

**TRAFFIC IMPACT STUDY
FOR
PALAZZO HOTEL
#657 BAY ESPLANADE
CLEARWATER BEACH, FLORIDA**

PREPARED FOR:
NORTHSIDE ENGINEERING, INC.

PREPARED BY:
GULF COAST CONSULTING, INC.
SEPTEMBER 2016
PROJECT # 13-005



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

I. INTRODUCTION

The .35 acre project site is located along the south side of Bay Esplanade along Clearwater Harbor in north Clearwater Beach (See Figure 1). The site is proposed to be developed as a small hotel containing 27 rooms. The development of the property is the subject of a Comprehensive Infill Redevelopment application. This application requires an assessment of the traffic impacts of development. Prior to completing this analysis a methodology was established with the City of Clearwater staff.

II. EXISTING TRAFFIC CONDITIONS

The property has frontage on Bay Esplanade which is a two-lane local road. Mandalay Avenue is a four-lane divided collector roadway between the roundabout and Bay Esplanade, and a two-lane collector north of Bay Esplanade. Royal Way is a two-lane local road that intersects with Mandalay Avenue and provides access to the area of the proposed hotel. As agreed to by Clearwater staff, traffic counts were conducted between 4 - 6 PM on in September 2016 at the following intersections:

Mandalay Avenue / Bay Esplanade (signal)
Mandalay Avenue / Royal Way/Glendale St

All traffic counts were converted to annual average equivalents using FDOT seasonal adjustment factors. Existing traffic volumes are shown in Figure 2. Existing intersections were analyzed using the SYNCHRO and HCS 2010 software. The SYNCHRO & HCS 2010 printouts are included in Appendix A.

Presently the signalized intersection at Mandalay Avenue / Bay Esplanade operates at LOS A with average delay of 2.3 seconds per vehicle during the PM peak hour. Intersection capacity utilization (ICU) is 49.2%.

At the Mandalay Avenue / Royal Way Glendale Street intersection northbound left runs operate at LOS A with average delay of 7.8 seconds southbound left turns operate at LOS A with average delay of 7.7 seconds, the eastbound approach (Glendale) operates at LOS B with 10.2 seconds average delay and the westbound approach (Royal Way) operates at LOS B with 12.5 seconds average delay. Traffic volume on Royal Way is extremely low.

Mandalay Avenue south of Bay Esplanade is a four-lane divided collector roadway and according to FDOT 2012 QLOS Handbook capacity tables has a LOS D capacity of 2,630 vehicles per hour. The segment of Mandalay Avenue north of Bay Esplanade is a two-lane undivided collector roadway with a LOS D capacity of 1,200 vehicles per hour. Existing roadway conditions are shown below.



PROJECT LOCATION – PALAZZO HOTEL

PROJECT NO:
16-053



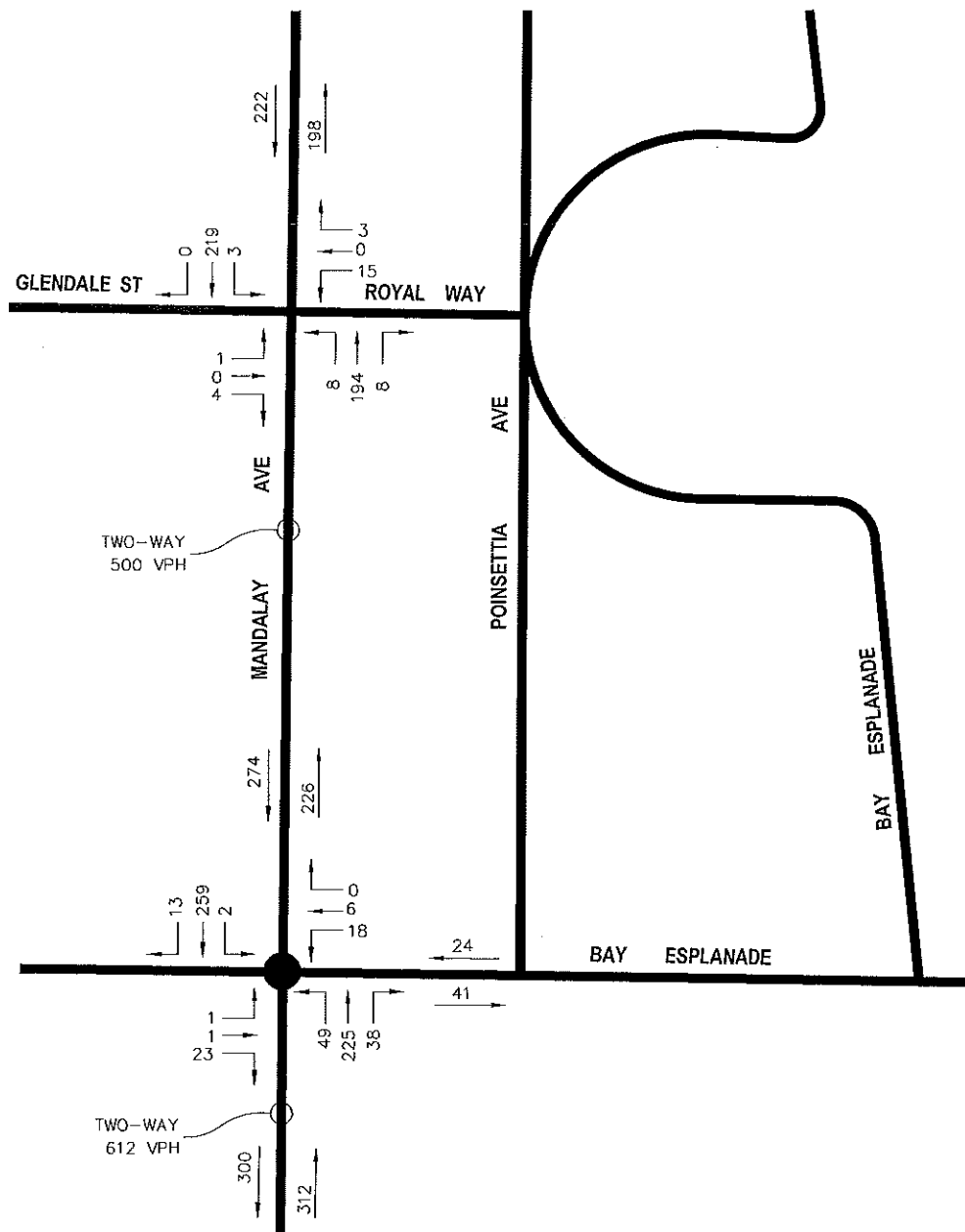
Gulf Coast Consulting, Inc.
Land Development Consulting

DATE:
9/2016

DRAWN BY:
DME

FIGURE:

1



EXISTING PM PEAK HOUR TRAFFIC (2016)

PROJECT NO:
16-053



Gulf Coast Consulting, Inc.
Land Development Consulting

DATE:

9/2016

DRAWN BY:

DME

FIGURE:

2

EXISTING ROADWAY CONDITIONS - 2016

<u>Roadway Segment</u>	<u>Lanes</u>	<u>PM Volume</u>	<u>PM LOS</u>
Mandalay Ave (S. of Bay Esplanade)	4LU	612	C
Mandalay Ave. (Bay Esplanade – Royal)	2LU	500	C
Mandalay (N of Royal)	2LU	420	C

As shown above all roadway segments and intersections operate at LOS C during PM peak hour.

III. FUTURE TRAFFIC CONDITIONS

Background Traffic Growth

Existing traffic was adjusted to include expected traffic from the approved Fairfield Inn hotel which is presently under construction on a 1.02 acre site across the street from the subject site. Fairfield Inn will contain 102 rooms. Project traffic from this hotel was previously analyzed in a report prepared by Gulf Coast Consulting in January 2013.

Project Traffic

Using Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition rates, the amount of new trips was calculated and estimates are shown below:

TRIP GENERATION ESTIMATES

<u>Land Use</u>	<u>ITE LUC</u>	<u>Amount</u>	<u>Daily</u>	<u>Mid-Day</u>	<u>PM Peak</u>
Hotel	310	27 rooms	221	16 (8/8)	16 (8/8)

The expected distribution of vehicular trips is as follows:

10% to / from the north (2 PM trips)
90% to / from the south (14 PM trips)

PROJECT IMPACT CALCULATIONS (PM PEAK HOUR)

<u>Road Segment</u>	<u>Lanes</u>	<u>Project Trips</u>	<u>Capacity</u>	<u>Project Percent</u>
Mandalay Ave. (S – Bay Esplanade	4LU	14	2630	0.05%
Mandalay Ave (Bay Esplanade – Royal)	2LU	14	1200	1.17%
Mandalay Ave (N. of Royal Way)	2LU	2	1200	0.02%

Background traffic and project traffic were added to determine total traffic for 2017 and the intersections and roadway segments were reanalyzed. The future traffic volumes are shown in Figure 3, and the SYNCHRO & HCS 2010 printouts are included in Appendix B.

Under future conditions the signalized intersection at Mandalay Avenue / Bay Esplanade would continue to operate at LOS A with average delay of 2.3 seconds per vehicle during the PM peak hour. The ICU would slightly increase to 52.8%.

At the Mandalay Avenue / Royal Way intersection northbound and southbound left turns would continue to operate at LOS A with average delay of 7.8 seconds; the eastbound approach (Glendale) would operate at LOS B with 10.3 seconds average delay and the westbound approach (Royal Way) would operate at LOS B with average delay increasing to 13.7 seconds.

At the project driveway all movements would operate at LOS A with minimal delay.

FUTURE ROADWAY CONDITIONS - 2017

<u>Roadway Segment</u>	<u>Lanes</u>	<u>PM Volume</u>	<u>PM LOS</u>
Mandalay Ave (S. of Bay Esplanade)	4LU	681	C
Mandalay Ave. (Bay Esplanade – Royal)	2LU	569	C
Mandalay (N of Royal)	2LU	428	C

As shown above all roadway segments and intersections would continue to operate at LOS C during the PM peak hour.

IV. CONCLUSION

This analysis was conducted in accordance with a specific methodology established with City of Clearwater staff. This analysis demonstrates traffic operations at nearby intersections and on adjacent roadways would continue at acceptable levels of service with the proposed hotel during the PM peak hour.

APPENDIX A

2015 Peak Season Factor Category Report - Report Type: ALL
Category: 1500 PINELLAS COUNTYWIDE

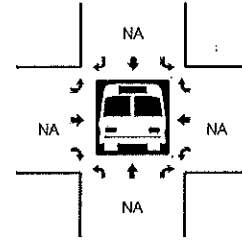
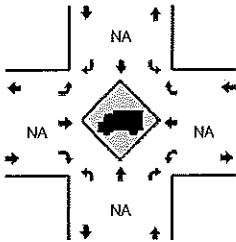
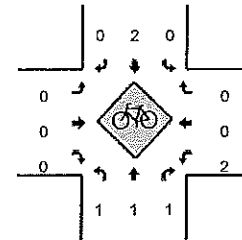
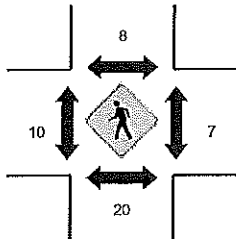
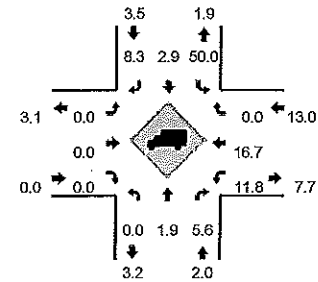
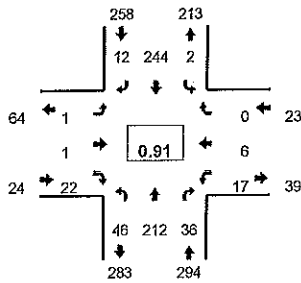
MOCF: 0.95

Week	Dates	SF	PSCF
1	01/01/2015 - 01/03/2015	1.04	1.09
2	01/04/2015 - 01/10/2015	1.04	1.09
3	01/11/2015 - 01/17/2015	1.04	1.09
4	01/18/2015 - 01/24/2015	1.02	1.07
5	01/25/2015 - 01/31/2015	1.00	1.05
6	02/01/2015 - 02/07/2015	0.98	1.03
* 7	02/08/2015 - 02/14/2015	0.96	1.01
* 8	02/15/2015 - 02/21/2015	0.95	1.00
* 9	02/22/2015 - 02/28/2015	0.94	0.99
*10	03/01/2015 - 03/07/2015	0.92	0.97
*11	03/08/2015 - 03/14/2015	0.91	0.96
*12	03/15/2015 - 03/21/2015	0.92	0.97
*13	03/22/2015 - 03/28/2015	0.93	0.98
*14	03/29/2015 - 04/04/2015	0.94	0.99
*15	04/05/2015 - 04/11/2015	0.95	1.00
*16	04/12/2015 - 04/18/2015	0.96	1.01
*17	04/19/2015 - 04/25/2015	0.96	1.01
*18	04/26/2015 - 05/02/2015	0.97	1.02
*19	05/03/2015 - 05/09/2015	0.98	1.03
20	05/10/2015 - 05/16/2015	0.99	1.04
21	05/17/2015 - 05/23/2015	0.99	1.04
22	05/24/2015 - 05/30/2015	1.00	1.05
23	05/31/2015 - 06/06/2015	1.00	1.05
24	06/07/2015 - 06/13/2015	1.00	1.05
25	06/14/2015 - 06/20/2015	1.01	1.06
26	06/21/2015 - 06/27/2015	1.02	1.07
27	06/28/2015 - 07/04/2015	1.02	1.07
28	07/05/2015 - 07/11/2015	1.03	1.08
29	07/12/2015 - 07/18/2015	1.03	1.08
30	07/19/2015 - 07/25/2015	1.03	1.08
31	07/26/2015 - 08/01/2015	1.03	1.08
32	08/02/2015 - 08/08/2015	1.03	1.08
33	08/09/2015 - 08/15/2015	1.03	1.08
34	08/16/2015 - 08/22/2015	1.04	1.09
35	08/23/2015 - 08/29/2015	1.05	1.11
36	08/30/2015 - 09/05/2015	1.06	1.12
37	09/06/2015 - 09/12/2015	1.07	1.13
38	09/13/2015 - 09/19/2015	1.06	1.12
39	09/20/2015 - 09/26/2015	1.04	1.09
40	09/27/2015 - 10/03/2015	1.03	1.08
41	10/04/2015 - 10/10/2015	1.02	1.07
42	10/11/2015 - 10/17/2015	1.01	1.06
43	10/18/2015 - 10/24/2015	1.02	1.07
44	10/25/2015 - 10/31/2015	1.03	1.08
45	11/01/2015 - 11/07/2015	1.04	1.09
46	11/08/2015 - 11/14/2015	1.04	1.09
47	11/15/2015 - 11/21/2015	1.04	1.09
48	11/22/2015 - 11/28/2015	1.04	1.09
49	11/29/2015 - 12/05/2015	1.04	1.09
50	12/06/2015 - 12/12/2015	1.04	1.09
51	12/13/2015 - 12/19/2015	1.04	1.09
52	12/20/2015 - 12/26/2015	1.04	1.09
53	12/27/2015 - 12/31/2015	1.04	1.09

* Peak Season

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Mandalay Ave -- Bay Esplanade
CITY/STATE: Clearwater, FLQC JOB #: 13906902
DATE: Wed, Sep 14 2016Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

R* = RTOR

15-Min Count Period	Mandalay Ave (Northbound)					Mandalay Ave (Southbound)					Bay Esplanade (Eastbound)					Bay Esplanade (Westbound)					Total	Hourly Totals
Beginning At	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	9	52	8	0	0	0	63	0	0	0	0	0	4	0	4	8	0	0	0	1	149	
4:15 PM	11	59	4	0	1	0	53	2	0	0	0	1	2	0	5	7	1	0	0	0	146	
4:30 PM	9	48	14	0	1	0	67	4	0	0	0	0	1	0	3	3	3	0	0	0	153	
4:45 PM	11	48	5	0	1	1	58	2	0	0	0	0	0	0	6	3	1	0	0	0	136	584
5:00 PM	15	57	10	0	0	1	66	4	0	0	1	0	0	0	5	4	1	0	0	0	164	599
5:15 PM	21	54	7	0	3	2	39	4	0	0	0	0	1	0	6	4	0	0	0	1	142	595
5:30 PM	19	45	8	0	2	0	46	0	0	0	1	0	1	0	5	8	1	0	0	0	136	578
5:45 PM	24	61	6	0	1	3	39	3	0	0	2	0	2	0	10	3	1	0	0	1	156	598

$SF = 1.06$
 132592
 $1 \uparrow \downarrow 6 \leftarrow 0$
 $23 \uparrow \downarrow 18$
 $49 \uparrow \downarrow 38$
 225

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	60	228	40	0	0	4	264	16	0	0	4	0	0	0	20	16	4	0	0	0	656
Heavy Trucks	0	0	4	0	0	4	4	0	0	0	0	0	0	0	0	8	0	0	0	0	20
Pedestrians	0	20	0	0	0	0	8	0	0	0	0	28	0	0	0	16	0	0	0	0	72
Bicycles	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	4
Railroad																					
Stopped Buses																					

Comments:

Report generated on 9/20/2016 1:28 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

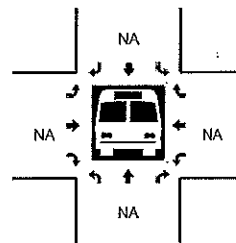
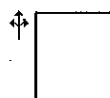
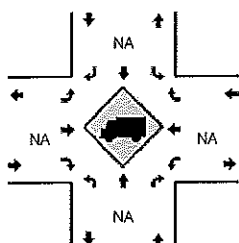
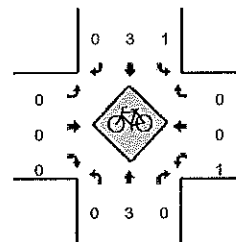
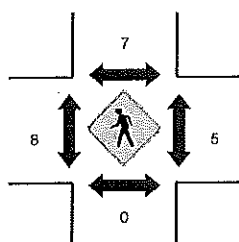
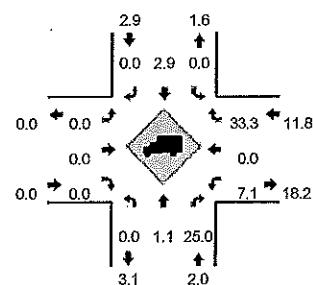
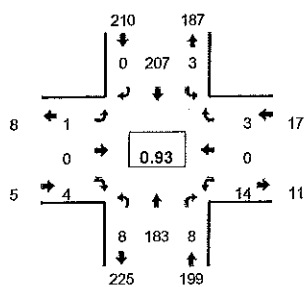
LOCATION: Mandalay Ave -- Royal Way

QC JOB #: 13906901

CITY/STATE: Clearwater, FL

DATE: Wed, Sep 14 2016

Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:15 PM -- 4:30 PM



R* = RTOR

15-Min Count Period	Mandalay Ave (Northbound)					Mandalay Ave (Southbound)					Royal Way (Eastbound)					Royal Way (Westbound)					Total	Hourly Totals
Beginning At	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	1	49	1	0	0	1	46	0	0	0	1	0	2	0	0	5	0	0	0	0	106	
4:15 PM	3	59	1	0	0	0	46	0	0	0	1	0	0	0	0	6	0	0	0	0	116	
4:30 PM	0	39	2	0	0	0	55	0	0	0	0	0	2	0	0	2	0	1	0	0	101	
4:45 PM	4	37	3	0	0	0	53	0	0	0	0	0	1	0	0	2	0	1	0	0	101	424
5:00 PM	1	48	2	0	0	3	53	0	0	0	0	0	1	0	0	4	0	1	0	0	113	431
5:15 PM	0	45	2	0	0	0	32	0	0	0	0	0	1	0	0	6	0	0	0	0	86	401
5:30 PM	2	40	4	0	0	1	38	0	0	0	0	0	2	0	0	3	0	1	0	0	91	391
5:45 PM	1	55	3	0	0	0	41	0	0	0	0	0	0	0	0	1	0	1	0	0	102	392
SF = 1.06 Hand-drawn diagram showing vehicle counts and flow rates for the intersection. Counts: 299 (left), 162 (right), 3 (left), 15 (right), 194 (left), 8 (right), 8 (left), 4 (right), 0 (left), 0 (right), 1 (left), 0 (right).																						
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
All Vehicles	12	236	4	0	0	0	184	0	0	0	4	0	0	0	0	24	0	0	0	0	464	
Heavy Trucks	0	0	0			0	4	0			0	0	0			4	0	0			8	
Pedestrians	0					20					8					4					32	
Bicycles	0	1	0			0	1	0			0	0	0			1	0	0			3	
Railroad																						
Stopped Buses																						

Comments:

Report generated on 9/20/2016 1:28 PM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Lanes, Volumes, Timings

3: MANDALAY & BAY ESPLANE

9/22/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	23	18	6	0	49	225	38	2	259	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.92			0.96		0.96	0.99			1.00	
Frt		0.875						0.978			0.994	
Flt Protected		0.998			0.964		0.950					
Satd. Flow (prot)	0	1525	0	0	1621	0	1770	1801	0	0	1829	0
Flt Permitted							0.577				0.999	
Satd. Flow (perm)	0	1526	0	0	1611	0	1031	1801	0	0	1827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25						26			7	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		434			429			371			489	
Travel Time (s)		9.9			9.8			8.4			11.1	
Confl. Peds. (#/hr)	18		30	27		15	30		27	15		18
Confl. Bikes (#/hr)			2						3			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	13%	13%	13%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	1	1	25	20	7	0	54	247	42	2	285	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	0	27	0	54	289	0	0	301	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		50.0	50.0		50.0	50.0	
Total Split (%)	28.6%	28.6%		28.6%	28.6%		71.4%	71.4%		71.4%	71.4%	
Maximum Green (s)	16.0	16.0		16.0	16.0		46.0	46.0		46.0	46.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		4.0			4.0		4.0	4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	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	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		6.0			6.2		25.3	25.3			25.3	
Actuated g/C Ratio		0.22			0.22		0.91	0.91			0.91	
v/c Ratio		0.08			0.07		0.06	0.18			0.18	
Control Delay		6.2			10.2		2.0	1.8			1.8	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		6.2			10.2		2.0	1.8			1.8	

Lanes, Volumes, Timings

3: MANDALAY & BAY ESPLANADE

9/22/2016



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			B		A	A			A	
Approach Delay		6.2			10.2			1.8			1.8	
Approach LOS		A			B			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 27.8

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.18

Intersection Signal Delay: 2.3

Intersection Capacity Utilization 49.2%

Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

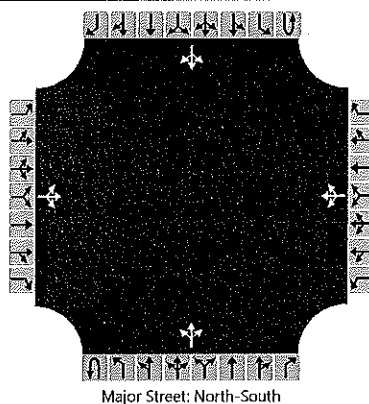
Splits and Phases: 3: MANDALAY & BAY ESPLANADE

 p2	 p4
50 s	20 s
 p6	 p8
50 s	20 s

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	RP	Intersection	MANDALAY AVE / ROYAL WAY
Agency/Co.	GCC	Jurisdiction	CLEARWATER
Date Performed	9/22/2016	East/West Street	ROYAL WAY / GLENDALE ST
Analysis Year	2016	North/South Street	MANDALAY AVENUE
Time Analyzed	PM PEAK - EXISTING 2016	Peak Hour Factor	0.93
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	PALAZZO HOTEL		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		1	0	4		15	0	3		8	194	8		3	219	0
Percent Heavy Vehicles		0	0	0		12	12	12		2				3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)			5				19				9				3	
Capacity			698				502				1315				1344	
v/c Ratio			0.01				0.04				0.01				0.00	
95% Queue Length			0.0				0.1				0.0				0.0	
Control Delay (s/veh)			10.2				12.5				7.8				7.7	
Level of Service (LOS)			B				B				A				A	
Approach Delay (s/veh)	10.2				12.5				0.4				0.1			
Approach LOS	B				B											

APPENDIX B

Hotel (310)

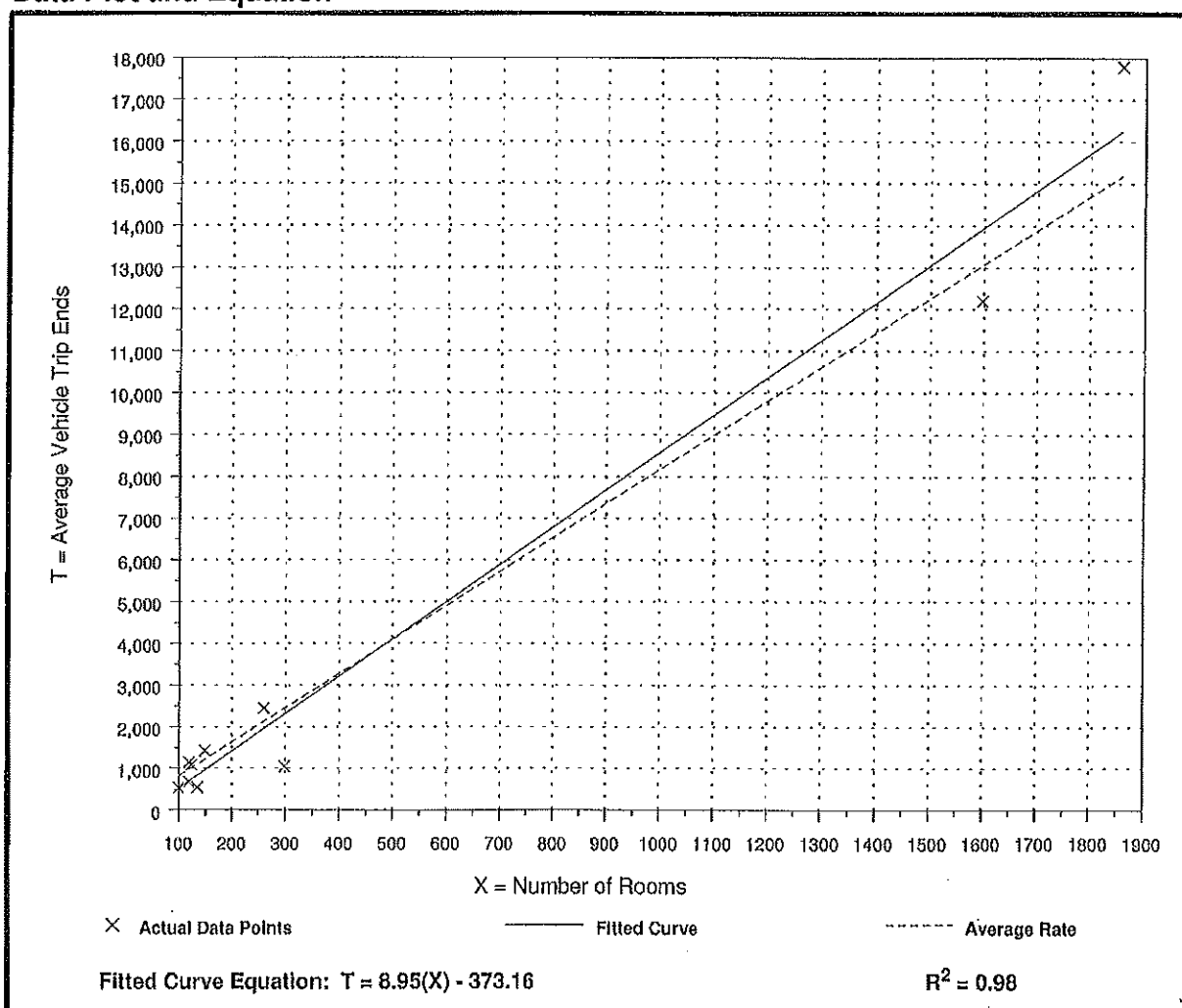
Average Vehicle Trip Ends vs: Rooms On a: Weekday

Number of Studies: 10
Average Number of Rooms: 476
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
8.17	3.47 - 9.58	3.38

Data Plot and Equation



Hotel (310)

MID-DAY

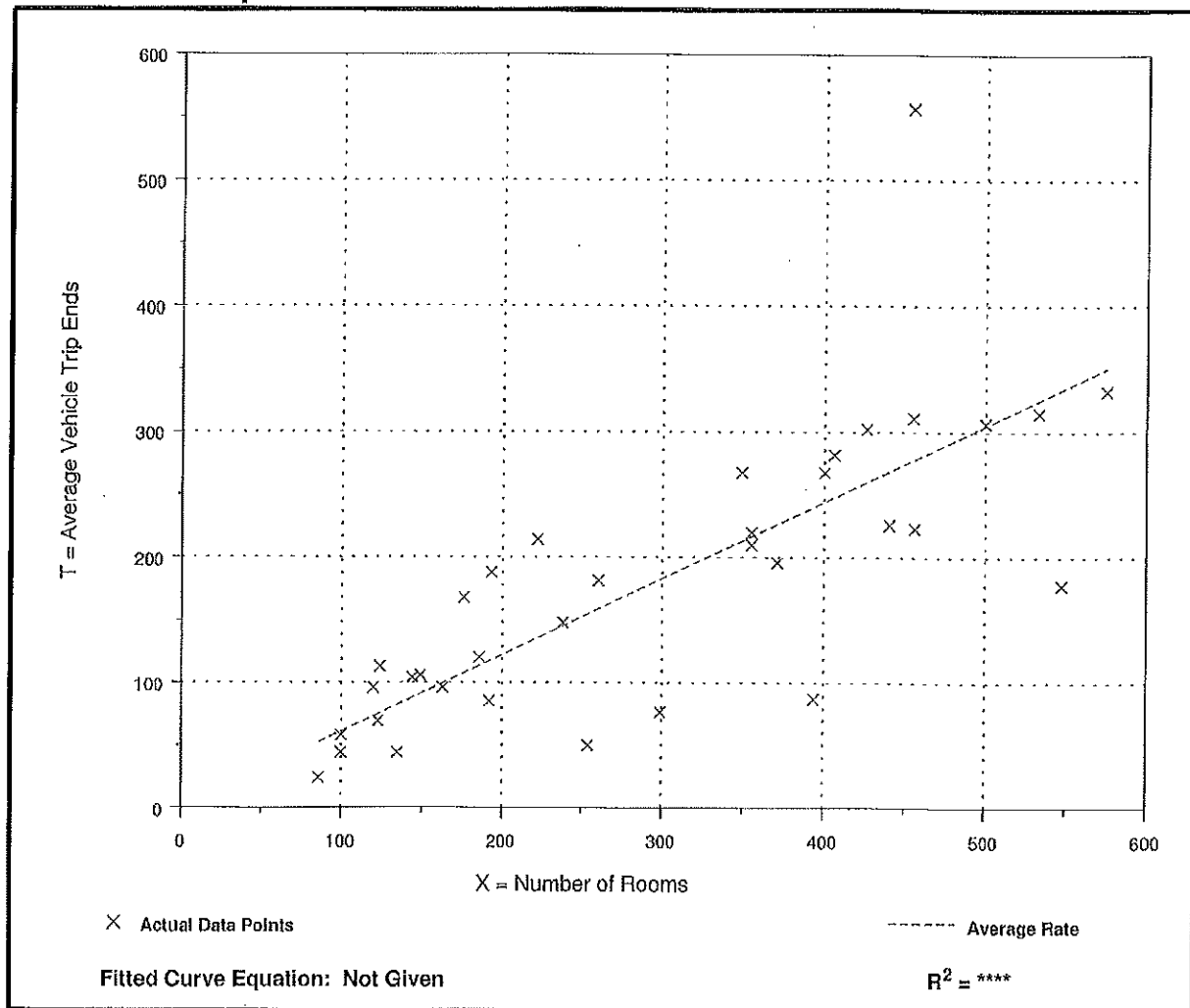
Average Vehicle Trip Ends vs: Rooms
On a: Weekday,
P.M. Peak Hour of Generator

Number of Studies: 35
Average Number of Rooms: 294
Directional Distribution: 58% entering, 42% exiting

Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.61	0.20 - 1.23	0.81

Data Plot and Equation



Hotel (310)

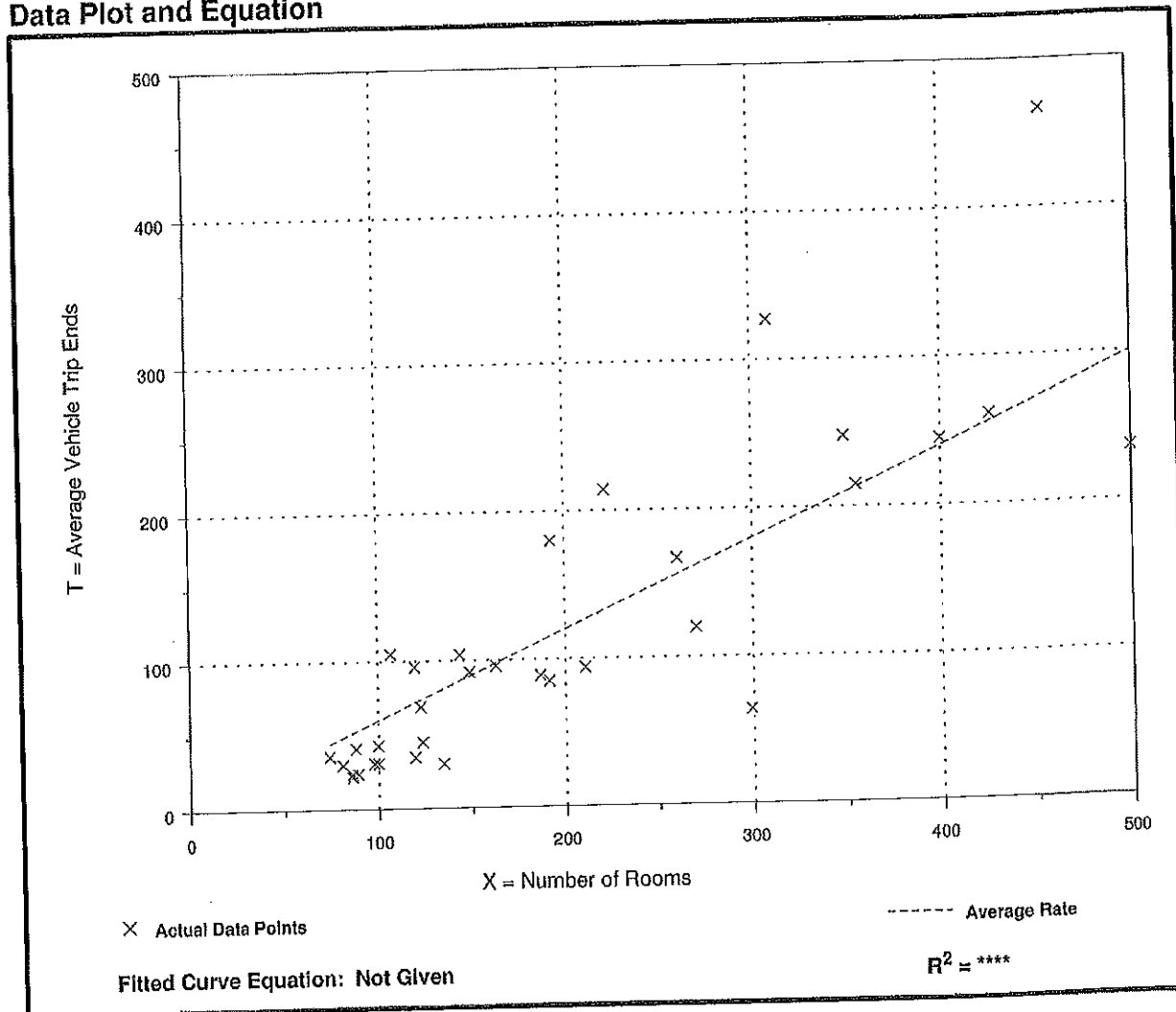
Average Vehicle Trip Ends vs: Rooms
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 33
Average Number of Rooms: 200
Directional Distribution: 51% entering, 49% exiting

Trip Generation per Room

Average Rate	Range of Rates	Standard Deviation
0.60	0.21 - 1.06	0.81

Data Plot and Equation



Lanes, Volumes, Timings

3: MANDALAY & BAY ESPLANE

9/22/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	1	23	18	6	0	49	260	38	2	293	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.92			0.96		0.96	0.99			1.00	
Frt		0.875						0.981			0.994	
Flt Protected		0.998			0.964		0.950					
Satd. Flow (prot)	0	1525	0	0	1621	0	1770	1809	0	0	1829	0
Flt Permitted							0.557				0.999	
Satd. Flow (perm)	0	1526	0	0	1611	0	999	1809	0	0	1827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25						22			6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		434			429			371			489	
Travel Time (s)		9.9			9.8			8.4			11.1	
Confl. Peds. (#/hr)	18		30	27		15	30		27	15		18
Confl. Bikes (#/hr)			2						3			
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	13%	13%	13%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	1	1	25	20	7	0	54	286	42	2	322	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	0	27	0	54	328	0	0	338	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		50.0	50.0		50.0	50.0	
Total Split (%)	28.6%	28.6%		28.6%	28.6%		71.4%	71.4%		71.4%	71.4%	
Maximum Green (s)	16.0	16.0		16.0	16.0		46.0	46.0		46.0	46.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	
Total Lost Time (s)		4.0			4.0		4.0	4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	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	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		6.0			6.3		26.0	26.0			26.0	
Actuated g/C Ratio		0.21			0.22		0.91	0.91			0.91	
v/c Ratio		0.08			0.08		0.06	0.20			0.20	
Control Delay		6.5			10.7		2.0	1.8			1.9	
Queue Delay		0.0			0.0		0.0	0.0			0.0	
Total Delay		6.5			10.7		2.0	1.8			1.9	

Lanes, Volumes, Timings
3: MANDALAY & BAY ESPLANADE

9/22/2016



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		A			B		A	A			A	
Approach Delay		6.5			10.7			1.8			1.9	
Approach LOS		A			B			A			A	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 28.5

Natural Cycle: 40

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.20

Intersection Signal Delay: 2.3

Intersection Capacity Utilization 52.8%

Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

Splits and Phases: 3: MANDALAY & BAY ESPLANADE

	50 s		20 s
	50 s		20 s

HCS 2010 Two-Way Stop Control Summary Report

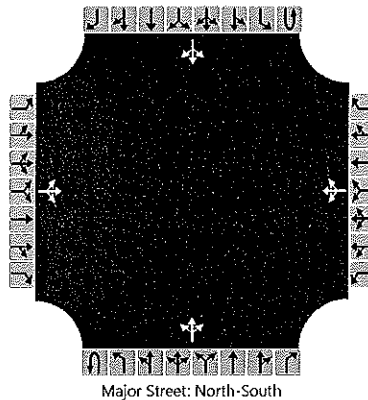
General Information

Analyst	RP
Agency/Co.	GCC
Date Performed	9/22/2016
Analysis Year	2017
Time Analyzed	PM PEAK - FUTURE W/PROJ
Intersection Orientation	North-South
Project Description	PALAZZO HOTEL

Site Information

Intersection	MANDALAY AVE / ROYAL WAY
Jurisdiction	CLEARWATER
East/West Street	ROYAL WAY / GLENDALE ST
North/South Street	MANDALAY AVENUE
Peak Hour Factor	0.93
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		1	0	4		49	0	7		8	194	43		7	219	0
Percent Heavy Vehicles		0	0	0		12	12	12		2				3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

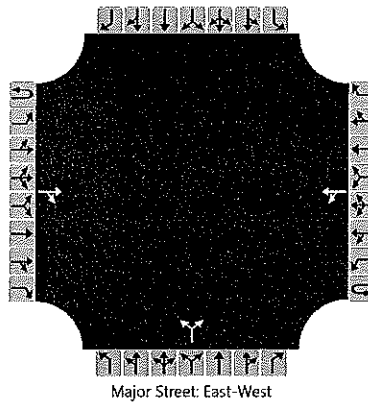
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)			5				61				9				8	
Capacity			686				474				1315				1303	
v/c Ratio			0.01				0.13				0.01				0.01	
95% Queue Length			0.0				0.4				0.0				0.0	
Control Delay (s/veh)			10.3				13.7				7.8				7.8	
Level of Service (LOS)			B				B				A				A	
Approach Delay (s/veh)	10.3				13.7				0.3				0.3			
Approach LOS	B				B											

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	RP	Intersection	BAY ESPLANADE - DRIVE A
Agency/Co.	GCC	Jurisdiction	CLEARWATER
Date Performed	9/22/2016	East/West Street	BAY ESPLANADE
Analysis Year	2017	North/South Street	DRIVE A
Time Analyzed	FUTURE - PM PEAK	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	FUTURE WITH PROJECT		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			19	8		0	26			8		0				
Percent Heavy Vehicles						3				3		3				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)					0					9						
Capacity					1574					951						
v/c Ratio					0.00					0.01						
95% Queue Length					0.0					0.0						
Control Delay (s/veh)					7.3					8.8						
Level of Service (LOS)					A					A						
Approach Delay (s/veh)					0.0				8.8							
Approach LOS									A							