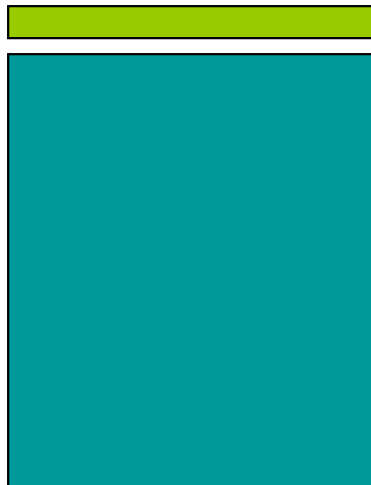


1212 Lincoln Miami Beach, Florida

traffic study



prepared for:
Crescent Heights

Traf Tech
ENGINEERING, INC.

March 2016
Revised May 2016

May 11, 2016

Graham Penn, Esq.
Bercow Radell & Fernandez, P.A.
200 S. Biscayne Boulevard, Suite 850
Miami, Florida 33131

Re: 1212 Lincoln –Traffic Study

Dear Graham:

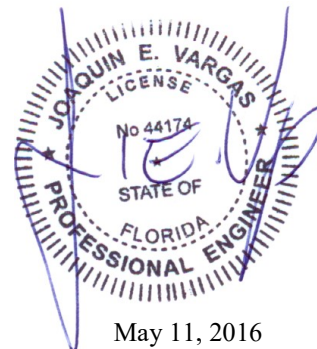
Traf Tech Engineering, Inc. is pleased to provide you with the results of the revised traffic study conducted for the 1212 Lincoln project located in the City of Miami Beach in Miami-Dade County, Florida.

It has been a pleasure working with you on this project.

Sincerely,

TRAF TECH ENGINEERING, INC.

Joaquin E. Vargas, P.E.
Senior Transportation Engineer



May 11, 2016

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INTRODUCTION

1212 Lincoln is a proposed hotel and retail development planned to be located at 1212 Lincoln Road in the City of Miami Beach in Miami-Dade County, Florida. The location of the project site is illustrated in Figure 1 on the following page.

Traf Tech Engineering, Inc. was retained by Crescent Heights to conduct a traffic study¹ in connection with the proposed retail development. The study addresses trip generation and the traffic impacts created by the proposed project on the nearby transportation network. This study is divided into seven (7) sections, as listed below:

1. Inventory
2. Existing Conditions
3. Traffic Counts
4. Trip Generation
5. Trip Distribution and Traffic Assignment
6. Traffic Impact Analysis
7. Conclusions and Recommendations

¹ The traffic methodology was discussed and agreed with the City of Miami Beach staff and is included in Appendix A.



INVENTORY

Existing Land Use

The subject site currently contains 55,800 square feet of retail space.

Proposed Land Use and Access

The proposed 1212 Lincoln project will consist of 106 hotel rooms and 92,725 square feet of retail space. Access to the site will be provided by an access driveway on 16th Street on the south side of the site. The proposed development also includes a parking garage that will provide parking for future patrons of the project. Appendix B contains a copy of the site plan for the project site.

EXISTING CONDITIONS

This section addresses the existing roadway system located in the vicinity of the project site and nearby intersections.

Roadway System

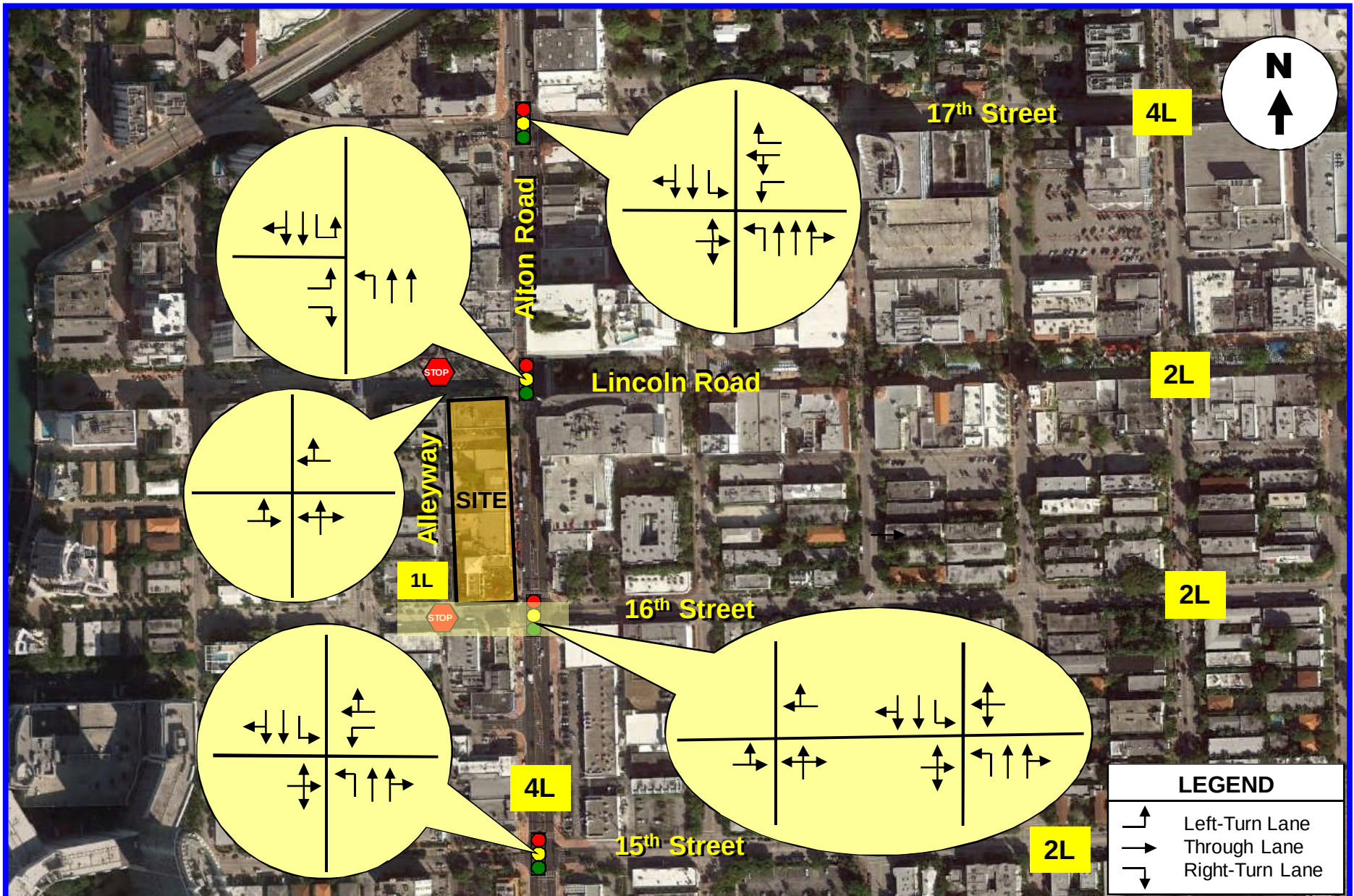
The roadway system located near the project site includes Alton Road, Lincoln Road, 17th Street, 16th Street, 15th Street, and the Alleyway (Alton Court). Near the project site, Lincoln Road, 16th Street, and 15th Street are two-lane facilities oriented in the east and west directions. Alton Road and 17 Street are four-lane facilities near the project site and the alleyway is a one-lane one-way street in the northbound direction.

Nearby Intersections

With the assistance of City of Miami Beach staff, six intersections (plus the future access driveways) were identified as the locations that will be impacted the most by the proposed project. These intersections include:

- Alton Road & 15th Street (Signalized)
- Alton Road & 16th Street (Signalized)
- Alton Road & Lincoln Road (Signalized)
- Alton Road & 17 Street (Signalized)
- Alleyway (Alton Court) & 16th Street (Stop controlled)
- Alleyway (Alton Court) & Lincoln Road (Stop controlled)

Figure 2 on the following page shows the existing lane geometry of the six (6) intersections selected for analysis purposes. The number of lanes on the street system surrounding the project site is also depicted in the figure.



TRAFFIC COUNTS

Traf Tech Engineering, Inc., in association with Traffic Survey Specialists, Inc., collected traffic data at the following locations:

- Alton Road & 15th Street (Signalized)
- Alton Road & 16th Street (Signalized)
- Alton Road & Lincoln Road (Signalized)
- Alton Road & 17 Street (Signalized)
- Alleyway (Alton Court) & 16th Street (Stop controlled)
- Alleyway (Alton Court) & Lincoln Road (Stop controlled)

The intersection turning movement counts performed by Traffic Survey Specialists, Inc., were collected on Friday, March 4, 2016 during the PM peak period (4:30 PM to 7:00 PM).

The existing PM peak hour traffic counts are presented in Figure 3 on the following page. Appendix C contains the traffic data as collected in the field. The signal timing plans for the signalized intersections were obtained from the Miami-Dade County Signals and Signs Division and are included in Appendix C.



TRIP GENERATION

The trip generation for the project was based on information contained in the Institute of Transportation Engineer's (ITE) *Trip Generation Manual (9th Edition)*. According to the subject ITE manual, the most appropriate "land use" category for the proposed land uses are: Land Use 310 – Hotel and Land Use 826 – Specialty Retail Center. Table 1 below summarizes the external trips associated with the proposed 1212 Lincoln development.

TABLE 1			
Trip Generation Summary			
1212 Lincoln			
		Number of Trips	
Land Use	Size	Daily	PM Peak
EXISTING DEVELOPMENT			
Specialty Retail	55,800 sf	2,425	155
PROPOSED DEVELOPMENT			
Hotel	106 rooms	866	64
Specialty Retail	92,725 sf	4,110	244
Difference		+2,551	+153

Source: ITE Trip Generation Manual (9th Edition)

As indicated in Table 1, the proposed 1212 Lincoln development is anticipated to generate approximately 4,110 gross daily trips and approximately 308 gross trips (140 inbound and 168 outbound) during the typical PM peak hour. The net new trips (proposed trips minus existing trips) include approximately 2,551 new daily trips and approximately 153 additional PM peak hour trips (72 inbound and 81 outbound).

ITE Land Use 310 – Hotel

Weekday Trip Generation

$$T = 8.17 (X)$$

Where T = number of weekday trips and

X = 1,000 square feet of gross leasable area

Weekday PM Peak Hour of Adjacent Street

$$T = 0.6 (X) \text{ (51\% inbound and 49\% outbound)}$$

Where T = number of weekday PM peak hour trips and

X = 1,000 square feet of gross leasable area

ITE Land Use 826 – Specialty Retail Center

Weekday Trip Generation

$$T = 44.32 (X)$$

Where T = number of weekday trips and

X = 1,000 square feet of gross leasable area

Weekday PM Peak Hour of Adjacent Street

$$T = 2.40 (X) + 21.48 \text{ (44\% inbound and 56\% outbound)}$$

Where T = number of weekday PM peak hour trips and

X = 1,000 square feet of gross leasable area

TRIP DISTRUBUTION AND TRAFFIC ASSIGNMENT

The trip distribution and traffic assignment for the project were based on Miami-Dade County's Cardinal Distribution information for the study area. Table 2 summarizes the County's cardinal distribution data for Traffic Analysis Zone 641, which is applicable to the project site from the latest SERPM data published by Miami-Dade County.

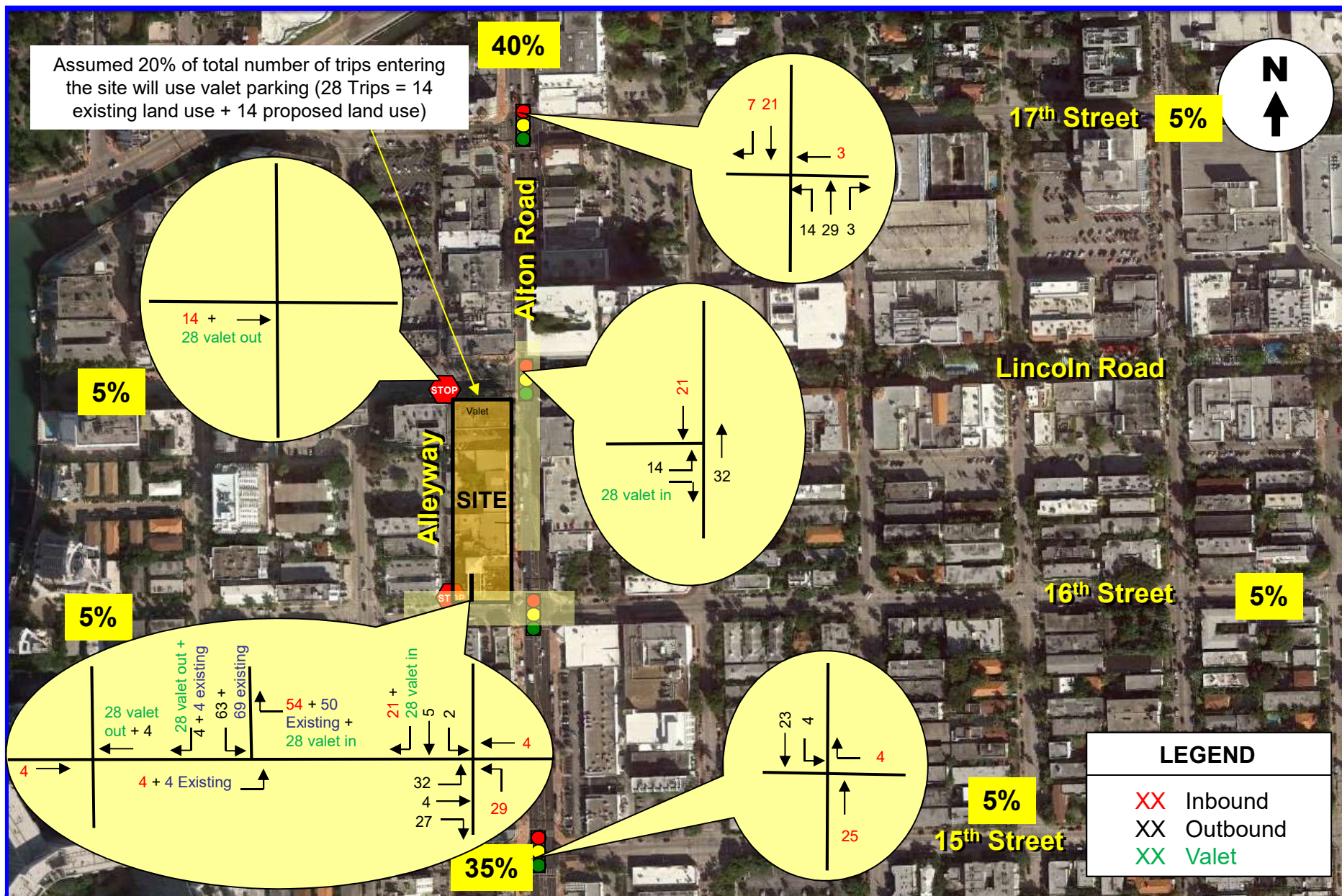
TABLE 2		
Project Trip Distribution		
1212 Lincoln		
Direction		% of Total Trips
North:	Northwest	12.4
	Northeast	16.8
South:	Southwest	3.6
	Southeast	7.5
East:	Northeast	13.6
	Southeast	2.1
West:	Northwest	20.7
	Southwest	23.4
Total		100.00%

Source: Miami-Dade County (2040 SERPM)

Based on the above, the following traffic assignment was assumed for the proposed retail development:

- 35% to/from the north via Alton Road
- 40% to/from the south via Alton Road
- 5% to/from the east via 15th Street
- 5% to/from the east via 16th Street
- 5% to/from the east via 17^h Street
- 5% to/from the west via 16th Street
- 5% to/from the west via Lincoln Road

The new peak hour traffic generated by the project was assigned to the nearby transportation network using the traffic assignment documented above. The new project traffic assignment is summarized in Figure 4.



TRAFFIC ANALYSIS

This section of the study is divided into three (3) parts. The first part consists of developing the future conditions traffic volumes for the study area. The second part includes level-of-service analyses for existing and future conditions. The third section addresses the projected operating conditions of the project's access driveways.

Future Conditions Traffic Volumes

Two sets of future traffic volumes were developed. The first set includes project buildout conditions without the proposed project and the second set adds the new trips anticipated to be generated by the project.

In order to develop year 2018 traffic volumes (project anticipated to be built and occupied by the year 2018), without the proposed project, two separate analyses were undertaken. The first analysis converts the existing peak hour traffic counts collected in the field during the month of March to average peak season conditions. Based on FDOT's Peak Season Factor Category report, a factor of 1.00 is required to convert traffic counts collected during the first week of March to average peak season conditions (refer to Appendix D).

The second analysis includes a growth factor to project 2016 peak season traffic volumes to the year 2018. Based on traffic growth data published by the FDOT for a nearby traffic count stations, minimal traffic growth has occurred during the past five years (refer to Appendix D). However, in order to assess impacts with a conservative approach, and to account for unforeseen approved project (committed trips) that may impact the study intersections, a one percent (1%) growth rate was used for purposes of this study. Moreover, committed development trips associated with several projects were added to the peak season volumes in order to develop 2018 background traffic conditions for the study area.

The new trips generated by the 1212 Lincoln project (refer to Figure 4) were added to the 2018 background traffic in order to develop total traffic conditions. The future traffic projections for the study intersections (peak season adjustments, growth rates, committed development trips and project traffic) are presented in tabular format in Appendix E. Figures 5 and 6 present the year 2018 future traffic volumes for the study area.

Figure 5 includes background traffic only (without the proposed project) and Figure 6 includes the additional traffic anticipated to be generated by the 1212 Lincoln project.

Level of Service Analyses

Intersection capacity/level of service analyses were conducted for the six (6) study intersections and the access driveway. The analyses were undertaken following the capacity/level of service procedures outlined in the Highway Capacity Manual (HCM) using the SYNCHRO software. The results of the capacity analyses are summarized in Tables 3 and 4. As indicated in Tables 3 and 4, all study intersections are currently operating adequately and will continue to operate at a acceptable level of service in the year 2018 with the proposed project in place, with one exception. The exception is the intersection of Alton Road and Lincoln Road. This intersection is currently operating at LOS F and will continue to operate at deficient level of service with the project in place.

Access Driveway

The proposed access driveway along 16 Street is projected to operate at level of service “B” (refer to Table 4).





TABLE 3 Intersection Levels of Service – (Signalized Intersections) 1212 Lincoln			
Intersection	2016 Existing	Future Traffic Conditions	
		2018 w/o Project	2018 With Project
Alton Road & 15 th Street	C	C	C
Alton Road & 16 th Street	B	B	B
Alton Road & Lincoln Road	F	F	F
Alton Road & 17 th Street	E	E	E

Source: Highway Capacity Manual

TABLE 4 Intersection Levels of Service (Stop-Controlled Intersections) 1212 Lincoln			
Intersection/Movement	2016 Existing	Future Traffic Conditions	
		2018 w/o Project	2018 With Project
Alleyway & 16 th Street -NB	A	A	A
Alleyway & Lincoln Road - NB	D	D	D
Project Driveway - SB			B

Source: Highway Capacity Manual

The computer printouts of the intersection capacity analyses are contained in Appendix F.

Valet Operation

The 1212 Lincoln project will provide valet service to the project patrons. It was assumed that 20% of the project patrons arriving to the site will stop at a valet station located on Lincoln Road (north- west corner of the project).

In order to determine the stacking requirements associated with the valet operation, a queuing analysis was undertaken. As indicated in Table 1, 20% of the inbound vehicles associated with this project, during a one-hour period, is approximately 28 vehicles or one vehicle every 128 seconds.

A queuing analysis was conducted in order to ensure that the on-street stacking is sufficient to accommodate the maximum inbound vehicular demand anticipated at this facility. The length of queue anticipated on Lincoln Road was determined using information contained in ITE's *Transportation and Land Development*, Chapter 8 – Drive-In Facilities¹. For this analysis, the following input variables were used:

- Service Rate: It was assumed that the average time to park/unpark a vehicle by a valet runner is approximately four minutes, or 15 vehicles per hour per valet runner. Assuming up to three (3) valet runners, the maximum service rate of the facility is 45 vehicles in a one-hour period.
- Demand Rate: As indicated above, a maximum of 28 vehicles will arrive during the highest hour.

Using equation 8-9b and Table 8-11 of ITE's *Transportation and Land Development*, the maximum length of queue anticipated on Lincoln Road, at the 90% confidence level, is three vehicles. Therefore, the valet station on Lincoln Road should provide stacking for at least three (3) vehicles. The results of the ITE queuing procedure is contained in Appendix H.

¹ By Vergil G. Stover and Frank J. Koepke.

OTHER MODES OF TRANSPORTATION

Throughout much of Miami Beach, and specifically within the immediate area of the proposed 1212 Lincoln project, there are many convenient and cost-effective transportation alternatives for residents, patrons, and visitors alike. Many patrons of the 1212 Lincoln project are likely to avail themselves of alternative travel modes as opposed to the automobile. Several of the more prominent modes in this area include bus transit services, bicycling (including the Deco Bike), and the sidewalk network throughout the surrounding area. Each of these is explained in further detail below.

Miami-Dade Transit

Transit services on Miami Beach are provided by Miami-Dade Transit. There are numerous transit routes serving the immediate study area including 119 Route M, 113 Route M, and the 123 SB Local. The nearest bus stop for these services is located at the intersection of Lincoln Road and Alton Road. These transit routes provide frequent service and access to all of Miami-Dade County as well as connections to other destinations outside of the County.

DecoBike

DecoBike is a bicycle sharing and rental program on Miami Beach. This program offers a network of 100 solar-powered bicycle rental stations and a fleet of 1,000 bicycles which can be rented 24 hours per day. Within the immediate area of the 1212 Lincoln project, there are three (3) convenient DecoBike rental stations. These stations are as follows:

- Station 137: Bay Road and 16th Street
- Station 152: Lenox Avenue and Lincoln Road
- Station 153: Lincoln Road and West Avenue

Pedestrian Network

Most of Miami Beach is considered a very walkable environment. Specifically within the project study area, each of the existing roadways has sidewalks on both sides and crosswalks are present at each of the major signalized intersections. There are many attractive destinations within easy access to the 1212 Lincoln and the project has been designed in such a manner as to provide direct access to this sidewalk network.

In summary, this project is located within an area that provides excellent access to alternative modes of transportation. It is expected that many of the customers of the 1212 Lincoln project will utilize these services as opposed to driving passenger vehicles.

CONCLUSIONS AND RECOMMENDATIONS

1212 Lincoln is a proposed retail development planned to be located at 1212 Lincoln Road in the City of Miami Beach in Miami-Dade County, Florida. The subject site currently contains 55,800 square feet of retail space. The proposed 1212 Lincoln project will consist of 106 hotel rooms and 92,725 square feet of retail use. Access to the site will be provided by an access driveway on 16th Street on the south side of the site. The proposed development also includes a parking garage that will provide on-site parking for its patrons.

Traf Tech Engineering, Inc. was retained by Crescent Heights to conduct a traffic study in connection with the proposed retail development. The study addresses trip generation and the traffic impacts created by the proposed project on the nearby transportation network. The conclusions of the traffic study are presented below:

- The proposed 1212 Lincoln development is anticipated to generate approximately 4,110 gross daily trips and approximately 308 gross trips (140 inbound and 168 outbound) during the typical PM peak hour. The net new trips (proposed trips minus existing trips) include approximately 2,551 new daily trips and approximately 153 additional PM peak hour trips (72 inbound and 81 outbound). In order to assess impacts with a conservative approach, no deductions were made to account for internal trips and passer-by traffic.
- All study intersections are currently operating adequately and will continue to operate at an acceptable level of service in the year 2018 with the proposed project in place, with one exception. The exception is the intersection of Alton Road and Lincoln Road. This intersection is currently operating at LOS F and will continue to operate at deficient level of service with the project in place.
- The proposed project access driveway on 16th Street is projected to operate at level of service “B”.

APPENDIX A

Traffic Methodology

TO: 1212 Lincoln

FROM: Joaquin Vargas

DATE: March 15, 2016

SUBJECT: Traffic Methodology for 1212 Lincoln

1212 Lincoln is a proposed re-development of an existing commercial space (55,800 square feet) with a mixed-use project consisting of 106 hotel rooms and approximately 92,725 square feet of retail space. The project is to be located at 1212 Lincoln Road.

The proposed access to the parking structure will be off of 16th Street. There will be valet service for hotel users. The valet station will be located on the south side of Lincoln Road just east of an existing alley. The following is our proposed methodology for the traffic study associated with this project:

- o The trip generation for the proposed project will be based on ITE's *Trip Generation Manual* (9th Edition). For the existing and proposed retail use, LUC 826 – Specialty Retail will be used. For the hotel, ITE LUC 310 – Hotel will be used.
- o The traffic study will evaluate six (6) intersections in the immediate vicinity of the project. Traffic counts will be conducted for the critical PM peak hour. These intersections are:
 - Alton Road and 17th Street (signalized)
 - Alton Road and Lincoln Road (signalized)
 - Alton Road and 16th Street (signalized)
 - Alton Road and 15th Street (signalized)
 - Lincoln Road and alleyway
 - 16th Street and alleyway
- o Traffic circulation will be evaluated in the traffic study, including its impact to the surrounding street system and adjacent driveways, if any.
- o For purposes of the traffic study, the build-out year will be 2018. For purposes of traffic growth, FDOT historical traffic data will be used.
- o Existing traffic signal timing data and traffic counts will be included in the appendix of the traffic study.
- o The traffic study will address any anticipated / proposed impacts onto the existing on-street vehicular parking, if applicable. Any impacts to on-street parking will be discussed with the City's Parking Department.
- o Traffic figures will be prepared for the following trip generation

scenarios for each of the intersections analyzed:

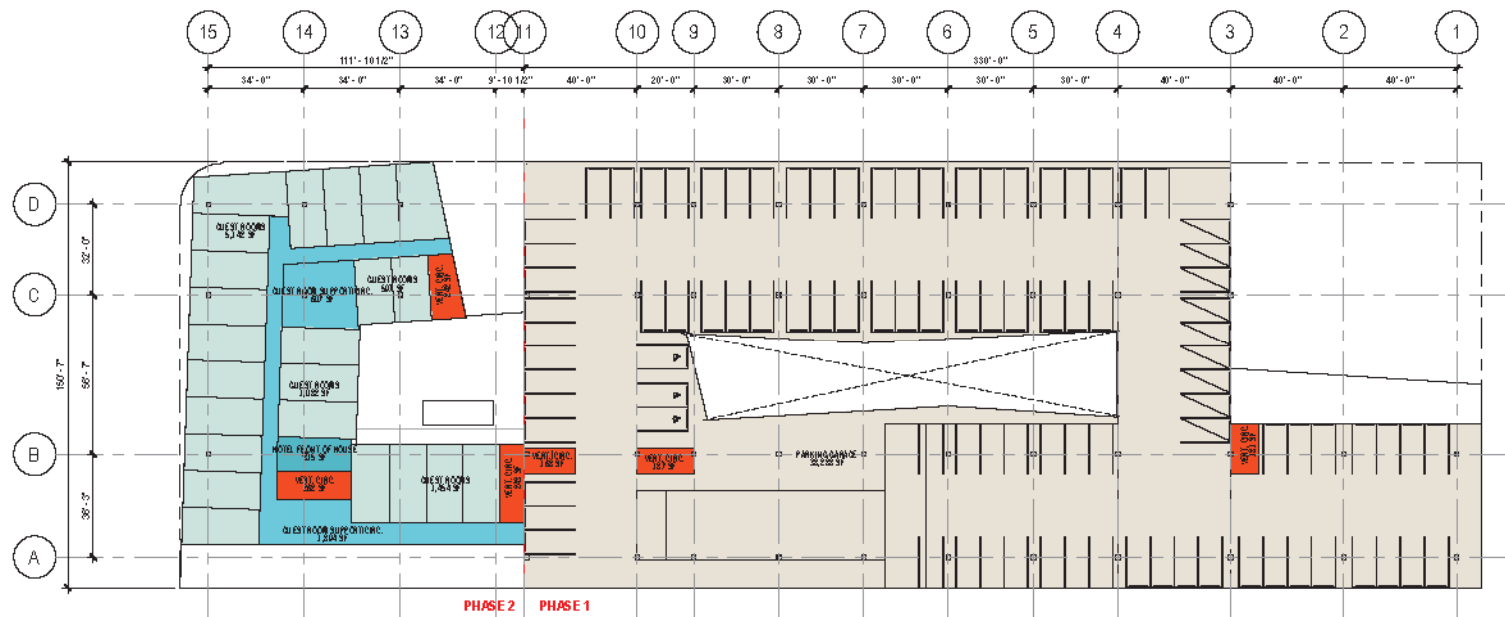
1. Existing trips
 2. Proposed site trips distribution
 3. Existing + traffic growth + committed developments
 4. Future or build-out + traffic growth + site trips
- o This report will also document other modes of travel available to patrons. This will include TDM measures, transit, and bicycles. The presence of transit and nearby routes will be discussed as will the provision and location of bicycle racks.
 - o Provide bicycle racks at the site to encourage other modes of transportation.
 - o The parking garage is at the site.
 - o The site plan will also include the location of bicycle parking, garbage pick-up area and place designated for deliveries.
 - o The submittal of the study will include LOS calculations for review by the peer reviewer.

APPENDIX B

**Site Plan
1212 Lincoln**

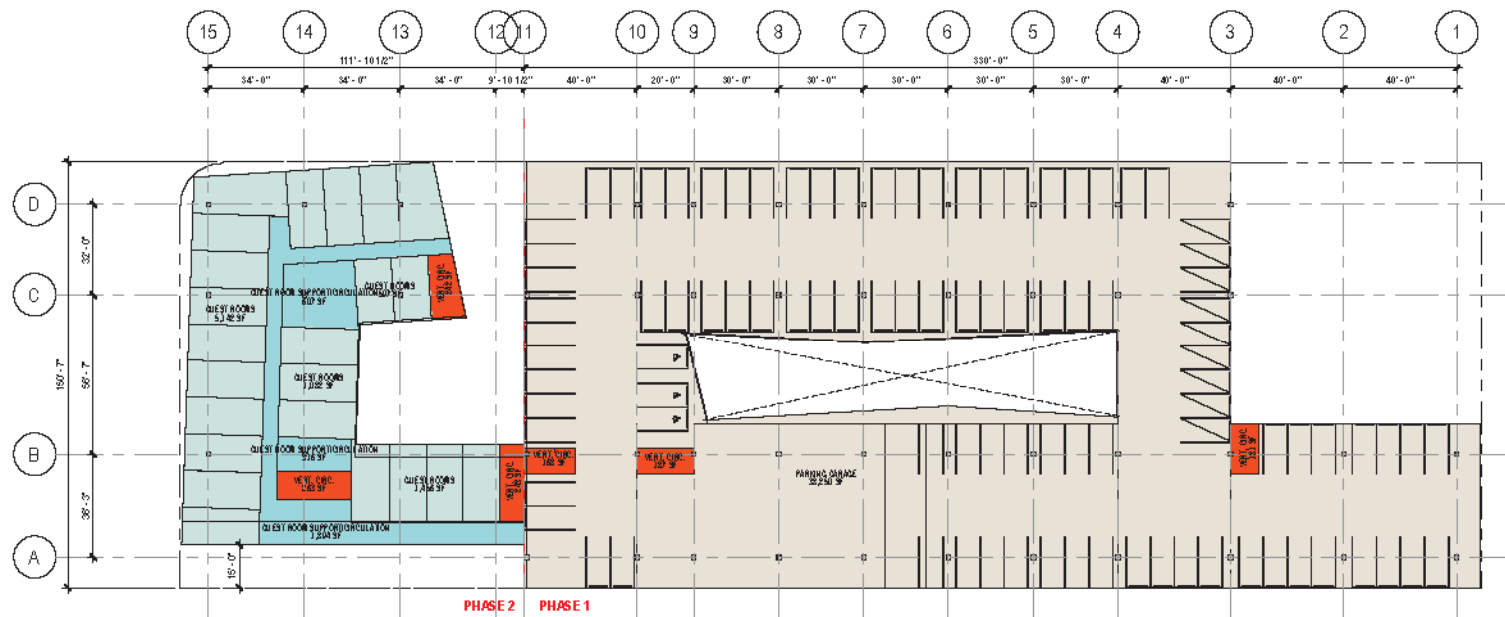
SITE PLAN





1 LEVEL 03
1" = 30'-0"

Area Schedule (Design Conceptual Diagramming) Level 03				
Level	Name	CC_NetGross_P (UP/F)	Area	Comments
LEVEL 03	PARKING GARAGE		56,288 SF	
LEVEL 03	VERT. CIRC.	Gross	187 SF	
LEVEL 03	VERT. CIRC.	Gross	181 SF	
LEVEL 03	VERT. CIRC.	Gross	262 SF	
LEVEL 03	VERT. CIRC.	Gross	242 SF	
LEVEL 03	VERT. CIRC.	Gross	243 SF	
LEVEL 03	GUEST ROOM SUPPORT/CIRC.	Gross	607 SF	
LEVEL 03	HOTEL FRONT OF HOUSE	Gross	315 SF	
LEVEL 03	GUEST ROOM SUPPORT/CIRC.	Gross	1,894 SF	
LEVEL 03	GUEST ROOMS	Gross	5,142 SF	
LEVEL 03	GUEST ROOMS	Gross	1,862 SF	
LEVEL 03	GUEST ROOMS	Gross	1,454 SF	
LEVEL 03	GUEST ROOMS	Gross	597 SF	
LEVEL 03	VERT. CIRC.	Gross	168 SF	
Gross: 13			12,574 SF	
Grand Total: 14			50,663 SF	

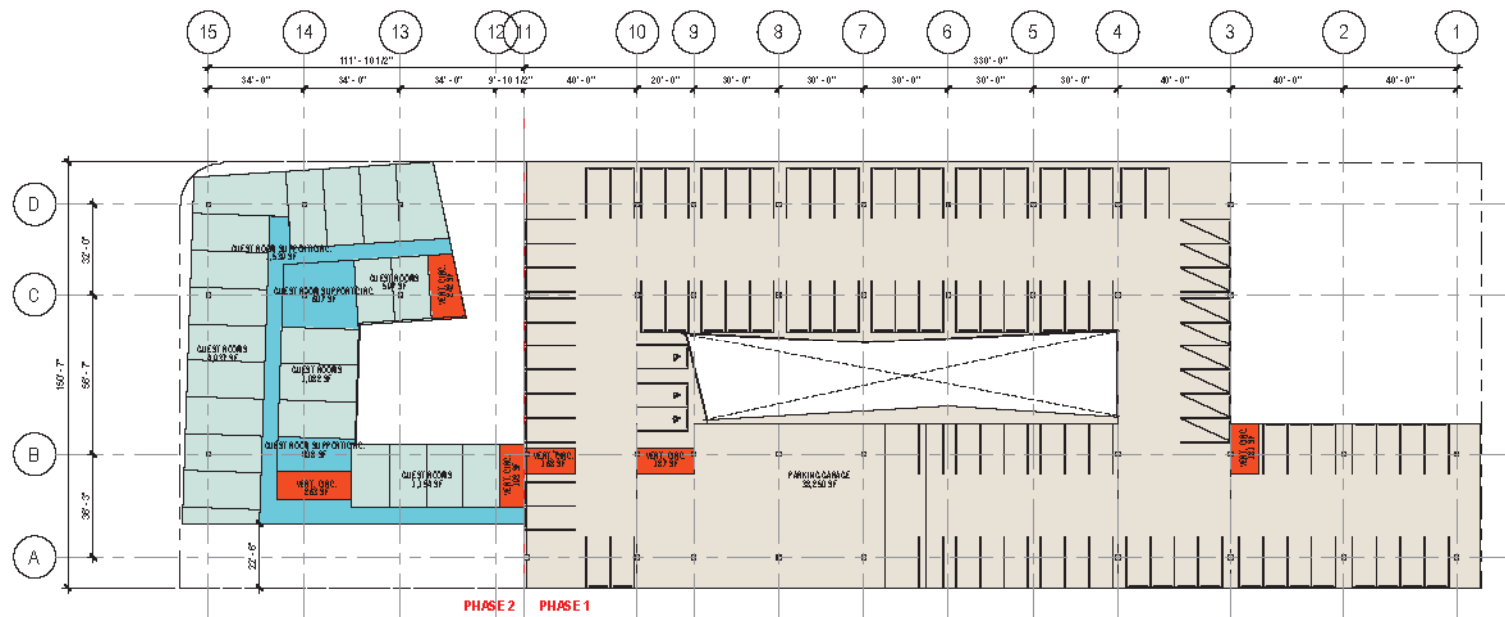


- GUEST ROOM SUPPORT/CIRCULATION
- GUEST ROOMS
- PARKING GARAGE
- VERT. CIRC.
- Calculating...

1 LEVEL 04
1" = 30'-0"



Area Schedule (Design Conceptual Diagramming) Level 04				
Level	Name	CC_NetGr oss_Primry	Area	Comments
LEVEL 04	PARKING GARAGE		30,250 SF	
LEVEL 04			30,250 SF	
LEVEL 04	VERT. CIRC.	Gross	167 SF	
LEVEL 04	VERT. CIRC.	Gross	181 SF	
LEVEL 04	VERT. CIRC.	Gross	263 SF	
LEVEL 04	VERT. CIRC.	Gross	242 SF	
LEVEL 04	GUEST ROOM SUPPORT/CIRCULATION	Gross	667 SF	
LEVEL 04	GUEST ROOM SUPPORT/CIRCULATION	Gross	316 SF	
LEVEL 04	VERT. CIRC.	Gross	240 SF	
LEVEL 04	GUEST ROOM SUPPORT/CIRCULATION	Gross	1,894 SF	
LEVEL 04	GUEST ROOMS	Gross	5,142 SF	
LEVEL 04	GUEST ROOMS	Gross	597 SF	
LEVEL 04	GUEST ROOMS	Gross	1,466 SF	
LEVEL 04	GUEST ROOMS	Gross	1,862 SF	
LEVEL 04	VERT. CIRC.	Gross	168 SF	
Gross: 13			12,377 SF	
Grand Total: 14			50,627 SF	



1 LEVEL 05
1" = 30'-0"

Area Schedule (Design Conceptual Diagramming) Level 05				
Level	Name	CC_NetOfGross_P (UPtr)	Area	Comments
LEVEL 05	PARKING GARAGE		56,250 SF	
LEVEL 05	VERT. CIRC.	Gross	187 SF	
LEVEL 05	VERT. CIRC.	Gross	181 SF	
LEVEL 05	VERT. CIRC.	Gross	263 SF	
LEVEL 05	VERT. CIRC.	Gross	242 SF	
LEVEL 05	VERT. CIRC.	Gross	193 SF	
LEVEL 05	GUEST ROOM SUPPORT/CIRC.	Gross	1,539 SF	
LEVEL 05	GUEST ROOM SUPPORT/CIRC.	Gross	318 SF	
LEVEL 05	GUEST ROOM SUPPORT/CIRC.	Gross	607 SF	
LEVEL 05	GUEST ROOMS	Gross	597 SF	
LEVEL 05	GUEST ROOMS	Gross	1,062 SF	
LEVEL 05	GUEST ROOMS	Gross	1,154 SF	
LEVEL 05	GUEST ROOMS	Gross	4,957 SF	
LEVEL 05	VERT. CIRC.	Gross	168 SF	
Gross: 13			11,468 SF	
Gross: 14			49,718 SF	

APPENDIX C

Signal Timing Plan and Traffic Counts

TOD Schedule Report
for 2644: Alton Rd&15 St

Print Date:
12/23/2013

Print Time:
8:12 AM

<u>Asset</u>	<u>Intersection</u>	<u>TOD</u> <u>Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD</u> <u>Setting</u>	<u>Active</u> <u>PhaseBank</u>	<u>Active</u> <u>Maximum</u>
2644	Alton Rd&15 St	DOW-2		N/A	0	0	N/A	0	Max 0

Splits

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
SBL	NBT	-	EBT	-	SBT	-	WBT
0	0	0	0	0	0	0	0



Active Phase Bank: Phase Bank 1

<u>Phase</u>			<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>																
			<u>Phase Bank</u>																																			
			1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3															
1	SBL		0	-	0	-	0	-	0	-	0	5	-	5	-	5	2	-	2	-	2	5	-	5	-	5	8	-	7	-	7	0	0					
2	NBT		7	-	7	-	7	-	7	-	7	16	-	16	-	16	7	-	7	-	7	1	-	1	-	1	40	-	40	-	40	0	-	0	-	0	4	0
3	-		0	-	0	-	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	0	0	0	
4	EBT		7	-	7	-	7	-	7	-	7	24	-	24	-	24	7	-	7	-	7	2.5	-	2.5	-	2.5	12	-	12	-	12	16	-	22	-	12	4	0.6
5	-		0	-	0	-	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	0	0	0	
6	SBT		7	-	7	-	7	-	7	-	7	16	-	16	-	16	7	-	7	-	7	1	-	1	-	1	40	-	40	-	40	0	-	0	-	0	4	0
7	-		0	-	0	-	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	0	0	0	
8	WBT		7	-	7	-	7	-	7	-	7	24	-	24	-	24	7	-	7	-	7	2.5	-	2.5	-	2.5	12	-	12	-	12	16	-	22	-	12	4	0.6

Last In Service Date: unknown

Permitted Phases

	<u>12345678</u>
Default	-2-4-6-8
External Permit 0	-----
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

		<u>Green Time</u>											
<u>Current</u>			1	2	3	4	5	6	7	8			
<u>TOD Schedule</u>	<u>Plan</u>	<u>Cycle</u>	SBL	NBT	-	EBT	-	SBT	-	WBT	<u>Ring Offset</u>	<u>Offset</u>	
	1	160	0	109	0	42	0	109	0	42	0	27	
	2	160	0	109	0	42	0	109	0	42	0	2	
	3	120	0	62	0	49	0	62	0	49	0	45	
	4	130	0	62	0	59	0	62	0	59	0	53	
	5	130	0	62	0	59	0	62	0	59	0	30	
	6	130	0	62	0	59	0	62	0	59	0	97	
	7	105	0	64	0	32	0	64	0	32	0	18	
	8	120	0	62	0	49	0	62	0	49	0	44	
	9	120	0	79	0	32	0	79	0	32	0	28	
	10	130	0	62	0	59	0	62	0	59	0	127	
	11	105	0	64	0	32	0	64	0	32	0	37	
	12	105	0	64	0	32	0	64	0	32	0	39	
	13	105	0	61	0	35	0	61	0	35	0	29	
	14	105	0	61	0	35	0	61	0	35	0	31	
	15	130	0	86	0	35	0	86	0	35	0	38	
	16	130	0	62	0	59	0	62	0	59	0	115	
	17	130	0	62	0	59	0	62	0	59	0	109	
	18	90	0	49	0	32	0	49	0	32	0	35	
	19	90	0	49	0	32	0	49	0	32	0	6	
	20	130	0	62	0	59	0	62	0	59	0	36	
	21	90	0	49	0	32	0	49	0	32	0	37	
	22	90	0	49	0	32	0	49	0	32	0	33	
	23	90	0	49	0	32	0	49	0	32	0	6	
	25	140	0	72	0	59	0	72	0	59	0	49	
	26	180	0	112	0	59	0	112	0	59	0	142	
	27	140	0	72	0	59	0	72	0	59	0	55	

<u>Local TOD Schedule</u>			
<u>Time</u>	<u>Plan</u>	<u>DOW</u>	
0000	8	Su M T W Th	S
0000	21		F
0030	11	Su	S
0030	21	M T W Th	
0600	8	M T W Th F	
0800	7	Su	S
0800	5	M T W Th F	
1000	4	Su	
1030	4		S
1515	16	M T W Th F	
1615	6	M T W Th F	
1830	4	Su M T W Th F	S
2000	8	Su M T W Th F	S
2330	21	M T W Th	

<u>Current Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	----4---	SuM T W ThF S
0600	TOD OUTPUTS	-----2-	SuM T W ThF S
0900	TOD OUTPUTS	-----	SuM T W ThF S
1500	TOD OUTPUTS	-----2-	SuM T W ThF S
1900	PERMIT	----4---	SuM T W ThF S

<u>Local Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	----4---	SuM T W ThF S
0600	TOD OUTPUTS	-----2-	SuM T W ThF S
0900	TOD OUTPUTS	-----	SuM T W ThF S
1500	TOD OUTPUTS	-----2-	SuM T W ThF S
1900	PERMIT	----4---	SuM T W ThF S

<u>* Settings</u>
Blank - FREE - Phase Bank 1, Max 1
Blank - Plan - Phase Bank 1, Max 2
1 - Phase Bank 2, Max 1
2 - Phase Bank 2, Max 2
3 - Phase Bank 3, Max 1
4 - Phase Bank 3, Max 2
5 - EXTERNAL PERMIT 1
6 - EXTERNAL PERMIT 2
7 - X-PED OMIT
8 - TBA

TOD Schedule Report
for 2645: Alton Rd&16 St

Print Date:
1/24/2014

Print Time:
8:09 AM

<u>Asset</u>	<u>Intersection</u>	<u>TOD</u> <u>Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD</u> <u>Setting</u>	<u>Active</u> <u>PhaseBank</u>	<u>Active</u> <u>Maximum</u>
2645	Alton Rd&16 St	DOW-6		N/A	0	0	N/A	0	Max 0

Splits

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
SBL	NBT	-	EBT	-	SBT	-	WBT
0	0	0	0	0	0	0	0



Active Phase Bank: Phase Bank 1

Phase	Walk			Don't Walk			Min Initial			Veh Ext			Max Limit			Max 2			Yellow	Red			
Phase Bank																							
1 2 3 1 2 3 1 2 3 1 2 3 1 2 3 1 2 3																							
1	SBL	0	-	0	-	0	0	-	0	-	0	5	-	5	-	5	8	-	7	-	18	3	0
2	NBT	7	-	7	-	7	18	-	18	-	18	7	-	7	-	7	40	-	40	-	40	0	0.2
3	-	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	0
4	EBT	7	-	7	-	7	26	-	26	-	26	7	-	7	-	7	3.5	-	3.5	-	3.5	47	0.6
5	-	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	0
6	SBT	7	-	7	-	7	18	-	18	-	18	7	-	7	-	7	40	-	40	-	40	0	0.2
7	-	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	0
8	WBT	7	-	7	-	7	26	-	26	-	26	7	-	7	-	7	3.5	-	3.5	-	3.5	47	0.6

Last In Service Date: unknown

Permitted Phases

	<u>12345678</u>
Default	-2-4-6-8
External Permit 0	-----
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

		<u>Green Time</u>											
<u>Current</u> TOD Schedule	<u>Plan</u>	<u>Cycle</u>	1 SBL	2 NBT	3 -	4 EBT	5 -	6 SBT	7 -	8 WBT	<u>Ring Offset</u>	<u>Offset</u>	
1		160	0	114	0	37	0	114	0	37	0	21	
2		160	0	114	0	37	0	114	0	37	0	8	
3		120	0	73	0	38	0	73	0	38	0	33	
4		130	0	83	0	38	0	83	0	38	0	50	
5		130	0	84	0	37	0	84	0	37	0	17	
6		130	0	83	0	38	0	83	0	38	0	86	
7		105	0	61	0	35	0	61	0	35	0	20	
8		120	0	73	0	38	0	73	0	38	0	37	
9		120	0	76	0	35	0	76	0	35	0	25	
10		130	0	83	0	38	0	83	0	38	0	0	
11		105	0	61	0	35	0	61	0	35	0	25	
12		105	0	61	0	35	0	61	0	35	0	25	
13		105	0	61	0	35	0	61	0	35	0	20	
14		105	0	61	0	35	0	61	0	35	0	20	
15		130	0	86	0	35	0	86	0	35	0	37	
16		130	0	83	0	38	0	83	0	38	0	101	
17		130	0	83	0	38	0	83	0	38	0	119	
18		90	0	46	0	35	0	46	0	35	0	37	
19		90	0	46	0	35	0	46	0	35	0	15	
20		130	0	83	0	38	0	83	0	38	0	45	
21		90	0	46	0	35	0	46	0	35	0	38	
22		90	0	46	0	35	0	46	0	35	0	25	
23		90	0	46	0	35	0	46	0	35	0	15	
25		140	0	93	0	38	0	93	0	38	0	56	
26		180	0	133	0	38	0	133	0	38	0	152	
27		140	0	93	0	38	0	93	0	38	0	84	

<u>Local TOD Schedule</u>			
<u>Time</u>	<u>Plan</u>	<u>DOW</u>	
0000	8	Su M T W Th	S
0000	21		F
0030	11	Su	S
0030	21	M T W Th	
0600	8	Su M T W Th F	S
0800	7	Su	S
0800	5	M T W Th F	
1000	4	Su	
1030	4		S
1515	16	M T W Th F	
1615	6	M T W Th F	
1830	4	Su M T W Th F	S
2000	8	Su M T W Th F	S
2330	21	M T W Th	

<u>Current Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	-----	SuM T W ThF S
0900	TOD OUTPUTS	----4---	M T W ThF
2000	TOD OUTPUTS	-----	M T W ThF

<u>Local Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	-----	SuM T W ThF S
0900	TOD OUTPUTS	----4---	M T W ThF
2000	TOD OUTPUTS	-----	M T W ThF

<u>* Settings</u>
Blank - FREE - Phase Bank 1, Max 1
Blank - Plan - Phase Bank 1, Max 2
1 - Phase Bank 2, Max 1
2 - Phase Bank 2, Max 2
3 - Phase Bank 3, Max 1
4 - Phase Bank 3, Max 2
5 - EXTERNAL PERMIT 1
6 - EXTERNAL PERMIT 2
7 - X-PED OMIT
8 - TBA

TOD Schedule Report

for 2646: Alton Rd&Lincoln Rd

Print Date:

11/25/2013

Print Time:

8:03 AM

<u>Asset</u>	<u>Intersection</u>	<u>TOD</u> <u>Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD</u> <u>Setting</u>	<u>Active</u> <u>PhaseBank</u>	<u>Active</u> <u>Maximum</u>
2646	Alton Rd&Lincoln Rd	DOW-2		N/A	0	0	N/A	0	Max 0

Splits

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
NEL	SBT	-	-	-	NBT	-	EBT
0	0	0	0	0	0	0	0



Active Phase Bank: Phase Bank 1

Phase	Walk			Don't Walk			Min Initial			Veh Ext			Max Limit			Max 2			Yellow	Red														
	Phase Bank																																	
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																
1 NEL	0	-	0	-	0	0	0	-	0	0	-	0	5	-	5	-	5	2	-	2	-	2	10	-	10	-	10	20	-	10	-	10	3	0
2 SBT	7	-	7	-	7	24	-	24	-	24	7	-	7	-	7	1	-	1	-	1	40	-	40	-	40	0	-	40	-	40	4	0.8		
3 -	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	0		
4 -	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	0		
5 -	0	-	0	-	0	0	-	0	-	0	5	-	5	-	5	2	-	2	-	2	7	-	7	-	7	20	-	10	-	10	3	0		
6 NBT	7	-	7	-	7	24	-	24	-	24	7	-	7	-	7	1	-	1	-	1	40	-	40	-	40	0	-	40	-	40	4	0.8		
7 -	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	0		
8 EBT	7	-	7	-	7	26	-	26	-	26	7	-	7	-	7	2.5	-	2.5	-	2.5	15	-	15	-	15	40	-	33	-	33	4	0.8		

Last In Service Date: unknown

Permitted Phases

12345678

Default	-2---6-8
External Permit 0	-----
External Permit 1	-2---6-8
External Permit 2	-2---6-8

		Green Time										
Current			1	2	3	4	5	6	7	8		
TOD Schedule	Plan	Cycle	NEL	SBT	-	-	-	NBT	-	EBT	Ring Offset	Offset
	1	160	0	117	0	0	0	117	0	33	0	143
	2	160	0	117	0	0	0	117	0	33	0	144
	3	120	0	77	0	0	0	77	0	33	0	26
	4	130	0	87	0	0	0	87	0	33	0	32
	5	130	0	87	0	0	0	87	0	33	0	9
	6	130	0	87	0	0	0	87	0	33	0	75
	7	105	0	62	0	0	0	62	0	33	0	81
	8	120	0	77	0	0	0	77	0	33	0	36
	9	120	0	77	0	0	0	77	0	33	0	85
	10	130	0	87	0	0	0	87	0	33	0	106
	11	105	0	62	0	0	0	62	0	33	0	70
	12	105	0	62	0	0	0	62	0	33	0	70
	13	105	0	62	0	0	0	62	0	33	0	104
	14	105	0	62	0	0	0	62	0	33	0	102
	15	130	0	87	0	0	0	87	0	33	0	15
	16	130	0	87	0	0	0	87	0	33	0	91
	17	130	0	87	0	0	0	87	0	33	0	87
	18	90	0	47	0	0	0	47	0	33	0	15
	19	90	0	47	0	0	0	47	0	33	0	70
	20	130	0	87	0	0	0	87	0	33	0	20
	21	90	0	47	0	0	0	47	0	33	0	55
	22	90	0	47	0	0	0	47	0	33	0	55
	23	90	0	47	0	0	0	47	0	33	0	70
	25	140	0	97	0	0	0	97	0	33	0	67
	26	180	0	137	0	0	0	137	0	33	0	161
	27	140	0	97	0	0	0	97	0	33	0	85

<u>Local TOD Schedule</u>			
<u>Time</u>	<u>Plan</u>	<u>DOW</u>	
0000	8	Su M T W Th	S
0000	21		F
0030	11	Su	S
0030	21	M T W Th	
0600	8	Su M T W Th F	
0800	7	Su	S
0800	5	M T W Th F	
1000	4	Su	
1030	4		S
1515	16	M T W Th F	
1615	6	M T W Th F	
1830	4	Su M T W Th F	S
2000	8	Su M T W Th F	S
2330	21	M T W Th	

<u>Current Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	-----	SuM T W ThF S

<u>Local Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	-----	SuM T W ThF S

<u>* Settings</u>
Blank - FREE - Phase Bank 1, Max 1
Blank - Plan - Phase Bank 1, Max 2
1 - Phase Bank 2, Max 1
2 - Phase Bank 2, Max 2
3 - Phase Bank 3, Max 1
4 - Phase Bank 3, Max 2
5 - EXTERNAL PERMIT 1
6 - EXTERNAL PERMIT 2
7 - X-PED OMIT
8 - TBA

TOD Schedule Report
for 2647: Alton Rd&17 St

Print Date:
1/24/2014

Print Time:
8:10 AM

<u>Asset</u>	<u>Intersection</u>	<u>TOD</u> <u>Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD</u> <u>Setting</u>	<u>Active</u> <u>PhaseBank</u>	<u>Active</u> <u>Maximum</u>
2647	Alton Rd&17 St	DOW-6		N/A	0	0	N/A	0	Max 0

Splits

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
NBL	SBT	EBT	WBT	SBL	NBT	-	-
0	0	0	0	0	0	0	0
							

Active Phase Bank: Phase Bank 1

Phase	Walk			Don't Walk			Min Initial			Veh Ext			Max Limit			Max 2			Yellow	Red																
	Phase Bank																																			
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																		
1 NBL	0	-	0	-	0	-	0	-	0	5	-	5	-	5	2	-	2	-	2	5	-	5	-	5	16	-	16	-	10	3.7	2					
2 SBT	4	-	4	-	4	-	4	-	4	26	-	26	-	26	4	-	4	-	4	1	-	1	-	1	30	-	30	-	30	0	-	30	-	30	4	2.8
3 EBT	0	-	0	-	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	0	0		
4 WBT	4	-	4	-	4	-	4	-	4	28	-	28	-	28	7	-	7	-	7	2.5	-	2.5	-	2.5	16	-	16	-	16	28	-	28	-	28	4	3.2
5 SBL	0	-	0	-	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	-	0	0	-	0	0	0		
6 NBT	0	-	0	-	0	-	0	-	0	18	-	18	-	18	1	-	1	-	1	30	-	30	-	30	0	-	30	-	30	0	-	30	-	30	4	2.8
7 -	0	-	0	-	0	-	0	-	0	5	-	5	-	0	2	-	2	-	0	5	-	5	-	0	12	-	5	-	0	3.7	2					
8 -	4	-	4	-	4	-	4	-	4	28	-	28	-	28	7	-	7	-	7	2.5	-	2.5	-	2.5	16	-	16	-	16	28	-	28	-	28	4	3.2

Last In Service Date: unknown

Permitted Phases

	<u>12345678</u>
Default	-2-4-678
External Permit 0	-2-4-6-8
External Permit 1	-2-4-678
External Permit 2	-2-4-6-8

		Green Time											
Current TOD Schedule	Plan	Cycle	1 NBL	2 SBT	3 EBT	4 WBT	5 SBL	6 NBT	7 -	8 -	Ring Offset	Offset	
	1	160	0	99	0	47	0	99	8	33	0	126	
	2	160	0	99	0	47	0	99	8	33	0	140	
	3	120	0	59	0	47	0	59	8	33	0	106	
	4	130	0	69	0	47	0	69	8	33	0	16	
	5	130	0	69	0	47	0	69	8	33	0	125	
	6	130	0	69	0	47	0	69	8	33	0	64	
	7	105	0	44	0	47	0	44	8	33	0	44	
	8	120	0	59	0	47	0	59	8	33	0	12	
	9	120	0	59	0	47	0	59	8	33	0	66	
	10	130	0	69	0	47	0	69	8	33	0	76	
	13	105	0	44	0	47	0	44	8	33	0	68	
	14	105	0	44	0	47	0	44	8	33	0	68	
	15	130	0	69	0	47	0	69	8	33	0	126	
	16	130	0	69	0	47	0	69	8	33	0	78	
	17	130	0	69	0	47	0	69	8	33	0	56	
	20	130	0	69	0	47	0	69	8	33	0	116	
	25	140	0	79	0	47	0	79	8	33	0	46	
	26	180	0	119	0	47	0	119	8	33	0	174	
	27	140	0	79	0	47	0	79	8	33	0	76	

<u>Local TOD Schedule</u>			
<u>Time</u>	<u>Plan</u>	<u>DOW</u>	
0000	8	Su M T W Th	S
0000	21		F
0030	Free	Su	S
0030	Free	M T W Th	
0600	8	Su M T W Th F	S
0800	7	Su	S
0800	5	M T W Th F	
1000	4	Su	
1030	4		S
1515	16	M T W Th F	
1615	6	M T W Th F	
1830	4	Su M T W Th F	S
2000	8	Su M T W Th F	S
2330	Free	M T W Th	

<u>Current Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	---5--2-	F
0600	TOD OUTPUTS	-----	Su M T W ThF S
0900	TOD OUTPUTS	-----	M T W ThF
1530	TOD OUTPUTS	-----	M T W ThF

<u>Local Time of Day Function</u>			
<u>Time</u>	<u>Function</u>	<u>Settings *</u>	<u>Day of Week</u>
0000	TOD OUTPUTS	---5--2-	F
0000	TOD OUTPUTS	---5----	Su M T W Th S
0030	TOD OUTPUTS	---5---1	Su S
0030	TOD OUTPUTS	---5--2-	M T W Th
0600	TOD OUTPUTS	-----	Su M T W ThF S
0900	TOD OUTPUTS	-----	M T W ThF
1530	TOD OUTPUTS	-----	M T W ThF
2330	TOD OUTPUTS	---5--2-	M T W Th

<u>* Settings</u>	
Blank - FREE - Phase Bank 1, Max 1	
Blank - Plan - Phase Bank 1, Max 2	
1 - Phase Bank 2, Max 1	
2 - Phase Bank 2, Max 2	
3 - Phase Bank 3, Max 1	
4 - Phase Bank 3, Max 2	
5 - EXTERNAL PERMIT 1	
6 - EXTERNAL PERMIT 2	
7 - X-PED OMIT	
8 - TBA	

No Calendar Defined/Enabled

15TH STREET & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: ISIDRO GONZALEZ
 SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 15ST_ALT
 Page : 1

ALL VEHICLES

ALTON ROAD From North				15TH STREET From East				ALTON ROAD From South				15TH STREET From West					
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total	
Date 03/04/16																	
16:30	0	26	226	8	3	27	29	37	0	18	275	25	0	6	24	13	717
16:45	0	40	189	9	1	30	34	28	0	14	230	27	0	14	21	13	650
17:00	0	26	216	12	0	31	26	25	0	19	241	19	2	12	19	13	661
17:15	4	33	216	14	0	36	26	22	0	23	242	26	4	14	21	5	686
Hr Total	4	125	847	43	4	124	115	112	0	74	988	97	6	46	85	44	2714
17:30	0	29	227	11	4	25	25	32	0	20	251	20	0	7	19	15	685
17:45	0	41	218	19	0	37	20	30	0	26	221	27	0	6	19	13	677
18:00	0	25	202	10	1	58	30	26	0	25	252	28	0	14	14	22	707
18:15	2	30	232	12	0	55	24	25	0	19	238	24	0	15	13	18	707
Hr Total	2	125	879	52	5	175	99	113	0	90	962	99	0	42	65	68	2776
18:30	0	38	213	9	0	46	28	25	0	18	248	25	0	9	19	20	698
18:45	0	37	219	11	0	32	30	15	0	18	249	30	0	13	16	17	687
Hr Total	0	75	432	20	0	78	58	40	0	36	497	55	0	22	35	37	1385
TOTAL	6	325	2158	115	9	377	272	265	0	200	2447	251	6	110	185	149	6875

15TH STREET & ALTON ROAD
MIAMI BEACH, FLORIDA
COUNTED BY: ISIDRO GONZALEZ
SIGNALIZED

Traffic Survey Specialists, Inc.
85 SE 4th Avenue, Unit 109
Delray Beach, Florida 33483
Phone (561) 272-3255

Site Code : 00160041
Start Date: 03/04/16
File I.D. : 15ST_ALT
Page : 2

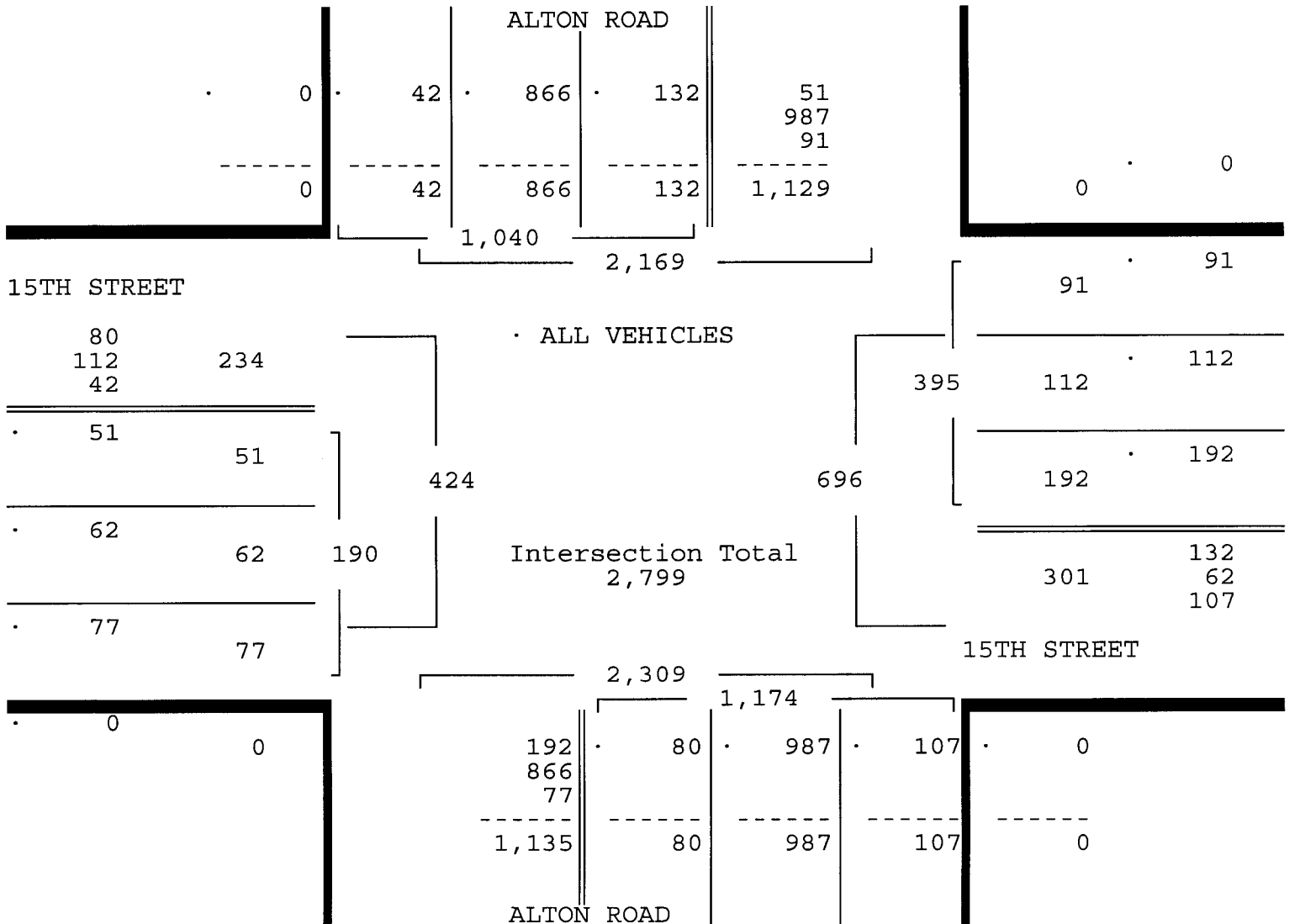
ALL VEHICLES

ALTON ROAD From North				15TH STREET From East				ALTON ROAD From South				15TH STREET From West				Total
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	

Date 03/04/16

Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 19:00 on 03/04/16

Peak start 18:00				18:00				18:00				18:00				
Volume	2	130	866	42	1	191	112	91	0	80	987	107	0	51	62	77
Percent	0%	12%	83%	4%	0%	48%	28%	23%	0%	7%	84%	9%	0%	27%	33%	41%
Pk total	1040				395				1174				190			
Highest	18:15				18:00				18:00				18:00			
Volume	2	30	232	12	1	58	30	26	0	25	252	28	0	14	14	22
Hi total	276				115				305				50			
PHF	.94				.86				.96				.95			



15TH STREET & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: ISIDRO GONZALEZ
 SIGNALIZED

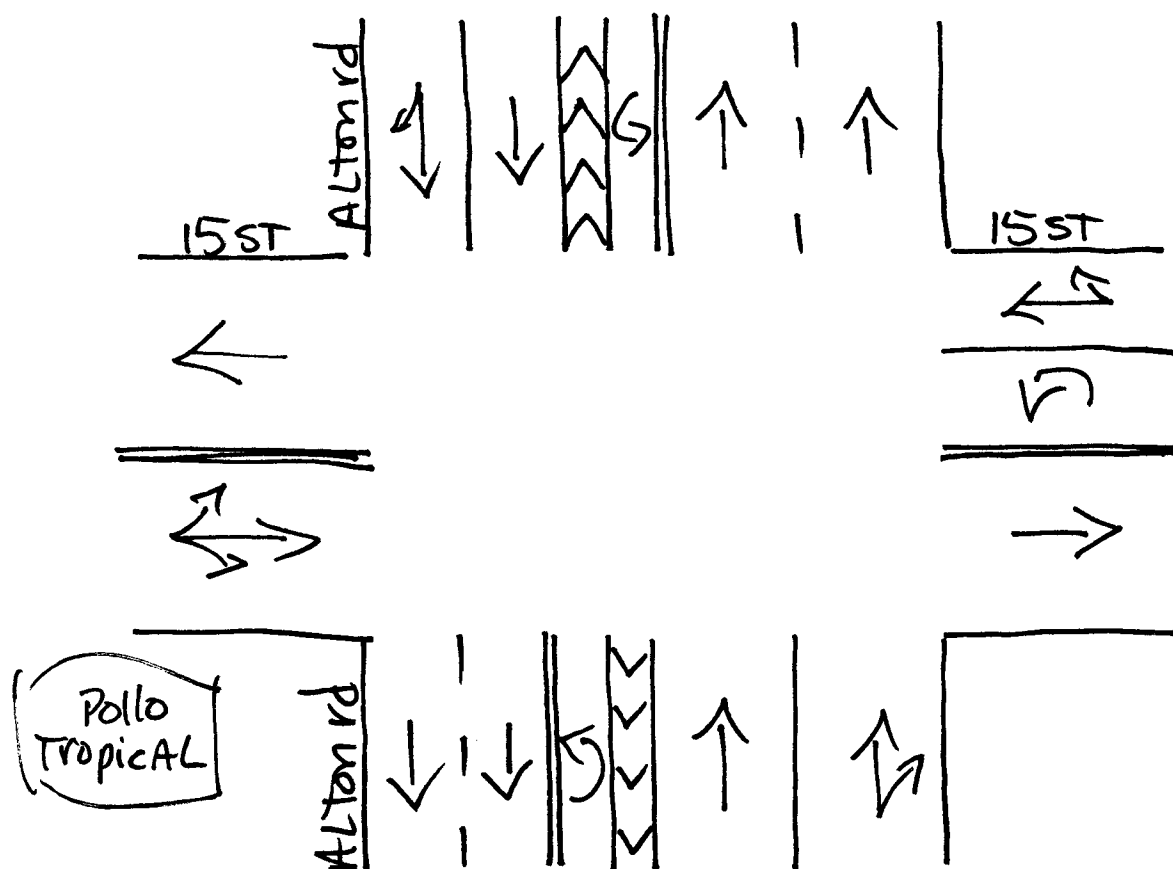
Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 15ST_ALT
 Page : 1

PEDESTRIANS & BIKES

ALTON ROAD From North				15TH STREET From East				ALTON ROAD From South				15TH STREET From West								Total
Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds					
Date 03/04/16																				
16:30	0	4	0	32	0	3	0	23	0	10	0	29	0	7	0	41				149
16:45	0	10	0	19	0	5	0	34	0	5	0	13	0	3	0	27				116
17:00	0	5	0	18	0	1	0	16	0	1	0	9	0	5	0	20				75
17:15	0	4	0	16	0	0	0	15	0	3	0	12	0	2	0	15				67
Hr Total	0	23	0	85	0	9	0	88	0	19	0	63	0	17	0	103				407
17:30	0	0	0	8	0	6	0	14	0	0	0	3	0	1	0	17				49
17:45	0	11	0	29	0	3	0	14	0	3	0	32	0	1	0	14				107
18:00	0	3	0	24	0	0	0	21	0	1	0	13	0	6	0	21				89
18:15	0	0	0	15	0	12	0	26	0	5	0	12	0	0	5	33				108
Hr Total	0	14	0	76	0	21	0	75	0	9	0	60	0	8	5	85				353
18:30	0	1	0	6	0	1	0	9	0	3	0	8	0	0	0	14				42
18:45	0	1	0	13	0	0	0	11	0	1	0	4	0	3	0	17				50
Hr Total	0	2	0	19	0	1	0	20	0	4	0	12	0	3	0	31				92
TOTAL	0	39	0	180	0	31	0	183	0	32	0	135	0	28	5	219				852

↑
North



Miami Beach, Florida
February 24, 2016
drawn by: Luis Palomino
signalized

16TH STREET & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: MARCELLO MINO-WILZEK
 SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 16STALTR
 Page : 1

ALL VEHICLES

ALTON ROAD					16TH STREET				ALTON ROAD				16TH STREET								
From North					From East				From South				From West								
UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		Total	
Date 03/04/16 -----																					
16:30	0	34	192	15		0	28	12	31		0	14	240	43		0	11	20	12		652
16:45	2	23	174	8		0	21	15	33		0	8	223	36		0	17	15	10		585
17:00	0	35	201	16		0	25	15	28		1	16	221	29		0	9	10	16		622
17:15	2	31	208	14		0	27	12	22		1	9	206	31		0	14	17	11		605
Hr Total	4	123	775	53		0	101	54	114		2	47	890	139		0	51	62	49		2464
17:30	0	28	186	14		1	23	11	36		0	12	234	28		0	14	16	9		612
17:45	0	23	211	6		0	25	23	30		0	11	215	28		0	4	15	8		599
18:00	0	28	172	8		0	22	10	30		0	13	211	28		1	7	13	13		556
18:15	0	29	201	7		0	20	16	28		0	14	226	26		0	9	15	16		607
Hr Total	0	108	770	35		1	90	60	124		0	50	886	110		1	34	59	46		2374
18:30	0	30	197	15		0	24	17	31		1	11	211	20		0	5	10	13		585
18:45	0	29	198	11		0	26	10	28		0	18	247	31		0	8	16	12		634
Hr Total	0	59	395	26		0	50	27	59		1	29	458	51		0	13	26	25		1219

TOTAL	4	290	1940	114		1	241	141	297		3	126	2234	300		1	98	147	120		6057

[illegible]

16TH STREET & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: MARCELLO MINO-WILZEK
 SIGNALIZED

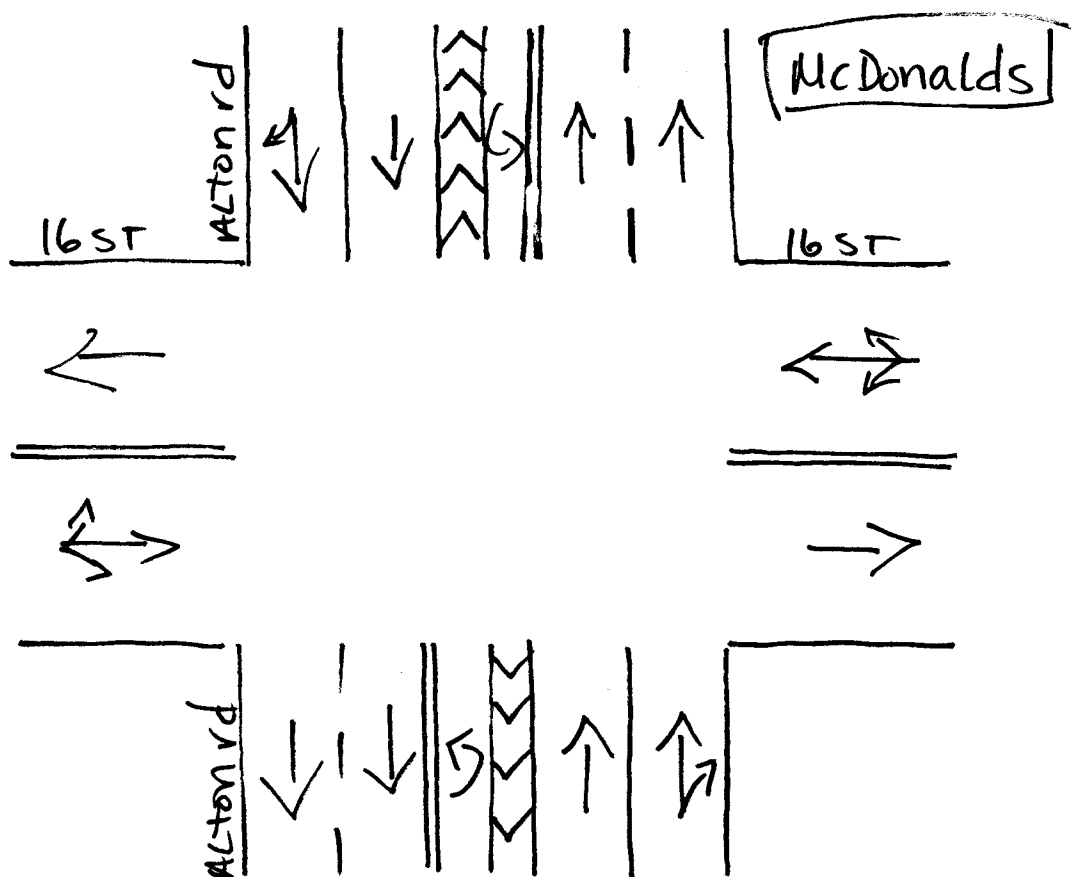
Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 16STALTR
 Page : 1

PEDESTRIANS & BIKES

ALTON ROAD From North					16TH STREET From East					ALTON ROAD From South					16TH STREET From West					
Left	BIKES	Right	Peds		Left	BIKES	Right	Peds		Left	BIKES	Right	Peds		Left	BIKES	Right	Peds		
Date 03/04/16																				
16:30	0	2	0	7	0	0	0	20	0	0	0	2	0	0	0	5		36		
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0		
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0		
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0		
Hr Total	0	2	0	7	0	0	0	20	0	0	0	2	0	0	0	5		36		
17:30	0	0	0	11	0	0	0	0	0	0	0	8	0	3	0	3		25		
17:45	0	0	0	23	0	0	0	9	0	2	0	12	0	2	0	19		67		
18:00	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0	11		30		
18:15	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0		14		
Hr Total	0	0	0	48	0	0	0	28	0	2	0	20	0	5	0	33		136		
18:30	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0	14		40		
18:45	0	10	0	28	0	0	0	9	0	1	0	5	0	0	0	13		66		
Hr Total	0	10	0	28	0	0	0	35	0	1	0	5	0	0	0	27		106		
TOTAL	0	12	0	83	0	0	0	83	0	3	0	27	0	5	0	65		278		

North



Miami Beach, Florida
February 24, 2016
drawn by: Luis Palomino
Signalized

16TH STREET & ALTON COURT
 MIAMI BEACH, FLORIDA
 COUNTED BY: CRISTINA PALOMINO
 NOT SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 16ST_ALT
 Page : 1

ALL VEHICLES

ALTON COURT From North					16TH STREET From East				ALTON COURT From South				16TH STREET From West								
UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right			
Date 03/04/16 -----																					
16:30	0	1	0	0		1	1	33	4		0	0	5	4		0	0	31	0		80
16:45	0	5	0	0		3	1	28	5		0	0	2	5		0	1	38	0		88
17:00	0	0	0	1		0	0	38	2		0	2	2	3		0	2	26	0		76
17:15	0	0	0	1		0	0	29	1		0	0	1	4		0	0	36	0		72
Hr Total	0	6	0	2		4	2	128	12		0	2	10	16		0	3	131	0		316
17:30	0	2	0	1		2	0	32	2		0	2	2	3		0	0	28	0		74
17:45	0	1	0	1		0	0	39	2		0	0	4	5		0	1	22	0		75
18:00	0	0	0	0		0	0	23	1		0	0	1	3		0	2	27	0		57
18:15	0	1	0	1		2	0	31	4		0	1	2	0		0	2	32	0		76
Hr Total	0	4	0	3		4	0	125	9		0	3	9	11		0	5	109	0		282
18:30	0	2	0	0		4	1	31	3		0	3	1	2		0	0	22	0		69
18:45	0	1	0	0		0	0	29	4		0	3	3	7		0	2	33	0		82
Hr Total	0	3	0	0		4	1	60	7		0	6	4	9		0	2	55	0		151

TOTAL	0	13	0	5		12	3	313	28		0	11	23	36		0	10	295	0		749

16TH STREET & ALTON COURT
 MIAMI BEACH, FLORIDA
 COUNTED BY: CRISTINA PALOMINO
 NOT SIGNALIZED

Traffic Survey Specialists, Inc.
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 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 16ST_ALT
 Page : 2

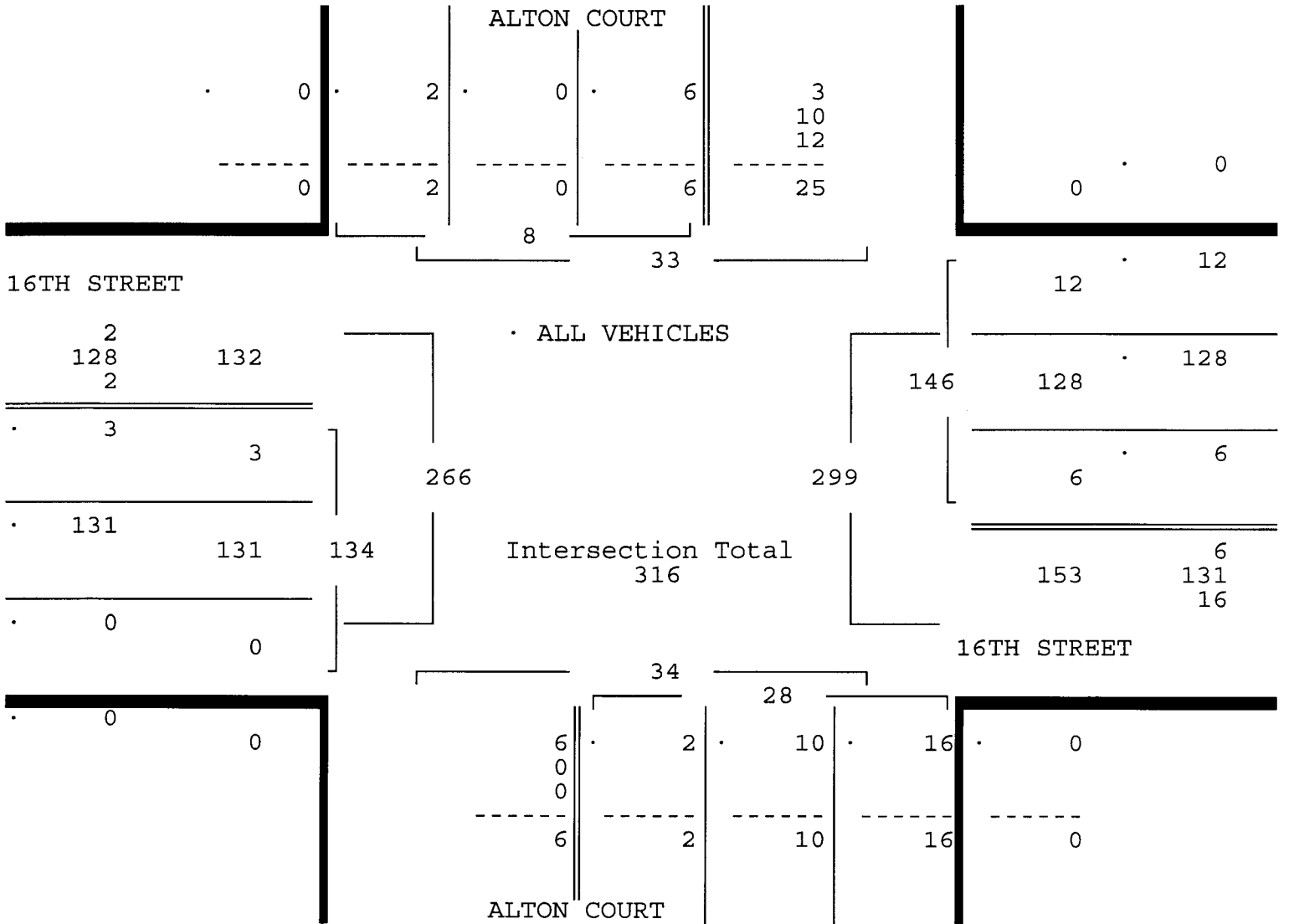
ALL VEHICLES

ALTON COURT From North				16TH STREET From East				ALTON COURT From South				16TH STREET From West				Total
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	

Date 03/04/16

Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 19:00 on 03/04/16

Peak start 16:30				16:30				16:30				16:30				
Volume	0	6	0	2	4	2	128	12	0	2	10	16	0	3	131	0
Percent	0%	75%	0%	25%	3%	1%	88%	8%	0%	7%	36%	57%	0%	2%	98%	0%
Pk total	8				146				28				134			
Highest	16:45				17:00				16:30				16:45			
Volume	0	5	0	0	0	0	38	2	0	0	5	4	0	1	38	0
Hi total	5				40				9				39			
PHF	.40				.91				.78				.86			



16TH STREET & ALTON COURT
 MIAMI BEACH, FLORIDA
 COUNTED BY: CRISTINA PALOMINO
 NOT SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

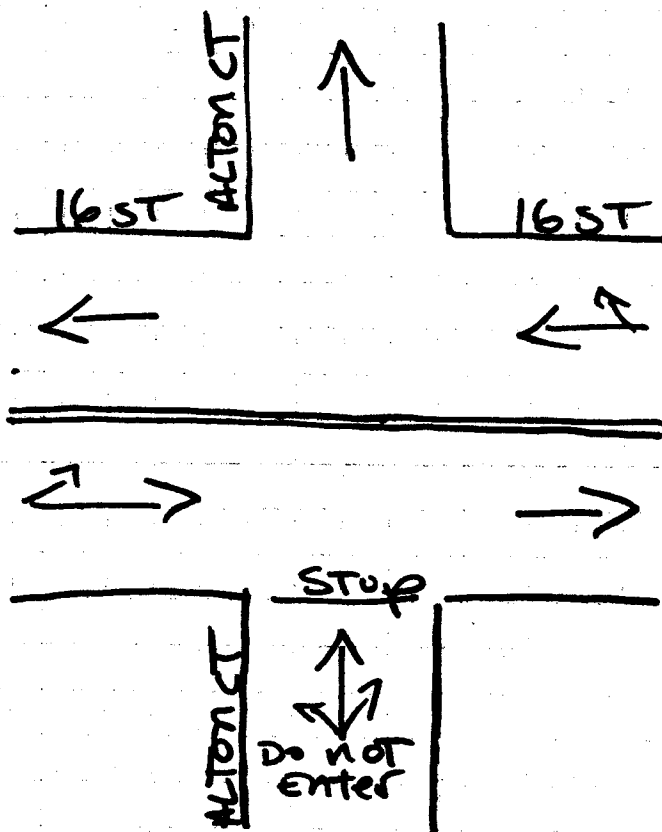
Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 16ST_ALT
 Page : 1

PEDESTRIANS & BIKES

ALTON COURT					16TH STREET				ALTON COURT				16TH STREET				
From North					From East				From South				From West				
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Total
Date 03/04/16 -----																	
16:30	0	7	0	7	0	1	0	2	0	6	0	5	0	0	0	1	29
16:45	0	3	0	0	0	0	0	2	0	4	0	10	0	0	0	0	19
17:00	0	7	0	11	0	0	0	10	0	3	0	8	0	0	0	0	39
17:15	0	7	0	18	0	0	0	3	0	3	0	3	0	0	0	1	35
Hr Total	0	24	0	36	0	1	0	17	0	16	0	26	0	0	0	2	122
17:30	0	4	0	4	0	0	0	0	0	0	0	6	0	0	0	0	14
17:45	0	6	0	13	0	0	0	0	0	5	0	10	0	0	0	0	34
18:00	0	12	0	15	0	0	0	2	0	4	0	24	0	0	0	0	57
18:15	0	7	0	16	0	2	0	6	0	6	0	19	0	0	0	0	56
Hr Total	0	29	0	48	0	2	0	8	0	15	0	59	0	0	0	0	161
18:30	0	6	0	3	0	0	0	4	0	7	0	12	0	0	0	0	32
18:45	0	0	0	8	0	0	0	2	0	0	0	5	0	0	0	0	15
Hr Total	0	6	0	11	0	0	0	6	0	7	0	17	0	0	0	0	47

TOTAL	0	59	0	95	0	3	0	31	0	38	0	102	0	0	0	2	330

↑
North



Miami Beach, Florida

JULY 14, 2014

drawn by: Luis Palomino

NOT signalized ✓

LINCOLN ROAD & ALTON COURT
 MIAMI BEACH, FLORIDA
 COUNTED BY: ALBERTO GUTIERREZ
 NOT SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : LIN_ALCT
 Page : 1

ALL VEHICLES

ALTON COURT From North					LINCOLN ROAD From East				ALTON COURT From South				LINCOLN ROAD From West							
UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		Total
Date 03/04/16 -----																				
16:30	0	0	0	1	2	0	31	1	0	6	2	6	0	2	36	1				88
16:45	0	1	0	3	4	1	44	12	0	4	2	5	0	0	39	0				115
17:00	0	0	0	2	3	0	24	4	0	2	2	4	0	5	42	0				88
17:15	0	1	0	1	4	0	30	11	0	3	2	7	2	0	40	1				102
Hr Total	0	2	0	7	13	1	129	28	0	15	8	22	2	7	157	2				393
17:30	0	1	0	1	6	0	31	3	0	4	4	9	0	2	36	0				97
17:45	0	1	0	0	1	0	30	6	1	2	2	11	0	3	26	0				83
18:00	0	0	0	2	3	0	31	6	0	5	1	7	0	2	44	0				101
18:15	1	1	0	0	3	0	35	3	1	2	1	4	0	0	43	0				94
Hr Total	1	3	0	3	13	0	127	18	2	13	8	31	0	7	149	0				375
18:30	1	1	0	4	6	0	32	1	0	3	2	6	0	1	45	0				102
18:45	0	1	0	1	6	0	40	10	0	3	7	11	0	2	44	0				125
Hr Total	1	2	0	5	12	0	72	11	0	6	9	17	0	3	89	0				227

TOTAL	2	7	0	15	38	1	328	57	2	34	25	70	2	17	395	2				995

LINCOLN ROAD & ALTON COURT
 MIAMI BEACH, FLORIDA
 COUNTED BY: ALBERTO GUTIERREZ
 NOT SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
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Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : LIN_ALCT
 Page : 2

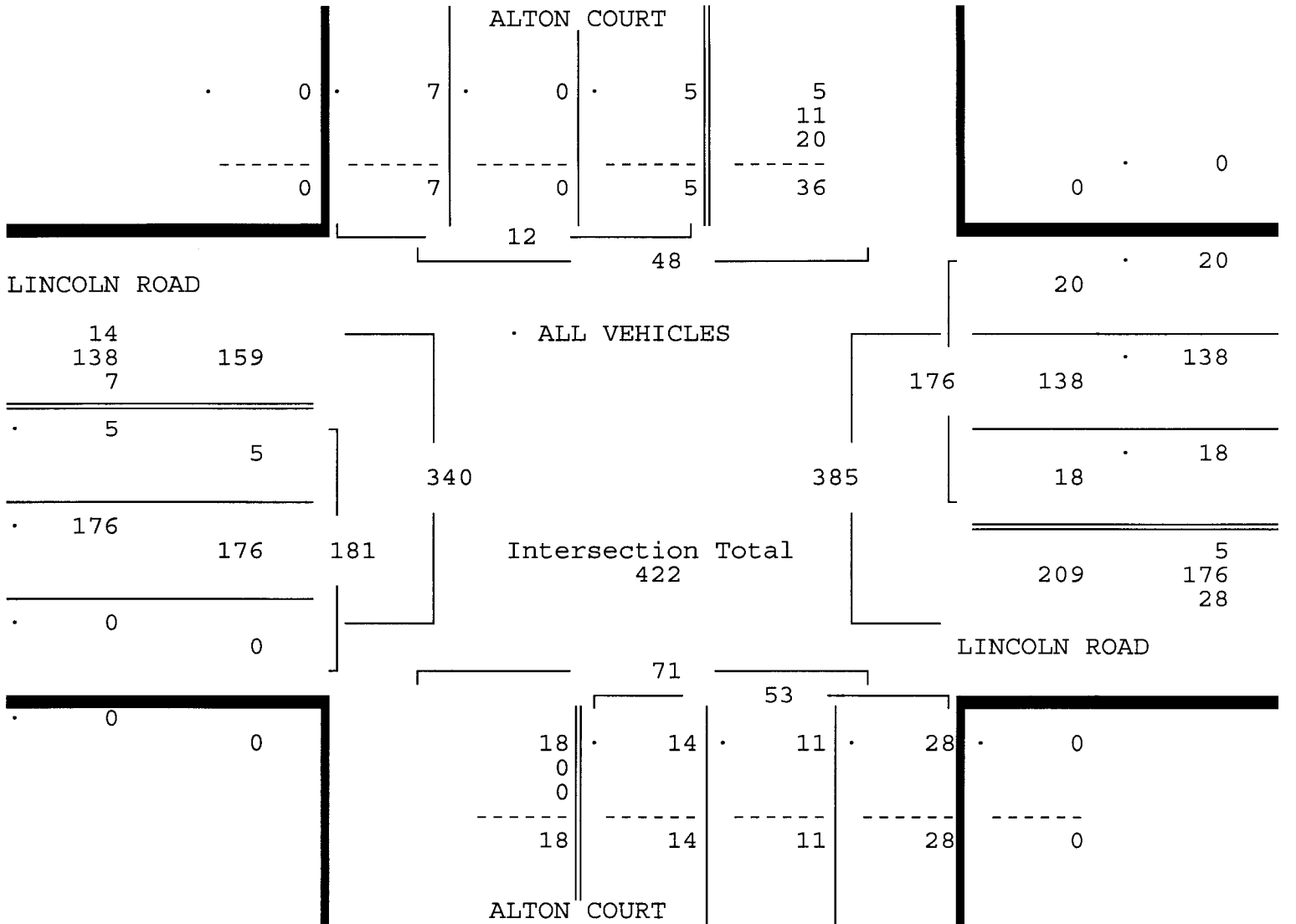
ALL VEHICLES

ALTON COURT From North				LINCOLN ROAD From East				ALTON COURT From South				LINCOLN ROAD From West				Total
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	

Date 03/04/16

Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 19:00 on 03/04/16

Peak start 18:00					18:00				18:00				18:00			
Volume	2	3	0	7	18	0	138	20	1	13	11	28	0	5	176	0
Percent	17%	25%	0%	58%	10%	0%	78%	11%	2%	25%	21%	53%	0%	3%	97%	0%
Pk total	12				176				53				181			
Highest	18:30				18:45				18:45				18:00			
Volume	1	1	0	4	6	0	40	10	0	3	7	11	0	2	44	0
Hi total	6				56				21				46			
PHF	.50				.79				.63				.98			



LINCOLN ROAD & ALTON COURT
 MIAMI BEACH, FLORIDA
 COUNTED BY: ALBERTO GUTIERREZ
 NOT SIGNALIZED

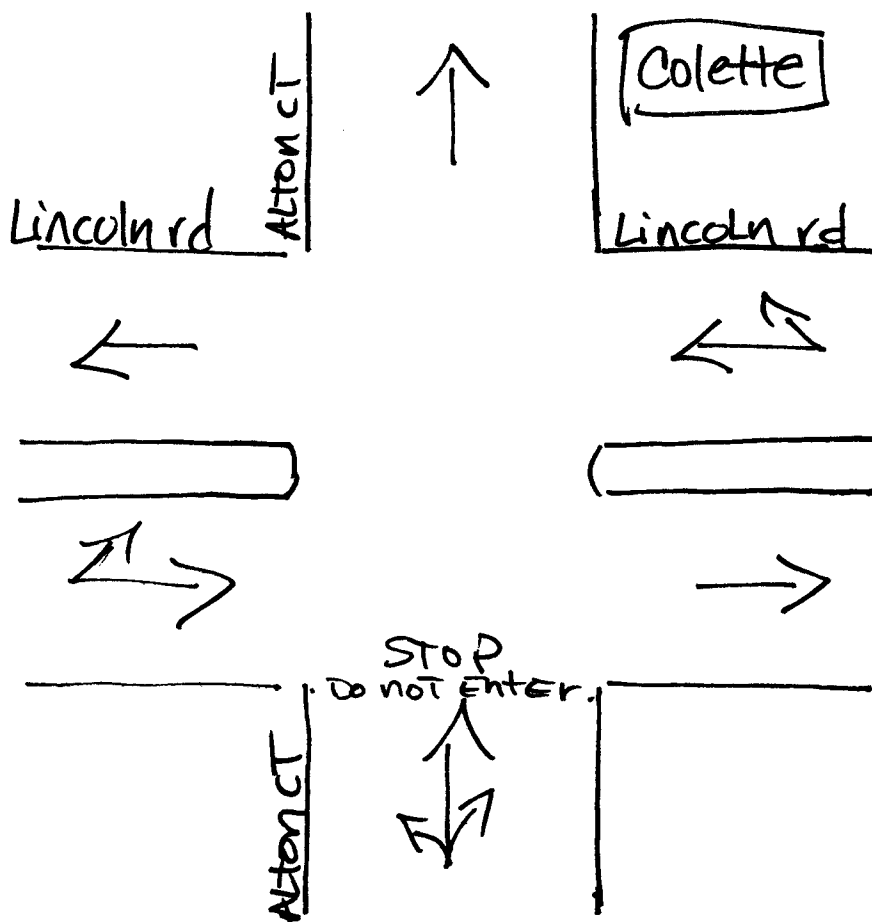
Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : LIN_ALCT
 Page : 1

PEDESTRIANS & BIKES

Date	ALTON COURT From North				LINCOLN ROAD From East				ALTON COURT From South				LINCOLN ROAD From West				Total
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	
03/04/16																	
16:30	0	3	0	41	0	3	0	7	0	0	0	39	0	1	0	4	98
16:45	0	4	0	91	0	1	0	7	0	8	0	53	0	0	0	3	167
17:00	0	5	0	117	0	0	0	1	0	4	0	60	0	0	0	6	193
17:15	0	2	0	117	0	0	0	6	0	5	0	62	0	2	0	0	194
Hr Total	0	14	0	366	0	4	0	21	0	17	0	214	0	3	0	13	652
17:30	0	6	0	112	0	2	0	9	0	7	0	70	0	0	0	4	210
17:45	0	6	0	109	0	0	0	22	0	5	0	114	0	0	0	0	256
18:00	0	3	0	128	0	2	0	5	0	2	0	135	0	0	0	8	283
18:15	0	2	0	120	0	3	0	4	0	6	0	102	0	0	0	4	241
Hr Total	0	17	0	469	0	7	0	40	0	20	0	421	0	0	0	16	990
18:30	0	5	0	108	0	5	0	0	0	3	0	108	0	2	0	3	234
18:45	0	2	0	98	0	5	0	21	0	1	0	176	0	0	0	0	303
Hr Total	0	7	0	206	0	10	0	21	0	4	0	284	0	2	0	3	537
TOTAL	0	38	0	1041	0	21	0	82	0	41	0	919	0	5	0	32	2179

↑
North



Miami Beach, Florida

February 24, 2016

drawn by: Luis Palomino
not signalized

LINCOLN ROAD & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: DREW GONZALEZ
 SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : LINC_ALT
 Page : 1

ALL VEHICLES

ALTON ROAD From North					----- From East					ALTON ROAD From South					LINCOLN ROAD From West						
UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		Total	
Date 03/04/16 -----																					
16:30	0	0	224	32		0	0	0	0		0	11	213	0		0	27	0	12		519
16:45	6	0	237	44		0	0	0	0		0	12	200	0		0	36	0	11		546
17:00	2	0	218	24		0	0	0	0		0	5	194	0		0	32	0	21		496
17:15	4	0	251	28		0	0	0	0		0	15	193	0		1	27	0	21		540
Hr Total	12	0	930	128		0	0	0	0		0	43	800	0		1	122	0	65		2101
17:30	3	0	249	26		0	0	0	0		0	13	245	0		0	23	0	16		575
17:45	1	0	212	24		0	0	0	0		0	21	181	0		0	24	0	21		484
18:00	0	0	180	20		0	0	0	0		0	18	190	0		0	26	0	23		457
18:15	1	0	238	27		0	0	0	0		0	12	203	0		0	34	0	18		533
Hr Total	5	0	879	97		0	0	0	0		0	64	819	0		0	107	0	78		2049
18:30	7	0	225	23		0	0	0	0		1	14	216	0		1	28	0	18		533
18:45	1	0	236	26		0	0	0	0		1	23	225	0		0	23	0	25		560
Hr Total	8	0	461	49		0	0	0	0		2	37	441	0		1	51	0	43		1093

TOTAL	25	0	2270	274		0	0	0	0		2	144	2060	0		2	280	0	186		5243

LINCOLN ROAD & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: DREW GONZALEZ
 SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : LINC_ALT
 Page : 2

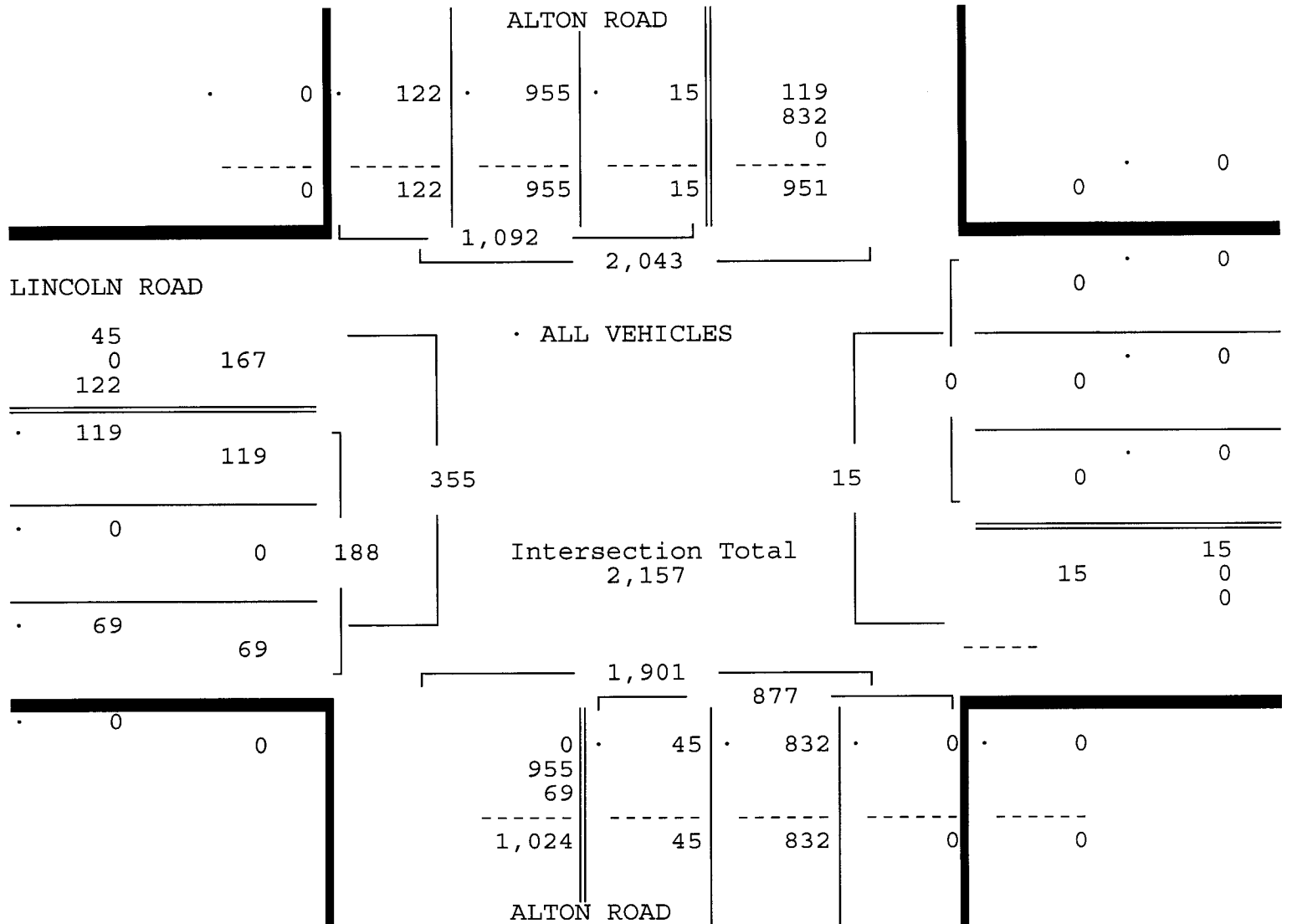
ALL VEHICLES

ALTON ROAD From North				From East				ALTON ROAD From South				LINCOLN ROAD From West				Total
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	

Date 03/04/16

Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 19:00 on 03/04/16

Peak start	16:45				16:45				16:45				16:45							
Volume	15	0	955	122	0	0	0	0	0	45	832	0	1	118	0	69				
Percent	1%	0%	87%	11%	0%	0%	0%	0%	0%	5%	95%	0%	1%	63%	0%	37%				
Pk total	1092				0				877				188							
Highest	16:45				16:30				17:30				17:00							
Volume	6	0	237	44	0	0	0	0	0	13	245	0	0	32	0	21				
Hi total	287				0				258				53							
PHF	.95				.0				.85				.89							



LINCOLN ROAD & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: DREW GONZALEZ
 SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

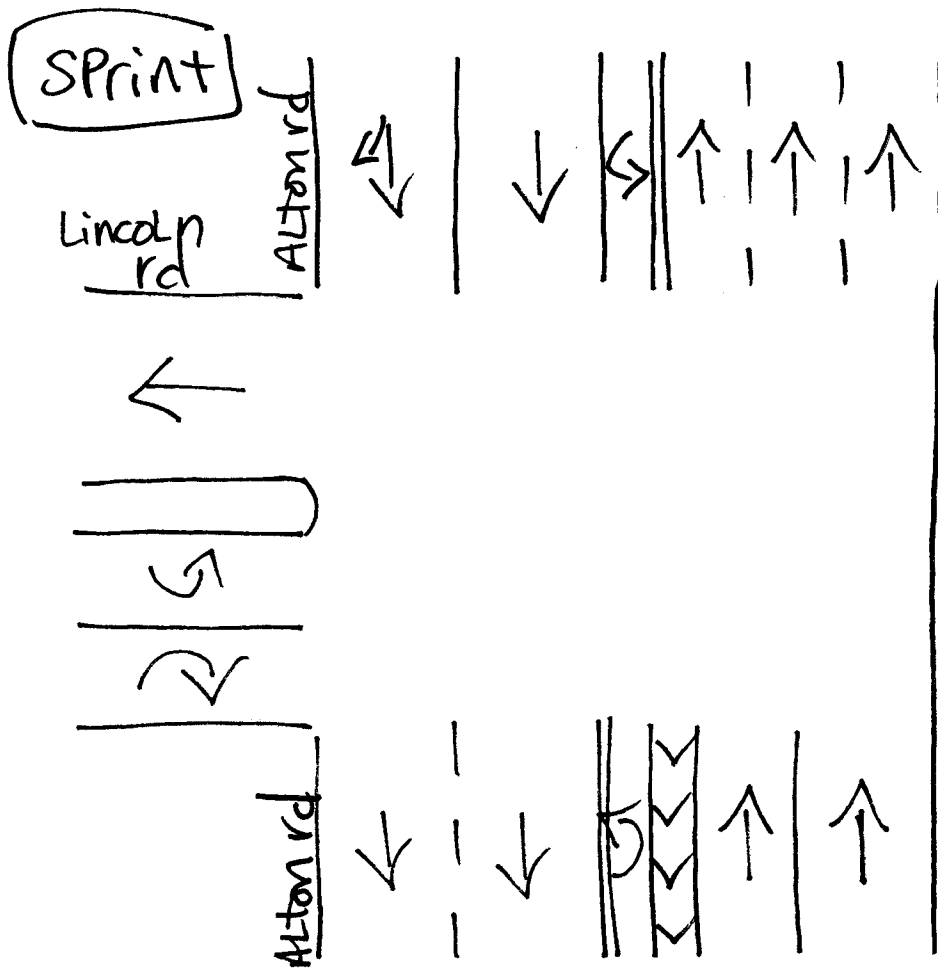
Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : LINC_ALT
 Page : 1

PEDESTRIANS & BIKES

ALTON ROAD					-----				ALTON ROAD				LINCOLN ROAD						
From North					From East				From South				From West						
Left BIKES Right Peds					Left BIKES Right Peds				Left BIKES Right Peds				Left BIKES Right Peds				Total		
Date 03/04/16 -----																			
16:30	0	4	0	67	0	0	0	4	0	2	0	38	0	4	0	15	134		
16:45	0	0	0	45	0	0	0	0	0	0	0	29	0	0	0	35	109		
17:00	0	0	0	44	0	0	0	0	0	0	0	33	0	0	0	28	105		
17:15	0	0	0	48	0	0	0	0	0	0	0	35	0	1	0	36	120		
Hr Total	0	4	0	204	0	0	0	4	0	2	0	135	0	5	0	114	468		
17:30	0	0	0	57	0	0	0	0	0	0	0	42	0	0	0	26	125		
17:45	0	0	0	5	0	0	0	0	0	0	0	9	0	0	0	7	21		
18:00	0	0	0	9	0	0	0	0	0	0	0	11	0	0	0	11	31		
18:15	0	0	0	73	0	0	0	0	0	0	0	41	0	0	0	31	145		
Hr Total	0	0	0	144	0	0	0	0	0	0	0	103	0	0	0	75	322		
18:30	0	0	0	75	0	0	0	0	0	0	0	44	0	0	0	42	161		
18:45	0	0	0	52	0	0	0	0	0	0	0	42	0	0	0	46	140		
Hr Total	0	0	0	127	0	0	0	0	0	0	0	86	0	0	0	88	301		

TOTAL	0	4	0	475	0	0	0	4	0	2	0	324	0	5	0	277	1091		

North



Miami Beach, Florida
February 24, 2016
drawn by: Luis Palomino
Signalized

17TH STREET & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: SEBASTIAN SALVO
 SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 17ST_ALT
 Page : 1

ALL VEHICLES

ALTON ROAD From North					17TH STREET From East				ALTON ROAD From South				17TH STREET From West								
UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		UTurn	Left	Thru	Right		Total	
Date 03/04/16 -----																					
16:30	0	54	201	34		0	51	59	48		0	29	224	45		0	46	44	25		860
16:45	1	53	210	30		1	36	51	52		0	22	197	50		0	48	53	11		815
17:00	0	65	249	46		0	52	54	41		0	27	191	44		0	52	52	16		889
17:15	0	44	224	33		0	64	58	60		1	26	171	52		0	39	33	13		818
Hr Total	1	216	884	143		1	203	222	201		1	104	783	191		0	185	182	65		3382
17:30	0	47	208	53		0	56	64	33		2	21	199	67		0	41	40	35		866
17:45	0	47	213	41		0	50	57	50		0	26	182	69		0	46	49	14		844
18:00	2	48	203	40		0	49	43	50		0	18	190	80		0	30	36	20		809
18:15	2	54	212	63		0	70	42	45		1	22	191	68		0	40	44	21		875
Hr Total	4	196	836	197		0	225	206	178		3	87	762	284		0	157	169	90		3394
18:30	0	61	222	50		0	52	49	54		0	21	165	62		0	31	34	24		825
18:45	3	68	195	54		1	47	51	63		0	24	175	82		0	42	38	23		866
Hr Total	3	129	417	104		1	99	100	117		0	45	340	144		0	73	72	47		1691

TOTAL	8	541	2137	444		2	527	528	496		4	236	1885	619		0	415	423	202		8467

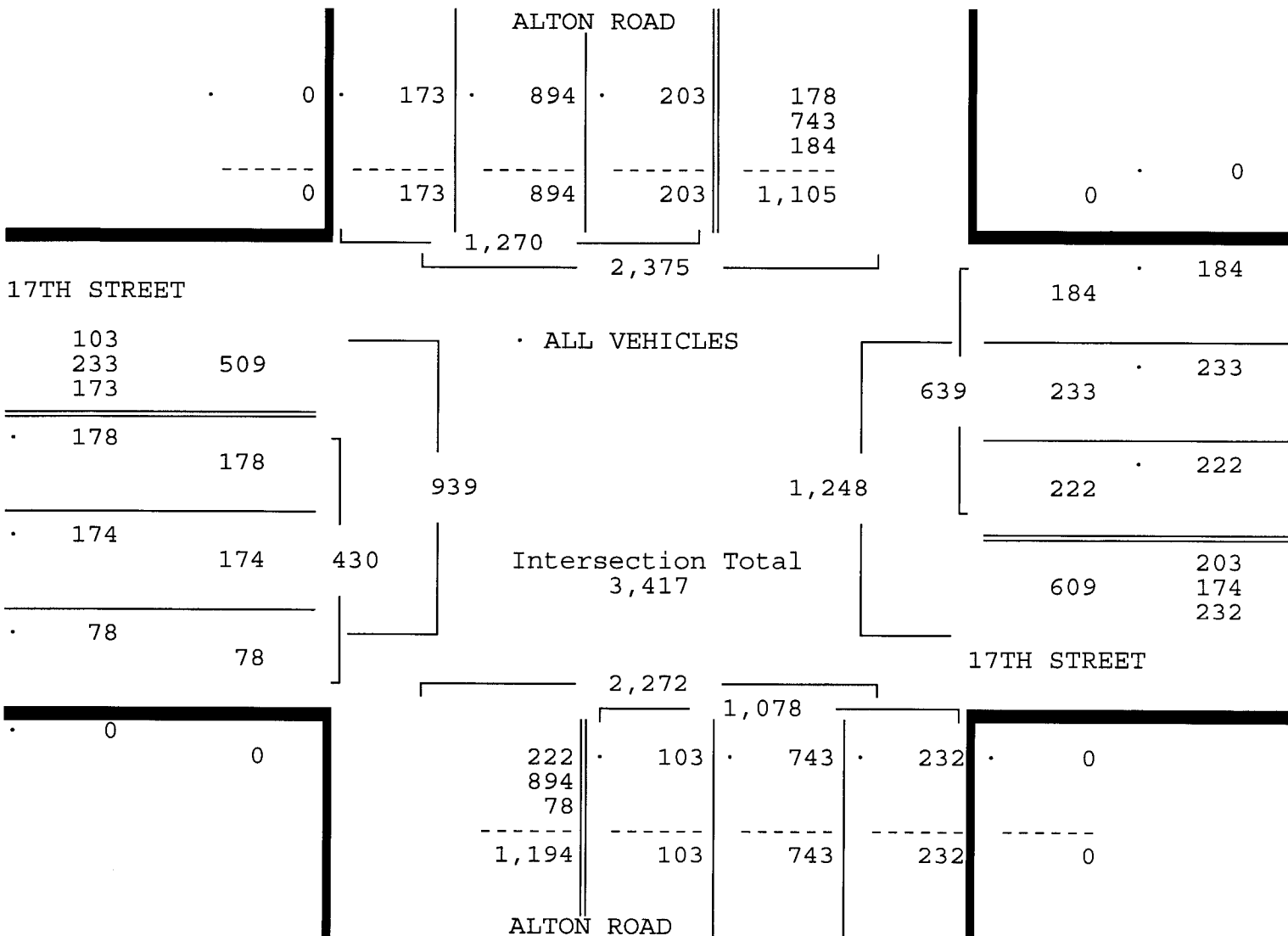
17TH STREET & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: SEBASTIAN SALVO
 SIGNALIZED

Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 17ST_ALT
 Page : 2

ALL VEHICLES

ALTON ROAD				17TH STREET				ALTON ROAD				17TH STREET				
From North				From East				From South				From West				
UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	UTurn	Left	Thru	Right	Total
Date 03/04/16																
Peak Hour Analysis By Entire Intersection for the Period: 16:30 to 19:00 on 03/04/16																
Peak start 17:00				17:00				17:00				17:00				
Volume	0	203	894	173	0	222	233	184	3	100	743	232	0	178	174	78
Percent	0%	16%	70%	14%	0%	35%	36%	29%	0%	9%	69%	22%	0%	41%	40%	18%
Pk total	1270				639				1078				430			
Highest	17:00				17:15				17:30				17:00			
Volume	0	65	249	46	0	64	58	60	2	21	199	67	0	52	52	16
Hi total	360				182				289				120			
PHF	.88				.88				.93				.90			



17TH STREET & ALTON ROAD
 MIAMI BEACH, FLORIDA
 COUNTED BY: SEBASTIAN SALVO
 SIGNALIZED

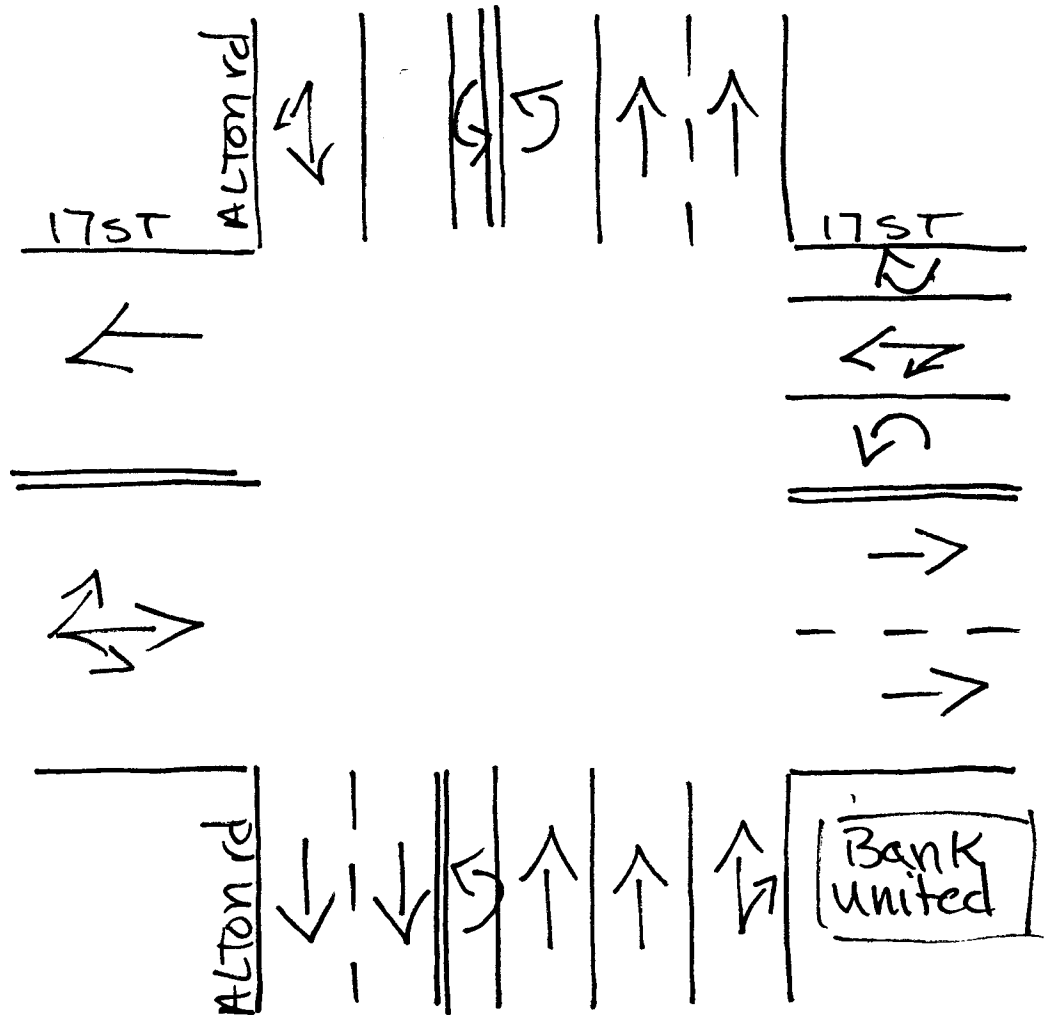
Traffic Survey Specialists, Inc.
 85 SE 4th Avenue, Unit 109
 Delray Beach, Florida 33483
 Phone (561) 272-3255

Site Code : 00160041
 Start Date: 03/04/16
 File I.D. : 17ST_ALT
 Page : 1

PEDESTRIANS & BIKES

Date 03/04/16	ALTON ROAD From North				17TH STREET From East				ALTON ROAD From South				17TH STREET From West				Total
	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	Left	BIKES	Right	Peds	
16:30	0	2	0	4	0	0	0	6	0	2	0	3	0	2	0	13	32
16:45	0	3	0	2	0	2	0	14	0	3	0	6	0	1	0	8	39
17:00	0	5	0	4	0	2	0	7	0	4	0	11	0	0	0	14	47
17:15	0	7	0	18	0	3	0	11	0	4	0	16	0	0	0	13	72
Hr Total	0	17	0	28	0	7	0	38	0	13	0	36	0	3	0	48	190
17:30	0	2	0	10	0	3	0	16	0	3	0	18	0	2	0	25	79
17:45	0	2	0	11	0	2	0	21	0	2	0	7	0	2	0	18	65
18:00	0	2	0	1	0	4	0	14	0	2	0	23	0	3	0	9	58
18:15	0	1	0	3	0	5	0	20	0	4	0	20	0	3	0	32	88
Hr Total	0	7	0	25	0	14	0	71	0	11	0	68	0	10	0	84	290
18:30	0	1	0	9	0	0	0	22	0	1	0	10	0	2	0	19	64
18:45	0	4	0	19	0	1	0	8	0	1	0	14	0	2	0	17	66
Hr Total	0	5	0	28	0	1	0	30	0	2	0	24	0	4	0	36	130
TOTAL	0	29	0	81	0	22	0	139	0	26	0	128	0	17	0	168	610

↑
North



Miami Beach, Florida

February 24, 2016

drawn by: Luis Palomino
signalized

APPENDIX D

Peak Season Conversion Factors and Growth Rate Calculations

2014 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
 CATEGORY: 8701 MIAMI-DADE SOUTH

WEEK	DATES	SF	MOCF: 0.99 PSCF
1	01/01/2014 - 01/04/2014	0.98	0.99
2	01/05/2014 - 01/11/2014	1.01	1.02
3	01/12/2014 - 01/18/2014	1.03	1.04
4	01/19/2014 - 01/25/2014	1.02	1.03
5	01/26/2014 - 02/01/2014	1.01	1.02
6	02/02/2014 - 02/08/2014	1.00	1.01
7	02/09/2014 - 02/15/2014	1.00	1.01
8	02/16/2014 - 02/22/2014	0.99	1.00
* 9	02/23/2014 - 03/01/2014	0.99	1.00
*10	03/02/2014 - 03/08/2014	0.99	1.00
*11	03/09/2014 - 03/15/2014	0.99	1.00
*12	03/16/2014 - 03/22/2014	0.99	1.00
*13	03/23/2014 - 03/29/2014	0.99	1.00
*14	03/30/2014 - 04/05/2014	0.99	1.00
*15	04/06/2014 - 04/12/2014	0.99	1.00
*16	04/13/2014 - 04/19/2014	0.99	1.00
*17	04/20/2014 - 04/26/2014	0.99	1.00
*18	04/27/2014 - 05/03/2014	0.99	1.00
*19	05/04/2014 - 05/10/2014	0.99	1.00
*20	05/11/2014 - 05/17/2014	0.99	1.00
*21	05/18/2014 - 05/24/2014	0.99	1.00
22	05/25/2014 - 05/31/2014	1.00	1.01
23	06/01/2014 - 06/07/2014	1.01	1.02
24	06/08/2014 - 06/14/2014	1.01	1.02
25	06/15/2014 - 06/21/2014	1.02	1.03
26	06/22/2014 - 06/28/2014	1.02	1.03
27	06/29/2014 - 07/05/2014	1.03	1.04
28	07/06/2014 - 07/12/2014	1.03	1.04
29	07/13/2014 - 07/19/2014	1.04	1.05
30	07/20/2014 - 07/26/2014	1.03	1.04
31	07/27/2014 - 08/02/2014	1.02	1.03
32	08/03/2014 - 08/09/2014	1.02	1.03
33	08/10/2014 - 08/16/2014	1.01	1.02
34	08/17/2014 - 08/23/2014	1.00	1.01
35	08/24/2014 - 08/30/2014	1.01	1.02
36	08/31/2014 - 09/06/2014	1.01	1.02
37	09/07/2014 - 09/13/2014	1.01	1.02
38	09/14/2014 - 09/20/2014	1.01	1.02
39	09/21/2014 - 09/27/2014	1.01	1.02
40	09/28/2014 - 10/04/2014	1.00	1.01
41	10/05/2014 - 10/11/2014	1.00	1.01
42	10/12/2014 - 10/18/2014	0.99	1.00
43	10/19/2014 - 10/25/2014	0.99	1.00
44	10/26/2014 - 11/01/2014	1.00	1.01
45	11/02/2014 - 11/08/2014	1.00	1.01
46	11/09/2014 - 11/15/2014	1.00	1.01
47	11/16/2014 - 11/22/2014	1.00	1.01
48	11/23/2014 - 11/29/2014	1.00	1.01
49	11/30/2014 - 12/06/2014	0.99	1.00
50	12/07/2014 - 12/13/2014	0.99	1.00
51	12/14/2014 - 12/20/2014	0.98	0.99
52	12/21/2014 - 12/27/2014	1.01	1.02
53	12/28/2014 - 12/31/2014	1.03	1.04

* PEAK SEASON

09-MAR-2015 16:07:55

830UPD

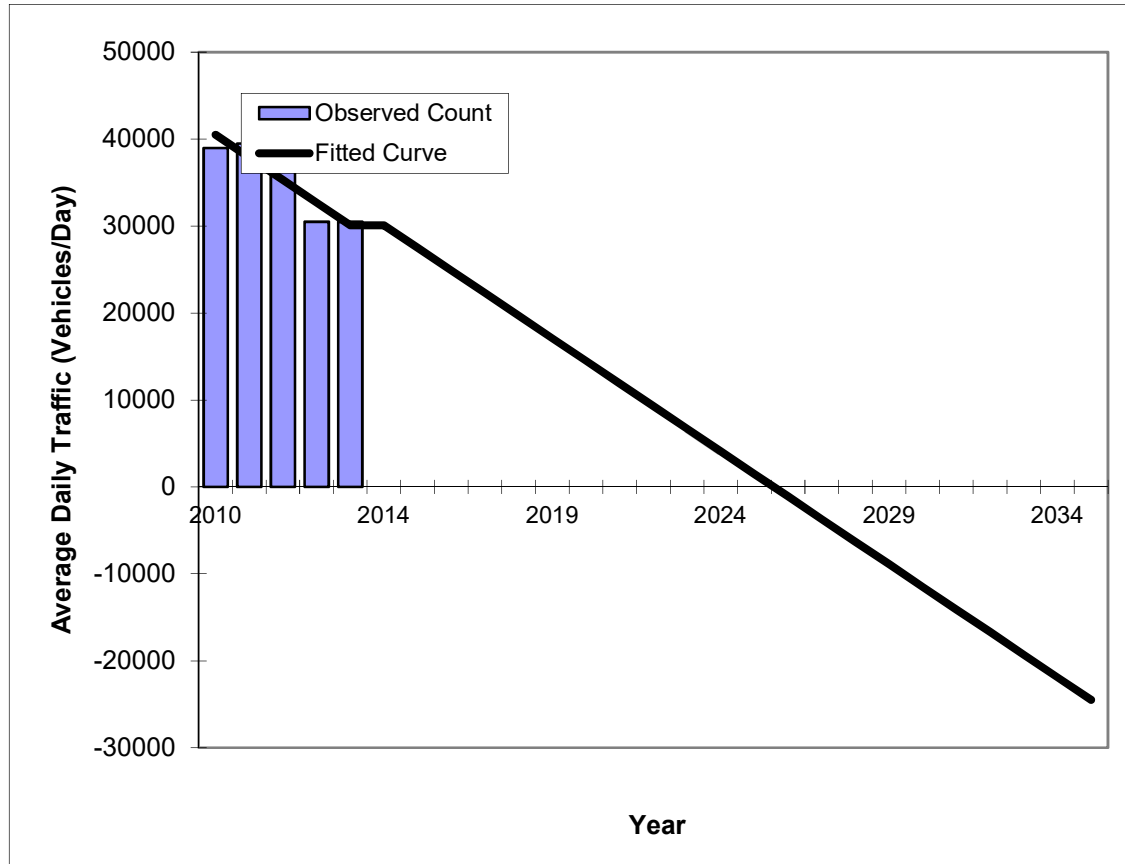
6_8701_PKSEASON.TXT

Traffic Trends - V2.0

SR 907/Alton Road -- 200' S OF VENETIAN CSWY

PIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2542
Highway:	SR 907/Alton Road



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2010	39000	40500
2011	39500	37900
2012	37000	35300
2013	30500	32700
2014	30500	30100
2016 Opening Year Trend		
2016	N/A	24900
2017 Mid-Year Trend		
2017	N/A	22300
2018 Design Year Trend		
2018	N/A	19700
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-2,600
Trend R-squared:	84.18%
Trend Annual Historic Growth Rate:	-6.42%
Trend Growth Rate (2014 to Design Year):	-8.64%
Printed:	17-Mar-16
Straight Line Growth Option	

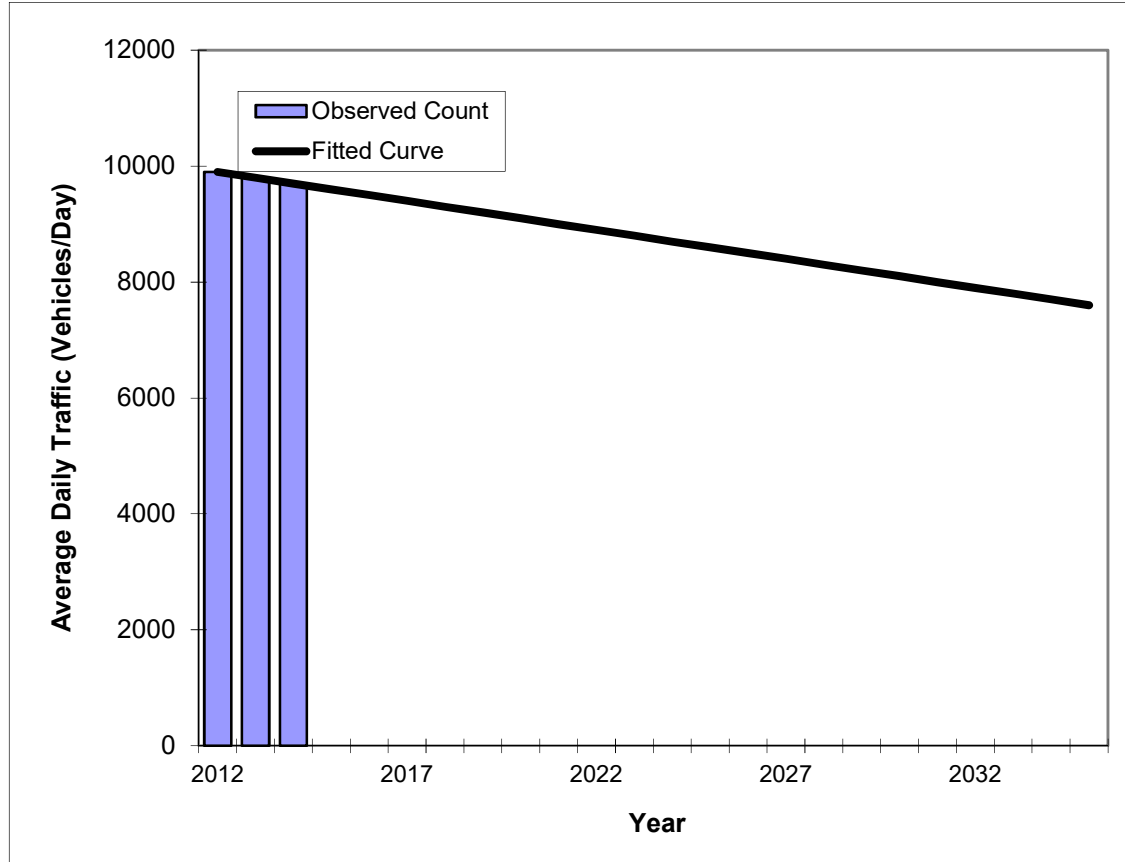
*Axle-Adjusted

Traffic Trends - V2.0

16 ST -- 200' E OF MERIDIAN AVE

PIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8567
Highway:	16 ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	9900	9900
2013	9800	9800
2014	9700	9700
2016 Opening Year Trend		
2016	N/A	9500
2017 Mid-Year Trend		
2017	N/A	9400
2018 Design Year Trend		
2018	N/A	9300
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-100
Trend R-squared:	100.00%
Trend Annual Historic Growth Rate:	-1.01%
Trend Growth Rate (2014 to Design Year):	-1.03%
Printed:	17-Mar-16
Straight Line Growth Option	

*Axle-Adjusted

APPENDIX E

Committed Developments

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Alton Road and Dade Boulevard PM Peak Hour

Description	Alton Road Northbound			Alton Road Southbound			Dade Boulevard Eastbound			Dade Boulevard Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (7/10/2012)	74	1,141	224	72	900	43	97	101	59	269	110	96
Season Adjustment Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2015 Peak Season Traffic	82	1,258	247	79	992	47	107	111	65	297	121	106
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
1901 Trips		87					58			84	56	58
17 Street Hotel Trips		9	1		9				12	2		
Sunset Palau		2										
1750 Alton		6	1		10				5	2		
Fresh Market + 1920 (*)		15			9							
Bank United, Sunset Harbour (**)	7	7		7	13			7			7	
2017 Background Traffic	90	1,409	254	88	1,053	48	167	121	83	391	187	166
1800 Alton	22							7	26		7	
2017 Total Traffic	112	1,409	254	88	1,053	48	167	128	109	391	194	166

* From Committed Development Column from Sunset Palau TIA

** From Committed Development Column from 17 Street Hotel Trips (Dec 7, 2012 Memo)

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Alton Road and 17th Street PM Peak Hour

Description	Alton Road Northbound			Alton Road Southbound			17th Street Eastbound			17th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (7/10/2012)	59	786	173	209	810	171	372	142	76	272	144	301
Season Adjustment Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2015 Peak Season Traffic	65	867	191	230	893	189	410	157	84	300	159	332
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
1901 Trips		87			84							
17 Street Hotel Trips	6	10	4			23					4	
17 Street Hotel Valet Trips	33											
Sunset Palau		2										
1750 Alton	12	7	2								3	
Fresh Market + 1920 (*)		15			9							
Bank United, Sunset Harbour (**)												
2017 Background Traffic	117	1,005	201	235	1,004	215	418	160	85	306	169	338
1800 Alton		19		4	22							3
Re-Routed Traffic (1)					-2				2			
2017 Total Traffic	117	1,024	201	239	1,024	215	418	160	87	306	169	341

(1) Based on a traffic count conducted by Traf Tech Engineering on 8/20/2015

* From Committed Development Column from Sunset Palau TIA

** From Committed Development Column from 17 Street Hotel Trips (Dec 7, 2012 Memo)

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Alton Road and 20th Street PM Peak Hour

Description	Alton Road Northbound			Alton Road Southbound			20th Street Eastbound			20th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (3/30/2011)	107	1,267	26	27	948	206	184	8	5	5	1	18
Season Adjustment 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
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2015 Peak Season Traffic	111	1,318	27	28	986	214	191	8	5	5	1	19
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
1901 Trips		85										
17 Street Hotel Trips		9			9							
Sunset Palau	2					4						
1750 Alton		6			10							
Fresh Market + 1920 (*)	15					76	66					
Bank United, Sunset Harbour (**)	16					52	45					
2017 Background Traffic	147	1,445	28	29	1,025	351	306	8	5	5	1	19
1800 Alton					23		27					
2017 Total Traffic	147	1,445	28	29	1,048	351	333	8	5	5	1	19

* From Committed Development Column from Sunset Palau TIA

** From Committed Development Column from 17 Street Hotel Trips (Dec 7, 2012 Memo)

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Dade Boulevard and Michigan Avenue PM Peak Hour

Description	Michigan Avenue Southbound		Dade Boulevard Northeastbound			Dade Boulevard Southwestbound		
	Left	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (1/27/2012)	722	108		392			678	776
Season Adjustment Factor	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2015 Peak Season Traffic	766	115	0	416	0	0	720	823
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
1901 Trips	56	140					58	
17 Street Hotel Trips				1			2	
Sunset Palau								
1750 Alton				1			2	
Fresh Market + 1920 (*)								
Bank United, Sunset Harbour (**)				14			7	
2017 Background Traffic	838	257	0	440	0	0	803	840
1800 Alton				7			7	
2017 Total Traffic	838	257	0	447	0	0	810	840

* From Committed Development Column from Sunset Palau TIA

** From Committed Development Column from 17 Street Hotel Trips (Dec 7, 2012 Memo)

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Dade Boulevard and West Avenue PM Peak Hour

Description	West Avenue Southbound		Dade Boulevard Northeastbound			Dade Boulevard Southwestbound		
	Left	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (7/10/2012)	90	50	25	237			181	91
Season Adjustment Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2015 Peak Season Traffic	95	53	26	249	0	0	190	96
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
1901 Trips				58			56	
17 Street Hotel Trips				12				
Sunset Palau								
1750 Alton				5				
Fresh Market + 1920 (*)								
Bank United, Sunset Harbour (**)	7		21				14	
2017 Background Traffic	103	54	48	329	0	0	264	98
1800 Alton	33	14	13					29
2017 Total Traffic	136	68	61	329	0	0	264	127

* From Committed Development Column from Sunset Palau TIA

** From Committed Development Column from 17 Street Hotel Trips (Dec 7, 2012 Memo)

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

20th Street and West Avenue PM Peak Hour

Description	West Avenue Northbound		20th Street Eastbound			20th Street Westbound		
	Left	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (10/11/2011)	7	33		122	23	65	133	
Season Adjustment Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2015 Peak Season Traffic	7	34	0	127	24	68	138	0
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
1901 Trips				15			14	
17 Street Hotel Trips								
Sunset Palau		2		7			-1	
1750 Alton								
Fresh Market + 1920 (*)		21		58		30	69	
Bank United, Sunset Harbour (**)				45			52	
2017 Background Traffic	7	58	0	255	24	99	275	0
1800 Alton		27						
2017 Total Traffic	7	85	0	255	24	99	275	0

* From Committed Development Column from Sunset Palau TIA

** From Committed Development Column from 17 Street Hotel Trips (Dec 7, 2012 Memo)

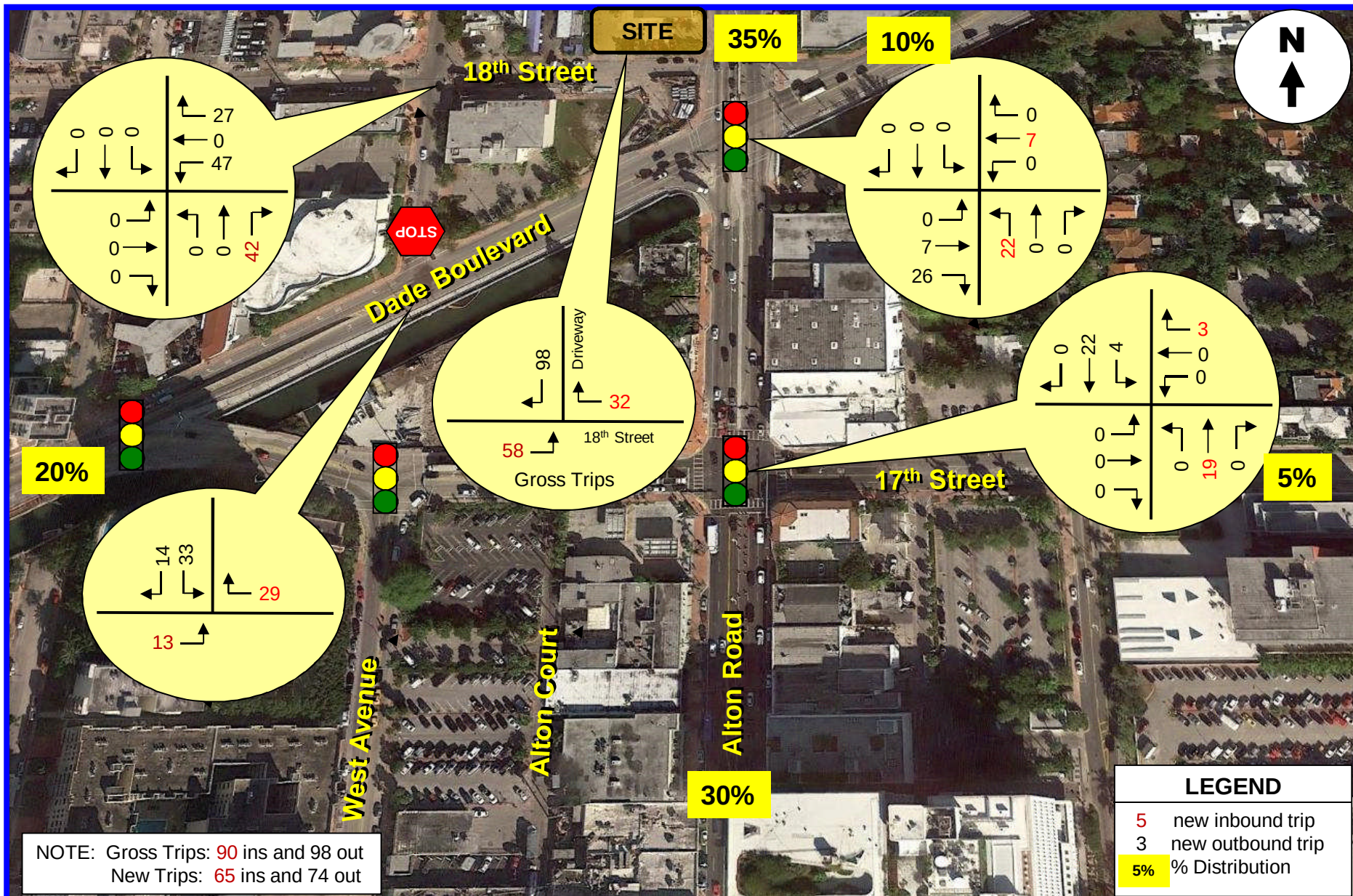
FUTURE TURNING MOVEMENT VOLUME ANALYSIS

20th Street and Sunset Drive PM Peak Hour

Description	Sunset Drive Northbound			Sunset Drive Southbound			20th Street Eastbound			20th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (10/11/2011)	0	1	2	19	32	24	32	92	56	16	176	70
Season Adjustment 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
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
2015 Peak Season Traffic	0	1	2	20	33	25	33	96	58	17	183	73
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
1901 Trips								15			14	
17 Street Hotel Trips												
Sunset Palau						6					6	
1750 Alton												
Fresh Market + 1920 (*)					2	7	10	66	9		91	
Bank United, Sunset Harbour (**)								45			52	
2017 Background Traffic	0	1	2	20	36	38	44	224	68	17	350	74
1800 Alton								27				
2017 Total Traffic	0	1	2	20	36	38	44	251	68	17	350	74

* From Committed Development Column from Sunset Palau TIA

** From Committed Development Column from 17 Street Hotel Trips (Dec 7, 2012 Memo)



APPENDIX F

Future Turning Movement Volumes

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Alton Road and 15 Street PM Peak Hour

Description	Alton Road Northbound			Alton Road Southbound			15 Street Eastbound			15 Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (3/4/2016)	80	987	107	132	866	42	51	62	77	192	112	91
Season Adjustment 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
2016 Peak Season Traffic	80	987	107	132	866	42	51	62	77	192	112	91
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Committed Developments												
1901 Trips		87			84							
17 Street Hotel Trips		10										
17 Street Hotel Valet Trips												
Sunset Palau		2										
1750 Alton		7										
Fresh Market +1920(*)		15										
Bank United, Sunset Harbour(**)					9							
1800 Alton		19			22							
Total Committed Developments		140			115							
2018 Background Traffic	82	1,147	109	135	998	43	52	63	79	196	114	93
1212 Lincoln Valet		25		4	23				4			
2018 Total Traffic	82	1,172	109	139	1,021	43	52	63	83	196	114	93

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Alton Road and 16th Street PM Peak Hour

Description	Alton Road Northbound			Alton Road Southbound			16th Street Eastbound			16th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (3/4/2016)	49	890	139	127	775	53	51	62	49	101	54	114
Season Adjustment 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
2016 Peak Season Traffic	49	890	139	127	775	53	51	62	49	101	54	114
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Committed Developments												
1901 Trips		87			84							
17 Street Hotel Trips		10										
17 Street Hotel Valet Trips												
Sunset Palau		2										
1750 Alton		7										
Fresh Market +1920(*)		15										
Bank United, Sunset Harbour(**)					9							
1800 Alton		19			22							
Total Committed Developments		140			115							
2018 Background Traffic	50	1,048	142	130	906	54	52	63	50	103	55	116
1212 Lincoln Valet	29			2	5	21	32	4	27		4	
						28						
2018 Total Traffic	79	1,048	142	132	911	103	84	67	77	103	59	116

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Alton Road and Lincoln Road PM Peak Hour

Description	Alton Road Northbound			Alton Road Southbound			Lincoln Road Eastbound			Lincoln Road Westbound		
	Left	Through	Right	U-turn	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (3/4/2016)	45	832	0	15	955	122	119	0	69			
Season Adjustment 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
2016 Peak Season Traffic	45	832	0	15	955	122	119	0	69	0	0	0
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Committed Developments												
1901 Trips		87			84							
17 Street Hotel Trips		10										
17 Street Hotel Valet Trips												
Sunset Palau		2										
1750 Alton		7										
Fresh Market +1920(*)		15										
Bank United, Sunset Harbour(**)					9							
1800 Alton		19			22							
Total Committed Developments		140			115							
2018 Background Traffic	46	989	0	15	1,089	124	121	0	70	0	0	0
1212 Lincoln Valet		32			21		14		28			
2018 Total Traffic	46	1,021	0	15	1,110	124	135	0	98	0	0	0

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Alton Road and 17 Street PM Peak Hour

Description	Alton Road Northbound			Alton Road Southbound			17 Street Eastbound			17 Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (3/4/2016)	103	743	232	203	894	173	178	174	78	222	233	184
Season Adjustment 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
2016 Peak Season Traffic	103	743	232	203	894	173	178	174	78	222	233	184
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Committed Developments												
1901 Trips		87			84							
17 Street Hotel Trips	6	10	4			23					4	
17 Street Hotel Valet Trips	33											
Sunset Palau		2										
1750 Alton	12	7	2								3	
Fresh Market +1920(*)		15										
Bank United, Sunset Harbour(**)					9							
1800 Alton		19		4	22							3
Total Committed Developments	51	140	6	4	115	23					7	3
2018 Background Traffic	156	898	243	211	1,027	199	182	177	80	226	245	191
1212 Lincoln Valet	14	29	3		21	7					3	
2018 Total Traffic	170	927	246	211	1,048	206	182	177	80	226	248	191

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Alton Court and 16th Street PM Peak Hour

Description	Alton Court Northbound			Alton Court Southbound			16th Street Eastbound			16th Street Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
Existing Traffic (3/4/2016)	2	10	16				3	131	0		128	12
Season Adjustment 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
2016 Peak Season Traffic	2	10	16	0	0	0	3	131	0	0	128	12
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Committed Developments												
Yardhouse Restaurant												
730-804 First Street												
49 Collins												
600 Alton												
850 Commerce												
42 Collins												
Milos												
1800 Alton												
Total Committed Developments												
2018 Background Traffic	2	10	16	0	0	0	3	134	0	0	131	12
1212 Lincoln								4			4	
Valet											28	
2018 Total Traffic	2	10	16	0	0	0	3	138	0	0	163	12

FUTURE TURNING MOVEMENT VOLUME ANALYSIS

Alton Court and Lincoln Road PM Peak Hour

Description	Alton Court Northbound			Alton Court Southbound			Lincoln Road Eastbound			Lincoln Road Westbound		
	Left	Through	Right	U-turn	Through	Right	Left	Through	Right	U-turn	Through	Right
Existing Traffic (3/4/2016)	14	11	28				5	176	0	18	138	20
Season Adjustment 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
2016 Peak Season Traffic	14	11	28	0	0	0	5	176	0	18	138	20
Annual Growth Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Committed Developments												
Yardhouse Restaurant												
730-804 First Street												
49 Collins												
600 Alton												
850 Commerce												
42 Collins												
Milos												
1800 Alton												
Total Committed Developments												
2018 Background Traffic	14	11	29	0	0	0	5	180	0	18	141	20
1212 Lincoln Valet								14 28				
2018 Total Traffic	14	11	29	0	0	0	5	222	0	18	141	20

APPENDIX G

Intersection Capacity Analyses

HCM 2010 Signalized Intersection Summary

101: Alton Road & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↵	↵		↵	↕		↵	↕	
Traffic Volume (veh/h)	51	62	77	192	112	91	80	987	107	132	866	42
Future Volume (veh/h)	51	62	77	192	112	91	80	987	107	132	866	42
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.91	1.00		0.91	1.00		0.92	1.00		0.93
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Adj Sat Flow, veh/h/ln	1710	1676	1710	1676	1676	1710	1676	1676	1710	1676	1676	1710
Adj Flow Rate, veh/h	54	65	81	202	118	96	84	1039	113	139	912	44
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	1	2	0
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
Cap, veh/h	99	107	116	290	240	195	287	1501	163	184	1610	78
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.58	0.58	0.58	0.77	0.77	0.77
Sat Flow, veh/h	177	298	324	1113	670	545	525	2607	283	437	2796	135
Grp Volume(v), veh/h	200	0	0	202	0	214	84	634	518	139	519	437
Grp Sat Flow(s),veh/h/ln	799	0	0	1113	0	1216	525	1593	1298	437	1593	1339
Q Serve(g_s), s	15.7	0.0	0.0	8.3	0.0	17.8	13.8	36.5	36.6	38.3	17.5	17.5
Cycle Q Clear(g_c), s	33.6	0.0	0.0	41.9	0.0	17.8	31.3	36.5	36.6	74.9	17.5	17.5
Prop In Lane	0.27		0.40	1.00		0.45	1.00		0.22	1.00		0.10
Lane Grp Cap(c), veh/h	321	0	0	290	0	435	287	917	747	184	917	771
V/C Ratio(X)	0.62	0.00	0.00	0.70	0.00	0.49	0.29	0.69	0.69	0.75	0.57	0.57
Avail Cap(c_a), veh/h	427	0	0	400	0	556	287	917	747	184	917	771
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92
Uniform Delay (d), s/veh	39.7	0.0	0.0	43.6	0.0	32.5	24.1	19.4	19.5	34.9	8.5	8.5
Incr Delay (d2), s/veh	1.5	0.0	0.0	2.4	0.0	0.6	2.6	4.3	5.2	22.8	2.3	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.0	0.0	7.2	0.0	6.1	2.2	17.1	14.2	6.1	8.0	6.8
LnGrp Delay(d),s/veh	41.2	0.0	0.0	46.0	0.0	33.2	26.7	23.7	24.7	57.6	10.8	11.3
LnGrp LOS	D			D		C	C	C	C	E	B	B
Approach Vol, veh/h		200			416			1236			1095	
Approach Delay, s/veh		41.2			39.4			24.3			16.9	
Approach LOS		D			D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		78.8		51.2		78.8		51.2				
Change Period (Y+Rc), s		4.0		* 4.6		4.0		* 4.6				
Max Green Setting (Gmax), s		62.0		* 59		62.0		* 59				
Max Q Clear Time (g_c+I1), s		38.6		35.6		76.9		43.9				
Green Ext Time (p_c), s		8.4		3.0		0.0		2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			24.9									
HCM 2010 LOS			C									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Existing 2016

HCM 2010 Signalized Intersection Summary

102: Alton Road & 16th Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Volume (veh/h)	51	62	49	101	54	114	49	890	139	127	775	53
Future Volume (veh/h)	51	62	49	101	54	114	49	890	139	127	775	53
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1676	1676	1710	1676	1676	1710
Adj Flow Rate, veh/h	54	66	52	107	57	121	52	947	148	135	824	56
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	114	125	88	140	72	128	329	1601	250	350	1753	119
Arrive On Green	0.30	0.30	0.29	0.30	0.30	0.29	1.00	1.00	1.00	0.64	0.64	0.64
Sat Flow, veh/h	258	417	293	340	240	428	565	2505	391	461	2742	186
Grp Volume(v), veh/h	172	0	0	285	0	0	52	602	493	135	479	401
Grp Sat Flow(s),veh/h/ln	968	0	0	1007	0	0	565	1593	1303	461	1593	1336
Q Serve(g_s), s	0.0	0.0	0.0	17.3	0.0	0.0	3.4	0.0	0.0	19.4	20.1	20.1
Cycle Q Clear(g_c), s	19.0	0.0	0.0	36.2	0.0	0.0	23.5	0.0	0.0	19.4	20.1	20.1
Prop In Lane	0.31		0.30	0.38		0.42	1.00		0.30	1.00		0.14
Lane Grp Cap(c), veh/h	326	0	0	339	0	0	329	1018	833	350	1018	854
V/C Ratio(X)	0.53	0.00	0.00	0.84	0.00	0.00	0.16	0.59	0.59	0.39	0.47	0.47
Avail Cap(c_a), veh/h	327	0	0	340	0	0	329	1018	833	350	1018	854
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.81	0.81	0.81	0.88	0.88	0.88
Uniform Delay (d), s/veh	38.1	0.0	0.0	45.2	0.0	0.0	2.9	0.0	0.0	12.0	12.1	12.1
Incr Delay (d2), s/veh	1.8	0.0	0.0	17.1	0.0	0.0	0.8	2.1	2.5	2.8	1.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	0.0	11.7	0.0	0.0	0.6	0.6	0.6	2.7	9.2	7.7
LnGrp Delay(d),s/veh	39.9	0.0	0.0	62.3	0.0	0.0	3.7	2.1	2.5	14.8	13.5	13.7
LnGrp LOS	D			E			A	A	A	B	B	B
Approach Vol, veh/h		172			285			1147			1015	
Approach Delay, s/veh		39.9			62.3			2.3			13.7	
Approach LOS		D			E			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		87.1		42.9		87.1		42.9				
Change Period (Y+Rc), s		* 4.2		* 4.6		* 4.2		* 4.6				
Max Green Setting (Gmax), s		* 83		* 38		* 83		* 38				
Max Q Clear Time (g_c+I1), s		25.5		21.0		22.1		38.2				
Green Ext Time (p_c), s		8.7		2.3		8.7		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			15.7									
HCM 2010 LOS			B									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Existing 2016

HCM Signalized Intersection Capacity Analysis

103: Alton Road & Lincoln Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	119	0	69	0	0	0	45	832	0	15	0	955
Future Volume (vph)	119	0	69	0	0	0	45	832	0	15	0	955
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8		4.8				4.8	4.8		4.0		4.8
Lane Util. Factor	1.00		1.00				1.00	0.95		1.00		0.95
Frpb, ped/bikes	1.00		0.99				1.00	1.00		1.00		0.97
Flpb, ped/bikes	1.00		1.00				0.96	1.00		1.00		1.00
Frt	1.00		0.85				1.00	1.00		1.00		0.98
Flt Protected	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (prot)	1593		1152				1523	3185		1433		3042
Flt Permitted	0.95		1.00				0.23	1.00		0.95		1.00
Satd. Flow (perm)	1593		1152				368	3185		1433		3042
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.94	0.94
Adj. Flow (vph)	127	0	73	0	0	0	48	885	0	16	0	1016
RTOR Reduction (vph)	0	0	59	0	0	0	0	0	0	0	0	4
Lane Group Flow (vph)	127	0	14	0	0	0	48	885	0	16	0	1142
Confl. Peds. (#/hr)	125						125	194		139		139
Confl. Bikes (#/hr)			1									
Parking (#/hr)			16				16			16	0	
Turn Type	Prot		Perm				Perm	NA		NA		NA
Protected Phases	8							2				6
Permitted Phases			8				2					
Actuated Green, G (s)	15.3		15.3				105.1	105.1		0.0		105.1
Effective Green, g (s)	15.3		15.3				105.1	105.1		0.0		105.1
Actuated g/C Ratio	0.12		0.12				0.81	0.81		0.00		0.81
Clearance Time (s)	4.8		4.8				4.8	4.8				4.8
Vehicle Extension (s)	2.5		2.5				1.0	1.0				1.0
Lane Grp Cap (vph)	187		135				297	2574		0		2459
v/s Ratio Prot	c0.08							0.28				c0.38
v/s Ratio Perm			0.01				0.13					
v/c Ratio	0.68		0.10				0.16	0.34		no cap		0.46
Uniform Delay, d1	55.0		51.2				2.7	3.3		Error		3.8
Progression Factor	1.01		1.02				0.91	0.75				2.52
Incremental Delay, d2	8.6		0.2				1.0	0.3		Error		0.4
Delay (s)	64.1		52.3				3.5	2.8		Error		10.0
Level of Service	E		D				A	A		F		B
Approach Delay (s)		59.8			0.0			2.8				Error
Approach LOS		E			A			A				F
Intersection Summary												
HCM 2000 Control Delay			Error				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			130.0				Sum of lost time (s)			9.6		
Intersection Capacity Utilization			56.9%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

Existing 2016

HCM Signalized Intersection Capacity Analysis

103: Alton Road & Lincoln Road

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	122
Future Volume (vph)	122
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	130
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	194
Confl. Bikes (#/hr)	
Parking (#/hr)	16
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis

104: Alton Road & 17 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	178	174	78	222	233	184	103	743	232	203	894	173
Future Volume (vph)	178	174	78	222	233	184	103	743	232	203	894	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		2.0		7.2	7.2	7.2	6.8	6.8		6.8	6.8	
Lane Util. Factor		1.00		0.95	0.95	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		0.97		1.00	1.00	1.00	1.00	0.94		1.00	0.97	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		0.96	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.96		1.00	0.98	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1560		1513	1586	1168	1593	4168		1535	3007	
Flt Permitted		0.98		0.95	1.00	1.00	0.17	1.00		0.23	1.00	
Satd. Flow (perm)		1560		1513	1586	1168	284	4168		374	3007	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	187	183	82	234	245	194	108	782	244	214	941	182
RTOR Reduction (vph)	0	6	0	0	0	145	0	43	0	0	12	0
Lane Group Flow (vph)	0	446	0	211	268	49	108	983	0	214	1111	0
Confl. Peds. (#/hr)	70		55	550		70	43		52	52		43
Confl. Bikes (#/hr)			4			10			13			16
Parking (#/hr)			16			16			16			16
Turn Type	Split	NA		Split	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	3	3		4	4	4		6			2	
Permitted Phases							6			2		
Actuated Green, G (s)		25.0		19.8	19.8	19.8	69.2	69.2		69.2	69.2	
Effective Green, g (s)		25.0		19.8	19.8	19.8	69.2	69.2		69.2	69.2	
Actuated g/C Ratio		0.19		0.15	0.15	0.15	0.53	0.53		0.53	0.53	
Clearance Time (s)		2.0		7.2	7.2	7.2	6.8	6.8		6.8	6.8	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		300		230	241	177	151	2218		199	1600	
v/s Ratio Prot		c0.29		0.14	c0.17	0.04		0.24			0.37	
v/s Ratio Perm							0.38			c0.57		
v/c Ratio		1.49		0.92	1.11	0.28	0.72	0.44		1.08	0.69	
Uniform Delay, d1		52.5		54.3	55.1	48.8	23.0	18.6		30.4	22.6	
Progression Factor		1.00		1.00	1.00	1.00	1.23	1.24		1.00	1.00	
Incremental Delay, d2		235.3		37.2	91.3	0.9	24.4	0.6		85.3	2.5	
Delay (s)		287.8		91.5	146.4	49.6	52.7	23.6		115.7	25.1	
Level of Service		F		F	F	D	D	C		F	C	
Approach Delay (s)		287.8			101.3			26.4			39.6	
Approach LOS		F			F			C			D	
Intersection Summary												
HCM 2000 Control Delay			78.2				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.16									
Actuated Cycle Length (s)			130.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			102.0%				ICU Level of Service			G		
Analysis Period (min)			15									
c Critical Lane Group												

Existing 2016

HCM 2010 TWSC
105: Alton Ct & 16th Street

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	3	131	0	0	128	12	2	10	16	0	0	0
Future Vol, veh/h	3	131	0	0	128	12	2	10	16	0	0	0
Conflicting Peds, #/hr	17	0	2	2	0	17	36	0	26	26	0	36
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	146	0	0	142	13	2	11	18	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	156	0	0	182	0	0	337	344	199			
Stage 1	-	-	-	-	-	-	188	188	-			
Stage 2	-	-	-	-	-	-	149	156	-			
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-			
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318			
Pot Cap-1 Maneuver	1424	-	-	1393	-	-	658	579	842			
Stage 1	-	-	-	-	-	-	844	745	-			
Stage 2	-	-	-	-	-	-	879	769	-			
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1404	-	-	1373	-	-	628	0	805			
Mov Cap-2 Maneuver	-	-	-	-	-	-	628	0	-			
Stage 1	-	-	-	-	-	-	817	0	-			
Stage 2	-	-	-	-	-	-	867	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.2			0			9.8					
HCM LOS							A					
Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	781	1404	-	-	1373	-	-					
HCM Lane V/C Ratio	0.04	0.002	-	-	-	-	-					
HCM Control Delay (s)	9.8	7.6	0	-	0	-	-					
HCM Lane LOS	A	A	A	-	A	-	-					
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-					

HCM 2010 TWSC
106: Alton Ct & Lincoln Road

Intersection

Int Delay, s/veh 2.5

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	176	0	18	0	414	60	14	11	28	0	0	0
Future Vol, veh/h	5	176	0	18	0	414	60	14	11	28	0	0	0
Conflicting Peds, #/hr	30	0	15	0	15	0	30	454	0	54	54	0	454
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	92	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	210	0	20	0	493	71	17	13	33	0	0	0

Major/Minor	Major1			Major2				Minor1		
Conflicting Flow All	564	0	0	243	664	0	0	1204	1278	713
Stage 1	-	-	-	-	-	-	-	675	675	-
Stage 2	-	-	-	-	-	-	-	529	603	-
Critical Hdwy	4.12	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1008	-	-	-	925	-	-	203	166	432
Stage 1	-	-	-	-	-	-	-	506	453	-
Stage 2	-	-	-	-	-	-	-	591	488	-
Platoon blocked, %		-	-			-	-			
Mov Cap-1 Maneuver	983	-	-	-	902	-	-	122	0	262
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	122	0	-
Stage 1	-	-	-	-	-	-	-	312	0	-
Stage 2	-	-	-	-	-	-	-	576	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2		33.1
HCM LOS			D

Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBU	WBL	WBT	WBR
Capacity (veh/h)	190	983	-	-	-	902	-	-
HCM Lane V/C Ratio	0.332	0.006	-	-	-	-	-	-
HCM Control Delay (s)	33.1	8.7	0	-	-	-	-	-
HCM Lane LOS	D	A	A	-	-	-	-	-
HCM 95th %tile Q(veh)	1.4	0	-	-	-	0	-	-

Existing 2016

HCM 2010 Signalized Intersection Summary

101: Alton Road & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↵	↵		↵	↕		↵	↕	
Traffic Volume (veh/h)	52	63	79	196	114	93	82	1147	109	135	998	43
Future Volume (veh/h)	52	63	79	196	114	93	82	1147	109	135	998	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.91	1.00		0.91	0.99		0.92	1.00		0.93
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Adj Sat Flow, veh/h/ln	1710	1676	1710	1676	1676	1710	1676	1676	1710	1676	1676	1710
Adj Flow Rate, veh/h	55	66	83	206	120	98	86	1207	115	142	1051	45
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	1	2	0
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
Cap, veh/h	100	108	119	293	244	199	315	1507	143	132	1602	69
Arrive On Green	0.36	0.36	0.36	0.36	0.36	0.36	0.57	0.57	0.57	1.00	1.00	1.00
Sat Flow, veh/h	178	297	325	1110	670	547	456	2647	251	372	2814	120
Grp Volume(v), veh/h	204	0	0	206	0	218	86	724	598	142	595	501
Grp Sat Flow(s),veh/h/ln	799	0	0	1110	0	1216	456	1593	1306	372	1593	1342
Q Serve(g_s), s	16.1	0.0	0.0	8.6	0.0	18.0	13.0	46.7	47.3	26.8	0.0	0.0
Cycle Q Clear(g_c), s	34.2	0.0	0.0	42.8	0.0	18.0	13.0	46.7	47.3	74.0	0.0	0.0
Prop In Lane	0.27		0.41	1.00		0.45	1.00		0.19	1.00		0.09
Lane Grp Cap(c), veh/h	327	0	0	293	0	444	315	907	743	132	907	764
V/C Ratio(X)	0.62	0.00	0.00	0.70	0.00	0.49	0.27	0.80	0.80	1.08	0.66	0.66
Avail Cap(c_a), veh/h	425	0	0	396	0	556	315	907	743	132	907	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.88	0.88	0.88
Uniform Delay (d), s/veh	39.3	0.0	0.0	43.3	0.0	32.0	14.9	22.1	22.2	29.2	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	2.8	0.0	0.6	2.1	7.3	9.0	94.7	3.2	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	0.0	7.4	0.0	6.1	1.8	22.4	18.8	8.2	0.8	0.8
LnGrp Delay(d),s/veh	40.8	0.0	0.0	46.1	0.0	32.6	17.0	29.4	31.3	123.9	3.2	3.8
LnGrp LOS	D			D		C	B	C	C	F	A	A
Approach Vol, veh/h	204				424		1408				1238	
Approach Delay, s/veh	40.8				39.1		29.4				17.3	
Approach LOS	D				D		C				B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	78.0		52.0		78.0		52.0					
Change Period (Y+Rc), s	4.0		* 4.6		4.0		* 4.6					
Max Green Setting (Gmax), s	62.0		* 59		62.0		* 59					
Max Q Clear Time (g_c+I1), s	49.3		36.2		76.0		44.8					
Green Ext Time (p_c), s	7.6		3.0		0.0		2.6					
Intersection Summary												
HCM 2010 Ctrl Delay			26.8									
HCM 2010 LOS			C									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

HCM 2010 Signalized Intersection Summary

102: Alton Road & 16th Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↵	↕		↵	↕	
Traffic Volume (veh/h)	52	63	50	103	55	116	50	1048	142	130	906	54
Future Volume (veh/h)	52	63	50	103	55	116	50	1048	142	130	906	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	0.99		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1676	1676	1710	1676	1676	1710
Adj Flow Rate, veh/h	55	67	53	110	59	123	53	1115	151	138	964	57
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	113	124	87	140	71	126	323	1634	221	306	1768	105
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	1.00	1.00	1.00	0.85	0.85	0.85
Sat Flow, veh/h	256	413	291	340	238	421	495	2559	346	392	2769	164
Grp Volume(v), veh/h	175	0	0	292	0	0	53	693	573	138	554	467
Grp Sat Flow(s),veh/h/ln	960	0	0	1000	0	0	495	1593	1311	392	1593	1341
Q Serve(g_s), s	0.0	0.0	0.0	18.3	0.0	0.0	2.6	0.0	0.0	13.0	12.7	12.7
Cycle Q Clear(g_c), s	19.4	0.0	0.0	37.7	0.0	0.0	15.3	0.0	0.0	13.0	12.7	12.7
Prop In Lane	0.31		0.30	0.38		0.42	1.00		0.26	1.00		0.12
Lane Grp Cap(c), veh/h	325	0	0	338	0	0	323	1017	837	306	1017	856
V/C Ratio(X)	0.54	0.00	0.00	0.86	0.00	0.00	0.16	0.68	0.68	0.45	0.55	0.55
Avail Cap(c_a), veh/h	325	0	0	338	0	0	323	1017	837	306	1017	856
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.73	0.73	0.73	0.84	0.84	0.84
Uniform Delay (d), s/veh	38.2	0.0	0.0	45.7	0.0	0.0	1.2	0.0	0.0	4.5	4.5	4.5
Incr Delay (d2), s/veh	2.0	0.0	0.0	20.3	0.0	0.0	0.8	2.7	3.3	4.0	1.8	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.0	0.0	12.3	0.0	0.0	0.4	0.8	0.8	1.7	5.8	4.9
LnGrp Delay(d),s/veh	40.2	0.0	0.0	66.0	0.0	0.0	2.0	2.7	3.3	8.5	6.3	6.6
LnGrp LOS	D			E			A	A	A	A	A	A
Approach Vol, veh/h		175			292			1319			1159	
Approach Delay, s/veh		40.2			66.0			2.9			6.7	
Approach LOS		D			E			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		87.0		43.0		87.0		43.0				
Change Period (Y+Rc), s		* 4.2		* 4.6		* 4.2		* 4.6				
Max Green Setting (Gmax), s		* 83		* 38		* 83		* 38				
Max Q Clear Time (g_c+I1), s		17.3		21.4		15.0		39.7				
Green Ext Time (p_c), s		11.7		2.4		11.7		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			12.9									
HCM 2010 LOS			B									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

HCM Signalized Intersection Capacity Analysis

103: Alton Road & Lincoln Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	121	0	70	0	0	0	46	989	0	15	0	1089
Future Volume (vph)	121	0	70	0	0	0	46	989	0	15	0	1089
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8		4.8				4.8	4.8		4.0		4.8
Lane Util. Factor	1.00		1.00				1.00	0.95		1.00		0.95
Frpb, ped/bikes	1.00		0.84				1.00	1.00		1.00		0.97
Flpb, ped/bikes	1.00		1.00				0.97	1.00		1.00		1.00
Frt	1.00		0.85				1.00	1.00		1.00		0.98
Flt Protected	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (prot)	1593		984				1539	3185		1593		3056
Flt Permitted	0.95		1.00				0.19	1.00		0.95		1.00
Satd. Flow (perm)	1593		984				313	3185		1593		3056
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.94	0.94
Adj. Flow (vph)	129	0	74	0	0	0	49	1052	0	16	0	1159
RTOR Reduction (vph)	0	0	43	0	0	0	0	0	0	0	0	4
Lane Group Flow (vph)	129	0	31	0	0	0	49	1052	0	16	0	1287
Confl. Peds. (#/hr)			125	125			194		139		139	
Confl. Bikes (#/hr)			1									
Parking (#/hr)			16			16			16			
Turn Type	Prot		Perm				Perm	NA		NA		NA
Protected Phases	8							2				6
Permitted Phases			8				2					
Actuated Green, G (s)	15.4		15.4				105.0	105.0		0.0		105.0
Effective Green, g (s)	15.4		15.4				105.0	105.0		0.0		105.0
Actuated g/C Ratio	0.12		0.12				0.81	0.81		0.00		0.81
Clearance Time (s)	4.8		4.8				4.8	4.8				4.8
Vehicle Extension (s)	2.5		2.5				1.0	1.0				1.0
Lane Grp Cap (vph)	188		116				252	2572		0		2468
v/s Ratio Prot	c0.08							0.33				c0.42
v/s Ratio Perm			0.03				0.16					
v/c Ratio	0.69		0.27				0.19	0.41		no cap		0.52
Uniform Delay, d1	55.0		52.2				2.9	3.6		Error		4.2
Progression Factor	1.02		1.04				1.34	1.30				2.54
Incremental Delay, d2	9.1		0.9				1.4	0.4		Error		0.5
Delay (s)	65.0		55.1				5.2	5.0		Error		11.0
Level of Service	E		E				A	A		F		B
Approach Delay (s)		61.4			0.0			5.1				Error
Approach LOS		E			A			A				F
Intersection Summary												
HCM 2000 Control Delay			Error				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			130.0				Sum of lost time (s)			9.6		
Intersection Capacity Utilization			73.9%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

103: Alton Road & Lincoln Road

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	124
Future Volume (vph)	124
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	132
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	194
Confl. Bikes (#/hr)	
Parking (#/hr)	16
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis

104: Alton Road & 17 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	177	80	226	245	191	156	898	243	211	1027	199
Future Volume (vph)	182	177	80	226	245	191	156	898	243	211	1027	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		7.2	7.2	7.2	6.8	6.8		6.8	6.8	
Lane Util. Factor	1.00	0.95		0.95	0.95	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes	1.00	0.94		1.00	1.00	1.00	1.00	0.97		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.99	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1593	2863		1513	1586	1168	1593	4298		1570	3007	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.12	1.00		0.18	1.00	
Satd. Flow (perm)	1593	2863		1513	1586	1168	204	4298		299	3007	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	192	186	84	238	258	201	164	945	256	222	1081	209
RTOR Reduction (vph)	0	42	0	0	0	111	0	37	0	0	12	0
Lane Group Flow (vph)	192	228	0	214	282	90	164	1164	0	222	1278	0
Confl. Peds. (#/hr)	55		70	55		70	43		52	52		43
Confl. Bikes (#/hr)			4			10			13			16
Parking (#/hr)			16			16			16			16
Turn Type	Split	NA		Split	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	3	3		4	4	4		6			2	
Permitted Phases							6			2		
Actuated Green, G (s)	20.3	20.3		24.5	24.5	24.5	69.2	69.2		69.2	69.2	
Effective Green, g (s)	20.3	20.3		24.5	24.5	24.5	69.2	69.2		69.2	69.2	
Actuated g/C Ratio	0.16	0.16		0.19	0.19	0.19	0.53	0.53		0.53	0.53	
Clearance Time (s)	2.0	2.0		7.2	7.2	7.2	6.8	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	248	447		285	298	220	108	2287		159	1600	
v/s Ratio Prot	c0.12	0.08		0.14	c0.18	0.08		0.27			0.42	
v/s Ratio Perm							c0.81			0.74		
v/c Ratio	0.77	0.51		0.75	0.95	0.41	1.52	0.51		1.40	0.80	
Uniform Delay, d1	52.6	50.3		49.9	52.1	46.4	30.4	19.5		30.4	24.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.24	1.35		1.00	1.00	
Incremental Delay, d2	14.0	0.9		10.6	37.6	1.2	273.2	0.8		211.9	4.3	
Delay (s)	66.6	51.2		60.5	89.7	47.6	311.0	27.2		242.3	29.0	
Level of Service	E	D		E	F	D	F	C		F	C	
Approach Delay (s)		57.6			68.6			61.3			60.3	
Approach LOS		E			E			E			E	
Intersection Summary												
HCM 2000 Control Delay			61.8				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.25									
Actuated Cycle Length (s)			130.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			96.9%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 TWSC
105: Alton Ct & 16th Street

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	3	134	0	0	131	12	2	10	16	0	0	0
Future Vol, veh/h	3	134	0	0	131	12	2	10	16	0	0	0
Conflicting Peds, #/hr	17	0	2	2	0	17	36	0	26	26	0	36
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	149	0	0	146	13	2	11	18	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	159	0	0	185	0	0	344	351	202			
Stage 1	-	-	-	-	-	-	192	192	-			
Stage 2	-	-	-	-	-	-	152	159	-			
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-			
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318			
Pot Cap-1 Maneuver	1420	-	-	1390	-	-	652	573	839			
Stage 1	-	-	-	-	-	-	841	742	-			
Stage 2	-	-	-	-	-	-	876	766	-			
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1400	-	-	1370	-	-	622	0	802			
Mov Cap-2 Maneuver	-	-	-	-	-	-	622	0	-			
Stage 1	-	-	-	-	-	-	814	0	-			
Stage 2	-	-	-	-	-	-	864	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.2			0			9.8					
HCM LOS							A					
Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	777	1400	-	-	1370	-	-					
HCM Lane V/C Ratio	0.04	0.002	-	-	-	-	-					
HCM Control Delay (s)	9.8	7.6	0	-	0	-	-					
HCM Lane LOS	A	A	A	-	A	-	-					
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-					

HCM 2010 TWSC
106: Alton Ct & Lincoln Road

Intersection

Int Delay, s/veh 3.5

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	180	0	18	0	141	20	14	11	29	0	0	0
Future Vol, veh/h	5	180	0	18	0	141	20	14	11	29	0	0	0
Conflicting Peds, #/hr	30	0	15	0	15	0	30	454	0	54	54	0	454
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	92	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	214	0	20	0	168	24	17	13	35	0	0	0

Major/Minor	Major1			Major2			Minor1			
Conflicting Flow All	192	0	0	249	668	0	0	860	911	718
Stage 1	-	-	-	-	-	-	-	680	680	-
Stage 2	-	-	-	-	-	-	-	180	231	-
Critical Hdwy	4.12	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1381	-	-	-	922	-	-	326	274	429
Stage 1	-	-	-	-	-	-	-	503	451	-
Stage 2	-	-	-	-	-	-	-	851	713	-
Platoon blocked, %		-	-			-	-			
Mov Cap-1 Maneuver	1346	-	-	-	899	-	-	197	0	260
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	197	0	-
Stage 1	-	-	-	-	-	-	-	311	0	-
Stage 2	-	-	-	-	-	-	-	830	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2		26
HCM LOS			D

Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBU	WBL	WBT	WBR
Capacity (veh/h)	235	1346	-	-	-	899	-	-
HCM Lane V/C Ratio	0.274	0.004	-	-	-	-	-	-
HCM Control Delay (s)	26	7.7	0	-	-	-	-	-
HCM Lane LOS	D	A	A	-	-	-	-	-
HCM 95th %tile Q(veh)	1.1	0	-	-	-	0	-	-

HCM 2010 Signalized Intersection Summary

101: Alton Road & 15 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	63	83	196	114	93	82	1172	109	139	1021	43
Future Volume (veh/h)	52	63	83	196	114	93	82	1172	109	139	1021	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.92	1.00		0.91	0.99		0.92	1.00		0.93
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Adj Sat Flow, veh/h/ln	1710	1676	1710	1676	1676	1710	1676	1676	1710	1676	1676	1710
Adj Flow Rate, veh/h	55	66	87	206	120	98	86	1234	115	146	1075	45
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	1	2	0
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
Cap, veh/h	100	108	124	293	246	201	308	1503	139	123	1596	67
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.57	0.57	0.57	1.00	1.00	1.00
Sat Flow, veh/h	176	294	337	1106	670	547	446	2654	246	363	2818	118
Grp Volume(v), veh/h	208	0	0	206	0	218	86	738	611	146	607	513
Grp Sat Flow(s),veh/h/ln	807	0	0	1106	0	1217	446	1593	1307	363	1593	1343
Q Serve(g_s), s	16.4	0.0	0.0	8.8	0.0	17.9	13.5	48.7	49.4	24.3	0.0	0.0
Cycle Q Clear(g_c), s	34.3	0.0	0.0	43.2	0.0	17.9	13.5	48.7	49.4	73.6	0.0	0.0
Prop In Lane	0.26		0.42	1.00		0.45	1.00		0.19	1.00		0.09
Lane Grp Cap(c), veh/h	331	0	0	293	0	447	308	902	740	123	902	761
V/C Ratio(X)	0.63	0.00	0.00	0.70	0.00	0.49	0.28	0.82	0.82	1.19	0.67	0.67
Avail Cap(c_a), veh/h	427	0	0	392	0	556	308	902	740	123	902	761
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.85	0.85	0.85
Uniform Delay (d), s/veh	39.0	0.0	0.0	43.3	0.0	31.7	15.1	22.8	22.9	30.1	0.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	2.9	0.0	0.6	2.2	8.2	10.1	133.0	3.4	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	0.0	0.0	7.4	0.0	6.1	1.8	23.4	19.7	8.9	0.9	0.9
LnGrp Delay(d),s/veh	40.5	0.0	0.0	46.1	0.0	32.3	17.4	31.0	33.1	163.1	3.4	4.0
LnGrp LOS	D			D		C	B	C	C	F	A	A
Approach Vol, veh/h	208				424				1435		1266	
Approach Delay, s/veh	40.5				39.0				31.0		22.1	
Approach LOS	D				D				C		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	77.6		52.4		77.6		52.4					
Change Period (Y+Rc), s	4.0		* 4.6		4.0		* 4.6					
Max Green Setting (Gmax), s	62.0		* 59		62.0		* 59					
Max Q Clear Time (g_c+I1), s	51.4		36.3		75.6		45.2					
Green Ext Time (p_c), s	6.9		3.0		0.0		2.6					
Intersection Summary												
HCM 2010 Ctrl Delay			29.2									
HCM 2010 LOS			C									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Future 2018

HCM 2010 Signalized Intersection Summary

102: Alton Road & 16th Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	84	67	77	103	59	116	79	1048	142	132	911	103
Future Volume (veh/h)	84	67	77	103	59	116	79	1048	142	132	911	103
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82	1.00	1.00	0.82
Adj Sat Flow, veh/h/ln	1710	1676	1710	1710	1676	1710	1676	1676	1710	1676	1676	1710
Adj Flow Rate, veh/h	89	71	82	110	63	123	84	1115	151	140	969	110
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	91	91	129	69	114	303	1634	221	306	1666	189
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	1.00	1.00	1.00	0.85	0.85	0.85
Sat Flow, veh/h	286	303	302	303	230	379	468	2559	346	392	2609	296
Grp Volume(v), veh/h	242	0	0	296	0	0	84	693	573	140	591	488
Grp Sat Flow(s),veh/h/ln	891	0	0	913	0	0	468	1593	1311	392	1593	1313
Q Serve(g_s), s	0.0	0.0	0.0	5.4	0.0	0.0	5.6	0.0	0.0	13.3	14.4	14.4
Cycle Q Clear(g_c), s	33.6	0.0	0.0	39.0	0.0	0.0	20.0	0.0	0.0	13.3	14.4	14.4
Prop In Lane	0.37		0.34	0.37		0.42	1.00		0.26	1.00		0.23
Lane Grp Cap(c), veh/h	305	0	0	312	0	0	303	1017	837	306	1017	838
V/C Ratio(X)	0.79	0.00	0.00	0.95	0.00	0.00	0.28	0.68	0.68	0.46	0.58	0.58
Avail Cap(c_a), veh/h	305	0	0	312	0	0	303	1017	837	306	1017	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.71	0.71	0.71	0.81	0.81	0.81
Uniform Delay (d), s/veh	43.0	0.0	0.0	47.0	0.0	0.0	1.7	0.0	0.0	4.6	4.6	4.6
Incr Delay (d2), s/veh	13.7	0.0	0.0	37.7	0.0	0.0	1.6	2.6	3.2	4.0	2.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	0.0	0.0	13.9	0.0	0.0	0.8	0.7	0.8	1.7	6.6	5.6
LnGrp Delay(d),s/veh	56.7	0.0	0.0	84.7	0.0	0.0	3.3	2.6	3.2	8.5	6.6	7.0
LnGrp LOS	E			F			A	A	A	A	A	A
Approach Vol, veh/h		242			296			1350			1219	
Approach Delay, s/veh		56.7			84.7			2.9			7.0	
Approach LOS		E			F			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		87.0		43.0		87.0		43.0				
Change Period (Y+Rc), s		* 4.2		* 4.6		* 4.2		* 4.6				
Max Green Setting (Gmax), s		* 83		* 38		* 83		* 38				
Max Q Clear Time (g_c+I1), s		22.0		35.6		16.4		41.0				
Green Ext Time (p_c), s		13.4		0.8		13.5		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			16.5									
HCM 2010 LOS			B									
Notes												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

Future 2018

HCM Signalized Intersection Capacity Analysis

103: Alton Road & Lincoln Road

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	135	0	98	0	0	0	46	1021	0	15	0	1110
Future Volume (vph)	135	0	98	0	0	0	46	1021	0	15	0	1110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.8		4.8				4.8	4.8		4.0		4.8
Lane Util. Factor	1.00		1.00				1.00	0.95		1.00		0.95
Frpb, ped/bikes	1.00		0.84				1.00	1.00		1.00		0.97
Flpb, ped/bikes	1.00		1.00				0.97	1.00		1.00		1.00
Frt	1.00		0.85				1.00	1.00		1.00		0.98
Flt Protected	0.95		1.00				0.95	1.00		0.95		1.00
Satd. Flow (prot)	1593		984				1542	3185		1593		3058
Flt Permitted	0.95		1.00				0.19	1.00		0.95		1.00
Satd. Flow (perm)	1593		984				302	3185		1593		3058
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.92	0.94	0.94
Adj. Flow (vph)	144	0	104	0	0	0	49	1086	0	16	0	1181
RTOR Reduction (vph)	0	0	41	0	0	0	0	0	0	0	0	4
Lane Group Flow (vph)	144	0	63	0	0	0	49	1086	0	16	0	1309
Confl. Peds. (#/hr)			125	125			194		139		139	
Confl. Bikes (#/hr)			1									
Parking (#/hr)			16			16			16			
Turn Type	Prot		Perm				Perm	NA		NA		NA
Protected Phases	8							2				6
Permitted Phases			8				2					
Actuated Green, G (s)	16.6		16.6				103.8	103.8		0.0		103.8
Effective Green, g (s)	16.6		16.6				103.8	103.8		0.0		103.8
Actuated g/C Ratio	0.13		0.13				0.80	0.80		0.00		0.80
Clearance Time (s)	4.8		4.8				4.8	4.8				4.8
Vehicle Extension (s)	2.5		2.5				1.0	1.0				1.0
Lane Grp Cap (vph)	203		125				241	2543		0		2441
v/s Ratio Prot	c0.09							0.34				c0.43
v/s Ratio Perm			0.06				0.16					
v/c Ratio	0.71		0.50				0.20	0.43		no cap		0.54
Uniform Delay, d1	54.4		52.9				3.2	4.0		Error		4.6
Progression Factor	1.01		1.02				1.24	1.22				2.42
Incremental Delay, d2	10.0		2.3				1.5	0.4		Error		0.5
Delay (s)	65.2		56.3				5.4	5.3		Error		11.7
Level of Service	E		E				A	A		F		B
Approach Delay (s)		61.5			0.0			5.3				Error
Approach LOS		E			A			A				F
Intersection Summary												
HCM 2000 Control Delay			Error				HCM 2000 Level of Service			F		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			130.0				Sum of lost time (s)			9.6		
Intersection Capacity Utilization			74.5%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Future 2018

HCM Signalized Intersection Capacity Analysis

103: Alton Road & Lincoln Road

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	124
Future Volume (vph)	124
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.94
Adj. Flow (vph)	132
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	194
Confl. Bikes (#/hr)	
Parking (#/hr)	16
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Signalized Intersection Capacity Analysis

104: Alton Road & 17 Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	177	80	226	248	191	170	927	246	211	1048	206
Future Volume (vph)	182	177	80	226	248	191	170	927	246	211	1048	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	2.0		7.2	7.2	7.2	6.8	6.8		6.8	6.8	
Lane Util. Factor	1.00	0.95		0.95	0.95	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes	1.00	0.94		1.00	1.00	1.00	1.00	0.97		1.00	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		0.99	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1593	2863		1513	1586	1168	1593	4302		1572	3004	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.11	1.00		0.17	1.00	
Satd. Flow (perm)	1593	2863		1513	1586	1168	190	4302		285	3004	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	192	186	84	238	261	201	179	976	259	222	1103	217
RTOR Reduction (vph)	0	42	0	0	0	108	0	37	0	0	13	0
Lane Group Flow (vph)	192	228	0	214	285	93	179	1198	0	222	1307	0
Confl. Peds. (#/hr)	55		70	70		55	43		52	52		43
Confl. Bikes (#/hr)			4			10			13			16
Parking (#/hr)			16			16			16			16
Turn Type	Split	NA		Split	NA	Prot	Perm	NA		Perm	NA	
Protected Phases	3	3		4	4	4		6			2	
Permitted Phases							6			2		
Actuated Green, G (s)	20.3	20.3		24.5	24.5	24.5	69.2	69.2		69.2	69.2	
Effective Green, g (s)	20.3	20.3		24.5	24.5	24.5	69.2	69.2		69.2	69.2	
Actuated g/C Ratio	0.16	0.16		0.19	0.19	0.19	0.53	0.53		0.53	0.53	
Clearance Time (s)	2.0	2.0		7.2	7.2	7.2	6.8	6.8		6.8	6.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	248	447		285	298	220	101	2289		151	1599	
v/s Ratio Prot	c0.12	0.08		0.14	c0.18	0.08		0.28			0.44	
v/s Ratio Perm							c0.94			0.78		
v/c Ratio	0.77	0.51		0.75	0.96	0.42	1.77	0.52		1.47	0.82	
Uniform Delay, d1	52.6	50.3		49.9	52.2	46.5	30.4	19.7		30.4	25.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.22	1.34		1.00	1.00	
Incremental Delay, d2	14.0	0.9		10.6	40.1	1.3	382.7	0.8		243.9	4.8	
Delay (s)	66.6	51.2		60.5	92.3	47.8	419.7	27.2		274.3	29.9	
Level of Service	E	D		E	F	D	F	C		F	C	
Approach Delay (s)		57.6			69.8			76.9			65.1	
Approach LOS		E			E			E			E	
Intersection Summary												
HCM 2000 Control Delay			69.1				HCM 2000 Level of Service			E		
HCM 2000 Volume to Capacity ratio			1.41									
Actuated Cycle Length (s)			130.0				Sum of lost time (s)			16.0		
Intersection Capacity Utilization			98.8%				ICU Level of Service			F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 TWSC
105: Alton Ct & 16th Street

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	3	138	0	0	163	12	2	10	16	0	0	0
Future Vol, veh/h	3	138	0	0	163	12	2	10	16	0	0	0
Conflicting Peds, #/hr	17	0	2	2	0	17	36	0	26	26	0	36
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	153	0	0	181	13	2	11	18	0	0	0
Major/Minor	Major1			Major2			Minor1					
Conflicting Flow All	194	0	0	189	0	0	384	390	206			
Stage 1	-	-	-	-	-	-	196	196	-			
Stage 2	-	-	-	-	-	-	188	194	-			
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22			
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-			
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-			
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318			
Pot Cap-1 Maneuver	1379	-	-	1385	-	-	619	545	835			
Stage 1	-	-	-	-	-	-	837	739	-			
Stage 2	-	-	-	-	-	-	844	740	-			
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1359	-	-	1365	-	-	591	0	798			
Mov Cap-2 Maneuver	-	-	-	-	-	-	591	0	-			
Stage 1	-	-	-	-	-	-	810	0	-			
Stage 2	-	-	-	-	-	-	832	0	-			
Approach	EB			WB			NB					
HCM Control Delay, s	0.2			0			9.9					
HCM LOS							A					
Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR					
Capacity (veh/h)	768	1359	-	-	1365	-	-					
HCM Lane V/C Ratio	0.041	0.002	-	-	-	-	-					
HCM Control Delay (s)	9.9	7.7	0	-	0	-	-					
HCM Lane LOS	A	A	A	-	A	-	-					
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-					

HCM 2010 TWSC
106: Alton Ct & Lincoln Road

Intersection

Int Delay, s/veh 3.4

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	5	222	0	18	0	141	20	14	11	29	0	0	0
Future Vol, veh/h	5	222	0	18	0	141	20	14	11	29	0	0	0
Conflicting Peds, #/hr	30	0	15	0	15	0	30	454	0	54	54	0	454
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	92	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	264	0	20	0	168	24	17	13	35	0	0	0

Major/Minor	Major1			Major2				Minor1		
Conflicting Flow All	192	0	0	299	718	0	0	910	961	768
Stage 1	-	-	-	-	-	-	-	730	730	-
Stage 2	-	-	-	-	-	-	-	180	231	-
Critical Hdwy	4.12	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1381	-	-	-	883	-	-	305	256	402
Stage 1	-	-	-	-	-	-	-	477	428	-
Stage 2	-	-	-	-	-	-	-	851	713	-
Platoon blocked, %		-	-			-	-			
Mov Cap-1 Maneuver	1346	-	-	-	861	-	-	184	0	244
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	184	0	-
Stage 1	-	-	-	-	-	-	-	295	0	-
Stage 2	-	-	-	-	-	-	-	830	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2		27.8
HCM LOS			D

Minor Lane/Major Mvm	NBLn1	EBL	EBT	EBR	WBU	WBL	WBT	WBR
Capacity (veh/h)	221	1346	-	-	-	861	-	-
HCM Lane V/C Ratio	0.291	0.004	-	-	-	-	-	-
HCM Control Delay (s)	27.8	7.7	0	-	-	-	-	-
HCM Lane LOS	D	A	A	-	-	-	-	-
HCM 95th %tile Q(veh)	1.2	0	-	-	-	0	-	-

HCM 2010 TWSC
2: 16th Street & Driveway

Intersection						
Int Delay, s/veh	3.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	8	146	109	132	132	36
Future Vol, veh/h	8	146	109	132	132	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	159	118	143	143	39
Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	262	0	-	0	366	190
Stage 1	-	-	-	-	190	-
Stage 2	-	-	-	-	176	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1302	-	-	-	634	852
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	855	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1302	-	-	-	629	852
Mov Cap-2 Maneuver	-	-	-	-	629	-
Stage 1	-	-	-	-	842	-
Stage 2	-	-	-	-	848	-
Approach	EB		WB		SB	
HCM Control Delay, s	0.4		0		12.4	
HCM LOS					B	
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1302	-	-	-	666	
HCM Lane V/C Ratio	0.007	-	-	-	0.274	
HCM Control Delay (s)	7.8	0	-	-	12.4	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	1.1	

Queues

101: Alton Road & 15 Street

	→	↘	←	↙	↑	↗	↓
Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	200	202	214	84	1152	139	956
v/c Ratio	0.61	0.93	0.50	0.30	0.55	0.63	0.46
Control Delay	40.5	90.3	34.6	15.5	14.2	36.1	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	40.5	90.3	34.6	15.5	14.2	36.1	16.2
Queue Length 50th (ft)	123	167	124	27	245	100	350
Queue Length 95th (ft)	176	237	173	81	417	m#176	365
Internal Link Dist (ft)	401		387		285		494
Turn Bay Length (ft)		115		100		115	
Base Capacity (vph)	541	376	704	281	2077	220	2100
Starvation Cap Reductn	0	0	0	0	0	0	590
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.54	0.30	0.30	0.55	0.63	0.63

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

102: Alton Road & 16th Street

	→	←	↖	↑	↘	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	172	285	52	1095	135	880
v/c Ratio	0.52	0.90	0.16	0.51	0.55	0.41
Control Delay	42.0	71.0	10.0	11.4	32.8	17.4
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	42.0	71.0	10.0	11.7	32.8	17.4
Queue Length 50th (ft)	110	208	18	261	93	303
Queue Length 95th (ft)	178	#339	m21	148	137	234
Internal Link Dist (ft)	182	359		494		579
Turn Bay Length (ft)			115		115	
Base Capacity (vph)	384	369	325	2134	245	2153
Starvation Cap Reductn	0	0	0	412	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.77	0.16	0.64	0.55	0.41

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

103: Alton Road & Lincoln Road

						
Lane Group	EBL	EBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	127	73	48	885	16	1146
v/c Ratio	0.68	0.38	0.16	0.34	0.04	0.47
Control Delay	72.3	18.8	4.4	3.0	6.4	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	1.0
Total Delay	72.3	18.8	4.4	3.0	6.4	12.2
Queue Length 50th (ft)	104	5	2	20	4	336
Queue Length 95th (ft)	166	49	m19	124	m7	m354
Internal Link Dist (ft)				579		516
Turn Bay Length (ft)			170		180	
Base Capacity (vph)	406	344	291	2575	388	2415
Starvation Cap Reductn	0	0	0	0	0	930
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.21	0.16	0.34	0.04	0.77
Intersection Summary						
m Volume for 95th percentile queue is metered by upstream signal.						

Queues

104: Alton Road & 17 Street

	→	↖	←	↗	↘	↑	↙	↓
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	452	211	268	194	108	1026	214	1123
v/c Ratio	1.48	0.92	1.11	0.60	0.72	0.45	1.08	0.70
Control Delay	268.1	95.7	141.2	18.7	57.0	21.5	118.4	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	268.1	95.7	141.2	18.7	57.0	21.5	118.4	24.9
Queue Length 50th (ft)	~521	186	~271	17	65	189	~201	350
Queue Length 95th (ft)	#734	#346	#457	99	#182	297	#364	432
Internal Link Dist (ft)	279		335			516		154
Turn Bay Length (ft)		215			130		300	
Base Capacity (vph)	306	230	241	322	151	2261	198	1613
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.48	0.92	1.11	0.60	0.72	0.45	1.08	0.70

Intersection Summary

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

Queues

101: Alton Road & 15 Street

	→	↙	←	↘	↑	↗	↓
Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	204	206	218	86	1322	142	1096
v/c Ratio	0.62	0.93	0.53	0.36	0.64	0.84	0.52
Control Delay	41.0	90.1	37.7	18.5	16.1	56.7	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	41.0	90.1	37.7	18.5	16.1	56.7	12.6
Queue Length 50th (ft)	126	170	136	29	310	43	250
Queue Length 95th (ft)	180	240	184	93	526	m#206	463
Internal Link Dist (ft)	401		387		285		494
Turn Bay Length (ft)		115		100		115	
Base Capacity (vph)	538	379	691	236	2077	170	2098
Starvation Cap Reductn	0	0	0	0	0	0	173
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.54	0.32	0.36	0.64	0.84	0.57

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

102: Alton Road & 16th Street

	→	←	↖	↑	↘	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	175	292	53	1266	138	1021
v/c Ratio	0.53	0.90	0.20	0.60	0.72	0.48
Control Delay	42.0	72.1	9.8	9.6	45.8	16.6
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.2
Total Delay	42.0	72.1	9.8	9.8	45.8	16.7
Queue Length 50th (ft)	112	213	12	173	58	162
Queue Length 95th (ft)	182	#353	m24	214	#217	303
Internal Link Dist (ft)	182	359		494		579
Turn Bay Length (ft)			115		115	
Base Capacity (vph)	381	368	268	2123	191	2142
Starvation Cap Reductn	0	0	0	144	0	325
Spillback Cap Reductn	0	0	0	0	0	41
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.79	0.20	0.64	0.72	0.56

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

103: Alton Road & Lincoln Road

						
Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Group Flow (vph)	129	74	49	1052	16	1291
v/c Ratio	0.69	0.47	0.19	0.41	no cap	0.52
Control Delay	73.3	31.7	6.7	5.6		12.2
Queue Delay	0.0	0.0	0.0	0.4		1.0
Total Delay	73.3	31.7	6.7	6.0	Error	13.1
Queue Length 50th (ft)	106	19	11	161	~28	407
Queue Length 95th (ft)	168	68	m21	231	m#35	m402
Internal Link Dist (ft)				579		516
Turn Bay Length (ft)			170		180	
Base Capacity (vph)	406	288	254	2571	1	2472
Starvation Cap Reductn	0	0	0	920	0	830
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.26	0.19	0.64	16.00	0.79

Intersection Summary

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

Queues

104: Alton Road & 17 Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	192	270	214	282	201	164	1201	222	1290
v/c Ratio	0.77	0.55	0.75	0.95	0.61	1.52	0.52	1.40	0.80
Control Delay	72.4	44.6	68.3	92.6	26.1	303.0	25.5	239.9	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.4	44.6	68.3	92.6	26.1	303.0	25.5	239.9	29.0
Queue Length 50th (ft)	156	90	182	250	47	~187	206	~249	442
Queue Length 95th (ft)	235	132	#353	#485	142	#343	332	#283	543
Internal Link Dist (ft)		279		335			516		154
Turn Bay Length (ft)			215			130		300	
Base Capacity (vph)	306	590	284	298	331	108	2325	159	1613
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.46	0.75	0.95	0.61	1.52	0.52	1.40	0.80

Intersection Summary

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

Queues

101: Alton Road & 15 Street

	→	↙	←	↘	↑	↗	↓
Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	208	206	218	86	1349	146	1120
v/c Ratio	0.62	0.93	0.51	0.38	0.65	0.92	0.54
Control Delay	40.0	90.2	37.5	19.8	16.9	73.2	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	40.0	90.2	37.5	19.8	16.9	73.2	13.2
Queue Length 50th (ft)	127	170	137	30	326	79	108
Queue Length 95th (ft)	181	241	184	97	552	m#216	508
Internal Link Dist (ft)	401		387		285		494
Turn Bay Length (ft)		115		100		115	
Base Capacity (vph)	542	372	696	225	2063	159	2083
Starvation Cap Reductn	0	0	0	0	0	0	159
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.55	0.31	0.38	0.65	0.92	0.58

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

102: Alton Road & 16th Street

	→	←	↖	↑	↘	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	242	296	84	1266	140	1079
v/c Ratio	0.76	0.92	0.35	0.60	0.75	0.51
Control Delay	55.8	74.5	12.5	10.1	49.0	18.0
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.2
Total Delay	55.8	74.5	12.5	10.2	49.0	18.1
Queue Length 50th (ft)	167	215	19	152	50	173
Queue Length 95th (ft)	269	#373	m40	228	#224	376
Internal Link Dist (ft)	62	359		494		579
Turn Bay Length (ft)			115		115	
Base Capacity (vph)	351	356	242	2095	186	2098
Starvation Cap Reductn	0	0	0	153	0	282
Spillback Cap Reductn	0	0	0	0	0	111
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.83	0.35	0.65	0.75	0.59

Intersection Summary

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues

103: Alton Road & Lincoln Road

						
Lane Group	EBL	EBR	NBL	NBT	SBU	SBT
Lane Group Flow (vph)	144	104	49	1086	16	1313
v/c Ratio	0.71	0.63	0.21	0.43	no cap	0.55
Control Delay	73.2	46.6	7.1	5.9		13.1
Queue Delay	0.0	0.0	0.0	0.4		0.9
Total Delay	73.2	46.6	7.1	6.3	Error	14.0
Queue Length 50th (ft)	118	45	10	185	~28	417
Queue Length 95th (ft)	183	107	m21	253	m#35	m394
Internal Link Dist (ft)				579		516
Turn Bay Length (ft)			170		180	
Base Capacity (vph)	406	286	238	2543	1	2403
Starvation Cap Reductn	0	0	0	847	0	734
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.36	0.21	0.64	16.00	0.79

Intersection Summary

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

Queues

104: Alton Road & 17 Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	192	270	214	285	201	179	1235	222	1320
v/c Ratio	0.77	0.55	0.75	0.96	0.61	1.77	0.53	1.47	0.82
Control Delay	72.4	44.6	68.3	94.7	27.2	409.1	25.6	271.1	30.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.4	44.6	68.3	94.7	27.2	409.1	25.6	271.1	30.0
Queue Length 50th (ft)	156	90	182	253	50	~220	239	~256	461
Queue Length 95th (ft)	235	132	#353	#492	#148	#378	317	#296	566
Internal Link Dist (ft)		279		335			516		154
Turn Bay Length (ft)			215			130		300	
Base Capacity (vph)	306	590	284	298	327	101	2328	151	1611
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.46	0.75	0.96	0.61	1.77	0.53	1.47	0.82

Intersection Summary

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

APPENDIX H

Valet Queuing Analysis

Service Rate Calculation

An average service rate was determined based on the service rate for standard parking spaces. The total service rate for standard parking spaces is the sum of the following times:

- Walking time: time for valet attendant to pick up vehicle within the garage at walking speed of 6 feet per second.
- Driving time: time to drive around on local roads at a speed of 25 miles per hour.

Valet Time (Standard Parking Spaces):

- Walking Time: $472 \text{ ft} * (1 \text{ sec}/6\text{ft}) * (1 \text{ min}/60\text{sec}) = 1.31 \text{ min}$
- Driving Time + Control Delay: $900 \text{ ft} * (1\text{mile}/5,280) * (1\text{hr}/20 \text{ miles}) * (60 \text{ min}/1\text{hr}) + 73.5 \text{ sec} * (1 \text{ min}/60 \text{ sec}) = 1.735 \text{ min}$
- Total Time: 3.045 min

Average Valet Time:

3.045 min, say 4 min

Queuing Analysis based on ITE Procedures

$$q = 28 \text{ veh/hr (demand rate)}^*$$

$$Q = 15 \text{ veh/hr (service rate)}$$

$$p = \frac{q}{NQ} = 0.6222 \text{ (N = 3 valet runners)}$$

$$Q_M = 0.6222$$

Using Acceptable Probability of 10% (90% Confidence Level)

$$M = \left(\frac{\ln(x > M) - \ln(Q_M)}{\ln(p)} \right) - 1$$

$$M = \left(\frac{\ln(0.10) - \ln(0.6222)}{\ln(0.6222)} \right) - 1$$

$$M = \left(\frac{-2.3026 - (-0.4744)}{-0.4744} \right) - 1$$

$$M = 3.85 - 1 = 2.85, \text{ say 3 vehicles}$$

* Assumed 20% of project trips will use valet parking

