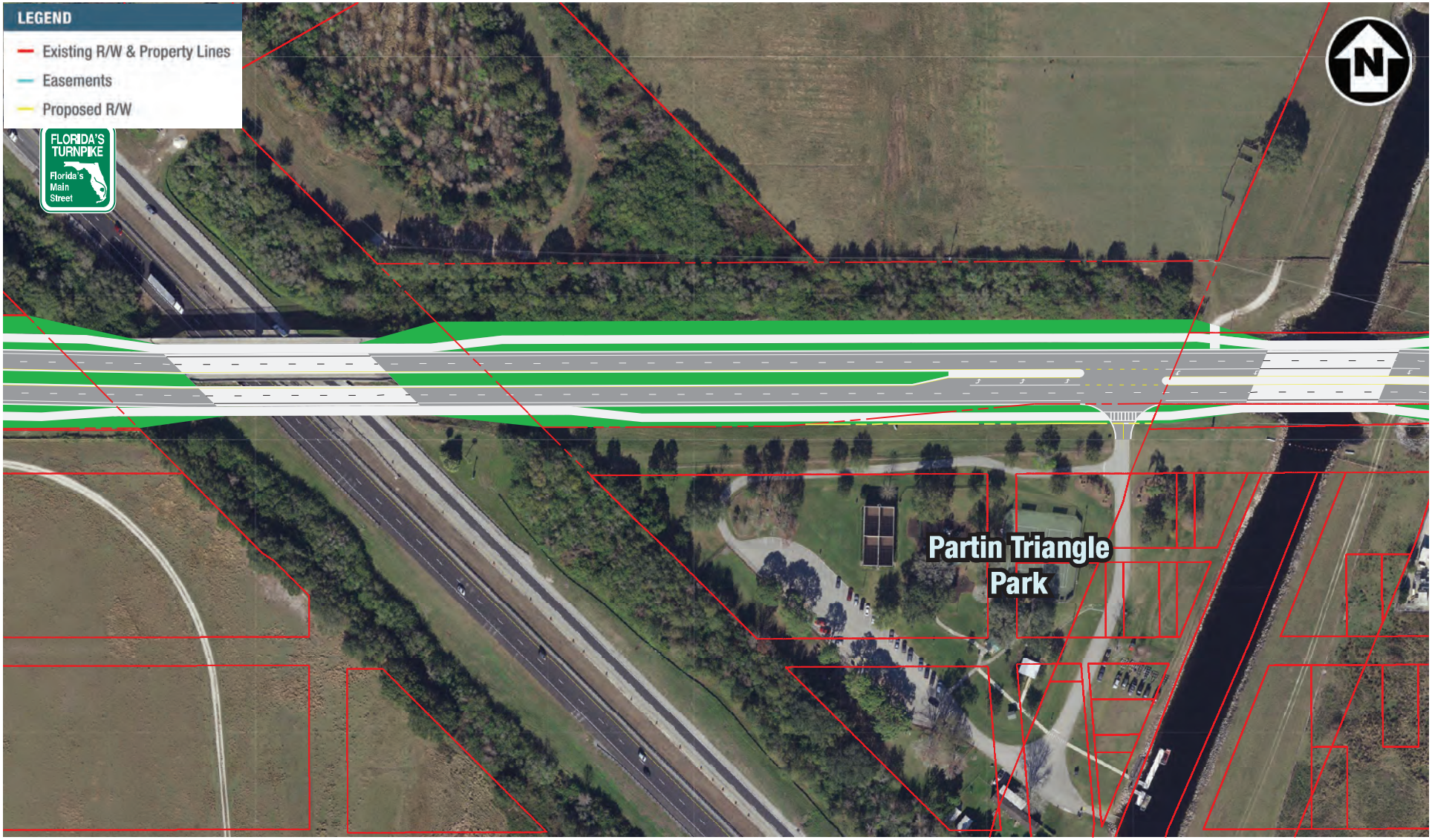
Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



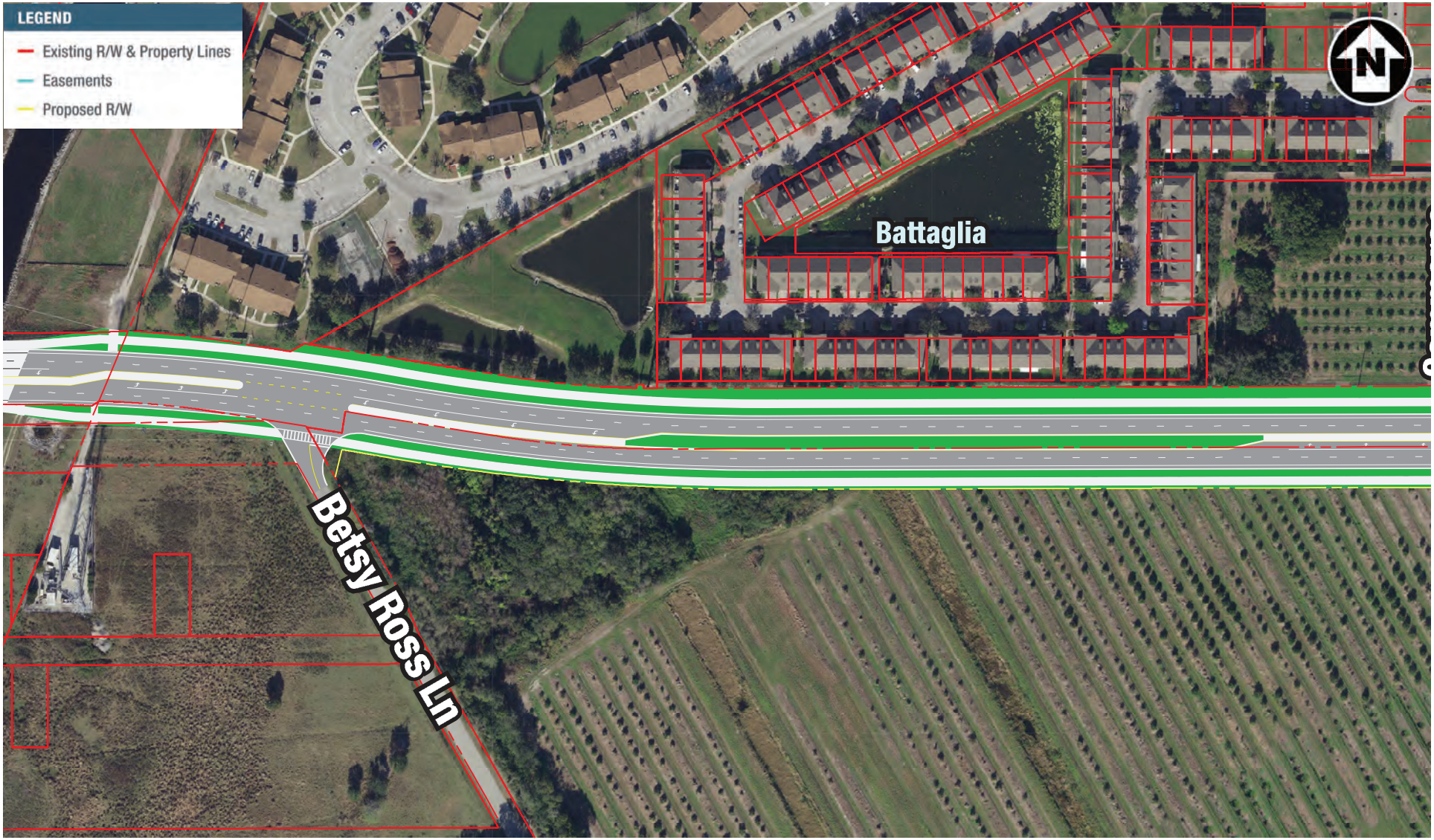
Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



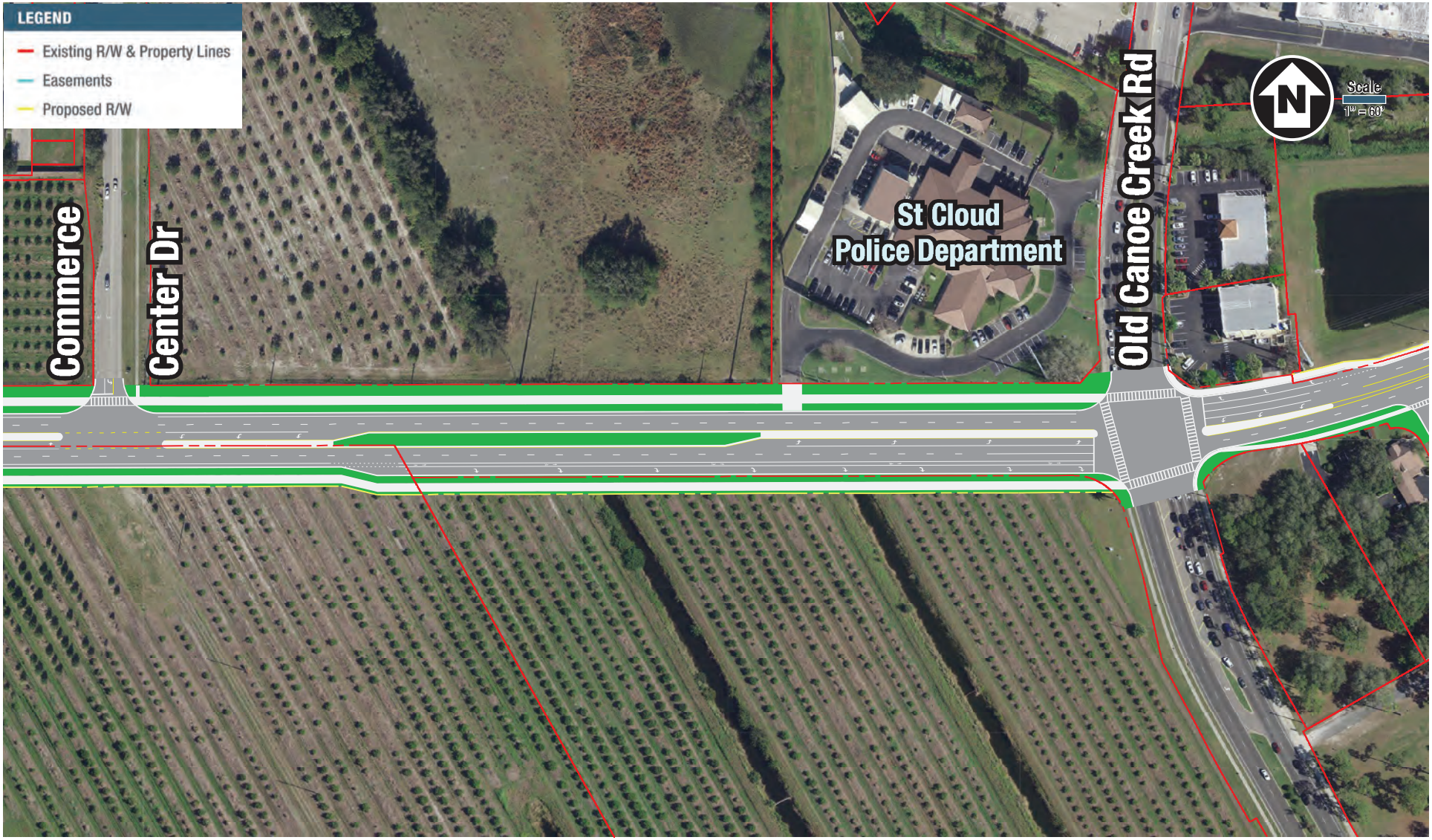
Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



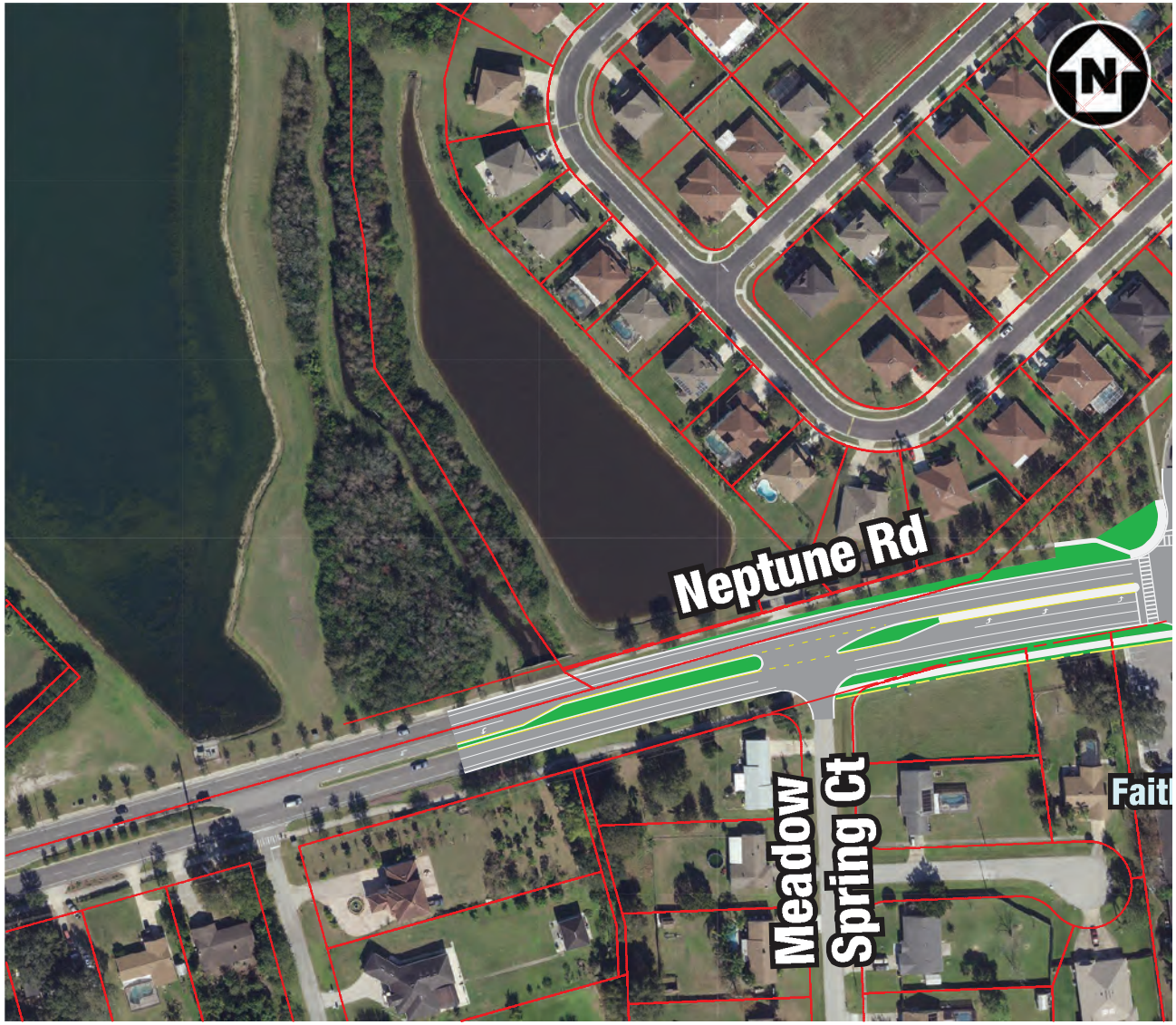
APPENDIX C

Conceptual Illustrations – Alternative 2

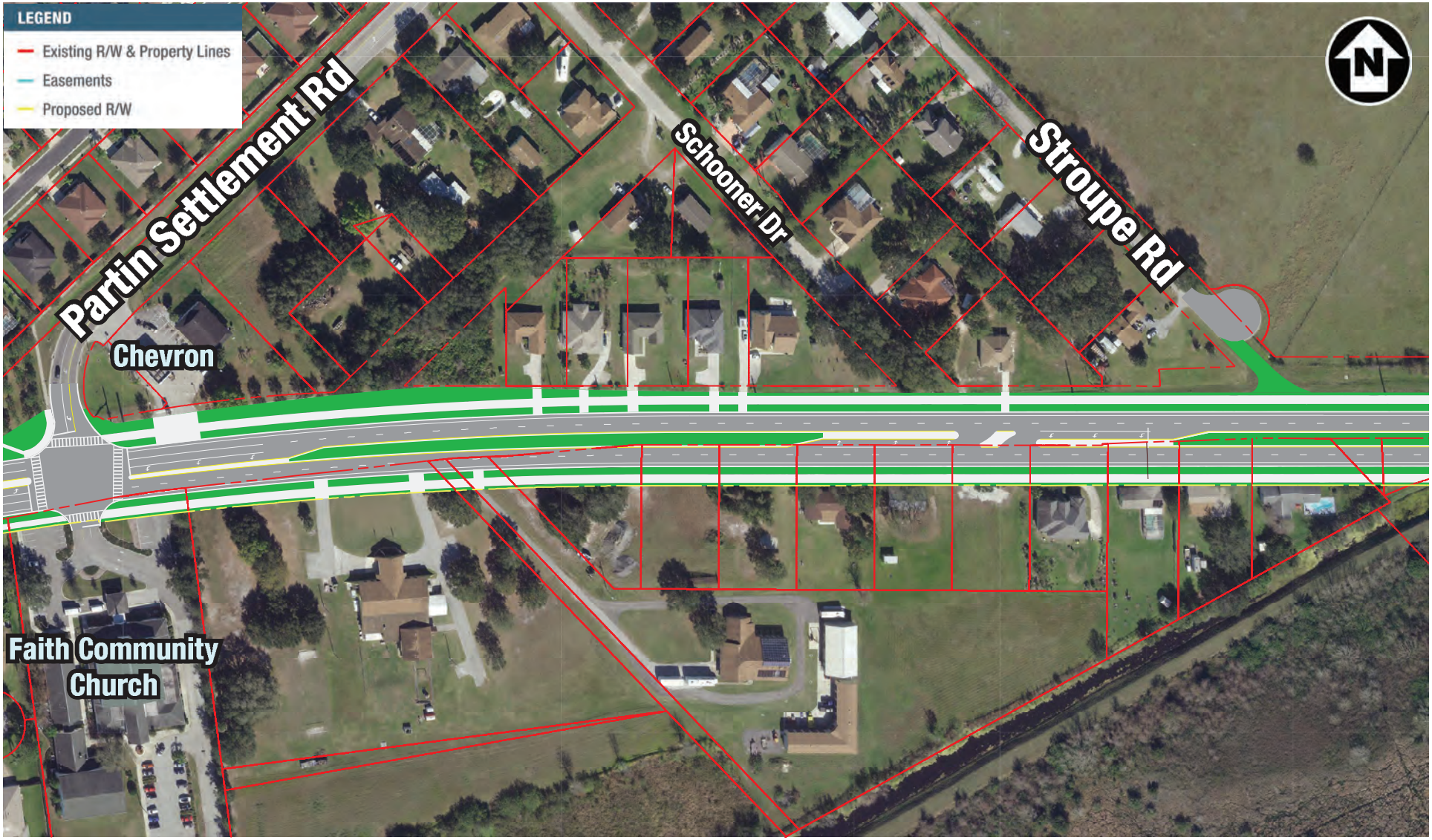
Alternative 2 from Partin Settlement Road to Ames Haven Road

LEGEND

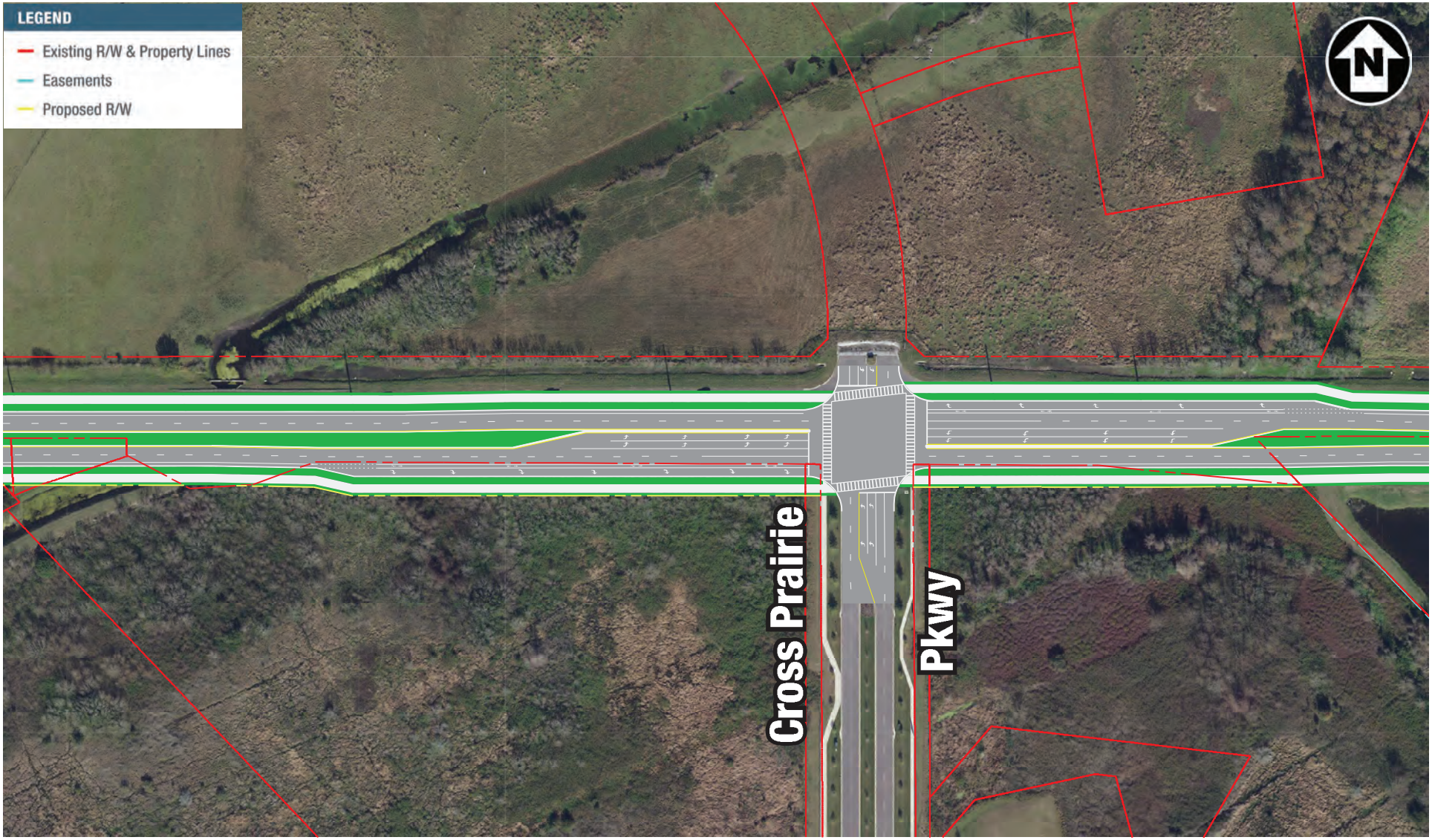
- Existing R/W & Property Lines
- Easements
- Proposed R/W



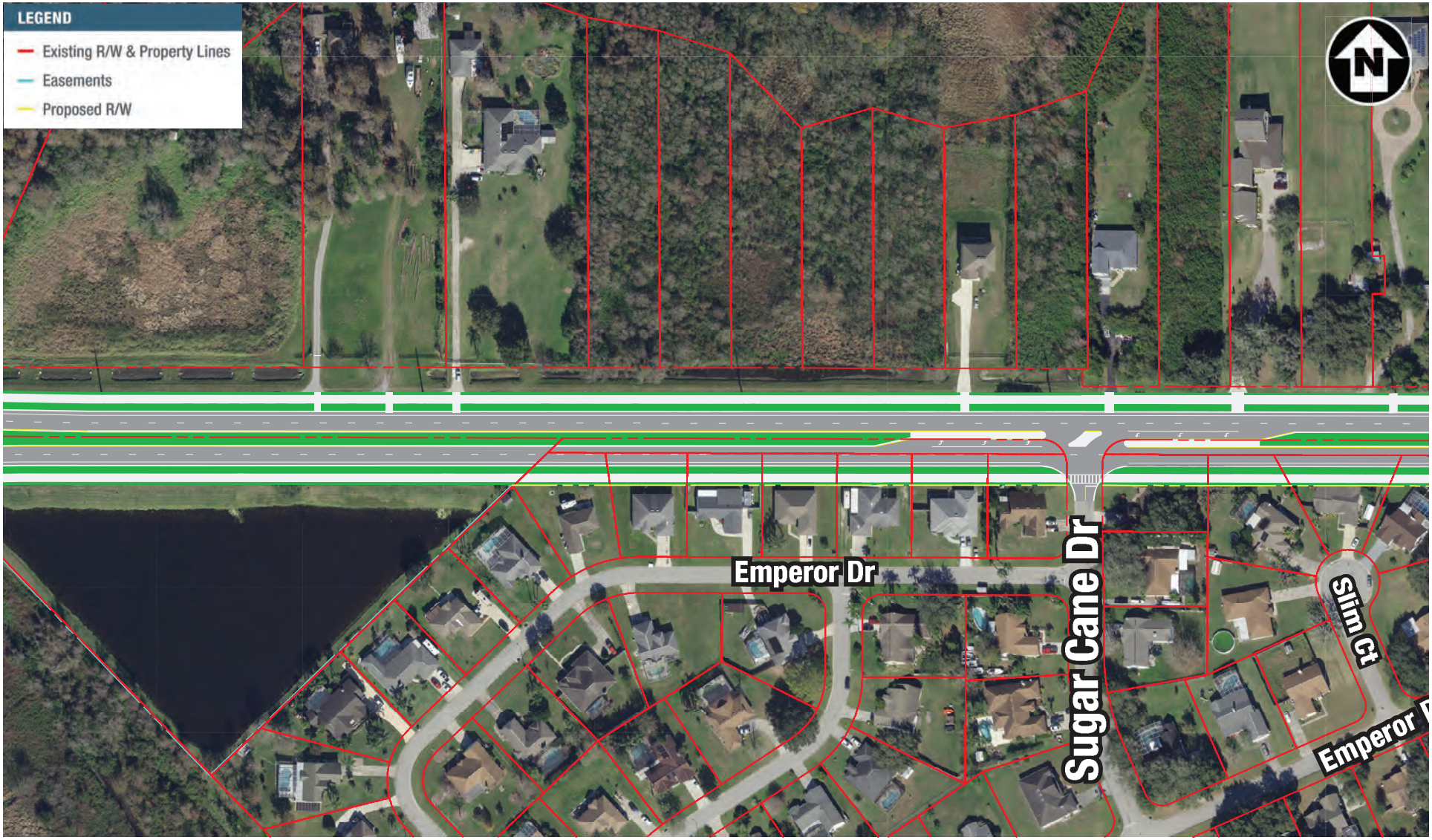
Alternative 2 from Partin Settlement Road to Ames Haven Road



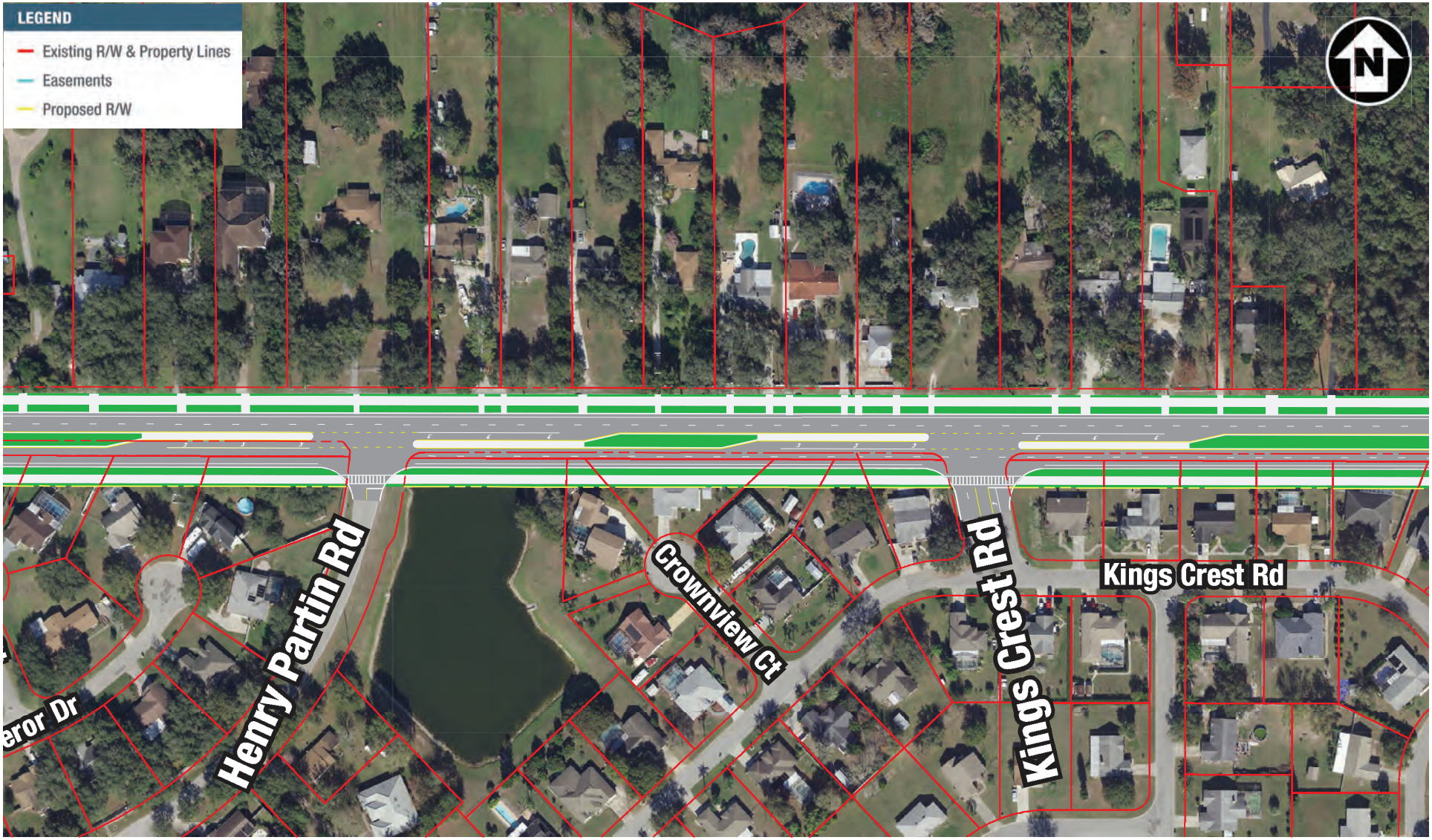
Alternative 2 from Partin Settlement Road to Ames Haven Road



Alternative 2 from Partin Settlement Road to Ames Haven Road

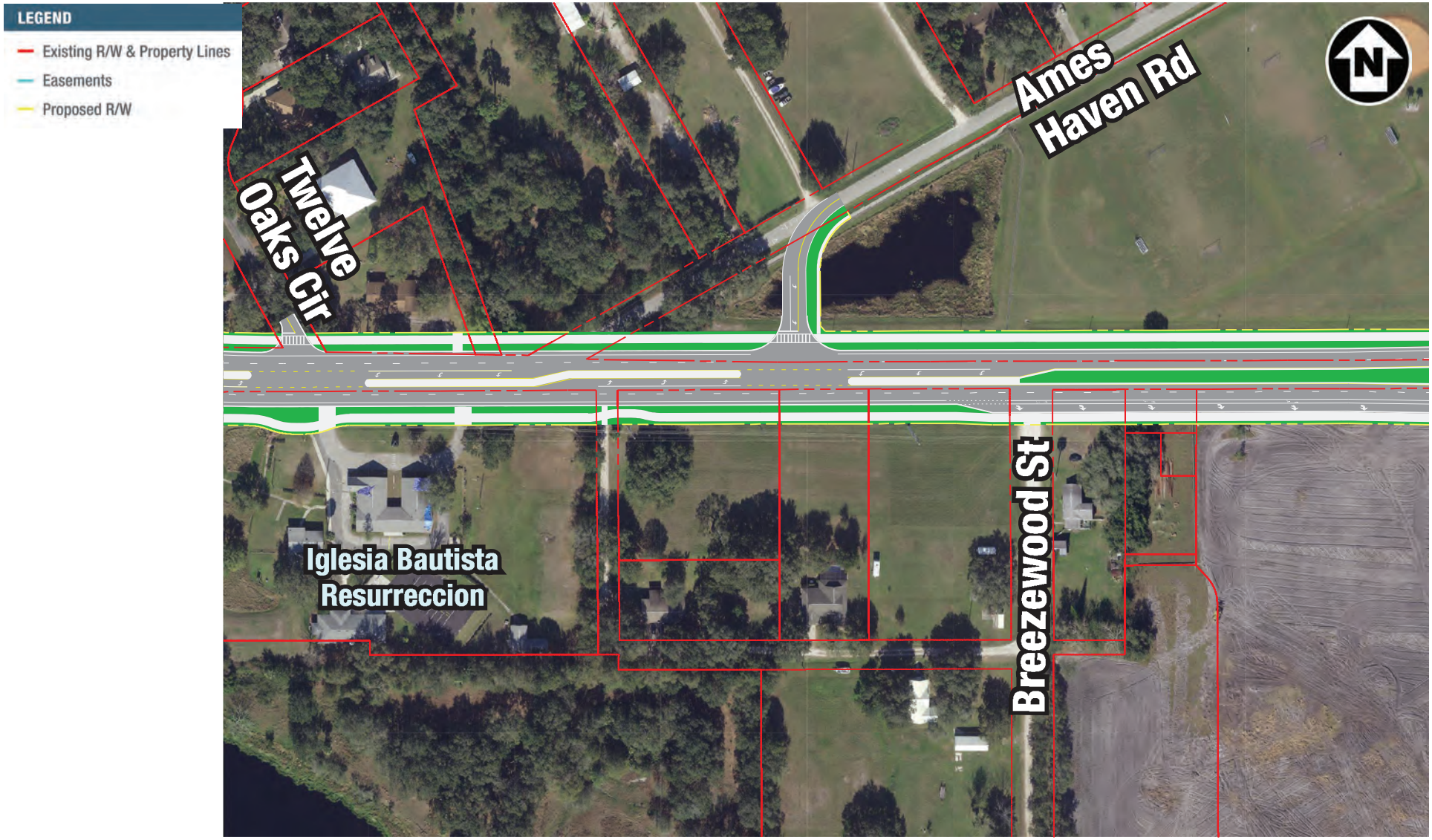


Alternative 2 from Partin Settlement Road to Ames Haven Road

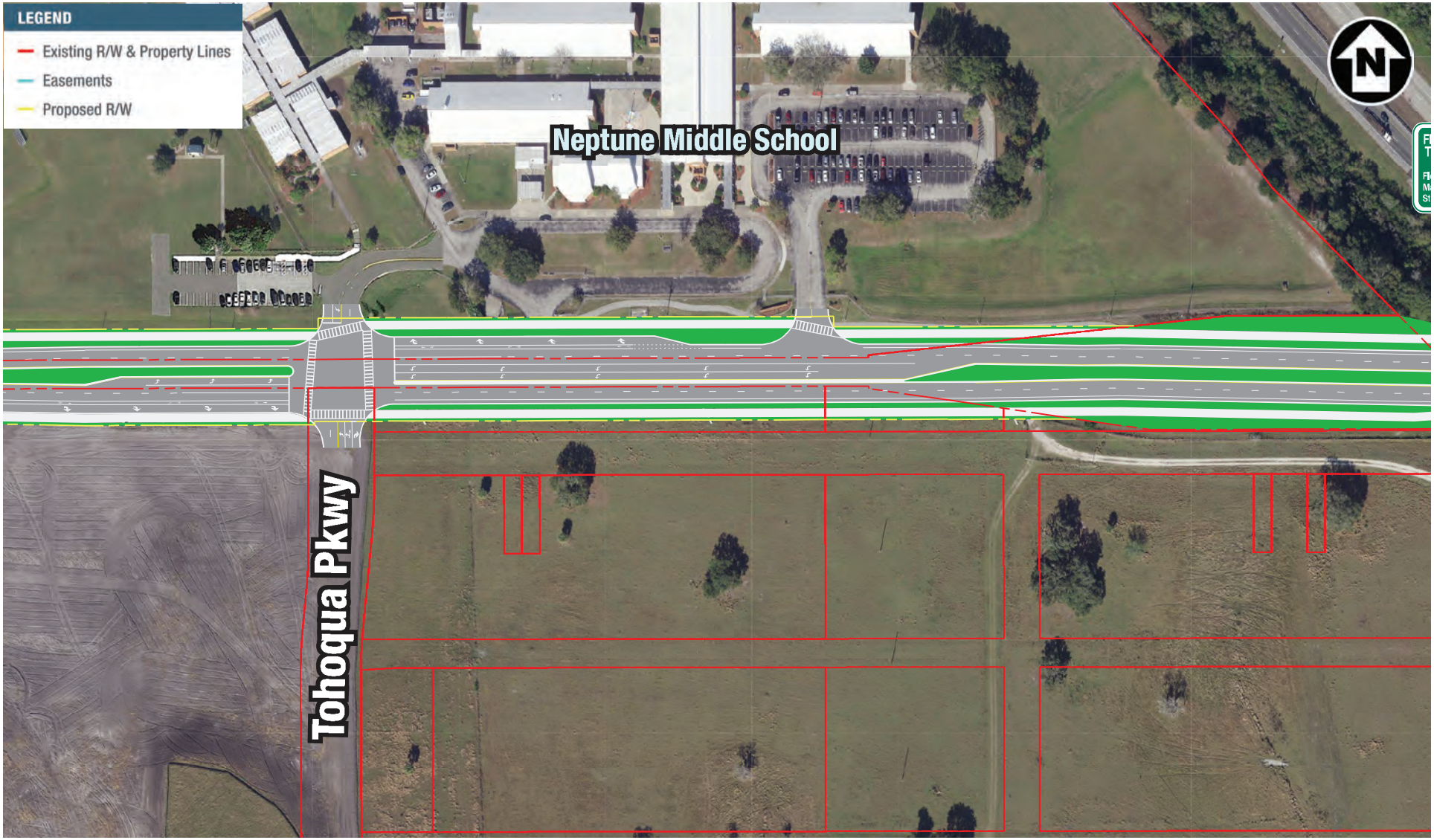


Alternative 2 from Partin Settlement Road to Ames Haven Road

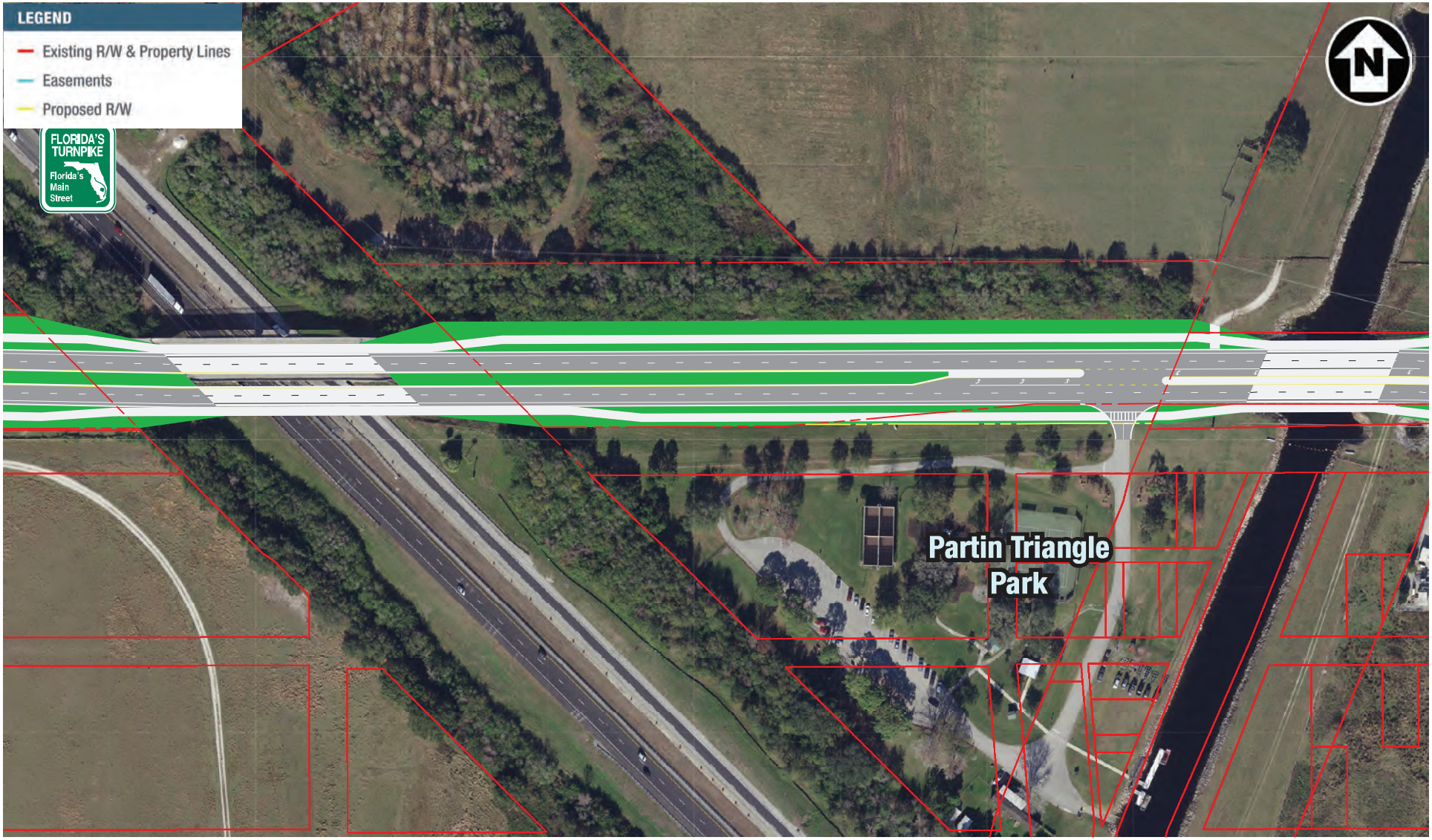
Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



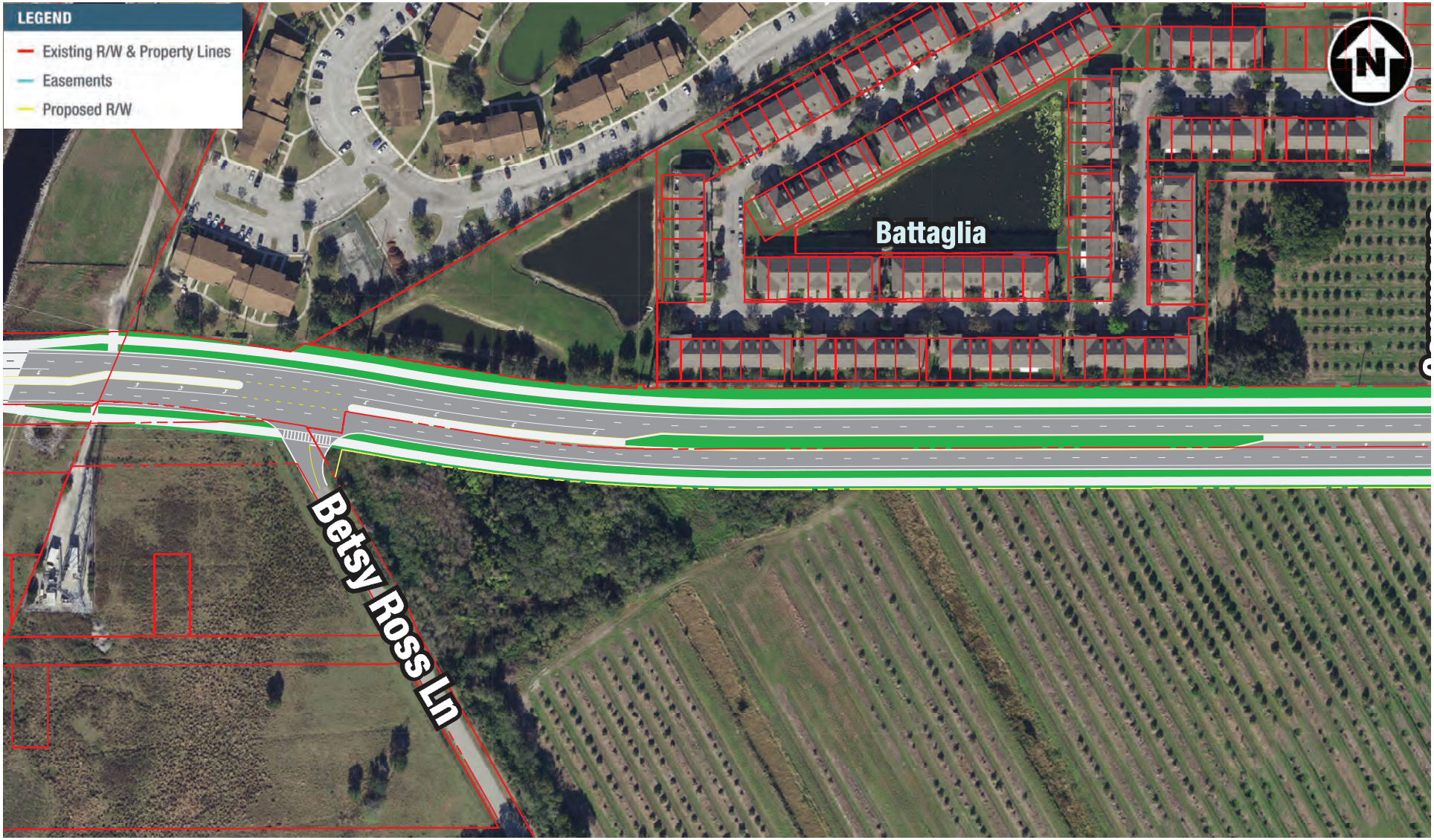
Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



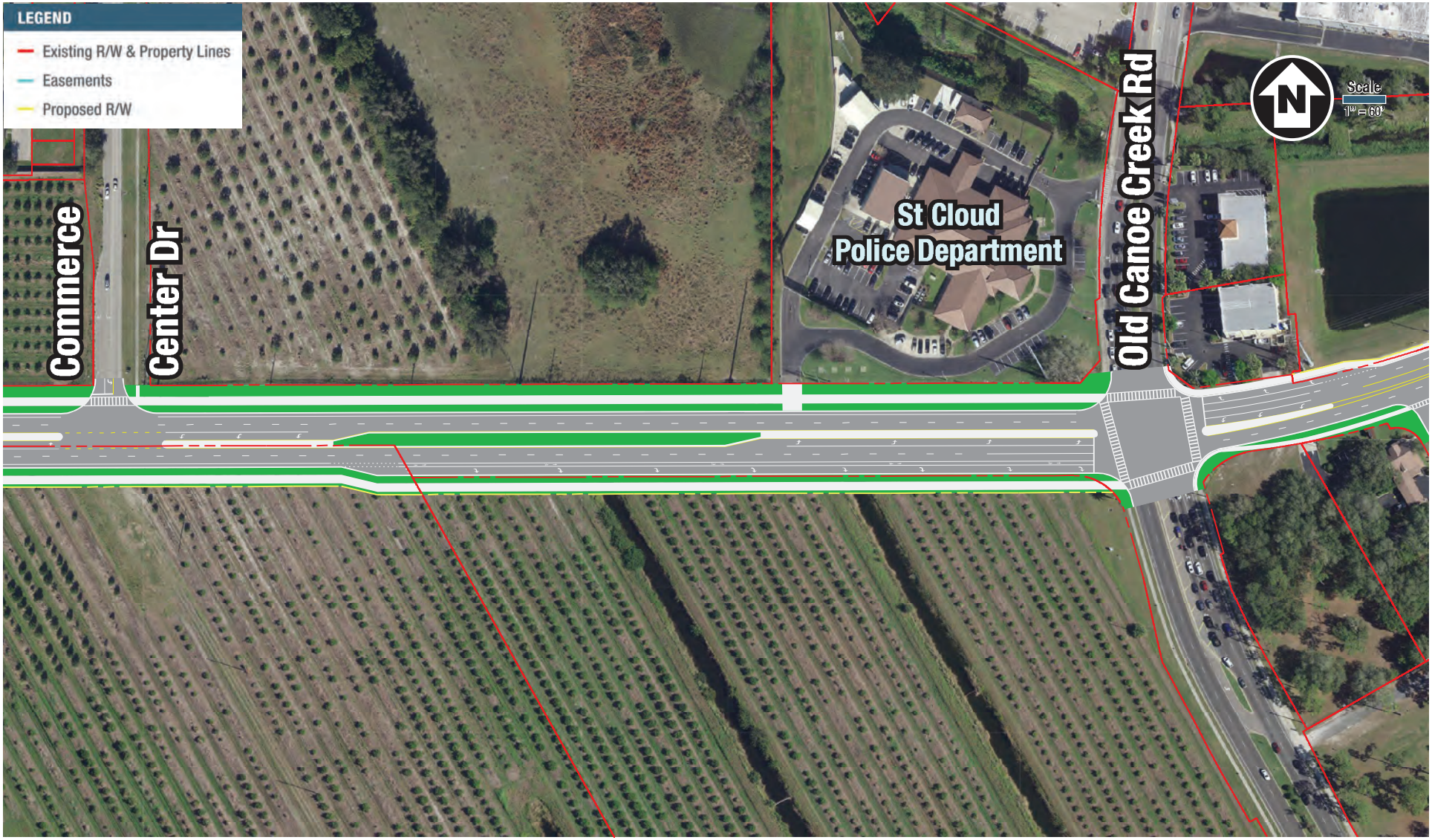
Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



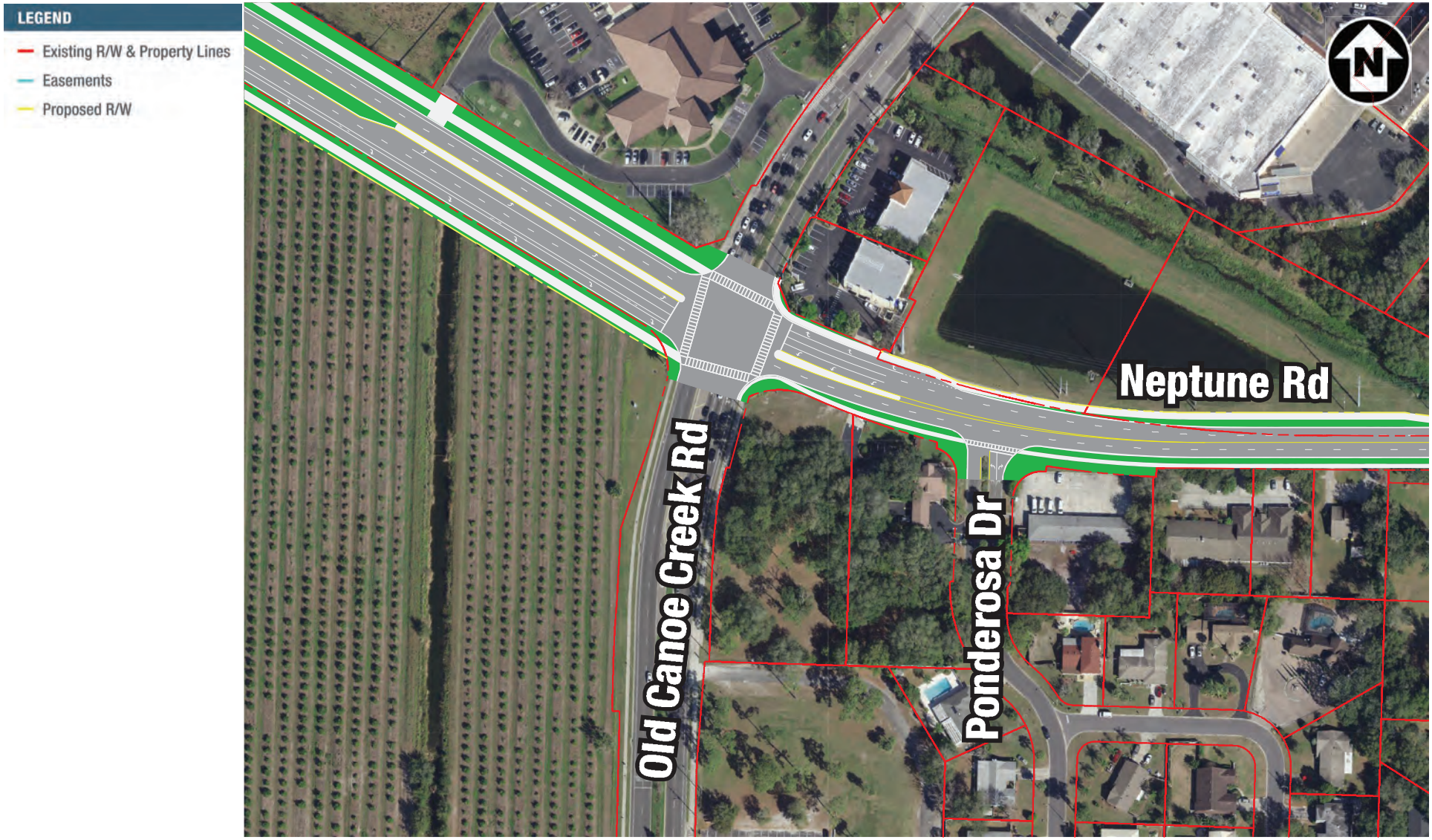
Alternatives 1 & 2 from Ames Haven Road to Old Canoe Creek Road



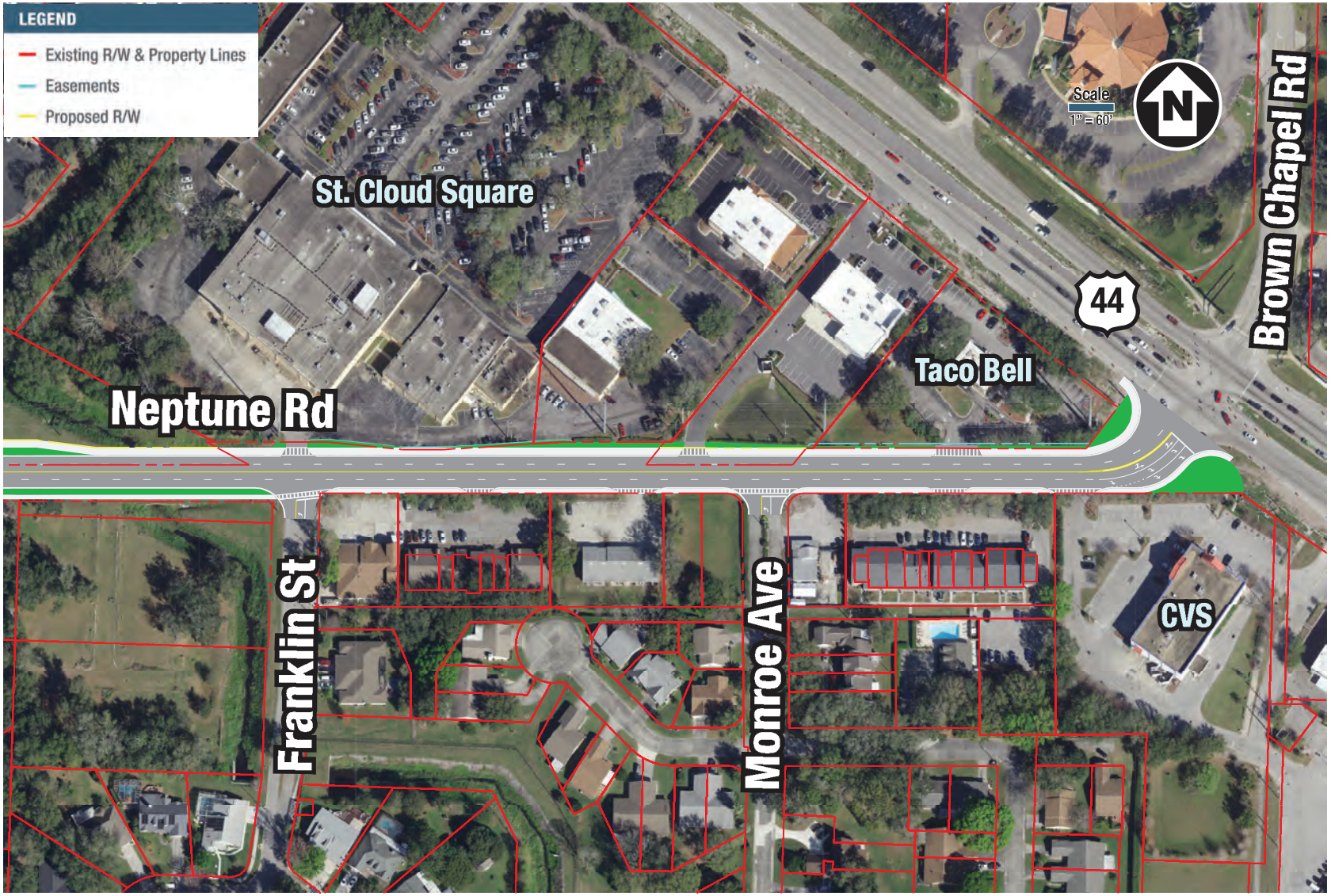
APPENDIX D

Conceptual Illustrations – Alternative A

Alternative A from Old Canoe Creek Road to US 192



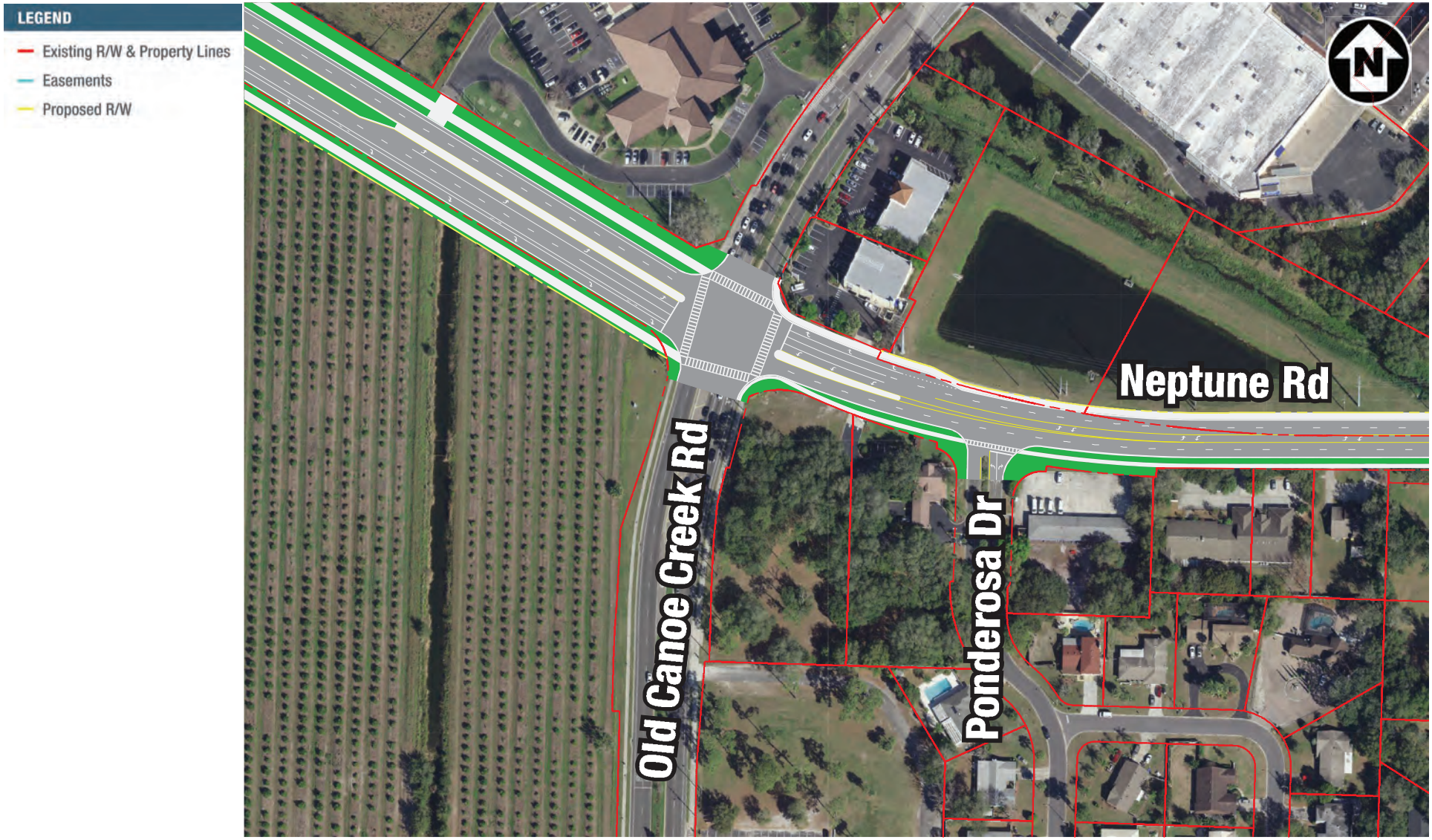
Alternative A from Old Canoe Creek Road to US 192



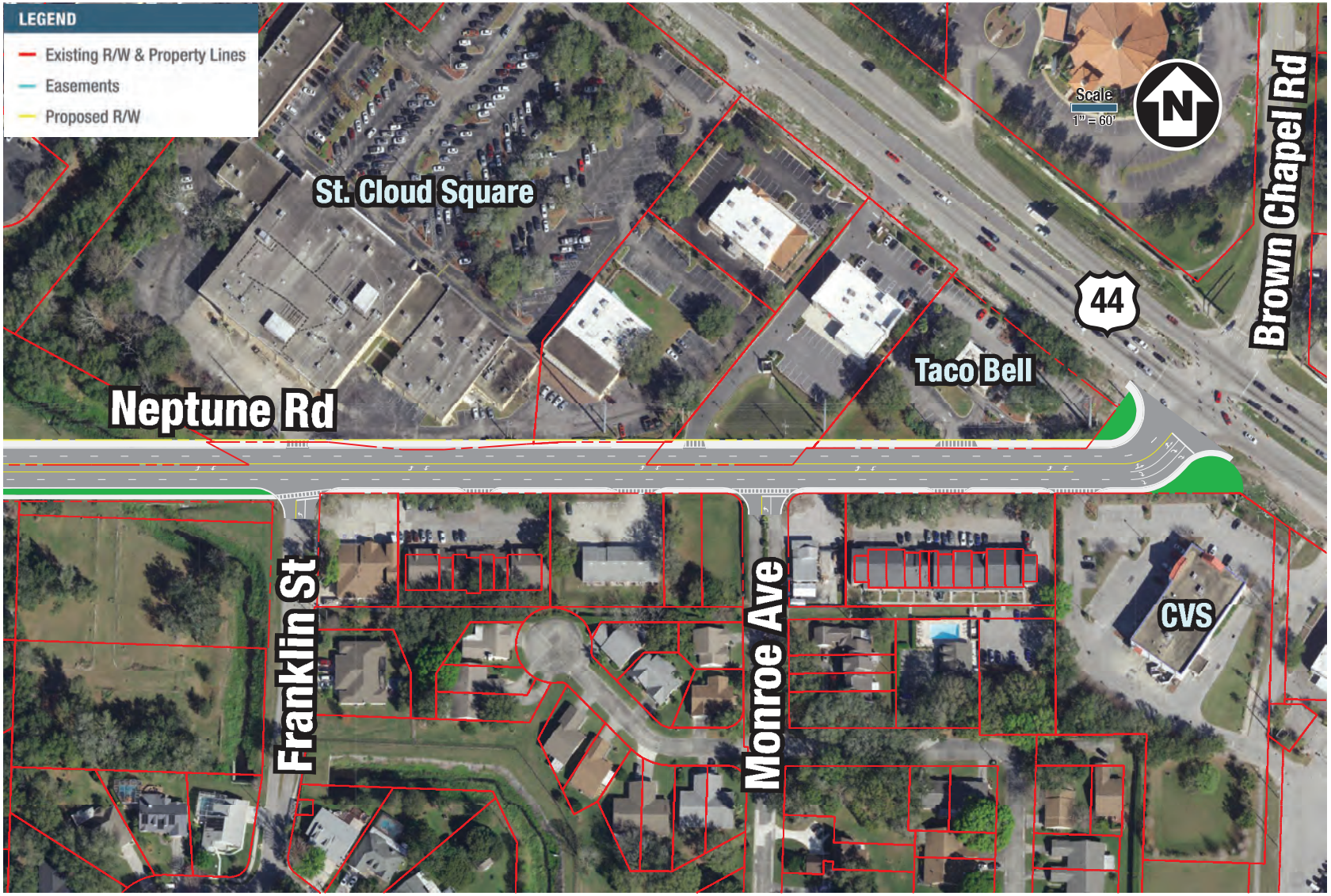
APPENDIX E

Conceptual Illustrations – Alternative B

Alternative B from Old Canoe Creek Road to US 192



Alternative B from Old Canoe Creek Road to US 192



APPENDIX F

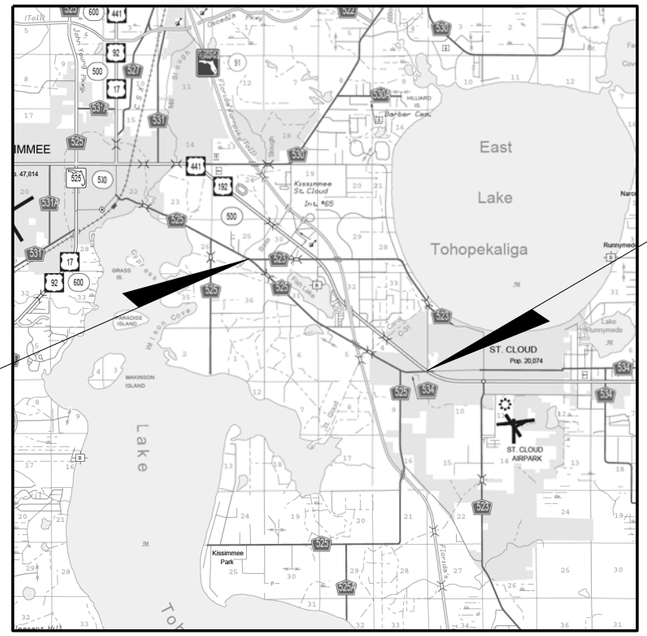
Concept Plans – Preferred Alternative

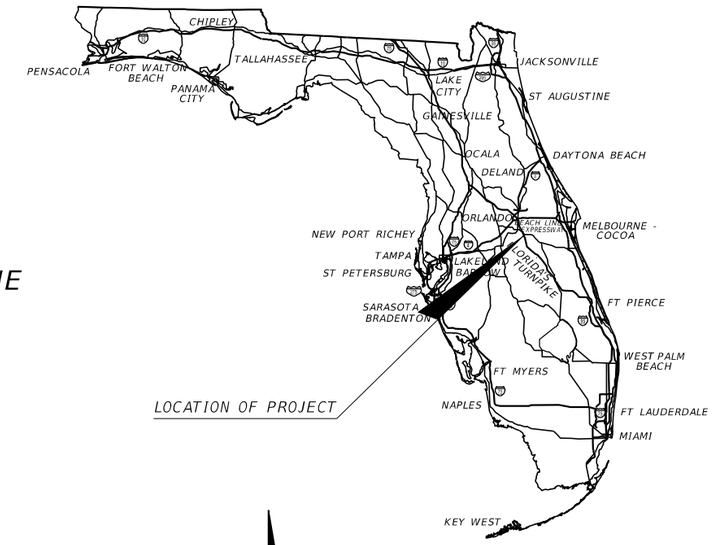
OSCEOLA COUNTY

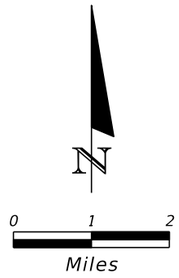
CONCEPT PLANS

FINANCIAL PROJECT ID 445415-1
OSCEOLA COUNTY (92550000) (92540000)
CR 525 (NEPTUNE ROAD)
RECONSTRUCTION OF NEPTUNE ROAD FROM 2-LANE TO 4-LANE

INDEX OF ROADWAY PLANS







GOVERNING STANDARD PLANS:

Florida Department of Transportation, FY 2019-20 Standard Plans for Road and Bridge Construction at the following website:
http://www.fdot.gov/design/standardplans

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, July 2019 Standard Specifications for Road and Bridge Construction at the following website:
http://www.fdot.gov/programmanagement/Implemented/SpecBooks

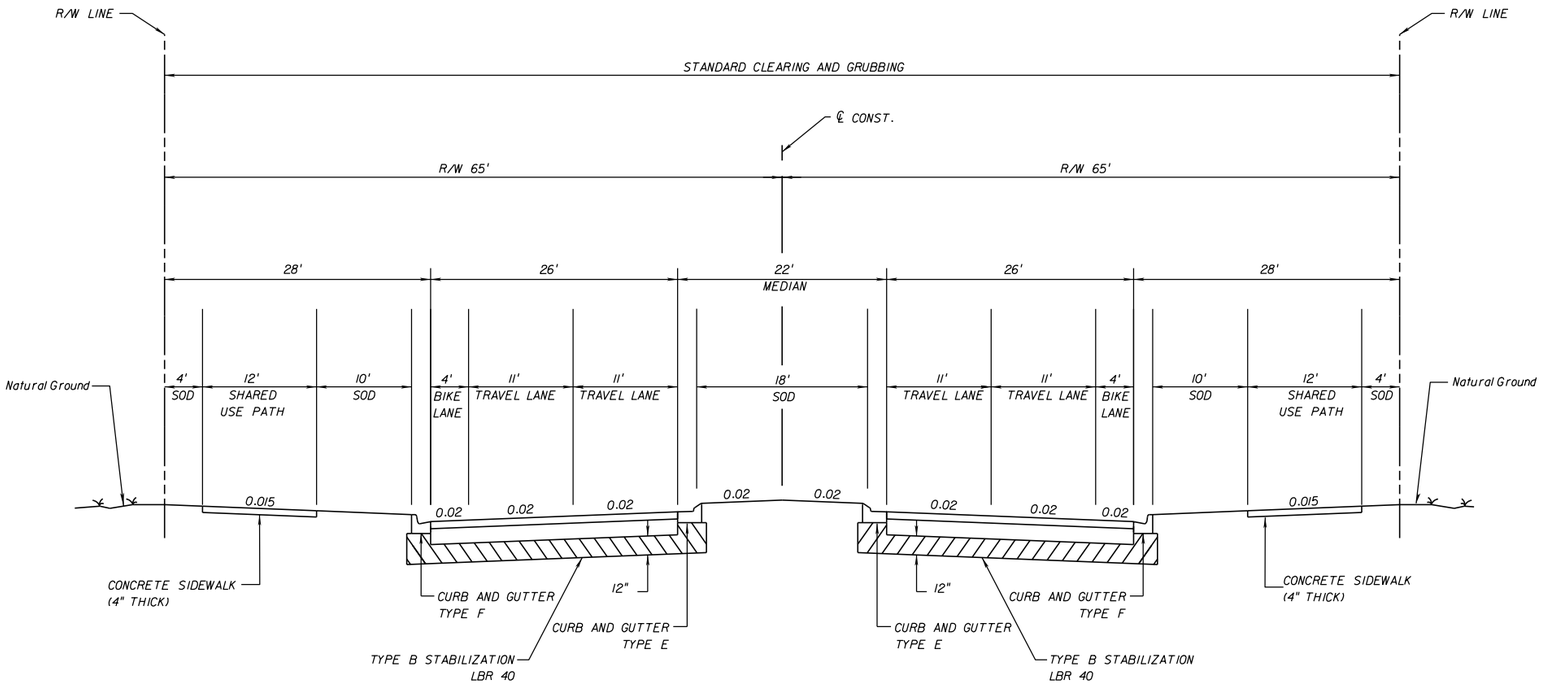
ROADWAY PLANS
ENGINEER OF RECORD:

L. FREDERICK BURKETT, P.E. NO: 45825

Kimley»Horn

189 SOUTH ORANGE AVENUE,
SUITE 1000
ORLANDO, FLORIDA 32801
TEL: (407) 898-1511
VENDOR NO. F560885615-001
CERTIFICATE OF AUTHORIZATION NO. 696

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
		1



TYPICAL SECTION

CR 525
STA. 0+00.00 TO STA. 129+36.96
STA. 132+22.76 TO STA. 144+33.06
STA. 146+17.99 TO STA. 181+30.00

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 26,000
ESTIMATED OPENING YEAR = 2025 AADT = 30,000
ESTIMATED DESIGN YEAR = 2045 AADT = 43,000
K = 9% D = 57.9% T (24 HOUR) = 5.11%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

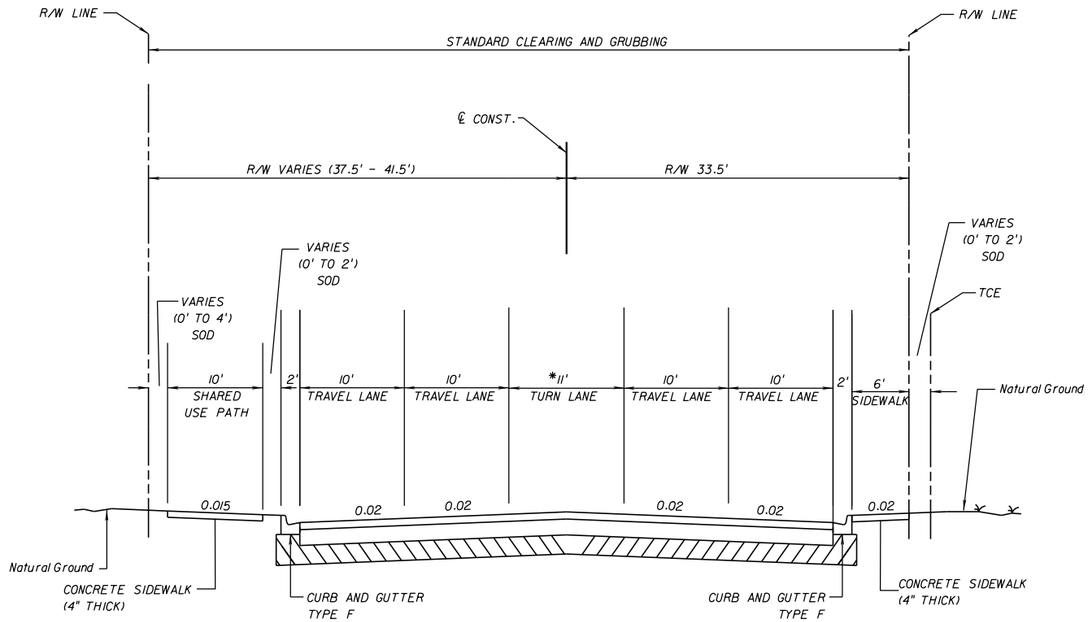
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Kimley»Horn
Certificate Of Authorization No. 696
L. Frederick Burkett, P.E.
P.E. License No. 45825
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

OSCEOLA COUNTY
TRANSIT AND
TRANSPORTATION
1 Courthouse Square, Suite 3100
Kissimmee, Florida 34741-5488
Phone: (407) 742-0662 Fax (407) 742-0600

NEPTUNE ROAD
CONCEPT PLANS

SHEET NO. 2



TYPICAL SECTION

CR 525
STA. 181+30.00 TO STA. 191+50.78
STA. 198+59.10 TO STA. 206+40.00

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 21,000
ESTIMATED OPENING YEAR = 2025 AADT = 23,000
ESTIMATED DESIGN YEAR = 2045 AADT = 27,000
K = 9% D = 57.9% T (24 HOUR) = 5.11%
DESIGN SPEED = 35 MPH
POSTED SPEED = 35 MPH

* FROM STA. 191+50.78 TO STA. 198+59.10
THE CENTER TURN LANE IS NOT PROVIDED
DUE TO RIGHT OF WAY CONSTRAINTS.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

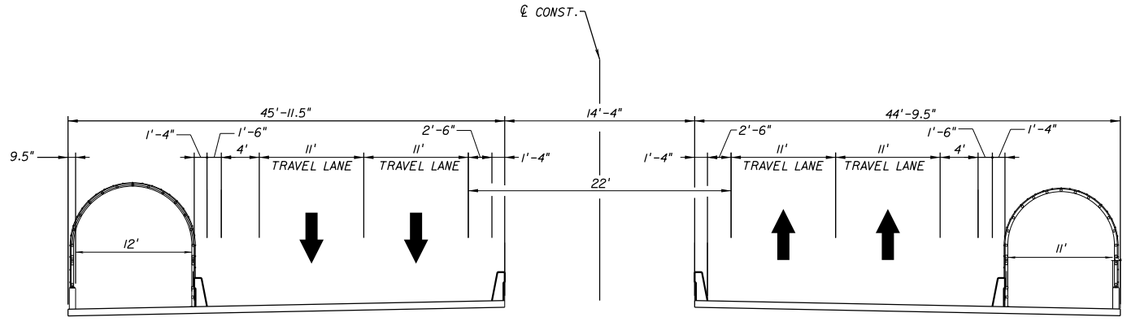
Kimley»Horn
Certificate Of Authorization No. 696
L. Frederick Burkett, P.E.
P.E. License No. 45825
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

OSCEOLA COUNTY TRANSIT AND TRANSPORTATION
1 Courthouse Square, Suite 3100
Kissimmee, Florida 34741-5488
Phone: (407) 742-0662 Fax (407) 742-0600

NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 3

Sean.Lynch 2/6/2020 9:30:23 AM K:\ORL_TPTO\4924441O___Neptune PD&E\300_Engineering\4924441O\roadway\Alternative Alignments\Preferred Alt\Plan Sheets



BRIDGE 920044
STA. 129+36.96 TO STA. 132+22.76

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 26,000
ESTIMATED OPENING YEAR = 2025 AADT = 30,000
ESTIMATED DESIGN YEAR = 2045 AADT = 43,000
K = 9% D = 57.9% T (24 HOUR) = 5.11%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

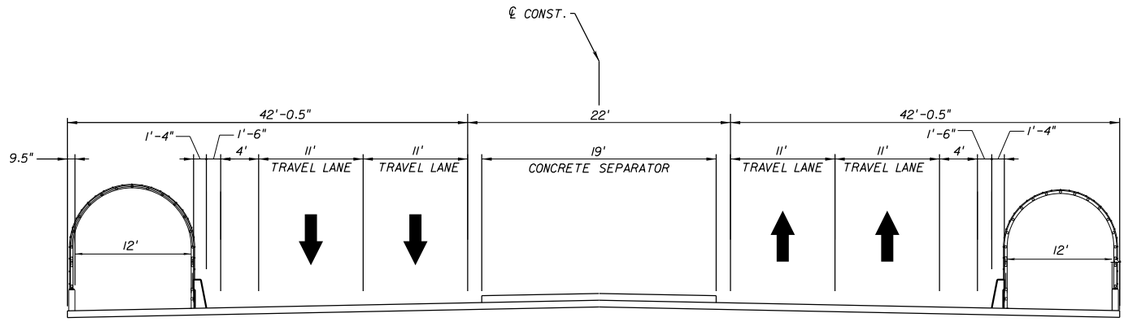
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Kimley»Horn
Certificate Of Authorization No. 696
L. Frederick Burkett, P.E.
P.E. License No. 45825
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

OSCEOLA COUNTY
TRANSIT AND
TRANSPORTATION
1 Courthouse Square, Suite 3100
Kissimmee, Florida 34741-5488
Phone: (407) 742-0662 Fax (407) 742-0600

NEPTUNE ROAD
CONCEPT PLANS

SHEET NO. 4



BRIDGE 924049
STA. 144+33.06 TO STA. 146+17.99

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 26,000
ESTIMATED OPENING YEAR = 2025 AADT = 30,000
ESTIMATED DESIGN YEAR = 2045 AADT = 43,000
K = 9% D = 57.9% T (24 HOUR) = 5.11%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Kimley»Horn
Certificate Of Authorization No. 696
L. Frederick Burkett, P.E.
P.E. License No. 45825
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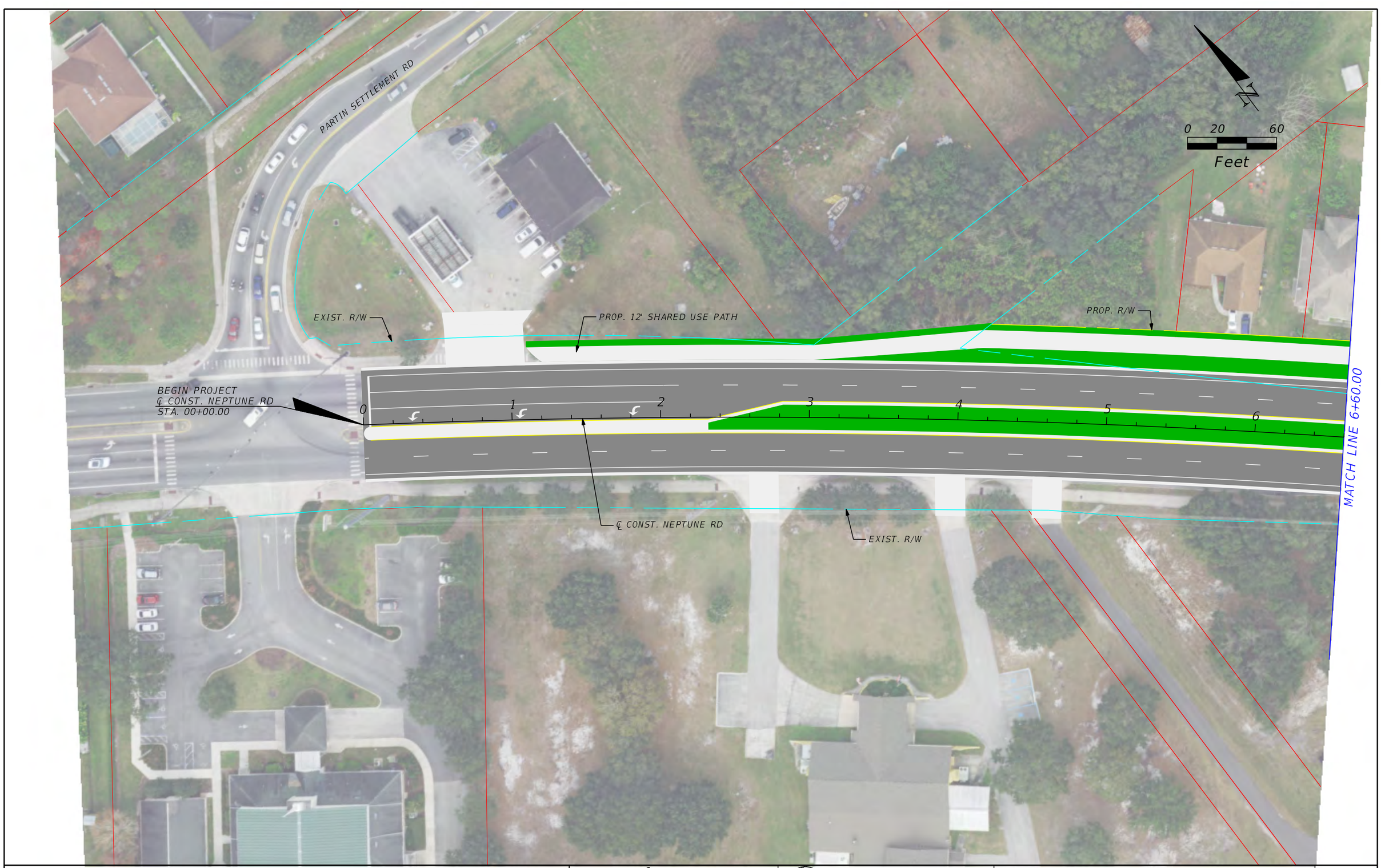
Orlando, Florida 32801

OSCEOLA COUNTY
TRANSIT AND
TRANSPORTATION
1 Courthouse Square, Suite 3100
Kissimmee, Florida 34741-5488
Phone: (407) 742-0662 Fax (407) 742-0600

NEPTUNE ROAD
CONCEPT PLANS

SHEET NO. 5



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Kimley»Horn
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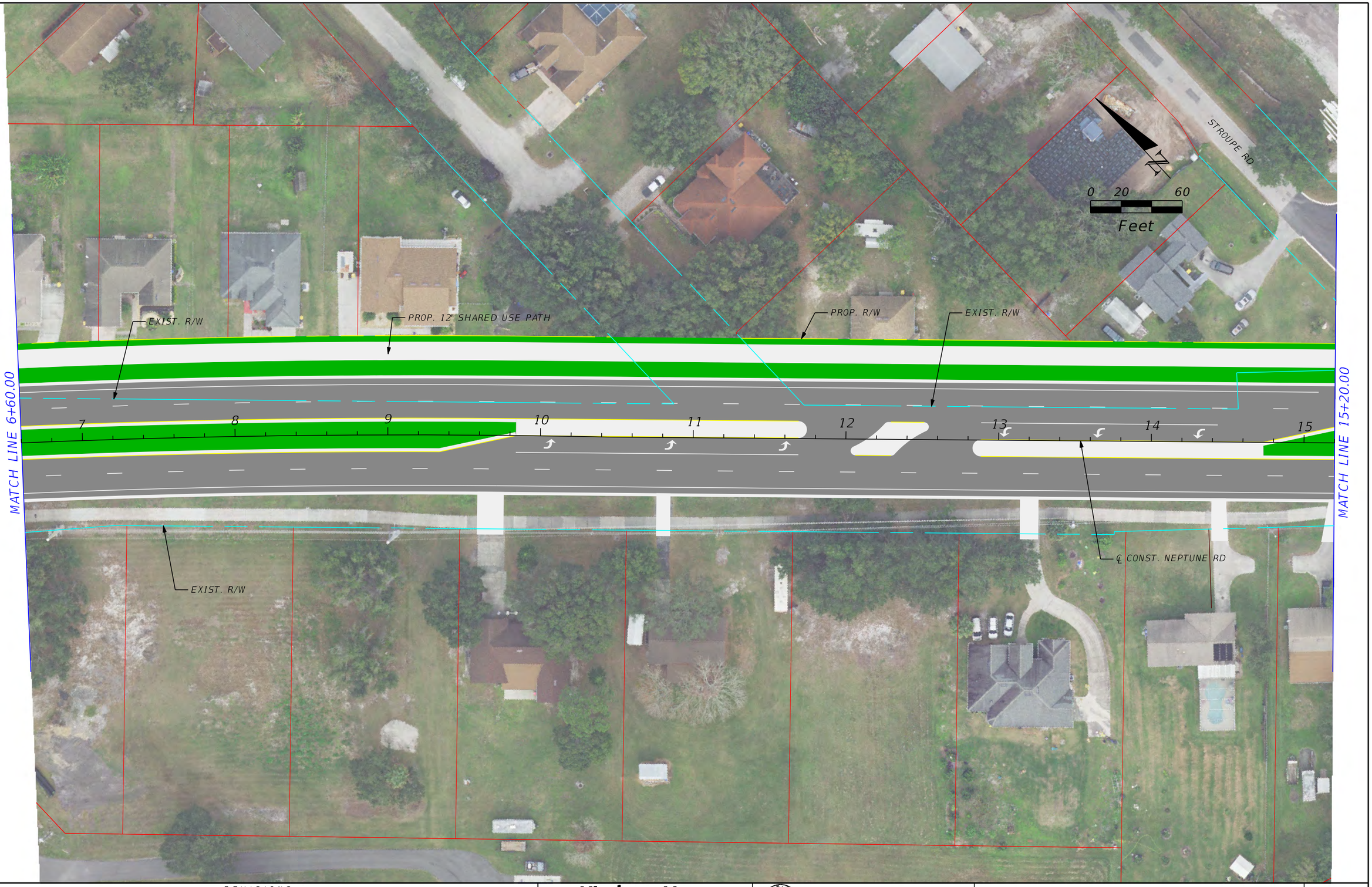
P.E. License No. 45825
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

OSCEOLA COUNTY
TRANSIT AND
TRANSPORTATION
1 Courthouse Square, Suite 3100
Kissimmee, Florida 34741-5488
Phone: (407) 742-0662 Fax (407) 742-0600

NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 6



REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

Kimley»Horn
Certificate Of Authorization No. 696
L. Frederick Burkett, P.E.
P.E. License No. 45825
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

OSCEOLA COUNTY TRANSIT AND TRANSPORTATION
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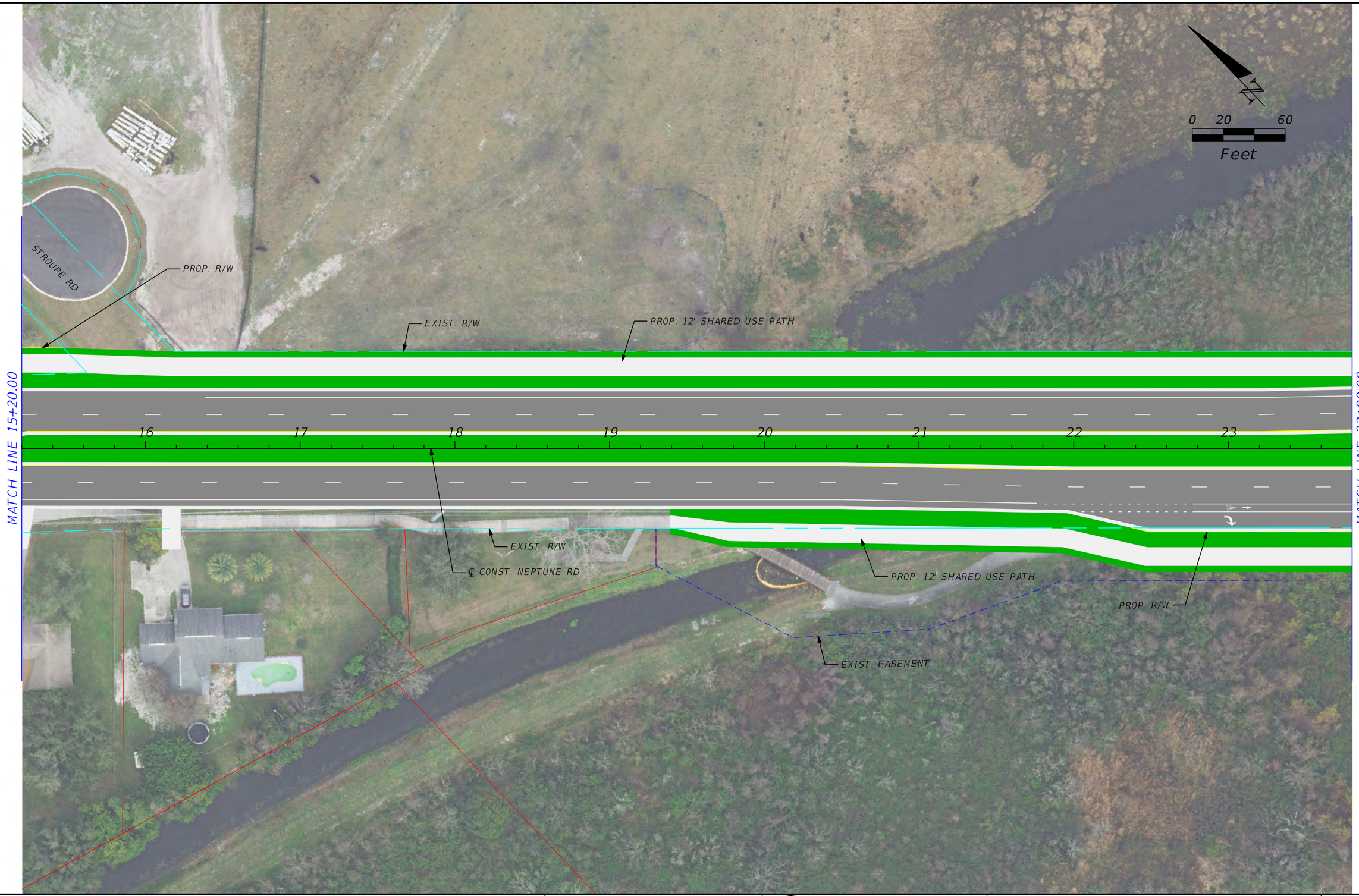
Kissimmee, Florida 34741-5488
Phone: (407) 742-0662 Fax (407) 742-0600

NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 7



REVISIONS					
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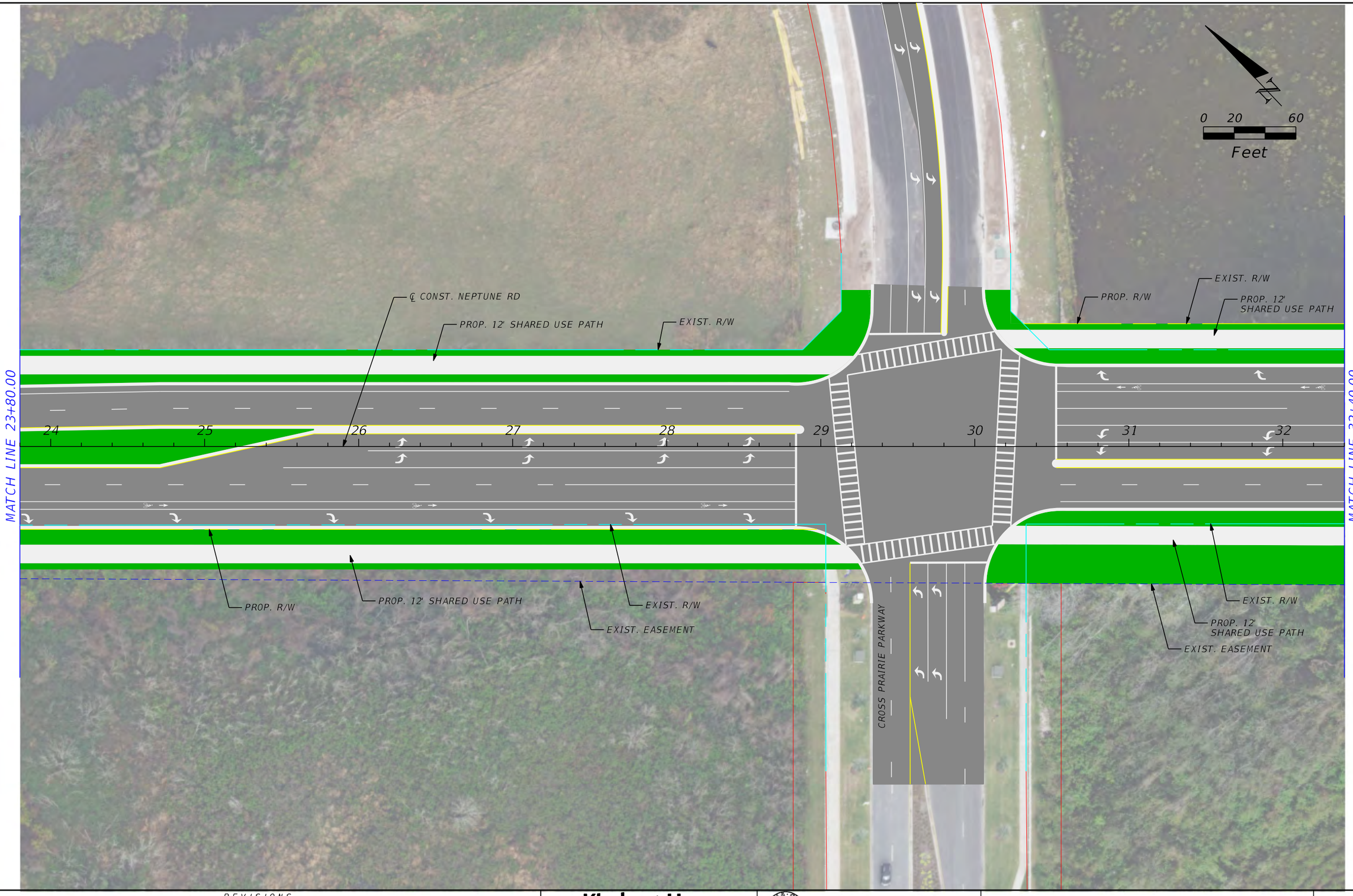
Kimley»Horn
Certificate Of Authorization No. 696
L. Frederick Burkett, P.E.
P.E. License No. 45825
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

OSCEOLA COUNTY TRANSIT AND TRANSPORTATION
1 Courthouse Square, Suite 3100
Kissimmee, Florida 34741-5488
Phone: (407) 742-0662 Fax (407) 742-0600

NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 8

Fred.Burkett 7/22/2020 12:34:24 PM K:\ORL_TPTO\49244410___Neptune PD&E\300_Engineering\49244410\roadway\Alternative Alignments\Preferred Alt\Plan She



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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 9

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0 20 60
Feet

PROP. R/W
PROP. 12' SHARED USE PATH
℄ CONST. NEPTUNE RD
PROP. 12' SHARED USE PATH
EXIST. R/W

MATCH LINE 32+40.00

33 34 35 36 37 38 39 40

MATCH LINE 41+00.00

PROP. 12' SHARED USE PATH
EXIST. R/W
EXIST. EASEMENT
EXIST. EASEMENT

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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 10

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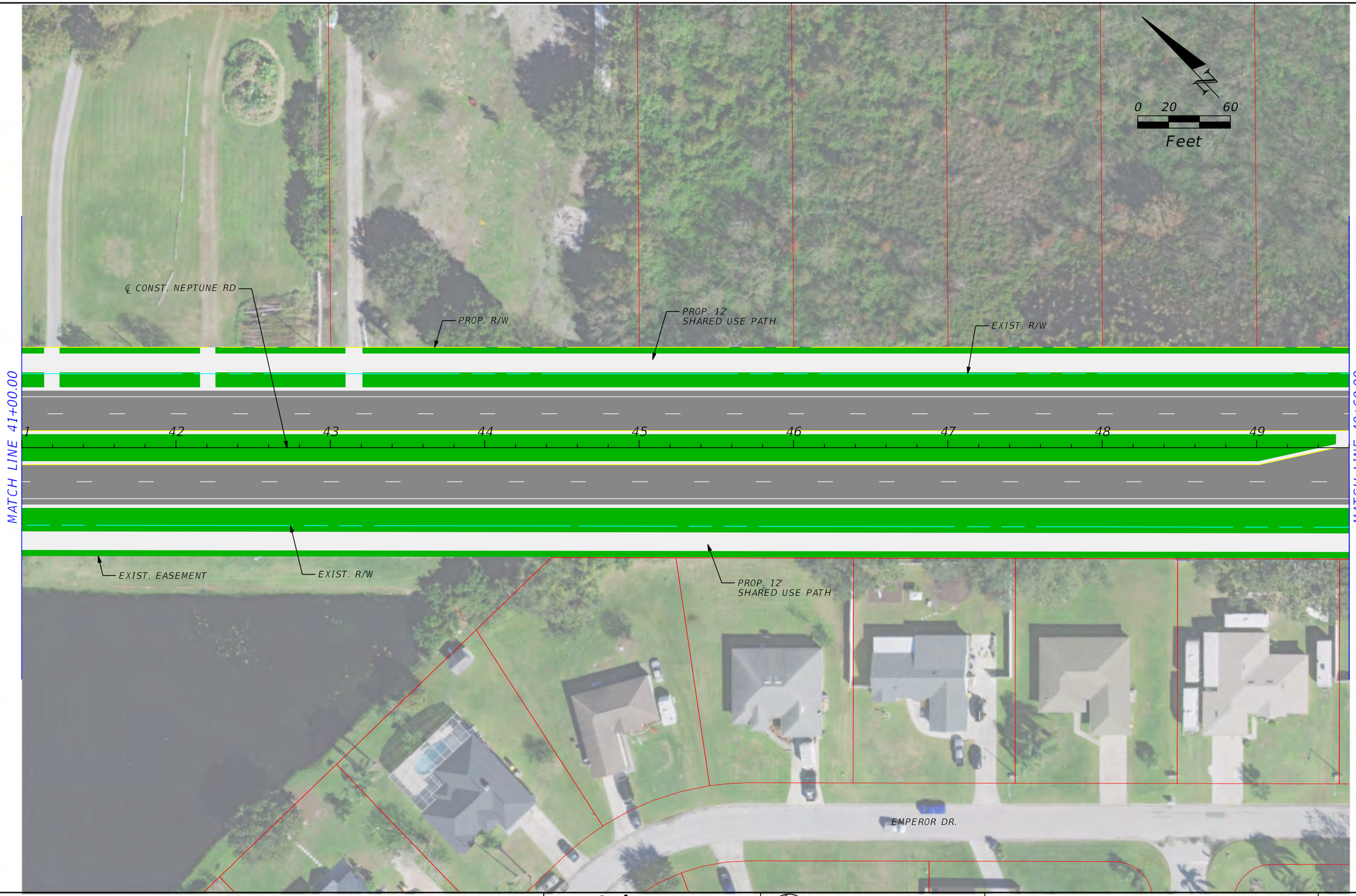

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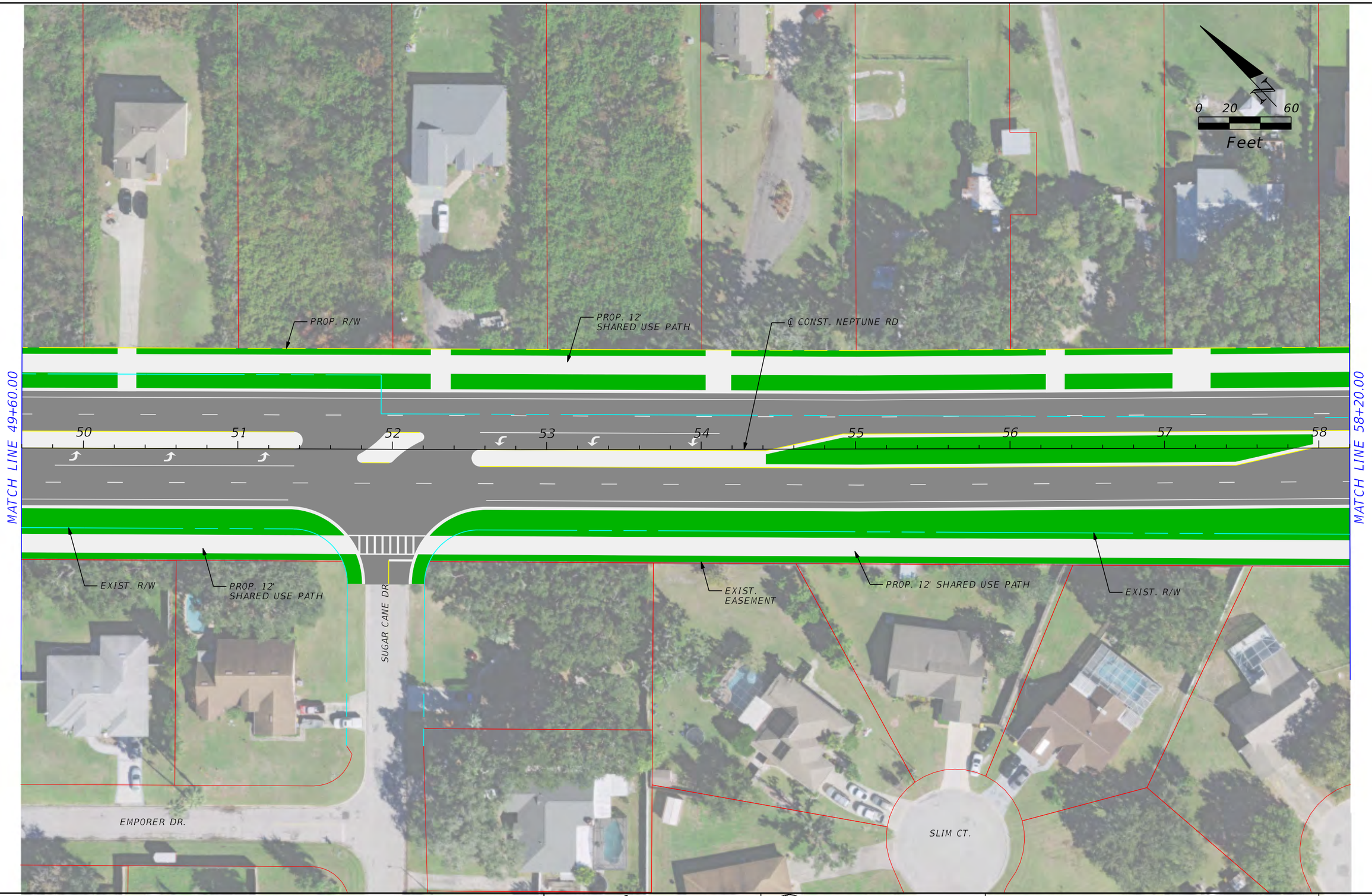

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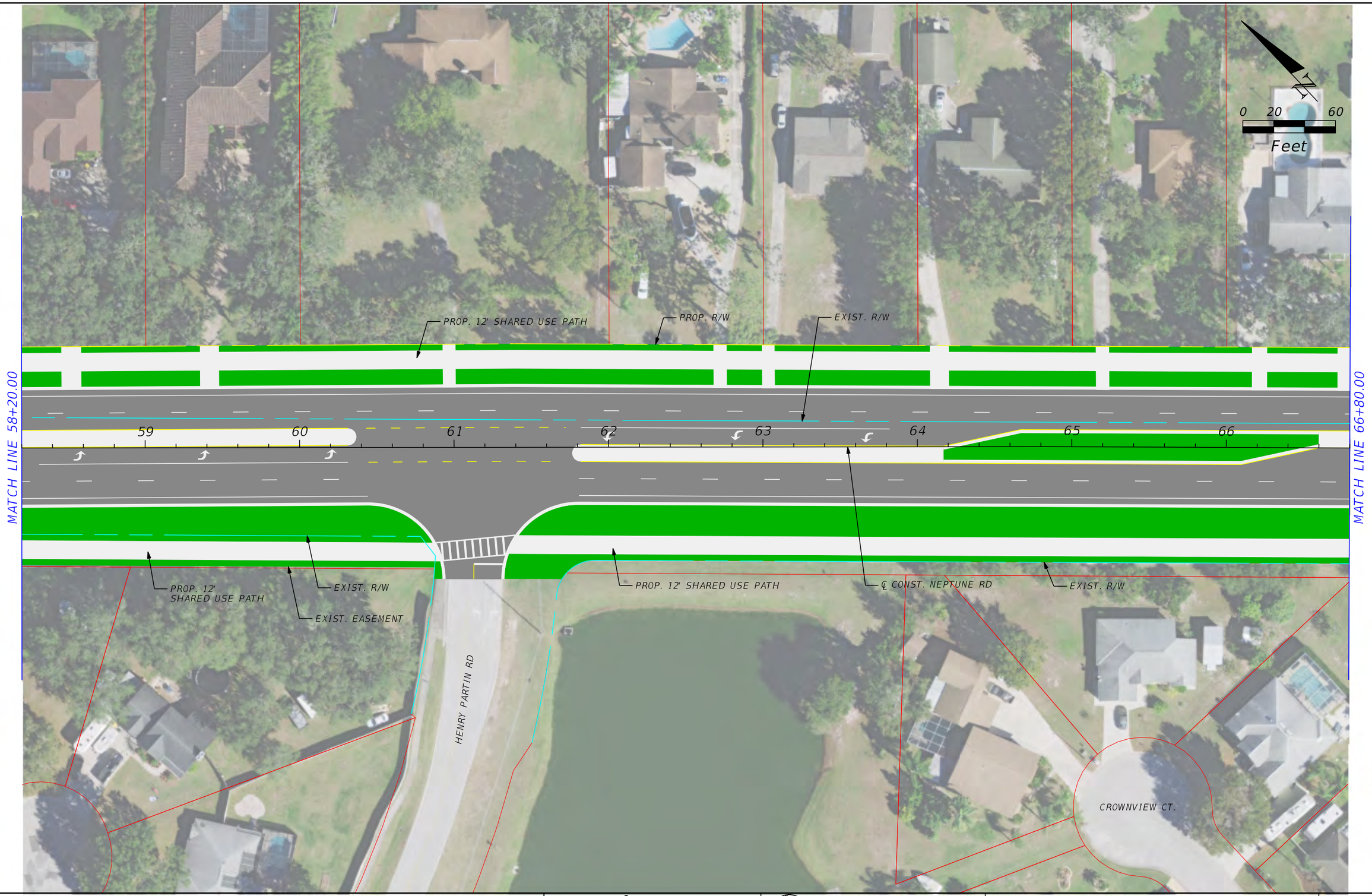

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NEPTUNE ROAD CONCEPT PLANS

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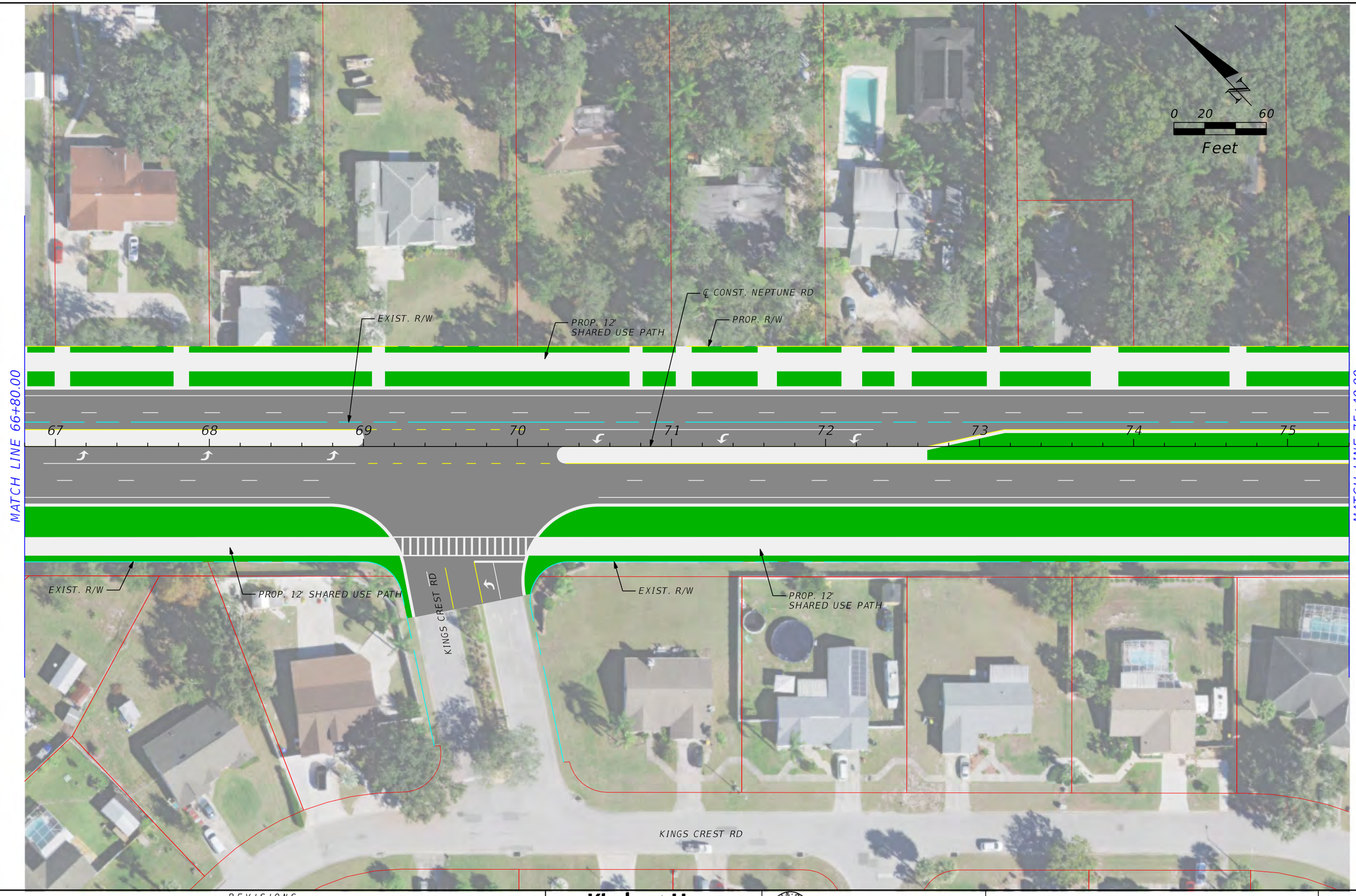

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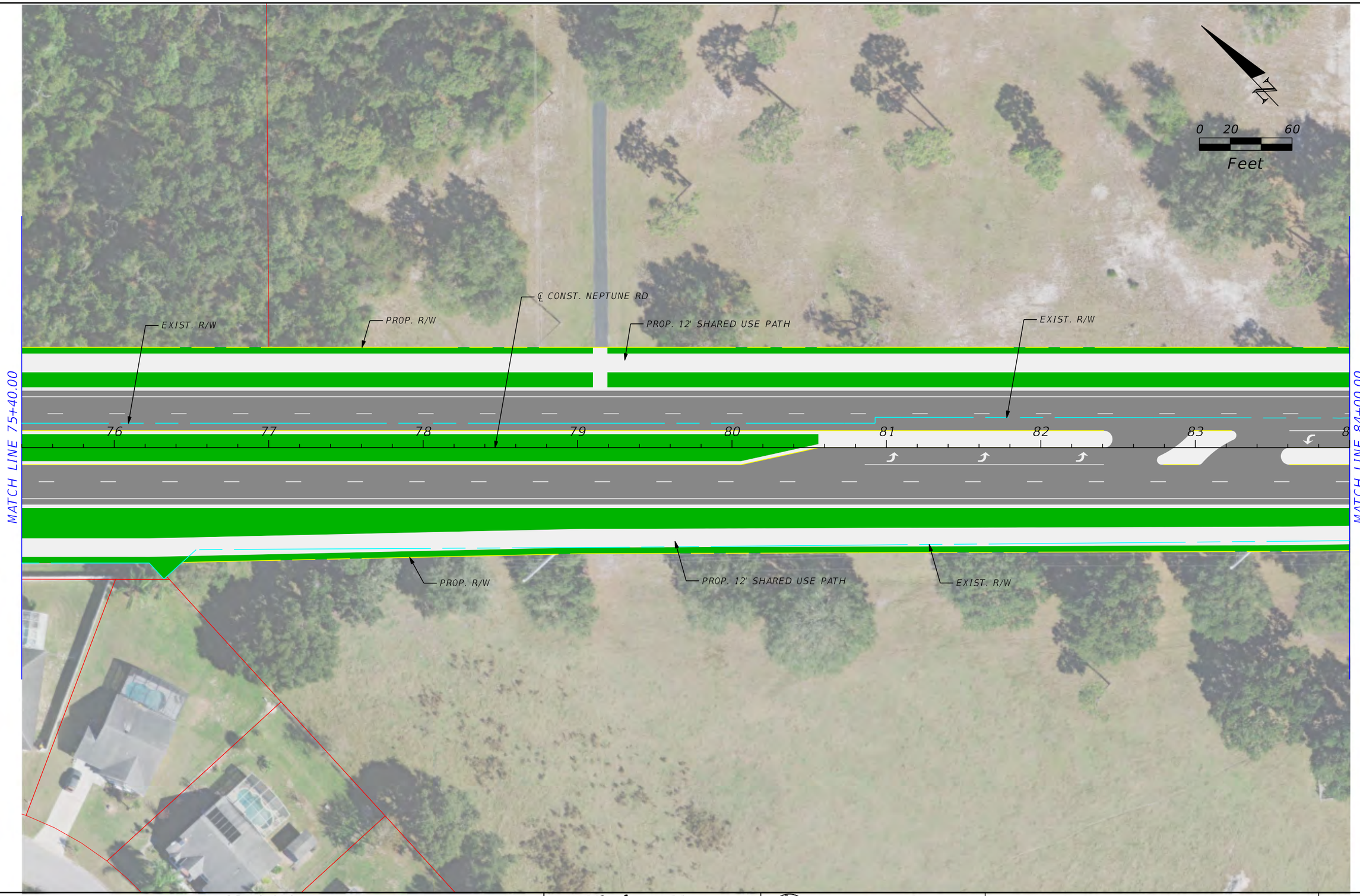
SHEET NO. 14



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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 15

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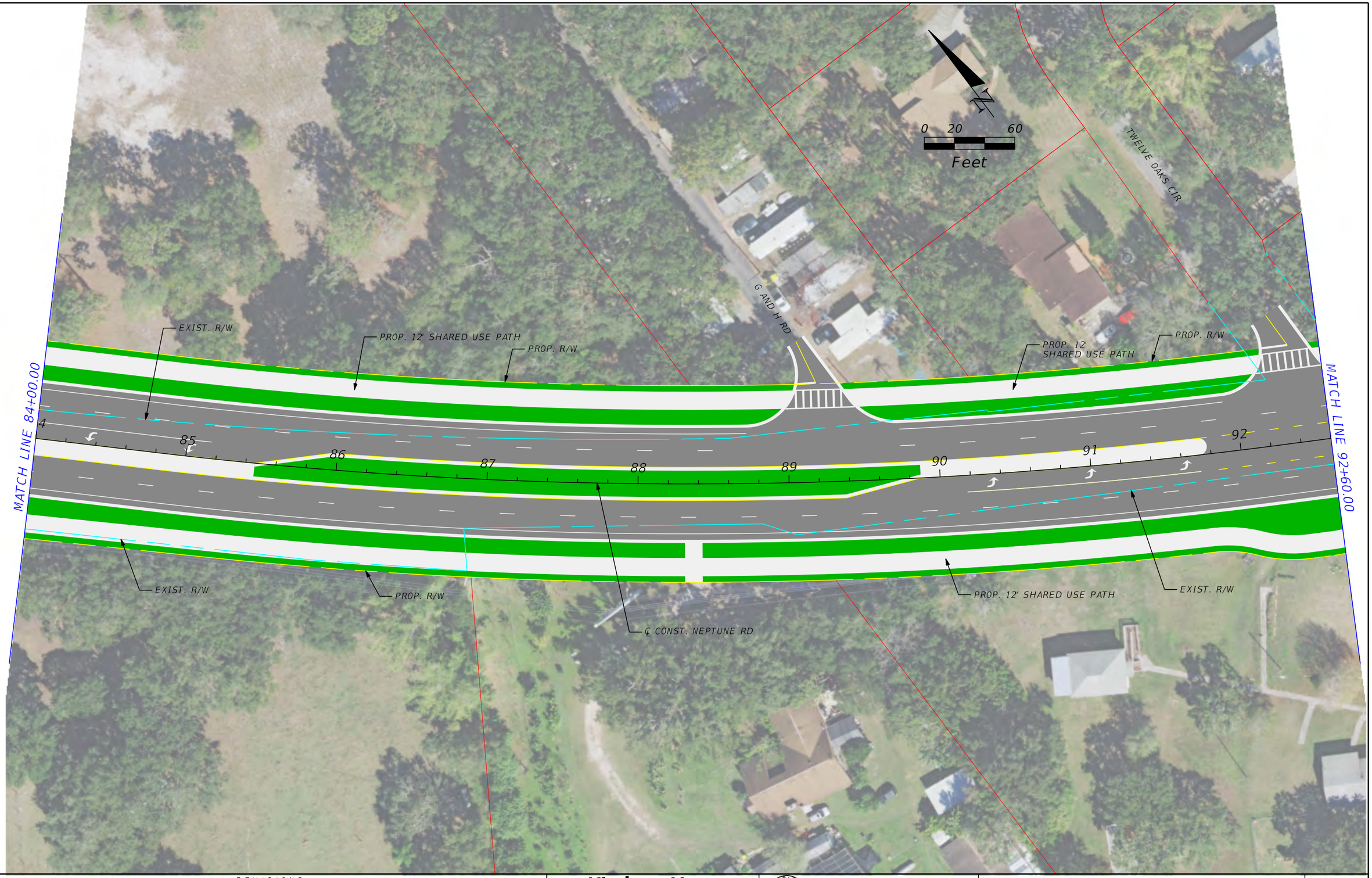

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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 16

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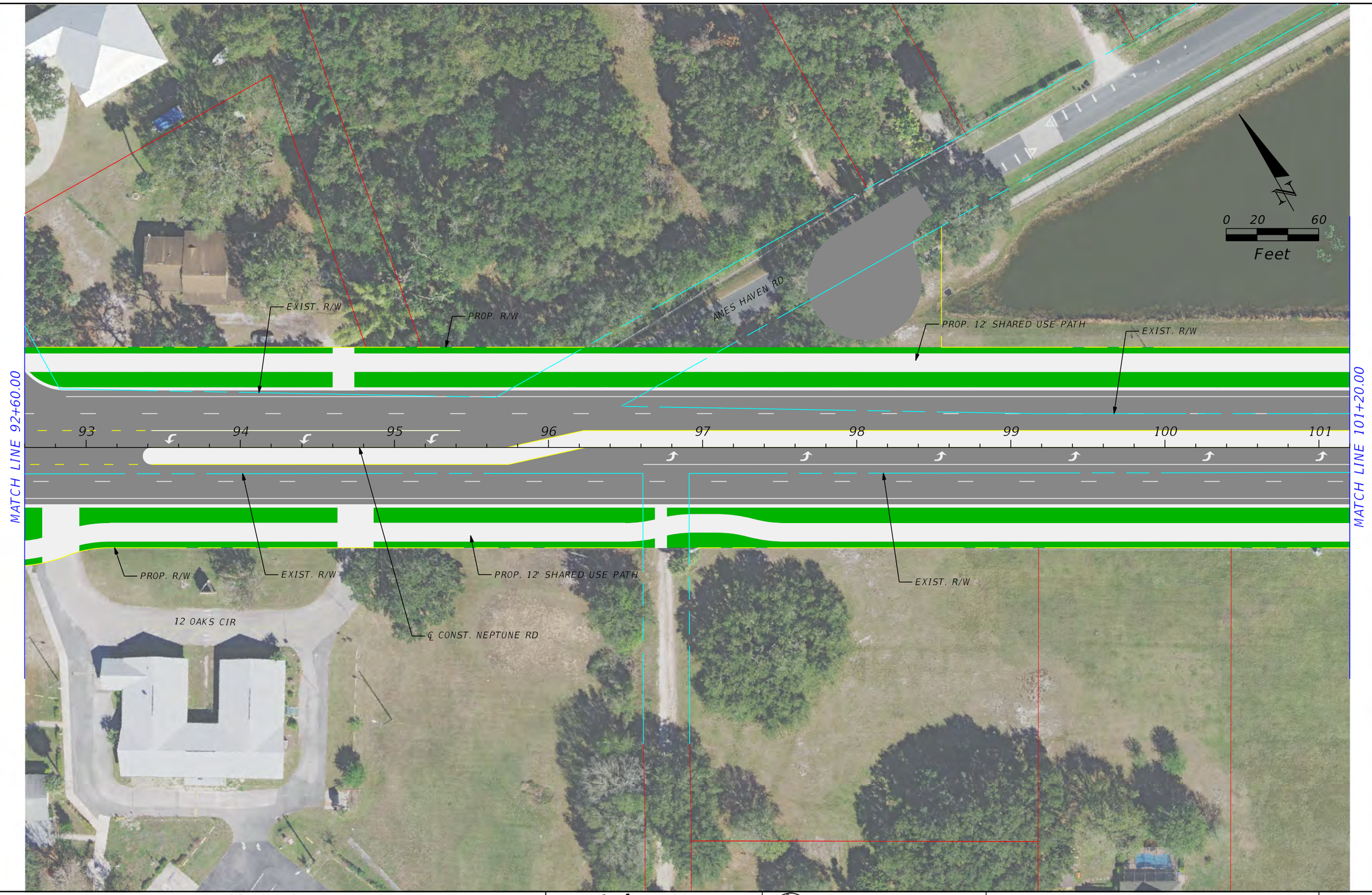

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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 17

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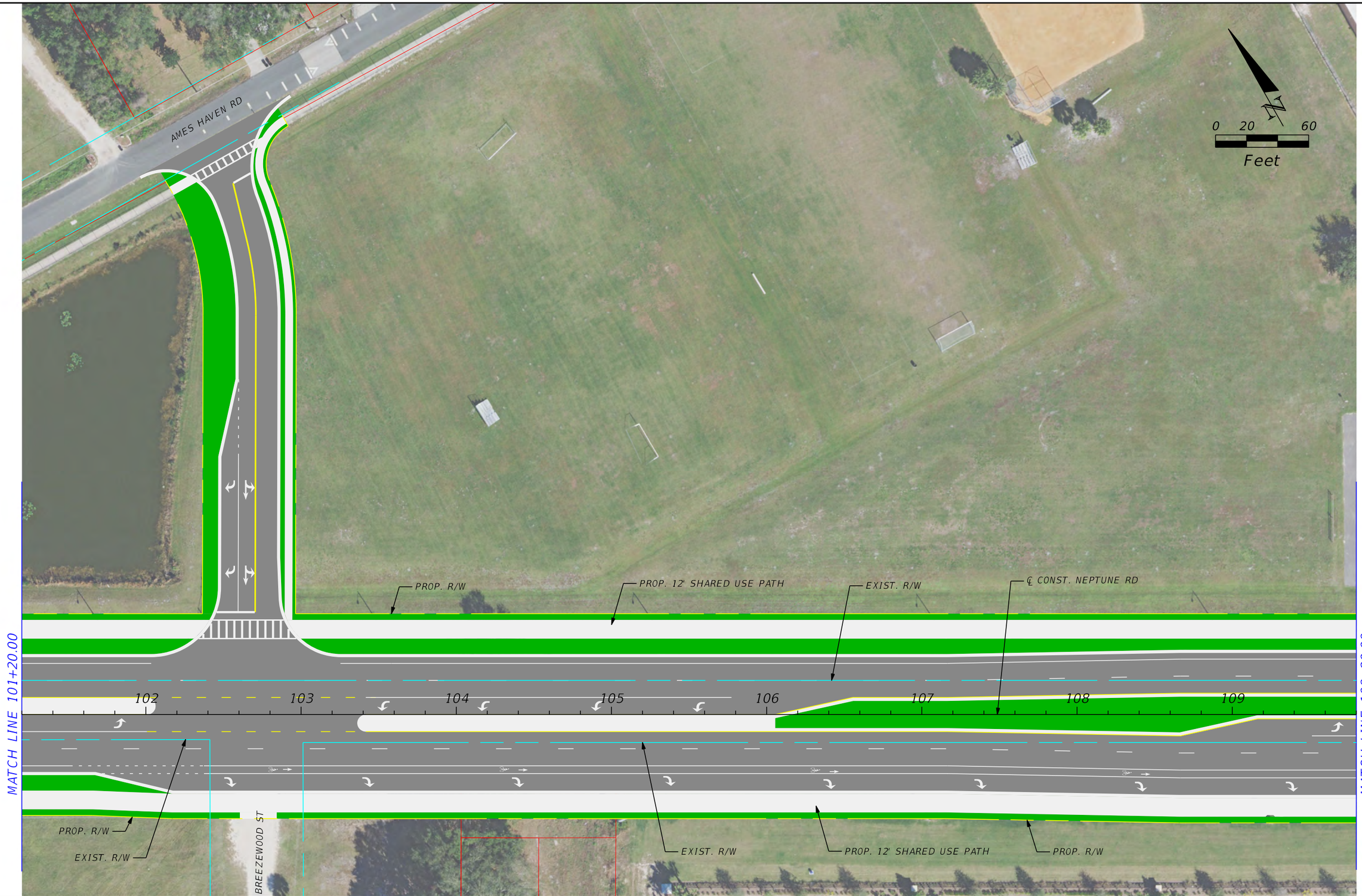

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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 18

Spencer.Edwards 7/9/2020 4:32:30 PM K:\ORL_TPTO\49244410___Neptune PD&E\300_Engineering\49244410\roadway\Alternative Alignments\Preferred Alt\Plan She

NEPTUNE MIDDLE SCHOOL

N

0 20 60

Feet

MATCH LINE 109+80.00

MATCH LINE 118+40.00

110 111 112 113 114 115 116 117 118

PROP. 12' SHARED USE PATH

PROP. R/W

PROP. R/W

℄ CONST. NEPTUNE RD

PROP. 12' SHARED USE PATH

EXIST. R/W

PROP. R/W

PROP. 12' SHARED USE PATH

PROP. R/W

EXIST. R/W

PROP. 12' SHARED USE PATH

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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 19

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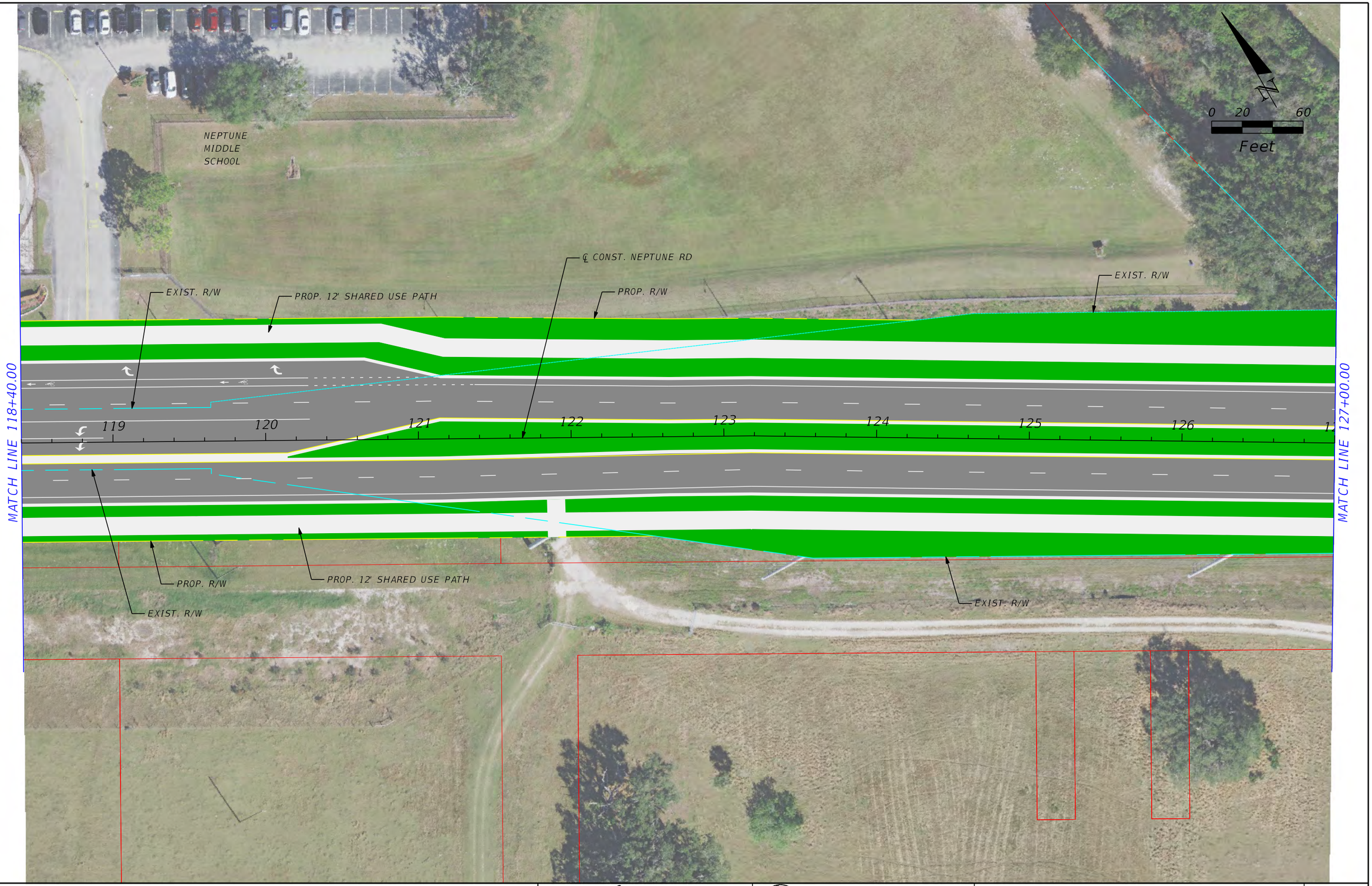

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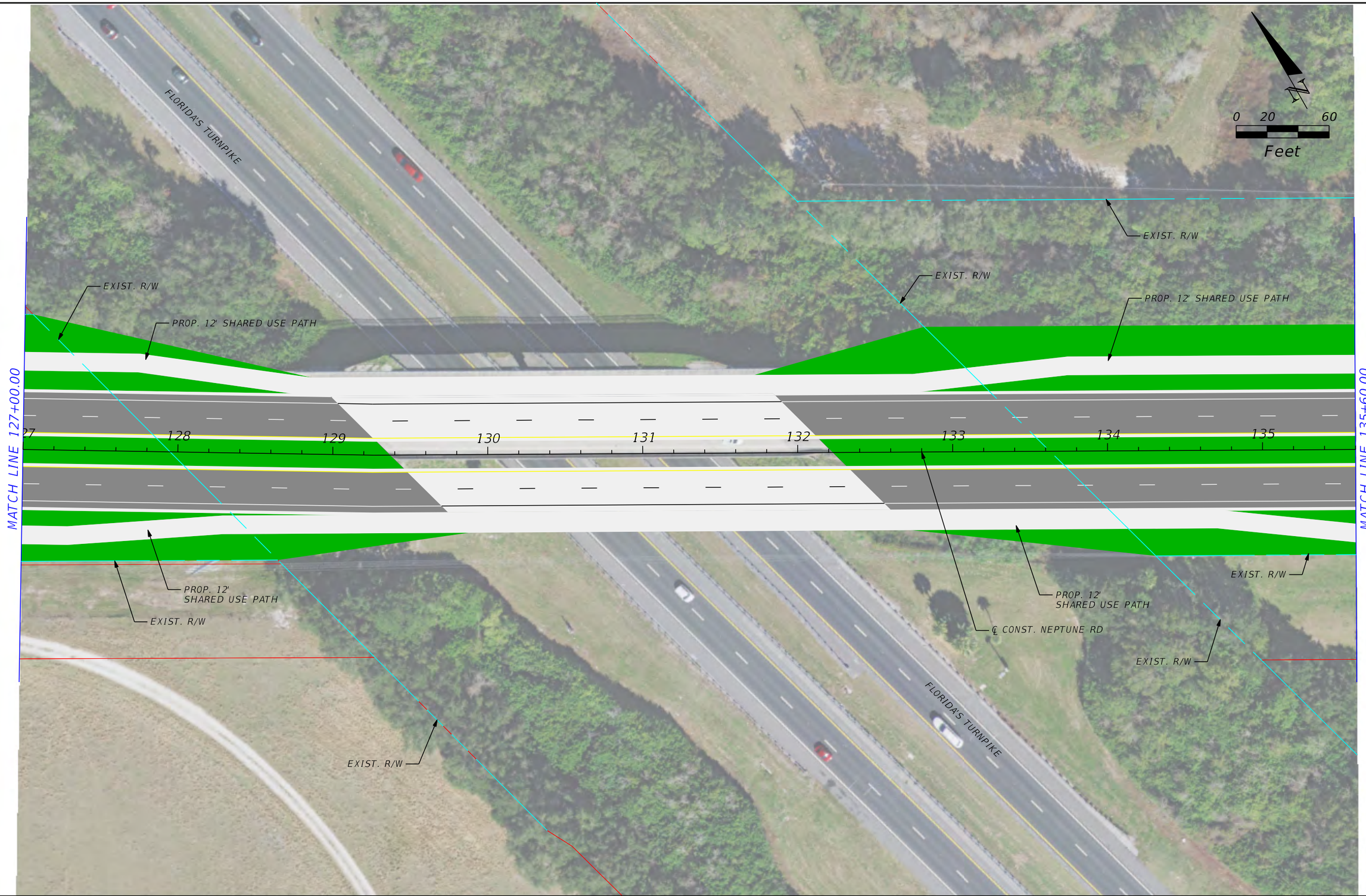
NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 20



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NEPTUNE ROAD CONCEPT PLANS

SHEET NO.

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0 20 60
Feet

EXIST. R/W

℄ CONST. NEPTUNE RD

PROP. 12' SHARED USE PATH

MATCH LINE 135+60.00

136 137 138 139 140 141 142 143

MATCH LINE 143+10.00

PROP. 12' SHARED USE PATH

EXIST. R/W

PROP. R/W

EXIST. R/W

PARTIN TRIANGLE PARK

EXIST. R/W

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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 22

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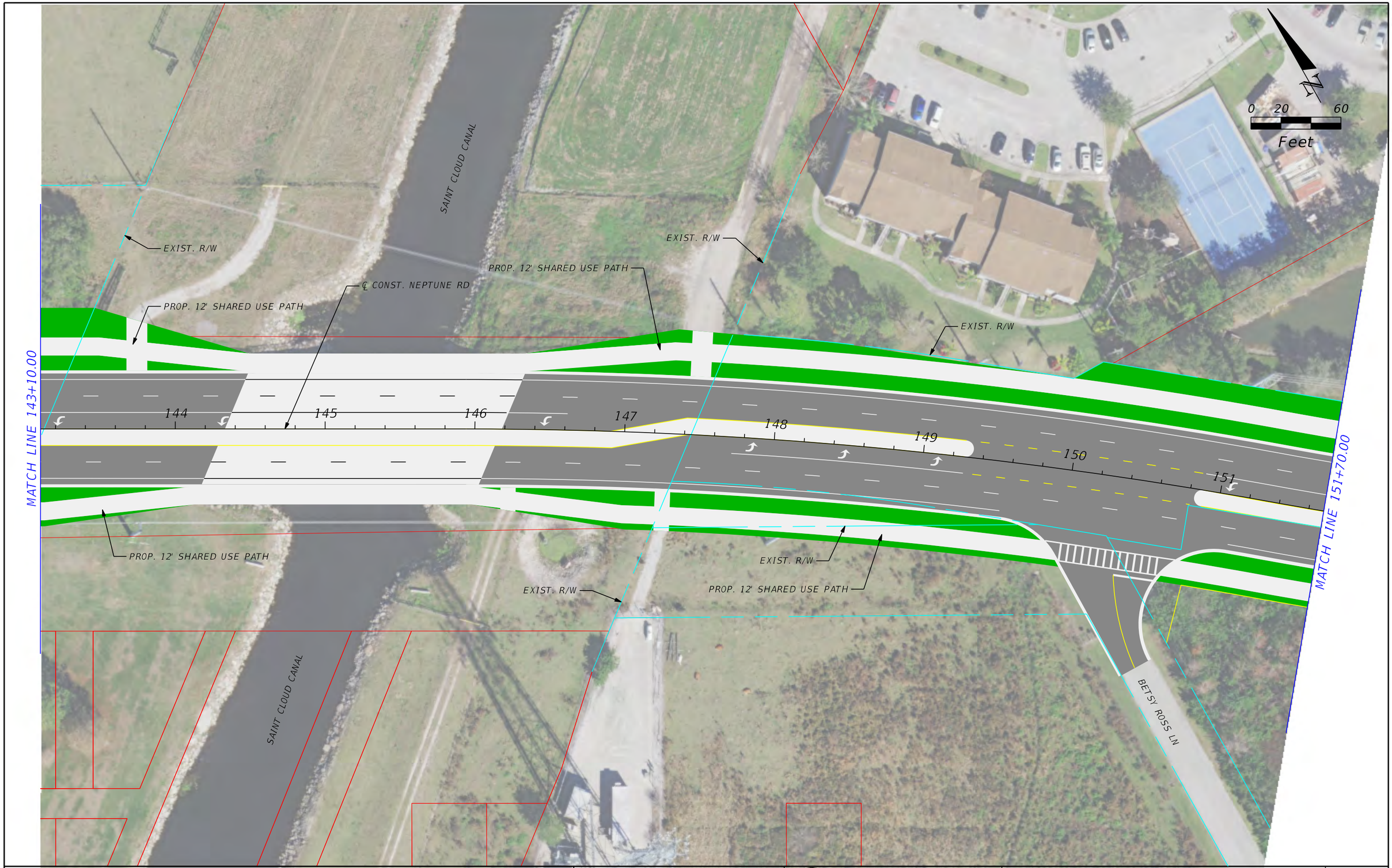

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SHEET NO. 23

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0 20 60
Feet

EXIST. OE TRANSMISSION POLE

POTENTIAL NOISE BARRIER

EXIST. OE TRANSMISSION POLE

POTENTIAL NOISE BARRIER

PROP. 12' SHARED USE PATH

EXIST. R/W

MATCH LINE 151+70.00

MATCH LINE 160+30.00

152 153 154 155 156 157 158 159 160

EXIST. R/W

℄ CONST. NEPTUNE RD

PROP. 12' SHARED USE PATH

PROP. R/W

PROP. R/W

REVISIONS					
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SHEET NO. 24

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SHEET NO. 25

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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 26

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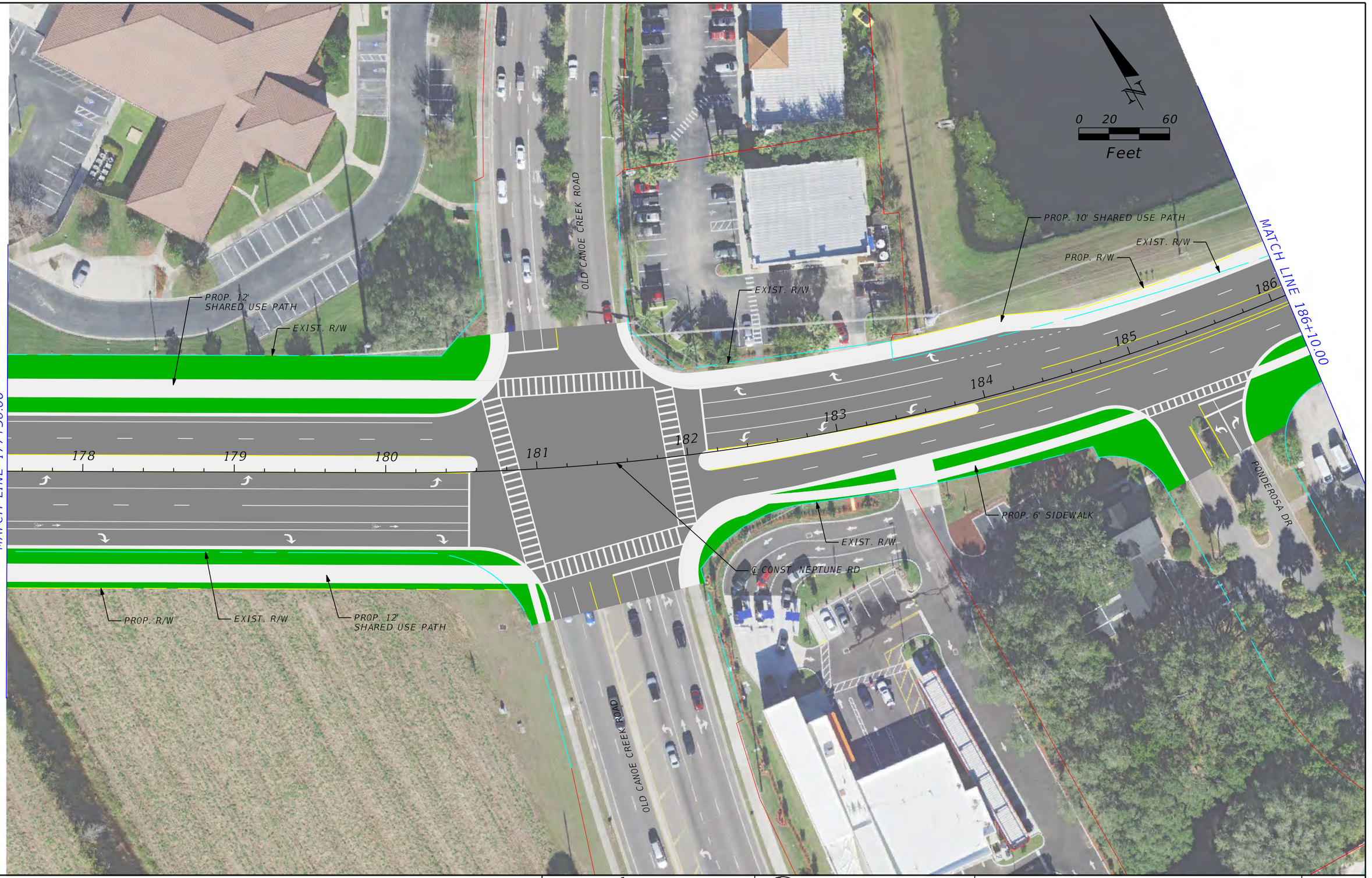

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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 27

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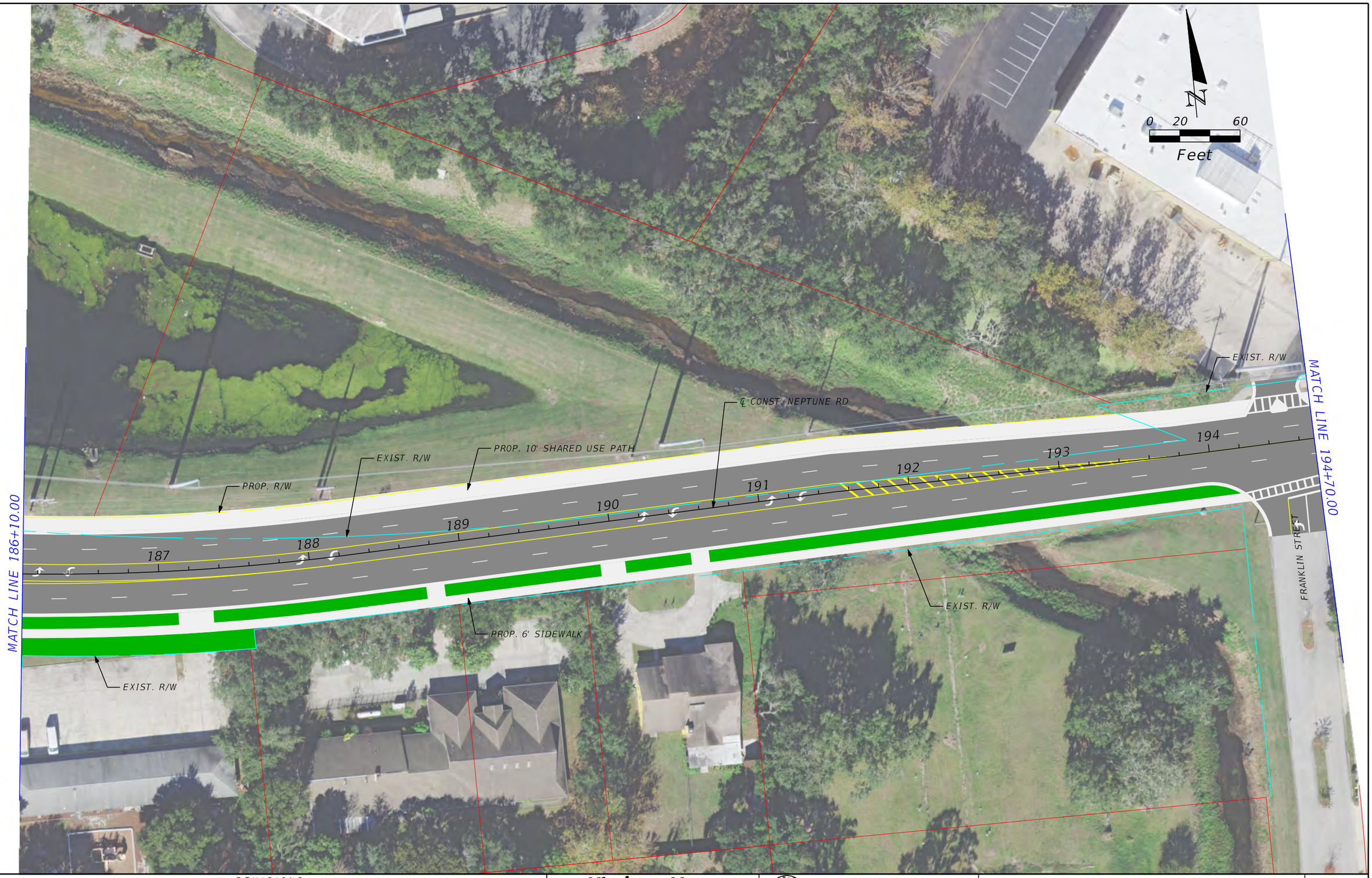

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SHEET NO. 28

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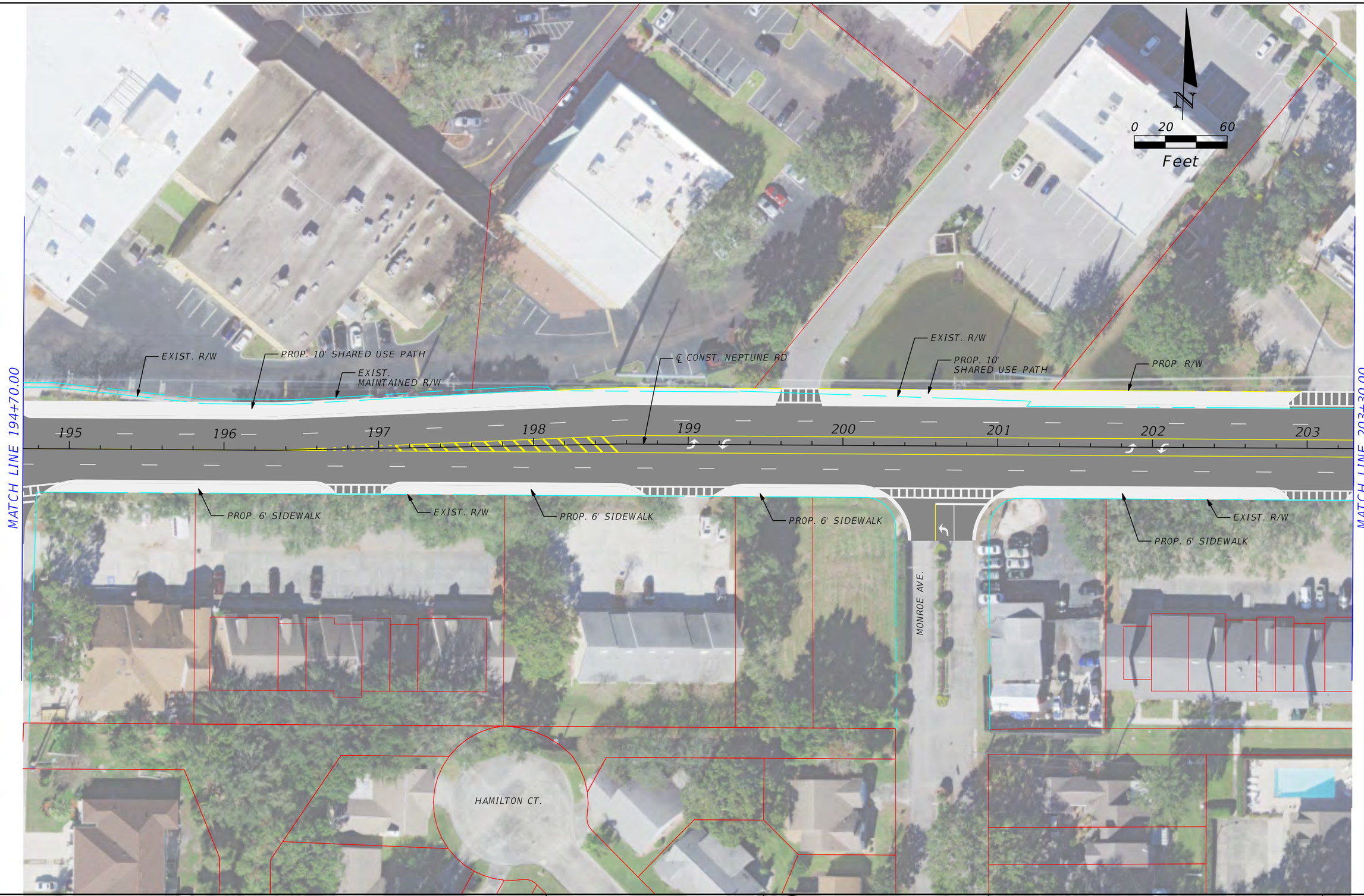

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SHEET NO. 29

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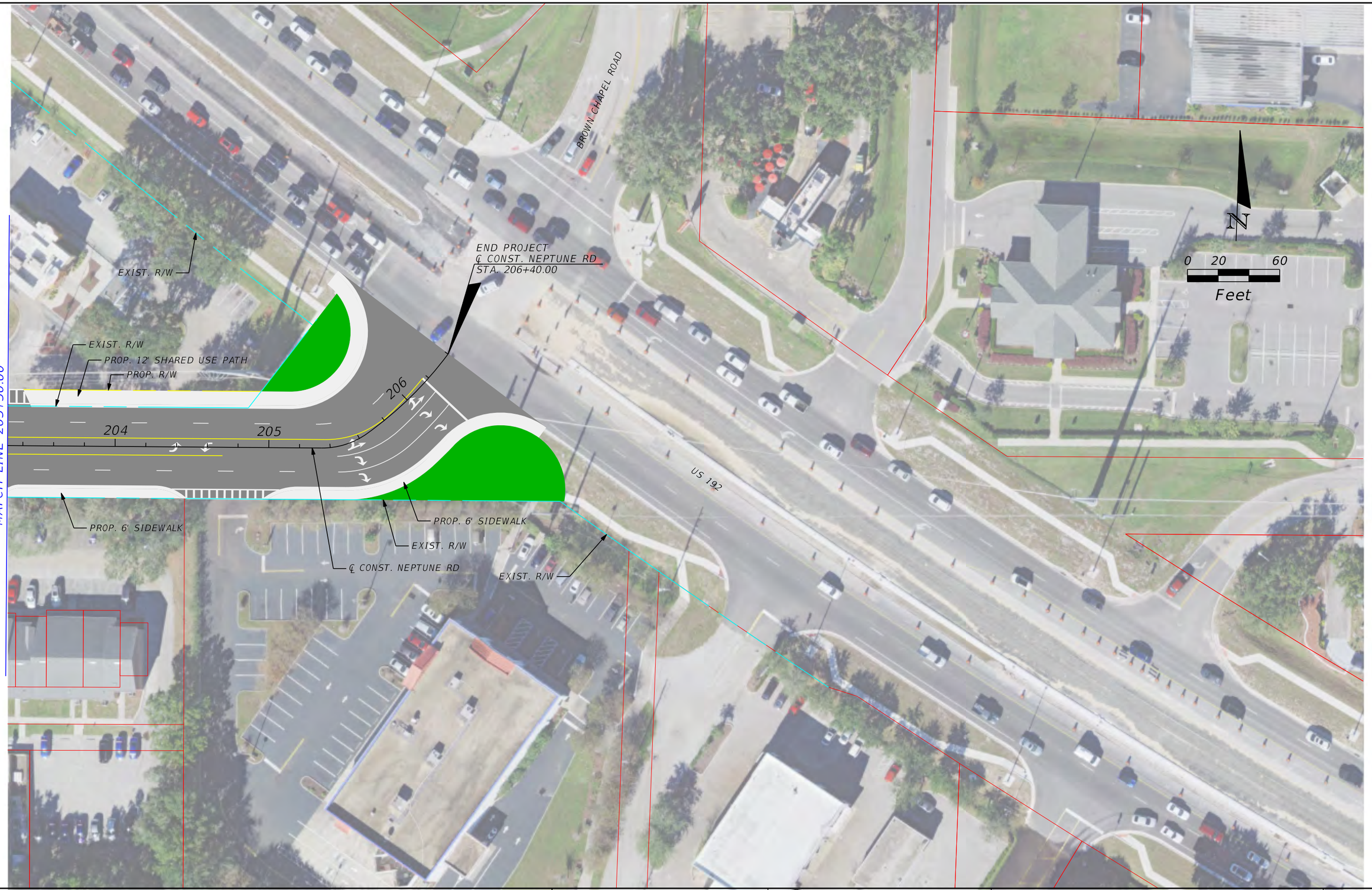

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NEPTUNE ROAD CONCEPT PLANS

SHEET NO. 30

Sean.Lynch 2/6/2020 9:36:35 AM K:\ORL_TPTO\4924440___Neptune PD&E\300_Engineering\4924440\roadway\Alternative Alignments\Preferred Alt\Plan Sheets

APPENDIX G

Typical Section Package

OSCEOLA COUNTY

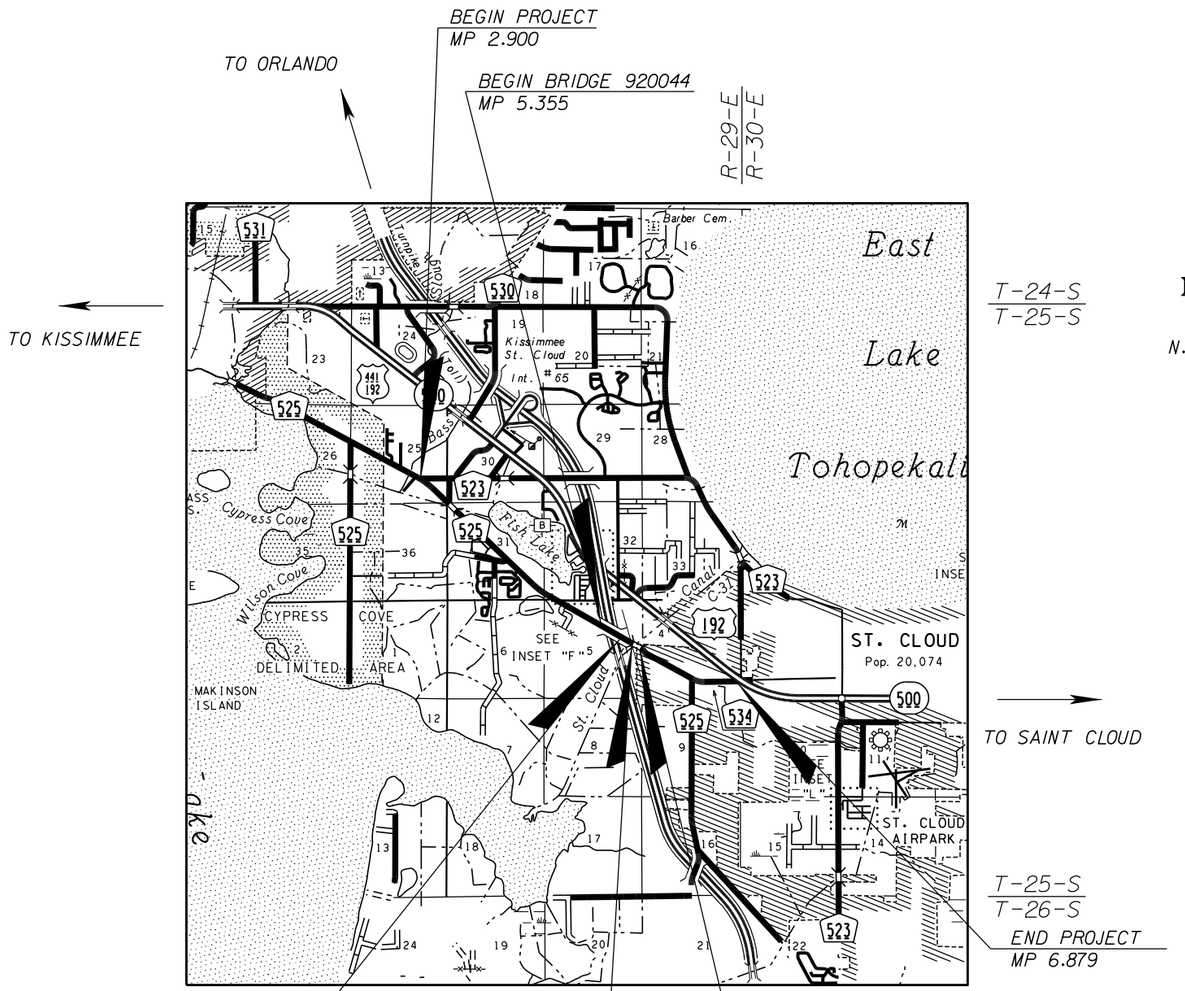
TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 445415-1

OSCEOLA COUNTY (92550000)(92540000)

CR 525 (NEPTUNE ROAD)

RECONSTRUCTION OF NEPTUNE ROAD FROM 2-LANE TO 4-LANE



THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

L. FREDERICK BURKETT
LICENSE
No 45825
STATE OF FLORIDA
PROFESSIONAL ENGINEER

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON THE ELECTRIC DOCUMENTS.

KIMLEY-HORN
189 SOUTH ORANGE AVE., SUITE 1000
ORLANDO, FLORIDA 32801
TEL: 407-898-1511
CERTIFICATE OF AUTHORIZATION 696
VENDOR NO:
FRED BURKETT, P.E. NO. 45825

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004 F.A.C.

TYPICAL SECTION PACKAGE

FDOT CONCURRENCE

MARIO BIZZIO, PE FDOT DISTRICT DESIGN ENGINEER	LOREEN BOBO, PE FDOT DISTRICT DIRECTOR OF TRANSPORTATION DEVELOPMENT	JIM STROZ, PE FDOT DISTRICT TRAFFIC OPERATIONS ENGINEER

OSCEOLA COUNTY APPROVAL

TAWNY OLORE, PE EXECUTIVE DIRECTOR TRANSPORTATION & TRANSIT	B. TODD HUDSON, PE COUNTY TRANSPORTATION ENGINEER	KATHY LEE, PE COUNTY TRAFFIC OPERATIONS ENGINEER

FINANCIAL PROJECT ID	SHEET NO.
445415-1	1

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
(X) C3R : RESIDENTIAL
( ) N/A : LA FACILITY
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
(X) MINOR ARTERIAL
( ) MAJOR COLL.
( ) MINOR COLL.
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
( ) STATE HIGHWAY SYSTEM
(X) OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE W/Service Roads
( ) 3 - RESTRICTIVE W/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE W/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE W/440 ft. Connection Spacing
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CRITERIA

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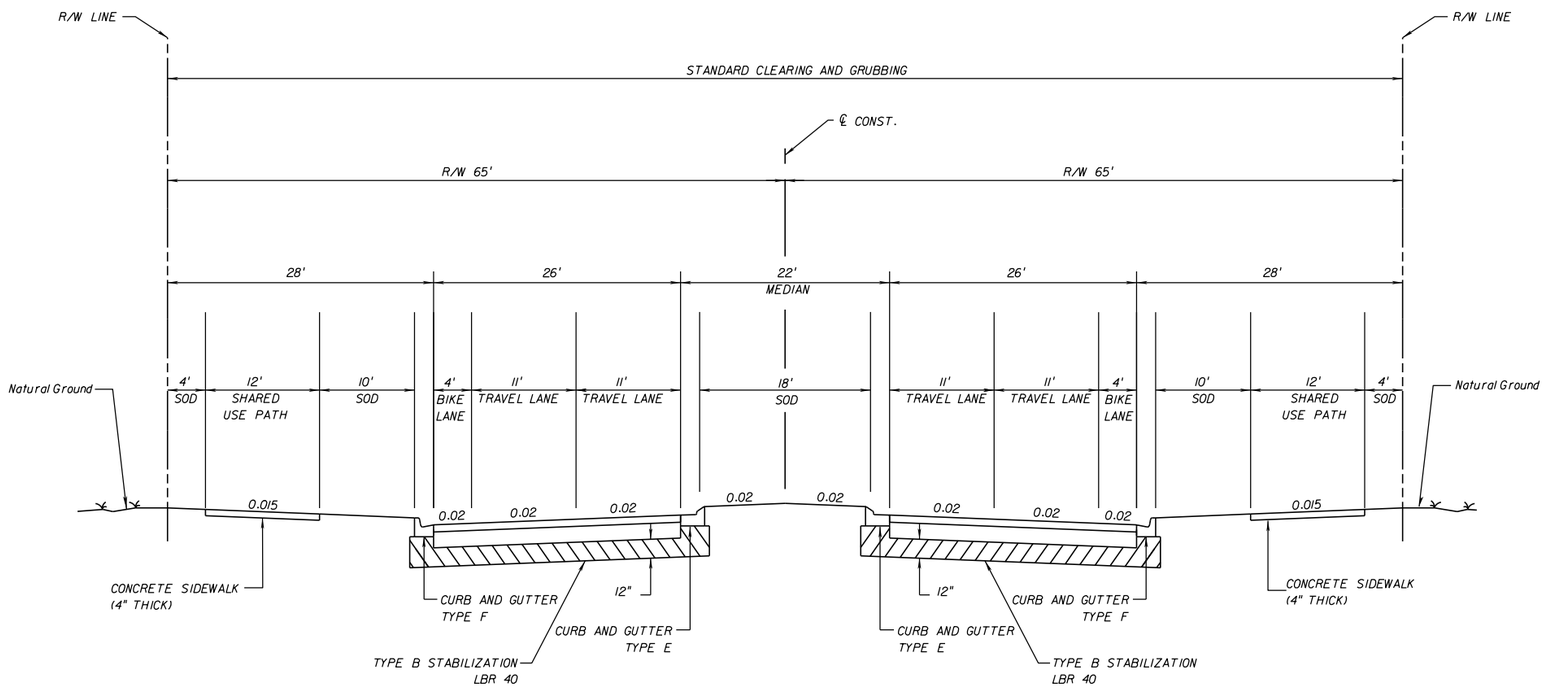
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

7-FOOT BUFFERED BIKE LANES

TYPICAL SECTION NO.1
NEPTUNE ROAD



TYPICAL SECTION

CR 525
MP 2.9000 TO MP 6.342

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 26,000
ESTIMATED OPENING YEAR = 2025 AADT = 30,000
ESTIMATED DESIGN YEAR = 2045 AADT = 43,000
K = 9% D = 57.9% T (24 HOUR) = 5.11%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
445415-1	2

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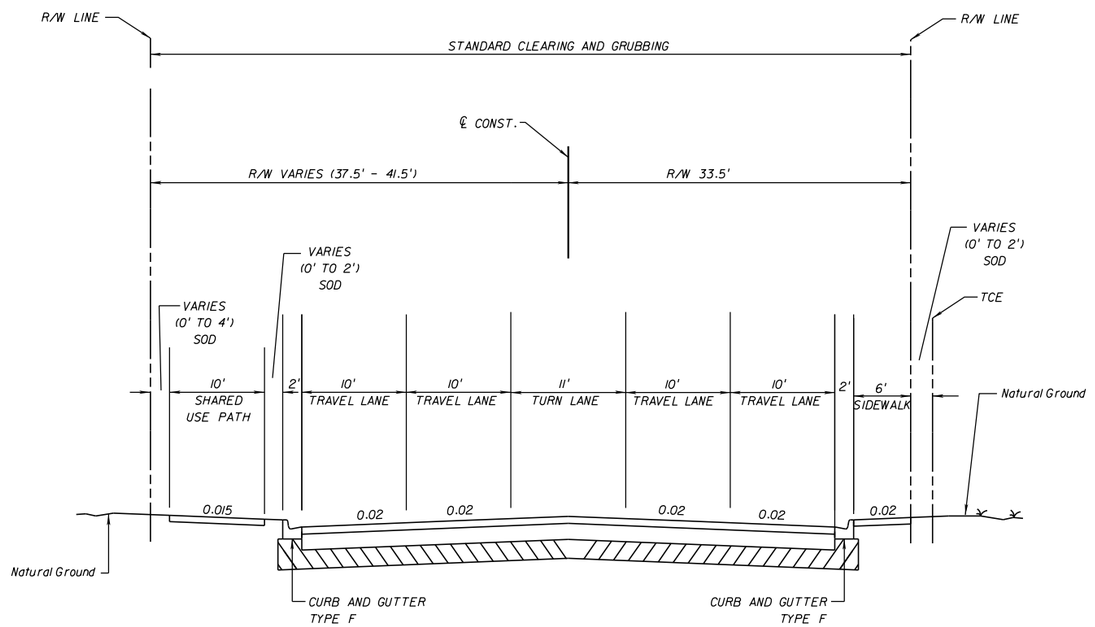
NEPTUNE ROAD



TYPICAL SECTION

CR 525
MP 6.342 TO MP 6.879

TRAFFIC DATA

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ESTIMATED DESIGN YEAR = 2045 AADT = 27,000
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FINANCIAL PROJECT ID	SHEET NO.
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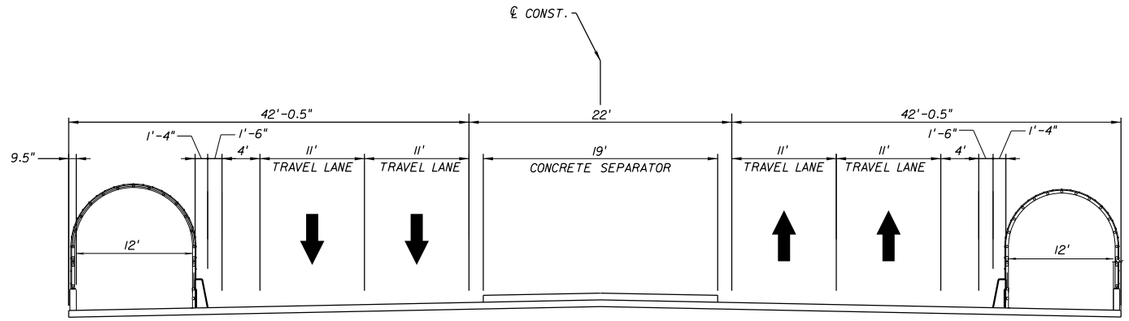
POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

7-FOOT BUFFERED BIKE LANES

TYPICAL SECTION NO.3
NEPTUNE ROAD



BRIDGE 924049
MP 5.656 TO MP 5.672

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 26,000
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445415-1	4

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APPENDIX H

Design Variations

MEMORANDUM

To: Mario Bizzio, P.E.

From: Fred Burkett, P.E. and Clif Tate P.E.
Kimley-Horn and Associates, Inc.

Date: December 11, 2019

Subject: Neptune Road PD&E – Osceola County, Florida
FPID: 445415-1
Design Variation Request
Segment 1: Partin Settlement Road to Old Canoe Creek Road

Description

Osceola County is conducting a Project Development and Environment (PD&E) study for improving Neptune Road, from Partin Settlement Road to US 192. While this is a county road, it is being processed similar to FDOT's Local Agency Program (LAP) with FDOT review throughout the process. Based on the LAP Manual (section 19.4), the FDOT Design Manual is to be used for design criteria and standards. This segment of the project meets all of these standards except for using 4-foot bicycle lanes (in addition to a 12-foot shared use path) instead of 7-foot buffered bicycle lanes. **This design variation request is for the Department to approve the use of 4-foot bicycle lanes plus 12-foot shared use paths (on both sides of Neptune Road) instead of providing 7-foot buffered bicycle lanes for this segment.**

Background

This section summarizes the County's decision-making process for determining the appropriate Typical Section for Neptune Road, from Partin Settlement Road to Old Canoe Creek Road.

Existing Conditions

- A 10-foot shared use path (Neptune Road Pathway) is on the south side of Neptune Road, from Partin Settlement Road to Ames Haven Road (1.9 miles) where it crosses to the north side of Neptune Road and extends east Old Canoe Creek Road (1.6 miles).

- Neptune Middle School (and its associated public recreational fields) is located on the north side of Neptune Road, approximately 0.3 miles east of Ames Haven Road. The pathway is also on the north side of Neptune Road at the school; however, it crosses to the south side of the road just west of the school via an unsignalized crossing at Ames Haven Road.
- Current use of the pathway is a wide cross-section of users, including older walkers, joggers, parents with strollers, and younger bicyclists and pedestrians. The County's Director of Parks and Public Lands indicated that students from Neptune Middle School often use the path to travel to Partin Triangle Park.
- Partin Triangle Park is located on the south side of Neptune Road approximately 0.6 miles east of Neptune Middle School, in the area where the pathway is on the north side of Neptune Road.
- No other bicycle or pedestrian facilities are located within this segment of Neptune Road.
- West of Partin Settlement Road, Neptune Road is a 4-lane divided roadway with 4-foot bicycle lanes, the Neptune Road Pathway (10-foot) is on the south side of the road and a 5-foot sidewalk is provided on the north side of the road.
- The existing right-of-way ranges from 60-feet to 110-feet; therefore, additional right-of-way will be needed for the improvements to Neptune Road.
- Osceola County has limited funding for improving their transportation system. Neptune Road is their highest priority; however, funds for full right-of-way needs and construction have not been identified.

Typical Sections Considered

- 4-lane divided roadway, buffered bicycle lanes, shared use path (12-foot) on one side of the road and 5-foot sidewalk on the other side
    - There was a safety concern about the pathway crossing the widened roadway and potential origins/destinations on the opposite side of the road from the pathway (i.e., residences and Partin Triangle Park).
    - There was a desire to provide an option for bicyclists to use a convenient pathway or the on-street bicycle lane.
- 4-lane divided roadway, 4-foot bicycle lanes, shared use paths (12-foot) on each side of the road
    - This typical section meets the County's design standards.
    - This typical section meets the Florida Greenbook standards.
    - This typical section better accommodates younger users accessing Neptune Middle School, its associated public recreational fields, Partin Triangle Park, and various residential developments along Neptune Road.
    - Shared use pathway users can cross at signalized intersections.
    - More advanced bicyclists will potentially utilize the 4-foot bicycle lanes.

- This typical section can be accommodated with a similar amount of right-of-way as the typical section with buffered bicycle lanes and a pathway only on one side (i.e., the other typical section considered and described above).

Preferred Typical Section

After considering the options, the County identified the typical section providing a 4-lane divided roadway, 4-foot bicycle lanes, and shared use paths (12-foot) on each side of the road as the preferred typical section. The Typical Section Package is included in **Attachment A**.

Design Variation Basis

This request is consistent with Section 122 Design Exceptions and Design Variations in the FDOT Design Manual.

Safety and Operational Performance

Bicycle and pedestrian counts along Neptune Road identified the highest volumes at the intersections with Henry Partin Road (26 east-west, and 11 north-south) Neptune Middle School (23 north-south and 0 east-west) and Old Canoe Creek Road (24 north-south and 3 east-west). With the location of Neptune Middle School on the north side of Neptune Road, many of these bicyclists and pedestrians are school age children. Providing the shared use path on both sides of the road is desired to provide separation of the children from traffic on Neptune Road. It is expected that the children will use the shared use paths instead of the bicycle lanes, which is expected to be safer for the children.

The operational performance for bicyclists and pedestrians are expected to be improved for the preferred typical section over conditions with buffered bicycle lanes and a shared use path on only one side of the road.

The operational performance for vehicles traveling the roadway may be negatively impacted if they provide a three-foot clearance of bicyclists in the 4-foot bicycle lanes. However, with the provision of the shared use paths on both sides of the road, the utilization of the 4-foot bicycle lanes is expected to be minimal. In addition, the bicycle lane widens to 5-feet through the intersections with separate right turn lanes. Thus, the actual impact to vehicular operational performance is expected to be minimal.

Level of Service

Per the FDOT Quality/Level of Service Handbook (2013), the level of service (LOS) for bicycles is based on two factors: 1) the existence of paved shoulders/bicycle lanes and 2) motorized vehicle volumes in the adjacent outside travel lane. Based on this methodology,

the proposed 4-foot bicycle lanes will provide the same LOS as 7-foot buffered bicycle lanes.

The LOS for vehicular traffic on the roadway will not be affected by the presence of 4-foot bicycle lanes or 7-foot buffered bicycle lanes.

Right-of-Way Impacts

For reasons described in the Background section describing the development of the preferred typical section, Osceola County desires to provide 12-foot shared use paths on both sides of this section of Neptune Road. The County also plans to provide a 10-foot buffer between the back of curb and the shared use path. Utilizing portions of this buffer to accommodate wider bicycle lanes is problematic because existing power transmission towers run along this segment of Neptune Road within the buffer, and the back of curb for the improved Neptune Road has been offset 4-feet from these poles for approximately 1.9 miles of this segment. Thus, providing 7-foot buffered bicycle lanes will require an additional 6-feet of right-of-way. The preferred alternative is expected to require nine residential relocations. The additional 6-feet or right-of-way is expected to add one additional residential relocation.

The additional right-of-way would also further impact two 4(f) properties (Neptune Middle School Sports Fields and Partin Triangle Park).

If 7-foot buffered bicycle lanes are provided, right-of-way will be required from a Chevron service station located at the northeast corner of Neptune Road at Partin Settlement Road. Currently, no right-of way is required from this property utilizing the 4-foot bicycle lanes.

Community Impacts

No community impacts are anticipated by providing 4-foot bicycle lanes with 12-foot shared use paths compared to providing 7-foot buffered bicycle lanes with 12-foot shared use paths.

Environmental Impacts

While providing 7-foot buffered bicycle lanes will have greater environmental impacts than providing 4-foot bicycle lanes, no significant environmental impacts are anticipated.

Costs

The construction costs for providing 7-foot buffered bicycle lanes instead of 4-foot bicycle lanes is estimated to be $1.69 million. The additional right-of-way costs for providing 7-foot buffered bicycle lanes instead of 4-foot bicycle lanes is estimated to be $2.54 million. Thus, the total cost for providing buffered bicycle lanes is estimated to be $4.23 million.

Usability

This consideration includes usability by all modes of transportation, and long term and cumulative effects on adjacent sections of the roadway. As describe in the Background section above, Osceola County considered the usability of all modes of travel, as well as the travel by elementary students along the corridor in developing their preferred typical section. It is the opinion of the County that their preferred typical section provides the appropriate usability for the proposed improvement.

In addition, the adjacent segment of Neptune Road to the west has 4-foot bicycle lanes and Canoe Creek Road (south of its intersection with Neptune Road) has 4-foot bicycle lanes.

Conclusion and Recommendation

Based on the above reasons, the provision of 4-foot bicycle lanes plus 12-foot shared use paths on both sides of Neptune Road provides the appropriate balance of all design impacts. Furthermore, the provision of 7-foot buffered bicycle lanes is impractical as the proposed 4-foot bicycle lanes will connect to existing 4-foot bicycle lanes on Neptune Road (west of Partin Settlement Road) and Old Canoe Creek Road (south of Neptune Road).

It is recommended that the Department approve this design variation request for the use of 4-foot bicycle lanes plus 12-foot shared use paths instead of providing 7-foot buffered bicycle lanes.

This document has been digitally signed and sealed by:

Leon F Burkett

Digitally signed by Leon F Burkett
Date: 2019.12.11 16:59:42 -05'00'

Printed copies of this document are not considered signed and sealed. The signature must be verified on the electric documents.

Kimley-Horn
189 South Orange Ave., Suite 1000
Orlando, FL 32801
Tel: 407-898-1511
Certificate of Authorization 696
Vendor No: Fred Burkett, P.E. No. 45825

Mario J Bizzio

Digitally signed by Mario J Bizzio
Date: 2019.12.18 09:50:37 -05'00'

Mario Bizzio, P.E.

FDOT District Design Engineer

ATTACHMENT A

Typical Section Package

OSCEOLA COUNTY

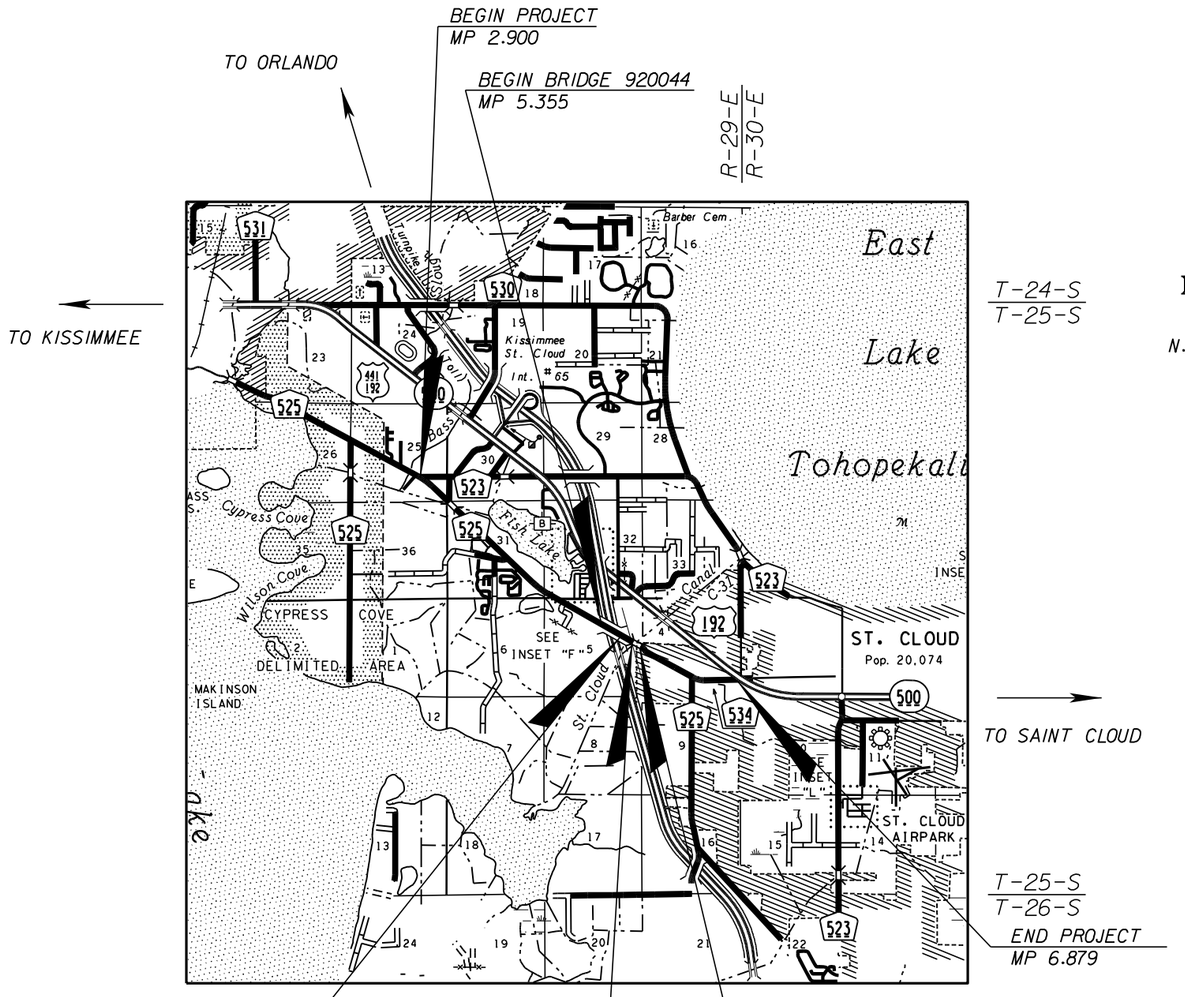
TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 445415-1

OSCEOLA COUNTY (92550000)(92540000)

CR 525 (NEPTUNE ROAD)

RECONSTRUCTION OF NEPTUNE ROAD FROM 2-LANE TO 4-LANE



N

N.T.S.

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

Leon F Burkett

Digitally signed by Leon F Burkett
Date: 2020.06.26 10:37:30 -04'00'

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON THE ELECTRIC DOCUMENTS.

L. FREDERICK BURKETT LICENSE No 45825 STATE OF FLORIDA PROFESSIONAL ENGINEER

KIMLEY-HORN
189 SOUTH ORANGE AVE., SUITE 1000
ORLANDO, FLORIDA 32801
TEL: 407-898-1511
CERTIFICATE OF AUTHORIZATION 696
VENDOR NO:
FRED BURKETT, P.E. NO. 45825

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004 F.A.C.

TYPICAL SECTION PACKAGE

FDOT CONCURRENCE

Mario J Bizzio — Digitally signed by Mario J Bizzio Date: 2020.08.12 09:59:56 -04'00'
MARIO BIZZIO, PE
FDOT DISTRICT DESIGN ENGINEER

Loreen Bobo — Digitally signed by: loreen.bobo@dot.state.fl.us DN: CN = loreen.bobo@dot.state.fl.us Date: 2020.08.12 10:36:03 -05'00'
LOREEN BOBO, PE
FDOT DISTRICT DIRECTOR OF TRANSPORTATION DEVELOPMENT

James S Stroz — Digitally signed by James S Stroz Date: 2020.08.12 10:26:22 -04'00'
JIM STROZ, PE
FDOT DISTRICT TRAFFIC OPERATIONS ENGINEER

OSCEOLA COUNTY APPROVAL

Tawny H. Olore — Digitally signed by Tawny H. Olore Date: 2020.06.29 15:54:42 -04'00'
TAWNY OLORE, PE
EXECUTIVE DIRECTOR
TRANSPORTATION & TRANSIT

2020.06.29 15:38:03 -04'00'
B. TODD HUDSON, PE
COUNTY TRANSPORTATION ENGINEER

Kathy Lee — Digitally signed by Kathy Lee Date: 2020.06.30 16:21:59 -04'00'
KATHY LEE, PE
COUNTY TRAFFIC OPERATIONS ENGINEER

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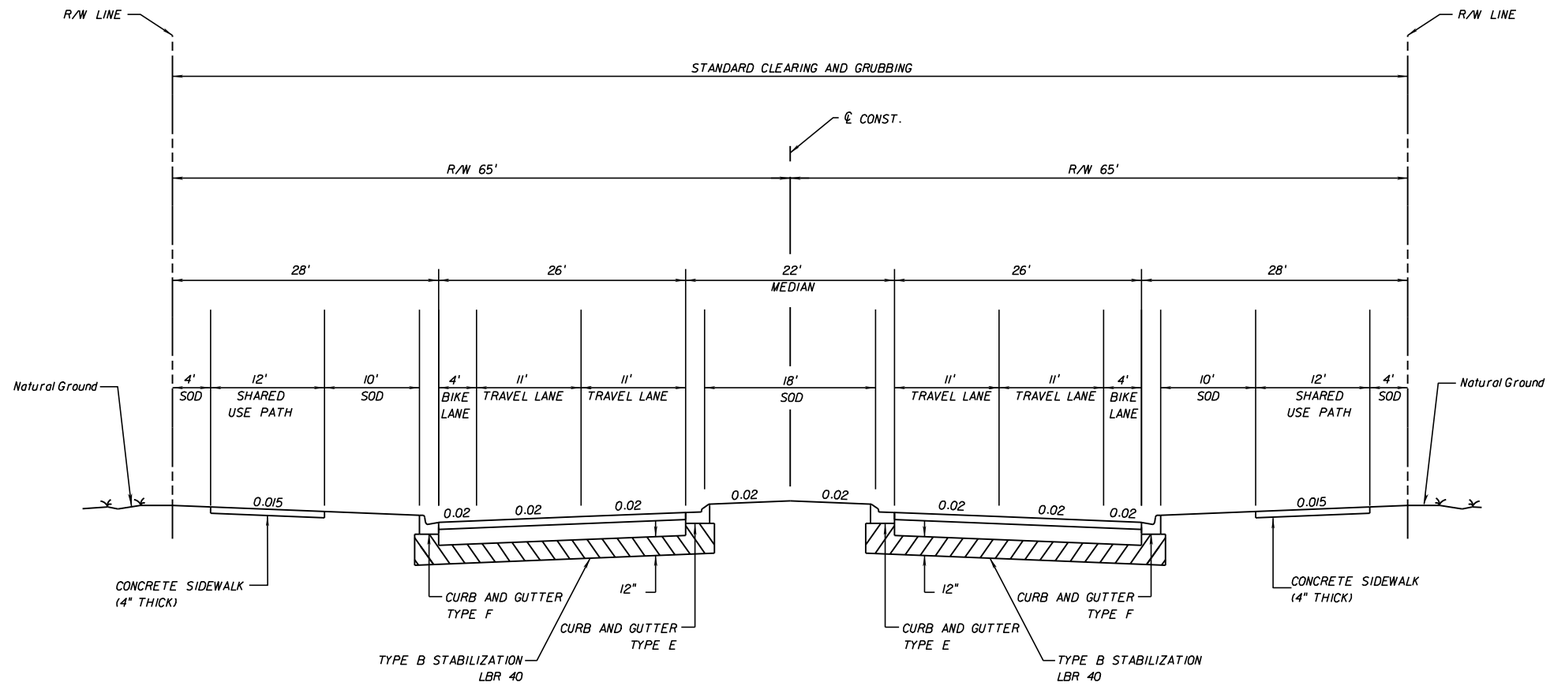

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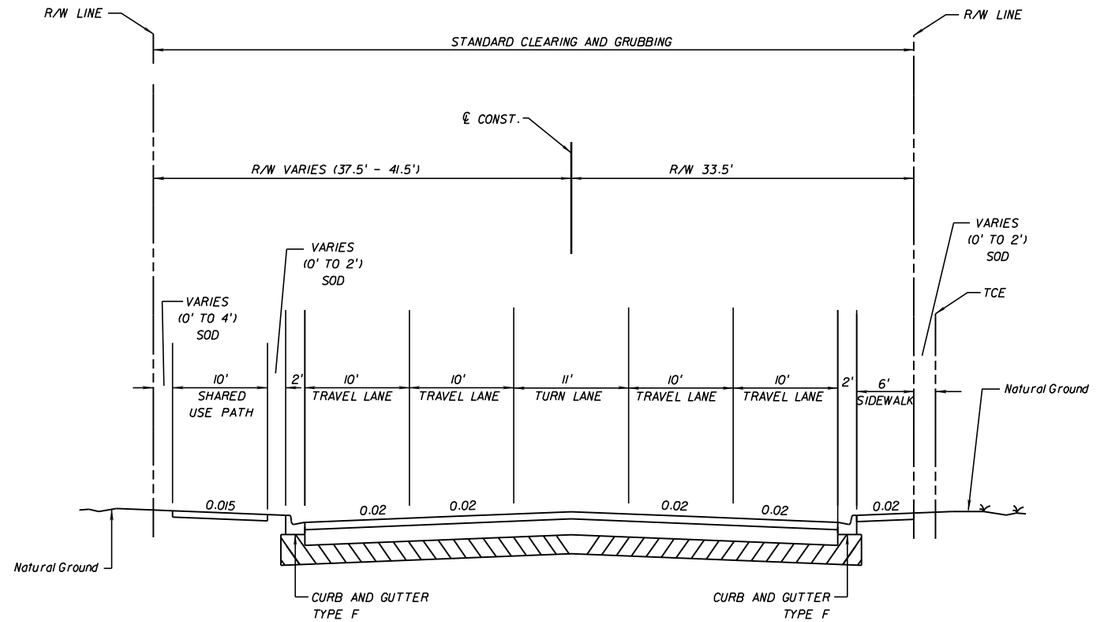

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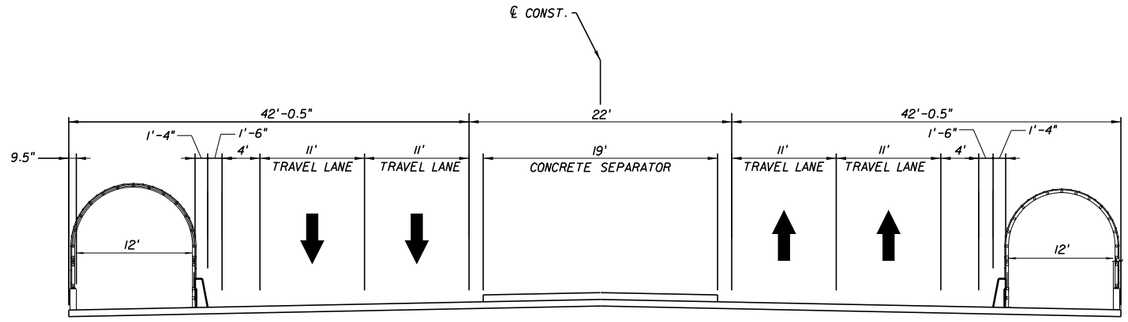
TYPICAL SECTION NO.3
NEPTUNE ROAD



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MEMORANDUM

To: Mario Bizzio, P.E.

From: Fred Burkett, P.E. and Clif Tate, P.E.
Kimley-Horn and Associates, Inc.

Date: December 11, 2019

Subject: Neptune Road PD&E – Osceola County, Florida
FPID: 445415-1
Design Variation Request
Segment 2: Old Canoe Creek Road to US 192

Description

Osceola County is conducting a Project Development and Environment (PD&E) study for improving Neptune Road, from Partin Settlement Road to US 192. While this is a county road, it is being processed similar to FDOT's Local Agency Program (LAP) with FDOT review throughout the process. Based on the LAP Manual (section 19.4), the FDOT Design Manual is to be used for design criteria and standards. This segment of the project meets all of these standards except for not providing bicycle lanes (in addition to a 10-foot shared use path on the north side of the road). **This design variation request is for the Department to approve providing a shared use path in lieu of bicycle lanes on this segment.**

Background

This section summarizes the County's decision-making process for determining the appropriate Typical Section for Neptune Road, from Old Canoe Creek Road to US 192.

Existing Conditions

- An 8-foot shared use path (Neptune Road Pathway) is on the north side of Neptune Road, from Old Canoe Creek Road to US 192 (0.5 miles).
- Current use of the pathway is a wide cross-section of users, including older walkers, joggers, parents with strollers, and younger bicyclists and pedestrians.
- No other bicycle or pedestrian facilities are located within this segment of Neptune Road.
- The existing right-of-way ranges from 40-feet to 60-feet; therefore, additional right-of-way will be needed for the improvements to Neptune Road.

- Osceola County has limited funding for improving their transportation system. Neptune Road is their highest priority; however, funds for full right-of-way needs and construction have not been identified.

Typical Sections Considered

- 4-lane undivided roadway, shared use path (10-foot) on the north side of the road and 6-foot sidewalk on the south side
    - This typical section meets the County's design standards.
    - This typical section meets the Florida Greenbook standards.
    - While minimizing additional right-of-way needed, there was a concern about left turning vehicles at driveways disrupting the flow of traffic.
- 5-lane roadway (including a center two way left turn lane), shared use path (10-foot) on the north side of the road and a 6-foot sidewalk on the south side.
    - This typical section meets the County's design standards.
    - This typical section meets the Florida Greenbook standards.
    - This typical section better accommodates vehicles turning left at driveways.
- 5-lane roadway (including a center two way left turn lane) with 7-foot buffered bicycle lanes, a shared use path (10-foot) on the north side of the road and a 6-foot sidewalk on the south side.
    - This typical section meets the Florida Design Manual standards.
- 5-lane roadway (including a center two way left turn lane) with 4-foot bicycle lanes, a shared use path (10-foot) on the north side of the road and a 6-foot sidewalk on the south side.
    - This typical section meets the County's design standards.
    - This typical section meets the Florida Greenbook standards.
    - The bicycle lane width matches the bicycle lanes provided to the west of Old Canoe Creek Road.

Preferred Typical Section

After considering the options, the County identified the typical section providing a 5-lane roadway (see note below), with a shared use path (10-foot) on the north side and a 6-foot sidewalk on the south side as the preferred typical section for Neptune Road, form Old Canoe Creek Road to US 192. The Typical Section Package is included in **Attachment A**.

Due to right-of-way constraints, the typical section will vary to minimize business damages and right-of-way costs associated with impacting the drive isle for the shopping center (see the discussion and exhibit under Right-of-Way Impacts). At this location, for approximately 700 feet, the center two way left turn lane will not be provided.

Design Variation Basis

This request is consistent with Section 122 Design Exceptions and Design Variations in the FDOT Design Manual.

Safety and Operational Performance

Given the right-of-way constraints, and the existing shared use path serving this segment, the Neptune Road PD&E Study Team concluded that providing a widened shared use path on the north side of Neptune Road (along with a sidewalk on the south side of Neptune Road) would provide better safety and operational conditions for bicyclists compared to providing bicycle lanes.

Level of Service

Per the FDOT Quality/Level of Service Handbook (2013), the level of service (LOS) for bicycles is based on two factors: 1) the existence of paved shoulders/bicycle lanes and 2) motorized vehicle volumes in the adjacent outside travel lane. Based on this methodology, the proposed 10-foot shared use path will provide the same LOS as 7-foot buffered bicycle lanes, as well as 4-foot bicycle lanes.

The LOS for vehicular traffic on the roadway will not be affected by the presence of the multi-use path or 7-foot buffered bicycle lanes or 4-foot bicycle lanes.

Right-of-Way Impacts

Osceola County desires to maintain the Neptune Road Pathway on the north side of the road in this segment. Thus, providing 7-foot buffered bicycle lanes will require an additional 14-feet of right-of-way. Similarly, providing 4-foot bicycle lanes will require an additional 8-feet of right-of-way. The preferred alternative is expected to impact three commercial properties. The additional 14-feet or 8-feet of right-of-way is expected to impact one additional commercial parcel.

The following exhibit illustrates the pinch point for the right-of-way on this segment of Neptune Road (designated by the red arrow). The preferred alternative has been developed to avoid impacting the adjacent parcel at this location because it would restrict the shopping center's internal circulation to access loading areas and additional parking (designated by the yellow circle). Providing bicycle lanes (either 7-foot buffered bicycle lanes or 4-foot bicycle lanes) on this segment of Neptune Road would create business damages for the shopping center.

Community Impacts
No community impacts are anticipated by providing a 10-foot shared use path compared to providing bicycle lanes.

Environmental Impacts
While providing bicycle lanes will have greater environmental impacts than not providing bicycle lanes, no significant environmental impacts are anticipated.

Costs
The construction costs for providing 7-foot buffered bicycle lanes is estimated to be $440,000. The additional right-of-way costs for providing 7-foot buffered bicycle lanes is estimated to be $7.49 million. Thus, the total cost for providing 7-foot buffered bicycle lanes is estimated to be $7.93 million.

The construction costs for providing 4-foot bicycle lanes is estimated to be $250,000. The additional right-of-way costs for providing 4-foot bicycle lanes is estimated to be $6.92 million. Thus, the total cost for providing 4-foot bicycle lanes is estimated to be $7.17

million.

Usability
This consideration includes usability by all modes of transportation, and long term and cumulative effects on adjacent sections of the roadway. Osceola County considered the

usability of all modes of travel in developing their preferred typical section. It is the opinion of the County that their preferred typical section provides the appropriate usability for the proposed improvement.

Conclusion and Recommendation

Based on the above reasons, the provision of a 10-foot shared use path on the north side of Neptune Road and a 6-foot sidewalk on the south side of Neptune Road while not providing bicycle lanes on Neptune Road from Old Canoe Creek Road to US 192 provides the appropriate balance of all design impacts. Furthermore, the provision of bicycle lanes is impractical due to the high ROW costs, as well as recognizing that the shared use path would serve bicyclists.

It is recommended that the Department approve this design variation request to provide a shared use path instead of on-road bicycle lanes on Neptune Road, from Old Canoe Creek Road to US 192.

This document has been digitally signed and sealed by:

Leon F Burkett
Digitally signed by Leon F Burkett
Date: 2019.12.11 17:00:41 -05'00'

Printed copies of this document are not considered signed and sealed. The signature must be verified on the electric documents.

Kimley-Horn
189 South Orange Ave., Suite 1000
Orlando, FL 32801
Tel: 407-898-1511
Certificate of Authorization 696
Vendor No: Fred Burkett, P.E. No. 45825

Mario J Bizzio
Digitally signed by Mario J Bizzio
Date: 2019.12.18 09:51:40 -05'00'

Mario Bizzio, P.E.

FDOT District Design Engineer

ATTACHMENT A

Typical Section Package

OSCEOLA COUNTY

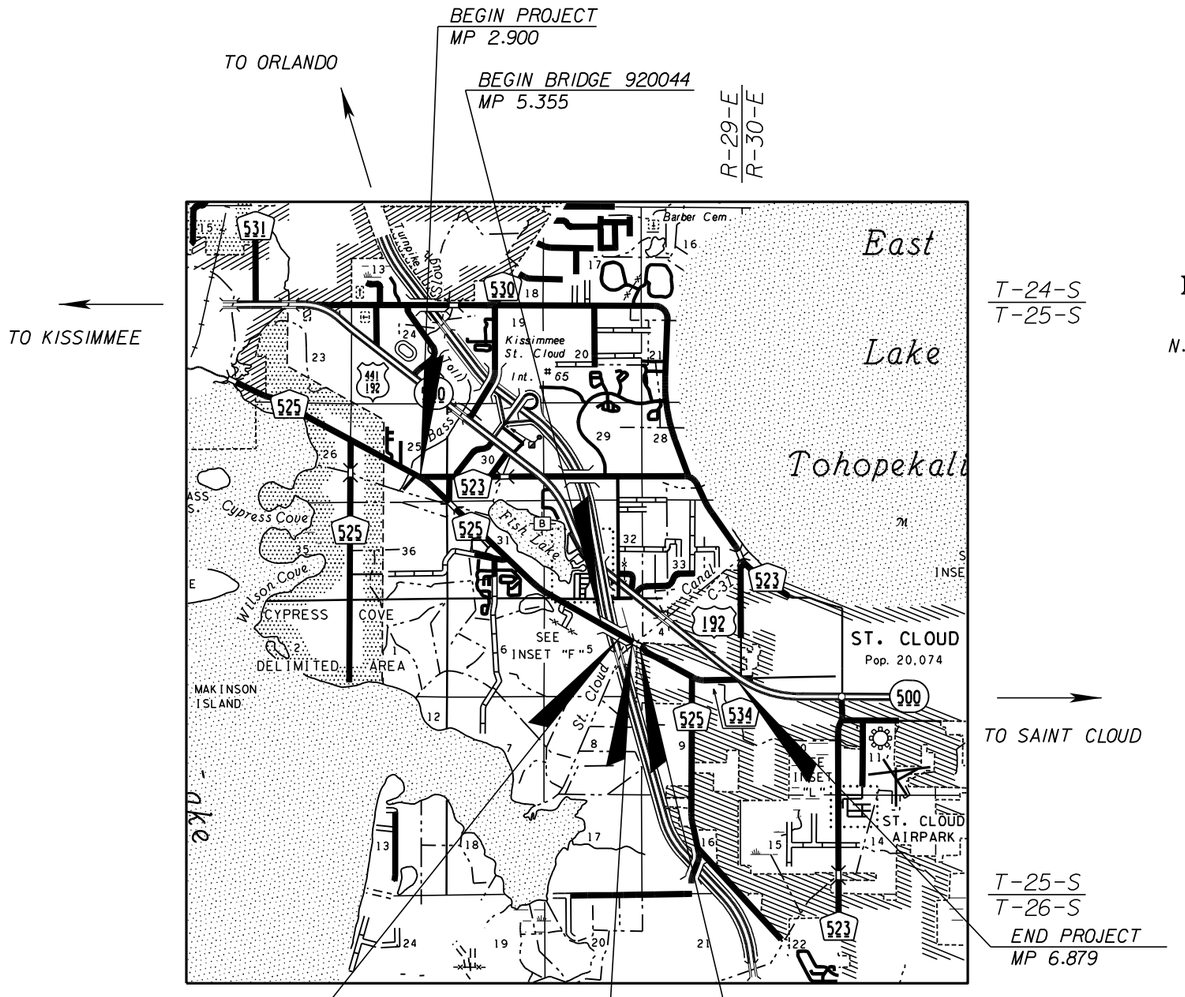
TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 445415-1

OSCEOLA COUNTY (92550000)(92540000)

CR 525 (NEPTUNE ROAD)

RECONSTRUCTION OF NEPTUNE ROAD FROM 2-LANE TO 4-LANE



N

N.T.S.

THIS DOCUMENT HAS BEEN DIGITALLY SIGNED AND SEALED BY:

Leon F Burkett

Digitally signed by Leon F Burkett
Date: 2020.06.26 10:37:30 -04'00'

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON THE ELECTRIC DOCUMENTS.

L. FREDERICK BURKETT LICENSE No 45825 STATE OF FLORIDA PROFESSIONAL ENGINEER

KIMLEY-HORN
189 SOUTH ORANGE AVE., SUITE 1000
ORLANDO, FLORIDA 32801
TEL: 407-898-1511
CERTIFICATE OF AUTHORIZATION 696
VENDOR NO:
FRED BURKETT, P.E. NO. 45825

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004 F.A.C.

TYPICAL SECTION PACKAGE

FDOT CONCURRENCE

Mario J Bizzio — Digitally signed by Mario J Bizzio Date: 2020.08.12 09:59:56 -04'00'
MARIO BIZZIO, PE
FDOT DISTRICT DESIGN ENGINEER

Loreen Bobo — Digitally signed by: loreen.bobo@dot.state.fl.us DN: CN = loreen.bobo@dot.state.fl.us Date: 2020.08.12 10:36:03 -05'00'
LOREEN BOBO, PE
FDOT DISTRICT DIRECTOR OF TRANSPORTATION DEVELOPMENT

James S Stroz — Digitally signed by James S Stroz Date: 2020.08.12 10:26:22 -04'00'
JIM STROZ, PE
FDOT DISTRICT TRAFFIC OPERATIONS ENGINEER

OSCEOLA COUNTY APPROVAL

Tawny H. Olore — Digitally signed by Tawny H. Olore Date: 2020.06.29 15:54:42 -04'00'
TAWNY OLORE, PE
EXECUTIVE DIRECTOR
TRANSPORTATION & TRANSIT

2020.06.29 15:38:03 -04'00'
B. TODD HUDSON, PE
COUNTY TRANSPORTATION ENGINEER

Kathy Lee — Digitally signed by Kathy Lee Date: 2020.06.30 16:21:59 -04'00'
KATHY LEE, PE
COUNTY TRAFFIC OPERATIONS ENGINEER

FINANCIAL PROJECT ID	SHEET NO.
445415-1	1

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
(X)	C3R : RESIDENTIAL	( )	C6 : URBAN CORE
( )	N/A : LA FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLL.
( )	FREEWAY/EXPWY.	( )	MINOR COLL.
( )	PRINCIPAL ARTERIAL	( )	LOCAL
(X)	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
( ) STATE HIGHWAY SYSTEM
(X) OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE W/Service Roads
( ) 3 - RESTRICTIVE W/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE W/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE W/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE W/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

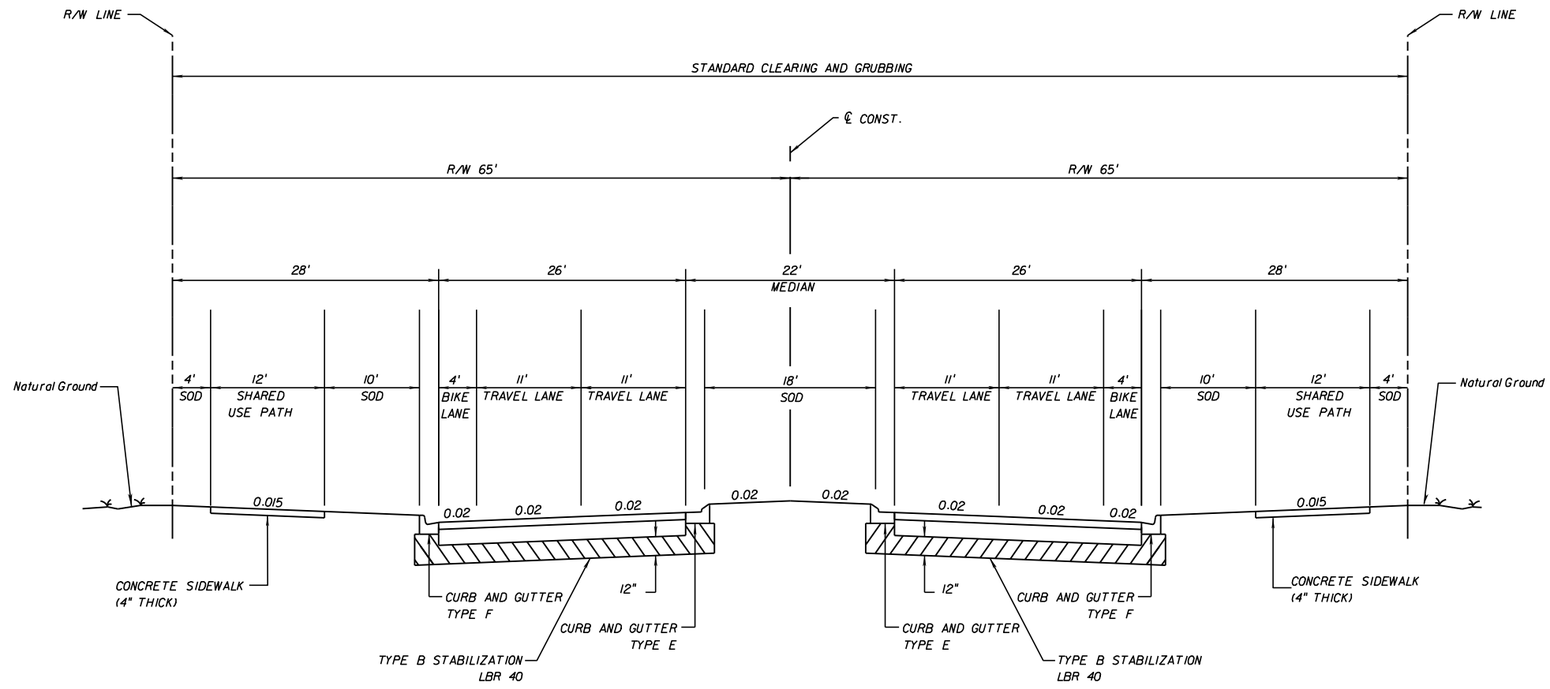
CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

7-FOOT BUFFERED BIKE LANES

TYPICAL SECTION NO.1
NEPTUNE ROAD



TYPICAL SECTION

CR 525
MP 2.9000 TO MP 6.342

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 26,000
ESTIMATED OPENING YEAR = 2025 AADT = 30,000
ESTIMATED DESIGN YEAR = 2045 AADT = 43,000
K = 9% D = 57.9% T (24 HOUR) = 5.11%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
445415-1	2

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : RESIDENTIAL	( )	C6 : URBAN CORE
( )	N/A : LA FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLL.
( )	FREEWAY/EXPWY.	(X)	MINOR COLL.
( )	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
( ) STATE HIGHWAY SYSTEM
(X) OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE W/Service Roads
( ) 3 - RESTRICTIVE W/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE W/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE W/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE W/1320 ft. Signal Spacing
(X) 7 - BOTH MEDIAN TYPES

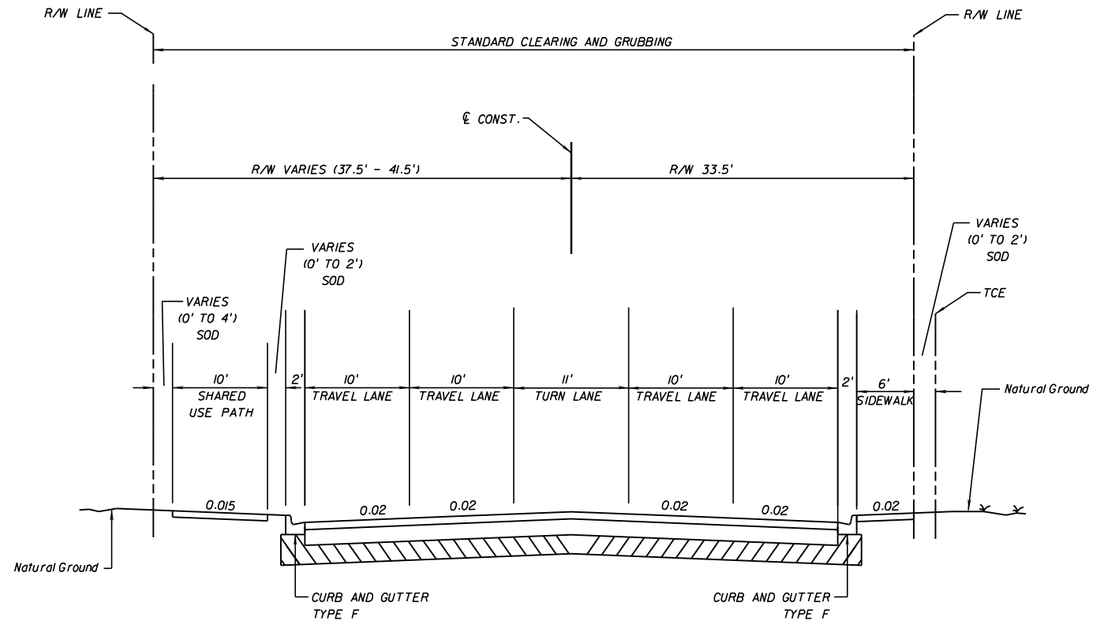
CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

7-FOOT BUFFERED BIKE LANES

TYPICAL SECTION NO.2
NEPTUNE ROAD



TYPICAL SECTION

CR 525
MP 6.342 TO MP 6.879

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 21,000
ESTIMATED OPENING YEAR = 2025 AADT = 23,000
ESTIMATED DESIGN YEAR = 2045 AADT = 27,000
K = 9% D = 57.9% T (24 HOUR) = 5.11%
DESIGN SPEED = 35 MPH
POSTED SPEED = 35 MPH

FINANCIAL PROJECT ID	SHEET NO.
445415-1	3

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
(X) C3R : RESIDENTIAL
( ) N/A : LA FACILITY
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
(X) MINOR ARTERIAL
( ) MAJOR COLL.
( ) MINOR COLL.
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
( ) STATE HIGHWAY SYSTEM
(X) OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE W/Service Roads
( ) 3 - RESTRICTIVE W/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE W/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE W/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE W/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

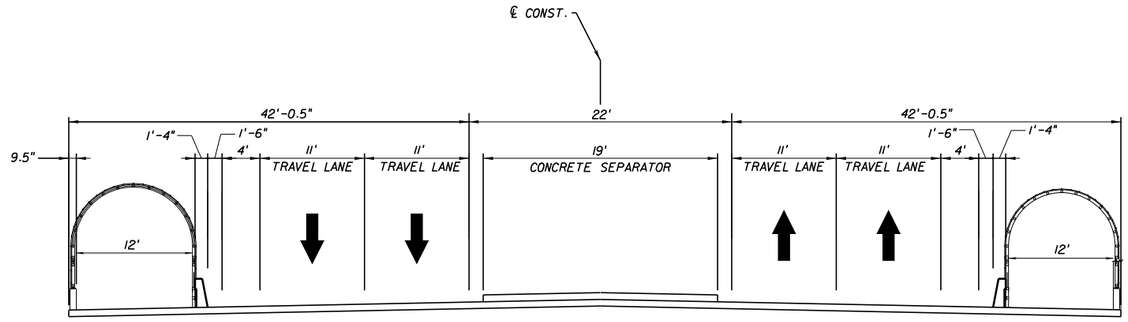
CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

7-FOOT BUFFERED BIKE LANES

TYPICAL SECTION NO.3
NEPTUNE ROAD



BRIDGE 924049
MP 5.656 TO MP 5.672

TRAFFIC DATA

CURRENT YEAR = 2018 AADT = 26,000
ESTIMATED OPENING YEAR = 2025 AADT = 30,000
ESTIMATED DESIGN YEAR = 2045 AADT = 43,000
K = 9% D = 57.9% T (24 HOUR) = 5.11%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
445415-1	4

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APPENDIX I

Cost Estimates

Date: 11/21/2019 9:55:45 AM

FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: 445415-1-52-01 **Letting Date:** 01/2099

Description: Neptune Road widening from Partin Settlement road to SR 192

District: 05 **County:** 92 OSCEOLA **Market Area:** 08 **Units:** English
Contract Class: **Lump Sum Project:** N **Design/Build:** N **Project Length:** 3.911 MI

Project Manager:

Version 2 Project Grand Total **$35,862,092.92**
Description: Neptune Road widening from Partin Settlement to SR 192 (Updated by KNICEHM on 11/13/2019)

Sequence: 1 NDU - New Construction, Divided, Urban **Net Length:** 3.436 MI
18,142 LF

Description: 4-Lane urban, 11-foot travel lanes, 4-foot bike lanes, 12-foot shared use path on both sides. Requires 130 feet of R/W.

EARTHWORK COMPONENT

User Input Data

Description	Value
Standard Clearing and Grubbing Limits L/R	65.00 / 65.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	3.436
Top of Structural Course For Begin Section	102.00
Top of Structural Course For End Section	102.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	2 to 1 / 2 to 1
Median Shoulder Cross Slope L/R	0.00 % / 0.00 %
Outside Shoulder Cross Slope L/R	0.00 % / 0.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	54.14	AC	$9,000.00	$487,260.00
120-6	EMBANKMENT	133,297.25	CY	$8.25	$1,099,702.31
	Earthwork Component Total				$1,586,962.31

ROADWAY COMPONENT

User Input Data

Description	Value
Number of Lanes	4
Roadway Pavement Width L/R	26.00 / 26.00
Structural Spread Rate	330
Friction Course Spread Rate	165

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	125,623.83	SY	$4.00	$502,495.32
285-709	OPTIONAL BASE,BASE GROUP 09	104,820.91	SY	$15.00	$1,572,313.65
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	17,295.45	TN	$99.00	$1,712,249.55
337-7-83	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	8,647.72	TN	$137.25	$1,186,899.57

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	15.00
Stabilization Code	N
Base Code	N
Friction Course Code	N

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	2,594.32	TN	$99.00	$256,837.68

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	N
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	2
Solid Stripe No. of Stripes	4
Skip Stripe No. of Paint Applications	2
Skip Stripe No. of Stripes	2

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-1-1	RAISED PAVMT MARK, TYPE B W/O FINAL SURF	1,392.00	EA	$7.00	$9,744.00
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	27.49	GM	$1,037.00	$28,507.13
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	13.74	GM	$478.00	$6,567.72

Peripherals Subcomponent

Description	Value
Off Road Bike Path(s)	0
Off Road Bike Path Width L/R	0.00 / 0.00
Bike Path Structural Spread Rate	0
Noise Barrier Wall Length	780.00
Noise Barrier Wall Begin Height	14.00
Noise Barrier Wall End Height	14.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
534-72-101	SOUND/NOISE BARRIER-INC FOUNDATION, PERM	10,920.00	SF	$37.25	$406,770.00

	Roadway Component Total	$5,682,384.62

SHOULDER COMPONENT

User Input Data

Description	Value
Total Outside Shoulder Width L/R	28.25 / 28.25
Total Outside Shoulder Perf. Turf Width L/R	14.00 / 14.00
Sidewalk Width L/R	12.00 / 12.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-7	CONCRETE CURB & GUTTER, TYPE E	18,142.08	LF	$16.00	$290,273.28
520-1-7	CONCRETE CURB & GUTTER, TYPE E	18,142.08	LF	$16.00	$290,273.28
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	48,378.88	SY	$35.00	$1,693,260.80
570-1-2	PERFORMANCE TURF, SOD	56,442.03	SY	$4.00	$225,768.12

Erosion Control

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	36,284.16	LF	$2.00	$72,568.32
104-11	FLOATING TURBIDITY BARRIER	859.00	LF	$10.50	$9,019.50
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	859.00	LF	$5.50	$4,724.50
104-15	SOIL TRACKING PREVENTION DEVICE	4.00	EA	$3,228.50	$12,914.00
104-18	INLET PROTECTION SYSTEM	176.00	EA	$100.25	$17,644.00
107-1	LITTER REMOVAL	87.45	AC	$37.25	$3,257.51
107-2	MOWING	87.45	AC	$61.00	$5,334.45
	Shoulder Component Total				$2,625,037.76

MEDIAN COMPONENT

User Input Data

Description	Value
Total Median Width	22.00
Performance Turf Width	18.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-7	CONCRETE CURB & GUTTER, TYPE E	36,284.16	LF	$16.00	$580,546.56
520-5-11	TRAF SEP CONC-TYPE I, 4' WIDE	300.00	LF	$47.25	$14,175.00
570-1-2	PERFORMANCE TURF, SOD	36,284.16	SY	$4.00	$145,136.64
	Median Component Total				$739,858.20

DRAINAGE COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	61.85	CY	$1,480.25	$91,553.46
425-1-351	INLETS, CURB, TYPE P-5, <10'	124.00	EA	$5,176.50	$641,886.00

425-1-451	INLETS, CURB, TYPE J-5, <10'	35.00	EA	$7,366.25	$257,818.75
425-1-521	INLETS, DT BOT, TYPE C, <10'	18.00	EA	$3,471.00	$62,478.00
425-2-41	MANHOLES, P-7, <10'	18.00	EA	$4,410.50	$79,389.00
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	9,096.00	LF	$98.50	$895,956.00
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	816.00	LF	$142.00	$115,872.00
430-175-148	PIPE CULV, OPT MATL, ROUND, 48"S/CD	17,184.00	LF	$165.00	$2,835,360.00
570-1-1	PERFORMANCE TURF	1,044.54	SY	$1.75	$1,827.95

Box Culvert 1

Description	Value
Size	12 x 8
Length	102.00
Multiplier	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-4-1	CONC CLASS IV, CULVERTS	180.42	CY	$1,167.00	$210,550.14
415-1-1	REINF STEEL- ROADWAY	21,060.80	LB	$1.00	$21,060.80

Box Culvert 2

Description	Value
Size	10 x 8
Length	185.50
Multiplier	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-4-1	CONC CLASS IV, CULVERTS	248.40	CY	$1,167.00	$289,882.80
415-1-1	REINF STEEL- ROADWAY	29,191.88	LB	$1.00	$29,191.88

Retention Basin 1

Description	Value
Size	2 AC
Multiplier	3
Depth	12.00
Description	Pond 1 A (NOFF Pond 5.77 AC)

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	6.00	AC	$9,000.00	$54,000.00
120-1	REGULAR EXCAVATION	116,160.00	CY	$6.00	$696,960.00
400-2-2	CONC CLASS II, ENDWALLS	54.00	CY	$1,480.25	$79,933.50
425-1-541	INLETS, DT BOT, TYPE D, <10'	3.00	EA	$4,163.50	$12,490.50
425-2-71	MANHOLES, J-7, <10'	3.00	EA	$6,269.50	$18,808.50
430-175-142	PIPE CULV, OPT MATL, ROUND, 42"S/CD	168.00	LF	$168.50	$28,308.00
430-175-160	PIPE CULV, OPT MATL, ROUND, 60"S/CD	600.00	LF	$344.00	$206,400.00
550-10-220	FENCING, TYPE B, 5.1-6.0', STANDARD	3,540.00	LF	$17.50	$61,950.00

550-60-234	FENCE GATE,TYP B,SLIDE/CANT,18.1-20'OPEN	3.00	EA	$2,107.50	$6,322.50
570-1-1	PERFORMANCE TURF	29,040.00	SY	$1.75	$50,820.00

Retention Basin 2

Description	Value
Size	.5 AC
Multiplier	13
Depth	6.00
Description	Pond 2C (Neptune Middle School 6.43 Ac)

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	6.50	AC	$9,000.00	$58,500.00
120-1	REGULAR EXCAVATION	62,920.00	CY	$6.00	$377,520.00
400-2-2	CONC CLASS II, ENDWALLS	234.00	CY	$1,480.25	$346,378.50
425-1-541	INLETS, DT BOT, TYPE D, <10'	13.00	EA	$4,163.50	$54,125.50
425-2-71	MANHOLES, J-7, <10'	13.00	EA	$6,269.50	$81,503.50
430-175-142	PIPE CULV, OPT MATL, ROUND, 42"S/CD	728.00	LF	$168.50	$122,668.00
430-175-160	PIPE CULV, OPT MATL, ROUND, 60"S/CD	1,352.00	LF	$344.00	$465,088.00
550-10-220	FENCING, TYPE B, 5.1-6.0', STANDARD	7,800.00	LF	$17.50	$136,500.00
550-60-234	FENCE GATE,TYP B,SLIDE/CANT,18.1-20'OPEN	13.00	EA	$2,107.50	$27,397.50
570-1-1	PERFORMANCE TURF	31,460.00	SY	$1.75	$55,055.00

Retention Basin 3

Description	Value
Size	1 AC
Multiplier	1
Depth	4.00
Description	Pond 3B (Partin 0.08 Ac)

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	1.00	AC	$9,000.00	$9,000.00
120-1	REGULAR EXCAVATION	6,453.33	CY	$6.00	$38,719.98
400-2-2	CONC CLASS II, ENDWALLS	18.00	CY	$1,480.25	$26,644.50
425-1-541	INLETS, DT BOT, TYPE D, <10'	1.00	EA	$4,163.50	$4,163.50
425-2-71	MANHOLES, J-7, <10'	1.00	EA	$6,269.50	$6,269.50
430-175-142	PIPE CULV, OPT MATL, ROUND, 42"S/CD	56.00	LF	$168.50	$9,436.00
430-175-160	PIPE CULV, OPT MATL, ROUND, 60"S/CD	200.00	LF	$344.00	$68,800.00
550-10-220	FENCING, TYPE B, 5.1-6.0', STANDARD	840.00	LF	$17.50	$14,700.00
550-60-234	FENCE GATE,TYP B,SLIDE/CANT,18.1-20'OPEN	1.00	EA	$2,107.50	$2,107.50
570-1-1	PERFORMANCE TURF	4,840.00	SY	$1.75	$8,470.00

Retention Basin 4

Description	Value
Size	1 AC
Multiplier	1
Depth	12.00
Description	Pond 4A (Neptune Elementary 1.03 Ac.)

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	1.00	AC	$9,000.00	$9,000.00
120-1	REGULAR EXCAVATION	19,360.00	CY	$6.00	$116,160.00
400-2-2	CONC CLASS II, ENDWALLS	18.00	CY	$1,480.25	$26,644.50
425-1-541	INLETS, DT BOT, TYPE D, <10'	1.00	EA	$4,163.50	$4,163.50
425-2-71	MANHOLES, J-7, <10'	1.00	EA	$6,269.50	$6,269.50
430-175-142	PIPE CULV, OPT MATL, ROUND, 42"S/CD	56.00	LF	$168.50	$9,436.00
430-175-160	PIPE CULV, OPT MATL, ROUND, 60"S/CD	200.00	LF	$344.00	$68,800.00
550-10-220	FENCING, TYPE B, 5.1-6.0', STANDARD	840.00	LF	$17.50	$14,700.00
550-60-234	FENCE GATE,TYP B,SLIDE/CANT,18.1-20'OPEN	1.00	EA	$2,107.50	$2,107.50
570-1-1	PERFORMANCE TURF	4,840.00	SY	$1.75	$8,470.00

Retention Basin 5

Description	Value
Size	2 AC
Multiplier	1
Depth	12.00
Description	Pond 5 (BNOB 1.63 Ac.)

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	2.00	AC	$9,000.00	$18,000.00
120-1	REGULAR EXCAVATION	38,720.00	CY	$6.00	$232,320.00
400-2-2	CONC CLASS II, ENDWALLS	18.00	CY	$1,480.25	$26,644.50
425-1-541	INLETS, DT BOT, TYPE D, <10'	1.00	EA	$4,163.50	$4,163.50
425-2-71	MANHOLES, J-7, <10'	1.00	EA	$6,269.50	$6,269.50
430-175-142	PIPE CULV, OPT MATL, ROUND, 42"S/CD	56.00	LF	$168.50	$9,436.00
430-175-160	PIPE CULV, OPT MATL, ROUND, 60"S/CD	200.00	LF	$344.00	$68,800.00
550-10-220	FENCING, TYPE B, 5.1-6.0', STANDARD	1,180.00	LF	$17.50	$20,650.00
550-60-234	FENCE GATE,TYP B,SLIDE/CANT,18.1-20'OPEN	1.00	EA	$2,107.50	$2,107.50
570-1-1	PERFORMANCE TURF	9,680.00	SY	$1.75	$16,940.00
	Drainage Component Total				$9,332,948.76

INTERSECTIONS COMPONENT

Intersection 1

Description	Value
Mainline No. of Left Turn Lanes	0
Mainline No. of Right Turn Lanes	0
Mainline Design Speed	45
Cross Street Thru Lanes	2
Cross Street No. of Left Turn Lanes	1
Cross Street No. of Right Turn Lanes	0
Cross Street Design Speed	35
T-Intersection?	Y
Multiplier	1
Description	Ames Haven Road

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	1.18	AC	$9,000.00	$10,620.00
120-1	REGULAR EXCAVATION	628.29	CY	$6.00	$3,769.74
160-4	TYPE B STABILIZATION	382.56	SY	$4.00	$1,530.24
160-4	TYPE B STABILIZATION	1,517.01	SY	$4.00	$6,068.04
285-709	OPTIONAL BASE,BASE GROUP 09	382.56	SY	$15.00	$5,738.40
285-709	OPTIONAL BASE,BASE GROUP 09	1,517.01	SY	$15.00	$22,755.15
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	63.12	TN	$99.00	$6,248.88
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	250.31	TN	$99.00	$24,780.69
337-7-83	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	31.56	TN	$137.25	$4,331.61
337-7-83	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	125.15	TN	$137.25	$17,176.84
520-1-7	CONCRETE CURB & GUTTER, TYPE E	101.42	LF	$16.00	$1,622.72
520-1-10	CONCRETE CURB & GUTTER, TYPE F	473.00	LF	$27.00	$12,771.00
520-5-11	TRAF SEP CONC-TYPE I, 4' WIDE	195.00	LF	$47.25	$9,213.75
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	262.78	SY	$35.00	$9,197.30
522-2	CONCRETE SIDEWALK AND DRIVEWAYS, 6"	86.94	SY	$57.50	$4,999.05
570-1-1	PERFORMANCE TURF	262.78	SY	$1.75	$459.86
	Intersections Component Total				$141,283.28

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	83.00	AS	$351.25	$29,153.75
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	7.00	AS	$1,230.25	$8,611.75
700-2-15	MULTI- POST SIGN, F&I GM, 51-100 SF	7.00	AS	$6,421.00	$44,947.00
700-2-16	MULTI- POST SIGN, F&I GM, 101-200 SF	7.00	AS	$9,797.25	$68,580.75
	Signing Component Total				$151,293.25

SIGNALIZATIONS COMPONENT

Signalization 1

Description	Value
Type	4 Lane Mast Arm
Multiplier	4
Description	Includes signals at the following Cross Prairie Parkway, the middle school, Commerce Center Drive, and a new signal at Ames Haven Road

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	3,000.00	LF	$8.00	$24,000.00
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	1,000.00	LF	$20.25	$20,250.00
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	4.00	PI	$5,629.50	$22,518.00
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	64.00	EA	$693.50	$44,384.00
639-1-112	ELECTRICAL POWER SRV,F&I,OH,M,PUR BY CON	4.00	AS	$2,779.50	$11,118.00
639-2-1	ELECTRICAL SERVICE WIRE, F&I	240.00	LF	$5.25	$1,260.00
649-21-10	STEEL MAST ARM ASSEMBLY, F&I, 60'	16.00	EA	$43,480.25	$695,684.00
650-1-14	VEH TRAF SIGNAL,F&I ALUMINUM, 3 S 1 W	48.00	AS	$998.50	$47,928.00
653-1-11	PEDESTRIAN SIGNAL, F&I LED COUNT, 1 WAY	32.00	AS	$615.00	$19,680.00
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	48.00	EA	$304.50	$14,616.00
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	48.00	AS	$995.00	$47,760.00
665-1-11	PEDESTRIAN DETECTOR, F&I, STANDARD	32.00	EA	$239.00	$7,648.00
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	4.00	AS	$28,483.00	$113,932.00
700-3-101	SIGN PANEL, F&I GM, UP TO 12 SF	16.00	EA	$246.25	$3,940.00

Interconnect Subcomponent

Description	Value
Type	U
Length of Fiber Run	18,140.00
Number of Intersections	4
Percentage of Underpavement Conduit	20.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
633-1-122	FIBER OPTIC CABLE, F&I, UG,13-48	18,140.00	LF	$2.75	$49,885.00
660-2-102	LOOP ASSEMBLY, F&I, TYPE B	16.00	AS	$799.50	$12,792.00
	Signalizations Component Total				$1,137,395.00

LIGHTING COMPONENT

Conventional Lighting Subcomponent

Description	Value
Spacing	MIN

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	18,142.08	LF	$8.00	$145,136.64
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	3,600.93	LF	$20.25	$72,918.83
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	121.00	EA	$693.50	$83,913.50
715-1-13	LIGHTING CONDUCTORS, F&I, INSUL, NO.4-2	66,259.82	LF	$2.25	$149,084.60
715-4-13	LIGHT POLE COMPLETE, F&I-STD, 40'	121.00	EA	$5,630.50	$681,290.50
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	121.00	EA	$566.00	$68,486.00
	Subcomponent Total				$1,200,830.07

Lighting Component Total $1,200,830.07

LANDSCAPING COMPONENT

User Input Data

Description	Value
Cost %	2.00
Component Detail	N

Landscaping Component Total $367,604.59

BRIDGES COMPONENT

Bridge 1

Description	Value
Estimate Type	SF Estimate
Primary Estimate	YES
Length (LF)	146.50
Width (LF)	108.25
Type	Low Level
Cost Factor	1.00
Structure No.	924049
Removal of Existing Structures area	2,600.00
Default Cost per SF	$135.00
Factored Cost per SF	$135.00
Final Cost per SF	**$144.64**
Basic Bridge Cost	**$2,140,914.38**
Description	BRIDGE OVER C-31 CANAL

Bridge Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-3	REMOVAL OF EXISTING STRUCTURES/BRIDGES	2,600.00	SF	$34.50	$89,700.00
400-2-10	CONC CLASS II, APPROACH SLABS	240.56	CY	$460.75	$110,838.02
415-1-9	REINF STEEL- APPROACH SLABS	42,098.00	LB	$1.00	$42,098.00

Bridge 1 Total	$2,383,550.40
Bridges Component Total	$2,383,550.40
Sequence 1 Total	$25,349,148.24

Sequence: 2 NUU - New Construction, Undivided, Urban **Net Length:** 0.475 MI
2,508 LF

Description: 4-lane urban, 6-foot sidewalk on north side, 10-foot shared use path on south side.

EARTHWORK COMPONENT

User Input Data

Description	Value
Standard Clearing and Grubbing Limits L/R	38.00 / 46.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.475
Top of Structural Course For Begin Section	102.00
Top of Structural Course For End Section	102.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	2 to 1 / 2 to 1
Outside Shoulder Cross Slope L/R	0.00 % / 0.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	4.84	AC	$9,000.00	$43,560.00
120-6	EMBANKMENT	11,646.41	CY	$8.25	$96,082.88
	Earthwork Component Total				$139,642.88

ROADWAY COMPONENT

User Input Data

Description	Value
Number of Lanes	4
Roadway Pavement Width L/R	20.00 / 20.00
Structural Spread Rate	330
Friction Course Spread Rate	165

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	12,584.59	SY	$4.00	$50,338.36
285-709	OPTIONAL BASE,BASE GROUP 09	11,146.67	SY	$15.00	$167,200.05
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	1,839.20	TN	$99.00	$182,080.80
337-7-83	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	919.60	TN	$137.25	$126,215.10

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	15.00
Stabilization Code	Y
Base Code	Y
Friction Course Code	Y

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	1,887.69	SY	$4.00	$7,550.76

285-709	OPTIONAL BASE,BASE GROUP 09	1,672.00 SY	$15.00	$25,080.00
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	275.88 TN	$99.00	$27,312.12
337-7-83	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	137.94 TN	$137.25	$18,932.26

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	N
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	2
Solid Stripe No. of Stripes	4
Skip Stripe No. of Paint Applications	2
Skip Stripe No. of Stripes	3

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
706-1-1	RAISED PAVMT MARK, TYPE B W/O FINAL SURF	321.00 EA	$7.00	$2,247.00
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	3.80 GM	$1,037.00	$3,940.60
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	2.85 GM	$478.00	$1,362.30

Peripherals Subcomponent

Description	Value
Off Road Bike Path(s)	0
Off Road Bike Path Width L/R	0.00 / 0.00
Bike Path Structural Spread Rate	0
Noise Barrier Wall Length	0.00
Noise Barrier Wall Begin Height	0.00
Noise Barrier Wall End Height	0.00

Roadway Component Total $612,259.36

SHOULDER COMPONENT

User Input Data

Description	Value
Total Outside Shoulder Width L/R	18.25 / 26.25
Total Outside Shoulder Perf. Turf Width L/R	10.00 / 14.00
Sidewalk Width L/R	6.00 / 10.00

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
520-1-10	CONCRETE CURB & GUTTER, TYPE F	2,508.00 LF	$27.00	$67,716.00
520-1-10	CONCRETE CURB & GUTTER, TYPE F	2,508.00 LF	$27.00	$67,716.00
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	4,458.67 SY	$35.00	$156,053.45
570-1-1	PERFORMANCE TURF	6,688.00 SY	$1.75	$11,704.00

Erosion Control

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	5,016.00	LF	$2.00	$10,032.00
104-11	FLOATING TURBIDITY BARRIER	118.75	LF	$10.50	$1,246.88
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	118.75	LF	$5.50	$653.12
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	$3,228.50	$3,228.50
104-18	INLET PROTECTION SYSTEM	25.00	EA	$100.25	$2,506.25
107-1	LITTER REMOVAL	5.76	AC	$37.25	$214.56
107-2	MOWING	5.76	AC	$61.00	$351.36
	Shoulder Component Total				$321,422.13

DRAINAGE COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	8.55	CY	$1,480.25	$12,656.14
425-1-351	INLETS, CURB, TYPE P-5, <10'	18.00	EA	$5,176.50	$93,177.00
425-1-451	INLETS, CURB, TYPE J-5, <10'	5.00	EA	$7,366.25	$36,831.25
425-1-521	INLETS, DT BOT, TYPE C, <10'	3.00	EA	$3,471.00	$10,413.00
425-2-41	MANHOLES, P-7, <10'	3.00	EA	$4,410.50	$13,231.50
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	1,104.00	LF	$98.50	$108,744.00
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	96.00	LF	$142.00	$13,632.00
430-175-148	PIPE CULV, OPT MATL, ROUND, 48"S/CD	2,376.00	LF	$165.00	$392,040.00
570-1-1	PERFORMANCE TURF	144.40	SY	$1.75	$252.70
	Drainage Component Total				$680,977.59

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	10.00	AS	$351.25	$3,512.50
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	1.00	AS	$1,230.25	$1,230.25
700-2-15	MULTI- POST SIGN, F&I GM, 51-100 SF	1.00	AS	$6,421.00	$6,421.00
	Signing Component Total				$11,163.75

SIGNALIZATIONS COMPONENT

Signalization 1

Description	Value
Type	4 Lane Mast Arm
Multiplier	2
Description	Signals at Old Canoe Creek Road and US 192

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	1,500.00	LF	$8.00	$12,000.00
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	500.00	LF	$20.25	$10,125.00
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	2.00	PI	$5,629.50	$11,259.00
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	32.00	EA	$693.50	$22,192.00
639-1-112	ELECTRICAL POWER SRV,F&I,OH,M,PUR BY CON	2.00	AS	$2,779.50	$5,559.00
639-2-1	ELECTRICAL SERVICE WIRE, F&I	120.00	LF	$5.25	$630.00
649-21-10	STEEL MAST ARM ASSEMBLY, F&I, 60'	8.00	EA	$43,480.25	$347,842.00
650-1-14	VEH TRAF SIGNAL,F&I ALUMINUM, 3 S 1 W	24.00	AS	$998.50	$23,964.00
653-1-11	PEDESTRIAN SIGNAL, F&I LED COUNT, 1 WAY	16.00	AS	$615.00	$9,840.00
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	24.00	EA	$304.50	$7,308.00
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	24.00	AS	$995.00	$23,880.00
665-1-11	PEDESTRIAN DETECTOR, F&I, STANDARD	16.00	EA	$239.00	$3,824.00
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	2.00	AS	$28,483.00	$56,966.00
700-3-101	SIGN PANEL, F&I GM, UP TO 12 SF	8.00	EA	$246.25	$1,970.00

Interconnect Subcomponent

Description	Value
Type	U
Length of Fiber Run	2,805.00
Number of Intersections	2
Percentage of Underpavement Conduit	20.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
633-1-122	FIBER OPTIC CABLE, F&I, UG,13-48	2,805.00	LF	$2.75	$7,713.75
660-2-102	LOOP ASSEMBLY, F&I, TYPE B	8.00	AS	$799.50	$6,396.00
	Signalizations Component Total				$551,468.75

LIGHTING COMPONENT

Conventional Lighting Subcomponent

Description	Value
Spacing	MIN

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	2,508.00	LF	$8.00	$20,064.00
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	497.80	LF	$20.25	$10,080.45
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	17.00	EA	$693.50	$11,789.50
715-1-13	LIGHTING CONDUCTORS, F&I, INSUL, NO.4-2	9,159.90	LF	$2.25	$20,609.78
715-4-13		17.00	EA	$5,630.50	$95,718.50

	LIGHT POLE COMPLETE, F&I-STD, 40'			
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	17.00 EA	$566.00	$9,622.00
	Subcomponent Total			$167,884.22
	Lighting Component Total			$167,884.23
Sequence 2 Total				$2,484,818.69

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FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: 445415-1-52-01 **Letting Date:** 01/2099

Description: Neptune Road widening from Partin Settlement road to SR 192

District: 05 **County:** 92 OSCEOLA **Market Area:** 08 **Units:** English
Contract Class: **Lump Sum Project:** N **Design/Build:** N **Project Length:** 3.911 MI

Project Manager:

Version 2 Project Grand Total **$35,862,092.92**
Description: Neptune Road widening from Partin Settlement to SR 192 (Updated by KNICEHM on 11/13/2019)

Project Sequences Subtotal			**$27,833,966.93**
102-1	Maintenance of Traffic	8.00 %	$2,226,717.35
101-1	Mobilization	8.00 %	$2,404,854.74
Project Sequences Total			**$32,465,539.02**
Project Unknowns		10.00 %	$3,246,553.90
Design/Build		0.00 %	$0.00

Non-Bid Components:

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
999-25	INITIAL CONTINGENCY AMOUNT (DO NOT BID)		LS	$150,000.00	$150,000.00
Project Non-Bid Subtotal					**$150,000.00**
Version 2 Project Grand Total					**$35,862,092.92**

Partin Settlement to Old Canoe Creek Rd.

		TOTAL
R/W Support Costs		
	Direct Labor Costs	740,000
R/W Acquisition Consultant Costs		
	Total Contract Amount	0
Relocation Costs		
	Replacement Housing Costs	
	Owner	
	Tenant	
	Move Cost	
	Residential	
	Non-residential	
	Landlord	
	Non-Categorized Settlements	
	Total	698,000
R/W Land Costs		
	Land, improvements, severance	
	Billboards	
	Subtotal	
	Admin Settlements	
	Litigation Awards	
	Business Damages	
	Owner Appraisal Fees	
	Owner CPA Fees	
	Defendant Attorney Fees	
	Other Condemnation Costs	
	Other Costs	
	Total	11,242,000
ROW Operations		
	Appraisal Fees	
	Business Damage CPA Fes	
	Court Reporter and Witness Fees	
	Demolition Contracts	
	Relocation Consultant	
	Attorney Fees (Outside Counsel)	
	Title Search	
	Hazardous Waste Investigations	
	Other	
	Total	2,557,400
	TOTAL	15,237,400

Old Canoe Creek Road to US 192

Parcels		Roadway ROW			Ponds		TOTAL
	Businesses	3			0		
	Residential	0			0		
	Unimproved	0			0		
	Total		3			0	3
Relocations							
	Businesses	0			0		
	Residential	0			0		
	Unimproved	0			0		
	Total		0			0	0
R/W Support Costs							
	Direct Labor Costs		30,000			0	30,000
R/W Acquisition Consultant Costs							
	Total Contract Amount		0			0	0
Relocation Costs							
	Replacement Housing Costs						
	Owner	0			0		
	Tenant	0			0		
	Move Cost						
	Residential	0			0		
	Non-residential	0			0		
	Landlord	0			0		
	Non-Categorized Settlements	0			0		
	Total		0			0	0
R/W Land Costs							
	Land, improvements, severance	185,000			0		
	Billboards	0			0		
	Subtotal	*185,000*			*0*		
	Admin Settlements	57,000			0		
	Litigation Awards	57,000			0		
	Business Damages	2,000,000			0		
	Owner Appraisal Fees	30,000			0		
	Owner CPA Fees	6,000			0		
	Defendant Attorney Fees	300,000			0		
	Other Condemnation Costs	30,000			0		
	Other Costs	9,000			0		
	Subtotal	*2,489,000*			*0*		
	Total		2,674,000			0	2,674,000
ROW Operations							
	Appraisal Fees	37,000			0		
	Business Damage CPA Fes	0			0		
	Court Reporter and Witness Fees	20,000			0		
	Demolition Contracts	0			0		
	Relocation Consultant	1,500			0		
	Attorney Fees (Outside Counsel)	24,000			0		
	Title Search	2,100			0		
	Hazardous Waste Investigations	50,000			0		
	Other	0			0		
	Total		134,600			0	134,600
	TOTAL		2,838,600			0	2,838,600

Temporary Construction Easement Cost Estimate
Neptune Road PD&E
Old Canoe Creek Road to US 192

Parcels			Cost
	Businesses	13	
	Residential	0	
	Unimproved	3	
	Total	16	
Relocations			
	Businesses	0	
	Residential	0	
	Unimproved	0	
	Total		0
R/W Support Costs			
	Direct Labor Costs		$48,000
R/W Acquisition Consultant Costs			
	Total Contract Amount		$0
Relocation Costs			
	Replacement Housing Costs		
	Owner	$0	
	Tenant	$0	
	Move Cost		
	Residential	$0	
	Non-residential	$0	
	Landlord	$0	
	Non-Categorized Settlements	$0	
	Total		$0
R/W Land Costs			
	Land, improvements, severance	$44,100	
	Billboards	$0	
	Subtotal	*$44,100*	
	Admin Settlements	$0	
	Litigation Awards	$0	
	Business Damages	$0	
	Owner Appraisal Fees	$0	
	Owner CPA Fees	$0	
	Defendant Attorney Fees	$0	
	Other Condemnation Costs	$0	
	Other Costs	$0	
	Subtotal	*$0*	
	Total		$44,100
ROW Operations			
	Appraisal Fees	$9,000	
	Business Damage CPA Fes	$0	
	Court Reporter and Witness Fees	$0	
	Demolition Contracts	$0	
	Relocation Consultant	$0	
	Attorney Fees (Outside Counsel)	$48,000	
	Title Search	$10,900	
	Hazardous Waste Investigations	$0	
	Other	$0	
	Total		$67,900
	TOTAL		$160,000