



O'ROURKE
ENGINEERING & PLANNING

TRAFFIC ANALYSIS

FOR

Lulfs Groves (Astoria)

Prepared for:

**Mr. Steve Garrett
Lucido & Associates
701 SE Ocean Blvd
Stuart, FL 34994**

Prepared by

**O'Rourke Engineering & Planning
3725 S. East Ocean Boulevard
Stuart, Florida 34996**

772-781-7918

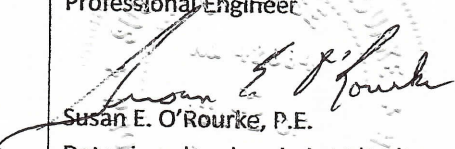
January 5, 2023

Revised August 10, 2023

Revised September 6, 2023

Revised November 29, 2023

SR22111.0

Prepared by: O'Rourke Engineering & Planning Certificate of Authorization: #26869 3725 S. East Ocean Boulevard Stuart, Florida 34996 772-781-7918	Professional Engineer  Susan E. O'Rourke, P.E. Date signed and sealed: 11/29/2023 License #: 42684
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INTRODUCTION

O'Rourke Engineering & Planning was retained to prepare a traffic analysis for the proposed Land Use Plan Amendment associated with several lots located off Glades Cut Off Road in Port St. Lucie, St. Lucie County, Florida. The purpose of this report is to determine the impact of the change in land use on the surrounding roadway system.

In order to make that determination, the following analytical steps were taken:

- summary of the project
- summary of existing lane geometries
- summary of the existing traffic volumes
- assessment of project traffic
- determination of impact area
- summary of short-term cumulative traffic volumes
- summary of levels of service with the project traffic added

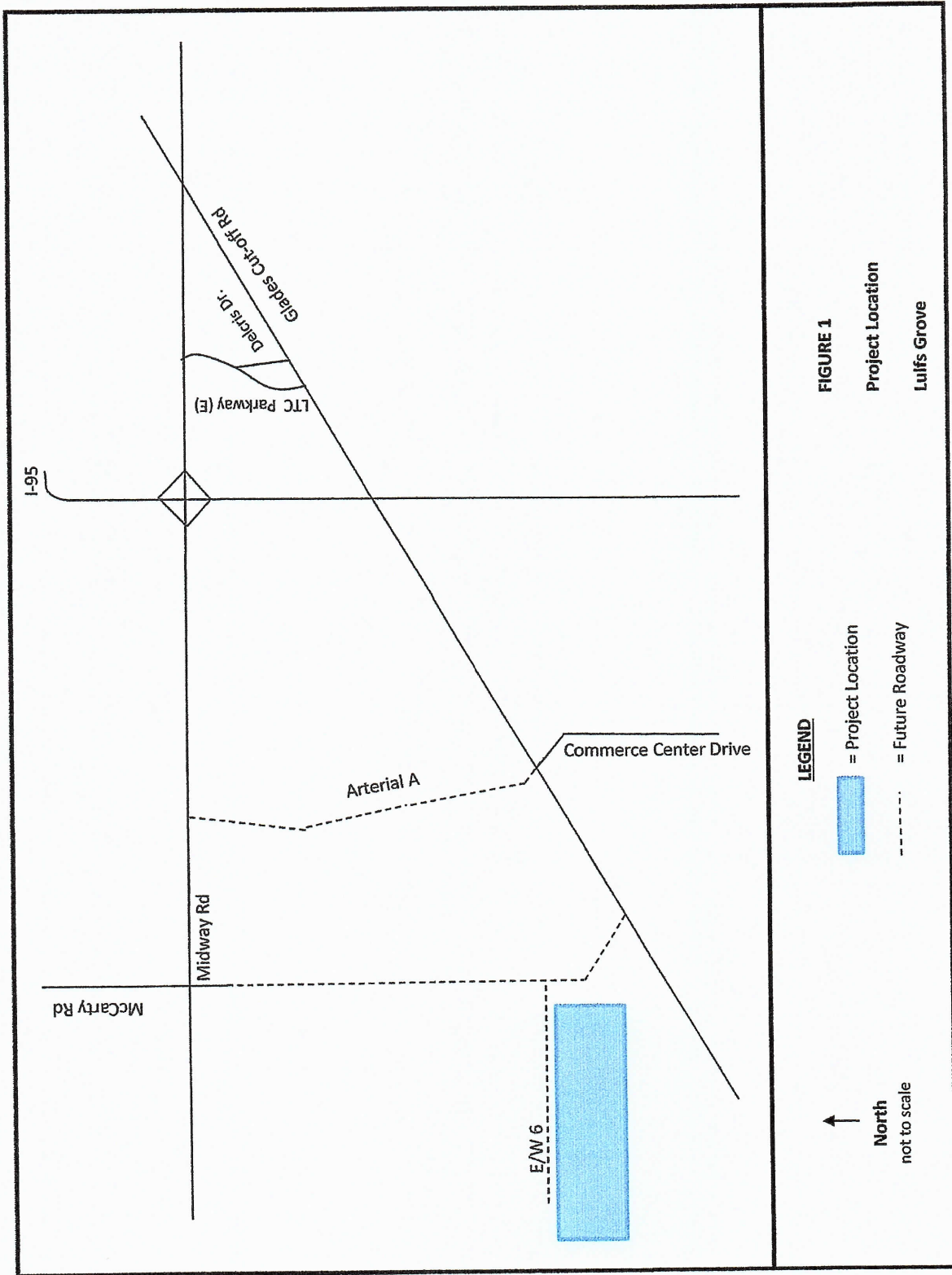
Each of these steps is outlined herein.

PROJECT DESCRIPTION

The subject property consists of two parcels totaling approximately 464.5 acres located off of Glades Cut Off Road in Port St. Lucie, St. Lucie County, Florida. The property has an existing future land use of CS (Service Commercial), LI (Light Industrial), and ROI (Residential, Office, Industrial) with a text amendment allowing for a maximum of 500 multi-family dwelling units, 2,400,000 square feet of industrial, 200,000 square feet of office, 200,000 square feet of institutional, and 200,000 square feet of retail. The comprehensive plan pages are included in **Appendix A**. The proposal is to change the land use to RL (Low Density Residential), General Commercial (CG), Service Commercial (CS), Institutional (I), and Open Space Conservation (OSC).

The proposed future land use would be capped at a total of 1,350 single family dwelling units, 200,000 square feet of retail, 150,000 square feet of office, and 50,000 square feet of institutional. A 12-acre open space area/park space is also proposed for the site. The project location is shown in **Figure 1**.

Appendix A shows the details of the site.



ROADWAY CONDITIONS

The study area is defined as the roadways upon which the project has an impact of 3% of the level of service capacity of the roadway and 1% on the adjacent link. Once the project traffic was assigned, the study area was refined based on the impact percentages.

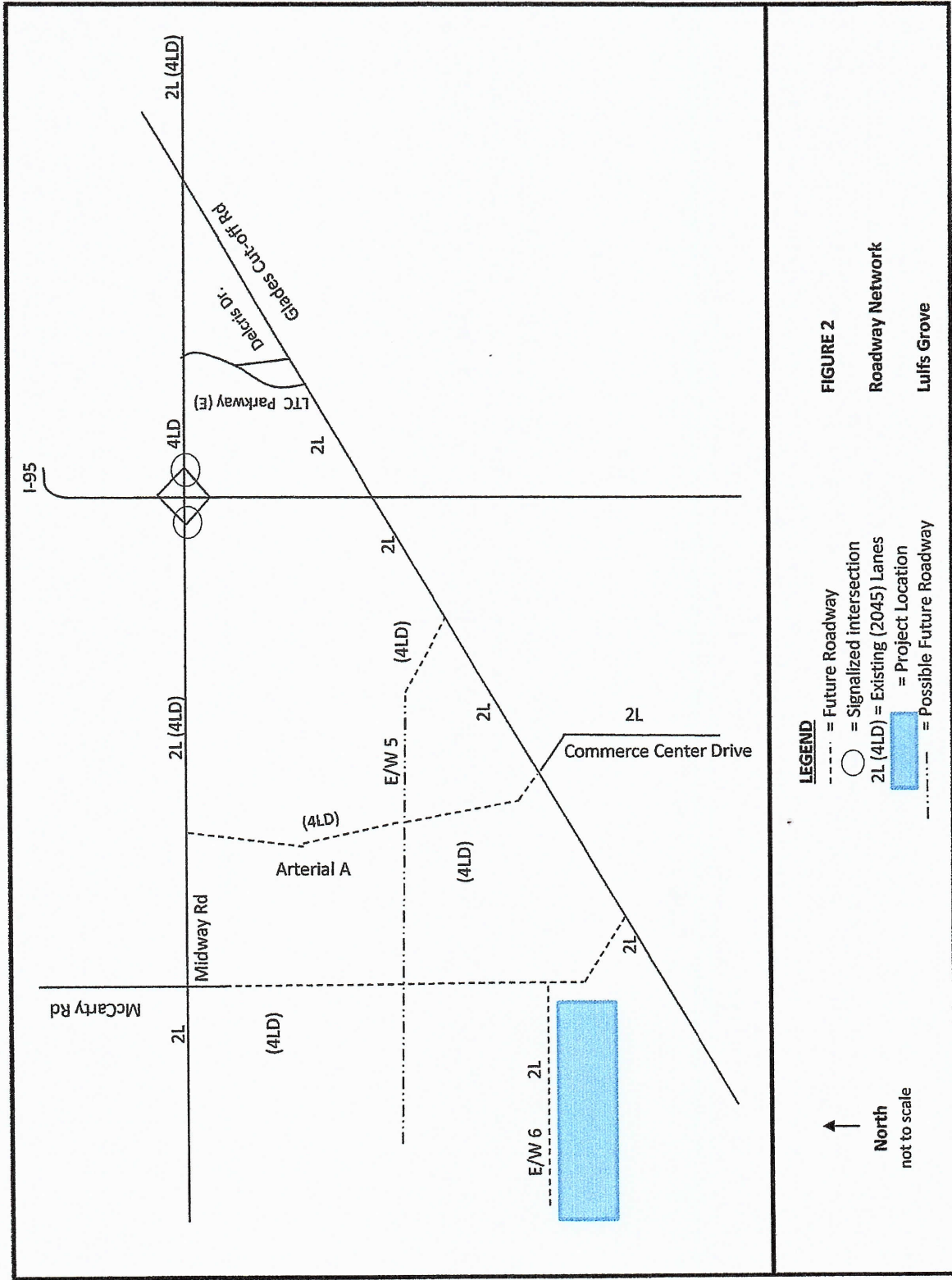
The study area roadways were defined in terms of existing lane geometrics and existing traffic volumes.

Existing/Proposed Lane Geometrics and Traffic Control

The study area was reviewed to determine the existing number and type of lanes, and the traffic control along the roadway. Each roadway is described below.

- Glades Cut Off Road is a two-lane minor arterial with a north/south alignment.
- Midway Road is a four-lane divided arterial from I-95 to Glades Cut Off Road and a two-lane arterial from Glades Cut Off Road to Selvitz Road with an east/west alignment. The two-lane section is included in the Cost Feasible 2045 LRTP to be widened to four-lanes.
- Commerce Center Drive is a two-lane collector roadway with a primarily north/south alignment.

The roadway network is shown in **Figure 2** with notations for Existing, Existing + Committed, and the 2045 Network. Roadway details are included in **Appendix B**.



PROJECT TRAFFIC

To estimate future traffic generated by the LUPA, the trip generation of the existing future land use was compared to the trip generation of the proposed future land use.

Existing Future Land Use

The ITE Trip Generation, 11th Edition trip rates were applied to the uses in the text amendment: General Light Industrial (Land Use Code 110), General Office (Land Use Code 710), Shopping Center (Land Use Code 820), and Multifamily Low (Land Use Code 220). Institutional uses were shown as office use for worst case impact. **Table 1** summarizes the trip generation with the existing future land use. As shown, there would be 20,745 daily trips, 2,404 AM peak hour trips, and 2,711 PM peak hour trips.

Proposed Future Land Use

Shopping Center (Land Use Code 820), General Office (Land Use Code 710), and Single-Family Detached Housing (Land Use Code 210) were applied to estimate the trips generated by the proposed future land use. As in the EFLU, the institutional land use was shown as office for trip generation purposes. The actual impact from the institutional use will likely be much lower. The proposed future land use generates 16,694 daily trips, 1,212 AM peak hour trips, and 1,695 PM peak hour trips would be generated. These calculations are shown in **Table 2**.

As shown in Table 2, the change in future land use will result in a decrease of 4,051 net new daily trips. There will be a decrease of 1,192 net new AM peak hour trips and a decrease of 1,016 net new PM peak hour trips. Because there is a decrease in Daily, AM peak hour, and PM peak hour trips, additional analyses are not required.

CONCLUSION

The change of land use on the 464.5 acres results in a decrease in Daily, AM peak hour, and PM peak hour trips from the current future land use. Therefore, additional analyses are not required, and the project meets the requirements for land use plan amendments.

Table 1 - Trip Generation - Existing FLU

Land Use	ITE Code	Intensity	Units	Trip Generation Rate	Directional Split		Gross Trips		Internalization Trips			Net External Trips			Pass-by Trips			Net New Trips		
					In	Out	In	Out	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise)	220	500	DU	$T = 6.41(X) + 75.31$	50%	50%	1,640	1,640	820	820	1,640	820	820	1,640	-	-	-	820	1,020	1,840
General Office	710	0.400,000	SR	$Ln(T) = 0.871Ln(X) + 3.05$	50%	50%	1,938	1,938	53	53	1,991	1,885	1,786	3,671	-	-	-	1,885	1,786	3,671
Light Industrial	110	2,400,000	SR	$T = 3.76(X) + 50.47$	50%	50%	4,537	4,537	124	124	4,661	4,413	4,180	8,593	-	-	-	4,413	4,180	8,593
Shopping Center	820	200,000	SR	$T = 26.11(X) + 586.73$	50%	50%	5,543	5,543	997	997	6,540	1,862	1,688	3,550	1,292	1,292	2,583	3,254	3,387	6,641
TOTALS							13,658	13,658	1,994	1,994	3,988	11,664	11,664	23,328	1,292	1,292	2,583	10,372	10,373	20,745

Source: ITE 11th Edition Trip Generation Rates

(1) Includes 200,000 SF of Institutional

Table 1b: AM Peak Hour

Land Use	ITE Code	Intensity	Units	Trip Generation Rate	Directional Split		Gross Trips		Internalization Trips			Net External Trips			Pass-by Trips			Net New Trips		
					In	Out	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total		
Multifamily Housing (Low-Rise) General Office Light Industrial Shopping Center	220	500	DU	$T = 0.31(X) + 22.85$	24%	76%	43	135	1	4	5	42	131	-	-	-	42	131	173	
	710	0.400,000	SR	$Ln(T) = 0.86Ln(X) + 1.16$	88%	12%	486	66	8	13	21	3,896	478	53	531	-	478	53	531	
	110	2,400,000	SR	$T = 0.68(X) + 3.81$	88%	12%	1,440	196	16,366	23	37	60	3,796	1,417	159	1,576	-	1,417	159	
	820	200,000	SR	$T = 0.59(X) + 133.55$	62%	38%	156	96	252	51	29	80	31.7%	105	67	172	24	48	28,068	
TOTALS							2,125	493	2,618	83	83	166	2,042	410	2,452	24	48	2,018	386	2,404

Source: ITE 11th Edition Trip Generation Rates

(1) Includes 200,000 SF of Institutional

Table 1c: PM Peak Hour

Land Use	ITE Code	Intensity	Units	Trip Generation Rate	Directional Split		Gross Trips		Internalization Trips			Net External Trips			Pass-by Trips			Net New Trips			
					In	Out	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total			
Multifamily Housing (Low-Rise)	220	500	DU	$T = 0.43(X) + 20.55$	63%	37%	149	87	236	75	40	115	48.7%	74	47	121	-	-	74	47	121
General Office	710	0.400,000	SR	$Ln(T) = 0.83Ln(X) + 1.29$	17%	83%	89	436	525	3	11	14	2.7%	86	425	511	-	-	86	425	511
Light Industrial	110	2,400,000	SR	$T = 0.65(X)$	14%	86%	218	1,342	1,510	10	31	41	2.6%	208	1,311	1,519	-	-	208	1,311	1,519
Shopping Center	820	200,000	SR	$Ln(T) = 0.72Ln(X) + 3.02$	48%	52%	446	484	930	73	79	152	16.3%	373	405	778	108	110	218	265	295
TOTALS							902	2,349	3,251	161	161	322	9.9%	741	2,188	2,929	108	110	218	633	2,078

Source: ITE 11th Edition Trip Generation Rates

(1) Includes 200,000 SF of Institutional

Table 2 - Trip Generation - Proposed FLU

Table 2a: Daily

Land Use	ITE Code	Intensity	Units	Trip Generation Rate	Directional Split		Gross Trips			Internalization Trips			Net External Trips			Pass-by Trips			Net New Trips		
					In	Out	In	Out	Total	In	Out	Total	%	In	Out	Total	%	In	Out	Total	
Single Family Detached General Office Shopping Center	210	1,350	DU	$\text{Ln}(T) = 0.92\text{Ln}(X) + 2.68$	50%	50%	5,531	11,062	1,462	775	2,237	20.2%	4,069	4,756	8,825	-	-	-	4,069	4,756	8,825
	710	(1)200,000	SR	$\text{Ln}(T) = 0.87\text{Ln}(X) + 3.05$	50%	50%	1,061	1,060	2,121	332	233	26.6%	729	827	1,556	-	-	-	729	827	1,556
	820	200,000	SR	$T = 26.11(X) + 5863.73$	50%	50%	5,543	11,086	766	1,552	2,318	20.9%	4,777	3,991	8,768	1,228	1,227	2,455	3,549	2,764	6,313
TOTALS							12,135	24,269	2,560	2,560	21.1%	9,575	9,574	19,149	1,228	1,227	2,455	8,347	8,347	16,694	
Source: ITE 11 th Edition Trip Generation Rates																			Net Change: (4,051)		

Source: ITE 11th Edition Trip Generation Rates

(1) Includes 50,000 SF of Institutional

Net Change: (4,051)

Table 2b: AM Peak Hour

Land Use	ITE Code	Intensity	Units	Trip Generation Rate	Directional Split		Gross Trips		Internalization Trips			Net External Trips			Pass-by Trips			Net New Trips				
					In	Out	In	Out	In	Out	%	In	Out	Total	In	Out	Total	In	Out	Total		
Single Family Detached General Office Shopping Center	210	1,350	DU	$\text{Ln}(T) = 0.91\text{Ln}(X) + 0.12$	26%	74%	207	589	796	4	14	18	2.3%	203	575	778	-	-	-	203	575	778
	710	(1)200,000	SR	$\text{Ln}(T) = 0.861\text{Ln}(X) + 1.16$	88%	12%	268	36	304	19	10	29	9.5%	249	26	275	-	-	-	249	26	275
	820	200,000	SR	$T = 0.59(X) + 133.55$	62%	38%	156	96	252	16	15	31	12.3%	140	81	221	31	31	62	28.0%	109	50
TOTALS							631	721	1,352	39	39	78	5.8%	592	682	1,274	31	62	4.9%	561	651	1,212

Source: ITE 11th Edition Trip Generation Rates

Source: ITE 11th Edition Trip Generation Rates

(1) Includes 50,000 SF of Institutional

Net Change: (1,192)

Table 2c: PM Peak Hour

Land Use	ITE Code	Intensity	Units	Trip Generation Rate	Directional Split		Gross Trips		Internalization Trips			Net External Trips			Pass-by Trips			Net New Trips					
					In	Out	In	Out	Total	In	Out	%	In	Out	Total	In	Out	Total	In	Out	Total		
Single Family Detached General Office Shopping Center	210	1,350	DU	$\text{Ln}(T) = 0.94\text{Ln}(X) + 0.27$	63%	37%	723	425	1,148	131	62	193	16.8%	592	363	955	-	-	-	592	363	955	
	710	(1) 200,000	SR	$\text{Ln}(T) = 0.83\text{Ln}(X) + 1.29$	17%	83%	50	245	295	27	41	68	23.1%	23	204	227	-	-	-	23	204	227	
	820	200,000	SR	$\text{Ln}(T) = 0.72\text{Ln}(X) + 3.02$	48%	52%	446	484	930	81	136	217	23.3%	365	348	713	99	101	200	28.0%	266	247	513
TOTALS							1,219	1,154	2,373	239	239	478	20.1%	980	915	1,895	99	101	200	10.6%	881	814	1,695

Source: ITE 11th Edition Trip Generation Rates

Net Change: (1,016)

Source: ITE 11th Edition Trip Generation Rates

(1) Includes 50,000 SF of Institutional

Net Change: (1,016)

APPENDIX A

SITE DATA

COMPREHENSIVE PLAN LAND USE DATA

Policy 1.1.4.18: Astoria Development Area. This area is designated pursuant to the provisions of Policy 1.1.7.2, to utilize PUD zoning, and design and architectural controls to better integrate mixed uses into neighborhoods and Policy 1.1.11, in order to promote mobility through viable transportation and land uses that incorporate walking, bicycling, and transit. This area generally includes the property west of Glades Cut-Off Road, north of the Copper Creek PUD, and south of the City's Glades Road Wastewater Treatment Facility and LTC Ranch. The total acreage of the Astoria Development Area is approximately 464.5 acres.

Policy 1.1.4.19: Development within the Astoria Development Area shall be consistent with the land uses delineated on the Future Land Use Map and the sub-area policies establishing development allowances and requirements set forth below:

- a. Within the Astoria Development Area, the following land uses shall be allowed either individually or in combination:
 - i. General Commercial (CG);
 - ii. Service Commercial (CS);
 - iii. Institutional (I);
 - iv. Low Density Residential (RL);
 - v. Open Space Recreation (OSR);
 - vi. Open Space Conservation (OSC);
- b. Overall distribution of mix of uses/density and intensity proposed:

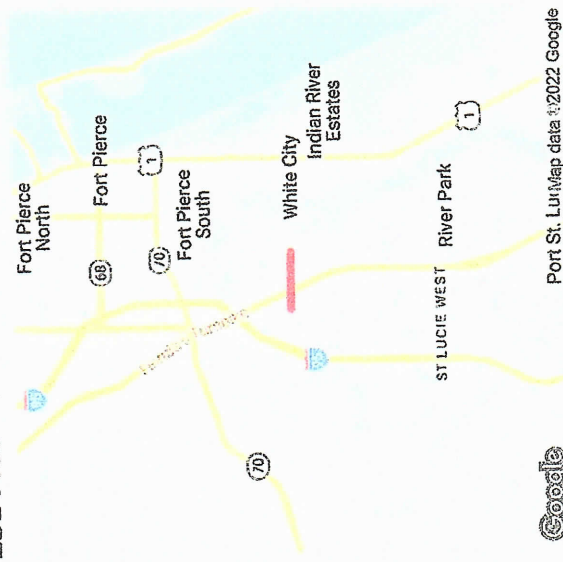
Table A.1 - Distribution Mix of Uses/Density and Intensity Proposed (Overall)

Use	Square Feet/Units
Retail	100,000 s.f. - 200,000 s.f.
Office	50,000 s.f. - 150,000 s.f.
Institutional	15,000 s.f. - 50,000 s.f.
Residential	up to 1,350 units

APPENDIX B

Roadway Details

MIDWAY RD FROM GLADES CUT OFF RD TO SELVITZ RD
2314403 Non-SIS



Project Description: ADD LANES & RECONSTRUCT
Extra Description: 2022 TPO PRIORITY #2 WIDENING FROM 2 TO 4 LANES LFA WITH ST. LUCIE COUNTY FOR PD&E AND DESIGN CK #09828620 REC FR ST. LUCIE CO. BCC FOR 1.65M ON 10/7/14 FOR PD&E. THIS IS A CAT2 CHECK REC 1/25/2017 FROM ST. LUCIE CO. \$2,108,000 PH32/37
Lead Agency: MANAGED BY FDOT
County: ST. LUCIE
Length: 1.577
Phase Group: P D & E, PRELIMINARY ENGINEERING, RIGHT OF WAY, RAILROAD & UTILITIES, ENVIRONMENTAL
From: GLADES CUT OFF RD
To: SELVITZ RD

Phase	Fund Code	2023	2024	2025	2026	2027	Total
ROW	SA	0	494,625	0	0	0	494,625
ROW	SU	0	973,875	0	0	0	973,875
			1,468,500				1,468,500

Prior Year Cost: 4,851,546
Future Year Cost: 0
Total Project Cost: 29,891,313
LRTP: Page 8-2

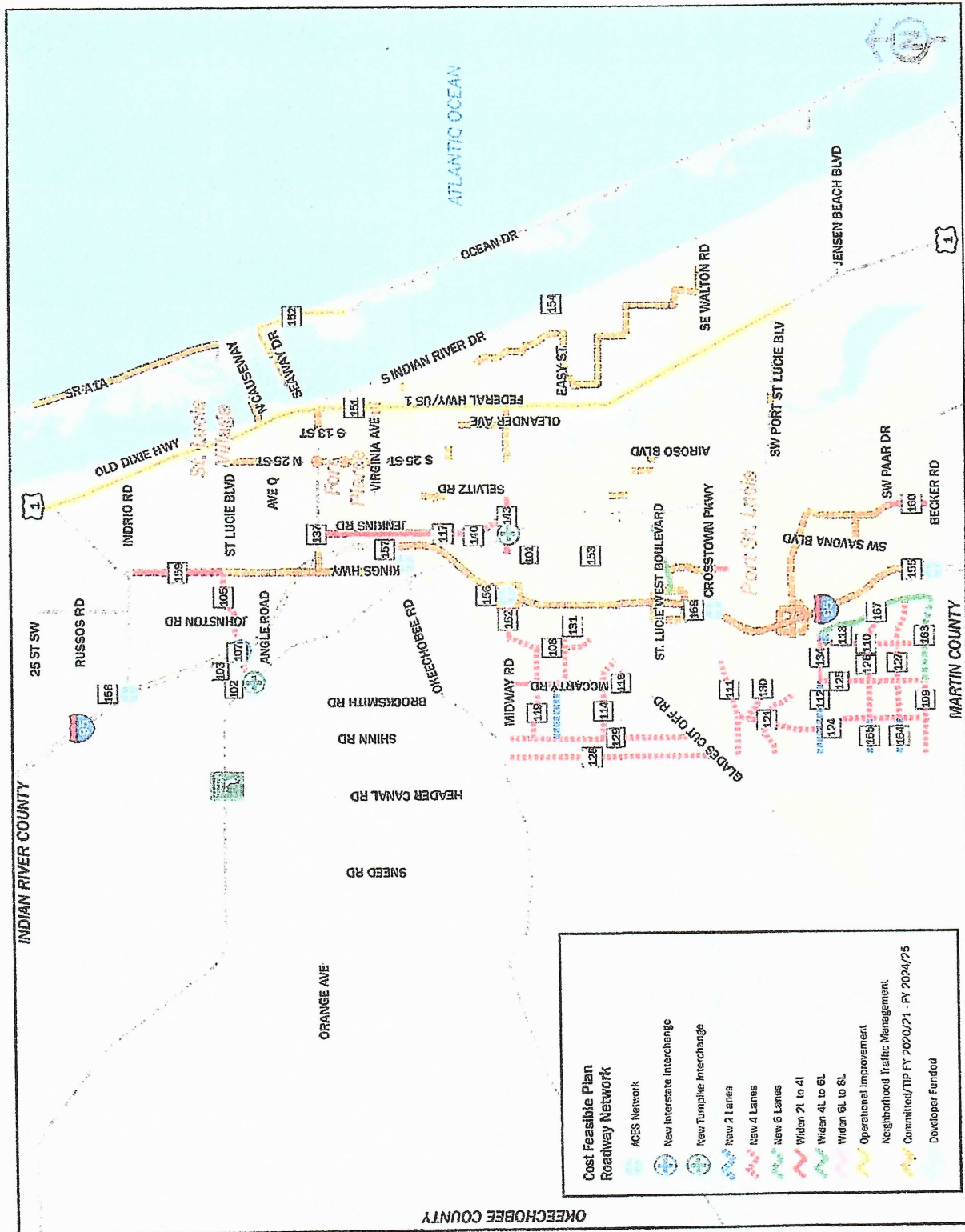


Figure 8-1. Cost Feasible Plan - Roadway Network

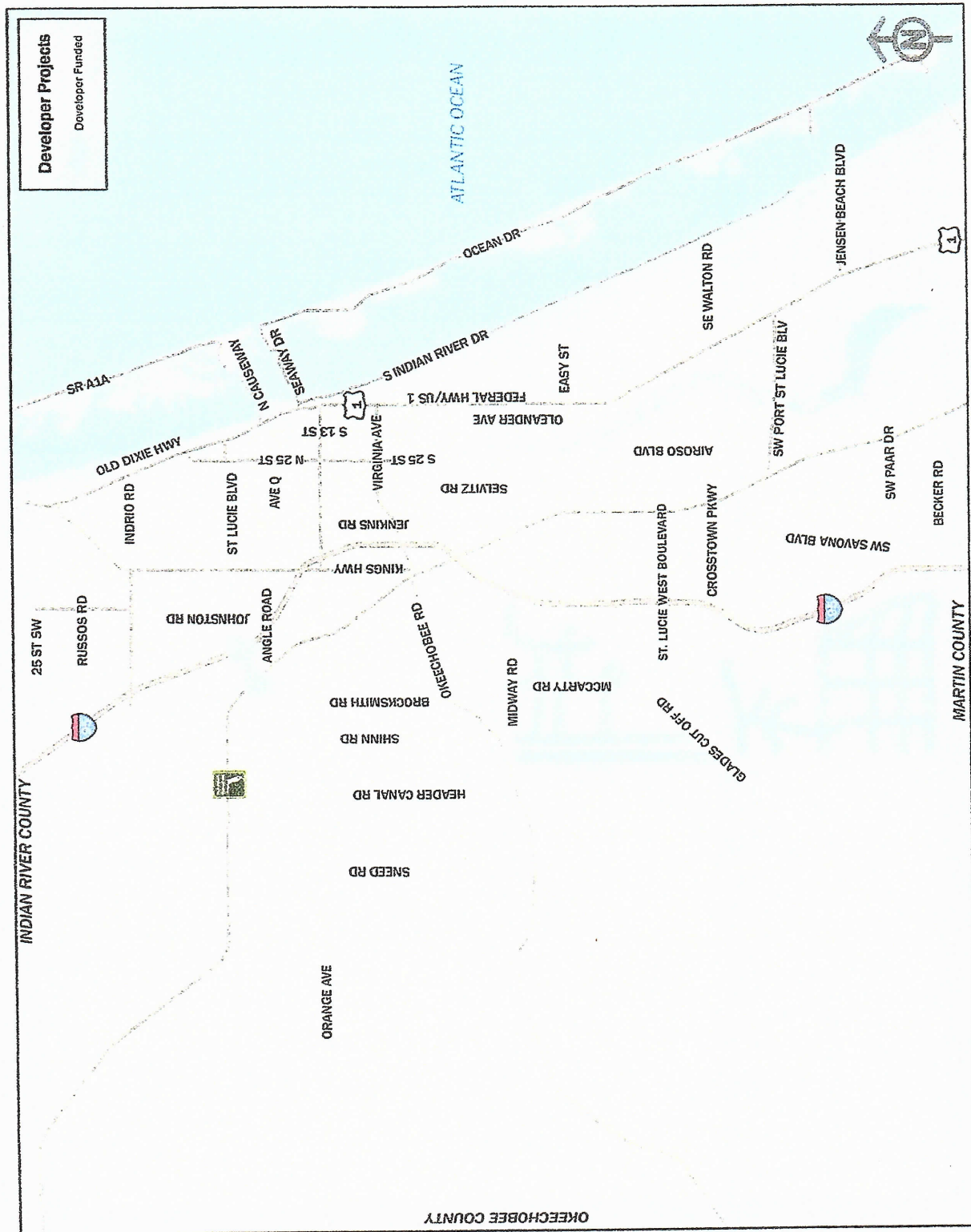


Figure 5-5. Developer Funded Projects

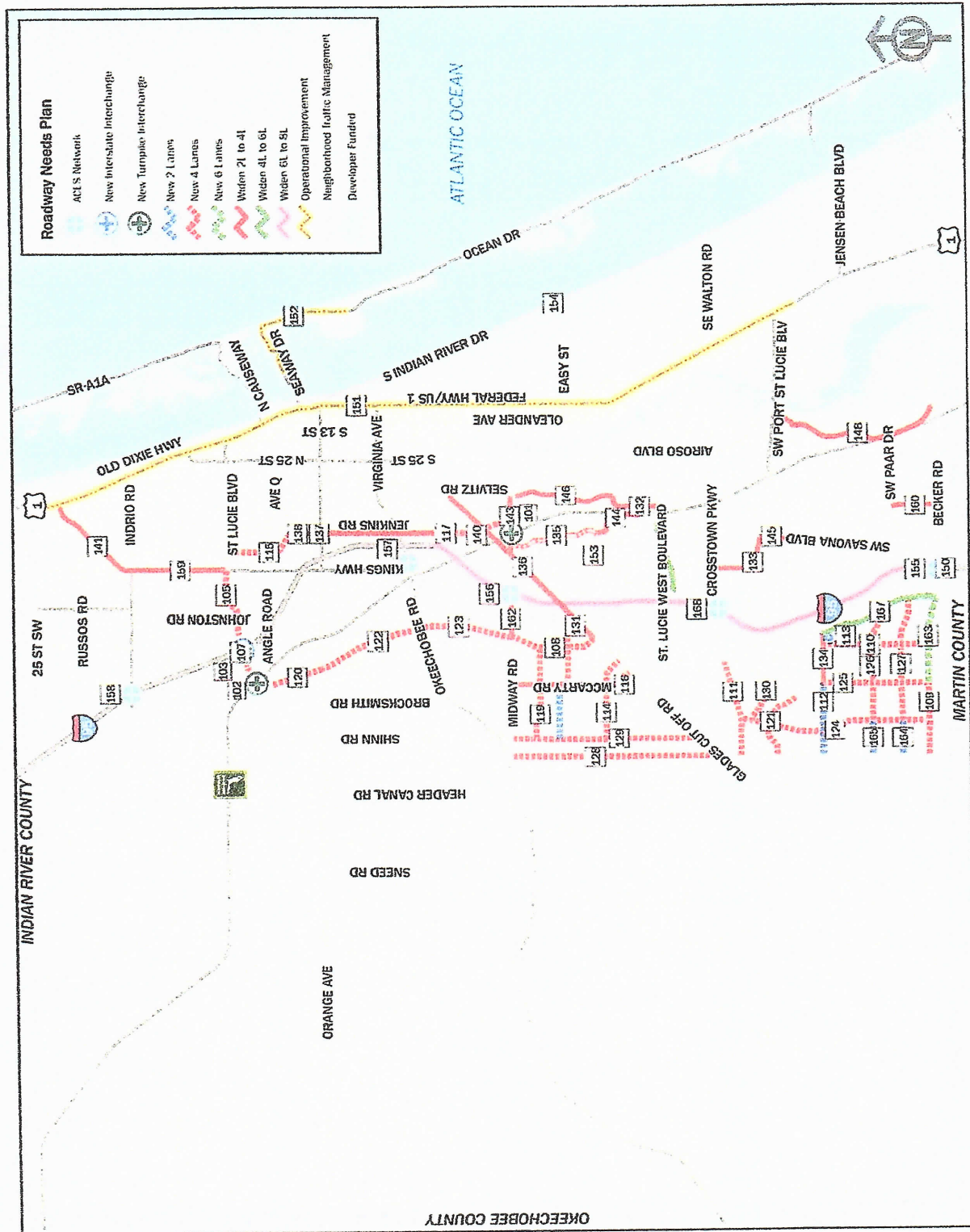


Figure 5-4. Roadway Needs Plan

The 2045 preliminary roadway deficiencies serve as the starting point for the development of the roadway improvement project needs. The roadway deficiencies included V/C ratios greater than 0.9 and a logical terminus. The roadway needs plan was developed to include projects that address the roadway deficiencies.

Listed in Table 5-4 is the roadway needs plan ordered by project type and roadway name. Figure 5-4 displays the roadway needs plan. Developer funded projects are included in the roadway needs plan and shown in Figure 5-5. As part of the roadway needs plan, pedestrian and bicycle facility improvements are recommended to incorporate complete street elements.

Please note the Northern Connector from Florida's Turnpike to I-95 with the two (2) interchanges at Florida's Turnpike and I-95 is a private developer-built road considered as one project.

Table 5-4. Roadway Needs Plan

ID	Roadway Name	From	To	E+C Lanes	Needs Plan Lanes	Project Type	Length (miles)
101	Florida's Turnpike at Midway Road					New Interchange	
102	Florida's Turnpike at Northern Connector					New Interchange	
103	I-95 at Northern Connector					New Interchange	
104	Williams Road	Shinn Road	McCarty Road	0	2	New 2 Lanes	1.52
105	Airport Connector	Johnston Road	Kings Highway	0	4	New 4 Lanes	1.42
106	Airport Connector	I-95	Johnston Road	0	4	New 4 Lanes	0.78
107	Northern Connector	Florida's Turnpike	I-95	0	4	New 4 Lanes	0.94
108	Arterial A	Glades Cut-Off Road	Midway Road	0	4	New 4 Lanes	2.34
109	Becker Road	Range Line Road	N-S Road B	0	4	New 4 Lanes	2.03
110	Community Boulevard	Becker Road	Discovery Way	0	4	New 4 Lanes	2.8
111	Crosstown Parkway	Range Line Road	Village Parkway	0	4	New 4 Lanes	2.72
112	Discovery Way	Range Line Road	N-S Road B	0	4	New 2 Lanes	1.99
113	E-W Road 2	Community Boulevard	Village Parkway	0	4	New 2 Lanes	0.56

¹ Developer Funded

ID	Roadway Name	From	To	E+C Lanes	Needs Plan Lanes	Project Type	Length (miles)
114	E-W Road 6	Shinn Road	Glades Cut-Off Road	0	4	New 4 Lanes	2.3
115	Jenkins Road	N Jenkins Road	St. Lucie Boulevard	0	4	New 4 Lanes	2.26
116	Jenkins Road	Post Office Road	Glades Cut-Off Road	0	4	New 4 Lanes	0.37
117	Jenkins Road	Walmart Distribution Center	Altman Road	0	4	New 4 Lanes	0.81
118	McCarty Road	Glades Cut-Off Road	Williams Road	0	4	New 4 Lanes	1.98
119	Newell Road	Shinn Road	Arterial A	0	4	New 4 Lanes	2.54
120	North-Mid County Connector	Orange Avenue	Florida's Turnpike	0	4	New 4 Lanes	1.88
121	Tradition Parkway	Range Line Road	SW Stony Creek Way	0	4	New 4 Lanes	2.05
122	North-Mid County Connector	Okeechobee Road	Orange Avenue	0	4	New 4 Lanes	2.93
123	North-Mid County Connector	Midway Road	Okeechobee Road	0	4	New 4 Lanes	2.37
124	N-S Road A	Becker Road	Crosstown Parkway	0	4	New 4 Lanes	5.13
125	N-S Road B	Becker Road	Discovery Way	0	4	New 4 Lanes	2.8
126	Open View Drive (West)	N-S Road A	Village Parkway	0	4	New 4 Lanes	2.97
127	Paar Drive (West)	N-S Road A	Village Parkway	0	4	New 4 Lanes	3.3
128	Range Line Road	Glades Cut-Off Road	Midway Road	0	4	New 4 Lanes	5.46
129	Shinn Road	Glades Cut-Off Road	Midway Road	0	4	New 4 Lanes	4.95
130	Westcliffe Lane	N-S Road A	SW Tremonte Avenue	0	4	New 4 Lanes	1.15
131	Williams Extension	McCarty Road	Glades Cut-Off Road	0	4	New 4 Lanes	1.65
132	Bayshore Boulevard	St. Lucie West Boulevard	Selvitz Road	2	4	Widen 2L to 4L	1.46

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ID	Roadway Name	From	To	E+C Lanes	Needs Plan Lanes	Project Type	Length (miles)
153	Torino Parkway					Neighborhood Traffic Management	6.06
154	Indian River Drive	Martin/St. Lucie County Line	Seaway Drive			Neighborhood Traffic Management	14.63
155	I-95 at Becker Road					ACES Network	
156	I-95 at Midway Road					ACES Network	
157	Okeechobee Road between Florida's Turnpike & I-95					ACES Network	
158	I-95 at Indrio Road					ACES Network	
159	Kings Highway	St. Lucie Boulevard	south of Indrio Road	2	4	Widen 2L to 4L	2.4
160	Port St. Lucie Boulevard	Becker Road	Paar Drive	2	4	Widen 2L to 4L	1.2
161	California Boulevard	Del Rio Boulevard	Crosstown Parkway	2	4	Widen 2L to 4L	0.37
162	Midway Road	Arterial A	I-95	2	4	Widen 2L to 4L	0.88
163	Becker Road	N-S Road B	Village Parkway		6	New 6 Lanes	2.26
164	Paar Drive (West)	Range Line Road	N-S Road A	0	2	New 2 Lanes	0.94
165	Open View Drive (West)	Range Line Road	N-S Road A	0	2	New 2 Lanes	0.95
166	Trade Center/Tom Mackie	Village Parkway	Discovery Way	0	2	New 2 Lanes	0.36
167	Village Parkway	Becker Road	Discovery Way	4	6	Widen 4L to 6L	3.26
168	I-95 at Crosstown Parkway					ACES Network	