

Letter of Transmittal

Attn: Glen Bailey

Date: 10-23-2018

Company: Pinellas County Planning/Zoning
 Address: 440 Court Street, 4th Floor
 Clearwater, FL 33756 (464-5640)

From: John C. Landon, P.E.
 LANDON@LMAENGR.COM

Re: Ulmerton Hilton H2

Job #: 781-01

Copies	Description
1	sealed boundary survey
1	sealed traffic survey
1	concept plan (11 x 17)

Transmitted:

- | | | |
|---|---|--|
| <input type="checkbox"/> For approval | <input type="checkbox"/> For your Signature | <input checked="" type="checkbox"/> For your use |
| <input type="checkbox"/> As requested | <input type="checkbox"/> Approved as noted | <input type="checkbox"/> Return for revision |
| <input type="checkbox"/> For review & comment | <input type="checkbox"/> Other: | |

Comments:

For transmittal to SHAUN N. AMARNANI , Esquire in support of developers agreement, zoning application, etc. for above referenced site

781-01

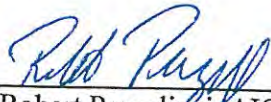
**TRAFFIC ANALYSIS
FOR
HILTON HOTEL
4501 ULMERTON ROAD
PINELLAS COUNTY, FL**

**PREPARED FOR:
LONDON MOREE & ASSOCIATES, INC**

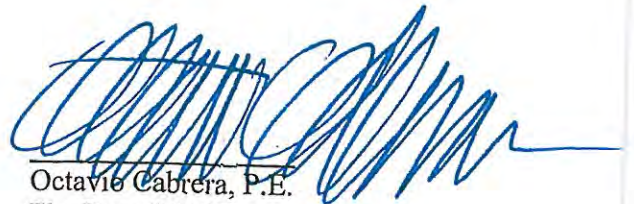
**PREPARED BY:
GULF COAST CONSULTING, INC.
OCTOBER 2018
PROJECT # 18-048**

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Robert Pergolizzi, AICP/PTP
AICP # 9023 / PTP #133



Octavio Cabrera, P.E.
Fla. Reg. # 14663

Octavio Cabrera

OCT 12 2018

FL P.E. No. 14663

I. INTRODUCTION

The applicant is seeking approval to develop a 2.5 acre parcel located on the north side of Ulmerton Road (SR 688) between 49th Street and Roosevelt Boulevard. (See Figure 1) The site is currently vacant and is accessed by a right-in/right-out driveway to Ulmerton Road that provides shared access to adjacent parcels. A pre-application meeting was held with FDOT on October 4, 2018 and this traffic analysis was prepared to evaluate the traffic impacts and access considerations for a proposed Hilton hotel and an outparcel restaurant, and to aid in driveway design.

II. EXISTING CONDITIONS

The adjacent segment of Ulmerton Road (SR 688) was recently widened to six-through lanes and auxiliary lanes. A previously existing traffic signal at Ulmerton Road / 40th Street has been removed and was relocated to the Roosevelt Boulevard (SR 686) intersection. Ulmerton Road is an arterial with a posted speed of 45 MPH and a design speed of 45 MPH per FDOT plans. Due to median modifications the existing driveway is limited to right-in/right out movements. This has created additional U-turns at the signalized intersection of 38th Street to the east and at the 49th Street intersection to the west.

To establish existing conditions, AM peak period (7-9 AM) and PM peak period (4-6 PM) intersection turning movement counts were conducted at the following intersections in October 2018.

Ulmerton Road / 49th Street (signal)
 Ulmerton Road / Existing driveway (RT in / RT out)
 Ulmerton Road / 38th Street / Stoneybrook Drive (Signal)

Traffic counts were adjusted to peak season equivalents using FDOT seasonal adjustment factors and the peak hour/peak season traffic volumes are shown in Figure 2. The intersections were analyzed using the SYNCHRO and HCS7 software. The existing operating conditions are shown in Table 1 and the SYNCHRO and HCS7 printouts are included in Appendix A.

TABLE 1 - EXISTING INTERSECTION CONDITIONS (2018)

INTERSECTION LOCATION	AM LOS	DELAY (SEC/VEH)	ICU %	PM LOS	DELAY (SEC/VEH)	ICU %
Ulmerton Rd / 49 th St.	F	87.9	97.1%	F	106.4	106.6%
Ulmerton Rd / Driveway	B*	10.5	NA	C*	19.6	NA
Ulmerton Rd / 38 th St.	C	21.4	80.2%	D	43.6	103.6%

* = LOS for SBRT exiting driveway

Right turns from the existing driveway are assisted by the presence of a traffic signal at the Roosevelt Boulevard (SR 686) intersection to the east which creates gaps in WB traffic allowing vehicles to exit onto Ulmerton Road.



PROJECT LOCATION - 4501 ULMERTON RD

PROJECT NO:
18-048

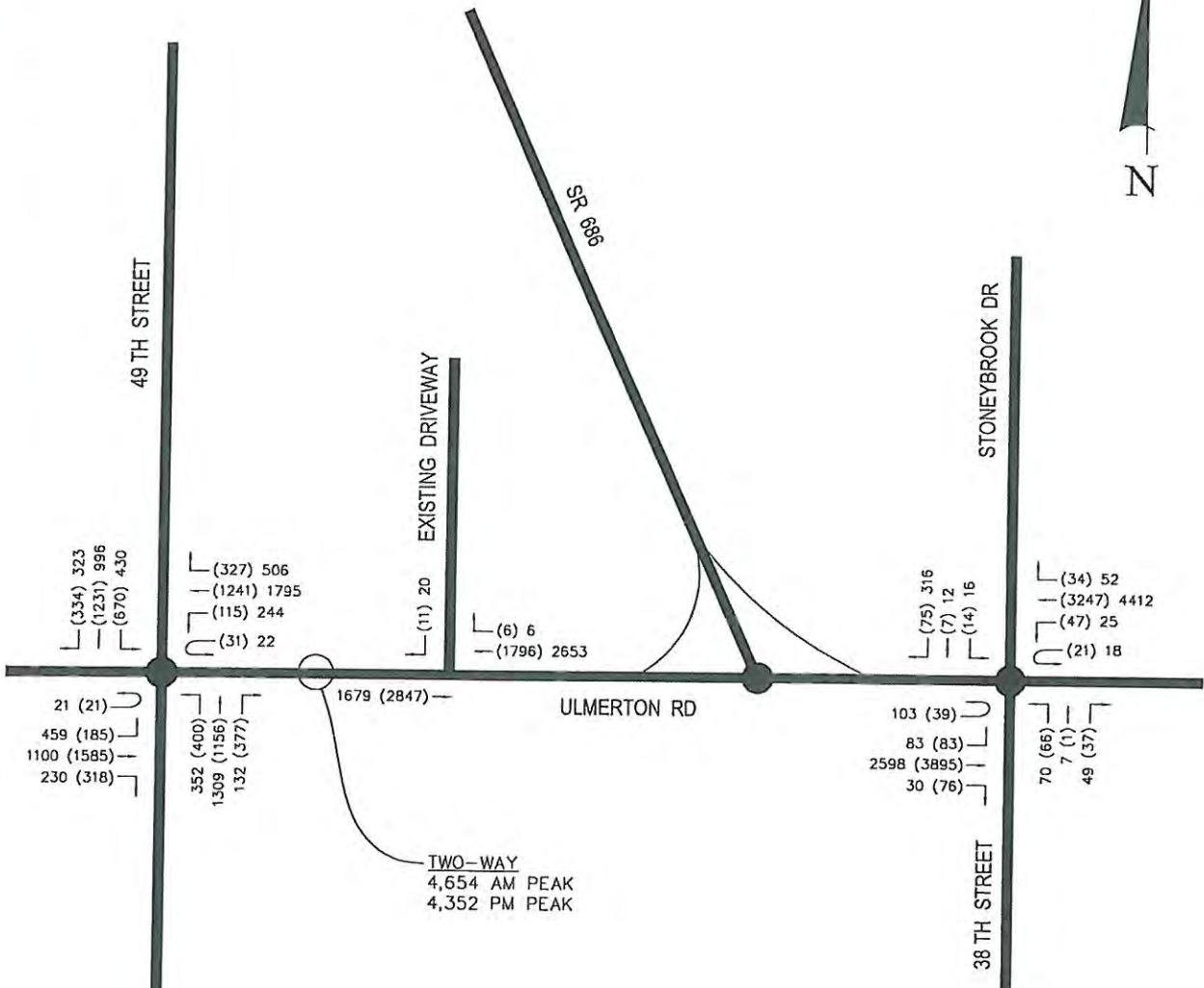


Gulf Coast Consulting, Inc.
Land Development Consulting

DATE:
10/2018

DRAWN BY:
GJS

FIGURE:
1



- = TRAFFIC SIGNAL
- (XX) = AM PEAK HR
- XX = PM PEAK HR

EXISTING PEAK HOUR/PEAK SEASON TRAFFIC (2018)

PROJECT NO:
18-048



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DATE:
10/2018

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FIGURE:
2

The recently completed improvements to Ulmerton Road and the Roosevelt Boulevard intersection have created a 6 and 8 lane divided arterial section. Based on the seasonally adjusted traffic counts the adjacent segment of Ulmerton Road carries 4,654 vehicles during the AM peak hour (LOS C) and 4,352 vehicles during the PM peak hour (LOS C), which represent acceptable conditions.

III. FUTURE CONDITIONS WITH DEVELOPMENT

Research of FDOT Annual Traffic Counts (AADT History) for the count station on the adjacent segment of Ulmerton Road shows no growth has occurred since 2000. This may be partially due to the opening of CR 296 with an interchange with I-275 that serves as a parallel reliever to Ulmerton Road. Expected buildout of the proposed project is 2020.

Trip generation estimates were made using ITE Trip Generation, 10th Edition rates for Land Use Code 310 (Hotel) and Land Use Code 934 (Fast-Food Restaurant w/ Drive Through). The trip generation is shown below in Table 2.

TABLE 2 – TRIP GENERATION ESTIMATES

LAND USE	ITE LUC	DAILY TRIPS	AM PEAK HOR TRIPS (IN/OUT)	PM PEAK HOUR TRIPS (IN/OUT)
Hotel 117 rooms	310	978	55 (32/23)	70 (36/34)
Fast-Food Restaurant 3500 SF	934	1,648	141 (72/69)	114 (59/55)
TOTAL		2,626	196 (104/92)	184 (95/89)

The proposed development is expected to generate 2,626 daily trips of which 196 would occur during the AM peak hour and 184 would occur during the PM peak hour. Project traffic was distributed to the surrounding roadway system based on the following percentages.

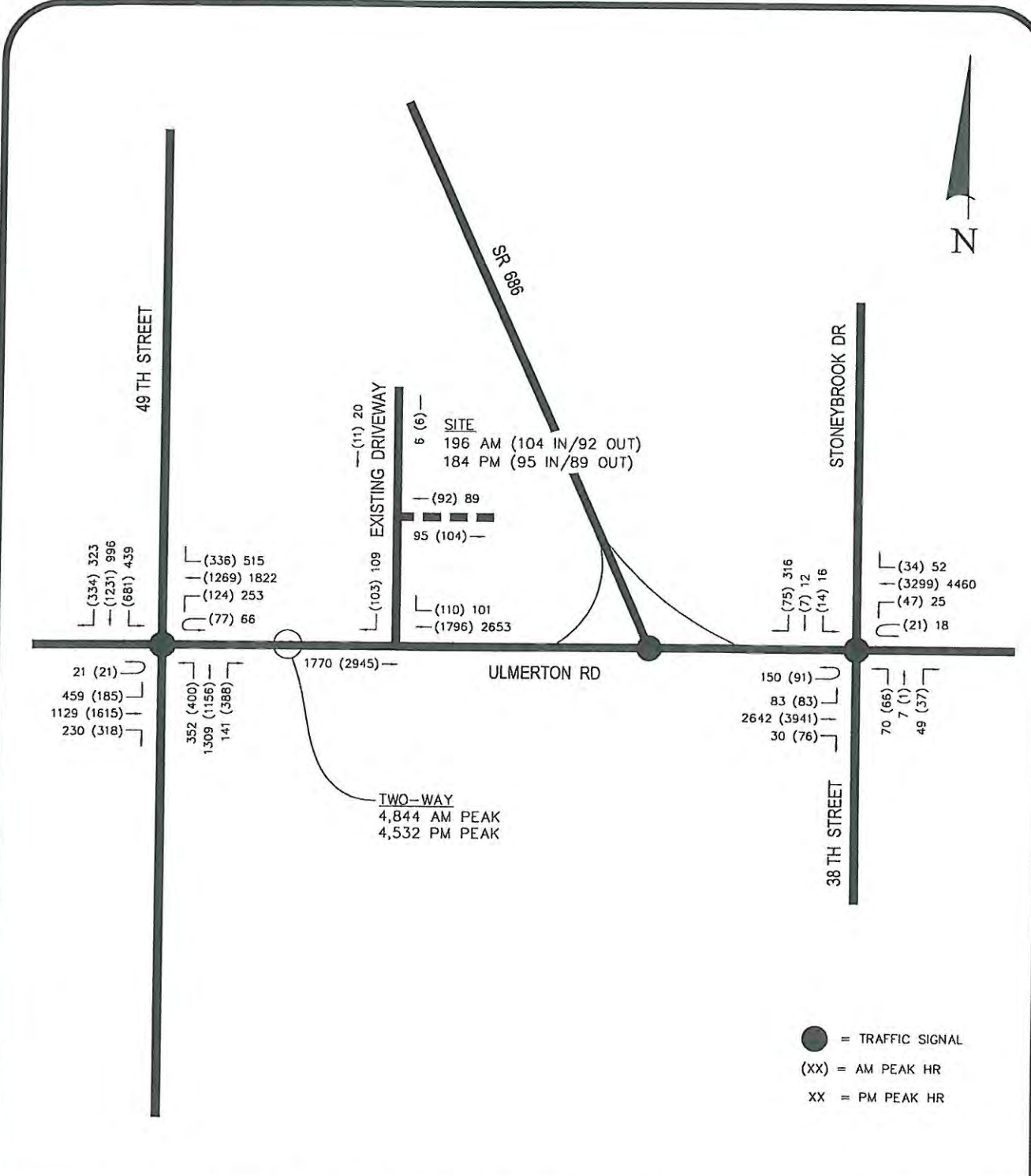
- 50% East on Ulmerton Road
- 50% West on Ulmerton Road

Project access is limited to a right-in/right-out connection to Ulmerton Road due to a raised median in Ulmerton Road. The intersections were analyzed to consider future operations with the full project in place. Expected future traffic is shown in Figure 3, intersection conditions are shown in Table 3 and the SYNCHRO and HCS7 printouts are included in Appendix B.

TABLE 3 - FUTURE INTERSECTION CONDITIONS WITH FULL PROJECT

INTERSECTION LOCATION	AM LOS	DELAY (SEC/VEH)	ICU %	PM LOS	DELAY (SEC/VEH)	ICU %
Ulmerton Rd / 49 th St.	F	92.8	99.5%	F	107.1	107.1%
Ulmerton Rd / Driveway	B*	12.2	NA	D*	33.1	NA
Ulmerton Rd / 38 th St.	C	23.1	88.4%	D	50.9	104.3%

* = LOS for SBRT exiting driveway



FUTURE PEAK HOUR/PEAK SEASON TRAFFIC

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GJS

FIGURE:
3

As shown above, the southbound approach would have moderate delays in entering Ulmerton Road during the PM peak hour. Gaps created by the SR 686 signal will help alleviate delays. Queues at the "Stop" sign within this driveway are expected to be up to 3 vehicles maximum during the PM peak hour. Therefore internal cross drive aisles should be at least 75 feet from the stop bar of this driveway as it intersects with Ulmerton Road. Incoming traffic will consist of free-flowing right turns, which would not be expected to queue into Ulmerton Road. The drive-through lane of the fast-food restaurant should be designed to accommodate the local government required stacking distance.

The full project development will add U-turns to the 38th Street intersection to the east, and the 49th Street intersection to the west, as these are the nearest locations where U-turns are permitted. With the projects impacts included, the adjacent segment of Ulmerton Road would continue to operate at LOS C during both the AM and PM peak hours.

IV. CONCLUSIONS AND RECOMMENDATIONS

The proposed development of the property with a 117 room hotel and a fast-food restaurant would generate 2,626 daily trips with 196 trips occurring in the AM peak hour and 184 trips during the PM peak hour. The SB approach of the existing driveway at the intersection with Ulmerton Road would have moderate delays during the PM peak hour. Internal queues at this driveway are expected to be 75 feet.

U-turns will be created at adjacent signalized intersections of 38th Street and at 49th Street. The turn lane lengths at these intersections are more than sufficient to accommodate these additional turns. The adjacent segment of Ulmerton Road would continue to operate at LOS C during the AM & PM peak hours.

APPENDIX A

2016 Peak Season Factor Category Report - Report Type: ALL
 Category: 1500 PINELLAS COUNTYWIDE

Week	Dates	SF	MOCF: 0.94 PSCF
1	01/01/2016 - 01/02/2016	1.05	1.12
2	01/03/2016 - 01/09/2016	1.04	1.11
3	01/10/2016 - 01/16/2016	1.03	1.10
4	01/17/2016 - 01/23/2016	1.01	1.07
5	01/24/2016 - 01/30/2016	1.00	1.06
6	01/31/2016 - 02/06/2016	0.98	1.04
* 7	02/07/2016 - 02/13/2016	0.96	1.02
* 8	02/14/2016 - 02/20/2016	0.95	1.01
* 9	02/21/2016 - 02/27/2016	0.94	1.00
*10	02/28/2016 - 03/05/2016	0.93	0.99
*11	03/06/2016 - 03/12/2016	0.92	0.98
*12	03/13/2016 - 03/19/2016	0.91	0.97
*13	03/20/2016 - 03/26/2016	0.92	0.98
*14	03/27/2016 - 04/02/2016	0.93	0.99
*15	04/03/2016 - 04/09/2016	0.93	0.99
*16	04/10/2016 - 04/16/2016	0.94	1.00
*17	04/17/2016 - 04/23/2016	0.95	1.01
*18	04/24/2016 - 04/30/2016	0.96	1.02
*19	05/01/2016 - 05/07/2016	0.96	1.02
20	05/08/2016 - 05/14/2016	0.97	1.03
21	05/15/2016 - 05/21/2016	0.98	1.04
22	05/22/2016 - 05/28/2016	0.98	1.04
23	05/29/2016 - 06/04/2016	0.99	1.05
24	06/05/2016 - 06/11/2016	1.00	1.06
25	06/12/2016 - 06/18/2016	1.01	1.07
26	06/19/2016 - 06/25/2016	1.01	1.07
27	06/26/2016 - 07/02/2016	1.01	1.07
28	07/03/2016 - 07/09/2016	1.01	1.07
29	07/10/2016 - 07/16/2016	1.01	1.07
30	07/17/2016 - 07/23/2016	1.02	1.09
31	07/24/2016 - 07/30/2016	1.03	1.10
32	07/31/2016 - 08/06/2016	1.04	1.11
33	08/07/2016 - 08/13/2016	1.04	1.11
34	08/14/2016 - 08/20/2016	1.05	1.12
35	08/21/2016 - 08/27/2016	1.06	1.13
36	08/28/2016 - 09/03/2016	1.06	1.13
37	09/04/2016 - 09/10/2016	1.07	1.14
38	09/11/2016 - 09/17/2016	1.07	1.14
39	09/18/2016 - 09/24/2016	1.06	1.13
40	09/25/2016 - 10/01/2016	1.05	1.12
41	10/02/2016 - 10/08/2016	1.04	1.11
42	10/09/2016 - 10/15/2016	1.03	1.10
43	10/16/2016 - 10/22/2016	1.03	1.10
44	10/23/2016 - 10/29/2016	1.04	1.11
45	10/30/2016 - 11/05/2016	1.04	1.11
46	11/06/2016 - 11/12/2016	1.04	1.11
47	11/13/2016 - 11/19/2016	1.04	1.11
48	11/20/2016 - 11/26/2016	1.05	1.12
49	11/27/2016 - 12/03/2016	1.05	1.12
50	12/04/2016 - 12/10/2016	1.05	1.12
51	12/11/2016 - 12/17/2016	1.05	1.12
52	12/18/2016 - 12/24/2016	1.04	1.11
53	12/25/2016 - 12/31/2016	1.03	1.10

* Peak Season

Lanes, Volumes, Timings
3: 49TH STREET & ULMERTON RD

10/10/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑	↘	↖	↑↑↑		↖	↑↑↑	↘	↖	↑↑↑	↘
Volume (vph)	206	1585	318	146	1241	327	400	1156	377	670	1231	334
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	800		1000	725		1000	630		450	500		575
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.969				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3273	4848	1509	3335	6032	0	3303	4893	1524	3367	4988	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3273	4848	1509	3335	6032	0	3303	4893	1524	3367	4988	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			313		37				105			188
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		702			805			381			291	
Travel Time (s)		10.6			12.2			5.8			4.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	7%	7%	5%	5%	5%	6%	6%	6%	4%	4%	4%
Adj. Flow (vph)	217	1668	335	154	1306	344	421	1217	397	705	1296	352
Shared Lane Traffic (%)												
Lane Group Flow (vph)	217	1668	335	154	1650	0	421	1217	397	705	1296	352
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6						4			8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0		10.0	22.0	22.0	10.0	22.0	22.0
Total Split (s)	30.0	130.0	130.0	20.0	120.0		30.0	50.0	50.0	40.0	60.0	60.0
Total Split (%)	12.5%	54.2%	54.2%	8.3%	50.0%		12.5%	20.8%	20.8%	16.7%	25.0%	25.0%
Maximum Green (s)	24.0	123.0	123.0	14.0	113.0		24.0	44.0	44.0	34.0	54.0	54.0
Yellow Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0			5.0	5.0		5.0	5.0
Flash Dont Walk (s)		11.0	11.0		11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	18.4	84.8	84.8	13.2	79.6		24.1	44.2	44.2	34.2	54.2	54.2
Actuated g/C Ratio	0.09	0.42	0.42	0.07	0.40		0.12	0.22	0.22	0.17	0.27	0.27
v/c Ratio	0.73	0.82	0.41	0.71	0.69		1.07	1.13	0.95	1.24	0.97	0.63
Control Delay	104.8	54.9	5.6	111.6	50.8		143.0	138.7	89.5	184.1	88.9	36.3
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.8	54.9	5.6	111.6	50.8		143.0	138.7	89.5	184.1	88.9	36.3

Lanes, Volumes, Timings
 3: 49TH STREET & ULMERTON RD

10/10/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	D	A	F	D		F	F	F	F	F	D
Approach Delay		52.4			56.0			130.0			109.5	
Approach LOS		D			E			F			F	
Queue Length 50th (ft)	146	718	17	104	516		-315	-683	409	-593	628	198
Queue Length 95th (ft)	213	769	85	#167	577		#505	#911	#732	#838	#863	363
Internal Link Dist (ft)		622			725			301			211	
Turn Bay Length (ft)	800		1000	725			630		450	500		575
Base Capacity (vph)	391	2973	1046	232	3414		395	1073	416	570	1342	555
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.56	0.32	0.66	0.48		1.07	1.13	0.95	1.24	0.97	0.63

Intersection Summary

Area Type: Other

Cycle Length: 240

Actuated Cycle Length: 201.5

Natural Cycle: 130

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 87.9

Intersection LOS: F

Intersection Capacity Utilization: 97.1%

ICU Level of Service F

Analysis Period (min) 15









- Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: 49TH STREET & ULMERTON RD

 p1	 p2	 p3	 p4
30 s	120 s	40 s	50 s
 p6	 p5	 p8	 p7
130 s	20 s	60 s	30 s

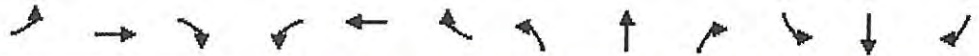
Lanes, Volumes, Timings
3: 49TH STREET & ULMERTON RD

10/10/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	480	1100	230	266	1795	506	352	1309	132	430	996	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	800		1000	725		1000	630		450	500		575
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.91	1.00
Frnt			0.850		0.967				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3367	4988	1553	3367	6077	0	3400	5036	1568	3400	5036	1568
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3367	4988	1553	3367	6077	0	3400	5036	1568	3400	5036	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242		35				105			248
Link Speed (mph)		45			45			45				45
Link Distance (ft)		702			805			381				291
Travel Time (s)		10.6			12.2			5.8				4.4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	505	1158	242	280	1889	533	371	1378	139	453	1048	340
Shared Lane Traffic (%)												
Lane Group Flow (vph)	505	1158	242	280	2422	0	371	1378	139	453	1048	340
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6						4			8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0		10.0	22.0	22.0	10.0	22.0	22.0
Total Split (s)	40.0	110.0	110.0	30.0	100.0		40.0	60.0	60.0	40.0	60.0	60.0
Total Split (%)	16.7%	45.8%	45.8%	12.5%	41.7%		16.7%	25.0%	25.0%	16.7%	25.0%	25.0%
Maximum Green (s)	34.0	103.0	103.0	24.0	93.0		34.0	54.0	54.0	34.0	54.0	54.0
Yellow Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0			5.0	5.0		5.0	5.0
Flash Dont Walk (s)		11.0	11.0		11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	34.0	68.8	68.8	58.1	93.0		34.1	54.0	54.0	33.5	53.4	53.4
Actuated g/C Ratio	0.14	0.29	0.29	0.24	0.39		0.14	0.23	0.23	0.14	0.22	0.22
v/c Ratio	1.06	0.81	0.39	0.34	1.02		0.77	1.21	0.32	0.95	0.93	0.63
Control Delay	150.2	83.8	7.1	77.9	92.5		110.4	176.2	23.1	131.1	105.7	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	150.2	83.8	7.1	77.9	92.5		110.4	176.2	23.1	131.1	105.7	27.2

Lanes, Volumes, Timings
 3: 49TH STREET & ULMERTON RD

10/10/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F	A	E	F		F	F	C	F	F	C
Approach Delay		91.6			91.0			152.0			97.4	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	~450	631	0	192	~1165		298	~974	44	374	605	134
Queue Length 95th (ft)	#581	647	75	258	#1204		366	#1065	121	#488	666	262
Internal Link Dist (ft)		622			725			301			211	
Turn Bay Length (ft)	800		1000	725			630		450	500		575
Base Capacity (vph)	477	2144	805	817	2380		484	1135	435	482	1135	545
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.54	0.30	0.34	1.02		0.77	1.21	0.32	0.94	0.92	0.62

Intersection Summary

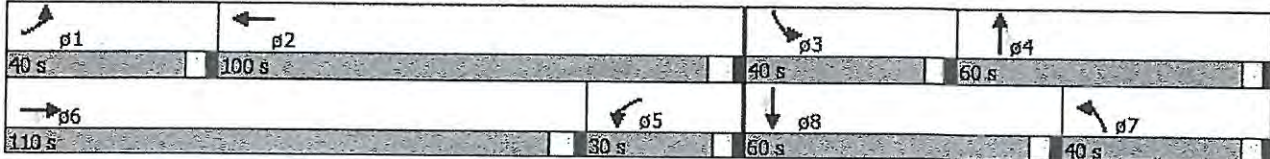
Area Type: Other
 Cycle Length: 240
 Actuated Cycle Length: 239.5
 Natural Cycle: 150
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.21
 Intersection Signal Delay: 106.4
 Intersection Capacity Utilization: 106.6%
 Analysis Period (min): 15

Intersection LOS: F

ICU Level of Service G

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

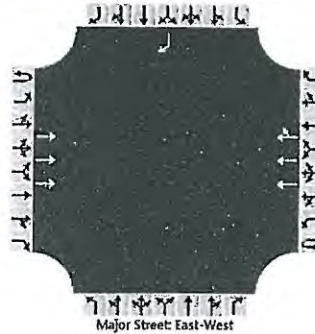
Splits and Phases: 3: 49TH STREET & ULMERTON RD



HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RP	Intersection	ULMERTON / DRIVEWAY
Agency/Co.	GCC	Jurisdiction	FDOT
Date Performed	10/10/2018	East/West Street	ULMERTON (SR 688)
Analysis Year	2018	North/South Street	DRIVEWAY A (RT ONLY)
Time Analyzed	AM PEAK	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	EXISTING CONDITIONS 2018		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	3	0	0	0	3	0		0	0	0		0	0	1
Configuration			T				T	TR								R
Volume (veh/h)			2847				1796	6								11
Percent Heavy Vehicles (%)																3
Proportion Time Blocked																0.200
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type Storage					Left Only								1			

Critical and Follow-up Headways

Base Critical Headway (sec)																	7.1
Critical Headway (sec)																	7.16
Base Follow-Up Headway (sec)																	3.9
Follow-Up Headway (sec)																	3.93

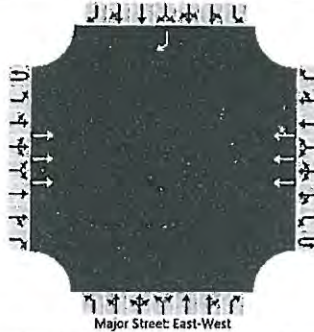
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																	12
Capacity, c (veh/h)																	671
v/c Ratio																	0.02
95% Queue Length, Q ₉₅ (veh)																	0.1
Control Delay (s/veh)																	10.5
Level of Service (LOS)																	B
Approach Delay (s/veh)																	10.5
Approach LOS																	B

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RP	Intersection	ULMERTON / DRIVEWAY
Agency/Co.	GCC	Jurisdiction	FDOT
Date Performed	10/10/2018	East/West Street	ULMERTON (SR 688)
Analysis Year	2018	North/South Street	DRIVEWAY A (RT ONLY)
Time Analyzed	PM PEAK	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	EXISTING CONDITIONS 2018		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	3	0	0	0	3	0		0	0	0		0	0	1
Configuration			T				T	TR								R
Volume (veh/h)			1679				2653	6								20
Percent Heavy Vehicles (%)																3
Proportion Time Blocked																0.200
Percent Grade (%)																0
Right Turn Channelized																No
Median Type Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																	7.1
Critical Headway (sec)																	7.16
Base Follow-Up Headway (sec)																	3.9
Follow-Up Headway (sec)																	3.93

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																	22
Capacity, c (veh/h)																	268
v/c Ratio																	0.08
95% Queue Length, Q ₉₅ (veh)																	0.3
Control Delay (s/veh)																	19.6
Level of Service (LOS)																	C
Approach Delay (s/veh)																	19.6
Approach LOS																	C

Lanes, Volumes, Timings

3: 38TH STREET/STONEBROOK DR & ULMERTON RD

10/10/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	122	3895	76	68	3247	34	66	1	37	14	7	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	1000		0	375		900	350		350	300		300
Storage Lanes	2		0	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.86	0.86	1.00	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.953			0.968	
Satd. Flow (prot)	3303	6148	0	1719	6225	1538	0	1561	1392	0	1803	1583
Flt Permitted	0.950			0.950				0.714			0.789	
Satd. Flow (perm)	3303	6148	0	1719	6225	1538	0	1169	1392	0	1470	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				41			45			77
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		702			805			381			291	
Travel Time (s)		10.6			12.2			8.7			6.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	16%	16%	16%	2%	2%	2%
Adj. Flow (vph)	126	4015	78	70	3347	35	68	1	38	14	7	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	126	4093	0	70	3347	35	0	69	38	0	21	77
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases						2	4		4	8		8
Detector Phase	1	6		5	2	2	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	23.0		10.0	23.0	23.0	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	20.0	180.0		20.0	180.0	180.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	8.3%	75.0%		8.3%	75.0%	75.0%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%
Maximum Green (s)	14.0	173.0		14.0	173.0	173.0	34.0	34.0	34.0	34.0	34.0	34.0
Yellow Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	7.0		6.0	7.0	7.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)	12.8	173.2		12.7	173.1	173.1		18.5	18.5		18.5	18.5
Actuated g/C Ratio	0.06	0.78		0.06	0.77	0.77		0.08	0.08		0.08	0.08
v/c Ratio	0.67	0.86		0.71	0.69	0.03		0.72	0.24		0.17	0.38
Control Delay	121.7	20.4		140.1	13.8	1.4		137.2	18.5		97.9	20.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	121.7	20.4		140.1	13.8	1.4		137.2	18.5		97.9	20.7

Lanes, Volumes, Timings

3: 38TH STREET/STONEBROOK DR & ULMERTON RD

10/10/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	C		F	B	A		F	B		F	C
Approach Delay		23.4			16.2			95.1			37.2	
Approach LOS		C			B			F			D	
Queue Length 50th (ft)	95	1124		104	663	0		102	0		30	0
Queue Length 95th (ft)	144	1301		#192	792	10		170	35		66	63
Internal Link Dist (ft)		622			725			301			211	
Turn Bay Length (ft)	1000			375		900			350			300
Base Capacity (vph)	207	4766		107	4828	1202		178	250		223	306
Starvation Cap Reductn	0	0		0	0	0		0	0		0	0
Spillback Cap Reductn	0	0		0	0	0		0	0		0	0
Storage Cap Reductn	0	0		0	0	0		0	0		0	0
Reduced v/c Ratio	0.61	0.86		0.65	0.69	0.03		0.39	0.15		0.09	0.25

Intersection Summary

Area Type: Other
 Cycle Length: 240
 Actuated Cycle Length: 223.4
 Natural Cycle: 110
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 21.4
 Intersection Capacity Utilization: 80.2%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 3: 38TH STREET/STONEBROOK DR & ULMERTON RD

ϕ1	ϕ2	ϕ4
20 s	180 s	40 s
ϕ5	ϕ6	ϕ8
20 s	180 s	40 s

Lanes, Volumes, Timings

3: 38TH STREET/STONEBROOK DR & ULMERTON RD

10/10/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	186	2598	30	43	4412	52	70	7	49	16	12	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	1000		0	375		900	350		350	300		300
Storage Lanes	2		0	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.86	0.86	1.00	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.956			0.972	
Satd. Flow (prot)	3400	6333	0	1770	6408	1583	0	1747	1553	0	1829	1599
Flt Permitted	0.950			0.950				0.723			0.827	
Satd. Flow (perm)	3400	6333	0	1770	6408	1583	0	1321	1553	0	1556	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				55			52			82
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		702			805			381			291	
Travel Time (s)		10.6			12.2			8.7			6.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	1%	1%	1%
Adj. Flow (vph)	198	2764	32	46	4694	55	74	7	52	17	13	336
Shared Lane Traffic (%)												
Lane Group Flow (vph)	198	2796	0	46	4694	55	0	81	52	0	30	336
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases						2	4		4	8		8
Detector Phase	1	6		5	2	2	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	23.0		10.0	23.0	23.0	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	20.0	180.0		20.0	180.0	180.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	8.3%	75.0%		8.3%	75.0%	75.0%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%
Maximum Green (s)	14.0	173.0		14.0	173.0	173.0	34.0	34.0	34.0	34.0	34.0	34.0
Yellow Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	7.0		6.0	7.0	7.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)	14.0	175.8		11.2	173.0	173.0		34.0	34.0		34.0	34.0
Actuated g/C Ratio	0.06	0.73		0.05	0.72	0.72		0.14	0.14		0.14	0.14
v/c Ratio	1.00	0.60		0.56	1.02	0.05		0.43	0.20		0.14	1.14
Control Delay	171.1	16.2		136.4	50.2	1.9		102.3	19.3		92.1	156.4
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	171.1	16.2		136.4	50.2	1.9		102.3	19.3		92.1	156.4

Lanes, Volumes, Timings

3: 38TH STREET/STONEBROOK DR & ULMERTON RD

10/10/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	B		F	D	A		F	B		F	F
Approach Delay		26.4			50.5			69.8			151.2	
Approach LOS		C			D			E			F	
Queue Length 50th (ft)	165	592		73	~2272	0		120	0		42	~499
Queue Length 95th (ft)	#270	625		128	2036	16		190	51		85	#737
Internal Link Dist (ft)		622			725			301			211	
Turn Bay Length (ft)	1000			375		900			350			300
Base Capacity (vph)	198	4639		103	4619	1156		187	264		220	296
Starvation Cap Reductn	0	0		0	0	0		0	0		0	0
Spillback Cap Reductn	0	0		0	0	0		0	0		0	0
Storage Cap Reductn	0	0		0	0	0		0	0		0	0
Reduced v/c Ratio	1.00	0.60		0.45	1.02	0.05		0.43	0.20		0.14	1.14

Intersection Summary

Area Type: Other
 Cycle Length: 240
 Actuated Cycle Length: 240
 Natural Cycle: 150
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 1.14
 Intersection Signal Delay: 46.6
 Intersection Capacity Utilization: 103.6%
 Analysis Period (min): 15
 Intersection LOS: D
 ICU Level of Service: G

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: 38TH STREET/STONEBROOK DR & ULMERTON RD

p1	p2	p4
20 s	180 s	40 s
p5	p6	p8
20 s	180 s	40 s

TABLE 4

Generalized Peak Hour Two-Way Volumes for Florida's Urbanized Areas¹

12/18/12

INTERRUPTED FLOW FACILITIES						UNINTERRUPTED FLOW FACILITIES							
STATE SIGNALIZED ARTERIALS						FREEWAYS							
Class I (40 mph or higher posted speed limit)						Lanes	B	C	D	E			
Lanes	Median	B	C	D	E	4	4,120	5,540	6,700	7,190			
2	Undivided	*	1,510	1,600	**	6	6,130	8,370	10,060	11,100			
4	Divided	*	3,420	3,580	**	8	8,230	11,100	13,390	15,010			
6	Divided	*	5,250	5,390	**	10	10,330	14,040	16,840	18,930			
8	Divided	*	7,090	7,210	**	12	14,450	18,880	22,030	22,860			
Class II (35 mph or slower posted speed limit)						Freeway Adjustments							
Lanes	Median	B	C	D	E	Auxiliary Lanes		Ramp					
2	Undivided	*	660	1,330	1,410	Present in Both Directions		Metering					
4	Divided	*	1,310	2,920	3,040	+ 1,800		+ 5%					
6	Divided	*	2,090	4,500	4,590								
8	Divided	*	2,880	6,060	6,130								
Non-State Signalized Roadway Adjustments (Alter corresponding state volumes by the indicated percent.)													
Non-State Signalized Roadways - 10%													
Median & Turn Lane Adjustments													
Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors									
2	Divided	Yes	No	+5%									
2	Undivided	No	No	-20%									
Multi	Undivided	Yes	No	-5%									
Multi	Undivided	No	No	-25%									
-	-	-	Yes	+ 5%									
One-Way Facility Adjustment Multiply the corresponding two-directional volumes in this table by 0.6													
BICYCLE MODE²						UNINTERRUPTED FLOW HIGHWAYS							
(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)						Lanes	Median	B	C	D	E		
Paved Shoulder/Bicycle Lane Coverage						2	Undivided	770	1,530	2,170	2,990		
0-49%						4	Divided	3,300	4,660	5,900	6,530		
50-84%						6	Divided	4,950	6,990	8,840	9,790		
85-100%													
260 680 1,770 >1,770 **													
PEDESTRIAN MODE²													
(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)													
Sidewalk Coverage													
0-49%													
50-84%													
85-100%													
* * 250 850													
* 150 780 1,420													
340 960 1,560 >1,770													
BUS MODE (Scheduled Fixed Route)³													
(Buses in peak hour in peak direction)													
Sidewalk Coverage													
0-84%													
85-100%													
> 5 ≥ 4 ≥ 3 ≥ 2													
> 4 ≥ 3 ≥ 2 ≥ 1													
						¹ Values shown are presented as peak hour two-way volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual and the Transit Capacity and Quality of Service Manual.							
						² Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.							
						³ Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.							
						* Cannot be achieved using table input value defaults.							
						^{**} Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.							
						Source: Florida Department of Transportation Systems Planning Office www.dot.state.fl.us/planning/systems/sm/ios/default.shtml							

APPENDIX B

Florida Department of Transportation
 Transportation Statistics Office
 2016 Historical AADT Report

County: 15 - PINELLAS

Site: 0077 - SR 688/DUMERTON RD, E OF 49TH ST N/CR 611

Year	AADT	Direction 1	Direction 2	*K Factor	D Factor	T Factor
2016	41500 S	E 22000	W 19500	9.00	55.90	6.70
2015	40500 F	E 21500	W 19000	9.00	55.00	6.70
2014	39500 C	E 21000	W 18500	9.00	55.40	6.70
2013	40000 C	E 21000	W 19000	9.00	55.20	7.00
2012	41500 C	E 22500	W 19000	9.00	55.00	6.20
2011	42000 C	E 22500	W 19500	9.00	56.50	7.10
2010	43000 C	E 23000	W 20000	10.52	55.26	7.10
2009	41500 C	E 22000	W 19500	10.53	55.79	7.60
2008	43500 F	E 22000	W 21500	10.29	58.46	7.90
2007	44500 C	E 22500	W 22000	10.31	56.79	7.90
2006	45500 C	E 24000	W 21500	9.88	58.53	8.60
2005	47000 C	E 25000	W 22000	9.90	58.50	9.50
2004	45000 C	E 23500	W 21500	9.90	59.20	9.50
2003	44000 C	E 21000	W 23000	10.00	56.00	3.40
2002	44000 C	E 23000	W 21000	9.80	55.70	10.10
2001	49500 C	E 26500	W 23000	10.00	52.10	9.70

AADT Flags: C = Computed; E = Manual Estimate; F = First Year Estimate
 S = Second Year Estimate; T = Third Year Estimate; R = Fourth Year Estimate
 V = Fifth Year Estimate; 6 = Sixth Year Estimate; X = Unknown
 *K Factor: Starting with Year 2011 is StandardK, Prior years are K30 values

Hotel (310)

Vehicle Trip Ends vs: Rooms
On a: Weekday

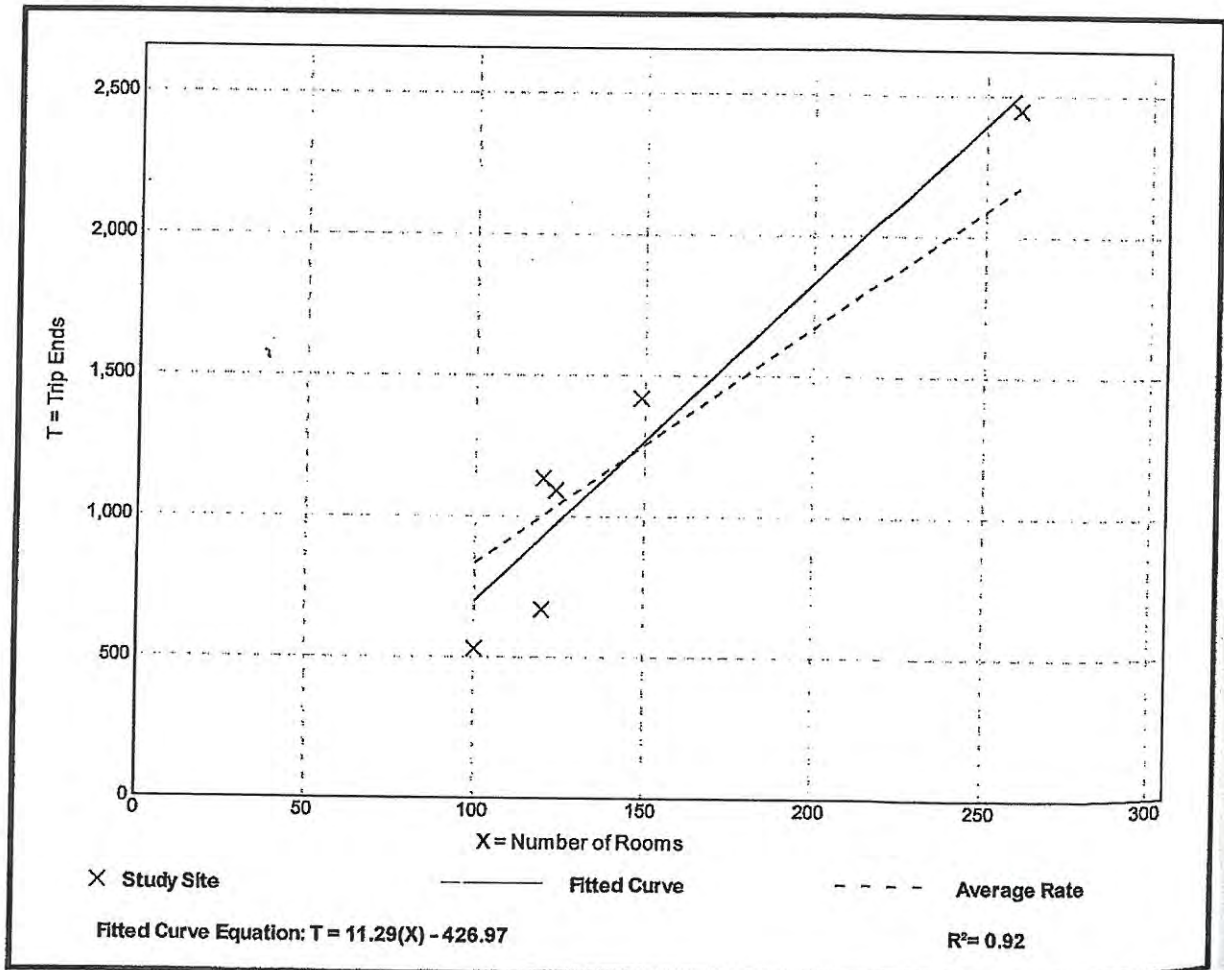
Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Rooms: 146
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
8.36	5.31 - 9.53	1.86

$$117 \times 8.36 = 978$$

Data Plot and Equation



Hotel (310)

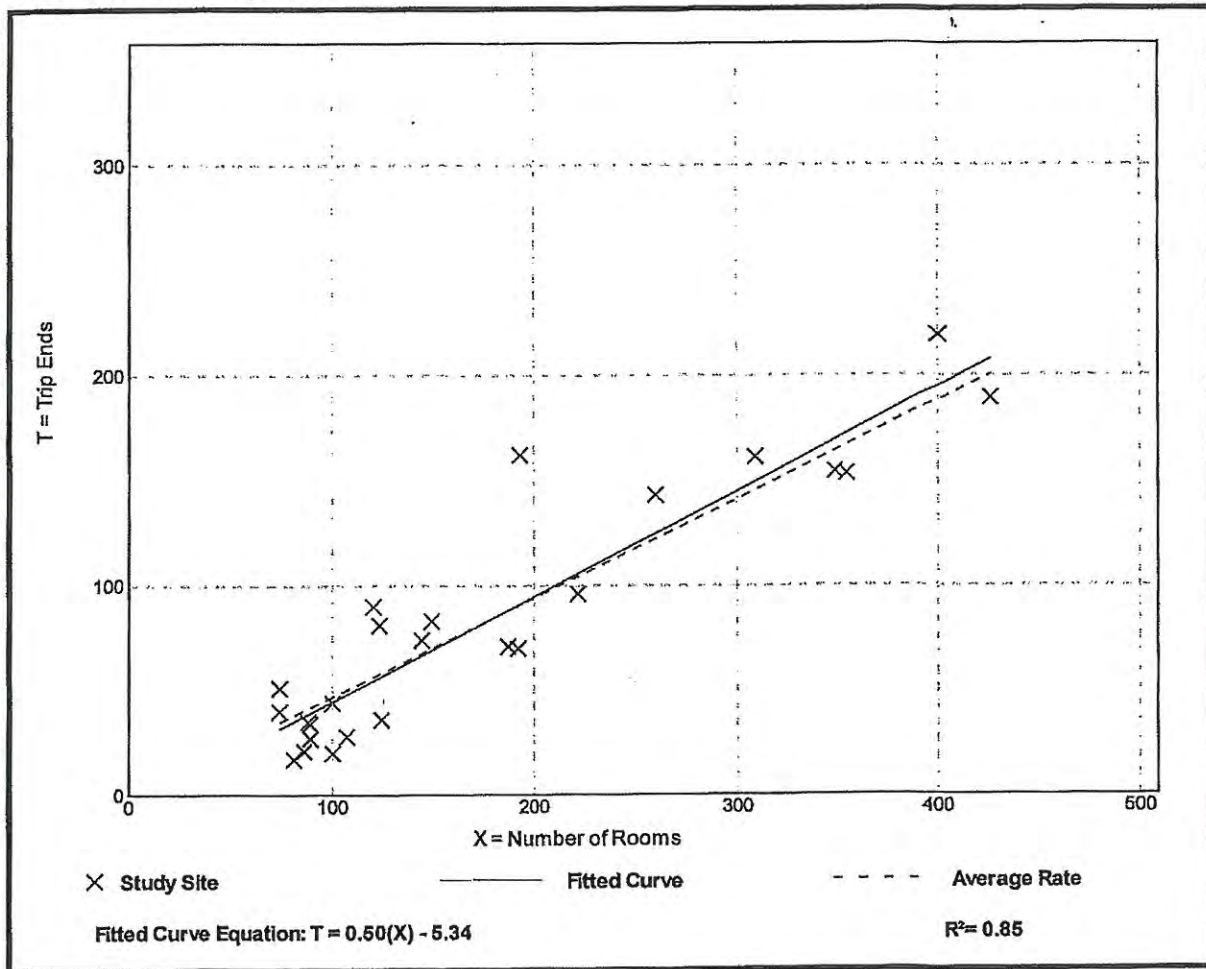
Vehicle Trip Ends vs: Rooms
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 25
 Avg. Num. of Rooms: 178
 Directional Distribution: 59% entering, 41% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.47	0.20 - 0.84	0.14

$178 \times .47 = 83.66$ (32/23)

Data Plot and Equation



Hotel (310)

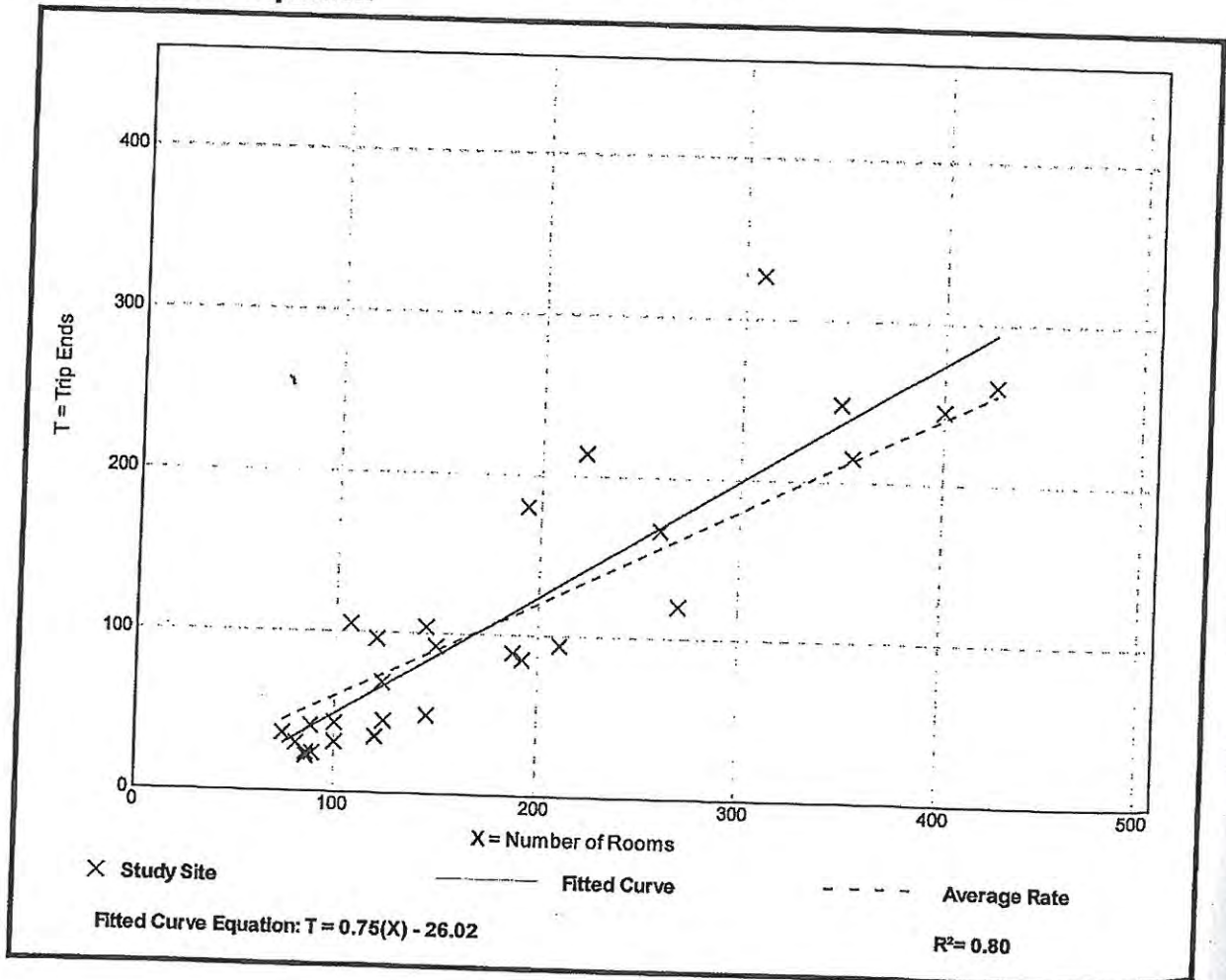
Vehicle Trip Ends vs: Rooms
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 28
 Avg. Num. of Rooms: 183
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.60	0.26 - 1.06	0.22

Data Plot and Equation

$$117 * .6 = 70 \quad (36/34)$$



Fast-Food Restaurant with Drive-Through Window (934)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

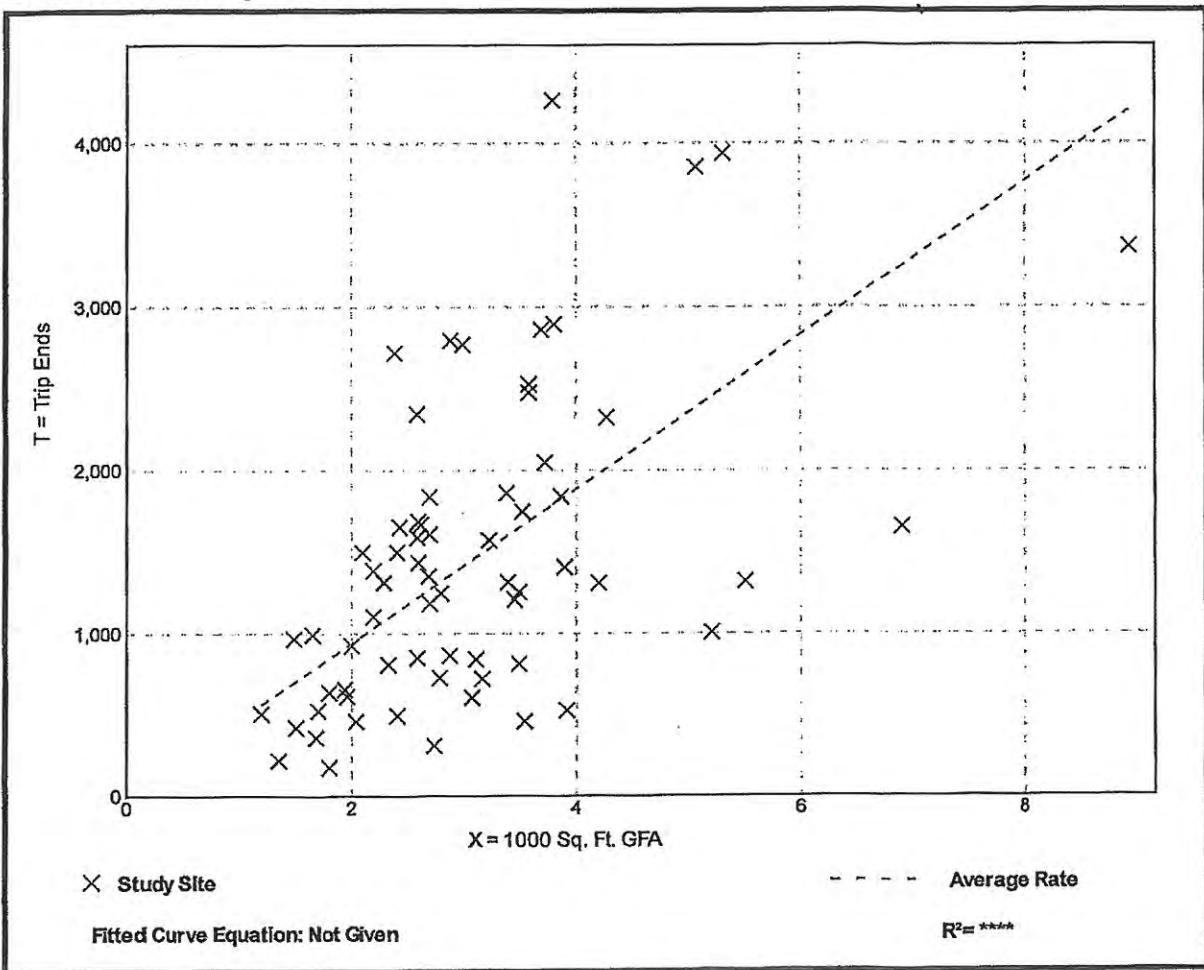
Setting/Location: General Urban/Suburban
Number of Studies: 67
1000 Sq. Ft. GFA: 3
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
470.95	98.89 - 1137.66	244.44

$$3.5 \times 470.95 = 1648$$

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

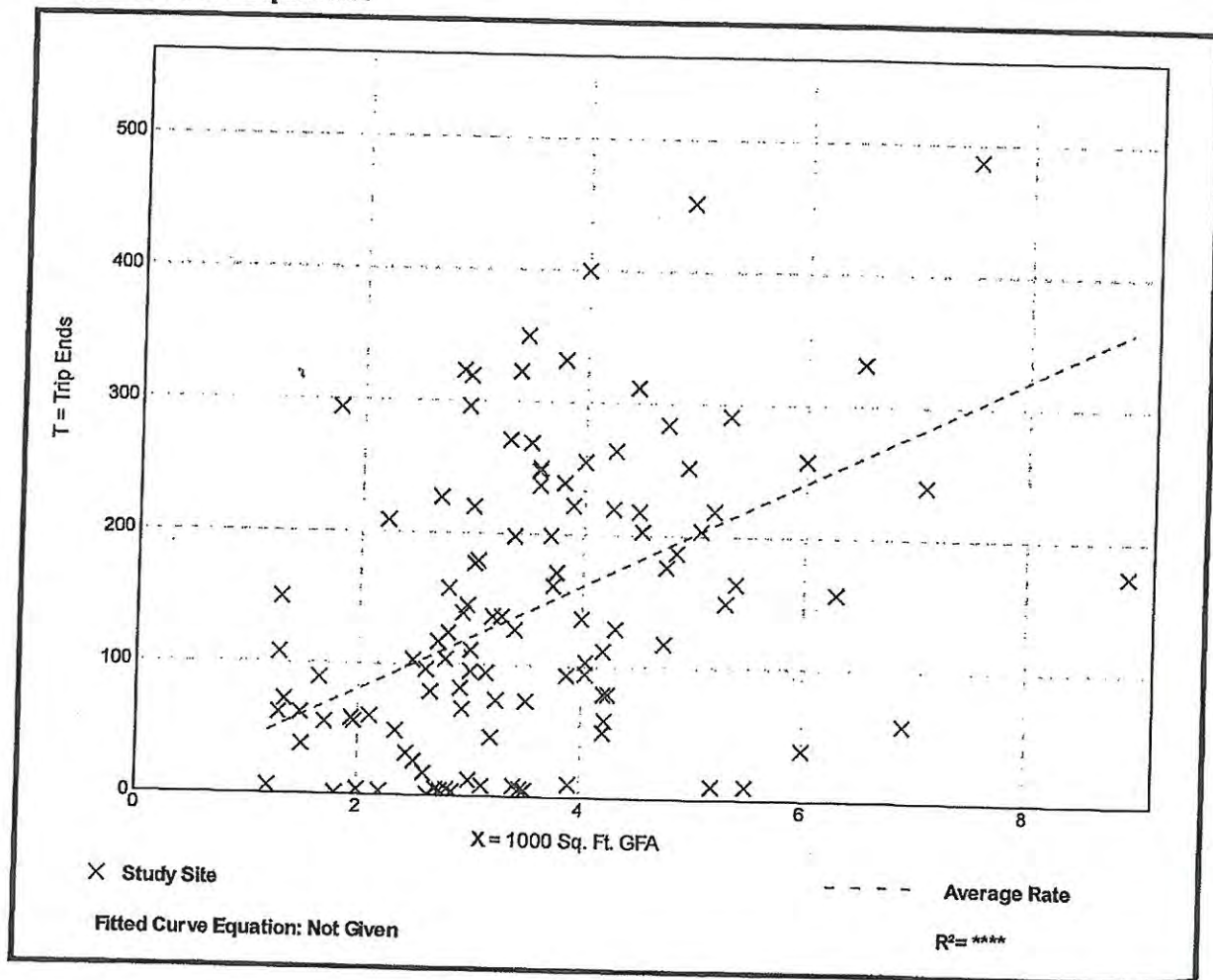
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 111
 1000 Sq. Ft. GFA: 4
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
40.19	0.38 - 164.25	28.78

$3.5 \times 40.19 = 141$

Data Plot and Equation



Fast-Food Restaurant with Drive-Through Window (934)

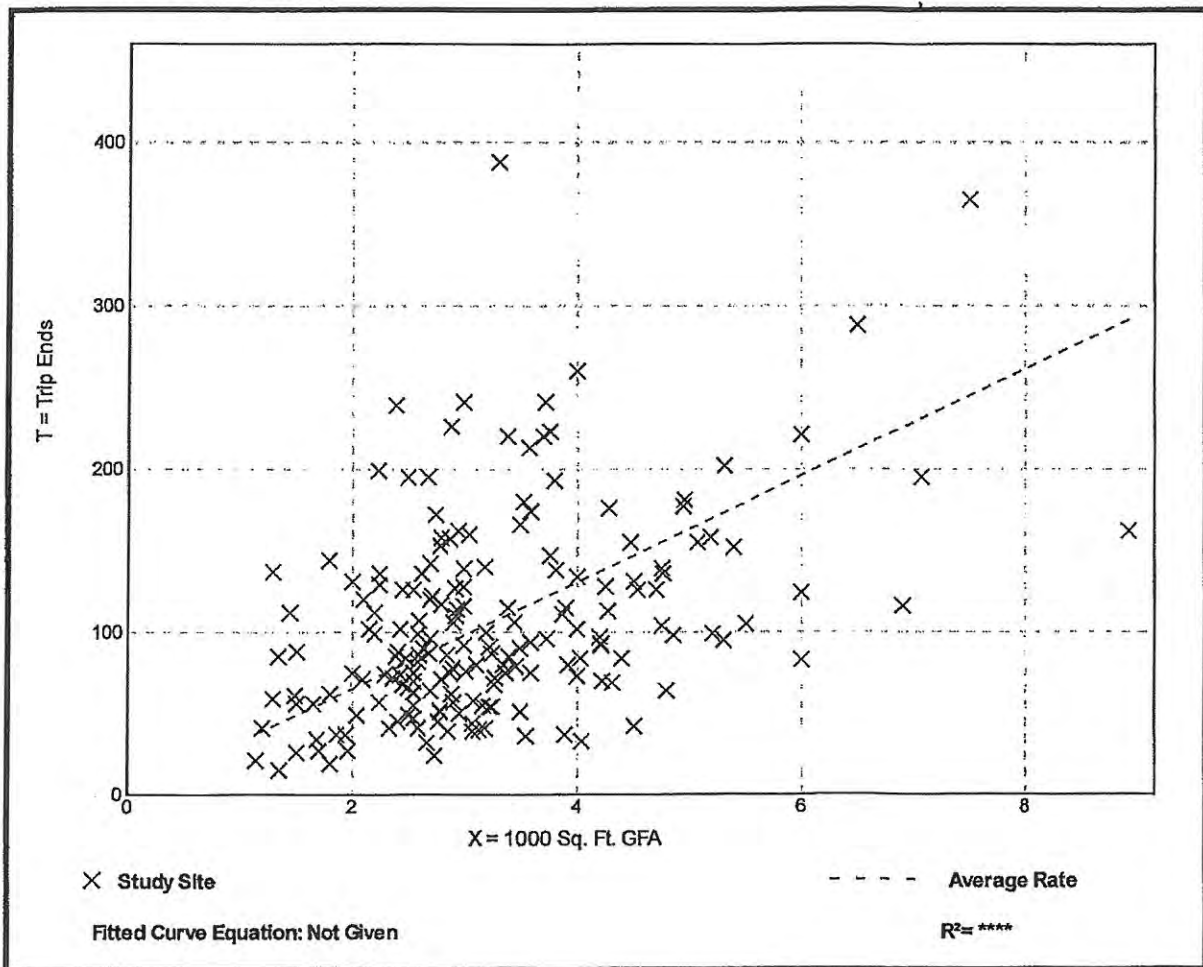
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 185
 1000 Sq. Ft. GFA: 3
 Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
32.67	8.17 - 117.22	17.87

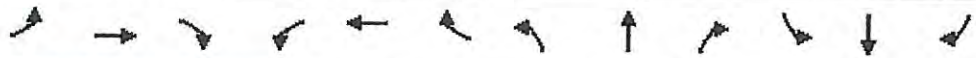
$$3.5 \times 32.67 = 114$$

Data Plot and Equation



Lanes, Volumes, Timings
 3: 49TH STREET & ULMERTON RD

10/11/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↔↔↔	↔	↔↔	↔↔↔		↔↔	↔↔↔	↔	↔↔	↔↔↔	↔
Volume (vph)	206	1615	318	201	1269	336	400	1156	388	681	1231	334
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	800		1000	725		1000	630		450	500		575
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.969				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3273	4848	1509	3335	6032	0	3303	4893	1524	3367	4988	1553
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3273	4848	1509	3335	6032	0	3303	4893	1524	3367	4988	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			309		38				105			186
Link Speed (mph)		45			45			45				45
Link Distance (ft)		702			805			381				291
Travel Time (s)		10.6			12.2			5.8				4.4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	7%	7%	7%	5%	5%	5%	6%	6%	6%	4%	4%	4%
Adj. Flow (vph)	217	1700	335	212	1336	354	421	1217	408	717	1296	352
Shared Lane Traffic (%)												
Lane Group Flow (vph)	217	1700	335	212	1690	0	421	1217	408	717	1296	352
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6						4			8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0		10.0	22.0	22.0	10.0	22.0	22.0
Total Split (s)	30.0	130.0	130.0	20.0	120.0		30.0	50.0	50.0	40.0	60.0	60.0
Total Split (%)	12.5%	54.2%	54.2%	8.3%	50.0%		12.5%	20.8%	20.8%	16.7%	25.0%	25.0%
Maximum Green (s)	24.0	123.0	123.0	14.0	113.0		24.0	44.0	44.0	34.0	54.0	54.0
Yellow Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0			5.0	5.0		5.0	5.0
Flash Dont Walk (s)		11.0	11.0		11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	18.5	87.4	87.4	14.1	82.9		24.1	44.2	44.2	34.1	54.2	54.2
Actuated g/C Ratio	0.09	0.43	0.43	0.07	0.40		0.12	0.22	0.22	0.17	0.26	0.26
v/c Ratio	0.74	0.82	0.41	0.93	0.69		1.09	1.15	0.99	1.28	0.98	0.64
Control Delay	106.9	55.3	5.8	135.6	50.5		149.3	146.8	99.8	201.0	93.9	37.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.9	55.3	5.8	135.6	50.5		149.3	146.8	99.8	201.0	93.9	37.7

Lanes, Volumes, Timings
 3: 49TH STREET & ULMERTON RD

10/11/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	E	A	F	D		F	F	F	F	F	D
Approach Delay		52.9			60.0			138.0			118.0	
Approach LOS		D			E			F			F	
Queue Length 50th (ft)	149	739	20	148	534		-324	-701	437	-625	641	205
Queue Length 95th (ft)	217	790	89	#275	595		#515	#930	#783	#874	#883	374
Internal Link Dist (ft)		622			725			301			211	
Turn Bay Length (ft)	800		1000	725			630		450	500		575
Base Capacity (vph)	384	2921	1032	228	3356		388	1055	411	560	1319	547
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.58	0.32	0.93	0.50		1.09	1.15	0.99	1.28	0.98	0.64

Intersection Summary

Area Type: Other

Cycle Length: 240

Actuated Cycle Length: 204.9

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.28

Intersection Signal Delay: 92.8

Intersection Capacity Utilization: 99.5%

Analysis Period (min): 15

Intersection LOS: F

ICU Level of Service F

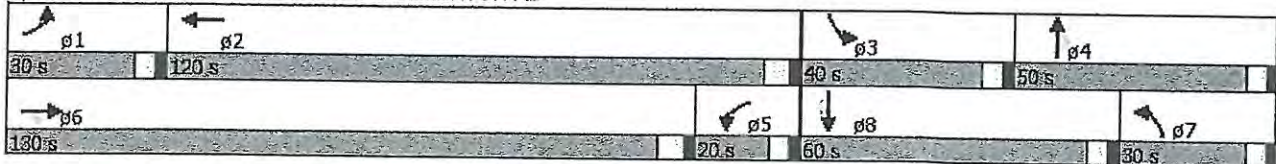
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

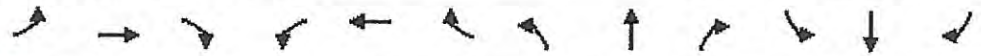
Queue shown is maximum after two cycles.

Splits and Phases: 3: 49TH STREET & ULMERTON RD



Lanes, Volumes, Timings
 3: 49TH STREET & ULMERTON RD

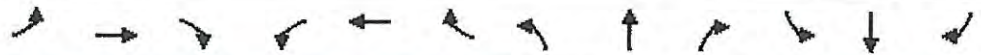
10/11/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑	↗	↔↔	↑↑↑		↔↔	↑↑↑	↗	↔↔	↑↑↑	↗
Volume (vph)	480	1129	230	319	1822	515	352	1309	141	430	996	323
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	800		1000	725		1000	630		450	500		575
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.91	1.00	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.91	1.00
Frt			0.850		0.967				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3367	4988	1553	3367	6077	0	3400	5036	1568	3400	5036	1568
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3367	4988	1553	3367	6077	0	3400	5036	1568	3400	5036	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242		35				108			248
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		702			805			381			291	
Travel Time (s)		10.6			12.2			5.8			4.4	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	505	1188	242	336	1918	542	371	1378	148	453	1048	340
Shared Lane Traffic (%)												
Lane Group Flow (vph)	505	1188	242	336	2460	0	371	1378	148	453	1048	340
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6						4			8
Detector Phase	1	6	6	5	2		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0		10.0	22.0	22.0	10.0	22.0	22.0
Total Split (s)	40.0	110.0	110.0	30.0	100.0		40.0	60.0	60.0	40.0	60.0	60.0
Total Split (%)	16.7%	45.8%	45.8%	12.5%	41.7%		16.7%	25.0%	25.0%	16.7%	25.0%	25.0%
Maximum Green (s)	34.0	103.0	103.0	24.0	93.0		34.0	54.0	54.0	34.0	54.0	54.0
Yellow Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0		6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag		Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min	Min	None	Min		None	None	None	None	None	None
Walk Time (s)		5.0	5.0		5.0			5.0	5.0		5.0	5.0
Flash Dont Walk (s)		11.0	11.0		11.0			11.0	11.0		11.0	11.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0
Act Effct Green (s)	34.0	70.4	70.4	56.6	93.0		34.1	54.0	54.0	33.5	53.4	53.4
Actuated g/C Ratio	0.14	0.29	0.29	0.24	0.39		0.14	0.23	0.23	0.14	0.22	0.22
v/c Ratio	1.06	0.81	0.39	0.42	1.03		0.77	1.21	0.34	0.95	0.93	0.63
Control Delay	150.2	82.9	6.9	81.1	96.3		110.4	176.2	24.7	131.1	105.7	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	150.2	82.9	6.9	81.1	96.3		110.4	176.2	24.7	131.1	105.7	27.2

Lanes, Volumes, Timings
 3: 49TH STREET & ULMERTON RD

10/11/2018



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	F	A	F	F		F	F	C	F	F	C
Approach Delay		91.0			94.5			151.5			97.4	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	~450	647	0	237	~1202		298	~974	51	374	605	134
Queue Length 95th (ft)	#581	661	74	(312)	#1238		366	#1065	131	#488	666	262
Internal Link Dist (ft)		622			725			301			211	
Turn Bay Length (ft)	800		1000	725			630		450	500		575
Base Capacity (vph)	477	2144	805	794	2380		484	1135	437	482	1135	545
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.55	0.30	0.42	1.03		0.77	1.21	0.34	0.94	0.92	0.62

Intersection Summary

Area Type: Other

Cycle Length: 240

Actuated Cycle Length: 239.5

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.21

Intersection Signal Delay: (107.1)

Intersection LOS: F

Intersection Capacity Utilization (107.1%)

(CU Level of Service G)

Analysis Period (min) 15

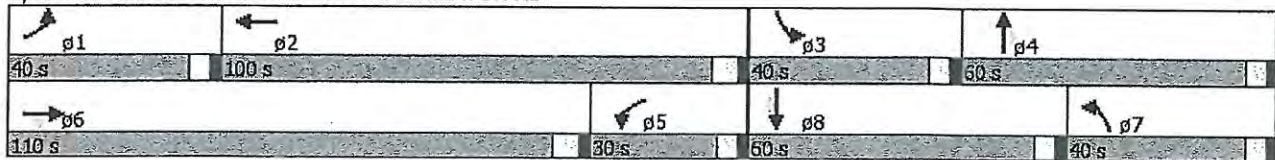
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

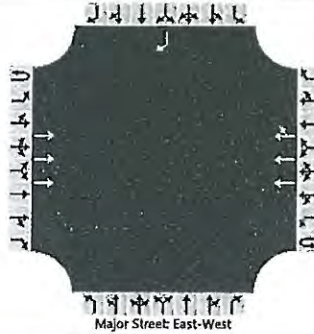
Splits and Phases: 3: 49TH STREET & ULMERTON RD



HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RP	Intersection	ULMERTON / DRIVEWAY
Agency/Co.	GCC	Jurisdiction	FDOT
Date Performed	10/11/2018	East/West Street	ULMERTON (SR 688)
Analysis Year	2020	North/South Street	DRIVEWAY A (RT ONLY)
Time Analyzed	AM PEAK	Peak Hour Factor	0.95
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	FUTURE CONDITIONS W/PROJECT		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Priority																
Number of Lanes	0	0	3	0	0	0	3	0		0	0	0		0	0	1
Configuration			T				T	TR								R
Volume (veh/h)			2945				1796	110								103
Percent Heavy Vehicles (%)																3
Proportion Time Blocked																0.200
Percent Grade (%)															0	
Right Turn Channelized															No	
Median Type Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																	7.1
Critical Headway (sec)																	7.16
Base Follow-Up Headway (sec)																	3.9
Follow-Up Headway (sec)																	3.93

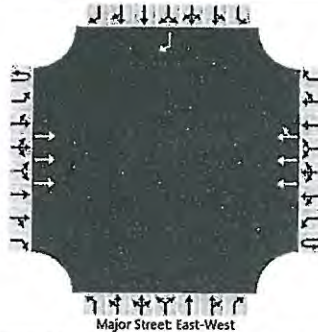
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																	108
Capacity, c (veh/h)																	608
v/c Ratio																	0.18
95% Queue Length, Q ₉₅ (veh)																	0.6
Control Delay (s/veh)																	12.2
Level of Service (LOS)																	B
Approach Delay (s/veh)																12.2	
Approach LOS																B	

HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	RP	Intersection	ULMERTON / DRIVEWAY
Agency/Co.	GCC	Jurisdiction	FDOT
Date Performed	10/11/2018	East/West Street	ULMERTON (SR 688)
Analysis Year	2020	North/South Street	DRIVEWAY A (RT ONLY)
Time Analyzed	PM PEAK	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	FUTURE CONDITIONS W/ PROJECT		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement	1U	1	2	3	4U	4	5	6	7	8	9		10	11	12	
Priority																
Number of Lanes	0	0	3	0	0	0	3	0	0	0	0		0	0	1	
Configuration			T				T	TR							R	
Volume (veh/h)			1770				2653	101							109	
Percent Heavy Vehicles (%)															3	
Proportion Time Blocked															0.200	
Percent Grade (%)	0															
Right Turn Channelized	No															
Median Type Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)																	7.1
Critical Headway (sec)																	7.16
Base Follow-Up Headway (sec)																	3.9
Follow-Up Headway (sec)																	3.93

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)																	118
Capacity, c (veh/h)																	243
v/c Ratio																	0.49
95% Queue Length, Q ₉₅ (veh)																	2.5
Control Delay (s/veh)																	33.1
Level of Service (LOS)																	D
Approach Delay (s/veh)																	33.1
Approach LOS																	D

Lanes, Volumes, Timings

3: 38TH STREET/STONEBROOK DR & ULMERTON RD

10/11/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	3941	76	68	3299	34	66	1	37	14	7	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	1000		0	375		900	350		350	300		300
Storage Lanes	2		0	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.86	0.86	1.00	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.953			0.968	
Satd. Flow (prot)	3303	6148	0	1719	6225	1538	0	1561	1392	0	1803	1583
Flt Permitted	0.950			0.950				0.714			0.789	
Satd. Flow (perm)	3303	6148	0	1719	6225	1538	0	1169	1392	0	1470	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				41			45			77
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		702			805			381			291	
Travel Time (s)		10.6			12.2			8.7			6.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	16%	16%	16%	2%	2%	2%
Adj. Flow (vph)	179	4063	78	70	3401	35	68	1	38	14	7	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	4141	0	70	3401	35	0	69	38	0	21	77
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases						2	4		4	8		8
Detector Phase	1	6		5	2	2	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	23.0		10.0	23.0	23.0	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	20.0	180.0		20.0	180.0	180.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	8.3%	75.0%		8.3%	75.0%	75.0%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%
Maximum Green (s)	14.0	173.0		14.0	173.0	173.0	34.0	34.0	34.0	34.0	34.0	34.0
Yellow Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	7.0		6.0	7.0	7.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)	14.0	173.4		12.7	172.2	172.2		18.5	18.5		18.5	18.5
Actuated g/C Ratio	0.06	0.78		0.06	0.77	0.77		0.08	0.08		0.08	0.08
v/c Ratio	0.87	0.87		0.72	0.71	0.03		0.72	0.24		0.17	0.38
Control Delay	137.6	21.1		140.5	14.6	1.4		137.3	18.5		98.0	20.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	137.6	21.1		140.5	14.6	1.4		137.3	18.5		98.0	20.7

Lanes, Volumes, Timings

3: 38TH STREET/STONEBROOK DR & ULMERTON RD

10/11/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	C		F	B	A		F	B		F	C
Approach Delay		25.9			17.0			95.1			37.2	
Approach LOS		C			B			F			D	
Queue Length 50th (ft)	138	1165		104	689	0		102	0		30	0
Queue Length 95th (ft)	#229	1345		#192	819	10		170	35		66	63
Internal Link Dist (ft)		622			725			301			211	
Turn Bay Length (ft)	1000			375		900			350			300
Base Capacity (vph)	206	4767		107	4818	1199		177	250		223	306
Starvation Cap Reductn	0	0		0	0	0		0	0		0	0
Spillback Cap Reductn	0	0		0	0	0		0	0		0	0
Storage Cap Reductn	0	0		0	0	0		0	0		0	0
Reduced v/c Ratio	0.87	0.87		0.65	0.71	0.03		0.39	0.15		0.09	0.25

Intersection Summary

Area Type: Other
 Cycle Length: 240
 Actuated Cycle Length: 223.7
 Natural Cycle: 110
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 23.1
 Intersection Capacity Utilization: 88.4%
 Analysis Period (min): 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Intersection LOS: C
 ICU Level of Service E

Splits and Phases: 3: 38TH STREET/STONEBROOK DR & ULMERTON RD

p1	p2	p4
20 s	180 s	40 s
p5	p6	p8
20 s	180 s	40 s

Lanes, Volumes, Timings

3: 38TH STREET/STONEBROOK DR & ULMERTON RD

10/11/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	233	2642	30	43	4460	52	70	7	49	16	12	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	1000		0	375		900	350		350	300		300
Storage Lanes	2		0	1		1	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.86	0.86	1.00	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.956			0.972	
Satd. Flow (prot)	3400	6333	0	1770	6408	1583	0	1747	1553	0	1829	1599
Flt Permitted	0.950			0.950				0.723			0.827	
Satd. Flow (perm)	3400	6333	0	1770	6408	1583	0	1321	1553	0	1556	1599
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				55			52			82
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		702			805			381			291	
Travel Time (s)		10.6			12.2			8.7			6.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	4%	4%	4%	1%	1%	1%
Adj. Flow (vph)	248	2811	32	46	4745	55	74	7	52	17	13	336
Shared Lane Traffic (%)												
Lane Group Flow (vph)	248	2843	0	46	4745	55	0	81	52	0	30	336
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6		5	2			4			8	
Permitted Phases						2	4		4	8		8
Detector Phase	1	6		5	2	2	4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	10.0	23.0		10.0	23.0	23.0	22.0	22.0	22.0	22.0	22.0	22.0
Total Split (s)	20.0	180.0		20.0	180.0	180.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	8.3%	75.0%		8.3%	75.0%	75.0%	16.7%	16.7%	16.7%	16.7%	16.7%	16.7%
Maximum Green (s)	14.0	173.0		14.0	173.0	173.0	34.0	34.0	34.0	34.0	34.0	34.0
Yellow Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	7.0		6.0	7.0	7.0		6.0	6.0		6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	Min		None	Min	Min	None	None	None	None	None	None
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)	14.0	175.8		11.2	173.0	173.0		34.0	34.0		34.0	34.0
Actuated g/C Ratio	0.06	0.73		0.05	0.72	0.72		0.14	0.14		0.14	0.14
v/c Ratio	1.25	0.61		0.56	1.03	0.05		0.43	0.20		0.14	1.14
Control Delay	228.8	16.4		136.4	53.7	1.9		102.3	19.3		92.1	156.4
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	228.8	16.4		136.4	53.7	1.9		102.3	19.3		92.1	156.4

Lanes, Volumes, Timings

3: 38TH STREET/STONEBROOK DR & ULMERTON RD

10/11/2018

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	F	B		F	D	A		F	B		F	F
Approach Delay		33.5			53.9			69.8			151.2	
Approach LOS		C			D			E			F	
Queue Length 50th (ft)	~251	610		73	~2321	0		120	0		42	~499
Queue Length 95th (ft)	#361	644		128	#2245	16		190	51		85	#737
Internal Link Dist (ft)		622			725			301			211	
Turn Bay Length (ft)	1000			375		900			350			300
Base Capacity (vph)	198	4639		103	4619	1156		187	264		220	296
Starvation Cap Reductn	0	0		0	0	0		0	0		0	0
Spillback Cap Reductn	0	0		0	0	0		0	0		0	0
Storage Cap Reductn	0	0		0	0	0		0	0		0	0
Reduced v/c Ratio	1.25	0.61		0.45	1.03	0.05		0.43	0.20		0.14	1.14

Intersection Summary

Area Type: Other

Cycle Length: 240

Actuated Cycle Length: 240

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.25

Intersection Signal Delay: 50.9

Intersection LOS: D

Intersection Capacity Utilization: 104.3%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: 38TH STREET/STONEBROOK DR & ULMERTON RD

20 s	180 s	40 s
20 s	180 s	40 s