Signal Warrant Analysis

For Submittal to Nassau County

City of Fernandina Beach
South 14th Street/ Simmons Road
Fernandina Beach, Florida

Prepared for:
Nassau County

June 2019

Engineers
Planners
Landscape Architects
Surveyors
Construction Management
Design/Build

Certificate of Authorization No. 00003215

5601 Mariner Street
Suite 105
Tampa, FL 33609
Tel: (813) 288-0233
Fax: (813) 288-0433
Contact: Devin Barrs

DEVIN F. BARRS LICENSE No. 70588 STATE OF FLORIDA PROFESSIONAL ENGINEER

Digitally signed by Devin F Barrs
DN: C=US, O=CPH INC., OU=CPH INC., CN=Devin F Barrs, OID.0.9.2342.19200300.100.1.1=A01097C000001600352ED0D00015B9C
Reason: I am the author of this document
Location: Identrust ACES CA 2
Date: 2019-09-23 10:59:07

Devin Barrs
70588
P.E. Number

Date

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

Introduction

A signal warrant analysis has been requested for the intersection of S. 14th Street and Simmons Road in Fernandina Beach, Nassau County, Florida. **Figure 1** illustrates the project location.

The major southbound approach of S. 14th Street has one shared through and right turn lane and one left turn lane. The major northbound approach has one shared through, left, and right turn lane. The minor westbound approach of Simmons Road has one shared through/left turn lane and one right turn lane. The minor eastbound approach of Simmons Road has one shared through, left, and right turn lane.

The following report has been prepared to evaluate the need for a traffic signal at the intersection. The warrant analysis is presented using traffic approach data and turning movement counts collected in May 2019. The analysis methods used in this report are consistent with the Federal Highway Administration's (FHWA) *Manual on Uniform Traffic Control Devices.*

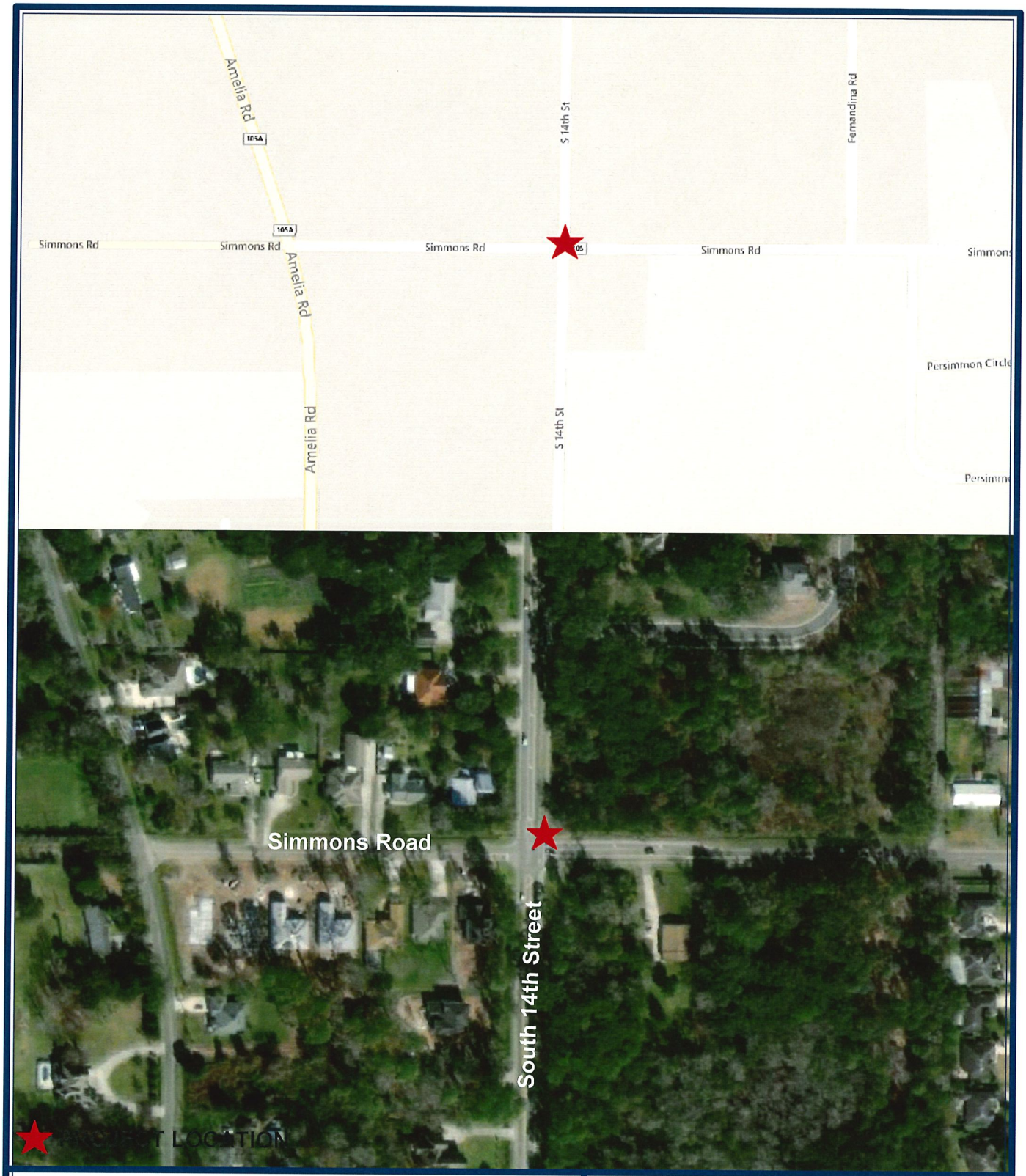


FIGURE 1
SITE LOCATION MAP

SIMMONS ROAD & SOUTH 14TH STREET
FERNANDINA BEACH, FLORIDA
NASSAU COUNTY

cph

Engineers
Architects
Planners
Landscape Architects
Transportation/Traffic
Surveyors
Environmental Scientists
Construction Management

U:\sgorman\Projects\Nassau Safety Study\CADD\Simmons and S 14th Street.dwg

5/28/19

Traffic Volumes

Twenty-four hour approach volumes were obtained on May 2, 2019. The approach volumes were then utilized to identify the 8 highest hours of traffic for the intersection. Turning movement counts were obtained on May 2, 2019 from 10:00 AM to 6:15 PM. The turning movement counts were utilized in the signal warrant analysis. The westbound approach was found to consistently have the higher approach volume among the minor approaches to the intersection, and therefore was utilized in the warrant analysis.

Signal Warrant Analysis

The MUTCD recommends that the following traffic signal warrants be considered when evaluating the need for a traffic signal at an intersection:

Warrant 1 – Eight Hour Vehicular Volume
Warrant 2 – Four Hour Vehicular Volume
Warrant 3 – Peak Hour
Warrant 4 – Pedestrian Volume
Warrant 5 – School Crossing
Warrant 6 – Coordinated Signal System
Warrant 7 – Crash Experience
Warrant 8 – Roadway Network
Warrant 9 – Railroad Crossing

The intersection will be analyzed as: major street 2 lane, minor street 1 lane, as noted in the MUTCD. The posted speed on S. 14th Street is 45 mph, therefore the 70% volume criteria will be used for Warrants 1 and 2. Each of the eight warrants is described in detail below and applied to the project intersection. Signal warrant summary sheets are included in the Appendix.

Warrant 1 – Eight Hour Vehicular Warrant

The minimum vehicular volume, Condition A, is intended for application where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal. The interruption of continuous traffic, Condition B, is intended for application where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

If either of these conditions are met during any eight hours over the course of a typical day, then the warrant is satisfied.

Based upon the approach volumes, Warrant 1 – Condition A is **not satisfied,** and Condition B **is satisfied**. Therefore, Warrant 1 the Eight Hour Vehicular Warrant **is satisfied.**

Warrant 2 – Four Hour Vehicular Volume

This warrant specifies a different set of minimum volume conditions for warranting a signal and is intended to be applied where the volume of intersecting traffic is the principal reason to consider a traffic control signal. Based upon the collected approach volumes, Warrant 2 **is satisfied**.

Warrant 3 – Peak Hour

The peak hour signal warrant is intended for use at a location where traffic conditions are such that, for a minimum of one hour of an average day, the minor street traffic suffers undue delay when entering or crossing the major street. This signal warrant shall be applied only in unusual cases. Such cases include office complexes, manufacturing plants, industrial complexes, or high occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time. Based upon the nature of the surrounding area, this warrant was **not applicable**.

Warrant 4 – Pedestrian Volume

The pedestrian volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street. Based upon the pedestrian volume observed during field review, Warrant 4 is **not applicable**.

Warrant 5 – School Crossing

The school crossing signal warrant is intended for application where a significant number of school children cross the major street. Based upon the pedestrian volume observed, Warrant 5 is **not applicable**.

Warrant 6 – Coordinated Signal System

Progressive movement in a coordinated signal system sometimes necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles. This intersection is not along a coordinated signal system, therefore, this warrant is **not applicable** to this location.

Warrant 7 – Crash Experience

Detailed crash records for this area have been requested from the FDOT and Nassau County Sherriff's Office. FDOT provided crash data for the study intersection from 2012 to 2019. Since 2012 there have been 13 "angle" crashes, 5 "left-turn" crashes, 2 "rear end" crashes, 1 "right turn" crash, and two "unknown" crashes. The warrant specifies that five or more signal correctable crashes must be reported within a 12 month period. Between March 10, 2018 and January 9, 2019, five "angle" or "left-turn" crashes occurred, which are considered signal correctable crashes. Therefore, Warrant 7, Item B, **is satisfied**.

Warrant 8 – Roadway Network

Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network. This warrant is **not applicable** to the intersection.

Warrant 9 – Railroad Crossing

This warrant is applied at intersections adjacent to or impacted by a nearby railroad crossing. This warrant is **not applicable** to the study intersection.

Conclusion

Traffic conditions were evaluated for the intersection of S. 14th Street and Simmons Road. Based upon the evaluation of the signal warrant criteria presented in the MUTCD. A traffic signal is currently warranted at this location.

APPENDIX

LIST OF APPENDICES

APPENDIX A
Traffic Counts

National Data & Surveying Services

Intersection Turning Movement Count

Location: S 14th St & Simmons Rd
City: Fernandina Beach
Control: 2-Way Stop(EB/WB)

Project ID: 19-03254-001
Date: 5/2/2019

Total

NS/EW Streets:	S 14th St				S 14th St				Simmons Rd				Simmons Rd				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	0 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	TOTAL
10:00 AM	1	102	9	0	9	76	3	0	0	1	2	0	17	3	13	0	236
10:15 AM	0	104	13	0	10	72	3	0	0	0	2	0	15	2	11	0	232
10:30 AM	1	81	11	0	13	68	1	0	4	5	2	0	13	3	7	0	209
10:45 AM	0	94	12	0	7	92	3	0	0	4	2	0	14	0	11	0	239
11:00 AM	0	90	11	0	11	86	3	0	5	0	2	0	11	3	16	0	238
11:15 AM	0	92	13	0	13	87	1	0	1	2	0	0	17	8	8	0	242
11:30 AM	1	104	19	0	9	90	5	0	0	2	1	0	14	8	7	0	260
11:45 AM	1	98	12	0	12	90	8	0	3	5	1	0	18	8	16	0	272
12:00 PM	0	98	13	0	12	93	3	0	2	4	4	0	15	3	10	0	257
12:15 PM	1	97	15	0	11	90	1	1	2	2	0	0	18	7	15	0	260
12:30 PM	1	110	19	0	6	109	4	0	0	4	1	0	17	5	10	0	286
12:45 PM	1	89	18	0	17	100	3	0	0	4	2	0	17	5	13	0	269
1:00 PM	2	96	23	0	14	90	1	0	2	1	2	0	24	5	7	0	267
1:15 PM	1	89	18	0	13	92	4	0	3	1	1	0	16	2	9	0	249
1:30 PM	1	77	14	0	10	67	2	0	1	3	2	0	22	4	9	0	212
1:45 PM	0	105	11	0	11	91	2	0	1	6	1	0	16	3	9	0	256
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	11	1526	231	0	178	1393	47	1	24	44	25	0	264	69	171	0	3984
APPROACH %'s :	0.62%	86.31%	13.07%	0.00%	10.99%	86.04%	2.90%	0.06%	25.81%	47.31%	26.88%	0.00%	52.38%	13.69%	33.93%	0.00%	
PEAK HR :	12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :	5	392	75	0	48	389	9	1	4	11	5	0	76	22	45	0	1082
PEAK HR FACTOR :	0.625	0.891	0.815	0.000	0.706	0.892	0.563	0.250	0.500	0.688	0.625	0.000	0.792	0.786	0.750	0.000	0.946
		0.908				0.931				0.833				0.894			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	0 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	TOTAL
2:00 PM	2	91	18	0	19	74	3	0	0	4	0	0	13	2	15	0	241
2:15 PM	3	91	17	0	12	101	0	0	1	6	1	0	14	2	13	0	261
2:30 PM	1	110	14	0	11	107	2	0	2	4	3	0	21	6	14	0	295
2:45 PM	0	71	19	0	10	104	2	0	0	1	1	0	19	4	8	0	239
3:00 PM	0	100	12	0	9	100	0	0	1	2	0	0	14	4	12	0	254
3:15 PM	0	83	19	0	9	111	2	0	2	1	1	0	13	1	6	0	248
3:30 PM	0	72	21	0	8	96	1	0	2	4	0	0	18	3	9	0	234
3:45 PM	0	99	27	0	10	100	4	0	1	3	1	0	14	0	12	0	271
4:00 PM	2	103	22	0	12	104	8	0	1	2	3	0	17	4	8	0	286
4:15 PM	0	104	27	0	9	104	0	0	2	3	2	0	9	4	3	0	267
4:30 PM	0	122	20	0	16	80	1	0	2	3	0	0	13	7	8	0	272
4:45 PM	0	138	29	0	3	72	4	0	1	9	2	0	7	9	15	0	289
5:00 PM	1	143	23	0	10	76	3	0	1	4	1	0	16	6	10	0	294
5:15 PM	1	138	26	0	18	73	5	0	2	4	1	0	15	8	15	0	306
5:30 PM	3	109	30	0	10	74	2	0	1	2	0	0	10	1	16	0	258
5:45 PM	2	78	19	0	10	57	1	0	2	3	2	0	13	3	10	0	200
6:00 PM	0	66	18	0	5	47	1	0	1	4	1	0	18	7	4	0	172
6:15 PM	0	42	9	0	6	34	1	0	0	2	1	0	11	2	7	0	115
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	15	1760	370	0	187	1514	40	0	22	61	20	0	255	73	185	0	4502
APPROACH %'s :	0.70%	82.05%	17.25%	0.00%	10.74%	86.96%	2.30%	0.00%	21.36%	59.22%	19.42%	0.00%	49.71%	14.23%	36.06%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	2	541	98	0	47	301	13	0	6	20	4	0	51	30	48	0	1161
PEAK HR FACTOR :	0.500	0.946	0.845	0.000	0.653	0.941	0.650	0.000	0.750	0.556	0.500	0.000	0.797	0.833	0.800	0.000	0.949
		0.960				0.930				0.625				0.849			

National Data & Surveying Services

Intersection Turning Movement Count

Location: S 14th St & Simmons Rd
City: Fernandina Beach
Control: 2-Way Stop(EB/WB)

Project ID: 19-03254-001
Date: 5/2/2019

Cars

NS/EW Streets:	S 14th St				S 14th St				Simmons Rd				Simmons Rd				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	1	102	9	0	9	74	3	0	0	1	2	0	16	3	13	0	233
10:15 AM	0	100	13	0	9	71	3	0	0	0	1	0	15	2	11	0	225
10:30 AM	1	80	10	0	13	66	1	0	4	5	2	0	13	3	7	0	205
10:45 AM	0	94	12	0	7	92	3	0	0	4	2	0	13	0	11	0	238
11:00 AM	0	89	11	0	11	85	3	0	5	0	2	0	10	3	16	0	235
11:15 AM	0	90	13	0	13	85	1	0	1	2	0	0	17	8	8	0	238
11:30 AM	1	102	18	0	9	90	5	0	0	2	1	0	14	7	7	0	256
11:45 AM	1	97	12	0	12	89	8	0	3	5	1	0	18	8	15	0	269
12:00 PM	0	96	13	0	12	93	3	0	2	4	3	0	15	3	10	0	254
12:15 PM	1	96	14	0	11	83	1	1	2	2	0	0	17	7	15	0	250
12:30 PM	1	108	19	0	6	106	4	0	0	4	1	0	17	5	10	0	281
12:45 PM	1	88	17	0	17	100	3	0	0	4	2	0	17	5	12	0	266
1:00 PM	2	94	23	0	14	85	1	0	2	1	2	0	24	5	7	0	260
1:15 PM	1	87	18	0	13	89	4	0	3	1	0	0	16	2	9	0	243
1:30 PM	0	75	14	0	10	67	2	0	1	3	2	0	22	4	9	0	209
1:45 PM	0	105	11	0	11	89	2	0	1	6	1	0	16	3	9	0	254
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	10	1503	227	0	177	1364	47	1	24	44	22	0	260	68	169	0	3916
APPROACH %'s :	0.57%	86.38%	13.05%	0.00%	11.14%	85.84%	2.96%	0.06%	26.67%	48.89%	24.44%	0.00%	52.31%	13.68%	34.00%	0.00%	
PEAK HR :	12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :	5	386	73	0	48	374	9	1	4	11	5	0	75	22	44	0	1057
PEAK HR FACTOR :	0.63	0.894	0.793	0.000	0.706	0.882	0.563	0.250	0.500	0.688	0.625	0.000	0.781	0.786	0.733	0.000	0.940
		0.906				0.900				0.833				0.904			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	2	88	18	0	19	74	3	0	0	4	0	0	13	2	15	0	238
2:15 PM	3	90	17	0	12	98	0	0	1	6	1	0	14	2	13	0	257
2:30 PM	1	106	13	0	11	107	2	0	2	4	2	0	20	6	13	0	287
2:45 PM	0	69	19	0	9	102	2	0	0	1	1	0	19	3	8	0	233
3:00 PM	0	99	12	0	9	97	0	0	1	2	0	0	12	4	12	0	248
3:15 PM	0	82	18	0	9	110	2	0	2	1	0	0	13	1	6	0	244
3:30 PM	0	72	20	0	8	96	1	0	2	4	0	0	18	3	9	0	233
3:45 PM	0	98	27	0	10	99	4	0	1	3	0	0	13	0	12	0	267
4:00 PM	2	101	22	0	12	103	7	0	1	2	3	0	17	3	8	0	281
4:15 PM	0	103	26	0	9	104	0	0	2	3	2	0	8	4	3	0	264
4:30 PM	0	116	20	0	16	79	1	0	2	3	0	0	13	7	8	0	265
4:45 PM	0	136	29	0	3	72	4	0	1	9	2	0	7	9	15	0	287
5:00 PM	1	143	23	0	10	75	3	0	1	4	1	0	16	6	10	0	293
5:15 PM	1	137	26	0	18	71	5	0	2	4	1	0	15	8	15	0	303
5:30 PM	3	109	30	0	10	73	2	0	1	2	0	0	9	1	16	0	256
5:45 PM	2	78	19	0	10	56	1	0	2	3	2	0	13	3	10	0	199
6:00 PM	0	65	18	0	5	47	1	0	1	4	1	0	17	7	4	0	170
6:15 PM	0	42	9	0	6	34	1	0	0	2	1	0	11	2	7	0	115
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	15	1734	366	0	186	1497	39	0	22	61	17	0	248	71	184	0	4440
APPROACH %'s :	0.71%	81.99%	17.30%	0.00%	10.80%	86.93%	2.26%	0.00%	22.00%	61.00%	17.00%	0.00%	49.30%	14.12%	36.58%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	2	532	98	0	47	297	13	0	6	20	4	0	51	30	48	0	1148
PEAK HR FACTOR :	0.50	0.930	0.845	0.000	0.653	0.940	0.650	0.000	0.750	0.556	0.500	0.000	0.797	0.833	0.800	0.000	0.947
		0.946				0.930				0.625				0.849			

National Data & Surveying Services

Intersection Turning Movement Count

Location: S 14th St & Simmons Rd
City: Fernandina Beach
Control: 2-Way Stop(EB/WB)

Project ID: 19-03254-001
Date: 5/2/2019

HT

NS/EW Streets:	S 14th St				S 14th St				Simmons Rd				Simmons Rd				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	3
10:15 AM	0	4	0	0	1	1	0	0	0	0	1	0	0	0	0	0	7
10:30 AM	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	4
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
11:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	3
11:15 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
11:30 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	4
11:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	3
12:00 PM	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
12:15 PM	0	1	1	0	0	7	0	0	0	0	0	0	1	0	0	0	10
12:30 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
12:45 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	3
1:00 PM	0	2	0	0	0	5	0	0	0	0	0	0	0	0	0	0	7
1:15 PM	0	2	0	0	0	3	0	0	0	0	1	0	0	0	0	0	6
1:30 PM	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	23	4	0	1	29	0	0	0	0	3	0	4	1	2	0	68
APPROACH %'s :	3.57%	82.14%	14.29%	0.00%	3.33%	96.67%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	57.14%	14.29%	28.57%	0.00%	
PEAK HR :	12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :	0	6	2	0	0	15	0	0	0	0	0	0	1	0	1	0	25
PEAK HR FACTOR :	0.00	0.750	0.500	0.000	0.000	0.536	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.625
		1.000				0.536								0.500			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
2:15 PM	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
2:30 PM	0	4	1	0	0	0	0	0	0	0	1	0	1	0	1	0	8
2:45 PM	0	2	0	0	1	2	0	0	0	0	0	0	0	1	0	0	6
3:00 PM	0	1	0	0	0	3	0	0	0	0	0	0	2	0	0	0	6
3:15 PM	0	1	1	0	0	1	0	0	0	0	1	0	0	0	0	0	4
3:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	1	0	0	0	1	0	0	0	0	1	0	1	0	0	0	4
4:00 PM	0	2	0	0	0	1	1	0	0	0	0	0	0	1	0	0	5
4:15 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	3
4:30 PM	0	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
6:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	26	4	0	1	17	1	0	0	0	3	0	7	2	1	0	62
APPROACH %'s :	0.00%	86.67%	13.33%	0.00%	5.26%	89.47%	5.26%	0.00%	0.00%	0.00%	100.00%	0.00%	70.00%	20.00%	10.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	9	0	0	0	4	0	0	0	0	0	0	0	0	0	0	13
PEAK HR FACTOR :	0.00	0.375	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.464
		0.375				0.500											

National Data & Surveying Services

Intersection Turning Movement Count

Location: S 14th St & Simmons Rd
City: Fernandina Beach
Control: 2-Way Stop(EB/WB)

Project ID: 19-03254-001
Date: 5/2/2019

Bikes

NS/EW Streets:	S 14th St				S 14th St				Simmons Rd				Simmons Rd				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	3
10:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
10:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
1:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	1	0	1	1	0	0	0	1	1	0	1	2	1	0	11
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	25.00%	50.00%	25.00%	0.00%	
PEAK HR :	12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	1	0	0	0	0	1	0	0	1	0	0	4
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.500
		0.250				0.250				0.250				0.250			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	2	1	0	0	1	0	0	1	0	1	0	0	0	0	0	6
APPROACH %'s :	0.00%	66.67%	33.33%	0.00%	0.00%	100.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	4
PEAK HR FACTOR :	0.00	0.500	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500
		0.750				0.000				0.250				0.000			

National Data & Surveying Services

Intersection Turning Movement Count

Location: S 14th St & Simmons Rd **Project #:** 19-03214-001
City: Fernandina Beach **Date:** 5/2/2019

Pedestrians (Crosswalks)

NS/EW Streets:	S 14th St		S 14th St		Simmons Rd		Simmons Rd		
NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
10:00 AM	0	1	0	0	0	0	0	0	1
10:15 AM	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	1	1	0	0	2
11:45 AM	1	0	0	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	1	0	0	1	0	2
1:30 PM	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	1	0	1	1	1	1	0	6
APPROACH %'s :	50.00%	50.00%	0.00%	100.00%	50.00%	50.00%	100.00%	0.00%	
PEAK HR :	12:15 PM - 01:15 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Prepared by National Data & Surveying Services

S 14th St & Simmons Rd

Peak Hour Turning Movement Count

ID: 19-03254-001
City: Fernandina Beach

Day: Thursday
Date: 05/02/2019

PEAK HOURS	COUNT PERIODS
NONE	NONE
12:15 PM - 01:15 PM	10:00 AM - 02:00 PM
04:30 PM - 05:30 PM	02:00 PM - 06:30 PM

S 14th St — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	9	389	48	1	442	NOON
PM	13	301	47	0	595	PM

Simmons Rd — EASTBOUND

AM	NOON	PM	
0	36	45	⇦
0	0	0	0 ↰
0	4	6	0 ↑
0	11	20	0 →
0	5	4	0 ↱
AM	NOON	PM	

WESTBOUND — Simmons Rd

PM	NOON	AM	
48	45	0	0 ↰
30	22	0	0 ←
51	76	0	0 ↙
0	0	0	0 ↲
165	134	0	⇨
PM	NOON	AM	

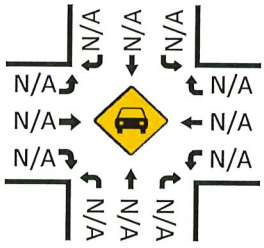
CONTROL: 2-Way Stop(EB/WB)

TEV	0 AM	1082 NOON	1161 PM
PHF		0.95	0.95

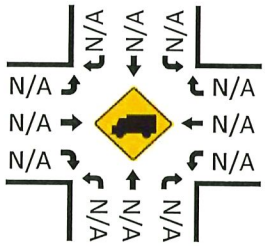
NORTHBOUND — S 14th St

PM	356	0	2	541	98	PM
NOON	470	0	5	392	75	NOON
AM	0	0	0	0	0	AM

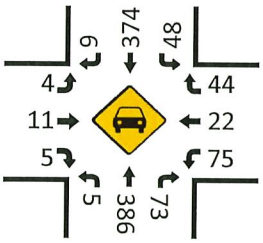
Cars (AM)



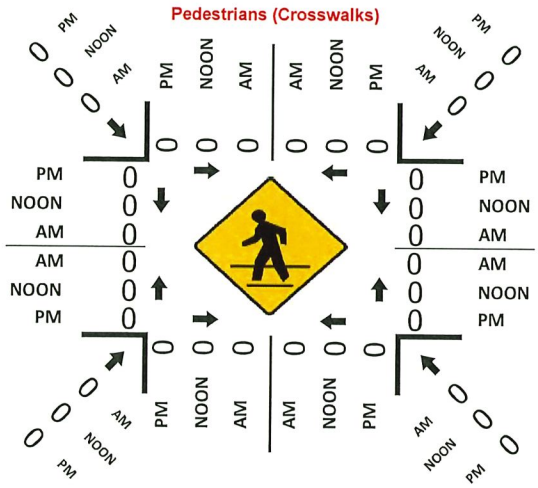
HT (AM)



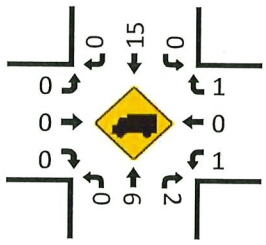
Cars (NOON)



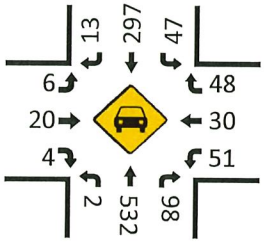
Pedestrians (Crosswalks)



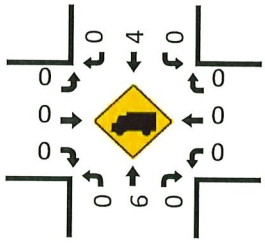
HT (NOON)



Cars (PM)

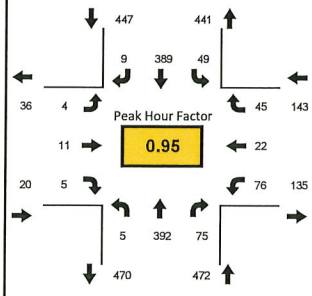


HT (PM)



LOCATION: S 14th St & Simmons Rd
CITY/STATE: Fernandina Beach, FL

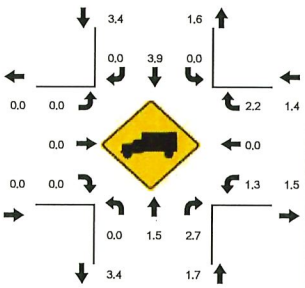
PROJECT ID: 19-03254-001
DATE: 05/02/2019

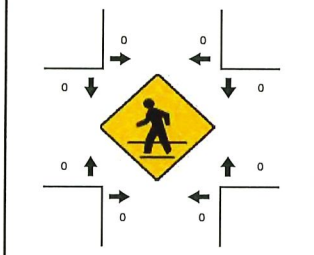


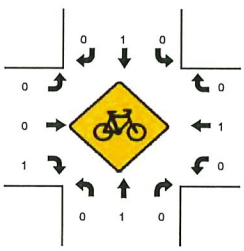
Peak Hour Factor: 0.95

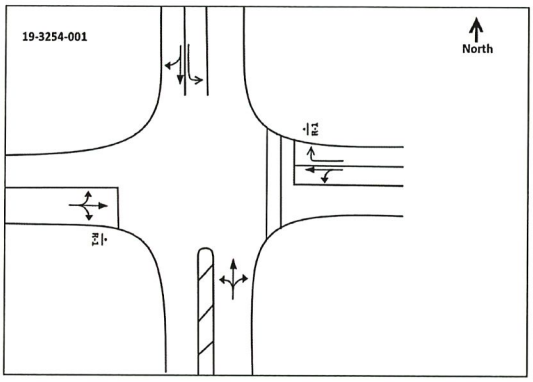
Peak-Hour: 12:15 PM - 01:15 PM
Peak 15-Minute: 12:30 PM - 12:45 PM

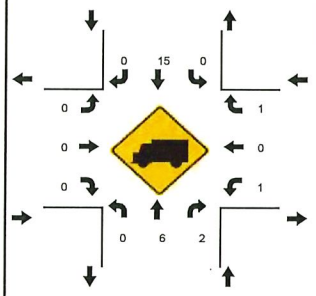
National Data & Surveying Services

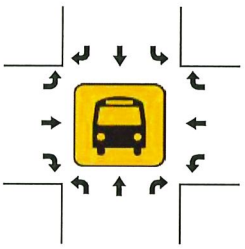








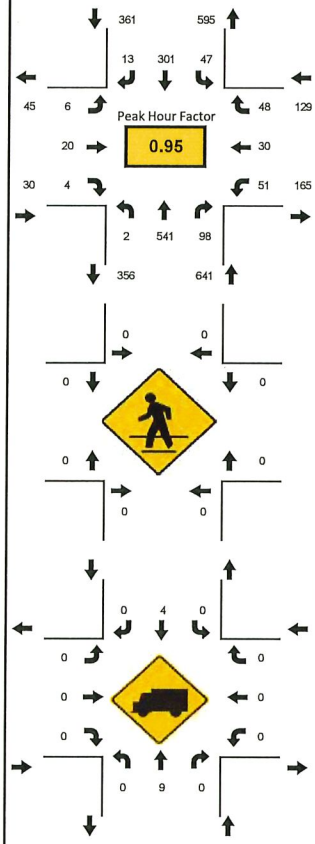




15-Min Count Period Beginning At	S 14th St Northbound					S 14th St Southbound					Simmons Rd Eastbound					Simmons Rd Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
10:00 AM	1	102	9	0		9	76	3	0		0	1	2	0		17	3	13	0		236	916
10:15 AM	0	104	13	0		10	72	3	0		0	0	2	0		15	2	11	0		232	918
10:30 AM	1	81	11	0		13	68	1	0		4	5	2	0		13	3	7	0		209	928
10:45 AM	0	94	12	0		7	92	3	0		0	4	2	0		14	0	11	0		239	979
11:00 AM	0	90	11	0		11	86	3	0		5	0	2	0		11	3	16	0		238	1012
11:15 AM	0	92	13	0		13	87	1	0		1	2	0	0		17	8	8	0		242	1031
11:30 AM	1	104	19	0		9	90	5	0		0	2	1	0		14	8	7	0		260	1048
11:45 AM	1	98	12	0		12	90	8	0		3	5	1	0		18	8	16	0		272	1074
12:00 PM	0	98	13	0		12	93	3	0		2	4	4	0		15	3	10	0		257	1071
12:15 PM	1	97	15	0		11	90	1	1		2	2	0	0		18	7	15	0		259	1081
12:30 PM	1	110	19	0		6	109	4	0		0	4	1	0		17	5	10	0		286	1071
12:45 PM	1	89	18	0		17	100	3	0		0	4	2	0		17	5	13	0		269	997
01:00 PM	2	96	23	0		14	90	1	0		2	1	2	0		24	5	7	0		267	984
01:15 PM	1	89	18	0		13	92	4	0		3	1	1	0		16	2	9	0		249	717
01:30 PM	1	77	14	0		10	67	2	0		1	3	2	0		22	4	9	0		212	468
01:45 PM	0	105	11	0		11	91	2	0		1	6	1	0		16	3	9	0		256	256
Peak 15-Min Flowrates	**Northbound**					**Southbound**					**Eastbound**					**Westbound**					**Total**	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	8	440	92	0		68	436	16	4		8	16	8	0		96	28	60	0		1280	
Heavy Trucks	0	8	4			0	28	0			0	0	0			4	0	4			48	
Pedestrians		0					0					0					0				0	
Bicycles	0	4	0			0	4	0			0	0	4			0	4	0			16	
Railroad Stopped Buses																						

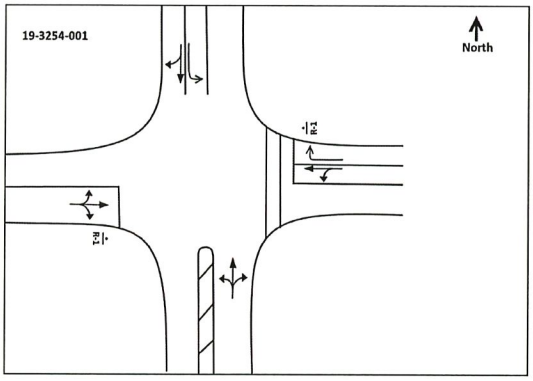
LOCATION: S 14th St & Simmons Rd
CITY/STATE: Fernandina Beach, FL

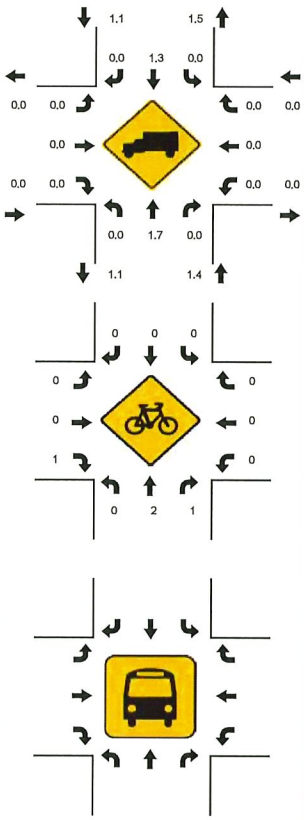
PROJECT ID: 19-03254-001
DATE: 05/02/2019



Peak-Hour: 04:30 PM - 05:30 PM
Peak 15-Minute: 05:15 PM - 05:30 PM

National Data & Surveying Services





15-Min Count Period Beginning At	S 14th St Northbound					S 14th St Southbound					Simmons Rd Eastbound					Simmons Rd Westbound						Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Total	
02:00 PM	2	91	18	0		19	74	3	0		0	4	0	0		13	2	15	0		241	1036
02:15 PM	3	91	17	0		12	101	0	0		1	6	1	0		14	2	13	0		261	1049
02:30 PM	1	110	14	0		11	107	2	0		2	4	3	0		21	6	14	0		295	1036
02:45 PM	0	71	19	0		10	104	2	0		0	1	1	0		19	4	8	0		239	975
03:00 PM	0	100	12	0		9	100	0	0		1	2	0	0		14	4	12	0		254	1007
03:15 PM	0	83	19	0		9	111	2	0		2	1	1	0		13	1	6	0		248	1039
03:30 PM	0	72	21	0		8	96	1	0		2	4	0	0		18	3	9	0		234	1058
03:45 PM	0	99	27	0		10	100	4	0		1	3	1	0		14	0	12	0		271	1096
04:00 PM	2	103	22	0		12	104	8	0		1	2	3	0		17	4	8	0		286	1114
04:15 PM	0	104	27	0		9	104	0	0		2	3	2	0		9	4	3	0		267	1122
04:30 PM	0	122	20	0		16	80	1	0		2	3	0	0		13	7	8	0		272	1161
04:45 PM	0	138	29	0		3	72	4	0		1	9	2	0		7	9	15	0		289	1147
05:00 PM	1	143	23	0		10	76	3	0		1	4	1	0		16	6	10	0		294	1058
05:15 PM	1	138	26	0		18	73	5	0		2	4	1	0		15	8	15	0		306	936
05:30 PM	3	109	30	0		10	74	2	0		1	2	0	0		10	1	16	0		258	745
05:45 PM	2	78	19	0		10	57	1	0		2	3	2	0		13	3	10	0		200	487
06:00 PM	0	66	18	0		5	47	1	0		1	4	1	0		18	7	4	0		172	287
06:15 PM	0	42	9	0		6	34	1	0		0	2	1	0		11	2	7	0		115	115

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	
All Vehicles	4	572	116	0		72	320	20	0		8	36	8	0		64	36	60	0		1316
Heavy Trucks	0	24	0			0	8	0			0	0	0			0	0	0			32
Pedestrians		0					0					0					0				0
Bicycles	0	4	4			0	0	0			0	0	4			0	0	0			12
Railroad																					
Stopped Buses																					

APPENDIX B
Data Summary

Prepared by NDS/ATD

VOLUME

Simmons Rd W/O S 14th St

Day: Wednesday
Date: 4/17/2019

City: Fernandina Beach
Project #: FL19_3255_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	404	499	903

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		0		1		12:00			8		15		23	
00:15			1		1		2		12:15			3		13		16	
00:30			0		1		1		12:30			5		7		12	
00:45			1	3	1	3	2	6	12:45			5	21	11	46	16	67
01:00			0		0		0		13:00			6		11		17	
01:15			0		0		0		13:15			2		9		11	
01:30			0		0		0		13:30			10		10		20	
01:45			0		0		0		13:45			7	25	12	42	19	67
02:00			0		0		0		14:00			6		12		18	
02:15			0		0		0		14:15			5		3		8	
02:30			0		0		0		14:30			13		12		25	
02:45			0		0		0		14:45			8	32	13	40	21	72
03:00			0		0		0		15:00			9		9		18	
03:15			0		0		0		15:15			5		4		9	
03:30			0		0		0		15:30			5		11		16	
03:45			0		0		0		15:45			6	25	7	31	13	56
04:00			0		1		1		16:00			13		11		24	
04:15			0		1		1		16:15			9		14		23	
04:30			0		0		0		16:30			6		11		17	
04:45			0		1	3	1	3	16:45			9	37	15	51	24	88
05:00			0		0		0		17:00			7		12		19	
05:15			0		0		0		17:15			8		7		15	
05:30			1		3		4		17:30			5		12		17	
05:45			0	1	0	3	0	4	17:45			2	22	12	43	14	65
06:00			1		1		2		18:00			5		11		16	
06:15			1		1		2		18:15			1		7		8	
06:30			0		3		3		18:30			1		7		8	
06:45			4	6	3	8	7	14	18:45			4	11	3	28	7	39
07:00			0		5		5		19:00			2		6		8	
07:15			2		4		6		19:15			3		5		8	
07:30			8		6		14		19:30			2		7		9	
07:45			7	17	9	24	16	41	19:45			4	11	2	20	6	31
08:00			6		4		10		20:00			4		4		8	
08:15			7		7		14		20:15			2		5		7	
08:30			13		4		17		20:30			2		3		5	
08:45			13	39	9	24	22	63	20:45			2	10	3	15	5	25
09:00			16		9		25		21:00			1		2		3	
09:15			13		6		19		21:15			0		1		1	
09:30			7		9		16		21:30			1		0		1	
09:45			10	46	4	28	14	74	21:45			2	4	2	5	4	9
10:00			12		7		19		22:00			3		3		6	
10:15			10		13		23		22:15			2		3		5	
10:30			11		7		18		22:30			0		1		1	
10:45			8	41	5	32	13	73	22:45			0	5	0	7	0	12
11:00			13		10		23		23:00			3		0		3	
11:15			10		9		19		23:15			0		0		0	
11:30			9		9		18		23:30			1		1		2	
11:45			12	44	14	42	26	86	23:45			0	4	3	4	3	8
TOTALS				197		167		364	TOTALS				207		332		539
SPLIT %				54.1%		45.9%		40.3%	SPLIT %				38.4%		61.6%		59.7%

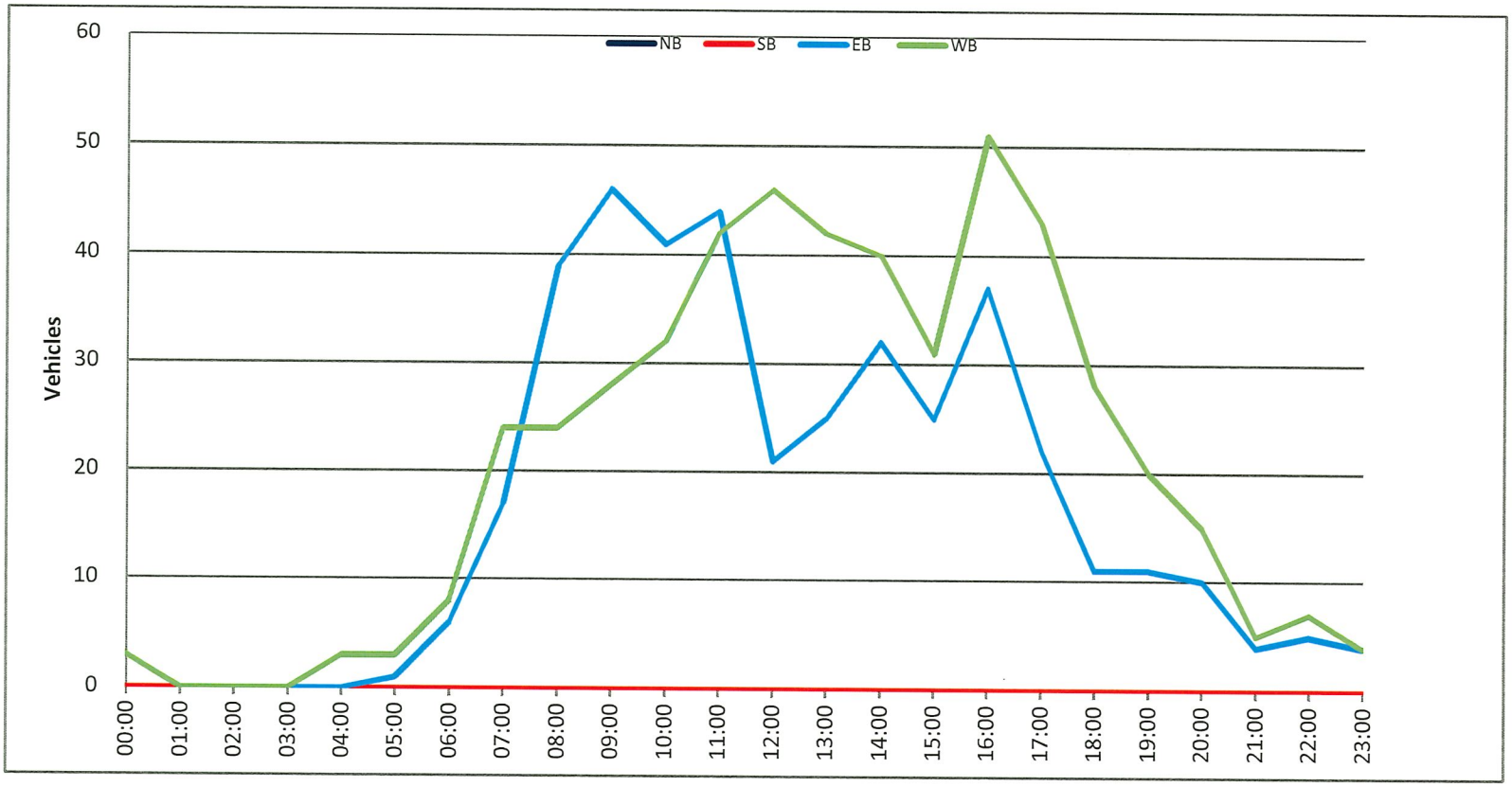
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	404	499	903

AM Peak Hour	08:30	11:30	11:00	PM Peak Hour	16:00	16:15	16:00
AM Pk Volume	55	51	86	PM Pk Volume	37	52	88
Pk Hr Factor	0.859	0.850	0.827	Pk Hr Factor	0.712	0.867	0.917
7 - 9 Volume	56	48	104	4 - 6 Volume	59	94	153
7 - 9 Peak Hour	08:00	07:30	08:00	4 - 6 Peak Hour	16:00	16:15	16:00
7 - 9 Pk Volume	39	26	63	4 - 6 Pk Volume	37	52	88
Pk Hr Factor	0.750	0.722	0.716	Pk Hr Factor	0.712	0.867	0.917

Prepared by NDS/ATD

Project #: FL19_3255_001 **City:** Fernandina Beach

Location: Simmons Rd W/O S 14th St **Date:** 4/17/2019



Prepared by NDS/ATD

VOLUME

S 14th St S/O Simmons Rd

Day: Wednesday
Date: 4/17/2019

City: Fernandina Beach
Project #: FL19_3255_002

DAILY TOTALS	NB	SB	EB	WB	Total
	5,476	5,597	0	0	11,073

AM Period	NB		SB		EB	WB	TOTAL	
00:00	2		4				6	
00:15	2		2				4	
00:30	5		4				9	
00:45	3	12	2	12			5	24
01:00	2		0				2	
01:15	1		3				4	
01:30	3		1				4	
01:45	1	7	2	6			3	13
02:00	2		3				5	
02:15	2		1				3	
02:30	0		1				1	
02:45	1	5	3	8			4	13
03:00	1		2				3	
03:15	3		1				4	
03:30	0		0				0	
03:45	0	4	2	5			2	9
04:00	1		4				5	
04:15	3		4				7	
04:30	4		7				11	
04:45	3	11	8	23			11	34
05:00	2		9				11	
05:15	7		8				15	
05:30	10		12				22	
05:45	11	30	36	65			47	95
06:00	12		28				40	
06:15	27		18				45	
06:30	21		34				55	
06:45	45	105	35	115			80	220
07:00	56		50				106	
07:15	68		53				121	
07:30	88		85				173	
07:45	109	321	108	296			217	617
08:00	90		70				160	
08:15	96		79				175	
08:30	101		75				176	
08:45	111	398	92	316			203	714
09:00	92		97				189	
09:15	86		71				157	
09:30	98		84				182	
09:45	103	379	90	342			193	721
10:00	94		83				177	
10:15	90		84				174	
10:30	86		95				181	
10:45	86	356	99	361			185	717
11:00	130		67				197	
11:15	111		115				226	
11:30	107		99				206	
11:45	113	461	109	390			222	851
TOTALS		2089		1939				4028
SPLIT %		51.9%		48.1%				36.4%

PM Period	NB		SB		EB	WB	TOTAL	
12:00	93		124				217	
12:15	130		97				227	
12:30	101		114				215	
12:45	112	436	94	429			206	865
13:00	100		80				180	
13:15	115		113				228	
13:30	94		105				199	
13:45	82	391	96	394			178	785
14:00	90		120				210	
14:15	100		92				192	
14:30	97		93				190	
14:45	107	394	128	433			235	827
15:00	102		110				212	
15:15	110		100				210	
15:30	93		128				221	
15:45	83	388	138	476			221	864
16:00	87		158				245	
16:15	110		165				275	
16:30	98		119				217	
16:45	102	397	99	541			201	938
17:00	110		120				230	
17:15	122		118				240	
17:30	110		101				211	
17:45	116	458	85	424			201	882
18:00	100		98				198	
18:15	92		69				161	
18:30	79		60				139	
18:45	77	348	60	287			137	635
19:00	78		48				126	
19:15	59		69				128	
19:30	55		54				109	
19:45	58	250	51	222			109	472
20:00	40		61				101	
20:15	32		64				96	
20:30	27		61				88	
20:45	27	126	44	230			71	356
21:00	26		42				68	
21:15	21		32				53	
21:30	24		44				68	
21:45	24	95	23	141			47	236
22:00	23		19				42	
22:15	12		17				29	
22:30	15		8				23	
22:45	18	68	8	52			26	120
23:00	7		5				12	
23:15	15		7				22	
23:30	6		9				15	
23:45	8	36	8	29			16	65
TOTALS		3387		3658				7045
SPLIT %		48.1%		51.9%				63.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	5,476	5,597	0	0	11,073

AM Peak Hour	11:00	11:15					11:45	
AM Pk Volume	461	447					881	
Pk Hr Factor	0.887	0.901					0.970	
7 - 9 Volume	719	612	0	0			1331	
7 - 9 Peak Hour	08:00	07:30					07:45	
7 - 9 Pk Volume	398	342	0	0			728	
Pk Hr Factor	0.896	0.792	0.000	0.000			0.839	

PM Peak Hour	17:00	15:30					15:30	
PM Pk Volume	458	589					962	
Pk Hr Factor	0.939	0.892					0.875	
4 - 6 Volume	855	965	0	0			1820	
4 - 6 Peak Hour	17:00	16:00					16:00	
4 - 6 Pk Volume	458	541	0	0			938	
Pk Hr Factor	0.939	0.820	0.000	0.000			0.853	

Prepared by NDS/ATD

Project #: FL19_3255_002 **City:** Fernandina Beach

Location: S 14th St S/O Simmons Rd **Date:** 4/17/2019

Prepared by NDS/ATD

VOLUME

Simmons Rd E/O S 14th St

Day: Wednesday
Date: 4/17/2019

City: Fernandina Beach
Project #: FL19_3255_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,911	1,791	3,702

AM Period	NB	SB	EB		WB		TOTAL	
00:00			7		1		8	
00:15			4		1		5	
00:30			2		0		2	
00:45			0	13	1	3	1	16
01:00			0		0		0	
01:15			1		0		1	
01:30			0		3		3	
01:45			0	1	1	4	1	5
02:00			1		2		3	
02:15			1		1		2	
02:30			0		0		0	
02:45			1	3	1	4	2	7
03:00			1		1		2	
03:15			2		0		2	
03:30			0		0		0	
03:45			1	4	1	2	2	6
04:00			0		2		2	
04:15			1		2		3	
04:30			0		4		4	
04:45			1	2	4	12	5	14
05:00			0		2		2	
05:15			1		1		2	
05:30			1		7		8	
05:45			1	3	9	19	10	22
06:00			2		9		11	
06:15			3		7		10	
06:30			5		19		24	
06:45			13	23	21	56	34	79
07:00			9		29		38	
07:15			9		17		26	
07:30			21		35		56	
07:45			27	66	31	112	58	178
08:00			27		33		60	
08:15			33		27		60	
08:30			35		30		65	
08:45			28	123	38	128	66	251
09:00			29		32		61	
09:15			32		40		72	
09:30			24		41		65	
09:45			28	113	33	146	61	259
10:00			28		40		68	
10:15			28		24		52	
10:30			37		32		69	
10:45			32	125	28	124	60	249
11:00			36		27		63	
11:15			33		26		59	
11:30			40		36		76	
11:45			37	146	21	110	58	256
TOTALS				622		720		1342
SPLIT %				46.3%		53.7%		36.3%

PM Period	NB	SB	EB		WB		TOTAL	
12:00			37		37		74	
12:15			44		30		74	
12:30			32		33		65	
12:45			32	145	37	137	69	282
13:00			37		30		67	
13:15			39		32		71	
13:30			41		32		73	
13:45			40	157	31	125	71	282
14:00			36		40		76	
14:15			36		20		56	
14:30			36		36		72	
14:45			29	137	32	128	61	265
15:00			44		43		87	
15:15			45		23		68	
15:30			43		43		86	
15:45			42	174	36	145	78	319
16:00			44		41		85	
16:15			38		36		74	
16:30			34		30		64	
16:45			48	164	22	129	70	293
17:00			47		42		89	
17:15			41		36		77	
17:30			48		34		82	
17:45			29	165	24	136	53	301
18:00			32		42		74	
18:15			31		29		60	
18:30			22		33		55	
18:45			20	105	20	124	40	229
19:00			18		16		34	
19:15			16		18		34	
19:30			27		17		44	
19:45			19	80	11	62	30	142
20:00			14		8		22	
20:15			17		10		27	
20:30			16		11		27	
20:45			21	68	6	35	27	103
21:00			12		7		19	
21:15			11		9		20	
21:30			18		3		21	
21:45			9	50	4	23	13	73
22:00			10		7		17	
22:15			12		7		19	
22:30			4		2		6	
22:45			6	32	2	18	8	50
23:00			4		1		5	
23:15			3		3		6	
23:30			3		2		5	
23:45			2	12	3	9	5	21
TOTALS				1289		1071		2360
SPLIT %				54.6%		45.4%		63.7%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,911	1,791	3,702

AM Peak Hour			11:30	09:15	11:30	
AM Pk Volume			158	154	282	
Pk Hr Factor			0.898	0.939	0.928	
7 - 9 Volume	0	0	189	240	429	
7 - 9 Peak Hour			08:00	08:00	08:00	
7 - 9 Pk Volume	0	0	123	128	251	
Pk Hr Factor	0.000	0.000	0.879	0.842	0.951	

PM Peak Hour			16:45	15:30	15:30	
PM Pk Volume			184	156	323	
Pk Hr Factor			0.958	0.907	0.939	
4 - 6 Volume	0	0	329	265	594	
4 - 6 Peak Hour			16:45	17:00	16:45	
4 - 6 Pk Volume	0	0	184	136	318	
Pk Hr Factor	0.000	0.000	0.958	0.810	0.893	

Prepared by NDS/ATD

Project #: FL19_3255_003 **City:** Fernandina Beach

Location: Simmons Rd E/O S 14th St **Date:** 4/17/2019

Prepared by NDS/ATD

VOLUME

S 14th St N/O Simmons Rd

Day: Wednesday
Date: 4/17/2019

City: Fernandina Beach
Project #: FL19_3255_004

DAILY TOTALS	NB	SB	EB	WB	Total
	5,306	5,617	0	0	10,923

AM Period	NB		SB		EB	WB	TOTAL	
00:00	2		2				4	
00:15	2		2				4	
00:30	3		1				4	
00:45	3	10	1	6			4	16
01:00	3		0				3	
01:15	1		3				4	
01:30	4		1				5	
01:45	1	9	1	5			2	14
02:00	1		0				1	
02:15	2		1				3	
02:30	0		2				2	
02:45	0	3	1	4			1	7
03:00	0		1				1	
03:15	1		1				2	
03:30	0		0				0	
03:45	0	1	1	3			1	4
04:00	1		3				4	
04:15	3		3				6	
04:30	5		5				10	
04:45	3	12	5	16			8	28
05:00	3		8				11	
05:15	8		6				14	
05:30	12		12				24	
05:45	17	40	28	54			45	94
06:00	15		19				34	
06:15	28		15				43	
06:30	25		23				48	
06:45	56	124	25	82			81	206
07:00	60		33				93	
07:15	72		44				116	
07:30	103		74				177	
07:45	107	342	96	247			203	589
08:00	90		64				154	
08:15	86		69				155	
08:30	97		55				152	
08:45	119	392	82	270			201	662
09:00	93		90				183	
09:15	93		60				153	
09:30	101		60				161	
09:45	110	397	80	290			190	687
10:00	106		71				177	
10:15	88		71				159	
10:30	83		86				169	
10:45	84	361	95	323			179	684
11:00	119		59				178	
11:15	111		106				217	
11:30	105		101				206	
11:45	106	441	118	384			224	825
TOTALS		2132		1684				3816
SPLIT %		55.9%		44.1%				34.9%

PM Period	NB		SB		EB	WB	TOTAL	
12:00	97		127				224	
12:15	118		108				226	
12:30	103		108				211	
12:45	108	426	97	440			205	866
13:00	95		94				189	
13:15	102		121				223	
13:30	93		116				209	
13:45	84	374	95	426			179	800
14:00	91		137				228	
14:15	87		112				199	
14:30	93		102				195	
14:45	106	377	147	498			253	875
15:00	87		119				206	
15:15	83		115				198	
15:30	88		154				242	
15:45	76	334	169	557			245	891
16:00	72		182				254	
16:15	106		193				299	
16:30	82		126				208	
16:45	75	335	102	603			177	938
17:00	97		118				215	
17:15	114		110				224	
17:30	101		94				195	
17:45	115	427	86	408			201	835
18:00	99		95				194	
18:15	93		67				160	
18:30	78		58				136	
18:45	80	350	59	279			139	629
19:00	76		47				123	
19:15	54		64				118	
19:30	49		62				111	
19:45	56	235	51	224			107	459
20:00	37		67				104	
20:15	29		69				98	
20:30	23		62				85	
20:45	21	110	49	247			70	357
21:00	27		48				75	
21:15	25		38				63	
21:30	20		51				71	
21:45	24	96	25	162			49	258
22:00	21		24				45	
22:15	15		16				31	
22:30	19		12				31	
22:45	16	71	13	65			29	136
23:00	11		5				16	
23:15	15		4				19	
23:30	7		9				16	
23:45	6	39	6	24			12	63
TOTALS		3174		3933				7107
SPLIT %		44.7%		55.3%				65.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	5,306	5,617	0	0	10,923

AM Peak Hour	11:00	11:45					11:45	PM Peak Hour	17:15	15:30					15:30
AM Pk Volume	441	461					885	PM Pk Volume	429	698					1040
Pk Hr Factor	0.926	0.907					0.979	Pk Hr Factor	0.933	0.904					0.870
7 - 9 Volume	734	517	0	0			1251	4 - 6 Volume	762	1011	0	0			1773
7 - 9 Peak Hour	08:00	07:30					07:30	4 - 6 Peak Hour	17:00	16:00					16:00
7 - 9 Pk Volume	392	303	0	0			689	4 - 6 Pk Volume	427	603	0	0			938
Pk Hr Factor	0.824	0.789	0.000	0.000			0.849	Pk Hr Factor	0.928	0.781	0.000	0.000			0.784

Prepared by NDS/ATD

Project #: FL19_3255_004 **City:** Fernandina Beach

Location: S 14th St N/O Simmons Rd **Date:** 4/17/2019

APPENDIX C
Signal Warrant Analysis

Form 750-020-01
TRAFFIC ENGINEERING
10/15

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	Fernandina Beach	Engineer:	D. Barrs
County:	74 – Nassau	Date:	May 21, 2019
District:	Two		

Major Street:	S. 14th Street	Lanes:	2	Major Approach Speed:	45
Minor Street:	Simmons Road	Lanes:	1	Minor Approach Speed:	40

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Volume Level Criteria

1. Is the posted speed or 85th-percentile of major street > 40 mph (70 km/h)? ☑ Yes ☐ No
2. Is the intersection in a built-up area of an isolated community with a population < 10,000? ☐ Yes ☑ No

"70%" volume level **may** be used if Question 1 **or** 2 above is answered "Yes" ☑ 70% ☐ 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Warrant 1 is satisfied if Condition A or Condition B is "100%" satisfied for eight hours. ☑ Yes ☐ No

Warrant 1 is also satisfied if both Condition A and Condition B are "80%" satisfied (should only be applied after an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems). ☐ Yes ☑ No

Condition A - Minimum Vehicular Volume

Condition A is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

100% Satisfied: ☐ Yes ☑ No
80% Satisfied: ☐ Yes ☑ No
70% Satisfied: ☐ Yes ☑ No

Number of Lanes for moving traffic on each approach		Vehicles per hour on major-street (total of both approaches)			Vehicles per hour on minor-street (one direction only)		
Major	Minor	100%[a]	80%[b]	70%[c]	100%[a]	80%[b]	70%[c]
1	1	500	400	350	150	120	105
2 or more	1	600	480	420	150	120	105
2 or more	2 or more	600	480	420	200	160	140
1	2 or more	500	400	350	200	160	140

[a] Basic Minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Record 8 highest hours and the corresponding major-street and minor-street volumes in the Instructions Sheet.

Street	Eight Highest Hours							
	10:00-11:00AM	11:00-12:00PM	12:00-1:00PM	1:00-2:00PM	2:00-3:00PM	3:00-4:00PM	4:00-5:00PM	5:00-6:00PM
Major	730	784	835	759	807	797	869	803
Minor	67	87	87	92	81	67	70	72

Existing Volumes

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

Condition B - Interruption of Continuous Traffic

Condition B is intended for application where Condition A is not satisfied and the traffic volume on a major street is so heavy that traffic on the minor intersecting street suffers excessive delay or conflict in entering or crossing the major street.

Applicable:	☑ Yes	☐ No
100% Satisfied:	☐ Yes	☑ No
80% Satisfied:	☑ Yes	☐ No
70% Satisfied:	☑ Yes	☐ No

Number of Lanes for moving traffic on each approach		Vehicles per hour on major-street (total of both approaches)			Vehicles per hour on minor-street (one direction only)		
Major	**Minor**	**100%[a]**	**80%[b]**	**70%[c]**	**100%[a]**	**80%[b]**	**70%[c]**
1	1	750	600	525	75	60	53
2 or more	1	900	720	630	75	60	53
2 or more	2 or more	900	720	630	100	80	70
1	2 or more	750	600	525	100	80	70

[a] Basic Minimum hourly volume

[b] Used for combination of Conditions A and B after adequate trial of other remedial measures

[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Record 8 highest hours and the corresponding major-street and minor-street volumes in the Instructions Sheet.

Eight Highest Hours								
Street	**10:00-11:00AM**	**11:00-12:00PM**	**12:00-1:00PM**	**1:00-2:00PM**	**2:00-3:00PM**	**3:00-4:00PM**	**4:00-5:00PM**	**5:00-6:00PM**
Major	730	784	835	759	807	797	869	803
Minor	67	87	87	92	81	67	70	72

Existing Volumes

Form 750-020-01
TRAFFIC ENGINEERING
10/15

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	Fernandina Beach	Engineer:	D. Barrs
County:	74 – Nassau	Date:	May 21, 2019
District:	Two		

Major Street:	S. 14th Street	Lanes:	2	Major Approach Speed:	45
Minor Street:	Simmons Road	Lanes:	1	Minor Approach Speed:	40

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Volume Level Criteria

1. Is the posted speed or 85th-percentile of major street > 40 mph (70 km/h)? ☑ Yes ☐ No
2. Is the intersection in a built-up area of an isolated community with a population < 10,000? ☐ Yes ☑ No

"70%" volume level **may** be used if Question 1 **or** 2 above is answered "Yes" ☑ Yes ☐ No

WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

If all four points lie above the appropriate line, then the warrant is satisfied.

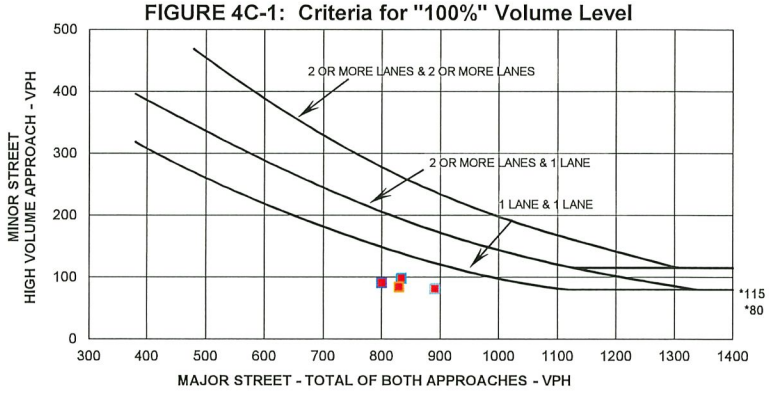
Applicable: ☑ Yes ☐ No
Satisfied: ☑ Yes ☐ No

Plot four volume combinations on the applicable figure below.

100% Volume Level

Four Highest Hours	Volumes	
	Major Street	Minor Street
11:00-12:00PM	800	91
12:00-1:00PM	834	98
2:15-3:15PM	830	84
4:30-5:30PM	891	81

FIGURE 4C-1: Criteria for "100%" Volume Level



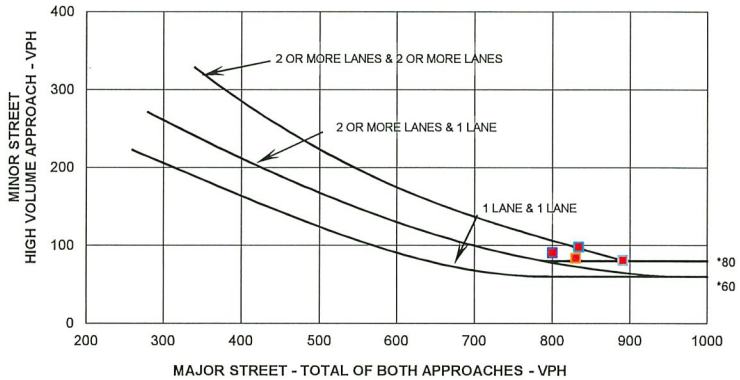
** Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

70% Volume Level

Four Highest Hours	Volumes	
	Major Street	Minor Street
11:00-12:00PM	800	91
12:00-1:00PM	834	98
2:15-3:15PM	830	84
4:30-5:30PM	891	81

FIGURE 4C-2: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Form 750-020-01
TRAFFIC ENGINEERING
10/15

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	Fernandina Beach	Engineer:	D. Barrs
County:	74 – Nassau	Date:	May 21, 2019
District:	Two		

Major Street:	S. 14th Street	Lanes:	2	Major Approach Speed:	45
Minor Street:	Simmons Road	Lanes:	1	Minor Approach Speed:	40

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Volume Level Criteria

1. Is the posted speed or 85th-percentile of major street > 40 mph (70 km/h)? ☑ Yes ☐ No
2. Is the intersection in a built-up area of an isolated community with a population < 10,000? ☐ Yes ☑ No

"70%" volume level **may** be used if Question 1 **or** 2 above is answered "Yes" ☑ 70% ☐ 100%

WARRANT 3 - PEAK HOUR

*If all three criteria are fulfilled **or** the plotted point lies above the appropriate line, then the warrant is satisfied.*

Applicable: ☐ Yes ☑ No
Satisfied: ☐ Yes ☐ No

Unusual condition justifying use of warrant:

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Peak Hour 100% Volume		
Time	Major Vol.	Minor Vol.

Peak Hour 70% Volume		
Time	Major Vol.	Minor Vol.
4:30-5:30PM	891	81

Criteria

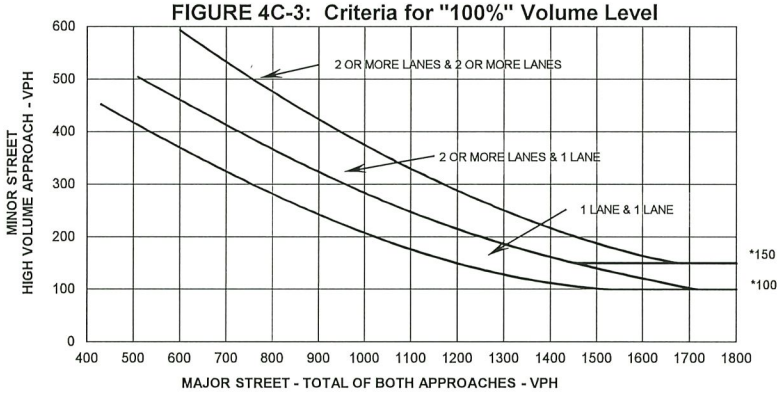
1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*		
Fulfilled?:	☐ Yes ☑ No	

2. Volume on Minor Approach One-Direction *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	100	150
Volume*		
Fulfilled?:	☐ Yes ☑ No	

3. Total Intersection Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*		
Fulfilled?:	☑ Yes ☐ No	

Plot volume combination on the applicable figure below.

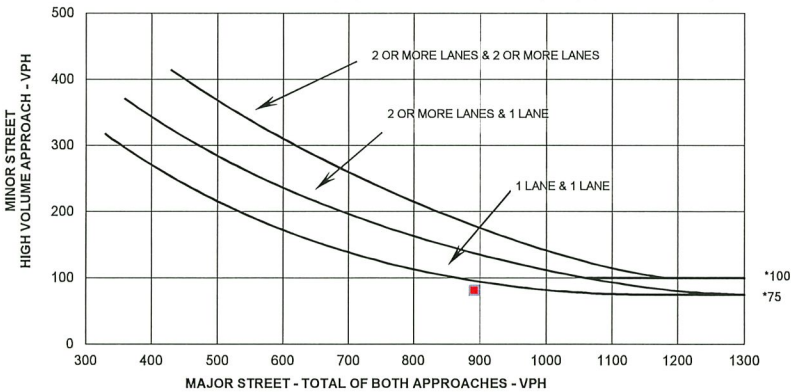
FIGURE 4C-3: Criteria for "100%" Volume Level



** Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

FIGURE 4C-4: Criteria for "70%" Volume Level

(Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



** Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.*

Form 750-020-01
TRAFFIC ENGINEERING
10/15

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	Fernandina Beach	Engineer:	D. Barrs
County:	74 – Nassau	Date:	May 21, 2019
District:	Two		

Major Street:	S. 14th Street	Lanes:	2	Major Approach Speed:	45
Minor Street:	Simmons Road	Lanes:	1	Minor Approach Speed:	40

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Volume Level Criteria

1. Is the posted speed or 85th-percentile of major street > 40 mph (70 km/h)? ☑ Yes ☐ No
2. Is the intersection in a built-up area of an isolated community with a population < 10,000? ☐ Yes ☑ No

"70%" volume level **may** be used if Question 1 **or** 2 above is answered "Yes" ☑ 70% ☐ 100%

WARRANT 4 - PEDESTRIAN VOLUME

For each of any 4 hours of an average day, the plotted points lie above the appropriate line, then the warrant is satisfied.

Applicable: ☐ Yes ☑ No
Satisfied: ☐ Yes ☑ No

100% Volume Level

Four Highest Hours	Volumes	
	Major Street	Pedestrian Total

Plot four volume combinations on the applicable figure below.

Figure 4C-5. Criteria for "100%" Volume Level

** Note: 107 pph applies as the lower threshold volume*

70% Volume Level

Four Highest Hours	Volumes	
	Major Street	Pedestrian Total
11:00-12:00PM	800	
12:00-1:00PM	834	
2:15-3:15PM	830	
4:30-5:30PM	891	

Figure 4C-6 Criteria for "70%" Volume Level

** Note: 75 pph applies as the lower threshold volume*

WARRANT 4 - PEDESTRIAN VOLUME

For 1 hour (any four consecutive 15-minute periods) of an average day, the plotted point falls above the appropriate line, then the warrant is satisfied.

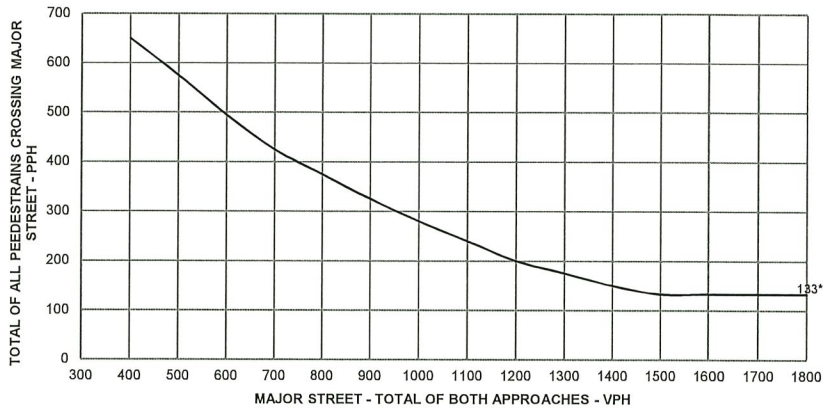
Applicable: ☐ Yes ☐ No
Satisfied: ☐ Yes ☐ No

Plot one volume combination on the applicable figure below.

100% Volume Level

Peak Hour	Volumes	
	Major Street	Pedestrian Total

Figure 4C-7. Criteria for "100%" Volume Level - Peak Hour



** Note: 133 pph applies as the lower threshold volume*

70% Volume Level

Peak Hour	Volumes	
	Major Street	Pedestrian Total
4:30-5:30PM	891	2

Figure 4C-8 Criteria for "70%" Volume Level - Peak Hour

** Note: 93 pph applies as the lower threshold volume*

Form 750-020-01
TRAFFIC ENGINEERING
10/15

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	Fernandina Beach	Engineer:	D. Barrs
County:	74 – Nassau	Date:	May 21, 2019
District:	Two		

Major Street:	S. 14th Street	Lanes:	2	Major Approach Speed:	45
Minor Street:	Simmons Road	Lanes:	1	Minor Approach Speed:	40

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

WARRANT 5 - SCHOOL CROSSING

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Applicable: ☐ Yes ☑ No

Satisfied: ☐ Yes ☑ No

Criteria				Fulfilled? Yes	Fulfilled? No
1. There are a minimum of 20 students crossing the major street during the highest crossing hour.	Students:	Hour:			
2. There are fewer adequate gaps in the major street traffic stream during the period when the children are using the established school crossing than the number of minutes in the same period.		Minutes:	Gaps:		
3. The nearest traffic signal along the major street is located more than 300 ft. (90 m) away, or the nearest signal is within 300 ft. (90 m) but the proposed traffic signal will not restrict the progressive movement of traffic.					

State of Florida Department of Transportation

Form 750-020-01
TRAFFIC ENGINEERING
10/15

TRAFFIC SIGNAL WARRANT SUMMARY

City:	Fernandina Beach	Engineer:	D. Barrs
County:	74 – Nassau	Date:	May 21, 2019
District:	Two		

Major Street:	S. 14th Street	Lanes:	2	Major Approach Speed:	45
Minor Street:	Simmons Road	Lanes:	1	Minor Approach Speed:	40

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

WARRANT 6 - COORDINATED SIGNAL SYSTEM

Indicate if the criteria are fulfilled in the boxes provided. The warrant is satisfied if either criterion is fulfilled. This warrant should not be applied when the resulting signal spacing would be less than 300 m (1,000 ft.).

Applicable: ☐ Yes ☑ No

Satisfied: ☐ Yes ☑ No

Criteria	Fulfilled? Yes	Fulfilled? No
1. On a one-way street or a street that has traffic predominately in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.		
2. On a two-way street, adjacent signals do not provide the necessary degree of platooning, and the proposed and adjacent signals will collectively provide a progressive operation.		

Form 750-020-01
TRAFFIC ENGINEERING
10/15

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City: **Fernandina Beach**
County: **74 – Nassau**
District: **Two**

Engineer: **D. Barrs**
Date: **May 21, 2019**

Major Street: **S. 14th Street** Lanes: **2** Major Approach Speed: **45**
Minor Street: **Simmons Road** Lanes: **1** Minor Approach Speed: **40**

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

WARRANT 7 - CRASH EXPERIENCE

Record hours where criteria are fulfilled, the corresponding volume, and other information in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Applicable: ☑ Yes ☐ No
Satisfied: ☑ Yes ☐ No

Criteria		Hour	Volume		Met?		Fulfilled?	
			Major	Minor	Yes	No	Yes	No
1. One of the warrants to the right is met.	Warrant 1, Condition A (80% satisfied)					No	Yes	
	Warrant 1, Condition B (80% satisfied)				Yes			
	Warrant 4, Pedestrian Volume at 80% of volume requirements: # ped/hr for four (4) hours or # ped/hr for one (1) hour.					No		
2. Adequate trial of other remedial measure has failed to reduce crash frequency.		Measure tried:	Unknown					
3. Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12-month period.		Observed Crash Types:	Angle and Left-Turn	Number of crashes per 12 months:	6		Yes	

Form 750-020-01
TRAFFIC ENGINEERING
10/15

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	Fernandina Beach	Engineer:	D. Barrs
County:	74 – Nassau	Date:	May 21, 2019
District:	Two		

Major Street:	S. 14th Street	Lanes:	2	Major Approach Speed:	45
Minor Street:	Simmons Road	Lanes:	1	Minor Approach Speed:	40

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

WARRANT 8 - ROADWAY NETWORK

Record hours where criteria are fulfilled, and the corresponding volume or other information in the boxes provided. The warrant is satisfied if at least one of the criteria is fulfilled and if all intersecting routes have one or more of the Major Route characteristics listed.

Applicable: ☐ Yes ☑ No

Satisfied: ☐ Yes ☐ No

Criteria							Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. Both of the criteria to the right are met.	a. Total entering volume of at least 1,000 veh/hr during a typical weekday peak hour.	Entering Volume:								
	b. Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.	Warrant:	1	2	3					
		Satisfied?:								
2. Total entering volume at least 1,000 veh/hr for each of any 5 hrs of a non-normal business day (Sat. or Sun.)						← Hour				
						←Volume				

Characteristics of Major Routes		Met? Yes	Met? No	Fulfilled? Yes	Fulfilled? No
1. Part of the street or highway system that serves as the principal roadway network for through traffic flow.	Major Street:				
	Minor Street:				
2. Rural or suburban highway outside of, entering, or traversing a city.	Major Street:				
	Minor Street:				
3. Appears as a major route on an official plan.	Major Street:				
	Minor Street:				

Form 750-020-01
TRAFFIC ENGINEERING
10/15

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	Fernandina Beach	Engineer:	D. Barrs
County:	74 – Nassau	Date:	May 21, 2019
District:	Two		

Major Street:	S. 14th Street	Lanes:	2	Major Approach Speed:	45
Minor Street:	Simmons Road	Lanes:	1	Minor Approach Speed:	40

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

Approach Lane Criteria

1. How many approach lanes are there at the track crossing? ☐ 1 ☐ 2 or

If there is 1 lane, use Figure 4C-9 and if there are 2 or more, use Figure 4C-10. ☐ Fig 4C-9 ☐ Fig 4C-10

WARRANT 9 - INTERSECTION NEAR A GRADE CROSSING

This signal warrant should be applied only after adequate consideration has been given to other alternatives or after a trial of an alternative has failed to alleviate the safety concerns associated with the grade crossing.

Indicate if both criteria are fulfilled in the boxes provided. The warrant is satisfied if both criteria are met.

Applicable: ☐ Yes ☐ No

Satisfied: ☐ Yes ☐ No

Criteria	Fulfilled? Yes	Fulfilled? No
1. A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of the track nearest to the intersection is within 140 feet of the stop line or yield line on the approach; and	☐	☐
2. During the highest traffic volume hour during which the rail uses the crossing, the plotted point falls above the applicable curve for the existing combination of approach lanes over the track and the distance D (clear storage distance).	☐	☐

Use the following tables (4C-2, 4C-3, and 4C-4 to appropriately adjust the minor-street approach volume).

Inputs		Adjustment Factors from Tables
Occurrences of Rail traffic per day		
% of High Occupancy Buses on Minor-Street Approach		1.00
Enter D (feet)		
% of Tractor-Trailer Trucks on Minor-Street Approach		0.50

Table 4C-2. Adjustment Factor for Daily Frequency of Rail Traffic

Rail Traffic per Day	Adjustment Factor
1	0.67
2	0.91
3 to 5	1.00
6 to 8	1.18
9 to 11	1.25
12 or more	1.33

Table 4C-3. Adjustment Factor for Percentage of High-Occupancy Buses

% of High-Occupancy Buses* on Minor Street Approach	Adjustment Factor
0%	1.00
2%	1.09
4%	1.19
6% or more	1.32

* A high-occupancy bus is defined as a bus occupied by at least 20 people

Table 4C-4. Adjustment Factor for Percentage of Tractor-Trailer Trucks

% of Tractor-Trailer Trucks on Minor-Street Approach	Adjustment Factor	
	D less than 70 feet	D of 70 feet or more
0% to 2.5%	0.50	0.50
2.6% to 7.5%	0.75	0.75
7.6% to 12.5%	1.00	1.00
12.6% to 17.5%	2.30	1.15
17.6% to 22.5%	2.70	1.35
22.6% to 27.5%	3.28	1.64
More than 27.5%	4.18	2.09

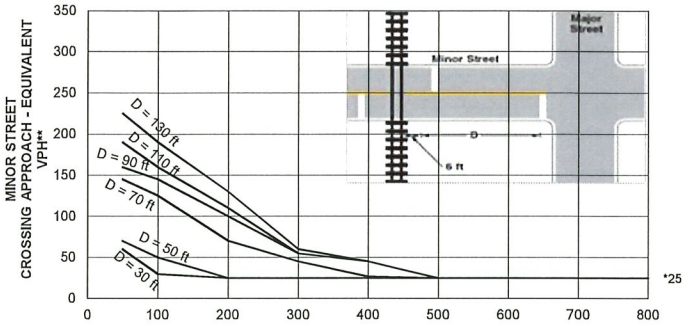
Input the major and minor street volumes before adjustment factors are applied

1 Approach Lane		
D (ft)	Major Vol.	Minor Vol.

After adjustment factors are applied

1 Approach Lane w/Factors		
D (ft)	Major Vol.	Minor Vol.

FIGURE 4C-9: Criteria for 1 Approach Lane at the Track Crossing



** Note: 25 vph applies as the lower threshold volume*

** *Note: VPH after applying the adjustment factors in Tables 4C-2, 4C, and or 4C-4, if appropriate*

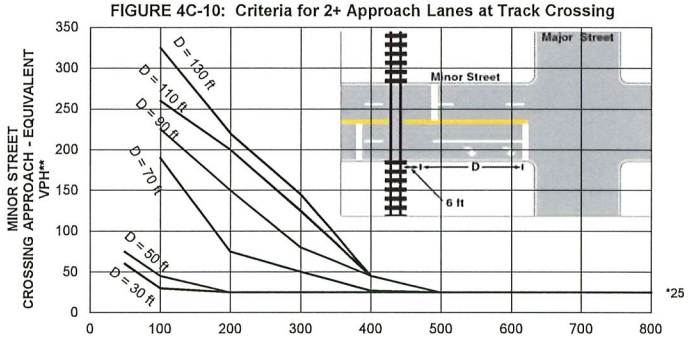
Input D and the major and minor street volumes before adjustment factors are applied

2 or more Approach Lanes		
D (ft)	Major Vol.	Minor Vol.

After adjustment factors are applied

2+ Approach Lane w/Factors		
D (ft)	Major Vol.	Minor Vol.

FIGURE 4C-10: Criteria for 2+ Approach Lanes at Track Crossing



** Note: 25 vph applies as the lower threshold volume*

** *Note: VPH after applying the adjustment factors in Tables 4C-2, 4C, and or 4C-4, if appropriate*

Form 750-020-01
TRAFFIC ENGINEERING
10/15

State of Florida Department of Transportation

TRAFFIC SIGNAL WARRANT SUMMARY

City:	Fernandina Beach	Engineer:	D. Barrs
County:	74 – Nassau	Date:	May 21, 2019
District:	Two		

Major Street:	S. 14th Street	Lanes:	2	Major Approach Speed:	45
Minor Street:	Simmons Road	Lanes:	1	Minor Approach Speed:	40

MUTCD Electronic Reference to Chapter 4: http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/part4.pdf

CONCLUSIONS

Remarks:

WARRANTS SATISFIED:

☑	Warrant 1	☐ Not Applicable
☑	Warrant 2	☐ Not Applicable
☐	Warrant 3	☑ Not Applicable
☐	Warrant 4	☑ Not Applicable
☐	Warrant 5	☑ Not Applicable
☐	Warrant 6	☑ Not Applicable
☐	Warrant 7	☐ Not Applicable
☐	Warrant 8	☑ Not Applicable
☐	Warrant 9	☑ Not Applicable

APPENDIX D
Crash Data
And
Crash Diagram

Reporting_Agency	Crash_Date	Crash_Time	County	Crash_Street	Intersecting_Street	Crash_Type	Vehicles	Injuries	Alcohol_Re	Distraction	Drug_Relat	Estimated_	Weather_C	Light_Cond	Crash_Type_Det	Crash_Type	Crash_Severity	Manner_of_Collision
Nassau Co SO	1/6/2012	1:17 PM	Nassau	SOUTH 14TH STREET	SIMMONS ROAD	Angle	2	2	N	N	Y	$5,000	Clear	Daylight	Right Angle	SE	Injury	Sideswipe, Opposite Direction
Nassau Co SO	11/26/2012	2:06 PM	Nassau	SOUTH 14TH ST	SIMMONS RD	Angle	2	1	N	N	N	$7,000	Clear	Daylight	Right Angle	NW	Injury	Sideswipe, Opposite Direction
Nassau Co SO	2/18/2013	5:09 PM	Nassau	SOUTH 14TH STREET	SIMMONS ROAD	Angle	3	1	N	N	N	$8,001	Clear	Daylight	Right Angle	SW	Injury	Sideswipe, Opposite Direction
FHP	3/15/2013	10:10 PM	Nassau	SIMMONS RD	14TH ST	Angle	2	1	N	N	N	$25,000	Clear	Dark - Not	Right Angle	NW	Injury	Angle
Nassau Co SO	4/23/2014	6:51 PM	Nassau	SOUTH 14 STREET		Left Turn	2	1	N	Y	N	$20,000	Clear	Daylight	Left Entering	W	Injury	Angle
FHP	6/12/2014	3:45 PM	Nassau	S 14TH ST	SIMMONS RD	Angle	3	1	N	Y	N	$12,500	Cloudy	Daylight	Right Angle	NE	Injury	Angle
Nassau Co SO	10/17/2014	5:05 PM	Nassau	SOUTH 14TH STREET		Other	2	2	N	N	N	$2	Clear	Daylight	Other	N	Injury	Angle
FHP	5/25/2015	5:03 PM	Nassau	S. 14TH STREET	SIMMONS ROAD	Unknown	2	4	N	N	N	$20,000	Clear	Daylight	Unknown		Injury	Angle
FHP	7/2/2015	1:15 PM	Nassau	S 14TH STREET	SIMMONS ROAD	Left Turn	2	0	N	N	N	$15,000	Clear	Daylight	Left Leaving	W	Property Damage O	Angle
FHP	7/25/2015	10:44 AM	Nassau	14TH STREET	SIMMONS ROAD	Angle	2	2	N	N	N	$16,000	Clear	Daylight	Right Angle	SE	Injury	Angle
Nassau Co SO	9/26/2015	10:33 PM	Nassau	SIMMONS ROAD	S 14TH STREET	Rear End	2	0	N	Y	N	$5,000	Clear	Dark - Not	Rear End	W	Property Damage O	Front to Rear
FHP	2/11/2016	11:27 AM	Nassau	S 14TH ST	SIMMONS ROAD	Left Turn	2	0	N	N	N	$3,500	Clear	Daylight	Left Entering	S	Property Damage O	Angle
Nassau Co SO	6/11/2016	3:35 AM	Nassau	S 14TH ST	SIMMONS RD	Rear End	2	0	Y	N	N	$5,200	Clear	Dark - Not	Rear End	N	Property Damage O	Front to Rear
Nassau Co SO	7/14/2016	9:29 PM	Nassau	S 14TH ST	SIMMONS RD	Angle	2	1	N	Y	N	$5,000	Clear	Dusk	Right Angle	NW	Injury	Angle
Nassau Co SO	12/26/2016	9:50 PM	Nassau	SIMMONS RD	S 14TH ST	Left Turn	2	2	N	N	N	$20,000	Fog, Smog,	Dark - Not	Left Entering	W	Injury	Angle
FHP	12/26/2017	3:30 PM	Nassau	SOUTH 14TH ST.	SIMMONS RD.	Angle	2	0	N	N	N	$5,000	Cloudy	Daylight	Right Angle	NE	Property Damage O	Angle
Nassau Co SO	3/10/2018	4:24 PM	Nassau	S 14TH STREET	SIMMONS ROAD	Left Turn	2	0	N	N	N	$5,000	Clear	Daylight	Left Leaving	W	Property Damage O	Angle
FHP	3/13/2018	5:40 PM	Nassau	SOUTH 14TH STREET	SIMMONS ROAD	Angle	2	0	N	N	N	$27,500	Clear	Daylight	Right Angle	NW	Property Damage O	Front to Front
FHP	5/1/2018	12:12 PM	Nassau	S 14TH ST	SIMMONS RD	Angle	3	1	N	N	N	$17,500	Clear	Daylight	Right Angle	NW	Injury	Angle
Nassau Co SO	11/30/2018	7:41 AM	Nassau	S 14TH ST	SIMMONS RD	Angle	2	2	N	N	N	$20,000	Clear	Daylight	Right Angle	NE	Injury	Angle
Nassau Co SO	1/9/2019	7:58 AM	Nassau	SOUTH 14TH STREET	SIMMONS RD	Angle	2	0	N	Y	N	$15,000	Clear	Daylight	Right Angle	SW	Property Damage O	Angle
FHP	3/31/2019	6:25 PM	Nassau	SOUTH 14TH STREET	SIMMONS ROAD	Right Turn	2	1	N	N	N	$15,000	Rain	Daylight	Right/Through	W	Injury	Angle
Nassau Co SO	5/14/2019	10:55 AM	Nassau	SIMMONS RD	S 14TH ST	Angle	2	2	Y	N	N	$9,700	Clear	Daylight	Right Angle	NW	Injury	Angle

REAR END

ANGLE

YEAR	NUMBER OF CRASHES
2015	4
2016	4
2017	1
2018	4
2019	2

CRASH SUMMARY

SIMMONS ROAD & SOUTH 14TH STREET
FERNANDINA BEACH, FLORIDA
NASSAU COUNTY

cph

Engineers
Architects
Planners
Landscape Architects
Transportation/Traffic
Surveyors
Environmental Scientists
Construction Management

U:\sgorman\Projects\Nassau Safety Study\CADD\Simmons and S 14th Street.dwg

5/28/19