TRAFFIC IMPACT ANALYSIS

MCDONALDS ATLANTIC HAGEN
DELRAY BEACH, FL

PREPARED FOR:

Kimley»Horn

Project # 147208326
July 15, 2019
Revised January 7, 2020
Revised February 6, 2020
Revised March 6, 2020
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Introduction

Kimley-Horn and Associates, Inc. has performed a traffic impact analysis to evaluate future traffic conditions following the proposed fast food with drive-through window located within Oriole Plaza on the northeast corner of Hagen Rand Road & Atlantic Avenue in Delray Beach, Florida. *Figure 1* illustrates the overall site. The Parcel Control Numbers (PCNs) for the project site are the following:

- 00-42-46-16-01-003-0010
- 00-42-46-16-01-003-0050
- 00-42-46-16-01-003-0060
- 00-42-46-16-23-001-0000
- 00-42-46-16-24-000-0000

The proposed site plan and PCN summary are included in *Appendix A*.

The purpose of this study is to evaluate the impact of the proposed fast food with drive-through window surrounding roadway network and determine if adequate capacity is available to accommodate future traffic volumes using the criteria defined in *Article 12* of the *Palm Beach County Unified Land Development Code (ULDC)* for buildout in 2024. This report summarizes the data collection, project trip generation, project trip distribution, and link analysis.

Not to scale

N

LEGEND

SITE

FIGURE 1
PROJECT SITE LOCATION
MCDONALDS ATLANTIC HAGEN
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Project Traffic

Project traffic used in this analysis is defined as the vehicle trips expected to be generated by the project and the distribution and assignment of that traffic over the study roadway network.

Existing and Proposed Land Uses

The project site has an approved mix-use PUD. The proposed plan of development includes adding 4,455 square feet of fast food with drive-through to the existing PUD. The trip generation calculations are based on three scenarios:

- Approved Scenario
- Existing Scenario> 5 years
- Proposed Scenario

Trip Generation

The trip generation potential for the proposed development program was calculated using trip generation rates and equations published by the Palm Beach County Traffic Division. Internal Capture worksheets are included in *Appendix B.* For significance purposes, the proposed development is projected to generate 1,009 net new external daily trips, 89 net new external AM peak-hour trips (46 in, 43 out), and 77 net new external PM peak-hour trips (40 in, 37 out). For capacity purposes, the proposed development is projected to generate 860 net new external daily trips, 79 net new external AM peak-hour trips (40 in, 39 out), and 60 net new external PM peak-hour trips (32 in, 28 out).Based on the impact analysis guidelines established in *Article 12* of the *Palm Beach County ULDC*, it was determined that the radius of development influence is one mile for Test 1 and Test 2 analyses.

Table 1: Trip Generation

Land Use	Intensity	Daily Trips	AM Peak Hour			PM Peak Hour		
			Total	In	Out	Total	In	Out
Approved Scenario								
General Commercial	130.97 KSF	7223	123	76	47	663	318	345
Movie Theater	12.23 KSF	955	3	2	1	75	71	4
Church/Synagogue	2.34 KSF	16	1	1	0	1	0	1
Drive-In Bank	9.15 KSF	915	87	50	37	187	94	93
High Turnover Sit-Down Restaurant	2.213 KSF	248	22	12	10	22	14	8
Mini-Warehouse/SS	110.053 KSF	166	11	7	4	19	9	10
Funeral Home*	7.2 KSF	83	33	28	5	8	1	7
	Subtotal	9606	280	176	104	975	507	468
Internal Capture								
General Commercial		105	4	2	2	21	7	14
Movie Theater		46	0	0	0	6	6	0
Drive-In Bank		70	4	2	2	14	7	7
High Turnover Sit-Down Restaurant		25	0	0	0	1	1	0
	Subtotal	246	8	4	4	42	21	21
Pass-By Capture								
General Commercial	37.8%	2691	45	28	17	243	118	125
Movie Theater	5.0%	45	0	0	0	3	3	0
Church/Synagogue	5.0%	1	0	0	0	0	0	0
Drive-In Bank	47.0%	397	39	23	16	81	41	40
High Turnover Sit-Down Restaurant	43.0%	96	9	5	4	9	6	3
Mini-Warehouse/SS	10.0%	17	1	1	0	2	1	1
	Subtotal	3247	94	57	37	338	169	169
Driveway Volumes		9360	272	172	100	933	486	447
Net New External Trips		6113	178	115	63	595	317	278

TABLE 1: TRIP GENERATION COMPARISON CONTINUED									
Existing Scenario >5 Years									
General Commercial	130.97	KSF	7223	123	76	47	663	318	345
Movie Theater	12.23	KSF	955	3	2	1	75	71	4
Church/Synagogue	2.34	KSF	16	1	1	0	1	0	1
Drive-In Bank	9.15	KSF	915	87	50	37	187	94	93
High Turnover Sit-Down Restaurant	2.213	KSF	248	22	12	10	22	14	8
Funeral Home*	7.2	KSF	83	33	28	5	8	1	7
		Subtotal	*9440*	*269*	*169*	*100*	*956*	*498*	*458*
Internal Capture									
General Commercial			105	4	2	2	21	7	14
Movie Theater			46	0	0	0	6	6	0
Drive-In Bank			70	4	2	2	14	7	7
High Turnover Sit-Down Restaurant			25	0	0	0	1	1	0
		Subtotal	*246*	*8*	*4*	*4*	*42*	*21*	*21*
Pass-By Capture									
General Commercial	37.8%		2691	45	28	17	243	118	125
Movie Theater	5.0%		45	0	0	0	3	3	0
Church/Synagogue	5.0%		1	0	0	0	0	0	0
Drive-In Bank	47.0%		397	39	23	16	81	41	40
High Turnover Sit-Down Restaurant	43.0%		96	9	5	4	9	6	3
		Subtotal	*3230*	*93*	*56*	*37*	*336*	*168*	*168*
Driveway Volumes			9194	261	165	96	914	477	437
Net New External Trips			5964	168	109	59	578	309	269
Proposed Scenario									
General Commercial	130.97	KSF	7223	123	76	47	663	318	345
Movie Theater	12.23	KSF	955	3	2	1	75	71	4
Church/Synagogue	2.34	KSF	16	1	1	0	1	0	1
Drive-In Bank	9.15	KSF	915	87	50	37	187	94	93
High Turnover Sit-Down Restaurant	2.213	KSF	248	22	12	10	22	14	8
Fast Food Restaurant + DT	4.455	KSF	2098	179	91	88	146	76	70
Mini-Warehouse/SS	110.053	KSF	166	11	7	4	19	9	10
Funeral Home*	7.2	KSF	83	33	28	5	8	1	7
		Subtotal	*11704*	*459*	*267*	*192*	*1121*	*583*	*538*
Internal Capture									
General Commercial			188	9	5	4	27	10	17
Movie Theater			56	0	0	0	8	8	0
Drive-In Bank			98	7	4	3	18	9	9
High Turnover Sit-Down Restaurant			17	1	0	1	2	1	1
Fast Food Restaurant + DT			139	7	3	4	13	6	7
		Subtotal	*498*	*24*	*12*	*12*	*68*	*34*	*34*
Pass-By Capture									
General Commercial	37.8%		2659	43	27	16	240	116	124
Movie Theater	5.0%		45	0	0	0	3	3	0
Church/Synagogue	5.0%		1	0	0	0	0	0	0
Drive-In Bank	47.0%		384	38	22	16	79	40	39
High Turnover Sit-Down Restaurant	43.0%		106	9	5	4	9	6	3
Fast Food Restaurant + DT	49.0%		1021	87	45	42	65	34	31
Mini-Warehouse/SS	10.0%		17	1	1	0	2	1	1
		Subtotal	*4233*	*178*	*100*	*78*	*398*	*200*	*198*
Driveway Volumes			11206	435	255	180	1053	549	504
Net New External Driveway Volumes			2012	174	90	84	139	72	67
Net New External Trips			6973	257	155	102	655	349	306
Proposed Net External - Existing Net External (Significance)			1009	89	46	43	77	40	37
Proposed Net External - Approved Net External (Capacity)			860	79	40	39	60	32	28
Radius of Development Influence:			1 mile						

Land Use	Daily	AM Peak Hour	PM Peak Hour	Pass By
General Commercial	Ln(T) = 0.68*Ln(X)+5.57	0.94 trips/1,000 sf (62% in, 38% out)	Ln(T) = 0.74*Ln(X)+2.89 (48% in, 52% out)	37.8%
Movie Theater [ITE444]	78.09 trips/1,000sf	0.22 trips/1,000sf (50%in, 50%out)	6.17 trips/1,000sf (94%in, 6%out)	5.0%
Church/Synagogue	6.95 trips/1,000 sf	0.33 trips/1,000 sf (60% in, 40% out)	0.49 trips/1,000 sf (45% in, 55% out)	5.0%
Drive-In Bank	100.03 trips/1,000 sf	9.5 trips/1,000 sf (58% in, 42% out)	20.45 trips/1,000 sf (50% in, 50% out)	47.0%
High Turnover Sit-Down Restaurant	112.18 trips/1,000 sf	9.94 trips/1,000 sf (55% in, 45% out)	9.77 trips/1,000 sf (62% in, 38% out)	43.0%
Fast Food Restaurant + DT	470.95 trips/1,000 sf	40.19 trips/1,000 sf (51% in, 49% out)	32.67 trips/1,000 sf (52% in, 48% out)	49.0%
Mini-Warehouse/SS	1.51 trips/1,000 sf	0.10 trips/1,000 sf (60% in, 40% out)	0.17 trips/1,000 sf (47% in, 53% out)	10.0%
Funeral Home*	Ln(T) = 0.97*Ln(X)+2.50	T = 0.94*(X)+26.49 (86% in, 14% out)	1.15 trips/1,000 sf (16% in, 84% out)	0%

*Trip Generation Rate for Funeral Home was not available. Trips for this use were claculated using Palm Beach County rates for General Office because no rates or equations are published for this use.

Traffic Distribution

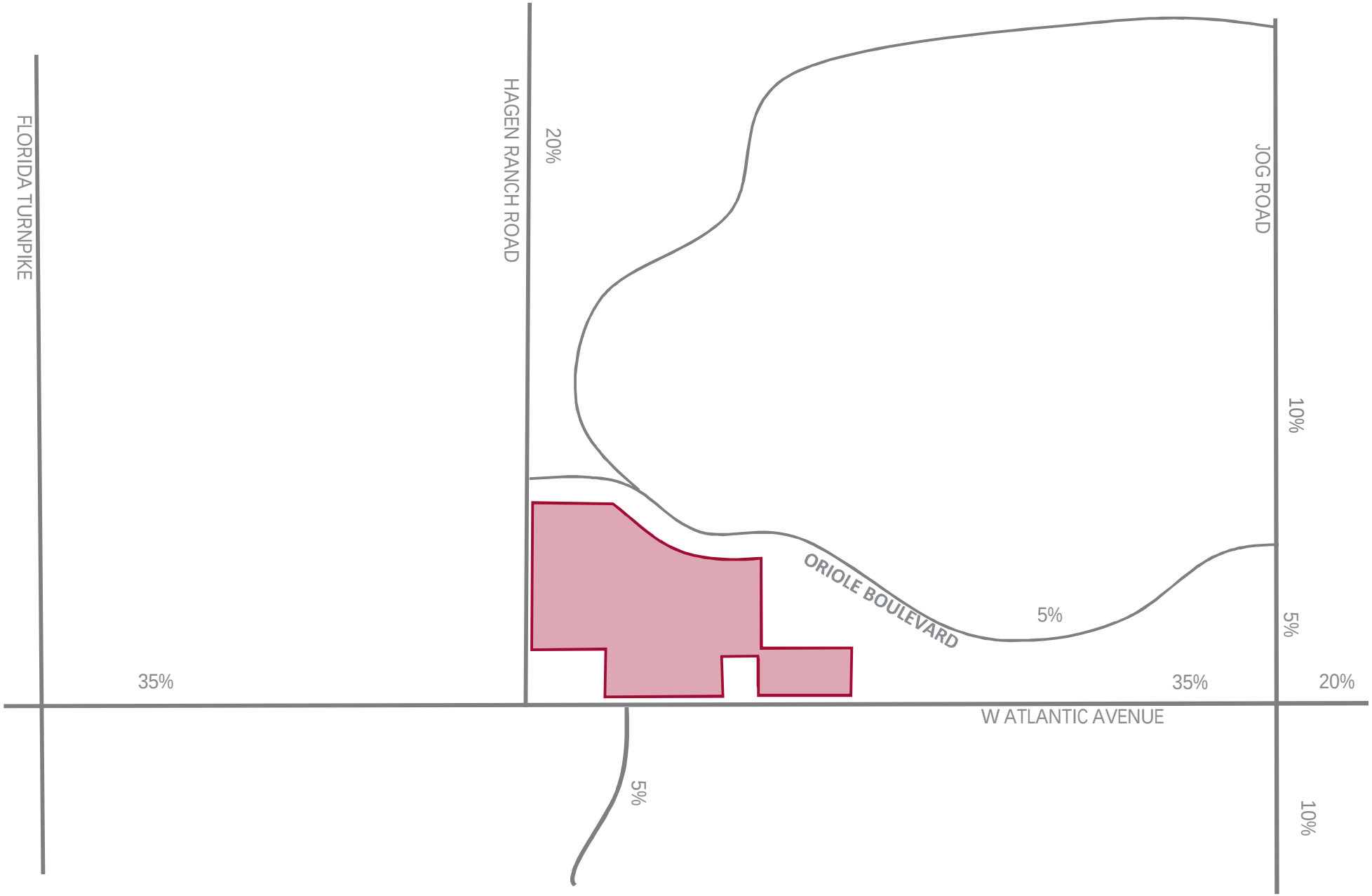
Traffic distribution is the pairing of trip ends from the subject site with other land uses in the area. These trips were assigned to the surrounding roadways based upon a review of the roadway network proposed to be in place at the time of buildout and its travel time characteristics.

The distribution according to cardinal directions is:

NORTH	-	30 percent
SOUTH	-	15 percent
EAST		20 percent
WEST		35 percent

Traffic Assignment

The site traffic was assigned to the surrounding roadway network based upon existing travel patterns and the traffic distribution. *Figure 2* illustrates the roadway link assignment. The AM and PM peak hour trips for the project were then assigned to the surrounding roadway network projected to be in place by 2024.



Not to scale

N

LEGEND

SITE

FIGURE 2
PROJECT TRAFFIC DISTRIBUTION
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147208326

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Roadway Improvements

A review was conducted of the Five-Year Plans of Palm Beach County and the FDOT, as well as those improvements committed by the developers of projects in the area. No major projects were identified for roadways within the study area.

Test 1 Significance Analysis

A peak hour peak-directional (PHPD) analysis was undertaken on the links included in the Palm Beach County Thoroughfare Map within the one-mile radius of development influence to determine the significantly impacted links. Net new external project traffic was assigned to all the thoroughfare roadway links within the radius of development influence. Per Palm Beach County standards, all the links on which the project impact is greater than 1% of the level of service (LOS) D generalized service volume are considered significantly impacted links.

As shown in *Table 2a* and *2b,* no roadway segments are anticipated to be significantly impacted during the AM and PM peak hours; therefore, no further analysis is required.

Table 2a: Test 1 Significance (AM Peak Hour)

ROADWAY	FROM	TO	COMMITTED NUMBER OF LANES	LOS D GEN. SVC. VOLUME	PROJECT TRIPS								
					PROJECT % ASSIGNMENT	NB/EB IN / OUT?	AM PEAK HOUR TRIPS		AM PEAK HOUR % IMPACT				
							NB/EB	SB/WB	NB/EB	Sig?	SB/WB	Sig?
Hagen Ranch Road	Atlantic Avenue	Lake Ida Road	4LD	1,770	NB: 10% in, 15% out, SB: 15% in		11	6	0.62%	No	0.34%	No
Hagen Ranch Road	Lake Ida Road	Flavor Pict Road	4LD	1,770	15%	o	6	7	0.34%	No	0.40%	No
W Atlantic Ave	FL Turnpike	Hagen Ranch Road	4LD	1,770	35%	i	16	15	0.90%	No	0.85%	No
W Atlantic Ave	Hagen Ranch Road	East Project Driveway	4LD	1,770	EB: 25% in, WB: 31% out		12	13	0.68%	No	0.73%	No
W Atlantic Ave	East Project Driveway	West Project Driveway	4LD	1,770	EB: 35% out, WB: 25% in, 4% out		15	13	0.85%	No	0.73%	No
W Atlantic Ave	West Project Driveway	Jog Road	4LD	1,770	35%	o	15	16	0.85%	No	0.90%	No
W Atlantic Ave	Jog Road	El Clair Ranch Road	6LD	2,680	20%	o	9	9	0.34%	No	0.34%	No
Jog Road	Linton Blvd	Atlantic Avenue	6LD	2,680	10%	i	5	4	0.19%	No	0.15%	No
Jog Road	Atlantic Avenue	Lake Ida Road	6LD	2,680	10%	o	4	5	0.15%	No	0.19%	No

Table 2b: Test 1 Significance (PM Peak Hour)

ROADWAY	FROM	TO	COMMITTED NUMBER OF LANES	LOS D GEN. SVC. VOLUME	PROJECT TRIPS							
					PROJECT % ASSIGNMENT	NB/EB IN/OUT?	PM PEAK HOUR TRIPS		PM PEAK HOUR % IMPACT			
							NB/EB	SB/WB	NB/EB	Sig?	SB/WB	Sig?
Hagen Ranch Road	Atlantic Avenue	Lake Ida Road	4LD	1,770	NB: 10% in, 15% out, SB: 15% in		10	6	0.56%	No	0.34%	No
Hagen Ranch Road	Lake Ida Road	Flavor Pict Road	4LD	1,770	15%	o	6	6	0.34%	No	0.34%	No
W Atlantic Ave	FL Turnpike	Hagen Ranch Road	4LD	1,770	35%	i	14	13	0.79%	No	0.73%	No
W Atlantic Ave	Hagen Ranch Road	East Project Driveway	4LD	1,770	EB: 25% in, WB: 31% out		10	11	0.56%	No	0.62%	No
W Atlantic Ave	East Project Driveway	West Project Driveway	4LD	1,770	EB: 35% out, WB: 25% in, 4% out		13	11	0.73%	No	0.62%	No
W Atlantic Ave	West Project Driveway	Jog Road	4LD	1,770	35%	o	13	14	0.73%	No	0.79%	No
W Atlantic Ave	Jog Road	El Clair Ranch Road	6LD	2,680	20%	o	7	8	0.26%	No	0.30%	No
Jog Road	Linton Blvd	Atlantic Avenue	6LD	2,680	10%	i	4	4	0.15%	No	0.15%	No
Jog Road	Atlantic Avenue	Lake Ida Road	6LD	2,680	10%	o	4	4	0.15%	No	0.15%	No

Intersection Analysis

Because the project driveway directly accesses a signalized intersection, an intersection analysis has been conducted for the intersection W Atlantic Avenue & Legends Way during the AM and PM peak hours. The net project driveway volumes were added to the background traffic to determine the total future volumes at the intersection. The intersection was analyzed using the Critical Sum planning methodology as outlined in the 1985 Highway Capacity Manual (HCM).

Turning movement data and committed developments for the intersection was provided by Palm Beach County Traffic Division and is included in *Appendix C*.

W Atlantic Avenue & Legends Way

The critical movement analysis shows that the critical sum for the intersection of W Atlantic Avenue & Legends Way will be less than the maximum threshold of 1,400 vehicles per hour per lane with the current lane configuration during the AM and PM peak hours. Therefore, this intersection is expected to operate to future buildout year 2024. *Table 3* summarizes the critical sum during the AM and PM peak hours. The critical movement analysis for W Atlantic Avenue & Legends Way is included in *Appendix D*.

Per comments from the Palm Beach County Traffic Division, the intersection of W Atlantic Avenue & Legends Way was analyzed using Synchro 10.0 software to compare the future total 95th percentile queues at this driveway with the existing storage lengths of the turn lanes serving the site. As summarized in Table 4, the future total 95th percentile queues will be contained within the existing storage area.

Table 3: Critical Movement Summary

Intersection	Geometry	Critical Sum: AM Peak	Critical Sum: PM Peak
W ATLANTIC AVENUE & LEGENDS WAY	Future Total Conditions: Existing Geometry	1,358	1,243

Table 4: 95th Percentile Queue Summary

	Eastbound Left	Westbound Right
Storage Length (Feet)	330	260
AM Peak Hour Queue (Feet)	38	27
PM Peak Hour Queue (Feet)	209	61

Test 2 Significance Analysis

The trips generated by the proposed project were assigned to the roadway network as part of Test 1. These volumes were then compared to the LOS E thresholds for roadways in the one-mile radius of development impact and compared against a three percent significance threshold. Per Palm Beach County standards, all the links on which the project traffic impact is greater than three percent of the level of service (LOS) E generalized service volume are considered significantly impacted links. Since the buildout horizon of Test 1 is five-years, and since the project will meet the Test 1 level of service thresholds, the project will also meet the Test 2 standards.

Site Circulation and Turn Lane Requirements

Driveway Classification

Access to the site is proposed to be maintained via three existing driveways on W Atlantic Avenue, two existing driveways on Hagen Ranch Road, and two existing driveways on Oriole Boulevard. According to the Palm Beach County "Guide to Parking Lot and Street Access Design Criteria and Standards," it is necessary to classify project driveways as minor, intermediate, or major according to the following criteria:

1. Minor – services a maximum daily volume of 500 vehicles.
2. Intermediate – services a daily volume ranging from 501 to 2,000 vehicles.
3. Major – services a daily volume of more than 2,000 vehicles.

Figure 3 illustrates the project traffic assignments and *Figure* 4 illustrates the total project volumes at the site driveways. Using these criteria, the driveways are classified as the following:

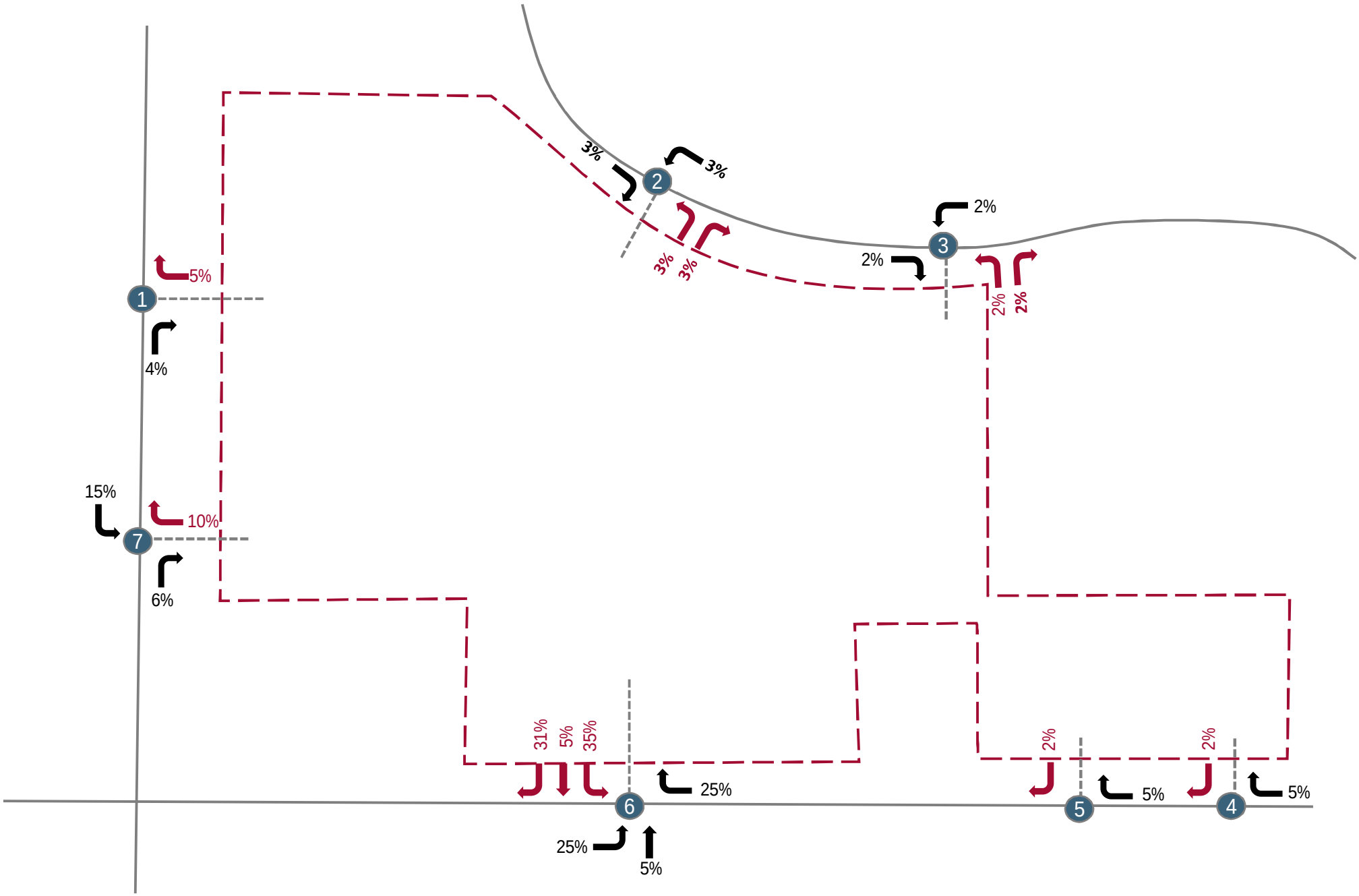
- Driveway 1 – Intermediate
- Driveway 2 – Intermediate
- Driveway 3 – Minor
- Driveway 4 – Minor
- Driveway 5 – Minor
- Driveway 6 – Major
- Driveway 7 – Intermediate

Turn Lane Requirements

The Palm Beach County "Guide to Parking Lot and Street Access Design Criteria and Standards" provides guidance on the provision of turn lanes at site driveways. According to the standards noted in this document, the volume thresholds for providing exclusive turn lanes are as follows:

- Right-turn Lane – 75 peak hour right turns, with driveway volumes that exceed 1,000 trips per day, and average daily traffic volumes that exceed 10,000 vehicles per day.
- Left-turn Lane – 30 peak hour left turns

Based on these thresholds, a left-turn lane is required at Driveway 7 and a left-turn and right-turn lane is required at Driveway 6. These turn lanes currently exist. Therefore, no additional turn lanes are recommended at the site's driveways.



Not to scale

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LEGEND

XX% INBOUND PERCENT ASSIGNED

XX% OUTBOUND PERCENT ASSIGNED

FIGURE 3
PROJECT DRIVEWAY ASSIGMENT
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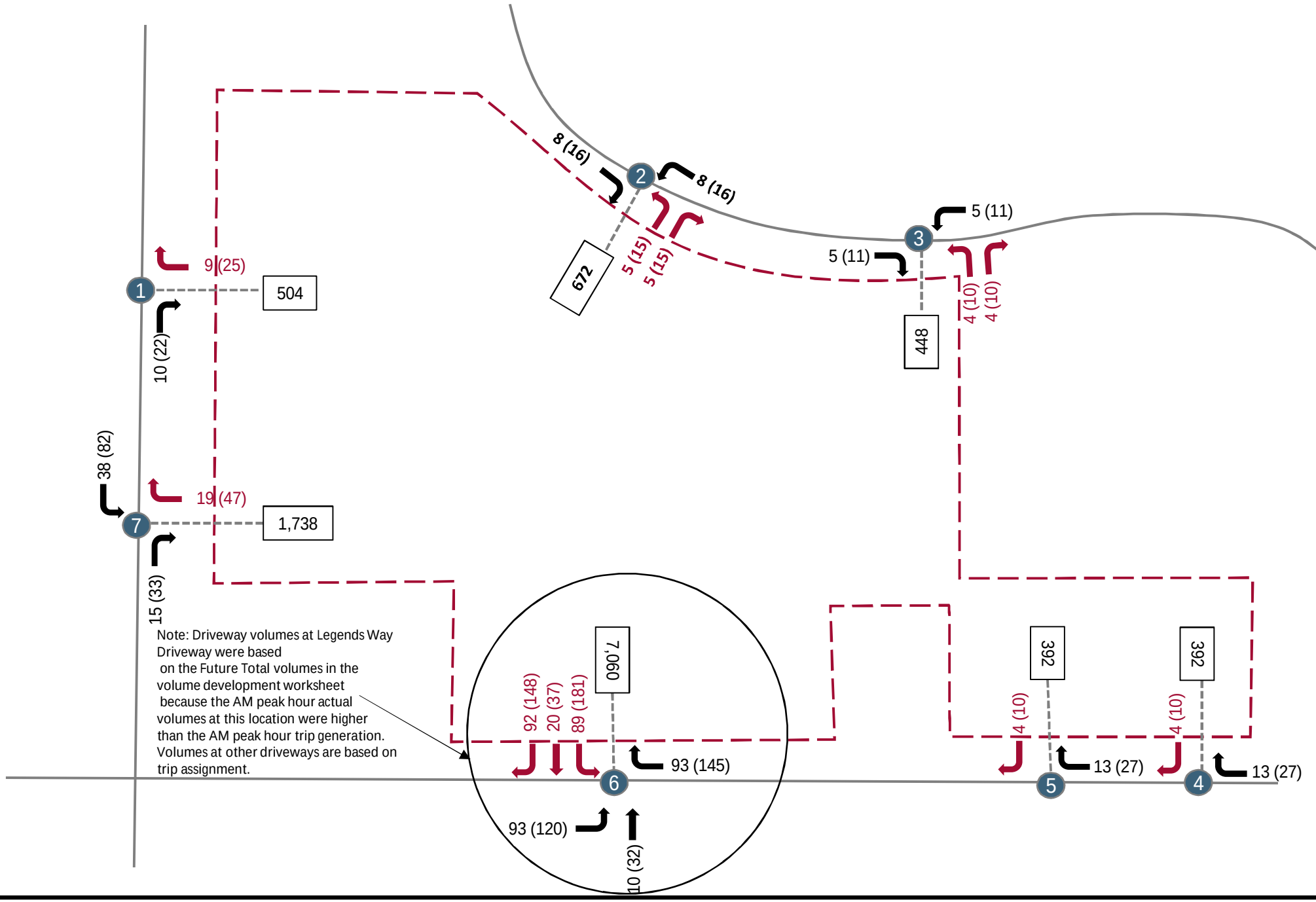

Not to scale

N

LEGEND

XX (XX) INBOUND PEAK VOLUMES

XX (XX) OUTBOUND PEAK VOLUMES

XX DAILY VOLUMES

FIGURE 4
TOTAL DRIVEWAY VOLUMES
MCDONALDS ATLANTIC HAGEN
147208326

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Conclusion

A 4,455 square foot fast food with drive-through window is proposed to be built within Oriole Plaza on the northeast corner of Hagen Rand Road & Atlantic Avenue in Delray Beach, Florida. Based on the traffic impact analysis prepared for the site, the proposed development meets the requirements of the Palm Beach County Traffic Performance Standards Ordinance with a buildout date of 2024.

Appendix A: Project Site Data

Excerpt From Approved 8-24-2017 Oriole Self Storage Traffic Study

TABLE 1
WEEKDAY PEAK HOUR TRIP GENERATION
Oriole Plaza Self-Storage

Land Use	Intensity		Daily Trips	AM peak Hour Total	AM peak Hour In	AM peak Hour out	PM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out
Existing									
General Commercial	130,970	sq. ft.	8,093	126	78	48	718	345	373
Church/Synagogue	2,340	sq. ft.	23	1	1	0	1	0	1
Movie Theater	137	seats	247	0	0	0	20	12	8
Drive-In Bank	9,150	sq. ft.	1,356	111	63	48	222	111	111
Funeral Home*	7,200	sq. ft.	178	23	20	3	11	2	9
High-Turnover Sit Down Restaurant	2,213	sq. ft.	281	24	13	11	22	13	9
Subtotal			10,178	285	175	110	994	483	511
Pass-by									
General Commercial	37.5%		3,035	47	29	18	269	129	140
Church/Synagogue	5.0%		1	0	0	0	0	0	0
Movie Theater	5.0%		12	0	0	0	1	1	0
Drive-In Bank	47.0%		637	52	30	23	104	52	52
High-Turnover Sit Down Restaurant	43.0%		121	10	6	5	9	6	4
			3,806	109	65	46	383	188	196
Internal Capture									
General Commercial	NCHRP 684 Estimation		123	9	2	7	13	6	7
Movie Theater	NCHRP 684 Estimation		102	0	0	0	6	4	2
High-Turnover Sit Down Restaurant	NCHRP 684 Estimation		37	9	7	2	9	4	5
			262	18	9	9	28	14	14
Driveway Volumes			*9,916*	*267*	*166*	*101*	*966*	*469*	*497*
Net Existing External Trips			*6,110*	*158*	*101*	*55*	*583*	*281*	*301*
Proposed									
General Commercial	130,970	sq. ft.	8,093	126	78	48	718	345	373
Church/Synagogue	2,340	sq. ft.	23	1	1	0	1	0	1
Movie Theater	137	seats	247	0	0	0	20	12	8
Drive-In Bank	9,150	sq. ft.	1,356	111	63	48	222	111	111
Funeral Home*	7,200	sq. ft.	178	23	20	3	11	2	9
High-Turnover Sit Down Restaurant	2,213	sq. ft.	281	24	13	11	22	13	9
Self-Storage/Mini Warehouse	110,053	sq. ft.	275	15	8	7	29	15	14
			10,453	300	183	117	1,023	498	525
Pass-by									
General Commercial	37.5%		3,035	47	29	18	269	129	140
Church/Synagogue	5.0%		1	0	0	0	0	0	0
Movie Theater	5.0%		12	0	0	0	1	1	0
Drive-In Bank	47.0%		637	52	30	23	104	52	52
High-Turnover Sit Down Restaurant	43.0%		121	10	6	5	9	6	4
Self-Storage/Mini Warehouse	10.0%		28	2	1	1	3	2	1
			3,834	111	66	47	386	190	197
Internal Capture									
General Commercial	NCHRP 684 Estimation		123	9	2	7	13	6	7
Movie Theatre	NCHRP 684 Estimation		102	0	0	0	6	4	2
High-Turnover Sit Down Restaurant	NCHRP 684 Estimation		37	9	7	2	9	4	5
			262	18	9	9	28	14	14
Driveway Volumes			*10,191*	*282*	*174*	*108*	*995*	*484*	*511*
Net New External Trips			*6,357*	*171*	*108*	*61*	*609*	*294*	*314*
Proposed - Existing Driveway Volumes			*275*	*15*	*8*	*7*	*29*	*15*	*14*
Proposed - Existing Net New Trips			*247*	*13*	*7*	*6*	*26*	*13*	*13*

Trip generation was calculated using the following data:

Daily Trip Generation

General Commercial	PBC	=	Ln(T) = 0.65*Ln(X)+5.83
Church/Synagogue	PBC	=	9.11 trips/1,000 sf
Movie Theater	PBC	=	1.8 trips/Seat
Drive-In Bank	PBC	=	148.15 trips/1,000 sf
Funeral Home*	PBC	=	Ln(T) = 0.76*Ln(X)+3.68
High-Turnover Sit Down Restaurant	PBC	=	127.15 trips/1,000 sf
Self-Storage/Mini Warehouse	PBC	=	2.5 trips/1,000 sf

AM Peak Hour Trip Generation

General Commercial	PBC	=	0.96 trips/1,000 sf (62% in, 38% out)
Church/Synagogue	PBC	=	.56 trips/1,000 sf (62% in, 38% out)
Movie Theater	PBC	=	0 trips/Seat (50% in, 50% out)
Drive-In Bank	PBC	=	12.08 trips/1,000 sf (57% in, 43% out)
Funeral Home*	PBC	=	Ln(T) = 0.8*Ln(X)+1.57 (88% in, 12% out)
High-Turnover Sit Down Restaurant	PBC	=	10.81 trips/1,000 sf (55% in, 45% out)
Self-Storage/Mini Warehouse	PBC	=	0.14 trips/1,000 sf (55% in, 45% out)

PM Peak Hour Trip Generation

General Commercial	PBC	=	Ln(T) = 0.67*Ln(X)+3.31 (48% in, 52% out)
Church/Synagogue	PBC	=	.56 trips/1,000 sf (48% in, 52% out)
Movie Theater	PBC	=	0.144 trips/Seat (60% in, 40% out)
Drive-In Bank	PBC	=	24.3 trips/1,000 sf (50% in, 50% out)
Funeral Home*	PBC	=	1.49 trips/1,000 sf (17% in, 83% out)
High-Turnover Sit Down Restaurant	PBC	=	9.85 trips/1,000 sf (60% in, 40% out)
Self-Storage/Mini Warehouse	PBC	=	0.26 trips/1,000 sf (50% in, 50% out)

Notes: * Funeral Home trip generation rates were calculated using Palm Beach County rates for General Office because no rates or equations are published for this use. There where also no internal capture or pass-by reductions applied to this land use.

k:\wpb_tpto\1452\145230000- oriole plaza - self-storage\[trip gen with correct concurrent .xls]table 1 fri_tgen
8/9/2017 18:49

Appendix B: Internal Capture

Internal Capture Reduction Calculations

EXISTING SCENARIO

Methodology for A.M. Peak Hour and P.M. Peak Hour
based on the *Trip Generation Handbook* , 3rd Edition, published by the Institute of Transportation Engineers

Methodology for Daily
based on the average of the Unconstrained Rates for the A.M. Peak Hour and P.M. Peak Hour

SUMMARY

GROSS TRIP GENERATION

INPUT

Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Office	458	458	50	37	94	93
Retail	3,612	3,612	76	47	318	345
Restaurant	124	124	12	10	14	8
Cinema/Entertainment	478	478	2	1	71	4
Residential						
Hotel						
	4,671	4,671	140	95	497	450

INTERNAL TRIPS

OUTPUT

Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Office	36	34	2	2	7	7
Retail	53	52	2	2	7	14
Restaurant	12	13	0	0	1	0
Cinema/Entertainment	22	24	0	0	6	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
	123	123	4	4	21	21
% Reduction	2.6%		3.4%		4.4%	

EXTERNAL TRIPS

OUTPUT

Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Office	422	424	48	35	87	86
Retail	3,559	3,560	74	45	311	331
Restaurant	112	111	12	10	13	8
Cinema/Entertainment	456	454	2	1	65	4
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
	4,548	4,548	136	91	476	429

Internal Capture Reduction Calculations

APPROVED SCENARIO

Methodology for A.M. Peak Hour and P.M. Peak Hour
based on the *Trip Generation Handbook* , 3rd Edition, published by the Institute of Transportation Engineers

Methodology for Daily
based on the average of the Unconstrained Rates for the A.M. Peak Hour and P.M. Peak Hour

SUMMARY

GROSS TRIP GENERATION

INPUT

Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Office	458	458	50	37	94	93
Retail	3,612	3,612	76	47	318	345
Restaurant	124	124	12	10	14	8
Cinema/Entertainment	478	478	2	1	71	4
Residential						
Hotel						
	4,671	4,671	140	95	497	450

INTERNAL TRIPS

OUTPUT

Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Office	36	34	2	2	7	7
Retail	53	52	2	2	7	14
Restaurant	12	13	0	0	1	0
Cinema/Entertainment	22	24	0	0	6	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
	123	123	4	4	21	21
% Reduction	2.6%		3.4%		4.4%	

EXTERNAL TRIPS

OUTPUT

Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Office	422	424	48	35	87	86
Retail	3,559	3,560	74	45	311	331
Restaurant	112	111	12	10	13	8
Cinema/Entertainment	456	454	2	1	65	4
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
	4,548	4,548	136	91	476	429

Internal Capture Reduction Calculations

PROPOSED SCENARIO

Methodology for A.M. Peak Hour and P.M. Peak Hour
based on the *Trip Generation Handbook* , 3rd Edition, published by the Institute of Transportation Engineers

Methodology for Daily
based on the average of the Unconstrained Rates for the A.M. Peak Hour and P.M. Peak Hour

SUMMARY

GROSS TRIP GENERATION

INPUT

Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Office	458	458	50	37	94	93
Retail	3,612	3,612	76	47	318	345
Restaurant	1,173	1,173	103	98	90	78
Cinema/Entertainment	478	478	2	1	71	4
Residential						
Hotel						
	5,720	5,720	231	183	573	520

INTERNAL TRIPS

OUTPUT

Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Office	50	48	4	3	9	9
Retail	91	97	5	4	10	17
Restaurant	81	75	3	5	7	8
Cinema/Entertainment	27	29	0	0	8	0
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
	249	249	12	12	34	34
% Reduction	4.4%		5.8%		6.2%	

EXTERNAL TRIPS

OUTPUT

Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Office	408	410	46	34	85	84
Retail	3,521	3,515	71	43	308	328
Restaurant	1,092	1,098	100	93	83	70
Cinema/Entertainment	451	449	2	1	63	4
Residential	0	0	0	0	0	0
Hotel	0	0	0	0	0	0
	5,471	5,471	219	171	539	486

Appendix C: Turning Movement Counts and TPS Datasheet

SIGNAL ID	E-W STREET	N-S STREET	DATE	TIME	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	TOTAL
53175	W Atlantic Ave	I 95 East	3/5/2018	4:45 PM	0	856	0	507	0	0	0	0	12	953	1167	0	0	0	1241	578	5314
53175	W Atlantic Ave	I 95 East	3/15/2016	7:45 AM	0	596	0	533	0	0	0	0	11	532	1297	0	0	0	1118	499	4586
53175	W Atlantic Ave	I 95 East	3/15/2016	12:00 PM	0	570	0	431	0	0	0	0	0	481	1207	0	0	0	1141	458	4288
53175	W Atlantic Ave	I 95 East	3/15/2016	4:45 PM	0	603	0	378	0	0	0	0	0	640	1268	0	0	0	1229	553	4671
53175	W Atlantic Ave	I 95 East	3/10/2015	7:45 AM	0	595	0	583	0	0	0	0	14	491	1145	0	6	0	1035	401	4270
53175	W Atlantic Ave	I 95 East	3/10/2015	4:45 PM	0	624	0	474	0	0	0	0	22	632	1132	0	0	0	1344	403	4631
53174	W Atlantic Ave	I 95 West	3/5/2018	7:45 AM	0	0	0	0	0	900	0	713	0	0	1320	740	0	0	1247	322	5242
53174	W Atlantic Ave	I 95 West	3/5/2018	12:00 PM	0	0	0	0	0	625	0	553	0	0	1331	610	0	0	1185	216	4520
53174	W Atlantic Ave	I 95 West	3/5/2018	4:45 PM	0	0	0	0	0	652	0	651	0	0	1538	606	1	0	1103	351	4902
53174	W Atlantic Ave	I 95 West	3/15/2016	7:45 AM	0	0	0	0	0	736	0	506	0	0	1216	512	0	0	1205	402	4577
53174	W Atlantic Ave	I 95 West	3/15/2016	12:00 PM	0	0	0	0	0	573	0	462	0	0	1082	545	0	0	1393	331	4386
53174	W Atlantic Ave	I 95 West	3/15/2016	4:45 PM	0	0	0	0	0	538	0	494	0	0	1382	426	0	0	1305	422	4567
53174	W Atlantic Ave	I 95 West	3/10/2015	7:45 AM	0	0	0	0	0	656	0	650	0	0	1114	579	0	0	1107	473	4579
53174	W Atlantic Ave	I 95 West	3/10/2015	4:45 PM	0	0	0	0	0	526	0	645	0	0	1356	524	0	0	1314	425	4790
53050	W Atlantic Ave	Jog Rd	1/31/2019	7:45 AM	4	456	573	290	1	347	1385	117	10	143	1575	1033	2	309	637	92	6974
53050	W Atlantic Ave	Jog Rd	1/31/2019	12:00 PM	14	699	856	395	3	387	733	166	40	195	1369	571	15	323	909	248	6923
53050	W Atlantic Ave	Jog Rd	1/31/2019	4:30 PM	6	714	1438	322	2	222	586	128	18	256	1249	537	4	356	1025	351	7214
53050	W Atlantic Ave	Jog Rd	3/13/2017	7:30 AM	1	343	395	224	3	318	1178	117	1	101	1263	718	2	222	726	95	5707
53050	W Atlantic Ave	Jog Rd	3/13/2017	12:00 PM	4	617	744	307	8	353	657	135	30	190	1128	432	11	309	894	215	6034
53050	W Atlantic Ave	Jog Rd	3/13/2017	4:30 PM	14	562	1158	263	1	224	518	108	8	188	1100	432	3	298	1043	268	6188
53050	W Atlantic Ave	Jog Rd	2/24/2016	7:45 AM	4	392	434	214	1	317	1246	106	1	134	1263	676	2	224	705	92	5811
53050	W Atlantic Ave	Jog Rd	2/24/2016	4:45 PM	2	601	1172	145	0	180	612	97	9	235	1141	352	2	231	1172	156	6107
53050	W Atlantic Ave	Jog Rd	3/10/2015	7:45 AM	1	333	409	230	2	274	1243	148	6	101	1179	656	2	184	747	122	5637
53050	W Atlantic Ave	Jog Rd	3/10/2015	4:30 PM	0	696	1079	184	1	185	537	157	27	203	1010	260	5	234	1115	282	5975
53050	W Atlantic Ave	Jog Rd	1/23/2014	7:45 AM	1	327	441	203	1	239	1218	153	3	104	1207	486	3	231	699	118	5434
53050	W Atlantic Ave	Jog Rd	1/23/2014	4:30 PM	4	450	1043	255	3	206	547	146	17	159	989	328	2	593	1188	351	6281
53049	W Atlantic Ave	Kings Point	11/15/2017	7:45 AM	0	26	0	82	0	0	0	0	1	0	2175	35	2	68	1167	0	3556
53049	W Atlantic Ave	Kings Point	11/15/2017	12:00 PM	0	45	0	118	0	0	0	0	0	0	1460	72	2	90	1306	0	3093
53049	W Atlantic Ave	Kings Point	11/15/2017	4:45 PM	0	50	0	80	0	0	0	0	0	0	1507	53	2	86	1656	0	3434
53055	W Atlantic Ave	Lakes of Delray Bl	3/4/2019	7:45 AM	0	45	0	50	0	0	0	21	0	0	1903	30	4	30	1092	4	3179
53055	W Atlantic Ave	Lakes of Delray Bl	3/4/2019	12:00 PM	1	72	0	83	0	0	0	92	0	0	1741	76	16	90	1319	11	3501
53055	W Atlantic Ave	Lakes of Delray Bl	3/4/2019	4:45 PM	0	60	0	70	0	0	0	61	0	0	1667	52	11	70	1653	7	3651
53055	W Atlantic Ave	Lakes of Delray Bl	4/26/2016	8:00 AM	0	27	0	35	0	0	0	19	0	0	1834	34	9	38	1166	12	3174
53055	W Atlantic Ave	Lakes of Delray Bl	4/26/2016	12:30 PM	0	60	0	65	0	0	1	92	2	0	1445	93	19	63	1274	18	3132
53055	W Atlantic Ave	Lakes of Delray Bl	4/26/2016	4:45 PM	0	30	0	60	0	0	0	55	0	2	1515	58	4	59	1457	7	3247
53045	W Atlantic Ave	Legends Way	2/11/2019	7:45 AM	0	25	5	36	0	57	15	63	15	52	2002	49	12	27	1045	67	3470
53045	W Atlantic Ave	Legends Way	2/11/2019	12:00 PM	0	35	18	58	3	163	27	104	17	98	1357	41	41	51	1153	200	3366

SIGNAL ID	E-W STREET	N-S STREET	DATE	TIME	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	TOTAL
53045	W Atlantic Ave	Legends Way	2/11/2019	4:45 PM	0	42	27	53	0	150	32	121	13	84	1376	34	24	33	1452	121	3562
53045	W Atlantic Ave	Legends Way	11/1/2016	7:30 AM	0	21	2	20	0	57	8	53	8	75	1871	24	7	25	1020	64	3255
53045	W Atlantic Ave	Legends Way	11/1/2016	12:00 PM	0	42	15	42	0	160	21	90	4	58	1222	28	35	49	1057	146	2969
53045	W Atlantic Ave	Legends Way	11/1/2016	4:45 PM	0	31	7	28	0	118	17	101	3	55	1290	22	15	30	1565	106	3388
53045	W Atlantic Ave	Legends Way	4/30/2014	7:30 AM	0	20	8	21	0	80	13	60	8	72	1803	31	8	37	913	76	3150
53045	W Atlantic Ave	Legends Way	4/30/2014	4:45 PM	0	37	22	27	1	129	15	69	7	38	1182	45	5	20	1533	74	3204
53040	W Atlantic Ave	Lyons Rd	3/1/2018	7:30 AM	0	80	140	327	0	466	379	114	16	62	678	94	4	336	672	211	3579
53040	W Atlantic Ave	Lyons Rd	3/1/2018	12:15 PM	0	126	140	300	1	287	154	71	53	91	491	91	1	248	592	254	2900
53040	W Atlantic Ave	Lyons Rd	3/1/2018	4:30 PM	0	121	303	420	0	319	211	67	32	109	634	41	2	311	703	336	3609
53040	W Atlantic Ave	Lyons Rd	3/14/2017	7:30 AM	0	56	96	255	0	282	355	85	1	38	601	57	1	385	658	100	2970
53040	W Atlantic Ave	Lyons Rd	3/14/2017	12:00 PM	0	125	140	273	0	313	135	62	37	86	554	77	3	256	546	223	2830
53040	W Atlantic Ave	Lyons Rd	3/14/2017	4:45 PM	0	113	344	281	0	278	168	42	36	58	621	25	1	275	581	270	3093
53040	W Atlantic Ave	Lyons Rd	1/13/2016	7:30 AM	0	54	114	277	0	400	378	85	9	33	863	87	3	296	600	123	3322
53040	W Atlantic Ave	Lyons Rd	1/13/2016	4:45 PM	0	119	449	423	0	323	219	48	29	101	587	24	5	248	602	294	3471
53040	W Atlantic Ave	Lyons Rd	1/29/2015	7:30 AM	0	42	91	295	0	300	349	63	8	36	791	102	0	289	551	107	3024
53040	W Atlantic Ave	Lyons Rd	1/29/2015	4:30 PM	0	104	268	377	0	234	174	57	50	150	555	50	4	292	623	302	3240
53040	W Atlantic Ave	Lyons Rd	1/22/2014	7:30 AM	0	43	98	209	0	255	318	42	6	36	750	111	0	273	492	74	2707
53040	W Atlantic Ave	Lyons Rd	1/22/2014	4:30 PM	0	87	249	178	0	171	110	17	21	52	570	33	0	197	491	117	2293
53063	W Atlantic Ave	Market Pl/Pines W Pla	11/30/2016	8:00 AM	0	7	2	20	0	4	2	6	73	93	1787	15	4	72	1265	6	3356
53063	W Atlantic Ave	Market Pl/Pines W Pla	11/30/2016	12:30 PM	0	12	20	49	0	44	2	26	36	153	1343	13	13	53	1459	30	3253
53063	W Atlantic Ave	Market Pl/Pines W Pla	11/30/2016	4:30 PM	0	48	3	62	0	35	4	23	36	112	1504	9	7	37	1828	13	3721
53063	W Atlantic Ave	Market Pl/Pines W Pla	5/7/2014	8:00 AM	0	17	1	36	0	8	1	3	68	78	1731	12	3	58	1021	9	3046
53063	W Atlantic Ave	Market Pl/Pines W Pla	5/7/2014	4:30 PM	1	64	4	51	0	27	1	24	32	88	1316	9	6	32	1451	20	3126
53075	W Atlantic Ave	Military Tr	3/12/2018	8:00 AM	4	209	509	207	3	347	1937	181	16	257	1114	500	9	219	892	160	6564
53075	W Atlantic Ave	Military Tr	3/12/2018	12:00 PM	18	449	911	248	16	288	970	241	78	385	835	304	14	189	961	233	6140
53075	W Atlantic Ave	Military Tr	3/12/2018	4:45 PM	12	443	1482	219	14	292	880	185	47	406	914	327	9	161	1195	197	6783
53075	W Atlantic Ave	Military Tr	3/2/2016	7:30 AM	0	262	492	209	4	402	1625	190	22	162	1015	478	10	280	818	162	6131
53075	W Atlantic Ave	Military Tr	4/14/2016	12:00 PM	12	432	879	192	13	327	828	323	66	341	908	329	19	231	809	367	6076
53075	W Atlantic Ave	Military Tr	3/2/2016	4:45 PM	4	472	1411	180	5	370	776	247	39	211	867	280	13	329	917	353	6474
53075	W Atlantic Ave	Military Tr	1/23/2014	7:45 AM	2	210	516	153	6	310	1524	157	13	193	1188	288	11	303	809	217	5900
53075	W Atlantic Ave	Military Tr	1/23/2014	4:30 PM	5	465	1220	196	21	315	650	296	42	408	911	168	18	267	910	379	6271
53062	W Atlantic Ave	Sims Rd	2/7/2019	7:45 AM	0	0	0	0	0	139	0	119	22	43	1915	0	1	0	1078	37	3354
53062	W Atlantic Ave	Sims Rd	2/7/2019	12:00 PM	0	0	0	0	0	73	0	58	9	66	1682	0	2	0	1571	77	3538
53062	W Atlantic Ave	Sims Rd	2/7/2019	4:30 PM	0	0	0	0	0	56	0	65	14	92	1560	0	1	0	1712	124	3624
53062	W Atlantic Ave	Sims Rd	9/25/2017	7:45 AM	0	0	0	0	0	93	0	88	23	47	1795	0	0	0	999	35	3080
53062	W Atlantic Ave	Sims Rd	9/25/2017	12:15 PM	0	0	0	0	0	57	0	55	14	44	1332	0	5	0	1249	68	2824
53062	W Atlantic Ave	Sims Rd	9/25/2017	4:30 PM	0	0	0	0	0	58	0	52	13	70	1349	0	4	0	1516	94	3156

Input Data

ROAD NAME: W Atlantic Ave | STATION: 5643 | Report Created
CURRENT YEAR: 2017 | FROM: Midpoint | 7/11/2019
ANALYSIS YEAR: 2024 | TO: S Jog Rd
GROWTH RATE: 6.77% | COUNT DATE: 2/8/2017
PSF: 1

Link Analysis

Time Period	AM			PM		
Direction	2-way	NB/EB	SB/WB	2-way	NB/EB	SB/WB
Existing Volume	3216	2076	1142	2935	1448	1504
Peak Volume	3216	2076	1142	2935	1448	1504
Diversion(%)	0	0	0	0	0	0
Volume after Diversion	3216	2076	1142	2935	1448	1504

Committed Developments							Type	% Complete
Atlantic Commons	65	50	15	79	29	50	Res	75%
Bridges North AGR-PUD	2	1	0	2	1	1	Res	95%
Hyder AGR-PUD	63	47	16	69	25	43	Res	35%
Spaulding	3	2	1	8	3	4	NR	85%
Terranova MUPD	54	14	40	178	102	76	NR	0%
Delray TMD	4	2	2	19	10	9	NR	91.90%
Cameron Park	0	0	0	0	0	0	Res	100%
Grand Haven	0	0	0	0	0	0	Res	100%
Villaggio Isles	30	20	10	36	14	22	Res	70%
Hagen Library	0	0	0	0	0	0	NR	100%
Aspen Square PUD	0	0	0	0	0	0	Res	100%
Atlantic Commons Commercial	19	8	11	25	12	13	NR	70%
Bridges South AGR-PUD	59	44	15	66	25	42	Res	0%
Stonybrook on The Lake	17	4	14	22	14	8	Res	0%
Happy Hollow Charter School	148	58	90	31	18	13	NR	25%
Feurring Commercial MUPD	9	4	5	31	15	16	NR	0%
Divine Savior Academy	64	29	35	22	12	11	NR	0%
Sussman North	18	14	5	22	8	14	Res	0%
Total Committed Developments	555	297	259	610	288	322		
Total Committed Residential	254	180	75	296	116	180		
Total Committed Non-Residential	301	117	184	314	172	142		
Double Count Reduction	60	23	19	63	29	28		
Total Discounted Committed Developments	495	274	240	547	259	294		
Historical Growth	1870	1207	664	1707	842	875		
Comm Dev+1% Growth	727	424	322	759	363	402		
Growth Volume Used	1870	1207	664	1707	842	875		
Total Volume	5086	3283	1806	4642	2290	2379		

Lanes	4LD					
LOS D Capacity	3220	1770	1770	3220	1770	1770
Link Meets Test 1?	NO	NO	NO	NO	NO	NO
LOS E Capacity	3400	1870	1870	3400	1870	1870
Link Meets Test 2?	NO	NO	YES	NO	NO	NO

Input Data

ROAD NAME: W Atlantic Ave | STATION: 5643 | Report Created
CURRENT YEAR: 2017 | FROM: Midpoint | 7/11/2019
ANALYSIS YEAR: 2024 | TO: S Jog Rd
GROWTH RATE: 6.77% | COUNT DATE: 2/8/2017
PSF: 1

Link Analysis

Time Period	AM			PM		
Direction	2-way	NB/EB	SB/WB	2-way	NB/EB	SB/WB
Existing Volume	3216	2076	1142	2935	1448	1504
Peak Volume	3216	2076	1142	2935	1448	1504
Diversion(%)	0	0	0	0	0	0
Volume after Diversion	3216	2076	1142	2935	1448	1504

Committed Developments							Type	% Complete
Atlantic Commons	65	50	15	79	29	50	Res	75%
Bridges North AGR-PUD	2	1	0	2	1	1	Res	95%
Hyder AGR-PUD	63	47	16	69	25	43	Res	35%
Spaulding	3	2	1	8	3	4	NR	85%
Terranova MUPD	54	14	40	178	102	76	NR	0%
Delray TMD	4	2	2	19	10	9	NR	91.90%
Cameron Park	0	0	0	0	0	0	Res	100%
Grand Haven	0	0	0	0	0	0	Res	100%
Villaggio Isles	30	20	10	36	14	22	Res	70%
Hagen Library	0	0	0	0	0	0	NR	100%
Aspen Square PUD	0	0	0	0	0	0	Res	100%
Atlantic Commons Commercial	19	8	11	25	12	13	NR	70%
Bridges South AGR-PUD	59	44	15	66	25	42	Res	0%
Stonybrook on The Lake	17	4	14	22	14	8	Res	0%
Happy Hollow Charter School	148	58	90	31	18	13	NR	25%
Feurring Commercial MUPD	9	4	5	31	15	16	NR	0%
Divine Savior Academy	64	29	35	22	12	11	NR	0%
Sussman North	18	14	5	22	8	14	Res	0%
Total Committed Developments	555	297	259	610	288	322		
Total Committed Residential	254	180	75	296	116	180		
Total Committed Non-Residential	301	117	184	314	172	142		
Double Count Reduction	60	23	19	63	29	28		
Total Discounted Committed Developments	495	274	240	547	259	294		
Historical Growth	1870	1207	664	1707	842	875		
Comm Dev+1% Growth	727	424	322	759	363	402		
Growth Volume Used	1870	1207	664	1707	842	875		
Total Volume	5086	3283	1806	4642	2290	2379		

Lanes	4LD					
LOS D Capacity	3220	1770	1770	3220	1770	1770
Link Meets Test 1?	NO	NO	NO	NO	NO	NO
LOS E Capacity	3400	1870	1870	3400	1870	1870
Link Meets Test 2?	NO	NO	YES	NO	NO	NO

Appendix D: Critical Movement, Signal Timing Sheets, and Synchro Output

CRITICAL MOVEMENT ANALYSIS
MCDONALDS ATLANTIC HAGEN
W ATLANTIC AVENUE & LEGENDS WAY

Growth Rate =	1.00%	
Peak Season =	1	1
Buildout Year =	2024	2024
Years =	5	5

AM Peak Hour

	Northbound			Southbound			Eastbound			Westbound		
	LT	Thru	RT	LT	Thru	RT	LT	Thru	RT	LT	Thru	RT
Existing Volume on 02/11/2019	25	5	36	57	15	63	67	2,002	49	39	1,045	67
Peak Season Volume	25	5	36	57	15	63	67	2,002	49	39	1,045	67
Traffic Volume Growth	1	0	2	3	1	3	3	102	2	2	53	3
Total Committed Projects								274			240	
1.0% Traffic Volume Growth	1	0	2	3	1	3	3	102	2	2	53	3
Committed + 1.0% Growth	1	0	2	3	1	3	3	376	2	2	293	3
Max (Committed + 1.0% or Historic Growth)	1	0	2	3	1	3	3	376	2	2	293	3
Background Traffic Volumes	26	5	38	60	16	66	70	2,378	51	41	1,338	70
Project Traffic												
Inbound Traffic Assignment		5.0%					25.0%					25.0%
Inbound Traffic Volumes		5					23					23
Outbound Traffic Assignment				35.0%	5.0%	31.0%						
Outbound Traffic Volumes				29	4	26						
Project Traffic	0	5	0	29	4	26	23	0	0	0	0	23
Total Traffic w/o RTOR	26	10	38	89	20	92	93	2,378	51	41	1,338	93
RTOR Reduction			(60)			(10)			(60)			(60)
TOTAL TRAFFIC	26	10	0	89	20	82	93	2,378	0	41	1,338	33

Critical Volume Analysis

No. of Lanes	1	1	1	1	1	<	1	2	1	1	2	1
Approach Volume		36			191			2,471			1,412	
Per Lane Volume	26	10	0	89	102		93	1,189	0	41	669	33
Overlap Reduction	0	0	0	0	0		0	0	0	0	0	(33)
Net Per Lane Volume	26	10	0	89	102		93	1,189	0	41	669	0
North-South Critical	NB LT + SB TH =			128			SB LT + NB TH =			99		
East-West Critical	EB LT + WB TH=			762			WB LT + EB TH=			1230		
Maximum Critical Sum	128			+	1230		=	1,358				
STATUS ?	NEAR											

PM Peak Hour

	Northbound			Southbound			Eastbound			Westbound		
	LT	Thru	RT	LT	Thru	RT	LT	Thru	RT	LT	Thru	RT
Existing Volume on 02/11/2019	42	27	53	150	32	121	97	1,376	34	57	1,452	121
Peak Season Volume	42	27	53	150	32	121	97	1,376	34	57	1,452	121
Traffic Volume Growth	2	1	3	8	2	6	5	70	2	3	74	6
Total Committed Projects								259			294	
1.0% Traffic Volume Growth	2	1	3	8	2	6	5	70	2	3	74	6
Committed + 1.0% Growth	2	1	3	8	2	6	5	329	2	3	368	6
Max (Committed + 1.0% or Historic Growth)	2	1	3	8	2	6	5	329	2	3	368	6
Background Traffic Volumes	44	28	56	158	34	127	102	1,705	36	60	1,820	127
Project Traffic												
Inbound Traffic Assignment		5.0%					25.0%					25.0%
Inbound Traffic Volumes		4					18					18
Outbound Traffic Assignment				35.0%	5.0%	31.0%						
Outbound Traffic Volumes				23	3	21						
Project Traffic	0	4	0	23	3	21	18	0	0	0	0	18
Total Traffic w/o RTOR	44	32	56	181	37	148	120	1,705	36	60	1,820	145
RTOR Reduction			(60)			(60)			(60)			(60)
TOTAL TRAFFIC	44	32	0	181	37	88	120	1,705	0	60	1,820	85

Critical Volume Analysis

No. of Lanes	1	1	1	1	1	<	1	2	1	1	2	1
Approach Volume		76			306			1,825			1,965	
Per Lane Volume	44	32	0	181	125		120	853	0	60	910	85
Overlap Reduction	0	0	0	0	0		0	0	0	0	0	(85)
Net Per Lane Volume	44	32	0	181	125		120	853	0	60	910	0
North-South Critical	NB LT + SB TH =			169			SB LT + NB TH =			213		
East-West Critical	EB LT + WB TH=			1,030			WB LT + EB TH=			913		
Maximum Critical Sum	213			+	1030		=	1,243				
STATUS ?	NEAR											

*EB and WB commited development taken from Volume link on W Atlantic Avenue

CONTROLLER TIME SHEET

DATE TIMING INSTALLED: _____

INTERSECTION:	WEST ATLANTIC AVENUE AND LEGEND'S WAY	CONTROLLER TYPE:	NAZTEC
SIGNAL #	53045	SYSTEM #	4650

PHASE NUMBER	BOUND	TIMING INTERVAL												
		MIN GREEN	GAP EXT	MAX 1	MAX 2	YEL CLR	RED CLR	WALK	PED CLR	MIN RCL	MAX RCL	PED RCL	PHASE ENABLE	LOCKED CALLS	DETECTOR SETTINGS
1	EBLT	4.0	2.0	15.0		5.0	2.0	0.0	0.0	0			1	0	L1=NORMAL
2	WB	20.0	4.0	45.0		5.0	2.0	7.0	23.0	1			1	1	ADV NORMAL L2=NORMAL
3													0	0	
4	NB	6.0	2.0	35.0		4.0	2.5	0.0	0.0	0			1	0	L4=D/N(5) L4R=D/N(10)
5	WBLT	4.0	2.0	15.0		5.0	2.0	0.0	0.0	0			1	0	L5=NORMAL
6	EB	20.0	4.0	45.0		5.0	2.0	7.0	24.0	1			1	1	ADV NORMAL L6=NORMAL
7													0	0	
8	SB	6.0	2.0	35.0		4.0	2.5	10.0	30.0	0			1	0	L3=D/N(5) L8=D/N(5)

PRE-EMPTION TIMING								
	DELAY BEFORE	GREEN BEFORE	PRE-EMPT LOCK	TRACK CLR Φ	TRACK CLR GREEN	DWELL Φ	MIN DWELL	EXIT Φ
R/R								
BRIDGE								
FIRE STN								
BUS								

SPECIAL FUNCTIONS						
	START Φ	DUAL ENTRY	DET SWITCH	OUT OF FLASH	INTO FLASH	
	2,6	2,4,6,8	1,5	2,6	4,8	

Notes:

1. *REFER TO SYSTEM TIMING AND ALT TIMING PLANS*
2. *INCREASED SB WALK & PED CLR TIMES*
3. *INSTALL FRIDAY & SATURDAY SABBATH DAY PLANS*
4. *UPDATE NEW SPLIT TIMING FOR SABBATH PED OPERATION*

TIMING DESIGNED BY:	RONALD TIBBETTS	DATE:	11/6/2018	APPROVED BY:	SCOTT ORNITZ, P.E.	DATE:	12/19/18

SYSTEM TIMING SHEET

DATE TIMING INSTALLED: _____

INTERSECTION:	WEST ATLANTIC AVENUE AND LEGEND'S WAY			CONTROLLER TYPE:	NAZTEC
SYSTEM:		SIGNAL #	53045	SYSTEM #	4650

TOD SCHEDULER

WEEKDAY				WEEKEND							
				SATURDAY				SUNDAY			
TIME	PATTERN	TIME	PATTERN	TIME	PATTERN	TIME	PATTERN	TIME	PATTERN	TIME	PATTERN
0:00	100	6:30	2	0:00	100	7:00	5	0:00	100	9:00	5
10:00	1	15:30	3	9:00	1	18:30	5	11:00	1	18:00	5
18:30	1	20:00	5	22:30	100			21:30	100		
23:00	100										

TIMING PLANS

PATTERN		1		2		3		4		5		6	
CYCLE LENGTH (SEC)		160		160		170		130		120		170	
OFFSET (SEC)		14		0		110		7		86		110	
COORDINATED PHASE		2		2		2		2		2		2	
SEQUENCE		1		1		1		1		1		1	
ALT TIMING PLAN		1		2		3		4		4		3	
		SPLIT	MODE	SPLIT	MODE	SPLIT	MODE	SPLIT	MODE	SPLIT	MODE	SPLIT	MODE
FORCE-OFF 1 (SEC)	EBLT	19	NON	22	NON	18	NON	20	NON	18	NON	18	NON
FORCE-OFF 2 (SEC)	WB	99	MAX	96	MAX	110	MAX	68	MAX	76	MAX	105	MXP
FORCE-OFF 3 (SEC)													
FORCE-OFF 4 (SEC)	NB	42	NON	42	NON	42	NON	42	NON	26	NON	47	NON
FORCE-OFF 5 (SEC)	WBLT	18	NON	18	NON	18	NON	20	NON	18	NON	18	NON
FORCE-OFF 6 (SEC)	EB	100	MAX	100	MAX	110	MAX	68	MAX	76	MAX	105	MXP
FORCE-OFF 7 (SEC)													
FORCE-OFF 8 (SEC)	SB	42	NON	42	NON	42	NON	42	NON	26	NON	47	MXP

Special Features:

1)

2)

3)

TIMING DESIGNED BY:	RONALD TIBBETTS		
APPROVED BY:	SCOTT ORNITZ, P.E.	DATE:	11/6/2018
		DATE:	12/19/18

SYSTEM TIMING SHEET

DATE TIMING INSTALLED: _____

INTERSECTION:	WEST ATLANTIC AVENUE AND LEGEND'S WAY			CONTROLLER TYPE:	NAZTEC
SYSTEM:		SIGNAL #	53045	SYSTEM #	4650

TOD SCHEDULER

WEEKDAY				WEEKEND							
				SATURDAY				SUNDAY			
TIME	PATTERN	TIME	PATTERN	TIME	PATTERN	TIME	PATTERN	TIME	PATTERN	TIME	PATTERN
0:00	100	6:30	2	0:00	100	7:00	5				
10:00	1	15:30	3	8:30	7	13:30	1				
17:00	6	19:00	1	17:00	7	19:00	5				
20:00	5	23:30	100	22:30	100						

TIMING PLANS

PATTERN		7		8		9		10		11		12	
CYCLE LENGTH (SEC)		160											
OFFSET (SEC)		14											
COORDINATED PHASE		2											
SEQUENCE		1											
ALT TIMING PLAN		1											
		SPLIT	MODE	SPLIT	MODE	SPLIT	MODE	SPLIT	MODE	SPLIT	MODE	SPLIT	MODE
FORCE-OFF 1 (SEC)	EBLT	22	NON										
FORCE-OFF 2 (SEC)	WB	91	MXP										
FORCE-OFF 3 (SEC)													
FORCE-OFF 4 (SEC)	NB	47	NON										
FORCE-OFF 5 (SEC)	WBLT	18	NON										
FORCE-OFF 6 (SEC)	EB	95	MXP										
FORCE-OFF 7 (SEC)													
FORCE-OFF 8 (SEC)	SB	47	MXP										

Special Features:

1) WEEKDAY 4 = FRIDAY SABBATH
2) WEEKDAY 5 = SATURDAY SABBATH
3)

TIMING DESIGNED BY:	RONALD TIBBETTS		
APPROVED BY:	SCOTT ORNITZ, P.E.	DATE:	11/6/2018
		DATE:	12/19/18

[1.1.6.1] ALTERNATE TIMING SHEET

INTERSECTION:	WEST ATLANTIC AVENUE AND LEGEND'S WAY	SIGNAL #	53045	SYSTEM #	4650

ALT TIMING PLAN 1

	MIN GREEN	GAP TIME	MAX 1	MAX 2	YELLOW	RED CLEAR	WALK	PED CLEAR	ASSIGNED PHASE	BIKE CLEAR
1	4.0	2.0	15.0	8.0	5.0	2.0	0.0	0.0	1	
2	20.0	4.0	45.0	31.0	5.0	2.0	7.0	23.0	2	
3										
4	6.0	2.0	40.0	14.0	4.0	2.5	0.0	0.0	4	
5	4.0	2.0	15.0	8.0	5.0	2.0	0.0	0.0	5	
6	20.0	4.0	45.0	31.0	5.0	2.0	7.0	23.0	6	
7										
8	6.0	2.0	40.0	14.0	4.0	2.5	10.0	30.0	8	

ALT TIMING PLAN 2

	MIN GREEN	GAP TIME	MAX 1	MAX 2	YELLOW	RED CLEAR	WALK	PED CLEAR	ASSIGNED PHASE	BIKE CLEAR
1	4.0	2.0	15.0	8.0	5.0	2.0	0.0	0.0	1	
2	20.0	4.0	45.0	31.0	5.0	2.0	7.0	23.0	2	
3										
4	6.0	2.0	40.0	10.0	4.0	2.5	0.0	0.0	4	
5	4.0	2.0	15.0	8.0	5.0	2.0	0.0	0.0	5	
6	20.0	4.0	45.0	31.0	5.0	2.0	7.0	23.0	6	
7										
8	6.0	2.0	40.0	10.0	4.0	2.5	10.0	30.0	8	

ALT TIMING PLAN 3

	MIN GREEN	GAP TIME	MAX 1	MAX 2	YELLOW	RED CLEAR	WALK	PED CLEAR	ASSIGNED PHASE	BIKE CLEAR
1	4.0	2.0	15.0	8.0	5.0	2.0	0.0	0.0	1	
2	20.0	4.0	45.0	31.0	5.0	2.0	7.0	23.0	2	
3										
4	6.0	2.0	40.0	14.0	4.0	2.5	0.0	0.0	4	
5	4.0	2.0	15.0	8.0	5.0	2.0	0.0	0.0	5	
6	20.0	4.0	45.0	31.0	5.0	2.0	7.0	23.0	6	
7										
8	6.0	2.0	40.0	14.0	4.0	2.5	10.0	30.0	8	

ALT TIMING PLAN 4

	MIN GREEN	GAP TIME	MAX 1	MAX 2	YELLOW	RED CLEAR	WALK	PED CLEAR	ASSIGNED PHASE	BIKE CLEAR
1	4.0	2.0	15.0	8.0	5.0	2.0	0.0	0.0	1	
2	20.0	4.0	45.0	31.0	5.0	2.0	7.0	23.0	2	
3										
4	6.0	2.0	40.0	10.0	4.0	2.5	0.0	0.0	4	
5	4.0	2.0	15.0	8.0	5.0	2.0	0.0	0.0	5	
6	20.0	4.0	45.0	31.0	5.0	2.0	7.0	23.0	6	
7										
8	6.0	2.0	40.0	10.0	4.0	2.5	10.0	30.0	8	

ALT TIMING PLAN 5

	MIN GREEN	GAP TIME	MAX 1	MAX 2	YELLOW	RED CLEAR	WALK	PED CLEAR	ASSIGNED PHASE	BIKE CLEAR
1										
2										
3										
4										
5										
6										
7										
8										

ALT TIMING PLAN ASSIGNMENTS

ALT TIMING PLAN 1	PATTERN 1,7
ALT TIMING PLAN 2	PATTERN 2
ALT TIMING PLAN 3	PATTERN 3,6
ALT TIMING PLAN 4	PATTERN 4,5
ALT TIMING PLAN 5	

NOTES;

TIMING DESIGNED BY:	RONALD TIBBETTS
APPROVED BY:	SCOTT ORNITZ, P.E.

DATE 11/6/2018

DATE 12/19/18

B.H.

DELRAY ORTHODOX SYNAGOGUE

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Rabbi Zevi Saunders

Traffic Light Schedule Requests

2018

Nov. 23: 5:00pm – 7:00pm
Nov. 24: 8:30am – 1:30pm; 4:45pm – 5:45pm
:
Nov. 30: 5:00pm – 7:00pm
Dec. 01: 8:30am - 1:30pm; 4:45pm - 5:45pm

Dec. 07: 5:00pm – 7:00pm
Dec. 08: 8:30am - 1:30pm; 4:45pm – 5:45pm

Dec. 14: 5:00pm – 7:00pm
Dec. 15: 8:30am - 1:30 pm; 4:45pm – 5:45pm

Dec. 21: 5:15pm – 7:15pm
Dec. 22: 8:30am – 1:30pm; 4:45/pm – 5:45pm

Dec. 28: 5:15pm – 7:15pm
Dec. 29: 8:30am - 1:30pm; 4:45pm - 5:45pm

2019

Jan 4: 5:15pm – 7:15pm
Jan 5: 8:30am – 1:30pm; 5:00pm - 6:00pm

Jan 11: 5:15pm – 7:15pm
Jan 12: 8:30am - 1:30pm; 5:00pm – 6:00pm

Jan18: 5:15pm – 7:15pm
Jan 19: 8:30am - - 1:30pm; 5:00pm – 6:00pm

ORTHODOX UNION

WWW.DELRAYORTHODOX.ORG
PHONE CONTACT: 561-499-0970

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Rochelle Rush

Rabbi Zevi Saunders

Traffic Light Schedule Requests

Feb 01: 5:45pm – 7:45pm
Feb 02: 8:30am – 1:30pm; 5:15pm – 6:15pm

Feb 08: 5:45pm – 7:45pm
Feb. 09: 8:30am – 1:30pm; 5:15pm – 6:15pm

Feb 15: 5:45pm – 8:00pm
Feb 16: 8:30am – 1:30pm; 5:30pm - 6:30pm

Feb 22: 5:45pm – 8:00pm
Feb 23: 8:30am – 1:30pm; 5:30pm - 6:30pm

Mar 01: 6:00pm – 8:00pm
Mar 02: 8:30am – 1:30pm; 5:30pm – 6:30pm

Mar 08: 6:00pm – 8:00pm
Mar 09: 8:30am – 1:30pm; 5:45pm – 6:45pm

Mar 15: 7:15pm – 9:00pm
Mar 16: 8:30am – 1:30pm; 6:45pm – 7:45pm

Mar 22: 7:15pm – 9:00pm
Mar 23: 8:30am – 1:30pm; 6:45pm – 7:45pm

Mar 29: 7:15pm – 9:15pm
Mar 30: 8:30am – 1:30pm; 6:45pm – 7:45pm

Apr: 05: 7:15pm – 9:15pm
Apr 06: 8:30am – 1:30pm; 6:45pm – 7:45pm

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Traffic Light Schedule Requests

Apr 12: 7:15pm – 9:15pm
Apr 13: 8:30am- 1:30pm; 7:00pm – 8:00pm

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	98	2503	54	43	1408	98	27	11	40	94	118
v/c Ratio	0.35	0.97	0.05	0.37	0.56	0.09	0.24	0.06	0.17	0.67	0.47
Control Delay	7.3	33.7	0.5	22.1	13.1	2.5	68.5	62.1	1.5	91.0	22.9
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	7.3	33.7	0.5	22.1	13.1	2.5	68.5	62.1	1.5	91.0	22.9
Queue Length 50th (ft)	18	1244	0	8	345	4	26	11	0	97	20
Queue Length 95th (ft)	38	#1634	5	41	494	27	59	31	0	157	84
Internal Link Dist (ft)		581			824			732			220
Turn Bay Length (ft)	330		280	190		260	120			215	
Base Capacity (vph)	359	2579	1176	162	2504	1145	238	401	408	296	423
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	0.27	0.97	0.05	0.27	0.56	0.09	0.11	0.03	0.10	0.32	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	93	2378	51	41	1338	93	26	10	38	89	20	92
Future Volume (veh/h)	93	2378	51	41	1338	93	26	10	38	89	20	92
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	2503	54	43	1408	98	27	11	40	94	21	97
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	287	2566	1144	100	2562	1143	89	195	166	179	30	140
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.03	0.72	0.72	0.03	0.72	0.72	0.10	0.10	0.10	0.10	0.10	0.10
Unsig. Movement Delay												
Ln Grp Delay, s/veh	9.7	33.8	6.5	48.9	11.2	6.8	78.1	64.7	66.6	72.1	0.0	74.2
Ln Grp LOS	A	C	A	D	B	A	E	E	E	E	A	E
Approach Vol, veh/h		2655			1549			78			212	
Approach Delay, s/veh		32.3			11.9			70.3			73.3	
Approach LOS		C			B			E			E	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Case No	1.1	3.0		5.0	1.1	3.0		6.0
Phs Duration (G+Y+Rc), s	11.9	123.4		24.7	11.8	123.5		24.7
Change Period (Y+Rc), s	7.0	8.0		* 8	7.5	8.0		8.0
Max Green (Gmax), s	15.0	88.0		* 35	10.5	92.0		34.0
Max Allow Headway (MAH), s	3.7	4.8		4.2	3.7	4.9		4.8
Max Q Clear (g_c+I1), s	4.3	31.3		16.5	3.0	107.9		13.6
Green Ext Time (g_e), s	0.1	14.9		0.2	0.0	0.0		0.9
Prob of Phs Call (p_c)	0.99	1.00		1.00	0.85	1.00		1.00
Prob of Max Out (p_x)	0.00	0.00		0.00	0.00	0.00		0.00

Left-Turn Movement Data								
Assigned Mvmt	1			7	5			3
Mvmt Sat Flow, veh/h	1781			1274	1781			1354

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		3554		1870		3554		290

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		1585		1585		1585		1339

Left Lane Group Data								
Assigned Mvmt	1	0	0	7	5	0	0	3
Lane Assignment	L (Pr/Pm)			LL (Pr/Pm)				L

Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	98	0	0	27	43	0	0	94
Grp Sat Flow (s), veh/h/ln	1781	0	0	1274	1781	0	0	1354
Q Serve Time (g_s), s	2.3	0.0	0.0	3.3	1.0	0.0	0.0	10.8
Cycle Q Clear Time (g_c), s	2.3	0.0	0.0	14.5	1.0	0.0	0.0	11.6
Perm LT Sat Flow (s_l), veh/h/ln	348	0	0	1274	124	0	0	1354
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	115.4	0.0	0.0	16.7	115.4	0.0	0.0	16.7
Perm LT Serve Time (g_u), s	86.1	0.0	0.0	5.5	9.6	0.0	0.0	15.9
Perm LT Q Serve Time (g_ps), s	11.5	0.0	0.0	3.3	9.6	0.0	0.0	10.8
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	287	0	0	89	100	0	0	179
V/C Ratio (X)	0.34	0.00	0.00	0.30	0.43	0.00	0.00	0.52
Avail Cap (c_a), veh/h	399	0	0	231	169	0	0	325
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	9.0	0.0	0.0	76.2	46.0	0.0	0.0	69.8
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.9	2.9	0.0	0.0	2.4
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	9.7	0.0	0.0	78.1	48.9	0.0	0.0	72.1
1st-Term Q (Q1), veh/ln	0.8	0.0	0.0	1.1	1.2	0.0	0.0	3.8
2nd-Term Q (Q2), veh/ln	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.8	0.0	0.0	1.2	1.3	0.0	0.0	3.9
%ile Storage Ratio (RQ%)	0.06	0.00	0.00	0.24	0.17	0.00	0.00	0.46
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		
Lanes in Grp	0	2	0	1	0	2	0	0
Grp Vol (v), veh/h	0	1408	0	11	0	2503	0	0
Grp Sat Flow (s), veh/h/ln	0	1777	0	1870	0	1777	0	0
Q Serve Time (g_s), s	0.0	29.3	0.0	0.8	0.0	105.9	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	29.3	0.0	0.8	0.0	105.9	0.0	0.0
Lane Grp Cap (c), veh/h	0	2562	0	195	0	2566	0	0
V/C Ratio (X)	0.00	0.55	0.00	0.06	0.00	0.98	0.00	0.00
Avail Cap (c_a), veh/h	0	2562	0	403	0	2566	0	0
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	10.3	0.0	64.5	0.0	20.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.1	0.0	12.9	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.2	0.0	64.7	0.0	33.8	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	10.3	0.0	0.4	0.0	37.2	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.3	0.0	0.0	0.0	4.6	0.0	0.0

3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	10.6	0.0	0.4	0.0	41.8	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.32	0.00	0.01	0.00	1.72	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		R		R		R		T+R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	98	0	40	0	54	0	118
Grp Sat Flow (s), veh/h/ln	0	1585	0	1585	0	1585	0	1629
Q Serve Time (g_s), s	0.0	2.9	0.0	3.7	0.0	1.6	0.0	11.2
Cycle Q Clear Time (g_c), s	0.0	2.9	0.0	3.7	0.0	1.6	0.0	11.2
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.82
Lane Grp Cap (c), veh/h	0	1143	0	166	0	1144	0	170
V/C Ratio (X)	0.00	0.09	0.00	0.24	0.00	0.05	0.00	0.69
Avail Cap (c_a), veh/h	0	1143	0	342	0	1144	0	346
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	6.6	0.0	65.8	0.0	6.4	0.0	69.2
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.7	0.0	0.1	0.0	5.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	6.8	0.0	66.6	0.0	6.5	0.0	74.2
1st-Term Q (Q1), veh/ln	0.0	0.9	0.0	1.5	0.0	0.5	0.0	4.7
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.0	0.0	1.5	0.0	0.5	0.0	4.9
%ile Storage Ratio (RQ%)	0.00	0.09	0.00	0.05	0.00	0.05	0.00	0.52
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	27.9
HCM 6th LOS	C

Notes

* HCM 6th Edition computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	126	1795	38	63	1916	153	46	34	59	191	195
v/c Ratio	0.77	0.78	0.04	0.41	0.85	0.15	0.35	0.11	0.18	0.85	0.55
Control Delay	69.5	25.1	0.1	15.7	30.9	6.1	68.1	58.2	5.6	99.8	34.0
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	69.5	25.1	0.1	15.7	30.9	6.1	68.1	58.2	5.6	99.8	34.0
Queue Length 50th (ft)	84	712	0	17	914	26	46	32	0	208	90
Queue Length 95th (ft)	#209	934	0	36	1068	61	88	65	23	298	173
Internal Link Dist (ft)		581			824			732			220
Turn Bay Length (ft)	330		280	190		260	120			215	
Base Capacity (vph)	169	2309	1060	185	2244	1037	161	378	385	273	412
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	0.75	0.78	0.04	0.34	0.85	0.15	0.29	0.09	0.15	0.70	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	1705	36	60	1820	145	44	32	56	181	37	148
Future Volume (veh/h)	120	1705	36	60	1820	145	44	32	56	181	37	148
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	126	1795	38	63	1916	153	46	34	59	191	39	156
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
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	156	2338	1043	170	2320	1035	119	329	279	252	58	230
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.04	0.66	0.66	0.03	0.65	0.65	0.18	0.18	0.18	0.18	0.18	0.18
Unsig. Movement Delay												
Ln Grp Delay, s/veh	52.6	22.6	10.3	23.7	25.8	11.6	79.5	58.9	60.3	80.2	0.0	70.2
Ln Grp LOS	D	C	B	C	C	B	E	E	E	F	A	E
Approach Vol, veh/h		1959			2132			139			386	
Approach Delay, s/veh		24.3			24.7			66.3			75.2	
Approach LOS		C			C			E			E	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Case No	1.1	3.0		5.0	1.1	3.0		6.0
Phs Duration (G+Y+Rc), s	13.1	119.0		37.9	12.2	119.8		37.9
Change Period (Y+Rc), s	7.0	8.0		* 8	7.5	8.0		8.0
Max Green (Gmax), s	11.0	102.0		* 35	10.5	102.0		34.0
Max Allow Headway (MAH), s	3.7	4.8		4.4	3.7	4.9		4.8
Max Q Clear (g_c+I1), s	6.0	71.1		27.4	4.0	61.4		29.1
Green Ext Time (g_e), s	0.1	19.5		0.2	0.0	19.9		0.8
Prob of Phs Call (p_c)	1.00	1.00		1.00	0.95	1.00		1.00
Prob of Max Out (p_x)	0.28	0.00		0.12	0.03	0.00		0.95

Left-Turn Movement Data								
Assigned Mvmt	1			7	5			3
Mvmt Sat Flow, veh/h	1781			1188	1781			1303

Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		3554		1870		3554		327

Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		1585		1585		1585		1308

Left Lane Group Data								
Assigned Mvmt	1	0	0	7	5	0	0	3
Lane Assignment	L (Pr/Pm)			LL (Pr/Pm)				L

Lanes in Grp	1	0	0	1	1	0	0	1
Grp Vol (v), veh/h	126	0	0	46	63	0	0	191
Grp Sat Flow (s), veh/h/ln	1781	0	0	1188	1781	0	0	1303
Q Serve Time (g_s), s	4.0	0.0	0.0	6.4	2.0	0.0	0.0	24.5
Cycle Q Clear Time (g_c), s	4.0	0.0	0.0	25.4	2.0	0.0	0.0	27.1
Perm LT Sat Flow (s_l), veh/h/ln	201	0	0	1188	253	0	0	1303
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	111.0	0.0	0.0	29.9	111.0	0.0	0.0	29.9
Perm LT Serve Time (g_u), s	41.9	0.0	0.0	10.9	52.5	0.0	0.0	27.3
Perm LT Q Serve Time (g_ps), s	41.9	0.0	0.0	6.4	19.3	0.0	0.0	24.5
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Lane Grp Cap (c), veh/h	156	0	0	119	170	0	0	252
V/C Ratio (X)	0.81	0.00	0.00	0.39	0.37	0.00	0.00	0.76
Avail Cap (c_a), veh/h	207	0	0	151	231	0	0	283
Upstream Filter (I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	36.8	0.0	0.0	77.4	22.4	0.0	0.0	70.2
Incr Delay (d2), s/veh	15.7	0.0	0.0	2.1	1.3	0.0	0.0	10.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	52.6	0.0	0.0	79.5	23.7	0.0	0.0	80.2
1st-Term Q (Q1), veh/ln	3.4	0.0	0.0	2.0	1.1	0.0	0.0	8.2
2nd-Term Q (Q2), veh/ln	0.7	0.0	0.0	0.1	0.1	0.0	0.0	0.7
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00
%ile Back of Q (50%), veh/ln	4.1	0.0	0.0	2.0	1.1	0.0	0.0	8.9
%ile Storage Ratio (RQ%)	0.32	0.00	0.00	0.43	0.15	0.00	0.00	1.05
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment		T		T		T		
Lanes in Grp	0	2	0	1	0	2	0	0
Grp Vol (v), veh/h	0	1916	0	34	0	1795	0	0
Grp Sat Flow (s), veh/h/ln	0	1777	0	1870	0	1777	0	0
Q Serve Time (g_s), s	0.0	69.1	0.0	2.6	0.0	59.4	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	69.1	0.0	2.6	0.0	59.4	0.0	0.0
Lane Grp Cap (c), veh/h	0	2320	0	329	0	2338	0	0
V/C Ratio (X)	0.00	0.83	0.00	0.10	0.00	0.77	0.00	0.00
Avail Cap (c_a), veh/h	0	2320	0	380	0	2338	0	0
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	22.2	0.0	58.8	0.0	20.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	3.5	0.0	0.1	0.0	2.5	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	25.8	0.0	58.9	0.0	22.6	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	26.7	0.0	1.2	0.0	22.8	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	1.1	0.0	0.0	0.0	0.8	0.0	0.0

3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	27.9	0.0	1.3	0.0	23.6	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.83	0.00	0.04	0.00	0.97	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		R		R		R		T+R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	153	0	59	0	38	0	195
Grp Sat Flow (s), veh/h/ln	0	1585	0	1585	0	1585	0	1635
Q Serve Time (g_s), s	0.0	6.3	0.0	5.4	0.0	1.4	0.0	19.0
Cycle Q Clear Time (g_c), s	0.0	6.3	0.0	5.4	0.0	1.4	0.0	19.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.80
Lane Grp Cap (c), veh/h	0	1035	0	279	0	1043	0	288
V/C Ratio (X)	0.00	0.15	0.00	0.21	0.00	0.04	0.00	0.68
Avail Cap (c_a), veh/h	0	1035	0	322	0	1043	0	327
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	11.3	0.0	60.0	0.0	10.2	0.0	65.5
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.4	0.0	0.1	0.0	4.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	11.6	0.0	60.3	0.0	10.3	0.0	70.2
1st-Term Q (Q1), veh/ln	0.0	2.2	0.0	2.2	0.0	0.5	0.0	8.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	2.3	0.0	2.2	0.0	0.5	0.0	8.3
%ile Storage Ratio (RQ%)	0.00	0.22	0.00	0.08	0.00	0.05	0.00	0.88
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	30.0
HCM 6th LOS	C

Notes

* HCM 6th Edition computational engine requires equal clearance times for the phases crossing the barrier.