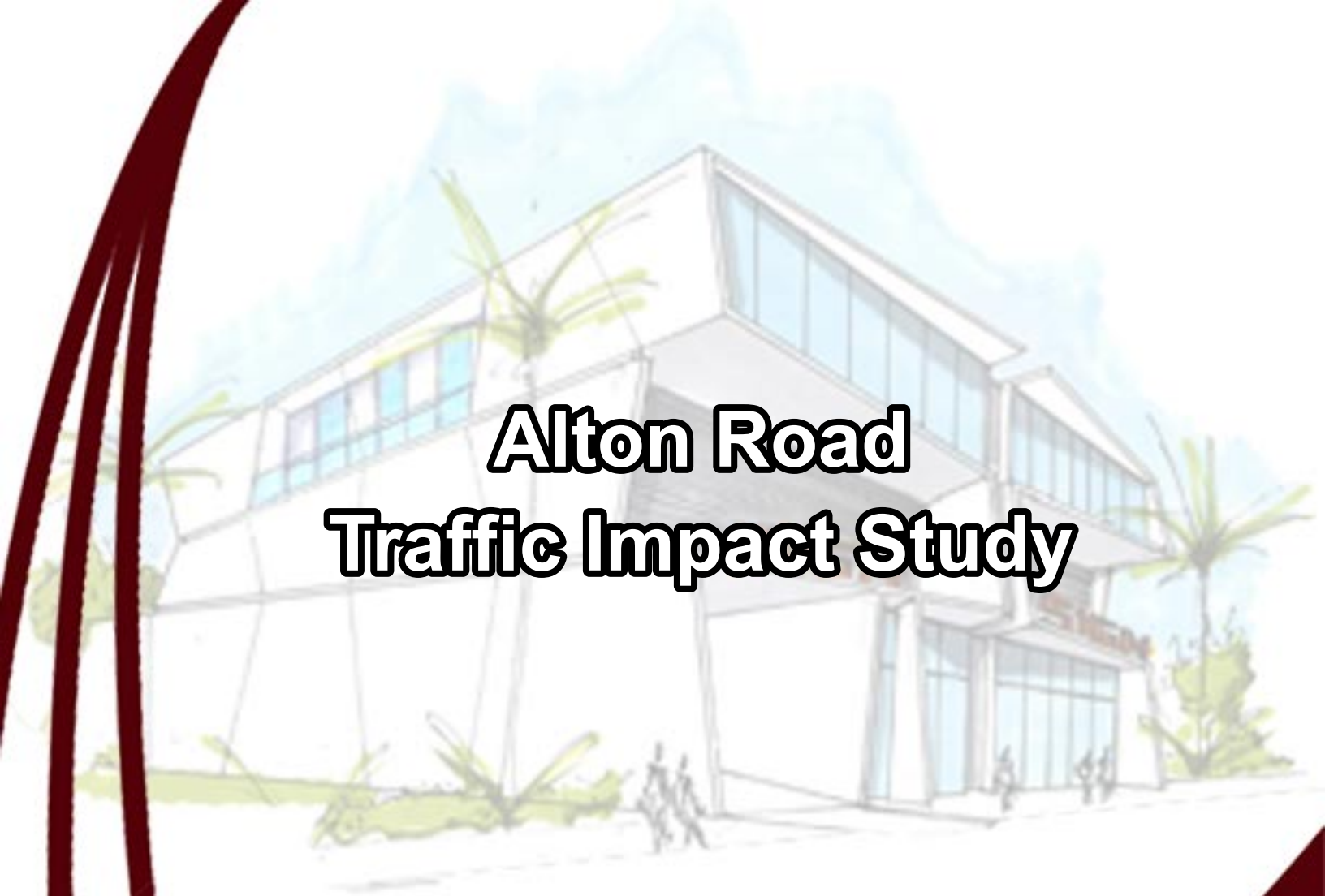

Alton Road
Traffic Impact Study

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DATE: July 21, 2016

FROM: Juan S. Calderon, P.E., PTOE, Project Manager

TO: ALTON SOBE LLC
960 NE 34th Street
Miami, FL, 33138

SUBJECT: Alton Road Traffic Impact Study

Engineer's Certification

I, Juan S. Calderon, certify that I currently hold an active Professional Engineer's License in the State of Florida and I am competent through education and experience to provide engineering services in the civil and traffic engineering disciplines contained in this report. I further certify that this report was prepared by me, or under my responsible charge, as required by Chapter 61G15-18.001 F.A.C. and that all statements, conclusions and recommendations made herein are true and correct to the best of my knowledge and ability.

Juan S. Calderon, P.E. PTOE

State of Florida Board of Professional Engineers,
Professional Engineer License No. 58569
State of Florida Board of Professional Engineers
Certificate of Authorization No.29379

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EXECUTIVE SUMMARY

Caltran Engineering Group, Inc. (CALTRAN) was retained by ALTON SOBE, LLC to assess the traffic impact with regards to the proposed site development of the five-story mixed use building located at 929 Alton Road, Miami Beach, FL 33139. The existing site primary land use is 1081 Vacant Land – Commercial: Vacant Land according to Miami Dade County Property Information. The development is to construct a mixed use building, including one story of retail floor, three stories of parking and one story of office floor.

6-hour Traffic Movement Counts (TMCs) was conducted on Wednesday, 22nd June 2016 at five desired intersections of the study, including three intersections at Alton Road with 8th Street, 9th Street and 10th Street, and also two intersections of Lenox Avenue with 9th Street and 10th Street during 2-hour periods for the AM, Mid-day and PM peak traffic based on the 24-hour demand.

Trip generation study was conducted using ITE trip generation recommendations. Land use codes of 710 (office) and 820 (retail) were used to estimate generated trips based on the areas provided in the site plan maps. Also since the building is a mixed use building, internal trip capture was considered. Finally 71 trips were predicted to be generated by the development in the AM peak and 187 trips were forecasted for PM peak.

Trip distribution and assignment were performed on the intersections of Alton Road with 10th Street, 9th Street, and 8th Street and also Lenox Avenue with 10th Street and 9th Street. The generated trip is distributed into the desired intersections based on the cardinal distribution from the Miami-Dade Long Range Transportation Plan Update, published by the MPO (TAZ 636). The distributed trips, were assigned to movements based on the existing TMCs.

Arterial analysis was performed consistent with 2010 HCM methodologies. Traffic network was evaluated based on proposed development under future conditions in order to identify areas of potential deficiencies. Three scenarios including existing condition, future no build condition and future build condition, were analyzed using Synchro software. The period of buildout is considered to be 1 year for this building, so future year represents 2017. According to analyses, all intersections are working under

LOS of C or better in both existing and future conditions. However some of queue lengths are greater than existing link lengths.

The parking study was conducted based on the 4th Edition ITE Parking Generation Manual and the Hialeah, FL Municipality code (MUNICODE). Both methods required less than 88 proposed parking spaces.

Also the driveway radii and width code was studies and recommendations are provided based on the FDOT standard. According to standard, driveway radius should be at least 25 feet and a minimum of 12 feet width for single lane is required for driveway width.

1. Study Area

The proposed development is located at 929 Alton Road, Miami Beach, FL 33139. The roadway impact boundaries for this site development are 10th Street to North, Lenox Avenue to the East, 9th Street to the South and Alton Road to the West. The study area is to include assessment of the intersections of Alton Road with 8th Street, with 9th Street and with 10th Street and also Lenox Avenue with 9th Street and with 10th Street. The existing site primary land use is 1081 Vacant Land – Commercial: Vacant Land according to Miami Dade County Property Information. Upon buildout, the proposed development will encompass a five story commercial building, 1st floor retail, 2nd to 4th floors are parking garages and 5th floor will be office space. The parking garage will be allocated to retail visitors during the day and to residents only during the night. In total, 88 parking spaces are provided in three floors. The retail space will be 11,500 square feet while the whole 1st floor space is 14,462 square feet, after adding service area, trash room, circulation and office lobby. The office space would have 11,120 square feet area. More details about the proposed building maps can be found in **Appendix A**. Inbound/outbound access to the proposed facility will be served along Alton Road located in the west side of the property. Site location is illustrated in **Figure 1**.

A traffic impact study was conducted in 2013 by Richard Garcia & Associates, Inc. (RGA, 2013). Number of trips generated by current study is around four times more than 2013 forecasted trips. However it should be noticed, the study considered this building as retail and residential, which is now office and retail.

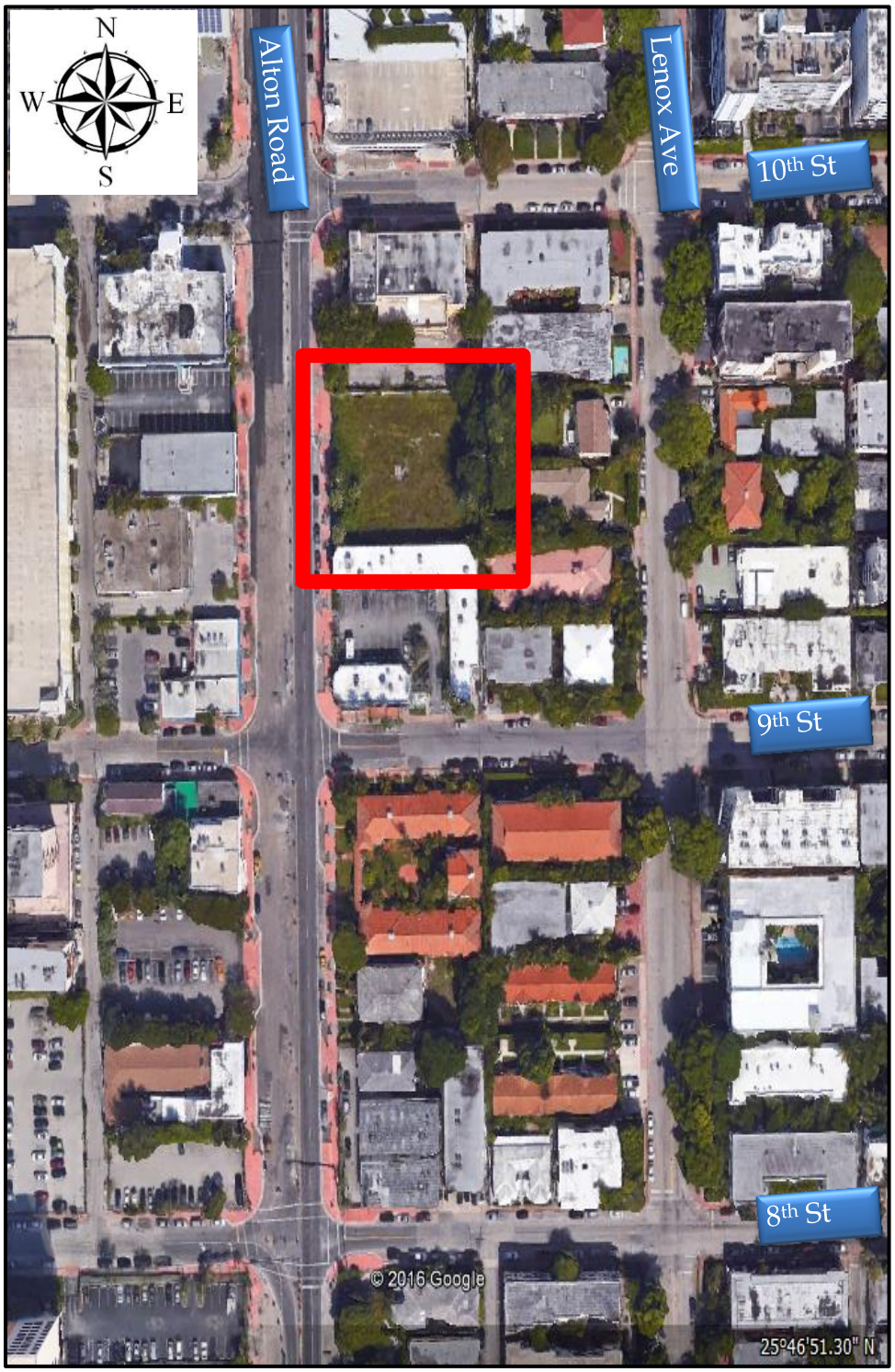


Figure 1 Site Location

2. Existing Conditions

A detailed field review was conducted along the project site to determine the existing intersection geometry, traffic control devices, signal phasing and other factors, which may affect intersection or roadway segment capacity. The following list shows all roadways within the assessed study area:

- Alton Road
- Lenox Avenue
- 10th Street
- 9th Street
- 8th Street

Alton Road is an currently is an south-north Urban Minor Arterial that runs along the west side of the proposed development under FDOT Section ID 87037000 with a 35 mph posted speed limit. The roadway typical section consists of four lanes of 46 feet of pavement width divided by an 18 feet paved median. Shoulders are located on both sides (8 feet paved) followed by curb and gutter.

There are two signalized intersections (Alton Road intersections with 10th Street and also with 8th Street), two two-way stop intersections (Alton Road with 9th Street and Lenox Avenue with 9th Street) and one all-way intersection (Lenox Avenue with 10th Street) around the proposed development, which will be studied.

2.1. Alton Road and 8th Street

The existing intersection is controlled by four mast arms with poles, two of which are situated at the southwest corner, one located at the northeast corner and one at southeast corner. Each mast arm holds two signal heads. The controller box for this intersection is located at the southwest corner. There is a pedestrian signal for all four crosswalks at each corner. The northbound approach includes one through lane, one right turn lane shared with through movement, and one left turn storage lane approximately 180 feet long. Southbound approach includes one through lane, one right turn lane shared with through movement, and one left turn storage lane approximately 160 feet long. The eastbound and westbound approaches contain one lane with all three movements of through, left and right shared. Based on the existing

signal timing, the total cycle length for both AM and PM peak periods (8:00 AM to 10:00 AM and 1:00 PM to 7:00 PM) is 150 seconds. There is no exclusive pedestrian phase allocated for this intersection.

2.2. Alton Road and 9th Street

The existing intersection is controlled by two stop signs in eastbound and westbound directions, while movement along northbound and southbound is free. The northbound approach includes one through lane, one right turn lane shared with through movement, and one left turn storage lane approximately 145 feet long. Southbound approach includes one through lane, one right turn lane shared with through movement, and one left turn storage lane approximately 210 feet long. The eastbound and westbound approaches contain one right turn only lane. An Island in the middle of intersection, prevents through movement along westbound and eastbound direction, and also provides left turn movement area for northbound and southbound movements.

2.3. Alton Road and 10th Street

The existing intersection is controlled by four mast arms with poles, one located at each corner. Each mast arm holds two signal heads. The controller box for this intersection is located at the southwest corner. There is a pedestrian signal for all four crosswalks at each corner. The northbound approach includes one through lane, one right turn lane shared with through movement, and one left turn storage lane approximately 160 feet long. Southbound approach includes one through lane, one right turn lane shared with through movement, and one left turn storage lane approximately 150 feet long. The eastbound and westbound approaches contain one lane with all three movements of through, left and right shared. Based on the existing signal timing, the total cycle length for both AM and PM peak periods (8:00 AM to 10:00 AM and 1:00 PM to 7:00 PM) is 150 seconds. There is no exclusive pedestrian phase allocated for this intersection.

2.4. Lenox Avenue and 9th Street

The existing intersection is controlled by two stop signs in eastbound and westbound directions, while movement along northbound and southbound is free. All four approaches include one lane with all three movements of through, left and right shared.

2.5. Lenox Avenue and 10th Street

The existing intersection is controlled by four stop signs in all four directions. All four approaches include one lane with all three movements of through, left and right shared.

3. Traffic Data Collection

Data collection includes 6-hour Turning Movement Counts (TMCs) conducted at five intersections of concern including three intersections at Alton Road with 8th Street, 9th Street and 10th Street, and also two intersections of Lenox Avenue with 9th Street and 10th Street during 2-hour periods for the AM, Mid-day and PM peak traffic based on the 24-hour demand on Wednesday, 22 June 2016. **Tables 1** shows the summary of collected data. The raw data can be seen in **Appendix B**. A seasonal factor of 1.05 was applied to the whole TMCs based on FTI 2014 recommended peak seasonal factor.

Table 1 Summary of TMCs

Direction / Period	Southbound				Northbound				Eastbound				Westbound			
	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike	Left	Thru	Right	Ped/Bike
Intersection: Alton Road and 8th Street																
AM	45	1239	13	13	69	1361	28	12	5	11	112	35	34	13	26	26
Mid-day	74	1098	11	22	86	1371	68	63	5	12	77	39	24	17	39	24
PM	55	1386	14	15	124	1374	94	30	8	20	82	34	42	29	47	19
Intersection: Alton Road and 9th Street																
AM	16	1132	26	15	49	1325	26	8	0	0	183	16	0	0	44	24
Mid-day	22	1039	31	25	41	1265	29	5	0	0	144	45	0	0	55	35
PM	27	1340	32	18	37	1306	49	8	0	0	140	51	0	0	74	30
Intersection: Alton Road and 10th Street																
AM	33	1114	56	36	77	1300	37	15	27	30	103	18	32	29	46	23
Mid-day	40	978	77	61	101	1231	46	28	43	46	103	31	37	43	49	27
PM	41	1251	71	114	108	1294	45	22	51	48	108	56	65	60	68	21
Intersection: Lenox Avenue and 9th Street																
AM	8	65	5	19	13	44	10	7	6	25	13	11	16	33	2	13
Mid-day	2	60	6	19	25	76	13	15	4	38	14	21	17	37	1	25
PM	5	74	10	23	21	101	13	18	7	50	16	25	14	51	8	29
Intersection: Alton Road and 8th Street																
AM	2	37	7	31	15	23	8	8	6	77	20	8	16	92	8	16
Mid-day	3	31	7	34	18	54	10	32	10	94	33	6	12	111	11	3
PM	6	36	11	66	26	81	21	14	20	82	27	21	23	171	19	1

4. Trip Generation

A trip generation analysis is performed using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition through the OTISS (Online Traffic Study Software) considering land use codes (LUC) of 820 (Retail) and 710 (Office – General Office Building). Trip generation for the proposed development will be based as per 1000 Square Feet Gross Floor Area of retail and the office. The trip rates for the study development are summarized below in **Table 2**. The OTISS reports can be seen in **Appendix C**.

Table 2 Estimated Trip Generation for Alton Building by OTISS

Land Use	Size (1000 square feet gross floor area)	Weekday, Peak Hour of Adjacent Street Traffic, One Hour between 7 and 9 AM			Weekday, Peak Hour of Adjacent Street Traffic, One Hour between 4 and 6 PM		
		Entry	Exit	Total	Entry	Exit	Total
820 - Retail	11.5	26	16	42	68	73	141
710 – General Office Building	11.12	29	4	33	15	76	91
Total Trips		55	20	75	83	149	232

Notes: Average methodology and best fit (LIN) is recommended by OTISS for variety store land use and general office building, respectively.

The preliminarily trip generation study, assuming above mentioned land uses, 11,500 Square Feet for the retail store 11,120 Square Feet for the office area, is showing 75 trips are totally generated in AM peak period and 232 trips can be generated in PM peak period. These trips are more than four times of the trips predicted in previous report (RGA, 2013). However it should be considered that the building land use is now office and retail, while it was retail and residential building before. Since the only driveway of this building is located in Alton Road, the trips should be assigned to this road and based on the directional trip distribution, to each intersection. The internal trip capture will be considered due to the fact that the development is a mixed land use building.

Internal trip capture refers to how the number trips to and from a development are reduced by the proximity of complementary land uses within the development (e.g., residential to retail) (Lin, et al., 2014). The trip generations reported by ITE tend to overestimate the real trip generation behavior for mixed land use developments. To consider the internal trip capture, the ITE handbook proposed method is used in this

report. The details on calculation can be found in **Appendix D**. The spreadsheet provided by ITE website is used for estimating internal trip capture procedure (ITE, 2009). As an assumption, the vehicle occupancy rate is assumed to be 1.08, based on average state occupancy rates table (USF, 2016). **Table 3** summarized the final trip generation after reducing internal trips.

Table 3 Estimated Trip Generation after Capturing Internal Trips for Alton Building

Land Use	Size (1000 square feet gross floor area)	Weekday, Peak Hour of Adjacent Street Traffic, One Hour between 7 and 9 AM			Weekday, Peak Hour of Adjacent Street Traffic, One Hour between 4 and 6 PM		
		Entry	Exit	Total	Entry	Exit	Total
Total Trips		53	18	71	60	127	187

Notes: Details on Estimation of Trips in **Appendix D**.

5. Trip Distribution and Assignment

Trip distribution is a function of the origin and destination of the site users and the available roadway system. For this project, trip distribution will be performed on the intersections of Alton Road with 10th Street, 9th Street, and 8th Street and also Lenox Avenue with 10th Street and 9th Street. Trip distribution will be based on the collected TMC counts from each respective intersection within the study limits. In addition to the existing counts, the trip distribution will take into consideration the cardinal distribution from the Miami-Dade Long Range Transportation Plan Update, published by the MPO. The development of 929 Alton Road building is located in TAZ 636. The Miami-Dade 2040 directional distribution for this TAZ is shown in **Figure 2**. Based on this figure, trip distribution showed in **Table 4** can be used for the intersection.

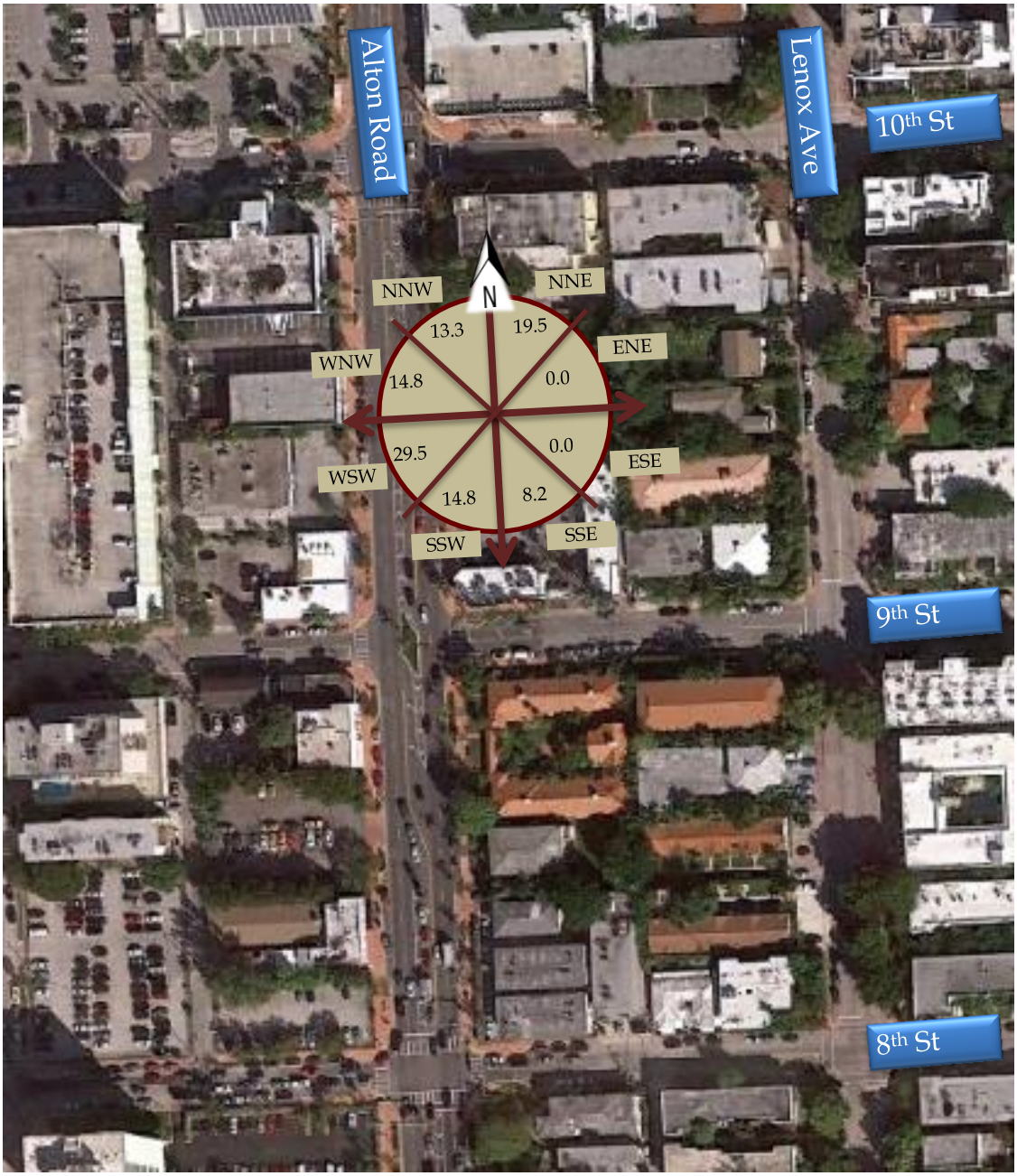


Figure 2 Cardinal Distribution for Alton Building

Table 4 Trip Assignment to Intersection

Intersection	Percent of Trips	AM Trips		PM Trips	
		Enter	Exit	Enter	Exit
Alton Road and 8th St	29.5+14.8=44.3	53×0.443=23	18×0.443=8	60×0.443=27	127×0.443=56
Alton Road and 9th St	29.5+14.8=44.3	53×0.443=23	18×0.443=8	60×0.443=27	127×0.443=56
Alton Road and 10th St	13.3+14.8=28.1	53×0.281=15	18×0.281=5	60×0.281=17	127×0.281=36
Lenox Avenue and 9th St	8.2	53×0.082=4	18×0.082=1	60×0.082=5	127×0.082=10
Lenox Avenue and 10th St	19.5	53×0.195=10	18×0.195=4	60×0.195=12	127×0.195=25

Entry trips (**Table 5** and **Table 7**) are assigned to NBT, WBR and EBL movements for intersections of Alton Road with 8th Street and Alton Road with 9th Street. These trips are assigned to SBT, WBL and EBR movements for Alton Road with 10th Street intersection. For two intersections at Lenox Avenue, the trips are assigned to SBR, NBL and WBT movements.

For exit trips (**Table 6** and **Table 8**) all SB movements are assigned for two intersections of Alton Road with 8th Street and Alton Road with 9th Street. For the intersection of Alton Road with 10th Street, exit trips are assigned to all NB movements, and for two intersections at Lenox Avenue, all trips are assigned to EB movements.

Trip assignment to each intersection is performed based on the ratio of existing movements. The details of assignment can be seen in **Tables 5 to 8**. As an example, the assignment for AM peak to the NBT movement of Alton Road and 8th Street is explained:

- Total number of trips to be distributed = 23
- Existing NBT trips = 1429
- All trips toward the development (NBT, WBR, EBL) = 1429+27+5=1461
- Movement ratio = 1429 / 1461 = 0.98
- Assigned trips = 0.98×23=22.54~23

Table 5 Trip Assignment for AM Peak, Entry Trips

Intersection		Involving Approached			
Alton Road and 8th St		NBT	WBR	EBL	Total
Distributed trips= 23	TMC	1429	27	5	1461
	TMC / Total	0.98	0.02	0.00	
	Assigned Trips	23	0	0	
Intersection		Involving Approached			
Alton Road and 9th St		NBT	WBR	EBL	Total
Distributed trips = 23	TMC	1391	46	0	1437
	TMC / Total	0.97	0.03	0.00	
	Assigned Trips	22	1	0	
Intersection		Involving Approached			
Alton Road and 10th St		SBT	WBL	EBR	Total
Distributed trips= 15	TMC	1170	34	108	1312
	TMC / Total	0.89	0.03	0.08	
	Assigned Trips	13	0	1	
Intersection		Involving Approached			
Lenox Avenue and 9th St		SBR	NBL	WBT	Total
Distributed trips = 4	TMC	5	14	35	54
	TMC / Total	0.09	0.26	0.65	
	Assigned Trips	0	1	3	
Intersection		Involving Approached			
Lenox Avenue and 10th St		SBR	NBL	WBT	Total
Distributed trips = 10	TMC	7	16	97	120
	TMC / Total	0.06	0.13	0.81	
	Assigned Trips	1	1	8	

Table 6 Trip Assignment for AM Peak, Exit Trips

Intersection		Involving Approached			
Alton Road and 8th St		SBL	SBT	SBR	Total
Distributed trips = 8	TMC	47	1301	14	1362
	TMC / Total	0.03	0.96	0.01	
	Assigned Trips	0	8	0	
Intersection		Involving Approached			
Alton Road and 9th St		SBL	SBT	SBR	Total
Distributed trips = 8	TMC	17	1189	27	1233
	TMC / Total	0.01	0.96	0.02	
	Assigned Trips	0	8	0	
Intersection		Involving Approached			
Alton Road and 10th St		NBL	NBT	NBR	Total
Distributed trips = 5	TMC	81	1365	39	1485
	TMC / Total	0.05	0.92	0.03	
	Assigned Trips	0	5	0	
Intersection		Involving Approached			
Lenox Avenue and 9th St		EBL	EBT	EBR	Total
Distributed trips = 1	TMC	6	26	14	46
	TMC / Total	0.13	0.57	0.30	
	Assigned Trips	0	1	0	
Intersection		Involving Approached			
Lenox Avenue and 10th St		EBL	EBT	EBR	Total
Distributed trips = 4	TMC	6	81	21	108
	TMC / Total	0.06	0.75	0.19	
	Assigned Trips	0	3	1	

Table 7 Trip Assignment for PM Peak, Entry Trips

Intersection		Involving Approached			
Alton Road and 8th St		NBT	WBR	EBL	Total
Distributed trips = 27	TMC	1443	49	8	1500
	TMC / Total	0.96	0.03	0.01	
	Assigned Trips	26	1	0	
Intersection		Involving Approached			
Alton Road and 9th St		NBT	WBR	EBL	Total
Distributed trips = 27	TMC	1371	78	0	1449
	TMC / Total	0.95	0.05	0.00	
	Assigned Trips	26	1	0	
Intersection		Involving Approached			
Alton Road and 10th St		SBT	WBL	EBR	Total
Distributed trips = 17	TMC	1314	68	113	1495
	TMC / Total	0.88	0.05	0.08	
	Assigned Trips	15	1	1	
Intersection		Involving Approached			
Lenox Avenue and 9th St		SBR	NBL	WBT	Total
Distributed trips = 5	TMC	11	22	55	88
	TMC / Total	0.13	0.25	0.63	
	Assigned Trips	1	1	3	
Intersection		Involving Approached			
Lenox Avenue and 10th St		SBR	NBL	WBT	Total
Distributed trips = 12	TMC	12	27	180	219
	TMC / Total	0.05	0.12	0.82	
	Assigned Trips	1	1	10	

Table 8 Trip Assignment for PM Peak, Exit Trips

Intersection		Involving Approached			
Alton Road and 8th St		SBL	SBT	SBR	Total
Distributed trips = 56	TMC	58	1455	15	1528
	TMC / Total	0.04	0.95	0.01	
	Assigned Trips	2	53	1	
Intersection		Involving Approached			
Alton Road and 9th St		SBL	SBT	SBR	Total
Distributed trips = 56	TMC	28	1407	34	1469
	TMC / Total	0.02	0.96	0.02	
	Assigned Trips	1	54	1	
Intersection		Involving Approached			
Alton Road and 10th St		NBL	NBT	NBR	Total
Distributed trips = 36	TMC	113	1359	47	1519
	TMC / Total	0.07	0.89	0.03	
	Assigned Trips	3	32	1	
Intersection		Involving Approached			
Lenox Avenue and 9th St		EBL	EBT	EBR	Total
Distributed trips = 10	TMC	7	53	17	77
	TMC / Total	0.09	0.69	0.22	
	Assigned Trips	1	7	2	
Intersection		Involving Approached			
Lenox Avenue and 10th St		EBL	EBT	EBR	Total
Distributed trips = 25	TMC	21	86	28	135
	TMC / Total	0.16	0.64	0.21	
	Assigned Trips	4	16	5	

6. Growth Analysis

Future traffic forecasts are developed for the years following expected buildout conditions for the mixed use building development. Historical traffic trends within the area are assessed as per due process to assist in forecasting future rates.

Within the project vicinity, the Alton Road is considered as the main arterial. As per the South Florida Regional Traffic Analysis Model (FSUTMS), the highest variation in traffic will be determined and provided within the impact study. According to SERPM 7.0 model, 17,804 vehicles were assigned to Alton Road in 2010 model which will increase to 18,860 in 2040, showing 0.19% annual growth rate. The Florida Traffic Information package includes a count station at Alton Road, north of 17th Street which is the closest station to the building area. The growth analysis of historic available data shows the compounded growth rate from 2014 to design year of 2017 is 0.24%, which is slightly greater than SERPM growth rate. The data and calculation can be seen in **Appendix E**. To remain in conservative side, the annual growth rate of 0.24% will be applied on TMCs collected at 2016.

7. Level of Service Analysis

The existing and proposed conditions are to be analyzed for all of the roadways encompassed within the defined study area. For this analysis, three different scenarios are to be expected as shown:

Scenario 1- LOS analysis of the Existing Conditions pertaining to Alton Road, Lenox Avenue, 9th Street and 10th Street. Existing conditions will be based on the TMC counts.

Scenario 2- LOS evaluation after a growth rate is applied to the intersections of Alton Road with 10th Street and 9th Street, and also Lenox Avenue with 10th Street and 9th Street. As discussed in previous section, 0.24% growth rate will be applied on the TMCs to predicted future TMCs.

Scenario 3- LOS analysis of the Future Conditions based on trips generated by the proposed commercial building development as per buildout conditions. Trip distribution information collected on the intersections of Alton Road with 10th Street,

with 9th Street and with 8th Street, and also Lenox Avenue with 10th Street and 9th Street will be used in this portion of the analysis. For this scenario, the assigned trips estimated in trip assignment sections will be added to future trips to obtain future build condition TMCs.

This traffic analysis utilizes Synchro, which applies methodologies outlined in the Highway Capacity Manual, 2010 Edition. LOS Analysis for signalized/unsignalized intersections are based on the amount of control delay which is a measurement in seconds per vehicle that act as an indicator of lost time, fuel consumption, frustration and driver's discomfort at the signalized intersections. The level of services for signalized intersections is a scale from "A" to "F" in accordance with control delay thresholds that range from less than 10 seconds to greater than 80 seconds of delay per vehicle.

Signal Time of Day (TODs) and Signal Operation Plans (SOPs) were requested from Miami-Dade County and are listed in **Appendix F**.

The existing condition LOS and delay (veh/s) summary can be seen in **Table 9** and **Table 10** for AM and PM peak hour and the queue reports from SimTraffic can also be found in **Table 11** and **Table 12** for AM and PM peak hour of this scenario, respectively. Two signalized intersections are working under LOS C and all unsignalized intersections are performing under LOS A. **Appendix G** shows the detail Synchro report for all scenarios.

Table 9 Existing Condition LOS and Delay Summary (AM)

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	59.9	56.3	15.1	21.2	21.1	16.8	18.7	18.6
Movement LOS	E	E	B	C	C	B	B	B
Intersection LOS (delay)	C (22.4)							
Alton Road and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	L			L		
Delay (veh/s)	26.6	18.8	12.9			15		
Movement LOS	D	C	B			C		
Intersection LOS (delay)	A (2.3)							
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	56.0	52.3	17.1	15.1	15.0	14.0	23.7	23.7
Movement LOS	E	D	B	B	B	B	C	C
Intersection LOS (delay)	C (22.2)							
Lenox Avenue and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	10.6	11.2	7.4			7.5		
Movement LOS	B	B	A			A		
Intersection LOS (delay)	A (5.0)							
Lenox Avenue and 10th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	8.0	8.2	8.1			7.9		
Movement LOS	A	A	A			A		
Intersection LOS (delay)	A (8.1)							

Table 10 Existing Condition LOS and Delay Summary (PM)

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	59.9	56.8	22.2	20.8	21.0	17.6	19.4	19.3
Movement LOS	E	E	C	C	C	B	B	B
Intersection LOS (delay)	C (22.7)							
Alton Road and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	L			L		
Delay (veh/s)	26.3	21.7	14.2			15.1		
Movement LOS	D	C	B			C		
Intersection LOS (delay)	A (2.1)							
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	62.7	65.4	21.3	17.3	17.2	14.0	28.7	28.8
Movement LOS	E	E	C	B	B	B	C	C
Intersection LOS (delay)	C (27.9)							
Lenox Avenue and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	11.7	12.1	7.6			7.6		
Movement LOS	B	B	A			A		
Intersection LOS (delay)	A (5.2)							
Lenox Avenue and 10th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	9.1	10.3	9.7			8.7		
Movement LOS	A	B	A			A		
Intersection LOS (delay)	A (9.7)							

Table 11 Existing Condition AM SimTraffic Queue Report

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	184	106	102	501	475	72	315	318
Link distance (feet)	365	409	180	416	416	160	334	334
Compliance	✓	✓	✓	×	×	✓	✓	✓
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	130	132	86	453	443	39	443	423
Link distance (feet)	384	338	160	400	400	150	431	431
Compliance	✓	✓	✓	×	×	✓	×	✓

Table 12 Existing Condition PM SimTraffic Queue Report

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	163	205	222	464	470	165	324	327
Link distance (feet)	365	409	180	416	416	160	334	334
Compliance	✓	✓	×	×	×	×	✓	✓
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	301	219	137	438	421	36	490	457
Link distance (feet)	384	338	160	400	400	150	431	431
Compliance	✓	✓	✓	×	×	✓	×	×

After applying the growth rate of 0.24% on TMCs, the no build future condition analysis is performed. **Table 13** and **Table 14** shows the summary of LOS and delay report for AM and PM peak, and SimTraffic queues can be seen in **Table 15** and **Table 16** for AM and PM peak of this scenario respectively. As expected, since the growth rate is very low, LOSs are the same for future no build condition and existing condition. However a couple of movements are showing queue lengths more than the link lengths.

Table 13 Future Condition No Build LOS and Delay Summary (AM)

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	59.9	56.3	15.2	21.2	21.2	16.9	18.8	18.7
Movement LOS	E	E	B	C	C	B	B	B
Intersection LOS (delay)	C (22.5)							
Alton Road and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	L			L		
Delay (veh/s)	26.9	18.9	13.0			15.0		
Movement LOS	D	C	B			C		
Intersection LOS (delay)	A (2.4)							
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	56.0	52.3	17.2	15.1	15.0	14.1	23.8	23.7
Movement LOS	E	D	B	B	B	B	C	C
Intersection LOS (delay)	C (22.3)							
Lenox Avenue and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	10.6	11.2	7.4			7.5		
Movement LOS	B	B	A			A		
Intersection LOS (delay)	A (5.0)							
Lenox Avenue and 10th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	8.0	8.2	8.1			7.9		
Movement LOS	A	A	A			A		
Intersection LOS (delay)	A (8.1)							

Table 14 Future Condition No Build LOS and Delay Summary (PM)

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	59.9	56.8	22.2	20.8	21.0	17.6	19.4	19.3
Movement LOS	E	E	C	C	C	B	B	B
Intersection LOS (delay)	C (22.7)							
Alton Road and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	L			L		
Delay (veh/s)	26.3	21.7	14.2			15.1		
Movement LOS	D	C	B			C		
Intersection LOS (delay)	A (2.1)							
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	62.7	65.4	21.3	17.3	17.2	14.0	28.7	28.8
Movement LOS	E	E	C	B	B	B	C	C
Intersection LOS (delay)	C (27.9)							
Lenox Avenue and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	11.7	12.1	7.6			7.6		
Movement LOS	B	B	A			A		
Intersection LOS (delay)	A (5.2)							
Lenox Avenue and 10th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	9.1	10.3	9.7			8.7		
Movement LOS	A	B	A			A		
Intersection LOS (delay)	A (9.7)							

Table 15 Future Condition No Build AM SimTraffic Queue Report

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	187	112	97	488	387	41	342	315
Link distance (feet)	365	409	180	416	416	160	334	334
Compliance	✓	✓	✓	×	✓	✓	×	✓
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	217	134	168	441	449	42	413	326
Link distance (feet)	384	338	160	400	400	150	431	431
Compliance	✓	✓	×	×	×	✓	✓	✓

Table 16 Future Condition No Build PM SimTraffic Queue Report

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	122	197	241	409	412	171	281	303
Link distance (feet)	365	409	180	416	416	160	334	334
Compliance	✓	✓	×	✓	✓	×	✓	✓
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	224	226	191	447	407	154	456	373
Link distance (feet)	384	338	160	400	400	150	431	431
Compliance	✓	✓	×	×	×	×	×	✓

Based on the described procedure in **Tables 5** through **8**, the future build condition scenario was constructed. **Table 17** and **Table 18** shows the summary of LOS and delay report and SimTraffic queues can be seen in **Table 19** and **Table 20** for AM and PM peak of this scenario respectively. In future build condition also all the intersections are working under LOS of A and C. By the way, there are movements showing queue lengths greater than link lengths.

Table 17 Future Condition Build LOS and Delay Summary (AM)

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	59.9	56.3	15.4	21.6	21.6	17.5	18.9	18.8
Movement LOS	E	E	C	C	C	B	B	B
Intersection LOS (delay)	C (22.7)							
Alton Road and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	L			L		
Delay (veh/s)	27.3	19.3	13.1			15.3		
Movement LOS	D	C	B			C		
Intersection LOS (delay)	A (2.4)							
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	56.0	52.3	17.5	15.2	15.1	14.1	24.0	24.0
Movement LOS	E	D	B	B	B	B	C	C
Intersection LOS (delay)	C (22.4)							
Lenox Avenue and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	10.6	11.3	7.5			7.4		
Movement LOS	B	B	A			A		
Intersection LOS (delay)	A (5.1)							
Lenox Avenue and 10th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	8.0	8.3	8.1			7.9		
Movement LOS	A	A	A			A		
Intersection LOS (delay)	A (8.1)							

Table 18 Future Condition Build LOS and Delay Summary (PM)

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	56.0	56.9	22.5	20.9	21.0	17.7	19.5	19.4
Movement LOS	E	E	C	C	C	B	B	B
Intersection LOS (delay)	C (22.8)							
Alton Road and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	L			L		
Delay (veh/s)	26.5	21.8	14.2			15.1		
Movement LOS	D	C	B			C		
Intersection LOS (delay)	A (2.1)							
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	63.1	65.7	21.4	17.3	17.3	14.1	28.8	28.9
Movement LOS	E	E	C	B	B	B	C	C
Intersection LOS (delay)	C (28.0)							
Lenox Avenue and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	11.7	12.1	7.6			7.6		
Movement LOS	B	B	A			A		
Intersection LOS (delay)	A (5.2)							
Lenox Avenue and 10th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	9.1	10.3	9.7			8.7		
Movement LOS	A	B	A			A		
Intersection LOS (delay)	A (9.7)							

Table 19 Future Condition Build AM SimTraffic Queue Report

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	170	75	185	457	335	167	296	317
Link distance (feet)	365	409	180	416	416	160	334	334
Compliance	✓	✓	×	×	✓	×	✓	✓
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	171	119	221	443	421	156	486	433
Link distance (feet)	384	338	160	400	400	150	431	431
Compliance	✓	✓	×	×	×	×	×	×

Table 20 Future Condition Build PM SimTraffic Queue Report

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	168	107	234	488	425	56	303	356
Link distance (feet)	365	409	180	416	416	160	334	334
Compliance	✓	✓	×	×	×	✓	✓	×
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	259	207	213	431	426	42	438	344
Link distance (feet)	384	338	160	400	400	150	431	431
Compliance	✓	✓	×	×	×	✓	×	✓

As mentioned, several movements are experiencing queue lengths greater than link length. To reduce the probability of queue related issues, an effort has been done to optimize splits, focusing on queue lengths reduction. The recommended timings can be found in **Appendix G**. **Tables 21** to **24** shows AM and PM peak LOSs, delays and queue reports for optimized split scenario. Although still some movements are showing greater queue lengths than link lengths, but left-turn movements are generally good.

Table 21 Future Condition Build with Optimized Splits LOS and Delay Summary (AM)

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	70.1	64.4	12.2	17.1	17.0	13.5	16.9	16.8
Movement LOS	E	E	B	B	B	B	B	B
Intersection LOS (delay)	C (20.2)							
Alton Road and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	L			L		
Delay (veh/s)	27.3	19.3	13.1			15.3		
Movement LOS	D	C	B			C		
Intersection LOS (delay)	A (2.4)							
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	73.2	65.9	11.3	2.4	2.3	8.3	16.8	16.8
Movement LOS	E	E	B	A	A	A	B	B
Intersection LOS (delay)	B (14.8)							
Lenox Avenue and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	10.6	11.3	7.5			7.4		
Movement LOS	B	B	A			A		
Intersection LOS (delay)	A (5.1)							
Lenox Avenue and 10th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	8.0	8.3	8.1			7.9		
Movement LOS	A	A	A			A		
Intersection LOS (delay)	A (8.1)							

Table 22 Future Condition Build with Optimized Splits LOS and Delay Summary (PM)

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	67.2	69.1	18.7	15.5	15.6	13.5	21.8	21.7
Movement LOS	E	E	B	B	B	B	C	C
Intersection LOS (delay)	C (21.9)							
Alton Road and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	L			L		
Delay (veh/s)	28.4	22.3	14.8			15.4		
Movement LOS	D	C	B			C		
Intersection LOS (delay)	A (2.2)							
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
Delay (veh/s)	54.7	56.3	26.4	14.2	14.2	17.8	34.5	34.7
Movement LOS	D	E	C	B	B	B	C	C
Intersection LOS (delay)	C (28.1)							
Lenox Avenue and 9th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	11.9	12.2	7.6			7.6		
Movement LOS	B	B	A			A		
Intersection LOS (delay)	A (5.5)							
Lenox Avenue and 10th St								
Movement	EB	WB	NB			SB		
Direction served	LTR	LTR	LTR			LTR		
Delay (veh/s)	9.5	10.6	9.9			8.9		
Movement LOS	A	B	A			A		
Intersection LOS (delay)	A (10.0)							

Table 23 Future Condition Build with Optimized Splits SimTraffic Queue Report (AM)

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	120	114	88	349	278	165	265	250
Link distance (feet)	365	409	180	416	416	160	334	334
Compliance	✓	✓	✓	✓	✓	×	✓	✓
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	173	124	41	320	307	54	387	361
Link distance (feet)	384	338	160	400	400	150	431	431
Compliance	✓	✓	✓	✓	✓	✓	✓	✓

Table 24 Future Condition Build with Optimized Splits SimTraffic Queue Report (PM)

Alton Road and 8th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	104	159	193	379	307	85	227	238
Link distance (feet)	365	409	180	416	416	160	334	334
Compliance	✓	✓	×	✓	✓	✓	✓	✓
Alton Road and 10th St								
Movement	EB	WB	NB	NB	NB	SB	SB	SB
Direction served	LTR	LTR	L	T	TR	L	T	TR
95th Queue (feet)	240	218	85	475	475	29	519	459
Link distance (feet)	384	338	160	400	400	150	431	431
Compliance	✓	✓	✓	×	×	✓	×	×

8. Transportation Demand Management Plan (TDM)

Transportation Demand Management (TDM) strategies should be developed to reduce the impact of project traffic on the surrounding roadway network and promote trip reduction. Typical measures are to promote bicycling and walking, encourage car/vanpooling and offer alternatives to the typical workday hours in particular for staff of the development. SOBE LLC representative will be in-charge of implementing the TDM Plan at the site. The City has the right to be in contact with SOBE LLC representative to determine how well the Plan is working and if any adjustments would be needed with time.

9. Code Requirements Evaluation

Pursuant to the Traffic Impact Analysis is the need to evaluate code requirements following Miami-Dade County and City of Miami Beach Ordinances. Evaluations include, but are not limited to:

9.1. Parking demand requirements enforced by Miami Beach City Ordinances.

ITE recommended parking requirements are studied and summarized in **Table 25**. Also the MUNICODE recommendation for Miami Beach is studied.

Based on City of Miami Beach MUNICODE, the Alton building development is located in Parking district 6 (MUNICODE, 2016). According to MUNICODE, this district includes those properties with a lot line on Alton Road from 5 Street on the south to Dade Boulevard on the north, with some described exceptions.

Retail stores, food stores, personal service establishments: There shall be no parking requirement for individual establishments of 2,500 square feet or less up to a total aggregate square footage of 10,000 square feet per development site. For individual establishments over 2,500 square feet or for development sites with a total aggregate square footage of more than 10,000 square feet of these uses, there shall be one space for every 300 square feet of floor area. A covenant running with the land, approved by the City Attorney, shall be recorded to ensure that individual stores will not be reconfigured internally in a way that would increase the minimum parking requirement

without conditional use approval and payment of a one-time parking impact fee for each required parking space.

For offices, one space per 400 square feet of floor area is required. However, medical offices and clinics or offices located on the ground floor shall provide one space per 300 square feet of floor area. The minimum parking requirements for office uses may be reduced by up to 20 percent in cases where the developer voluntarily proffers a restrictive covenant running with the land, form approved by the City Attorney, ensuring that the required office parking spaces shall be shared by all users in the building and shall not be reserved for individual persons or tenants.

Table 26 shows the parking study based on Miami Beach MUNICODE.

Table 25 ITE Recommended Parking Analysis

Land Use	Size (1000 square feet gross floor area)	MUNICODE Requirement	Parking Demand	Proposed Spaces	Compliance
820 - Retail	11.5	4.1 per 1,000 square feet	48	54	✓
710 – General Office Building	11.12	2.47 per 1,000 square feet	27	34	✓
Total			75	88	✓

Table 26 MUNICODE Parking Analysis

Land Use	Size (1000 square feet gross floor area)	MUNICODE Requirement	Parking Demand	Proposed Spaces	Compliance
820 - Retail	11.5	1 per 300 square feet	39	54	✓
710 – General Office Building	11.12	1 per 400 square feet	28	34	✓
Total			67	88	✓

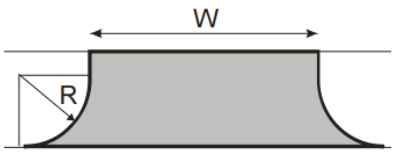
Based on **Table 25** and **Table 26**, the proposed number of parking can meet the minimum requirement of City of Miami Beach MUNICODE.

9.2.Miami-Dade Fire Truck requirements

Alton building presents a two-way entry along Alton Road on the west side of the development. **Figure 3** shows the FDOT standard driveway radii requirement. The

peak entry trip to Alton building is estimated to be 83 trips. Thus the minimum radius required by the driveway is 25 feet.

RADIAL RETURNS



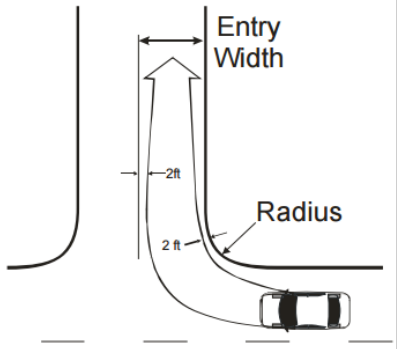
Radial Return Driveway

Trips/Day	*1-20*	*21-600*	*601-4000*
or Trips/Hour	*or 1-5*	*or 6-60*	*or 61-400*
RURAL SECTION Radius (feet)	15' min 25' std 50' max	25' min 50' std 75' max	25' min 50' std (or 3-centered curves)
URBAN SECTION Radius (feet)	N/A *	10'-35'	25' min 50' std 75' max

* Small radii may be used in lieu of flares as approved by the department

Figure 3 FDOT Driveway Radii Requirement

Figure 4 shows the FDOT driveway width requirement. Based on this standard, since minimum driveway radius should be 25 feet, a minimum of 12 feet width for single lane is required for driveway width.



Radius or Flare (ft.)	**Single Lane Width for Entry for Passenger Vehicles (ft.)**
Typical flared driveway	22 ft (Pavement striping should be used if entry is this wide)
10 ft Radius	19 ft
15 ft Radius	17 ft
20 ft Radius	14 ft
25 ft Radius	14 ft
Over 25 ft Radius	12-14 ft

Source: adapted from Access Management for Streets and Highways, Flora and Keith, FHWA, 1982 p 63

Figure 4 FDOT Driveway Width Requirement

Required dimensions for auto-turn are required in order to provide proper access to the typical vehicles that will be using the facility (Miami-Dade, 2016):

- All pertinent dimensions such as drivable roadway width turn radii, cul-de-sacs, and T or Y turnarounds must be identified on a site plan. All sidewalks and green space shall be identified separate from roadway dimensions.

- The minimum dimensions for fire department access roads shall be 20 feet unobstructed width (two-way traffic) and not less than 13 feet 6 inches of unobstructed vertical clearance NFPA 1 18.2.2.5.1. The AHJ will accept one-way traffic lanes to be a minimum of 15 feet unobstructed width.

In the case of Miami-Dade Fire Rescue Access Road Requirements are also provided in **Appendix H.**

10. Findings and Recommendation

This study analyzes the traffic impact of the proposed Building development. The following provides a summary of the traffic impact analysis:

- The trip generation forecasted 71 trips to be generated in the AM peak period and 187 trips in the PM peak. In the AM period, 53 trips enter the facility and 18 exit, while in the PM peak period 60 trips enter and 127 trips exit the facility.
- Arterial analysis by 2010 HCM methodologies shows all the intersections and approaches are working under acceptable LOSs and delays. However some of the queue lengths are greater than existing link lengths, especially in Alton road north-south direction. The movements which need greater length are determined in the report.
- The parking study showed at least 75 parking spaces should be provided for the facility, which is less than actual provided spaces (88).
- Based on the FDOT standard, it is recommended the driveway has at least 25 feet radius and 12 feet width. Also, all pertinent dimensions such as drivable roadway width turn radii, cul-de-sacs, and T or Y turnarounds must be identified on a site plan. All sidewalks and green space shall be identified separate from roadway dimensions. The minimum dimensions for fire department access roads shall be 20 feet unobstructed width (two-way traffic) and not less than 13 feet 6 inches of unobstructed vertical clearance NFPA 1

18.2.2.5.1. The AHJ will accept one-way traffic lanes to be a minimum of 15 feet unobstructed width.

- Implementation of the Transportation Demand Management Plan is expected and, if followed through effectively, should reduce parking demand generated by staff and visitors of the building.
- "It is understood that the City reserves the right to request additional analyses including but not limited to, additional traffic counts and level of service analysis for any intersection if City staff feels is necessary in order to complete the review process".

REFERENCES

1. **ITE. 2009.** Trip Generation. *ITE.* [Online] 2009. [Cited: July 18, 2016.] http://www.ite.org/tripgeneration/otherresources.asp.

2. **Lin, Pei-Sung, et al. 2014.** *Trip Internalization in Multi-Use Developments*: Florida Department of Transportation, 2014.

3. **Miami-Dade. 2016.** Miami-Dade Fire Rescue Access Road Requirements. 2016.

4. **MUNICODE. 2016.** Chapter 130 - OFF-STREET PARKING. *MMUNICODE.* [Online] 2016. [Cited: July 19, 2016.] https://www.municode.com/library/fl/miami_beach/codes/code_of_ordinances?nodeId=SPBLADERE_CH130OREPA.

5. **RGA. 2013.** *Traffic Impact Study*: Richard Garcia & Associates, Inc., 2013.

6. **USF. 2016.** State Averages for Private Vehicle Occupancy, Carpool Size and Vehicles Per 100 Workers. *USF.* [Online] 2016. [Cited: July 18, 2016.]

APPENDIX A

Building Maps

12-651US MIXED USE BUILDING

929 ALTON ROAD, MIAMI BEACH, FLORIDA
05-06-2016

Drawing index:

A.01	CODE ANALYSIS SHEET
A.02	F.A.R. CALCULATIONS & BUILDING SECTION
A.03	01 - RETAIL FLOOR
A.04	02A - PARKING
A.05	02B / 03A - PARKING
A.06	03B - PARKING
A.07	04 - PARKING
A.08	05 - OFFICE FLOOR

This artistic rendering of the building may differ from final appearance

idea

internationaldesign
idea
engineeringarchitecture

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ARCH LICENSE NBR AA26001856
ENG. CA No. 28787

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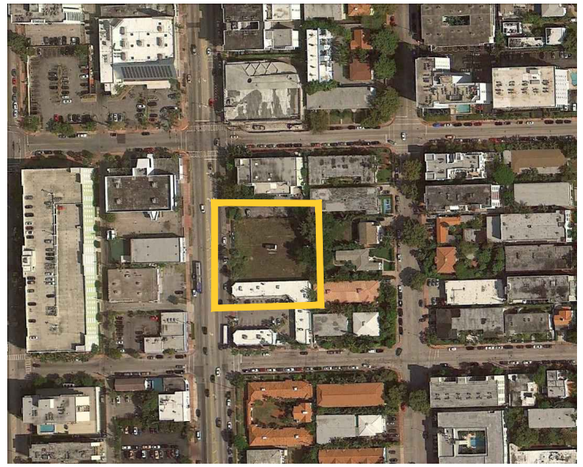
1 LOCATION MAP AND AERIAL PHOTOGRAPH OF EXISTING SITE



2 ZONING REGULATIONS (CD-2)

LOT SIZE 20,000 SQ. FT. (125'-0" X 160'-0")

DESCRIPTION

DIVISION 5. - CD-2 COMMERCIAL, MEDIUM INTENSITY DISTRICT[3]

Footnotes:
— (3) —
Cross reference— *Businesses, ch. 18.*

Sec. 142-301. - Purpose.

The CD-2 commercial, medium intensity district provides for commercial activities, services, offices and related activities which serve the entire city.

(Ord. No. 89-2665, § 6-7(A)(1), eff. 10-1-89; Ord. No. 90-2722, eff. 11-21-90; Ord. No. 96-3050, § 2, 7-17-96)

Sec. 142-302. - Main permitted uses.

The main permitted uses in the CD-2 commercial, medium intensity district are commercial uses; apartments; apartment/hotels; hotels; religious institutions with an occupancy of 199 persons or less and uses that serve alcoholic beverages as listed in article V, division 4 of this chapter (alcoholic beverages).

Parking restrictions: Except as otherwise provided in these land development regulations, when any building or structure is erected or altered within the CD-2 commercial medium intensity district, on properties in the Sunset Harbour neighborhood generally bounded by Purdy Avenue, 20th Street, Alton Road and Dade Boulevard the parking restrictions in subsection 130-33(b) for parking district no. 5 shall apply.

(Ord. No. 89-2665, § 6-7(A)(2), eff. 10-1-89; Ord. No. 90-2722, eff. 11-21-90; Ord. No. 96-3050, § 2, 7-17-96; Ord. No. 2000-3257, § 2, 7-12-00; Ord. No. 2001-3328, § 4, 10-17-01; Ord. No. 2004-3445, § 1, 5-5-04; Ord. No. 2012-3786, § 4, 12-12-12; Ord. No. 2014-3869, § 1, 5-21-14)

Sec. 142-303. - Conditional uses.

(a) *[Generally.]* The conditional uses in the CD-2 commercial, medium intensity district include the following:

(1) Adult congregate living facilities;
(2) Funeral home;
(3) Nursing homes;
(4) Religious institutions;
(5) Pawnshops;
(6) Video game arcades;
(7) Public and private institutions;
(8) Schools;
(9) Any use selling gasoline;
(10) New construction of structures 50,000 square feet and over (even when divided by a district boundary line), which review shall be the first step in the process before the review by any of the other land development boards;
(11) Outdoor entertainment establishment;
(12) Neighborhood impact establishment;
(13) Open air entertainment establishment; and
(14) Storage and/or parking of commercial vehicles on a site other than the site at which the associated commerce, trade or business is located. See section 142-1103.

Sec. 142-305. - Prohibited uses.

The prohibited uses in the CD-2 commercial, medium intensity district are accessory outdoor bar counters, except as provided in this division. Except as otherwise provided in these land development regulations, prohibited uses in the CD-2 commercial medium intensity district in the Sunset Harbour Neighborhood, generally bounded by Purdy Avenue, 20th Street, Alton Road and Dade Boulevard, also include outdoor entertainment establishments, neighborhood impact establishments, open air entertainment establishments, bars, dance halls, and entertainment establishments (as defined in section 114-1 of this Code).

(Ord. No. 89-2665, § 6-7(A)(5), eff. 10-1-89; Ord. No. 90-2722, eff. 11-21-90; Ord. No. 96-3050, § 2, 7-17-96; Ord. No. 2012-3786, § 6, 12-12-12; Ord. No. 2015-3983, § 1, eff. 12-19-15)

ZONING REGULATIONS (CONTINUATION)

LOT SIZE 20,000 SQ. FT. (125'-0" X 160'-0")

DESCRIPTION

Sec. 142-306. - Development regulations.

The development regulations in the CD-2 commercial, medium intensity district are as follows:

Maximum Floor Area Ratio	Minimum Lot Area (Square Feet)	Minimum Lot Width (Feet)	Minimum Apartment Unit Size (Square Feet)	Average Apartment Unit Size (Square Feet)	Maximum Building Height (Feet)	Maximum Number of Stories
1.5	Commercial—None Residential—7,000	Commercial—None Residential—50	Commercial—N/A New construction—550 Rehabilitated buildings—400 Non-elderly and elderly low and moderate income housing: See section 142-1183 Hotel unit: 15%: 300—335 85%: 335+ For contributing hotel structures, located within a local historic district or a national register district, which are being renovated in accordance with the Secretary of the Interior Standards and Guidelines for the	Commercial—N/A New construction—800 Rehabilitated buildings—550 Non-elderly and elderly low and moderate income housing: See section 142-1183 Hotel units—N/A	50 (except as provided in section 142-1161). Self-storage warehouse - 40 feet, except that the building height shall be limited to 25 feet within 50 feet from the rear property line for lots abutting an alley; and within 60 feet from a residential district for blocks with no alley	5 (except as provided in section 142-1161) Self-storage warehouse: 4
			Rehabilitation of Historic Structures as amended, retaining the existing room configuration shall be permitted, provided all rooms are a minimum of 200 square feet. Additionally, existing room configurations for the above described hotel structures may be modified to address applicable life-safety and accessibility regulations, provided the 200 square feet minimum unit size is maintained.			

Notwithstanding the above regulations, the maximum floor area ratio (FAR) for self-storage warehouses shall be 1.5. The floor area ratio provision for mixed use buildings in section 142-307(d)(2) shall not apply to self-storage warehouse development.

(Ord. No. 89-2665, § 6-7(B), eff. 10-1-89; Ord. No. 90-2722, eff. 11-21-90; Ord. No. 94-2949, eff. 10-15-94; Ord. No. 96-3050, § 2, 7-17-96; Ord. No. 97-3097, § 2, 10-8-97; Ord. No. 98-3107, § 1, 1-21-98; Ord. No. 98-3150, § 1, 11-4-98; Ord. No. 2005-3483, § 6, 5-18-05; Ord. No. 2011-3744, § 8, 10-19-11; Ord. No. 2013-3799, § 2, 5-8-13; Ord. No. 2014-3851, § 1, 4-23-14)

3 SETBACKS - CD-2

Sec. 142-307. - Setback requirements.

(a) The setback requirements for the CD-2 commercial, medium intensity district are as follows:

	Front	Side, Interior	Side, Facing a Street	Rear
At-grade parking lot on the same lot	5 feet	5 feet	5 feet	5 feet If abutting an alley—0 feet
Subterranean	0 feet	0 feet	0 feet	0 feet
Pedestal and tower (non-oceanfront)	0 feet Residential uses shall follow the RM-1, 2, 3 setbacks (See sections 142-156, 142-218 and 142-247)	10 feet when abutting a residential district, otherwise none Residential uses shall follow the RM-1, 2, 3 setbacks (See sections 142-156, 142-218 and 142-247)	10 feet when abutting a residential district, unless separated by a street or waterway otherwise none Residential uses shall follow the RM-1, 2, 3 setbacks (See sections 142-156, 142-218 and 142-247)	5 feet 10 feet when abutting a residential district unless separated by a street or waterway in which case it shall be 0 feet. Residential uses shall follow the RM-1, 2, 3 setbacks (See sections 142-156, 142-218 and 142-247)
Pedestal and tower (oceanfront)	Pedestal—15 feet Tower—20 feet + 1 foot for every 1 foot increase in height above 50 feet, to a maximum of 50 feet, then shall remain constant. Residential uses shall follow the RM-1, 2, 3 setbacks (See sections 142-156, 142-218 and 142-247)	Commercial uses—10 feet Residential uses shall follow the RM-1, 2, 3 setbacks (See sections 142-156, 142-218 and 142-247)	Commercial uses—10 feet Residential uses shall follow the RM-1, 2, 3 setbacks (See sections 142-156, 142-218 and 142-247)	25% of lot depth, 75 feet minimum from the bulkhead line whichever is greater Residential uses shall follow the RM-1, 2, 3 setbacks (See sections 142-156, 142-218 and 142-247)

4 SETBACKS - CD-2

Sec. 130-33. - Off-street parking requirements for parking districts nos. 2, 3, 4, 5, 6, and 7.

Except as otherwise provided in these land development regulations, when any building or structure is erected or altered in parking districts nos. 2, 3, 4 and 5 accessory off-street parking spaces shall be provided for the building, structure or additional floor area as follows. There shall be no off-street parking requirement for uses in this parking district except for those listed below:

(c) Except as otherwise provided in these land development regulations, when any building or structure is erected or altered in parking district no. 6, off-street automobile parking spaces shall be provided for the building, structure or additional floor area as follows. For uses not listed below, the off-street parking requirement shall be the same as for parking district no. 1 in section 130-32.

(1) *Apartment building and apartment-hotel:*

a. 1.0 spaces per unit for units between 550 and 799 square feet;
b. 1.25 spaces per unit for units between 800 and 999 square feet;
c. 1.5 spaces per unit for units between 1,000 and 1,199 square feet;
d. 1.75 spaces per unit for units between 1,200 and 1,399 square feet;
e. 2.0 spaces per unit for units between 1,400 and 1,599 square feet;
f. 2.25 spaces per unit for units above 1,600 square feet.
g. Designated guest parking: Developments of 20 units or less shall have no designated guest parking requirements. Multifamily buildings and suites-hotels with more than 20 units shall be required to provide supplemental designated guest parking equal to ten percent of the required residential parking spaces.
h. Car sharing: The minimum parking requirements listed in a.—g. above may be reduced by four parking spaces for every one parking space reserved for a vehicle owned and operated by an official car-share program sanctioned by the City of Miami Beach, not to exceed a total of four car-share parking spaces or 20 percent of the total number of required residential parking spaces, whichever is less.

(2) *Retail stores, food stores, personal service establishments:* There shall be no parking requirement for individual establishments of 2,500 square feet or less up to a total aggregate square footage of 10,000 square feet per development site. For individual establishments over 2,500 square feet or for development sites with a total aggregate square footage of more than 10,000 square feet of these uses, there shall be one space for every 300 square feet of floor area. A covenant running with the land, approved by the City Attorney, shall be recorded to ensure that individual stores will not be reconfigured internally in a way that would increase the minimum parking requirement without conditional use approval and payment of a one-time parking impact fee for each required parking space.

(3) *Restaurant, outdoor cafe or bar:* There shall be no parking requirement for individual establishments of 60 seats or less or 1,500 square feet or less, whichever is greater, up to a total aggregate square footage of 5,000 square feet per development site. For individual establishments over 60 seats or 1,500 square feet, whichever is greater, or for development sites with a total aggregate square footage of more than 5,000 square feet of these uses, there shall be one space per four seats or one space per 60 square feet of space not used for seating. A covenant running with the land, approved by the City Attorney, shall be recorded to ensure that individual stores will not be reconfigured internally in a way that would increase the minimum parking requirement without conditional use approval and payment of a one-time parking impact fee for each required parking space.

(4) *Hotel, suites hotel, motel or motor lodge:* One space per two units; however, suites hotel units as defined in section 142-1105 that are greater than 550 square feet and that contain full cooking facilities shall have the same parking requirement as apartment buildings in (1) above. Required parking for hotel accessory uses shall be the same as for (2) and (3) above:

(5) *Offices:* One space per 400 square feet of floor area. However, medical offices and clinics or offices located on the ground floor shall provide one space per 300 square feet of floor area. The minimum parking requirements for office uses may be reduced by up to 20 percent in cases where the developer voluntarily proffers a restrictive covenant running with the land, form approved by the City Attorney, ensuring that the required office parking spaces shall be shared by all users in the building and shall not be reserved for individual persons or tenants.

MIXED USE BUILDING

Miami Beach, FL 12-651US

BUILDING INFO / ZONING STUDY

internationaldesign
idea
engineeringarchitecture
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Scale: NTS 2016-05-06

www.absolute-idea.com

May 18, 2016 12-651US

929 ALTON ROAD

01 - RETAIL FLOOR	ALL AREA	FAR
RETAIL	11,515	11,515
SERVICE AREA	958	965
TRASH ROOM	366	0
CIRCULATION	782	782
OFFICE LOBBY	1,352	1,200
TOTAL 01 FLOOR	**14,973**	**14,462**

2A - PARKING	ALL AREA	FAR
PARKING	7,899	0
SERIVCE AREA	0	0
CIRCULATION	512	512
TOTAL 2A FLOOR	**8,411**	**512**

2B / 3A - PARKING	ALL AREA	FAR
PARKING	14,905	0
SERIVCE AREA	0	0
CIRCULATION	512	512
TOTAL 3B / 3A FLOOR	**15,417**	**512**

3B - PARKING	ALL AREA	FAR
PARKING	9,120	0
SERIVCE AREA	0	0
CIRCULATION	512	512
TOTAL 3B FLOOR	**9,632**	**512**

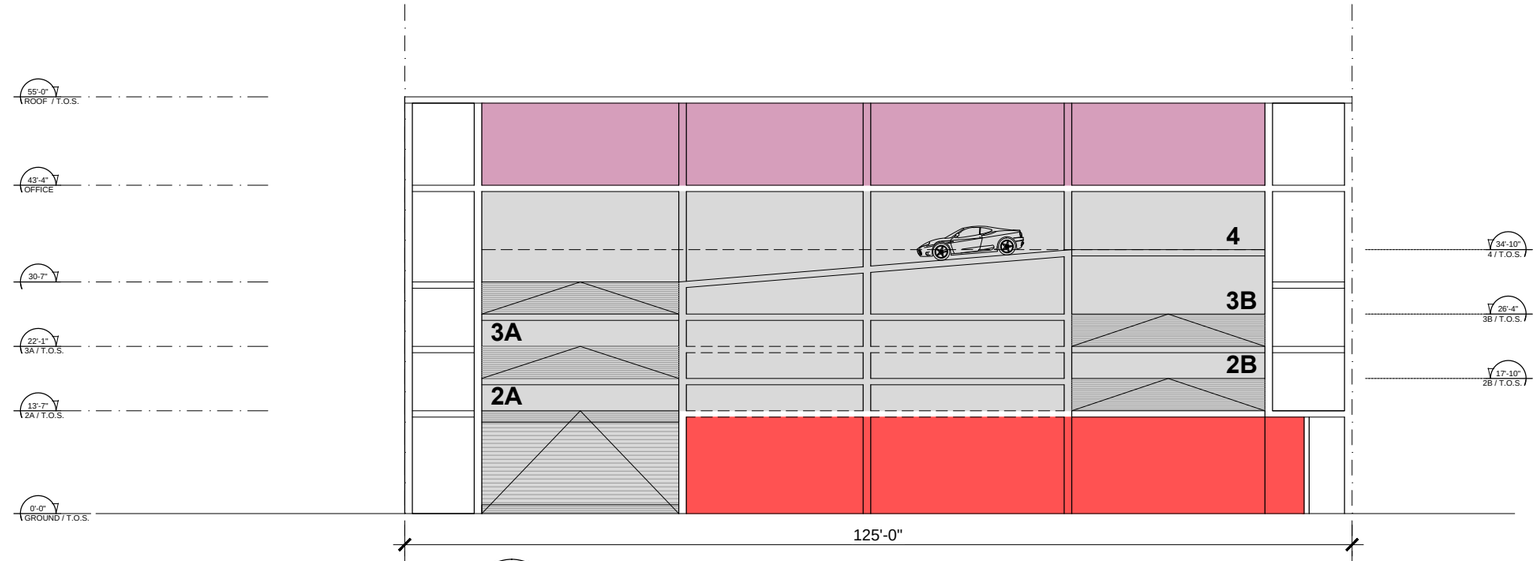
4 - PARKING	ALL AREA	FAR
PARKING	8,425	0
SERIVCE AREA	0	0
CIRCULATION	512	512
TOTAL 3B FLOOR	**8,937**	**512**

5- OFFICE FLOOR	ALL AREA	FAR
OFFICE	11,120	11,120
SIDE BALCONY	243	389
CIRCULATION	512	512
TOTAL 04 FLOOR	11,875	**12,021**

	ALL AREA	F.A.R.
TOTAL	69,245	**28,531**
TOTAL F.A.R. PROVIDED	**69,245**	**28,531**

ALLOWED F.A.R. CALCULATION		
LOT AREA		
(20 000)(1.5)=		30,000
	ALLOWED F.A.R.	**30,000**

PARKING CALCULATIONS				
AREA	SQUARE FOOTAGE	CODE	REQUIRED	PROVIDED
RETAIL	11,515	1 / 300 S.F.	38.38	54
OFFICE	11,120	1 / 400 S.F.	27.80	34
			67	88



1 / A-2 BUILDING SECTION (SCHEMATIC)

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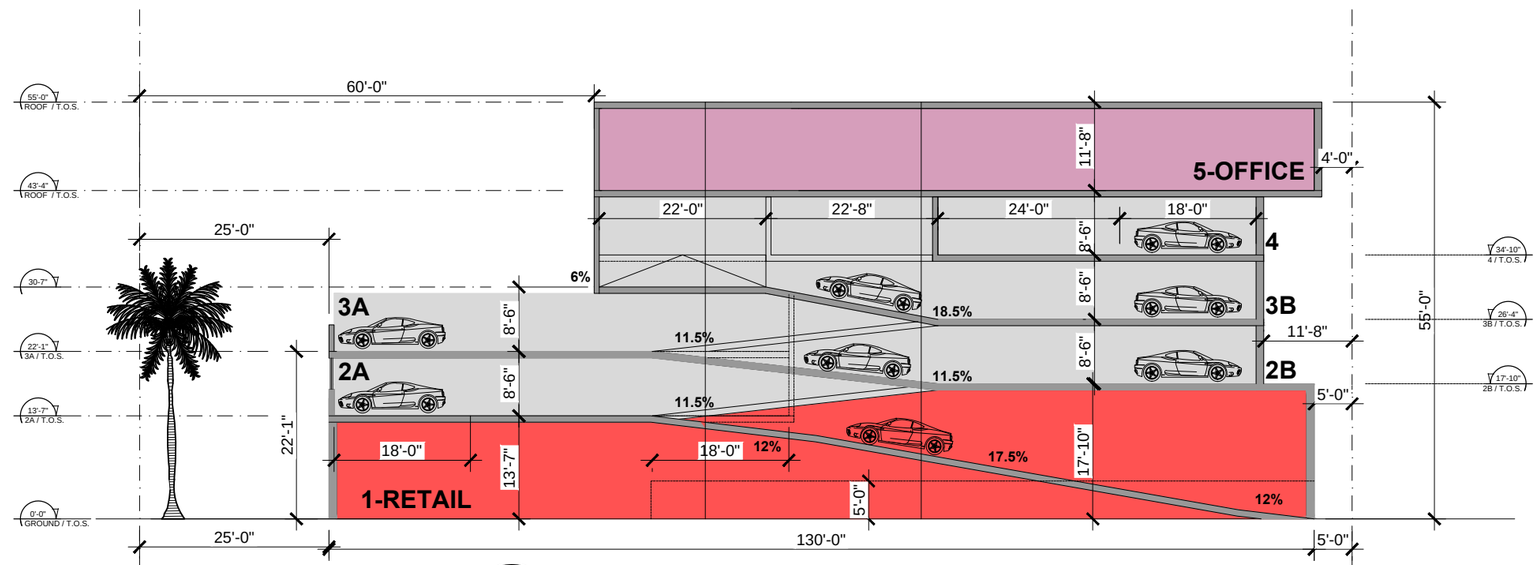

2 / A-2 BUILDING SECTION (CUT IN THE RAMP)

SCALE:1" = 20'-0"

MIXED USE BUILDING

Miami Beach, FL 12-651US

F.A.R. Calculation & Building Section

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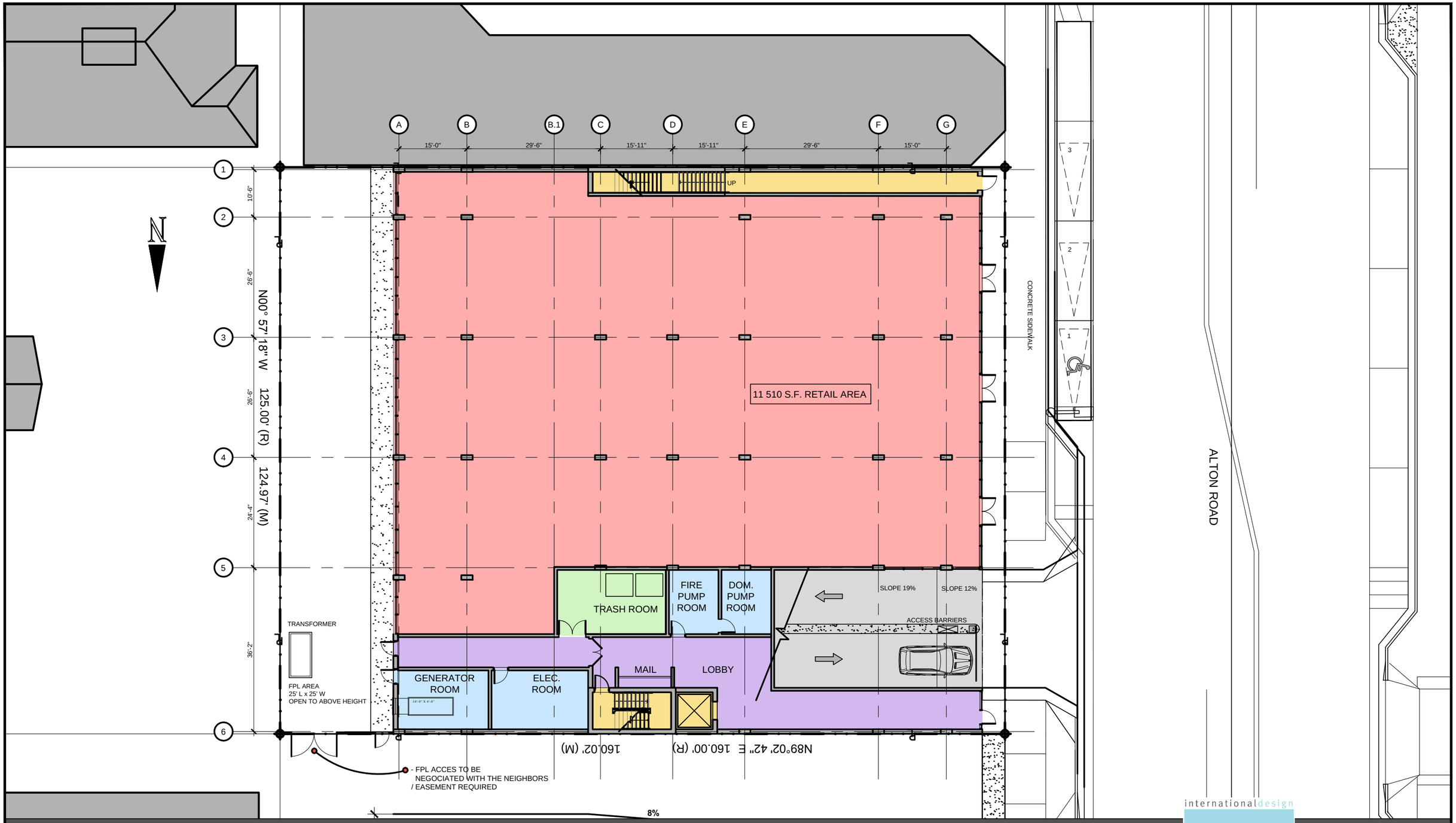

MIXED USE BUILDING

Miami Beach, FL 12-651US

Ground Floor (Retail)

internationaldesign
idea
engineeringarchitecture

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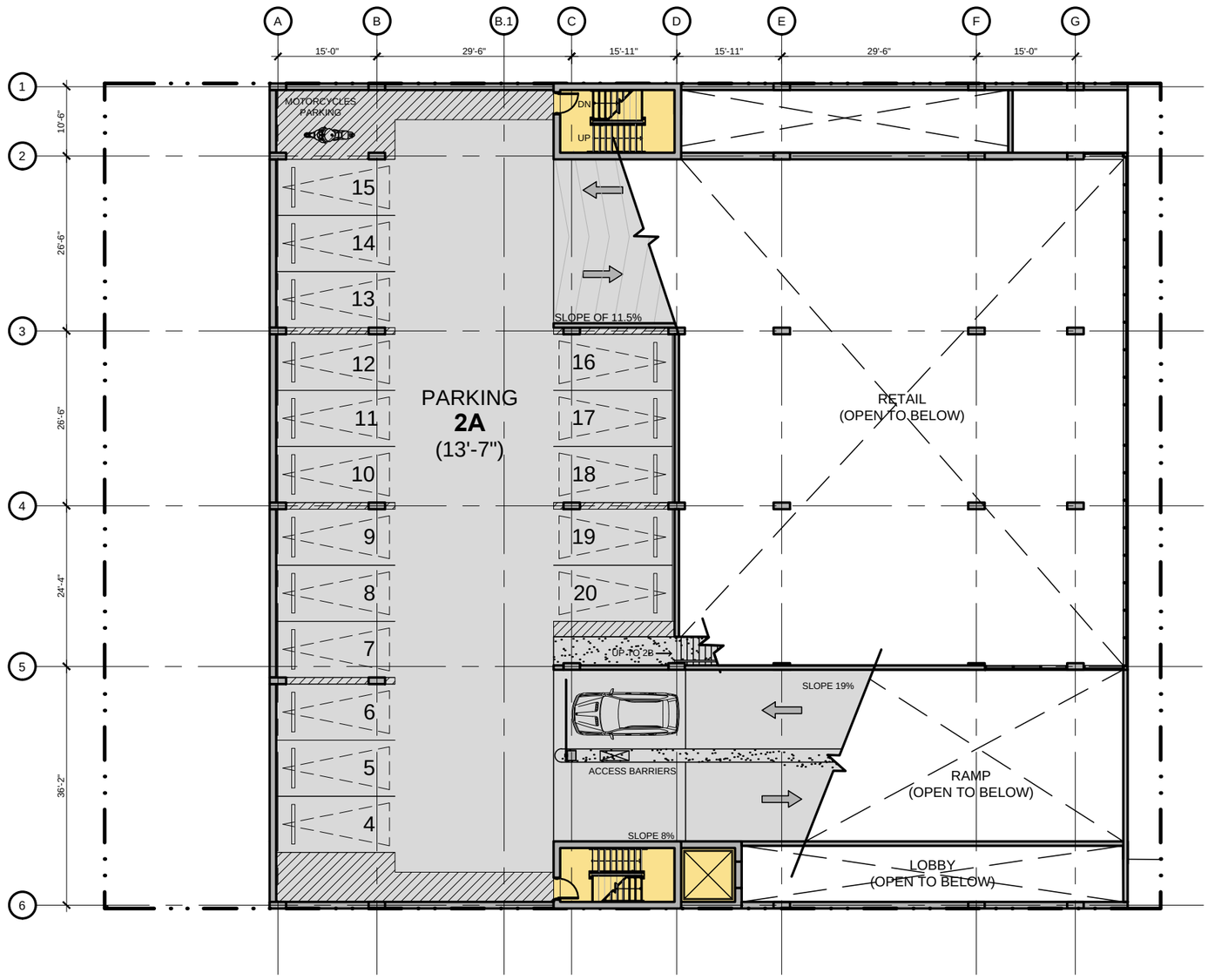
Scale: 1" = 20'-0" 2016-05-06



MIXED USE BUILDING

Miami Beach, FL 12-651US

Parking Floor 2A

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idea
engineeringarchitecture

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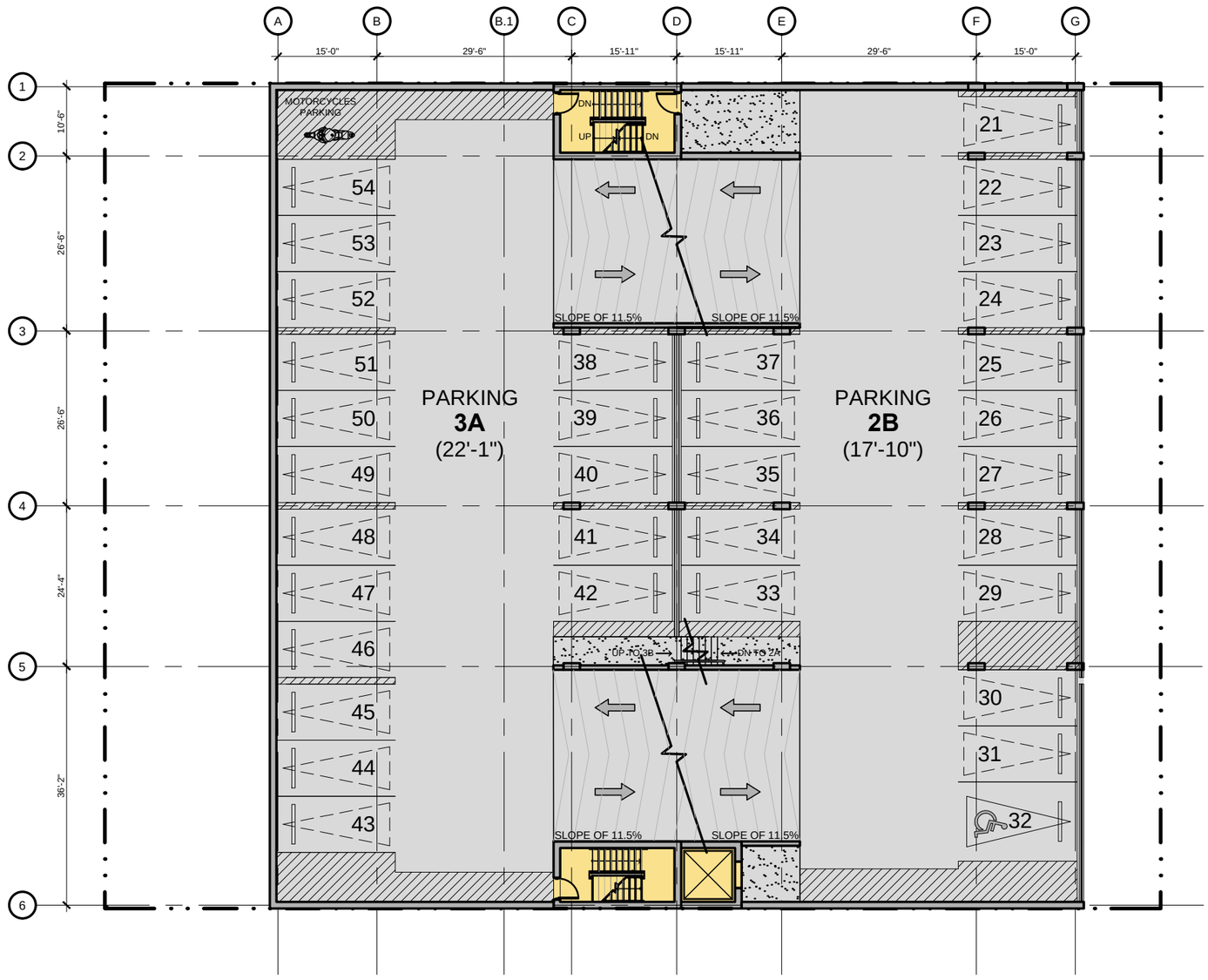
Scale: 1'' = 20'-0" 2016-05-06



MIXED USE BUILDING

Miami Beach, FL 12-651US

Parking Floor 02B-03A

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idea
engineeringarchitecture

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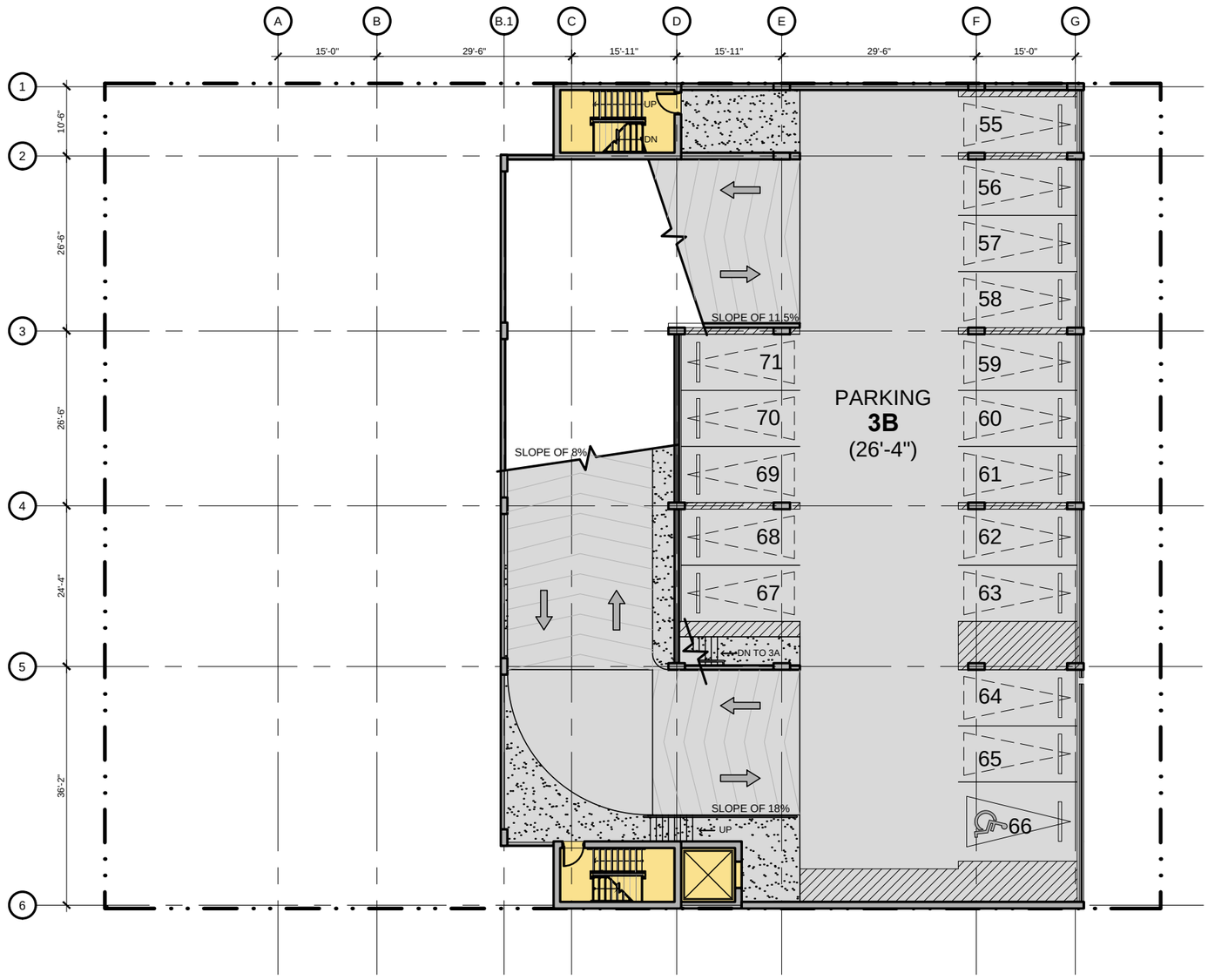
Scale: 1'' = 20'-0" 2016-05-06



MIXED USE BUILDING

Miami Beach, FL 12-651US

Parking Floor 03B

internationaldesign
idea
engineeringarchitecture

20900 NE 30th Ave., Suite 914
Aventura, FL 33180
Tel.: (305) 792-0015
Fax: (305) 931-0279
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Scale: 1'' = 20'-0" 2016-05-06

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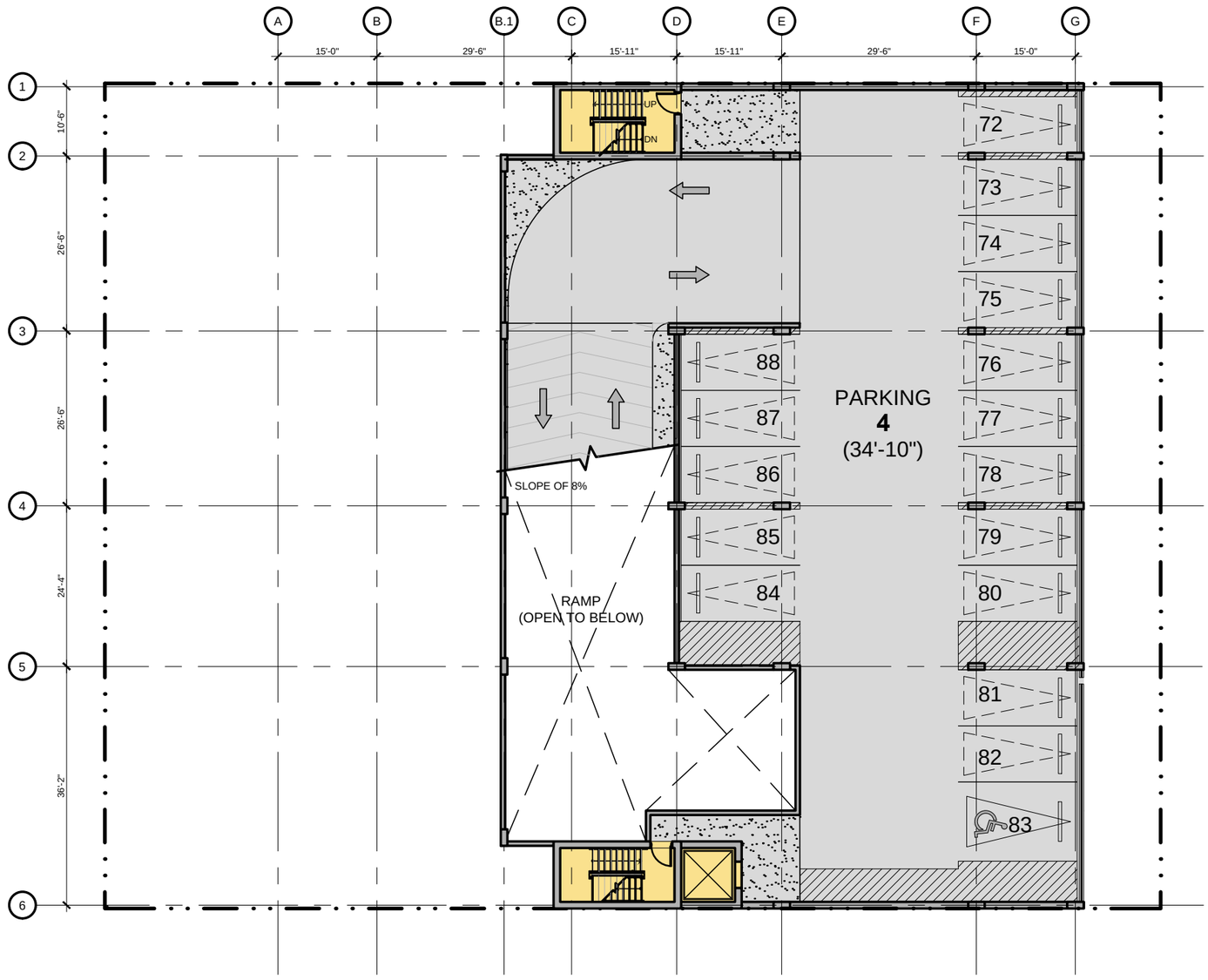

MIXED USE BUILDING

Miami Beach, FL 12-651US

Parking Floor 04

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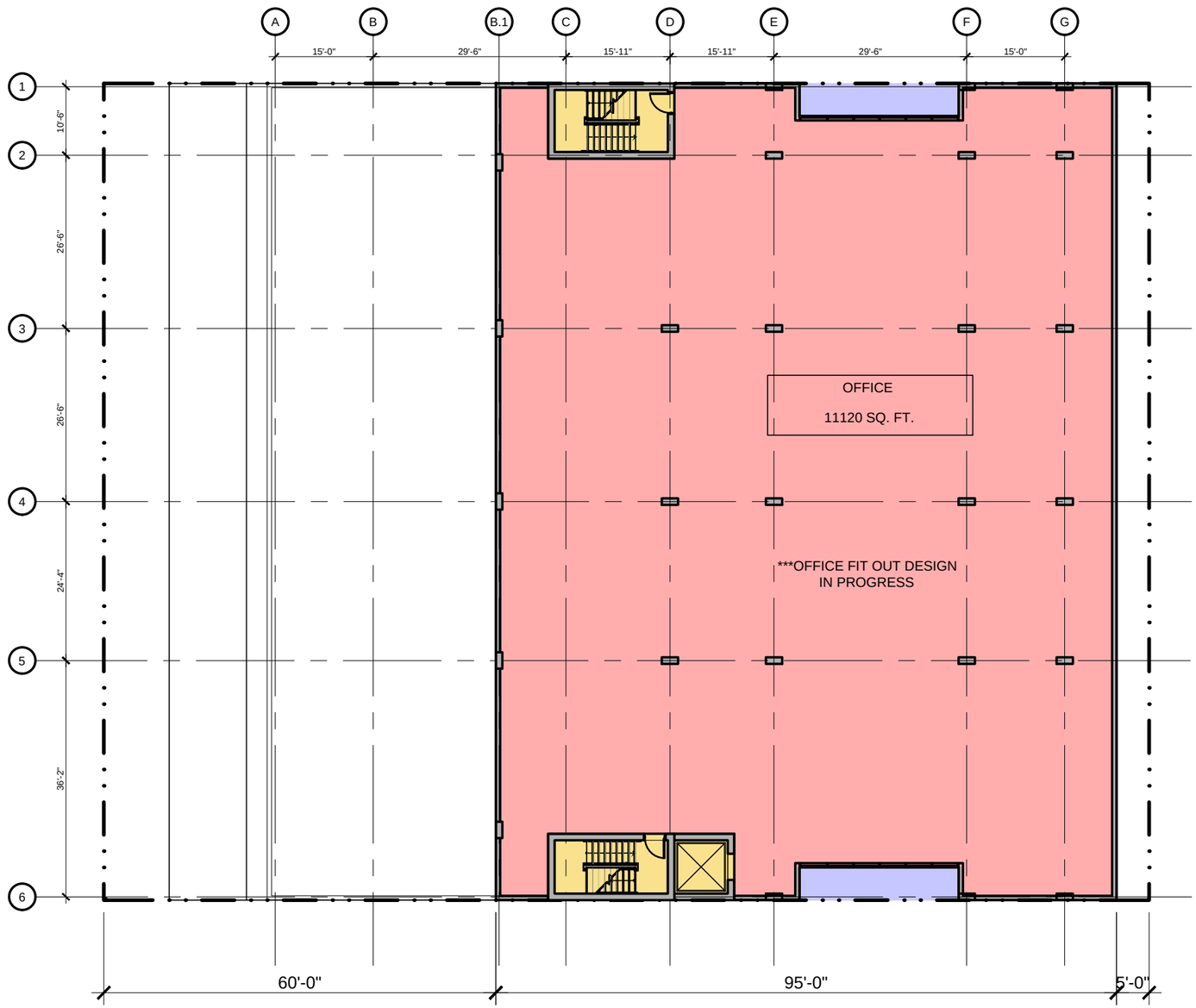
Scale: 1'' = 20'-0" 2016-05-06



MIXED USE BUILDING

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Scale: 1'' = 20'-0" 2016-05-06

APPENDIX B

Raw Data

Alton Road & 8th Street

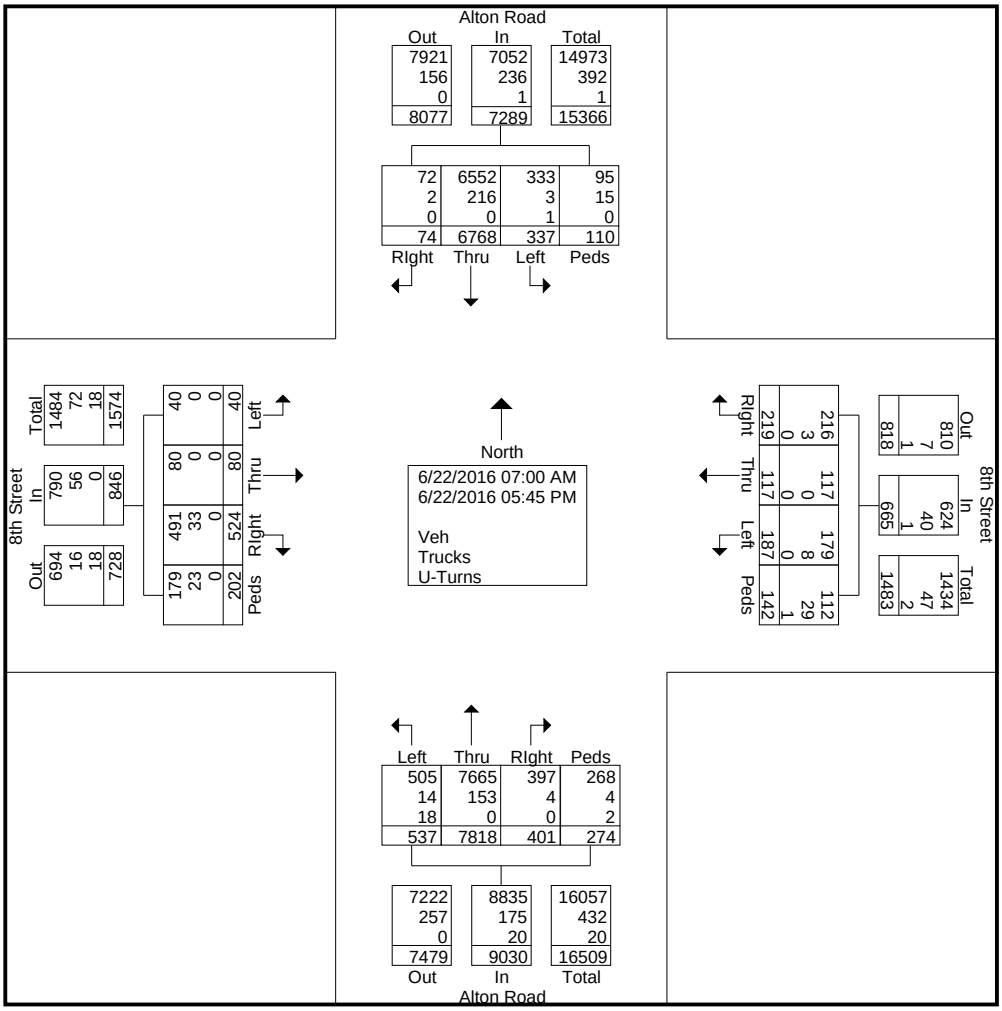
File Name : Alton Road & 8th Street
Site Code : 00000000
Start Date : 6/22/2016
Page No : 1

Groups Printed- Veh - Trucks - Turns

	Alton Road Southbound					Alton Road Northbound					8th Street Westbound					8th Street Eastbound					
Start Time	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Int. Total
07:00 AM	6	138	2	3	149	17	275	11	14	317	4	1	1	4	10	1	1	21	3	26	502
07:15 AM	8	168	0	1	177	13	252	7	1	273	4	2	8	4	18	1	1	15	2	19	487
07:30 AM	6	205	2	3	216	16	299	15	9	339	11	3	4	10	28	1	1	18	6	26	609
07:45 AM	7	238	2	2	249	18	305	9	4	336	4	1	1	4	10	3	1	17	5	26	621
Total	27	749	6	9	791	64	1131	42	28	1265	23	7	14	22	66	6	4	71	16	97	2219
08:00 AM	6	251	1	3	261	18	297	8	0	323	3	4	5	8	20	2	2	37	10	51	655
08:15 AM	12	310	2	3	327	14	332	8	7	361	5	3	8	2	18	0	3	27	11	41	747
08:30 AM	12	350	5	1	368	29	363	4	2	398	13	4	4	6	27	2	3	32	9	46	839
08:45 AM	15	328	5	6	354	8	369	8	3	388	13	2	9	10	34	1	3	16	5	25	801
Total	45	1239	13	13	1310	69	1361	28	12	1470	34	13	26	26	99	5	11	112	35	163	3042
*** BREAK ***																					
11:00 AM	18	255	5	3	281	19	309	16	20	364	8	1	11	8	28	3	2	16	6	27	700
11:15 AM	11	255	3	7	276	19	325	10	13	367	10	5	7	9	31	0	4	10	10	24	698
11:30 AM	22	245	6	6	279	18	329	23	31	401	6	3	16	2	27	5	5	29	17	56	763
11:45 AM	15	263	2	7	287	19	348	14	28	409	4	1	10	2	17	0	1	20	8	29	742
Total	66	1018	16	23	1123	75	1311	63	92	1541	28	10	44	21	103	8	12	75	41	136	2903
12:00 PM	14	271	1	4	290	20	333	18	9	380	6	5	11	6	28	0	3	17	13	33	731
12:15 PM	21	291	5	8	325	22	338	15	4	379	4	9	12	5	30	2	2	20	6	30	764
12:30 PM	24	273	3	3	303	25	352	21	22	420	10	2	6	11	29	3	6	20	12	41	793
12:45 PM	18	273	2	4	297	19	312	18	21	370	4	4	9	14	31	1	2	22	7	32	730
Total	77	1108	11	19	1215	86	1335	72	56	1549	24	20	38	36	118	6	13	79	38	136	3018
*** BREAK ***																					
04:00 PM	18	332	3	8	361	22	302	37	10	371	11	10	14	11	46	1	6	26	5	38	816
04:15 PM	20	299	5	11	335	21	345	27	12	405	6	12	13	3	34	2	6	24	10	42	816
04:30 PM	17	314	3	6	340	28	312	17	13	370	11	12	10	3	36	2	4	33	15	54	800
04:45 PM	9	357	4	7	377	33	359	16	10	418	7	9	8	6	30	4	6	18	9	37	862
Total	64	1302	15	32	1413	104	1318	97	45	1564	35	43	45	23	146	9	22	101	39	171	3294
05:00 PM	18	346	3	2	369	31	336	20	10	397	12	6	15	9	42	1	4	25	11	41	849
05:15 PM	14	346	1	3	364	30	329	31	6	396	14	9	12	1	36	3	6	22	6	37	833
05:30 PM	14	337	6	3	360	30	350	27	4	411	9	5	12	3	29	0	4	17	8	29	829
05:45 PM	12	323	3	6	344	48	347	21	21	437	8	4	13	1	26	2	4	22	8	36	843
Total	58	1352	13	14	1437	139	1362	99	41	1641	43	24	52	14	133	6	18	86	33	143	3354
Grand Total	337	6768	74	110	7289	537	7818	401	274	9030	187	117	219	142	665	40	80	524	202	846	17830
Apprch %	4.6	92.9	1	1.5		5.9	86.6	4.4	3		28.1	17.6	32.9	21.4		4.7	9.5	61.9	23.9		
Total %	1.9	38	0.4	0.6	40.9	3	43.8	2.2	1.5	50.6	1	0.7	1.2	0.8	3.7	0.2	0.4	2.9	1.1	4.7	
Veh	333	6552	72	95	7052	505	7665	397	268	8835	179	117	216	112	624	40	80	491	179	790	17301
% Veh	98.8	96.8	97.3	86.4	96.7	94	98	99	97.8	97.8	95.7	100	98.6	78.9	93.8	100	100	93.7	88.6	93.4	97
Trucks	3	216	2	15	236	14	153	4	4	175	8	0	3	29	40	0	0	33	23	56	507
% Trucks	0.9	3.2	2.7	13.6	3.2	2.6	2	1	1.5	1.9	4.3	0	1.4	20.4	6	0	0	6.3	11.4	6.6	2.8
U-Turns	1	0	0	0	1	18	0	0	2	20	0	0	0	1	1	0	0	0	0	0	22
% U-Turns	0.3	0	0	0	0	3.4	0	0	0.7	0.2	0	0	0	0.7	0.2	0	0	0	0	0	0.1

Alton Road & 8th Street

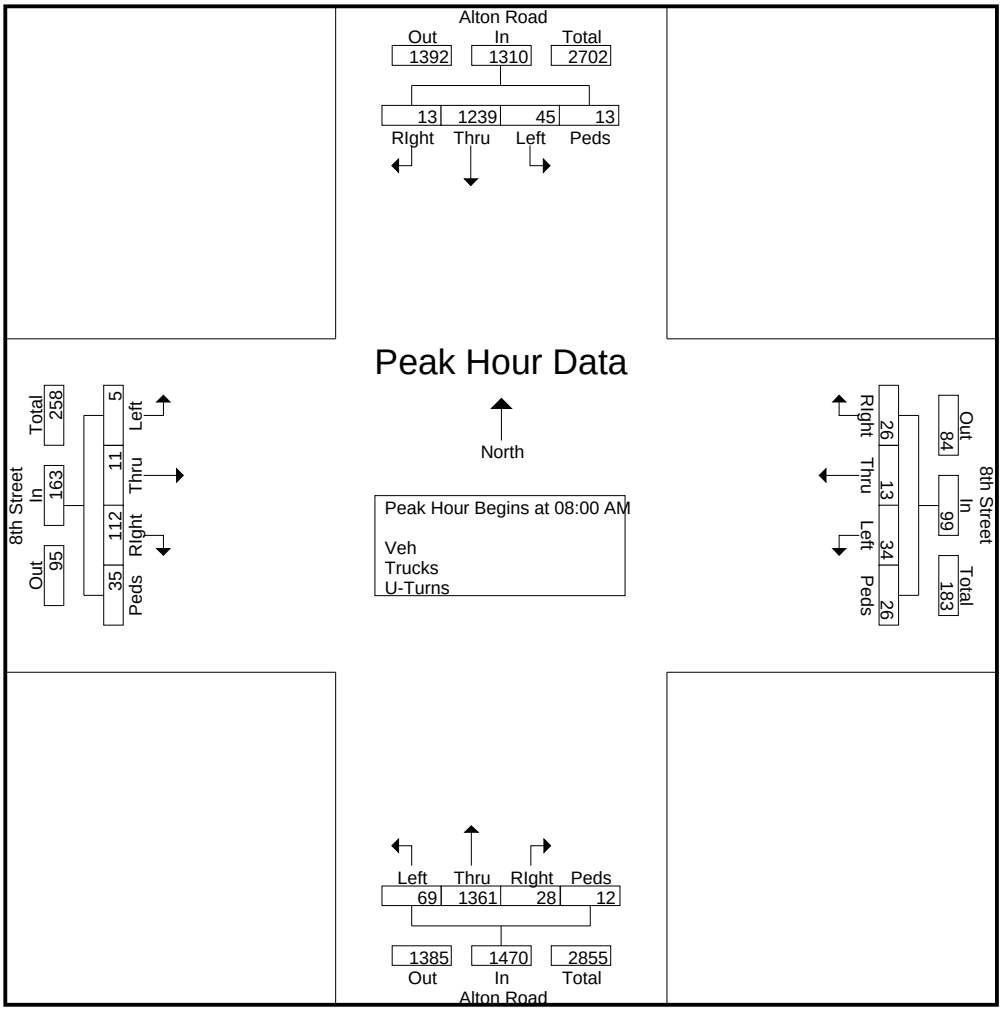
File Name : Alton Road & 8th Street
Site Code : 00000000
Start Date : 6/22/2016
Page No : 2



Alton Road & 8th Street

File Name : Alton Road & 8th Street
Site Code : 00000000
Start Date : 6/22/2016
Page No : 3

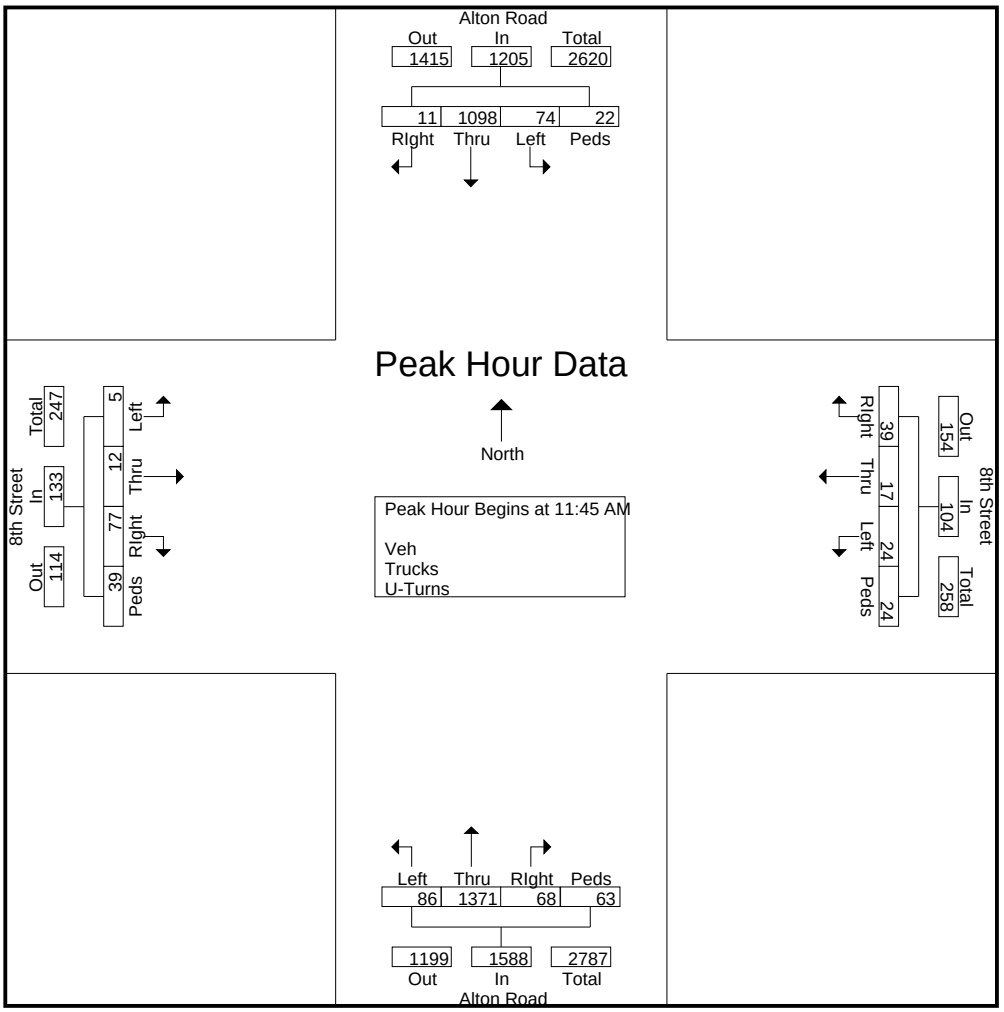
	Alton Road Southbound					Alton Road Northbound					8th Street Westbound					8th Street Eastbound					
Start Time	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	6	251	1	3	261	18	297	**8**	0	323	3	**4**	5	8	20	**2**	2	**37**	10	**51**	655
08:15 AM	12	310	2	3	327	14	332	8	**7**	361	5	3	8	2	18	0	**3**	27	**11**	41	747
08:30 AM	12	**350**	**5**	1	**368**	**29**	363	4	2	**398**	**13**	4	4	6	27	2	3	32	9	46	**839**
08:45 AM	**15**	328	5	**6**	354	8	**369**	8	3	388	13	2	**9**	**10**	**34**	1	3	16	5	25	801
Total Volume	45	1239	13	13	1310	69	1361	28	12	1470	34	13	26	26	99	5	11	112	35	163	3042
% App. Total	3.4	94.6	1	1		4.7	92.6	1.9	0.8		34.3	13.1	26.3	26.3		3.1	6.7	68.7	21.5		
PHF	.750	.885	.650	.542	.890	.595	.922	.875	.429	.923	.654	.813	.722	.650	.728	.625	.917	.757	.795	.799	.906



Alton Road & 8th Street

File Name : Alton Road & 8th Street
Site Code : 00000000
Start Date : 6/22/2016
Page No : 4

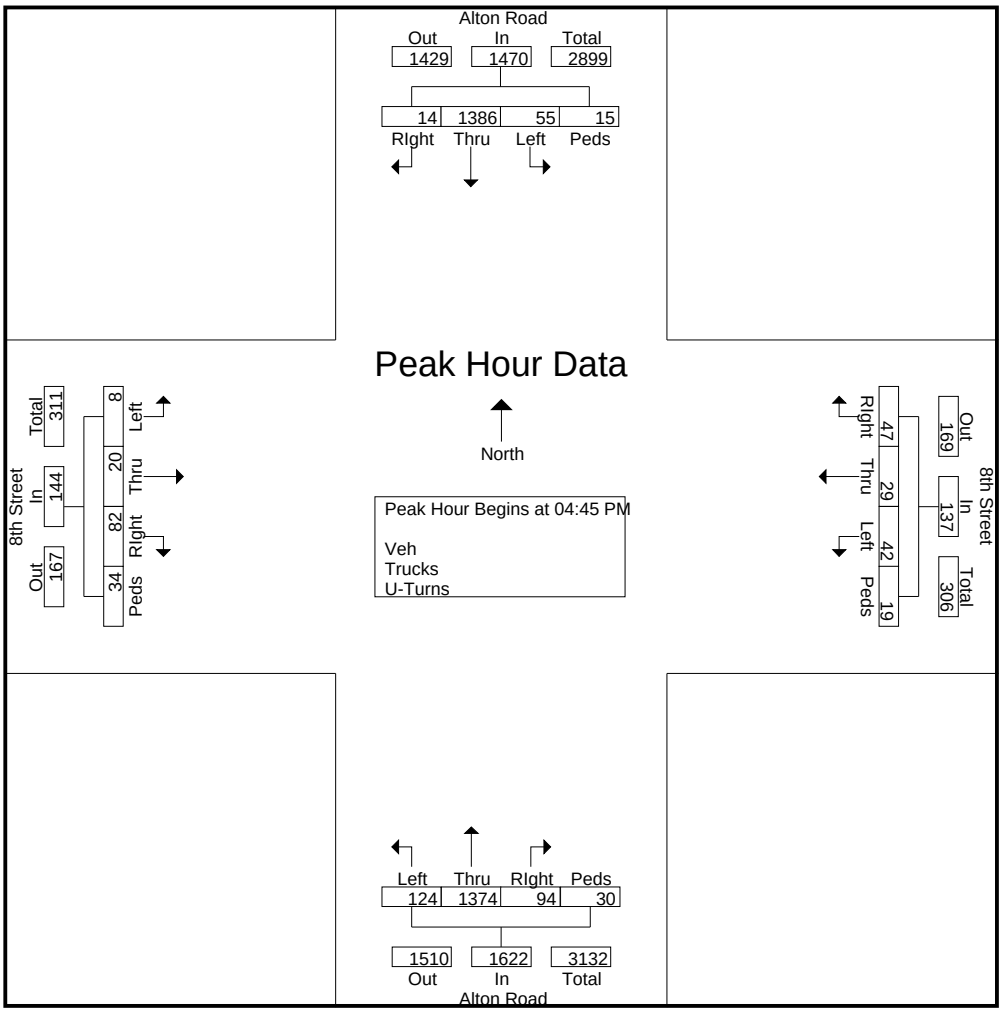
	Alton Road Southbound					Alton Road Northbound					8th Street Westbound					8th Street Eastbound					
Start Time	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	15	263	2	7	287	19	348	14	**28**	409	4	1	10	2	17	0	1	**20**	8	29	742
12:00 PM	14	271	1	4	290	20	333	18	9	380	6	5	11	6	28	0	3	17	**13**	33	731
12:15 PM	21	**291**	**5**	**8**	**325**	22	338	15	4	379	4	**9**	**12**	5	**30**	2	2	20	6	30	764
12:30 PM	**24**	273	3	3	303	**25**	**352**	**21**	22	**420**	**10**	2	6	**11**	29	**3**	**6**	20	12	**41**	**793**
Total Volume	74	1098	11	22	1205	86	1371	68	63	1588	24	17	39	24	104	5	12	77	39	133	3030
% App. Total	6.1	91.1	0.9	1.8		5.4	86.3	4.3	4		23.1	16.3	37.5	23.1		3.8	9	57.9	29.3		
PHF	.771	.943	.550	.688	.927	.860	.974	.810	.563	.945	.600	.472	.813	.545	.867	.417	.500	.963	.750	.811	.955



Alton Road & 8th Street

File Name : Alton Road & 8th Street
Site Code : 00000000
Start Date : 6/22/2016
Page No : 5

	Alton Road Southbound					Alton Road Northbound					8th Street Westbound					8th Street Eastbound					
Start Time	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	9	**357**	4	**7**	**377**	**33**	**359**	16	**10**	**418**	7	**9**	8	6	30	**4**	**6**	18	9	37	**862**
05:00 PM	**18**	346	3	2	369	31	336	20	10	397	12	6	**15**	**9**	**42**	1	4	**25**	**11**	**41**	849
05:15 PM	14	346	1	3	364	30	329	**31**	6	396	**14**	9	12	1	36	3	6	22	6	37	833
05:30 PM	14	337	**6**	3	360	30	350	27	4	411	9	5	12	3	29	0	4	17	8	29	829
Total Volume	55	1386	14	15	1470	124	1374	94	30	1622	42	29	47	19	137	8	20	82	34	144	3373
% App. Total	3.7	94.3	1	1		7.6	84.7	5.8	1.8		30.7	21.2	34.3	13.9		5.6	13.9	56.9	23.6		
PHF	.764	.971	.583	.536	.975	.939	.957	.758	.750	.970	.750	.806	.783	.528	.815	.500	.833	.820	.773	.878	.978



Alton Road & 9th Street

File Name : Alton Road & 9th Street
Site Code : 00000000
Start Date : 6/22/2016
Page No : 1

Groups Printed- Veh - Trucks - Turns

	Alton Road Southbound					Alton Road Northbound					9th Street Westbound					9th Street Eastbound					
Start Time	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Int. Total
07:00 AM	2	123	5	0	130	10	279	3	0	292	0	0	7	2	9	0	0	19	2	21	452
07:15 AM	0	153	7	1	161	9	248	4	2	263	0	0	7	4	11	0	0	21	2	23	458
07:30 AM	1	190	3	1	195	4	283	5	3	295	0	0	8	9	17	0	0	23	1	24	531
07:45 AM	1	212	4	4	221	8	276	4	4	292	0	0	10	4	14	0	0	26	2	28	555
Total	4	678	19	6	707	31	1086	16	9	1142	0	0	32	19	51	0	0	89	7	96	1996
08:00 AM	4	231	8	5	248	13	299	7	3	322	0	0	10	5	15	0	0	37	5	42	627
08:15 AM	4	290	5	4	303	13	316	4	2	335	0	0	12	4	16	0	0	48	1	49	703
08:30 AM	3	290	4	4	301	10	349	7	2	368	0	0	8	10	18	0	0	52	6	58	745
08:45 AM	5	321	9	2	337	13	361	8	1	383	0	0	14	5	19	0	0	46	4	50	789
Total	16	1132	26	15	1189	49	1325	26	8	1408	0	0	44	24	68	0	0	183	16	199	2864
*** BREAK ***																					
11:00 AM	9	254	9	6	278	12	297	7	1	317	0	0	15	11	26	0	0	34	11	45	666
11:15 AM	3	232	5	7	247	6	307	10	1	324	0	0	22	5	27	0	0	29	6	35	633
11:30 AM	7	244	8	7	266	12	322	7	3	344	0	0	10	6	16	0	0	34	15	49	675
11:45 AM	7	243	6	9	265	10	321	12	3	346	0	0	12	6	18	0	0	38	11	49	678
Total	26	973	28	29	1056	40	1247	36	8	1331	0	0	59	28	87	0	0	135	43	178	2652
12:00 PM	7	242	6	7	262	8	309	6	0	323	0	0	10	10	20	0	0	25	23	48	653
12:15 PM	3	281	6	6	296	9	311	4	2	326	0	0	11	9	20	0	0	33	7	40	682
12:30 PM	3	263	7	6	279	11	334	9	0	354	0	0	18	12	30	0	0	38	8	46	709
12:45 PM	9	253	12	6	280	13	311	10	3	337	0	0	16	4	20	0	0	48	7	55	692
Total	22	1039	31	25	1117	41	1265	29	5	1340	0	0	55	35	90	0	0	144	45	189	2736
*** BREAK ***																					
04:00 PM	11	328	9	7	355	8	286	8	3	305	0	0	18	7	25	0	0	33	1	34	719
04:15 PM	4	269	8	3	284	15	351	11	2	379	0	0	19	7	26	0	0	45	5	50	739
04:30 PM	8	277	7	0	292	12	307	8	1	328	0	0	16	12	28	0	0	33	11	44	692
04:45 PM	7	344	8	5	364	7	337	17	3	364	0	0	14	17	31	0	0	40	19	59	818
Total	30	1218	32	15	1295	42	1281	44	9	1376	0	0	67	43	110	0	0	151	36	187	2968
05:00 PM	8	342	14	3	367	9	327	12	2	350	0	0	16	2	18	0	0	33	10	43	778
05:15 PM	10	340	7	5	362	9	313	10	3	335	0	0	23	6	29	0	0	27	8	35	761
05:30 PM	2	314	3	5	324	12	329	10	0	351	0	0	21	5	26	0	0	40	14	54	755
05:45 PM	9	307	9	9	334	7	343	9	1	360	0	0	16	8	24	0	0	27	11	38	756
Total	29	1303	33	22	1387	37	1312	41	6	1396	0	0	76	21	97	0	0	127	43	170	3050
Grand Total	127	6343	169	112	6751	240	7516	192	45	7993	0	0	333	170	503	0	0	829	190	1019	16266
Apprch %	1.9	94	2.5	1.7		3	94	2.4	0.6		0	0	66.2	33.8		0	0	81.4	18.6		
Total %	0.8	39	1	0.7	41.5	1.5	46.2	1.2	0.3	49.1	0	0	2	1	3.1	0	0	5.1	1.2	6.3	
Veh	125	6177	163	102	6567	214	7347	188	39	7788	0	0	327	94	421	0	0	799	174	973	15749
% Veh	98.4	97.4	96.4	91.1	97.3	89.2	97.8	97.9	86.7	97.4	0	0	98.2	55.3	83.7	0	0	96.4	91.6	95.5	96.8
Trucks	0	166	6	10	182	22	169	4	6	201	0	0	6	76	82	0	0	30	16	46	511
% Trucks	0	2.6	3.6	8.9	2.7	9.2	2.2	2.1	13.3	2.5	0	0	1.8	44.7	16.3	0	0	3.6	8.4	4.5	3.1
U-Turns	2	0	0	0	2	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	6
% U-Turns	1.6	0	0	0	0	1.7	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0

Alton Road & 9th Street

File Name : Alton Road & 9th Street
Site Code : 00000000
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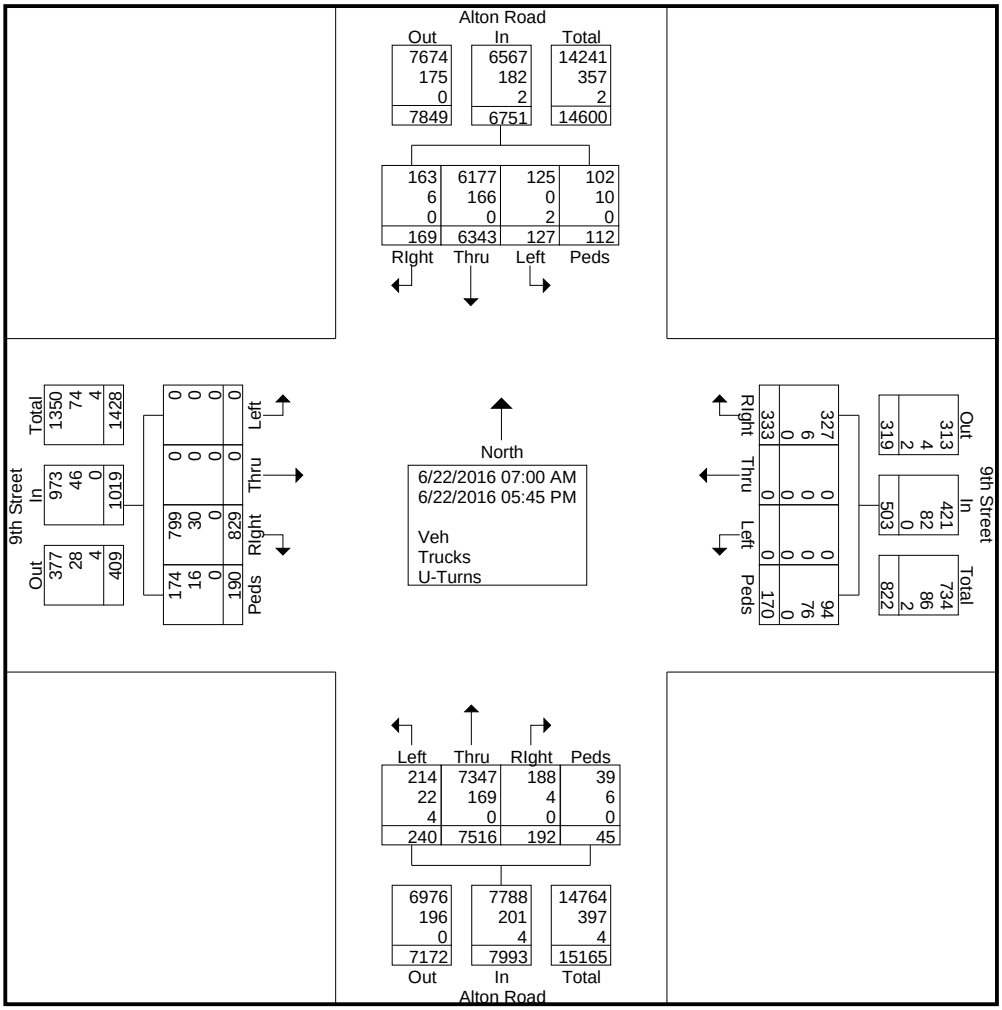
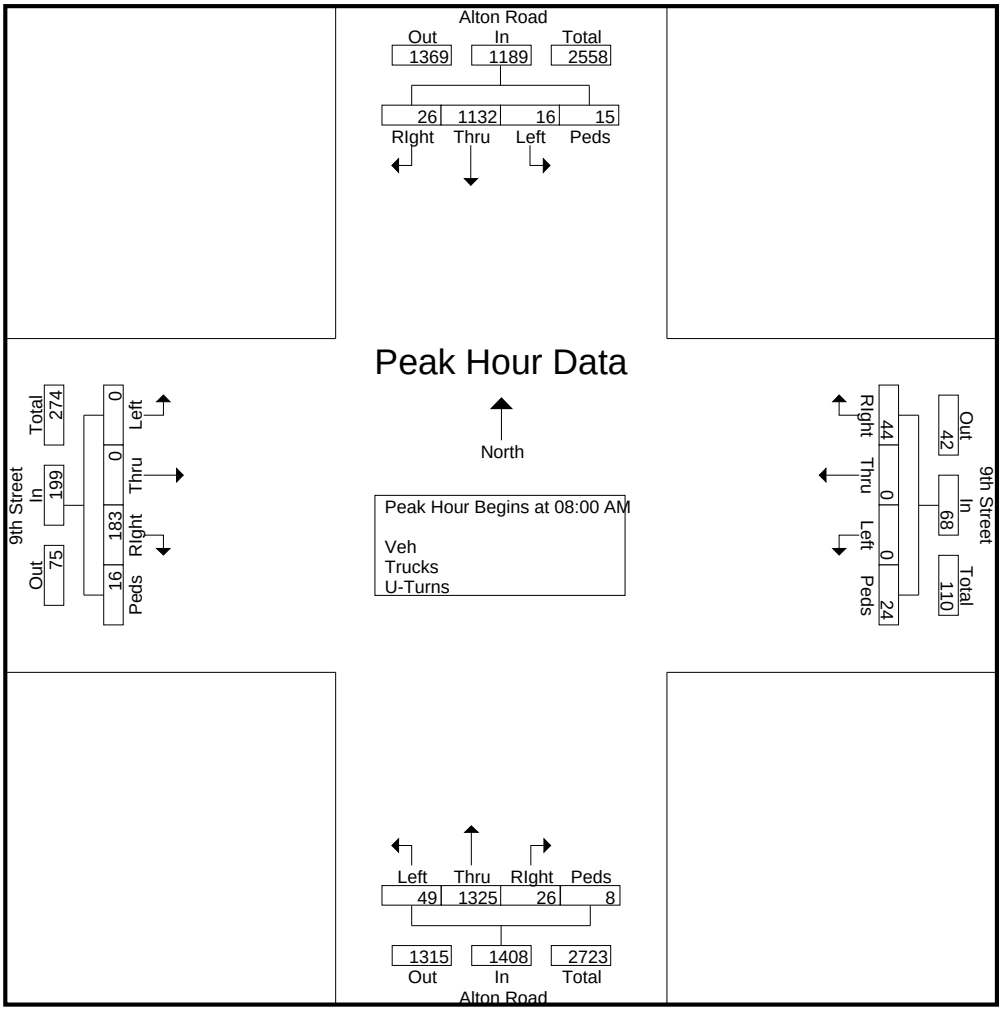


Alton Road & 9th Street

File Name : Alton Road & 9th Street
Site Code : 00000000
Start Date : 6/22/2016
Page No : 3

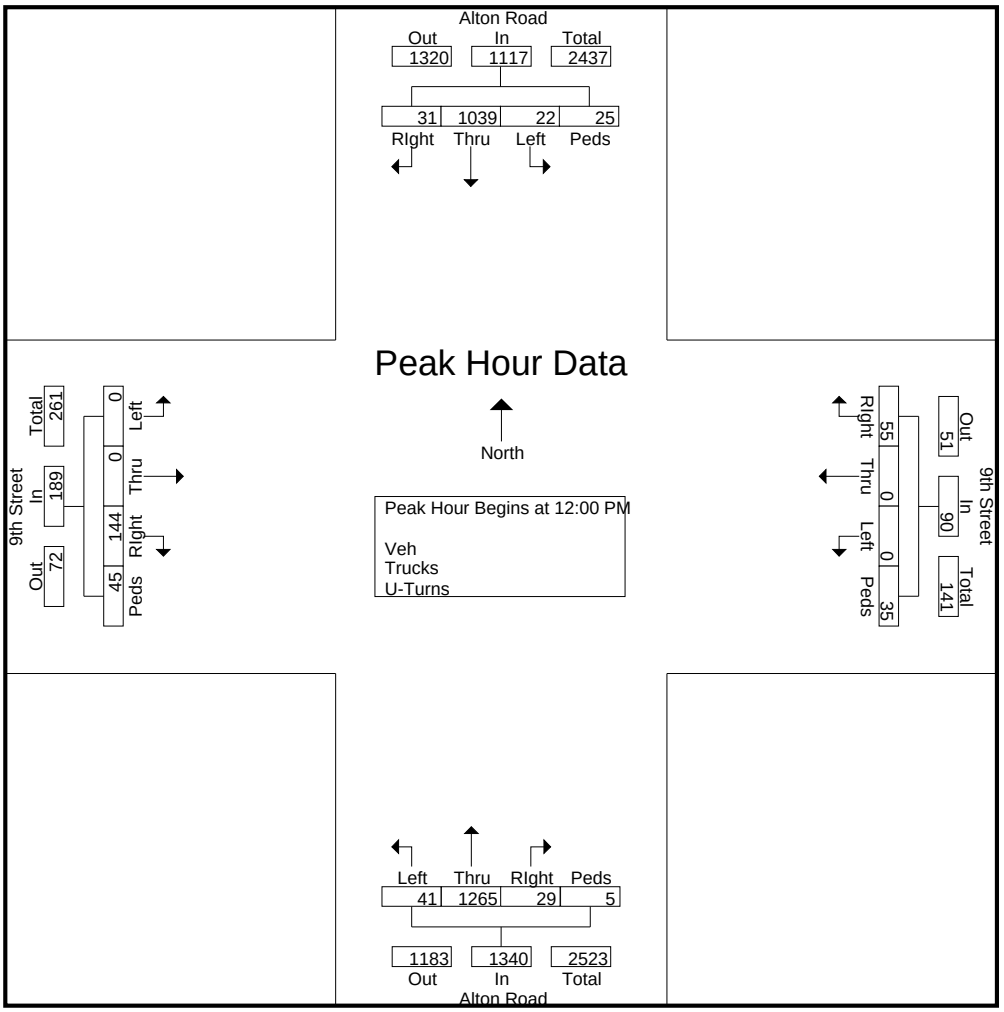
	Alton Road Southbound					Alton Road Northbound					9th Street Westbound					9th Street Eastbound					
Start Time	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	4	231	8	**5**	248	**13**	299	7	**3**	322	0	0	10	5	15	0	0	37	5	42	627
08:15 AM	4	290	5	4	303	13	316	4	2	335	0	0	12	4	16	0	0	48	1	49	703
08:30 AM	3	290	4	4	301	10	349	7	2	368	0	0	8	**10**	18	0	0	**52**	**6**	**58**	745
08:45 AM	**5**	**321**	**9**	2	**337**	13	**361**	**8**	1	**383**	0	0	**14**	5	**19**	0	0	46	4	50	**789**
Total Volume	16	1132	26	15	1189	49	1325	26	8	1408	0	0	44	24	68	0	0	183	16	199	2864
% App. Total	1.3	95.2	2.2	1.3		3.5	94.1	1.8	0.6		0	0	64.7	35.3		0	0	92	8		
PHF	.800	.882	.722	.750	.882	.942	.918	.813	.667	.919	.000	.000	.786	.600	.895	.000	.000	.880	.667	.858	.907



Alton Road & 9th Street

File Name : Alton Road & 9th Street
Site Code : 00000000
Start Date : 6/22/2016
Page No : 4

	Alton Road Southbound					Alton Road Northbound					9th Street Westbound					9th Street Eastbound					
Start Time	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	7	242	6	**7**	262	8	309	6	0	323	0	0	10	10	20	0	0	25	**23**	48	653
12:15 PM	3	**281**	6	6	**296**	9	311	4	2	326	0	0	11	9	20	0	0	33	7	40	682
12:30 PM	3	263	7	6	279	11	**334**	9	0	**354**	0	0	**18**	**12**	**30**	0	0	38	8	46	**709**
12:45 PM	**9**	253	**12**	6	280	**13**	311	**10**	**3**	337	0	0	16	4	20	0	0	**48**	7	**55**	692
Total Volume	22	1039	31	25	1117	41	1265	29	5	1340	0	0	55	35	90	0	0	144	45	189	2736
% App. Total	2	93	2.8	2.2		3.1	94.4	2.2	0.4		0	0	61.1	38.9		0	0	76.2	23.8		
PHF	.611	.924	.646	.893	.943	.788	.947	.725	.417	.946	.000	.000	.764	.729	.750	.000	.000	.750	.489	.859	.965



Alton Road & 9th Street

File Name : Alton Road & 9th Street
Site Code : 00000000
Start Date : 6/22/2016
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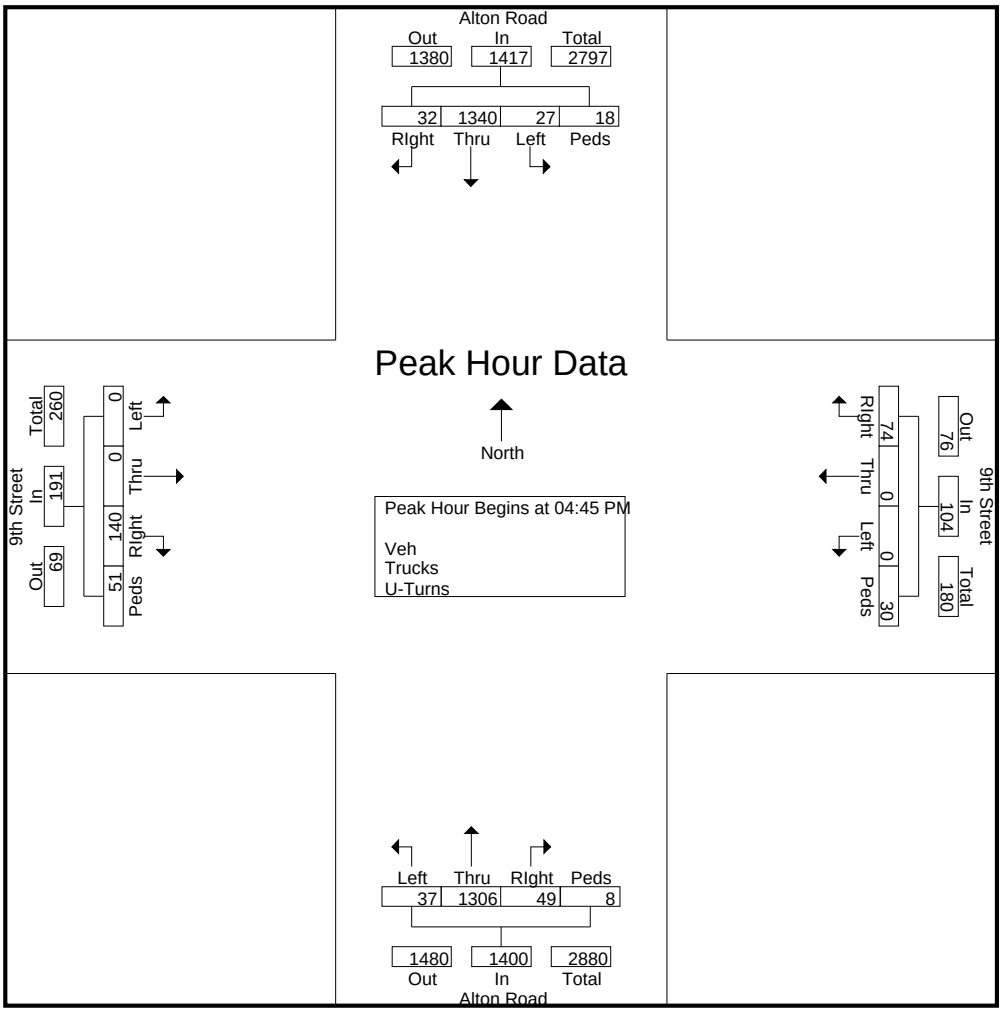
	Alton Road Southbound					Alton Road Northbound					9th Street Westbound					9th Street Eastbound					
Start Time	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	7	**344**	8	**5**	364	7	**337**	**17**	**3**	**364**	0	0	14	**17**	**31**	0	0	**40**	**19**	**59**	**818**
05:00 PM	8	342	**14**	3	**367**	9	327	12	2	350	0	0	16	2	18	0	0	33	10	43	778
05:15 PM	**10**	340	7	5	362	9	313	10	3	335	0	0	**23**	6	29	0	0	27	8	35	761
05:30 PM	2	314	3	5	324	**12**	329	10	0	351	0	0	21	5	26	0	0	40	14	54	755
Total Volume	27	1340	32	18	1417	37	1306	49	8	1400	0	0	74	30	104	0	0	140	51	191	3112
% App. Total	1.9	94.6	2.3	1.3		2.6	93.3	3.5	0.6		0	0	71.2	28.8		0	0	73.3	26.7		
PHF	.675	.974	.571	.900	.965	.771	.969	.721	.667	.962	.000	.000	.804	.441	.839	.000	.000	.875	.671	.809	.951



Alton Road & 10th Street

File Name : Alton Road & 10th Street
Site Code : 00000000
Start Date : 6/22/2016
Page No : 1

Groups Printed- Veh - Trucks - Turns

	Alton Road Southbound					Alton Road Northbound					10th Street Westbound					10th Street Eastbound					
Start Time	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Int. Total
07:00 AM	5	123	3	10	141	10	253	13	0	276	3	1	7	4	15	1	0	10	1	12	444
07:15 AM	5	142	6	17	170	17	230	8	4	259	5	4	6	7	22	3	5	13	0	21	472
07:30 AM	3	166	9	7	185	15	285	14	3	317	8	2	8	5	23	5	0	28	3	36	561
07:45 AM	3	178	11	12	204	12	269	7	1	289	9	2	8	2	21	1	1	28	7	37	551
Total	16	609	29	46	700	54	1037	42	8	1141	25	9	29	18	81	10	6	79	11	106	2028
08:00 AM	7	221	7	7	242	17	294	15	6	332	7	7	6	4	24	5	6	29	4	44	642
08:15 AM	8	298	13	15	334	29	309	7	2	347	7	7	6	5	25	8	8	19	6	41	747
08:30 AM	7	289	13	8	317	10	346	5	3	364	7	7	18	6	38	5	5	28	1	39	758
08:45 AM	11	306	23	6	346	21	351	10	4	386	11	8	16	8	43	9	11	27	7	54	829
Total	33	1114	56	36	1239	77	1300	37	15	1429	32	29	46	23	130	27	30	103	18	178	2976
*** BREAK ***																					
11:00 AM	11	252	12	11	286	15	282	16	11	324	11	6	13	7	37	14	7	21	7	49	696
11:15 AM	14	212	13	52	291	29	292	10	13	344	7	7	15	7	36	10	6	15	13	44	715
11:30 AM	11	246	11	26	294	19	318	5	3	345	3	4	9	5	21	9	10	24	12	55	715
11:45 AM	17	242	13	30	302	28	279	10	6	323	6	6	11	1	24	12	6	17	4	39	688
Total	53	952	49	119	1173	91	1171	41	33	1336	27	23	48	20	118	45	29	77	36	187	2814
12:00 PM	6	226	19	20	271	23	295	10	7	335	9	13	12	0	34	13	8	27	7	55	695
12:15 PM	7	270	26	16	319	26	314	7	7	354	8	11	11	10	40	8	14	27	7	56	769
12:30 PM	12	229	14	9	264	32	310	12	3	357	10	8	15	11	44	13	16	24	5	58	723
12:45 PM	15	253	18	16	302	20	312	17	11	360	10	11	11	6	38	9	8	25	12	54	754
Total	40	978	77	61	1156	101	1231	46	28	1406	37	43	49	27	156	43	46	103	31	223	2941
*** BREAK ***																					
04:00 PM	5	314	14	34	367	16	275	14	3	308	15	10	22	5	52	8	13	24	16	61	788
04:15 PM	8	253	20	44	325	39	304	18	1	362	11	9	17	2	39	7	10	18	12	47	773
04:30 PM	11	243	10	35	299	26	309	7	8	350	14	9	12	5	40	8	14	26	11	59	748
04:45 PM	12	316	17	35	380	21	326	14	6	367	18	14	22	18	72	13	13	32	11	69	888
Total	36	1126	61	148	1371	102	1214	53	18	1387	58	42	73	30	203	36	50	100	50	236	3197
05:00 PM	12	315	23	22	372	30	307	9	8	354	16	15	18	0	49	11	14	28	14	67	842
05:15 PM	7	328	14	26	375	35	332	11	2	380	12	17	12	3	44	12	6	25	14	57	856
05:30 PM	10	292	17	31	350	22	329	11	6	368	19	14	16	0	49	15	15	23	17	70	837
05:45 PM	12	292	18	52	374	28	325	16	8	377	19	19	23	9	70	6	9	20	15	50	871
Total	41	1227	72	131	1471	115	1293	47	24	1479	66	65	69	12	212	44	44	96	60	244	3406
Grand Total	219	6006	344	541	7110	540	7246	266	126	8178	245	211	314	130	900	205	205	558	206	1174	17362
Apprch %	3.1	84.5	4.8	7.6		6.6	88.6	3.3	1.5		27.2	23.4	34.9	14.4		17.5	17.5	47.5	17.5		
Total %	1.3	34.6	2	3.1	41	3.1	41.7	1.5	0.7	47.1	1.4	1.2	1.8	0.7	5.2	1.2	1.2	3.2	1.2	6.8	
Veh	217	5887	342	529	6975	528	7125	266	119	8038	243	210	311	113	877	204	203	555	200	1162	17052
% Veh	99.1	98	99.4	97.8	98.1	97.8	98.3	100	94.4	98.3	99.2	99.5	99	86.9	97.4	99.5	99	99.5	97.1	99	98.2
Trucks	1	119	2	12	134	3	121	0	7	131	2	1	3	17	23	1	2	3	6	12	300
% Trucks	0.5	2	0.6	2.2	1.9	0.6	1.7	0	5.6	1.6	0.8	0.5	1	13.1	2.6	0.5	1	0.5	2.9	1	1.7
U-Turns	1	0	0	0	1	9	0	0	0	9	0	0	0	0	0	0	0	0	0	0	10
% U-Turns	0.5	0	0	0	0	1.7	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0.1

Alton Road & 10th Street

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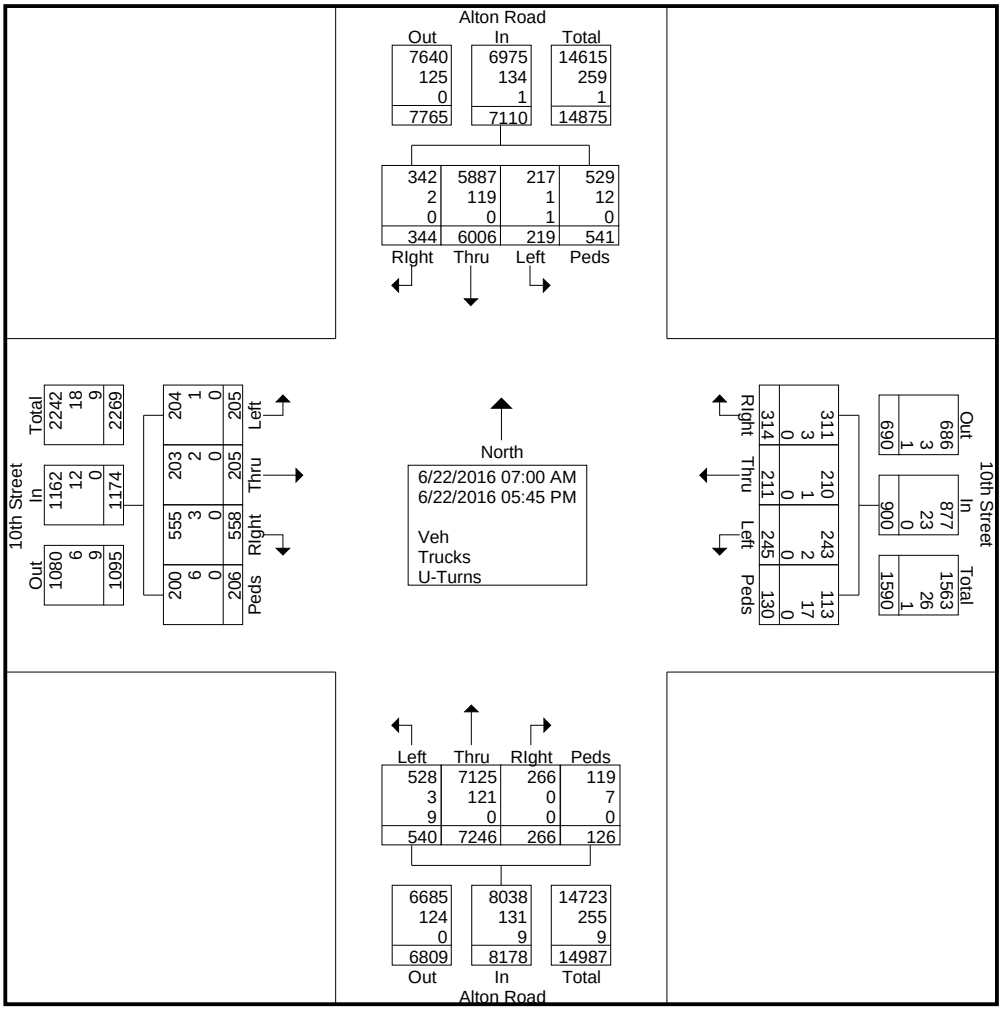

Alton Road & 10th Street

File Name : Alton Road & 10th Street
Site Code : 00000000
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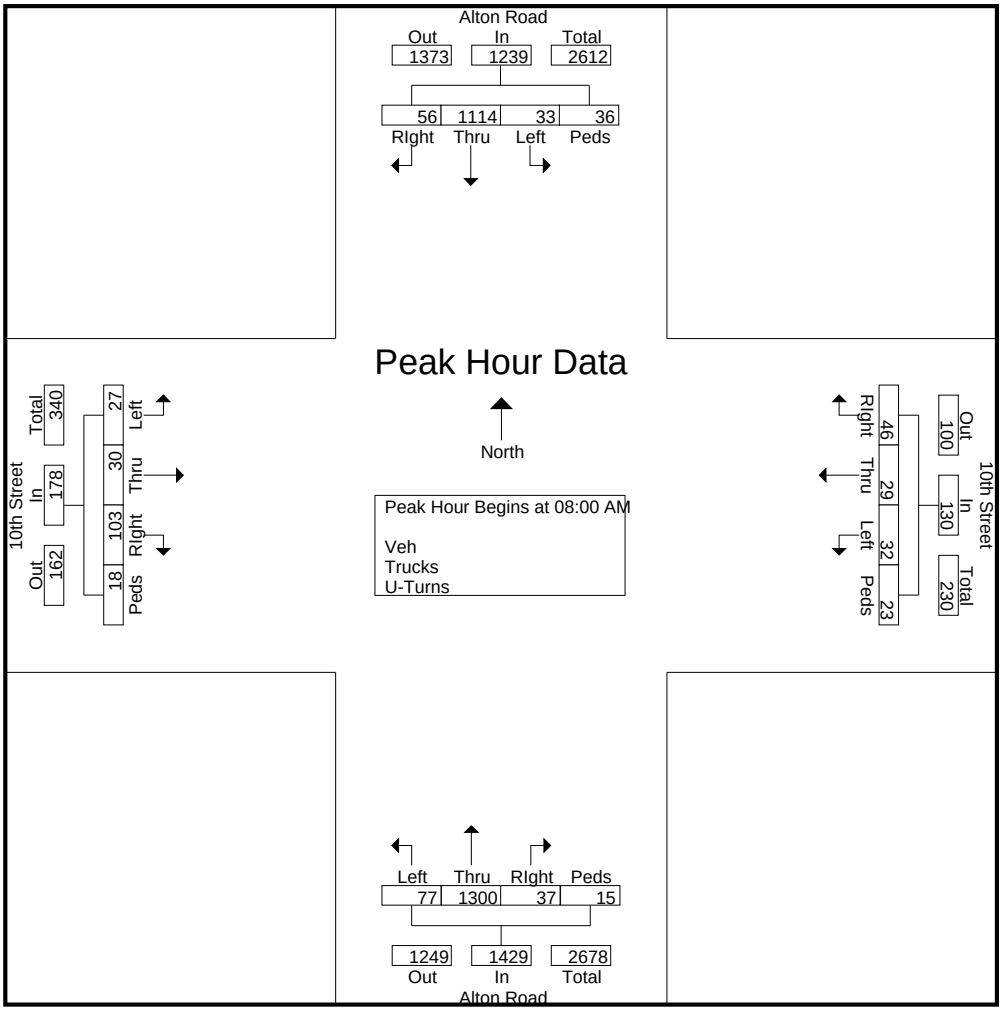
	Alton Road Southbound					Alton Road Northbound					10th Street Westbound					10th Street Eastbound					
Start Time	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	7	221	7	7	242	17	294	**15**	**6**	332	7	7	6	4	24	5	6	**29**	4	44	642
08:15 AM	8	298	13	**15**	334	**29**	309	7	2	347	7	7	6	5	25	8	8	19	6	41	747
08:30 AM	7	289	13	8	317	10	346	5	3	364	7	7	**18**	6	38	5	5	28	1	39	758
08:45 AM	**11**	**306**	**23**	6	**346**	21	**351**	10	4	**386**	**11**	**8**	16	**8**	**43**	**9**	**11**	27	**7**	**54**	**829**
Total Volume	33	1114	56	36	1239	77	1300	37	15	1429	32	29	46	23	130	27	30	103	18	178	2976
% App. Total	2.7	89.9	4.5	2.9		5.4	91	2.6	1		24.6	22.3	35.4	17.7		15.2	16.9	57.9	10.1		
PHF	.750	.910	.609	.600	.895	.664	.926	.617	.625	.926	.727	.906	.639	.719	.756	.750	.682	.888	.643	.824	.897



Alton Road & 10th Street

File Name : Alton Road & 10th Street
Site Code : 00000000
Start Date : 6/22/2016
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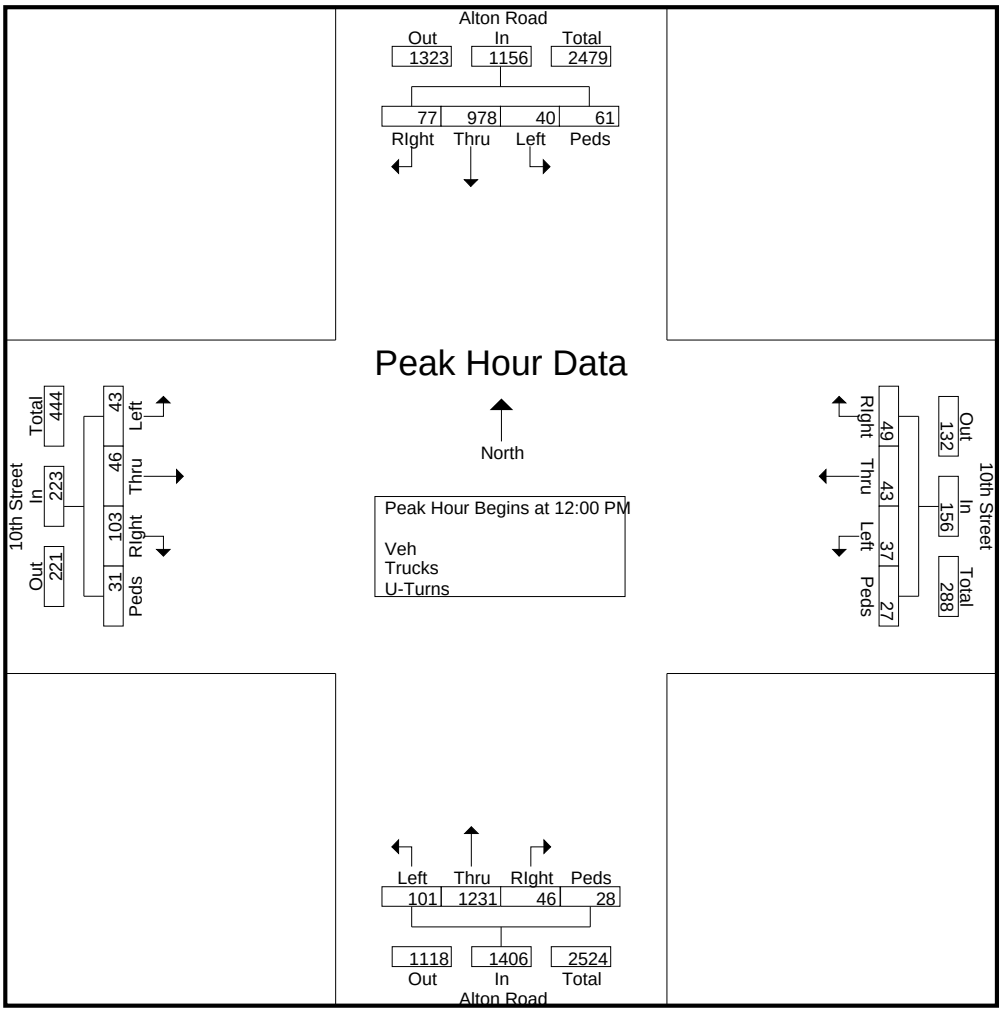
	Alton Road Southbound					Alton Road Northbound					10th Street Westbound					10th Street Eastbound					
Start Time	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	6	226	19	**20**	271	23	295	10	7	335	9	**13**	12	0	34	**13**	8	**27**	7	55	695
12:15 PM	7	**270**	**26**	16	**319**	26	**314**	7	7	354	8	11	11	10	40	8	14	27	7	56	**769**
12:30 PM	12	229	14	9	264	**32**	310	12	3	357	**10**	8	**15**	**11**	**44**	13	**16**	24	5	**58**	723
12:45 PM	**15**	253	18	16	302	20	312	**17**	**11**	**360**	10	11	11	6	38	9	8	25	**12**	54	754
Total Volume	40	978	77	61	1156	101	1231	46	28	1406	37	43	49	27	156	43	46	103	31	223	2941
% App. Total	3.5	84.6	6.7	5.3		7.2	87.6	3.3	2		23.7	27.6	31.4	17.3		19.3	20.6	46.2	13.9		
PHF	.667	.906	.740	.763	.906	.789	.980	.676	.636	.976	.925	.827	.817	.614	.886	.827	.719	.954	.646	.961	.956



Alton Road & 10th Street

File Name : Alton Road & 10th Street
Site Code : 00000000
Start Date : 6/22/2016
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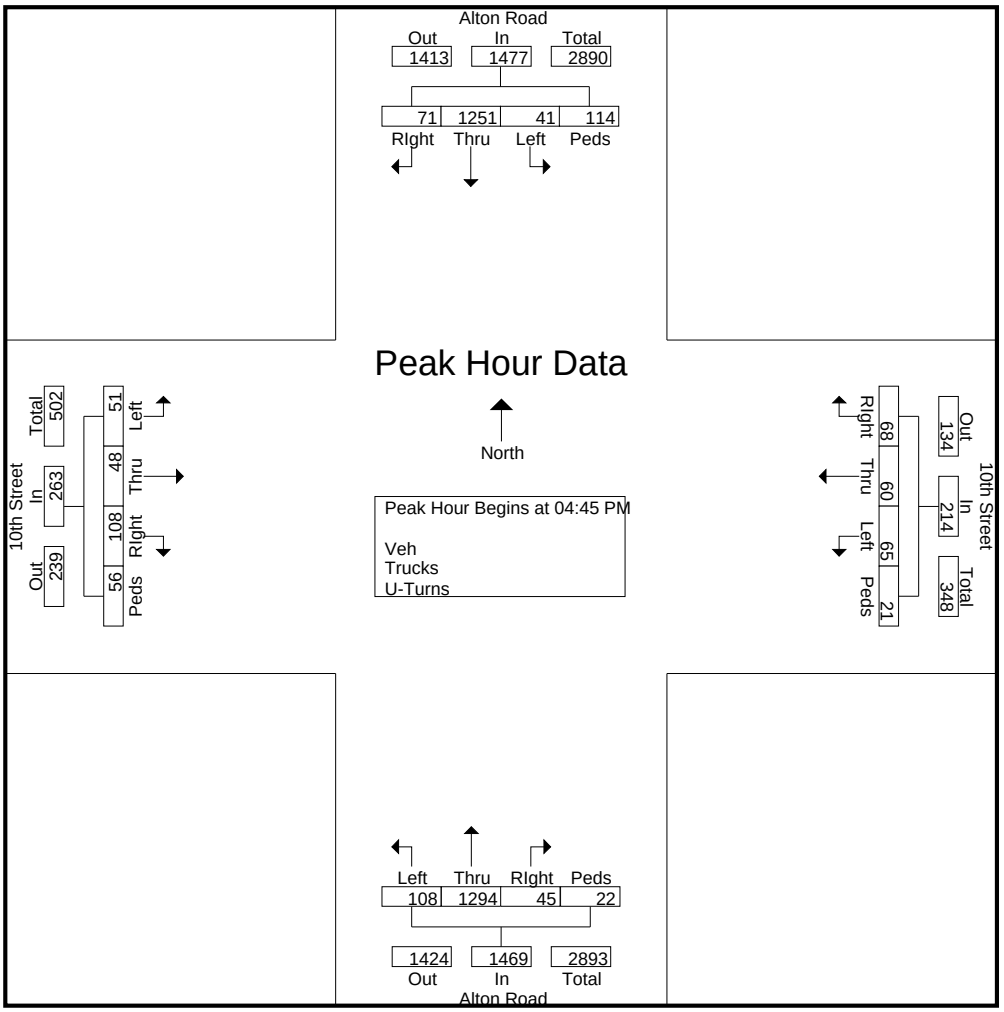
	Alton Road Southbound					Alton Road Northbound					10th Street Westbound					10th Street Eastbound					
Start Time	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	**12**	316	17	**35**	**380**	21	326	**14**	6	367	18	14	**22**	**18**	**72**	13	13	**32**	11	69	**888**
05:00 PM	12	315	**23**	22	372	30	307	9	**8**	354	16	15	18	0	49	11	14	28	14	67	842
05:15 PM	7	**328**	14	26	375	**35**	**332**	11	2	**380**	12	**17**	12	3	44	12	6	25	14	57	856
05:30 PM	10	292	17	31	350	22	329	11	6	368	**19**	14	16	0	49	**15**	**15**	23	**17**	**70**	837
Total Volume	41	1251	71	114	1477	108	1294	45	22	1469	65	60	68	21	214	51	48	108	56	263	3423
% App. Total	2.8	84.7	4.8	7.7		7.4	88.1	3.1	1.5		30.4	28	31.8	9.8		19.4	18.3	41.1	21.3		
PHF	.854	.954	.772	.814	.972	.771	.974	.804	.688	.966	.855	.882	.773	.292	.743	.850	.800	.844	.824	.939	.964



Lenox Avenue & 9th Street

File Name : Lenox Avenue & 9th Street
Site Code : 00000000
Start Date : 6/22/2016
Page No : 1

Groups Printed- Veh - Trucks - Turns

	Lenox Avenue Southbound					Lenox Avenue Northbound					9th Street Westbound					9th Street Eastbound					
Start Time	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Int. Total
07:00 AM	0	9	2	2	13	3	3	1	0	7	3	3	0	0	6	2	3	1	0	6	32
07:15 AM	0	5	2	6	13	1	4	1	4	10	6	5	1	1	13	0	4	0	2	6	42
07:30 AM	0	8	1	3	12	3	4	1	3	11	3	6	1	3	13	1	6	1	1	9	45
07:45 AM	1	10	0	5	16	5	8	0	1	14	2	4	1	4	11	0	4	2	4	10	51
Total	1	32	5	16	54	12	19	3	8	42	14	18	3	8	43	3	17	4	7	31	170
08:00 AM	3	17	1	6	27	1	9	3	1	14	3	10	0	1	14	1	8	3	3	15	70
08:15 AM	1	12	1	5	19	4	8	1	1	14	5	8	1	1	15	1	6	2	2	11	59
08:30 AM	2	16	2	6	26	1	13	3	2	19	4	7	0	3	14	2	5	4	1	12	71
08:45 AM	2	20	1	2	25	7	14	3	3	27	4	8	1	8	21	2	6	4	5	17	90
Total	8	65	5	19	97	13	44	10	7	74	16	33	2	13	64	6	25	13	11	55	290
*** BREAK ***																					
11:00 AM	0	13	3	6	22	4	13	3	3	23	1	10	3	3	17	2	13	1	5	21	83
11:15 AM	6	16	3	9	34	2	11	2	3	18	4	16	3	9	32	3	10	1	3	17	101
11:30 AM	1	22	2	13	38	2	15	3	2	22	4	5	1	6	16	0	11	3	6	20	96
11:45 AM	0	11	2	0	13	3	20	1	3	27	1	7	2	9	19	1	17	3	5	26	85
Total	7	62	10	28	107	11	59	9	11	90	10	38	9	27	84	6	51	8	19	84	365
12:00 PM	0	15	3	0	18	4	18	4	5	31	6	7	0	6	19	1	11	3	5	20	88
12:15 PM	0	18	1	9	28	3	22	2	4	31	3	11	1	5	20	1	6	2	3	12	91
12:30 PM	1	11	0	4	16	11	15	3	1	30	4	10	0	9	23	0	10	3	9	22	91
12:45 PM	1	16	2	6	25	7	21	4	5	37	4	9	0	5	18	2	11	6	4	23	103
Total	2	60	6	19	87	25	76	13	15	129	17	37	1	25	80	4	38	14	21	77	373
*** BREAK ***																					
04:00 PM	0	17	4	7	28	5	21	2	5	33	0	10	1	2	13	0	17	3	7	27	101
04:15 PM	2	8	3	6	19	2	16	7	3	28	2	16	3	10	31	2	7	7	8	24	102
04:30 PM	1	19	3	7	30	6	26	6	2	40	6	9	0	5	20	2	12	4	12	30	120
04:45 PM	2	11	4	6	23	4	30	2	4	40	1	8	0	6	15	2	17	2	6	27	105
Total	5	55	14	26	100	17	93	17	14	141	9	43	4	23	79	6	53	16	33	108	428
05:00 PM	1	16	3	2	22	7	31	4	6	48	3	10	2	1	16	3	13	5	7	28	114
05:15 PM	0	23	2	3	28	8	20	1	5	34	3	16	4	6	29	3	13	3	9	28	119
05:30 PM	2	18	4	10	34	2	23	4	4	33	2	14	2	14	32	1	11	2	7	21	120
05:45 PM	2	17	1	8	28	4	27	4	3	38	6	11	0	8	25	0	13	6	2	21	112
Total	5	74	10	23	112	21	101	13	18	153	14	51	8	29	102	7	50	16	25	98	465
Grand Total	28	348	50	131	557	99	392	65	73	629	80	220	27	125	452	32	234	71	116	453	2091
Apprch %	5	62.5	9	23.5		15.7	62.3	10.3	11.6		17.7	48.7	6	27.7		7.1	51.7	15.7	25.6		
Total %	1.3	16.6	2.4	6.3	26.6	4.7	18.7	3.1	3.5	30.1	3.8	10.5	1.3	6	21.6	1.5	11.2	3.4	5.5	21.7	
Veh	24	345	50	101	520	93	382	62	49	586	76	215	27	85	403	31	226	71	82	410	1919
% Veh	85.7	99.1	100	77.1	93.4	93.9	97.4	95.4	67.1	93.2	95	97.7	100	68	89.2	96.9	96.6	100	70.7	90.5	91.8
Trucks	2	3	0	30	35	4	10	3	24	41	4	5	0	40	49	0	8	0	34	42	167
% Trucks	7.1	0.9	0	22.9	6.3	4	2.6	4.6	32.9	6.5	5	2.3	0	32	10.8	0	3.4	0	29.3	9.3	8
U-Turns	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0	1	0	0	0	1	5
% U-Turns	7.1	0	0	0	0.4	2	0	0	0	0.3	0	0	0	0	0	3.1	0	0	0	0.2	0.2

Lenox Avenue & 9th Street

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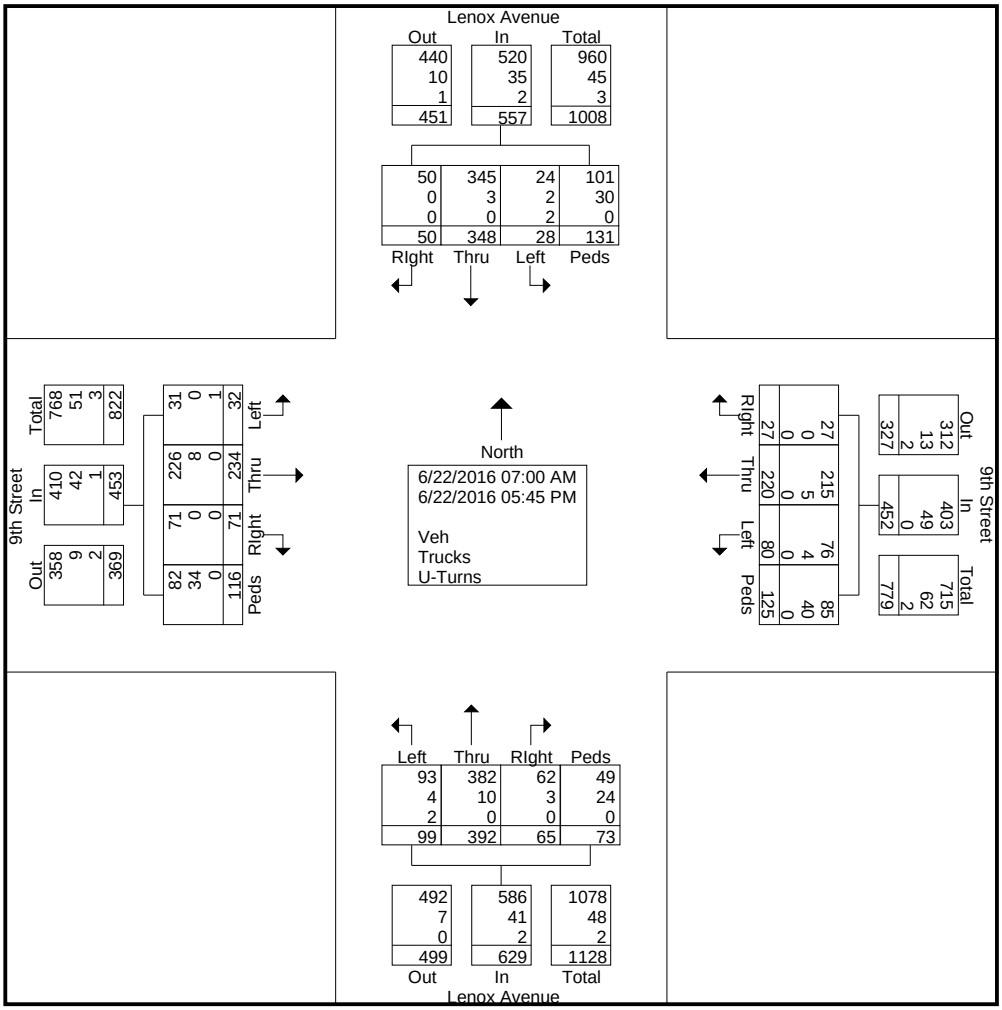

Lenox Avenue & 9th Street

File Name : Lenox Avenue & 9th Street
Site Code : 00000000
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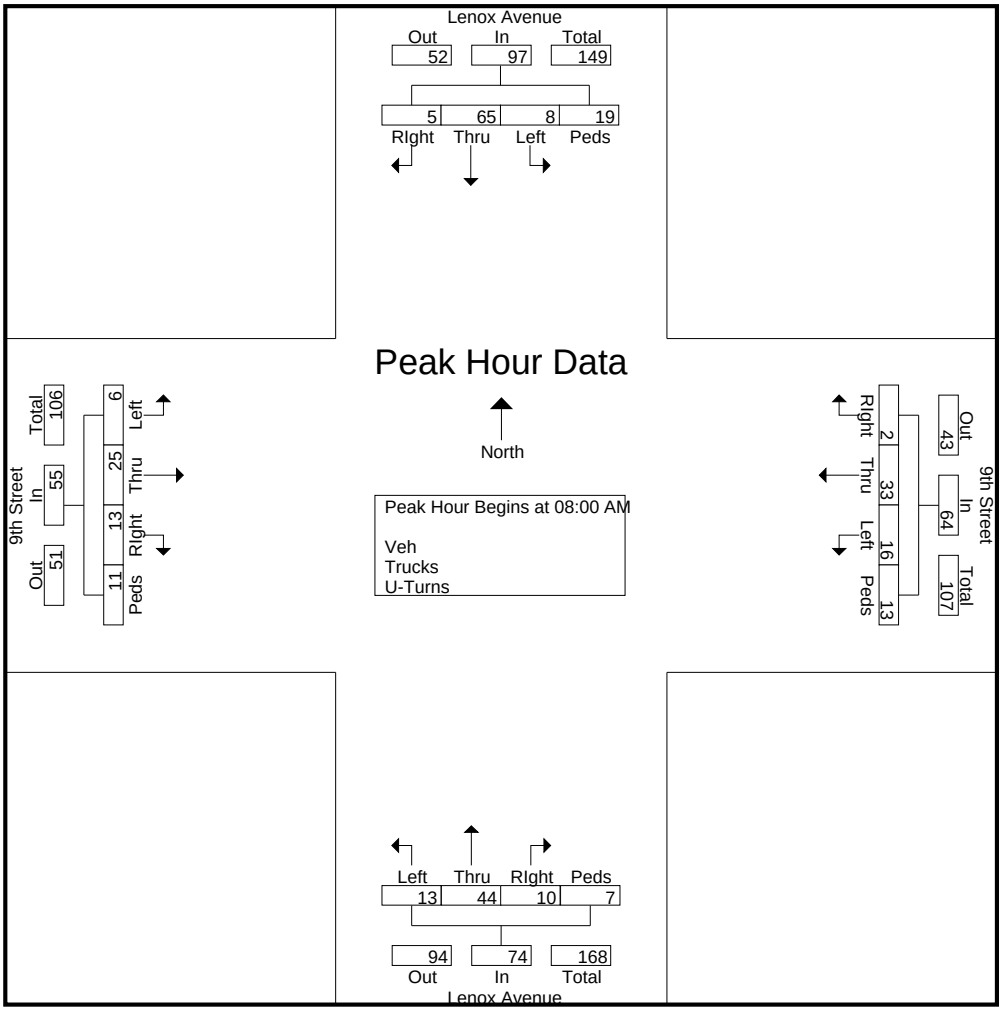
	Lenox Avenue Southbound					Lenox Avenue Northbound					9th Street Westbound					9th Street Eastbound					
Start Time	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	**3**	17	1	**6**	**27**	1	9	**3**	1	14	3	**10**	0	1	14	1	**8**	3	3	15	70
08:15 AM	1	12	1	5	19	4	8	1	1	14	**5**	8	**1**	1	15	1	6	2	2	11	59
08:30 AM	2	16	**2**	6	26	1	13	3	2	19	4	7	0	3	14	**2**	5	**4**	1	12	71
08:45 AM	2	**20**	1	2	25	**7**	**14**	3	**3**	**27**	4	8	1	**8**	**21**	2	6	4	**5**	**17**	**90**
Total Volume	8	65	5	19	97	13	44	10	7	74	16	33	2	13	64	6	25	13	11	55	290
% App. Total	8.2	67	5.2	19.6		17.6	59.5	13.5	9.5		25	51.6	3.1	20.3		10.9	45.5	23.6	20		
PHF	.667	.813	.625	.792	.898	.464	.786	.833	.583	.685	.800	.825	.500	.406	.762	.750	.781	.813	.550	.809	.806



Lenox Avenue & 9th Street

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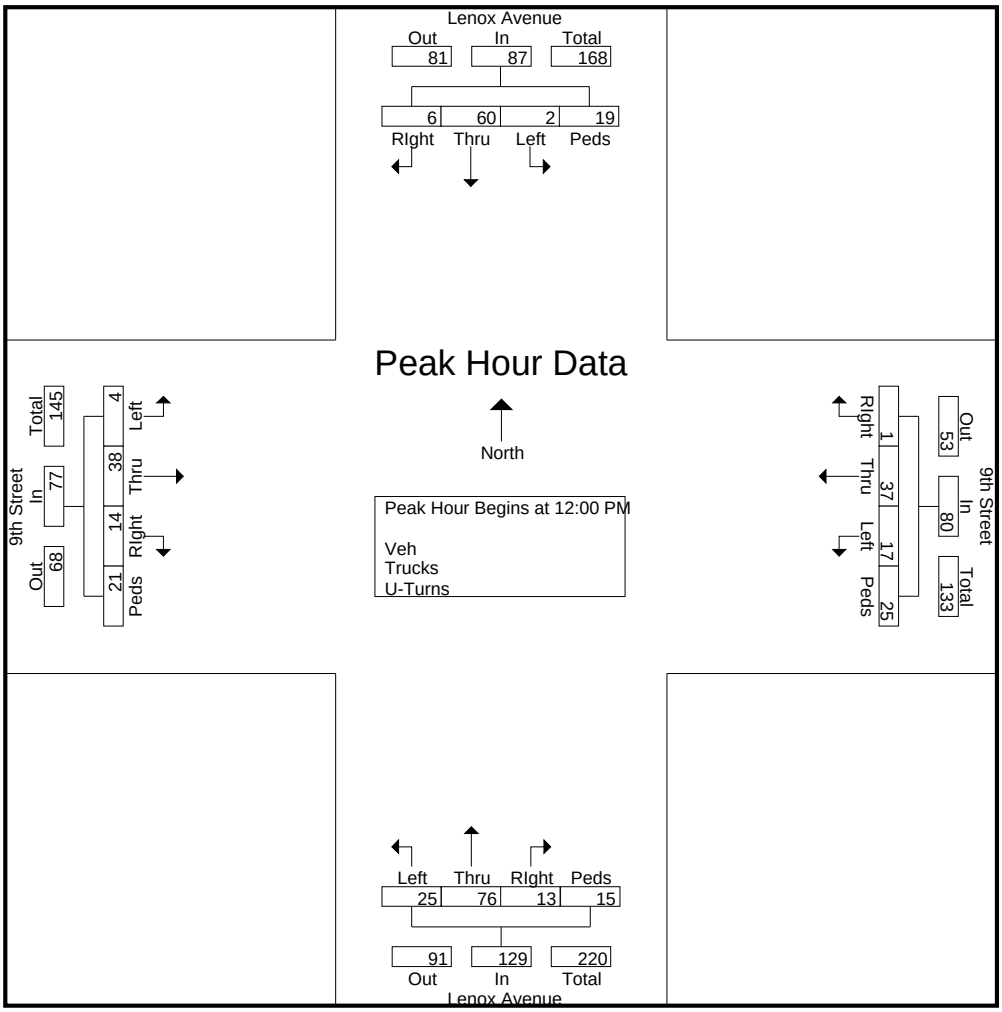
	Lenox Avenue Southbound					Lenox Avenue Northbound					9th Street Westbound					9th Street Eastbound					
Start Time	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	15	**3**	0	18	4	18	**4**	**5**	31	**6**	7	0	6	19	1	**11**	3	5	20	88
12:15 PM	0	**18**	1	**9**	**28**	3	**22**	2	4	31	3	**11**	**1**	5	20	1	6	2	3	12	91
12:30 PM	**1**	11	0	4	16	**11**	15	3	1	30	4	10	0	**9**	**23**	0	10	3	**9**	22	91
12:45 PM	1	16	2	6	25	7	21	4	5	**37**	4	9	0	5	18	**2**	11	**6**	4	**23**	**103**
Total Volume	2	60	6	19	87	25	76	13	15	129	17	37	1	25	80	4	38	14	21	77	373
% App. Total	2.3	69	6.9	21.8		19.4	58.9	10.1	11.6		21.2	46.2	1.2	31.2		5.2	49.4	18.2	27.3		
PHF	.500	.833	.500	.528	.777	.568	.864	.813	.750	.872	.708	.841	.250	.694	.870	.500	.864	.583	.583	.837	.905



Lenox Avenue & 9th Street

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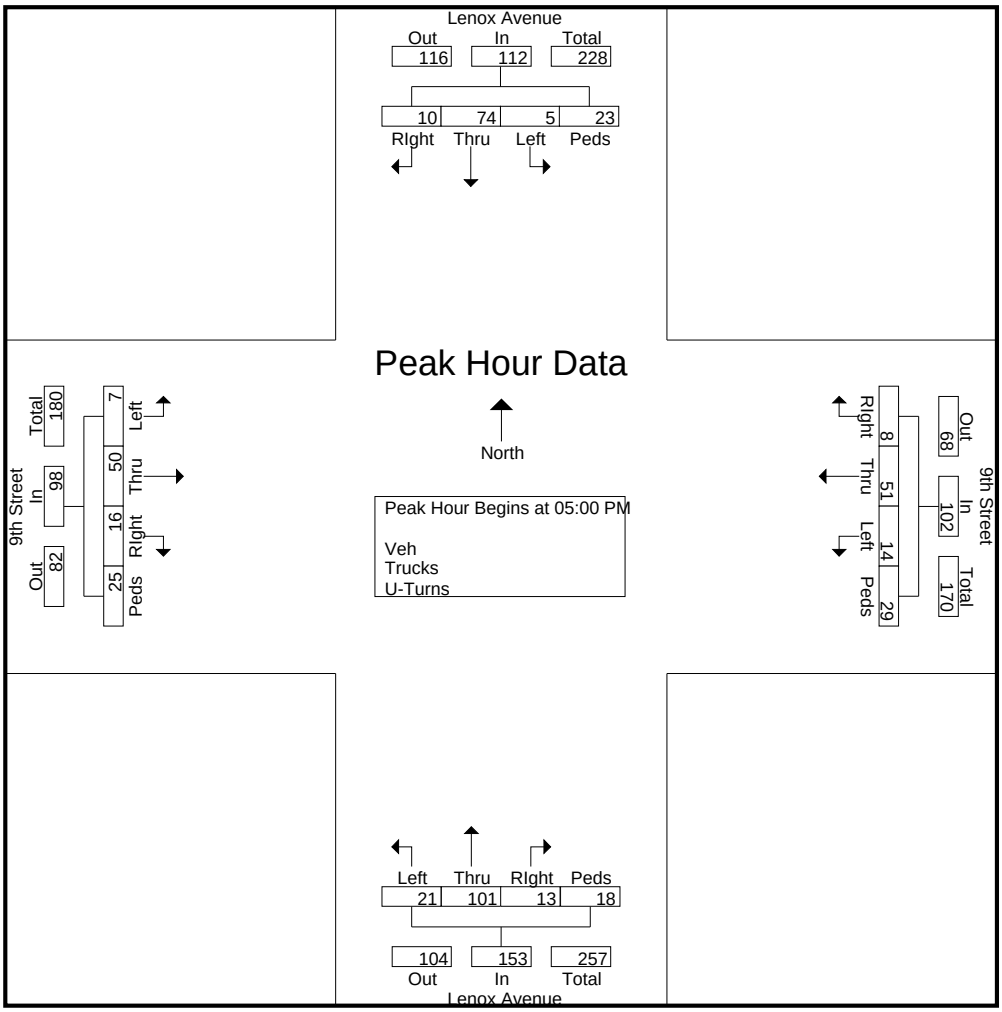
	Lenox Avenue Southbound					Lenox Avenue Northbound					9th Street Westbound					9th Street Eastbound					
Start Time	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	1	16	3	2	22	7	**31**	**4**	**6**	**48**	3	10	2	1	16	**3**	**13**	5	7	**28**	114
05:15 PM	0	**23**	2	3	28	**8**	20	1	5	34	3	**16**	**4**	6	29	3	13	3	**9**	28	119
05:30 PM	**2**	18	**4**	**10**	**34**	2	23	4	4	33	2	14	2	**14**	**32**	1	11	2	7	21	**120**
05:45 PM	2	17	1	8	28	4	27	4	3	38	**6**	11	0	8	25	0	13	**6**	2	21	112
Total Volume	5	74	10	23	112	21	101	13	18	153	14	51	8	29	102	7	50	16	25	98	465
% App. Total	4.5	66.1	8.9	20.5		13.7	66	8.5	11.8		13.7	50	7.8	28.4		7.1	51	16.3	25.5		
PHF	.625	.804	.625	.575	.824	.656	.815	.813	.750	.797	.583	.797	.500	.518	.797	.583	.962	.667	.694	.875	.969



Lenox Avenue & 10th Street

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Groups Printed- Veh - Trucks - Turns

	Lenox Avenue Southbound					Lenox Avenue Northbound					10th Street Westbound					10th Street Eastbound					
Start Time	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Int. Total
07:00 AM	1	5	0	1	7	1	3	1	0	5	2	13	1	1	17	2	15	3	1	21	50
07:15 AM	1	2	3	7	13	1	1	2	2	6	2	12	1	2	17	1	13	5	0	19	55
07:30 AM	1	7	2	2	12	0	2	0	0	2	0	16	1	0	17	3	12	1	2	18	49
07:45 AM	1	3	1	6	11	1	4	3	0	8	4	18	5	6	33	1	6	6	4	17	69
Total	4	17	6	16	43	3	10	6	2	21	8	59	8	9	84	7	46	15	7	75	223
08:00 AM	0	11	2	9	22	3	6	3	2	14	3	14	0	5	22	0	21	5	2	28	86
08:15 AM	1	8	2	9	20	3	6	1	0	10	3	15	2	0	20	2	18	5	2	27	77
08:30 AM	0	8	1	9	18	4	6	0	6	16	4	32	4	5	45	4	12	6	3	25	104
08:45 AM	1	10	2	4	17	5	5	4	0	14	6	31	2	6	45	0	26	4	1	31	107
Total	2	37	7	31	77	15	23	8	8	54	16	92	8	16	132	6	77	20	8	111	374
*** BREAK ***																					
11:00 AM	1	3	2	11	17	4	9	4	6	23	3	25	2	0	30	6	18	8	2	34	104
11:15 AM	1	8	1	15	25	4	12	5	1	22	4	28	0	0	32	1	19	9	3	32	111
11:30 AM	2	10	1	11	24	7	12	6	10	35	3	6	0	1	10	2	19	8	4	33	102
11:45 AM	0	6	1	7	14	8	18	2	9	37	2	16	1	1	20	1	24	8	4	37	108
Total	4	27	5	44	80	23	51	17	26	117	12	75	3	2	92	10	80	33	13	136	425
12:00 PM	1	8	1	5	15	1	12	2	2	17	3	36	2	1	42	1	20	6	2	29	103
12:15 PM	1	5	2	14	22	8	15	2	6	31	3	21	4	0	28	3	15	13	2	33	114
12:30 PM	0	8	2	9	19	4	14	4	8	30	2	31	3	2	38	3	28	6	1	38	125
12:45 PM	1	10	2	6	19	5	13	2	16	36	4	23	2	0	29	3	31	8	1	43	127
Total	3	31	7	34	75	18	54	10	32	114	12	111	11	3	137	10	94	33	6	143	469
*** BREAK ***																					
04:00 PM	3	10	5	6	24	2	12	4	1	19	6	43	2	0	51	4	24	7	3	38	132
04:15 PM	2	3	1	12	18	7	12	1	6	26	8	32	1	0	41	2	26	6	9	43	128
04:30 PM	5	8	0	6	19	1	15	4	1	21	3	38	4	0	45	1	26	7	5	39	124
04:45 PM	2	4	4	12	22	11	20	6	7	44	1	44	2	0	47	5	32	10	6	53	166
Total	12	25	10	36	83	21	59	15	15	110	18	157	9	0	184	12	108	30	23	173	550
05:00 PM	1	8	2	15	26	6	7	5	2	20	6	43	4	1	54	3	23	5	7	38	138
05:15 PM	3	12	2	12	29	5	23	4	2	34	3	37	3	0	43	4	17	7	4	32	138
05:30 PM	1	9	0	16	26	7	24	6	6	43	11	42	5	0	58	6	21	4	2	33	160
05:45 PM	1	7	7	23	38	8	27	6	4	45	3	49	7	0	59	7	21	11	8	47	189
Total	6	36	11	66	119	26	81	21	14	142	23	171	19	1	214	20	82	27	21	150	625
Grand Total	31	173	46	227	477	106	278	77	97	558	89	665	58	31	843	65	487	158	78	788	2666
Apprch %	6.5	36.3	9.6	47.6		19	49.8	13.8	17.4		10.6	78.9	6.9	3.7		8.2	61.8	20.1	9.9		
Total %	1.2	6.5	1.7	8.5	17.9	4	10.4	2.9	3.6	20.9	3.3	24.9	2.2	1.2	31.6	2.4	18.3	5.9	2.9	29.6	
Veh	27	171	45	207	450	101	273	74	95	543	88	655	55	30	828	62	482	151	72	767	2588
% Veh	87.1	98.8	97.8	91.2	94.3	95.3	98.2	96.1	97.9	97.3	98.9	98.5	94.8	96.8	98.2	95.4	99	95.6	92.3	97.3	97.1
Trucks	3	2	1	20	26	4	5	3	2	14	1	10	3	1	15	1	5	7	6	19	74
% Trucks	9.7	1.2	2.2	8.8	5.5	3.8	1.8	3.9	2.1	2.5	1.1	1.5	5.2	3.2	1.8	1.5	1	4.4	7.7	2.4	2.8
U-Turns	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	2	0	0	0	2	4
% U-Turns	3.2	0	0	0	0.2	0.9	0	0	0	0.2	0	0	0	0	0	3.1	0	0	0	0.3	0.2

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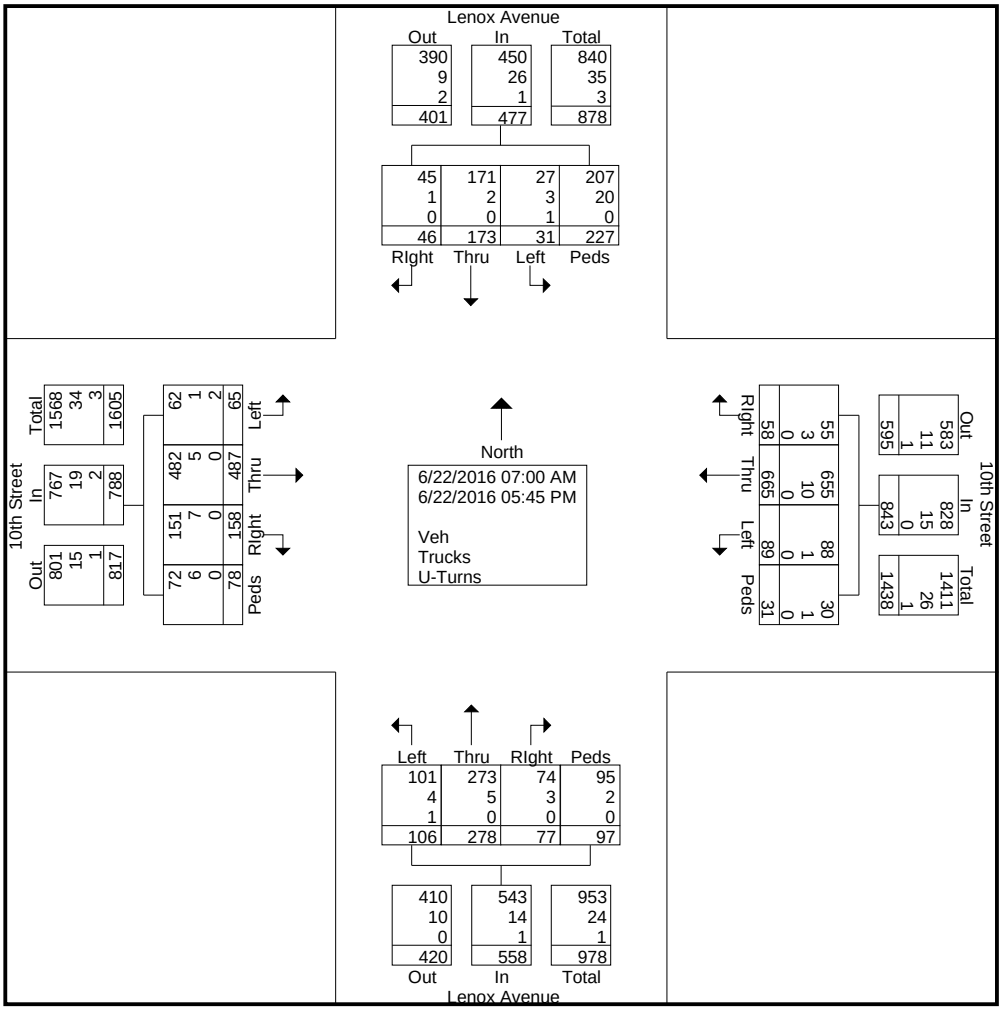

Lenox Avenue & 10th Street

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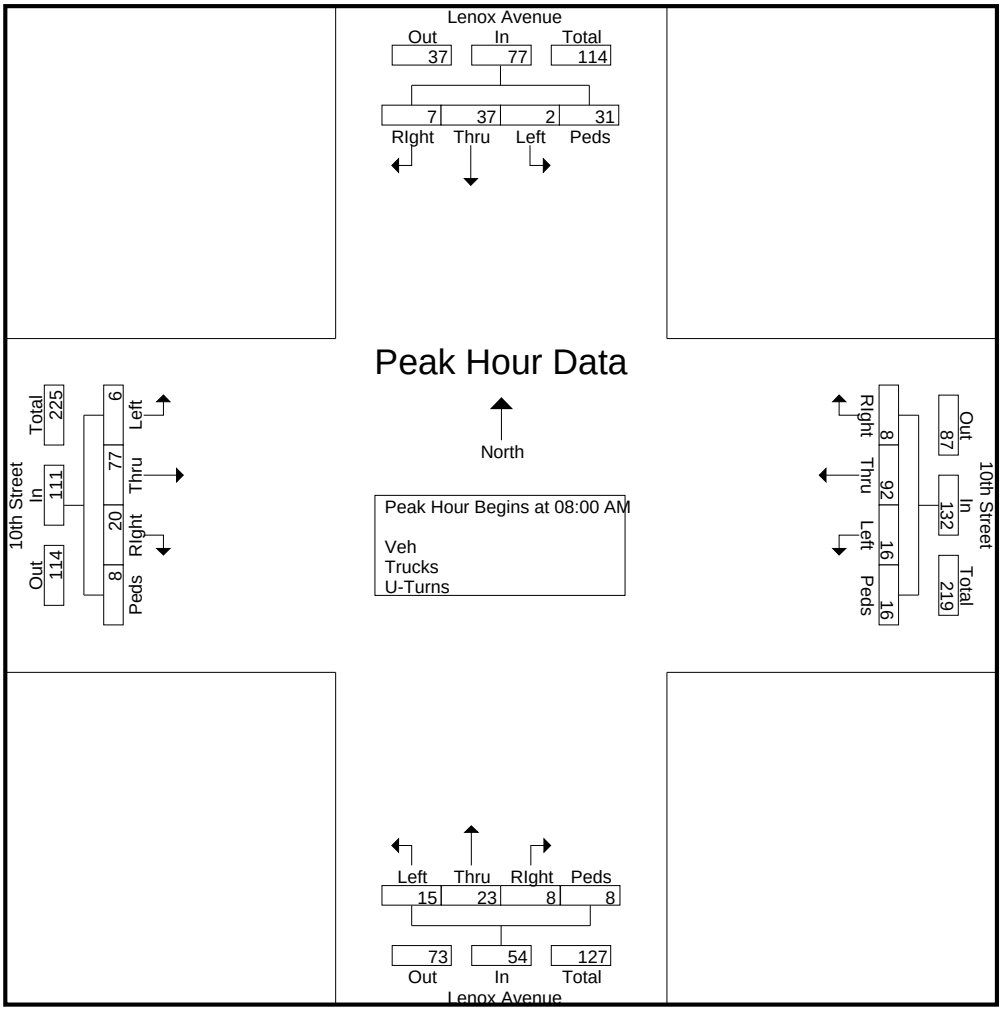
	Lenox Avenue Southbound					Lenox Avenue Northbound					10th Street Westbound					10th Street Eastbound					
Start Time	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Left	Thru	RIght	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	**11**	**2**	**9**	**22**	3	**6**	3	2	14	3	14	0	5	22	0	21	5	2	28	86
08:15 AM	**1**	8	2	9	20	3	6	1	0	10	3	15	2	0	20	2	18	5	2	27	77
08:30 AM	0	8	1	9	18	4	6	0	**6**	**16**	4	**32**	**4**	5	**45**	**4**	12	**6**	**3**	25	104
08:45 AM	1	10	2	4	17	**5**	5	**4**	0	14	**6**	31	2	**6**	45	0	**26**	4	1	**31**	**107**
Total Volume	2	37	7	31	77	15	23	8	8	54	16	92	8	16	132	6	77	20	8	111	374
% App. Total	2.6	48.1	9.1	40.3		27.8	42.6	14.8	14.8		12.1	69.7	6.1	12.1		5.4	69.4	18	7.2		
PHF	.500	.841	.875	.861	.875	.750	.958	.500	.333	.844	.667	.719	.500	.667	.733	.375	.740	.833	.667	.895	.874



Lenox Avenue & 10th Street

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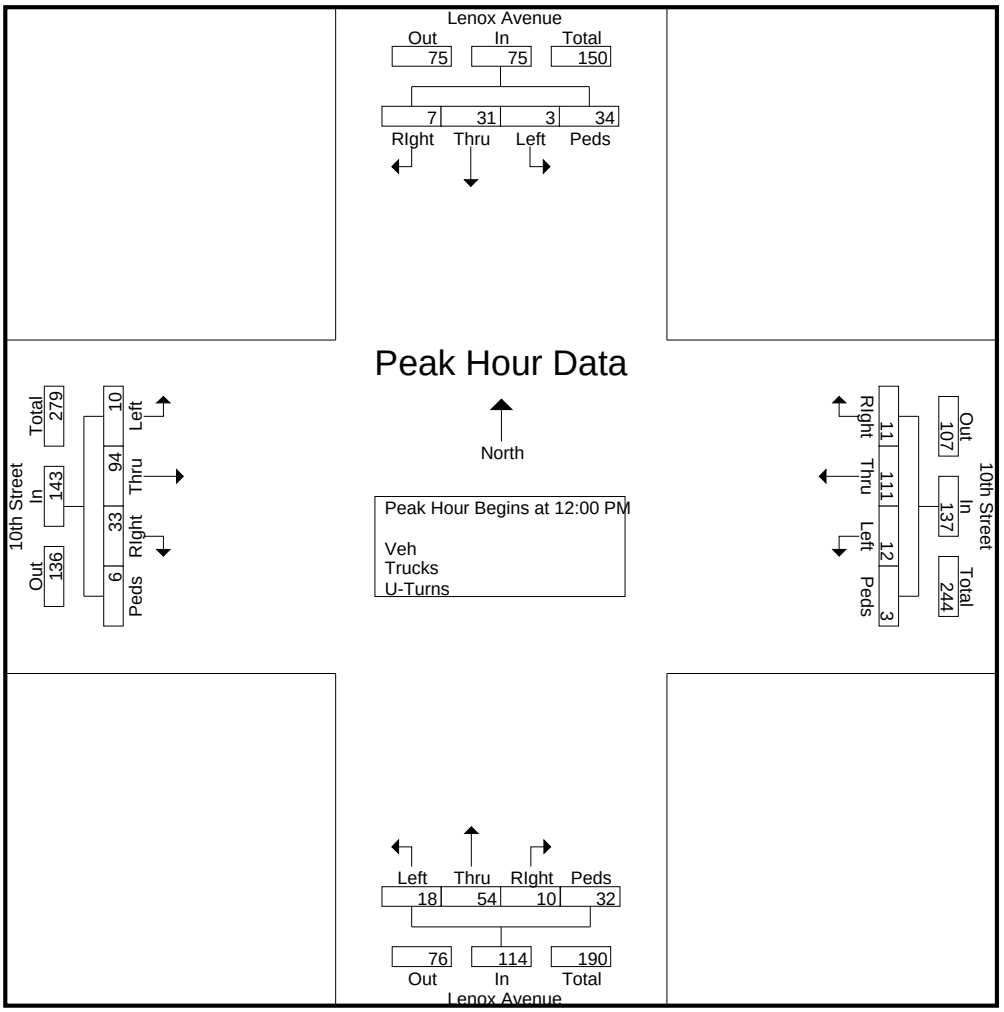
	Lenox Avenue Southbound					Lenox Avenue Northbound					10th Street Westbound					10th Street Eastbound					
Start Time	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	**1**	8	1	5	15	1	12	2	2	17	3	**36**	2	1	**42**	1	20	6	**2**	29	103
12:15 PM	1	5	**2**	**14**	**22**	**8**	**15**	2	6	31	3	21	**4**	0	28	**3**	15	**13**	2	33	114
12:30 PM	0	8	2	9	19	4	14	**4**	8	30	2	31	3	**2**	38	3	28	6	1	38	125
12:45 PM	1	**10**	2	6	19	5	13	2	**16**	**36**	**4**	23	2	0	29	3	**31**	8	1	**43**	**127**
Total Volume	3	31	7	34	75	18	54	10	32	114	12	111	11	3	137	10	94	33	6	143	469
% App. Total	4	41.3	9.3	45.3		15.8	47.4	8.8	28.1		8.8	81	8	2.2		7	65.7	23.1	4.2		
PHF	.750	.775	.875	.607	.852	.563	.900	.625	.500	.792	.750	.771	.688	.375	.815	.833	.758	.635	.750	.831	.923



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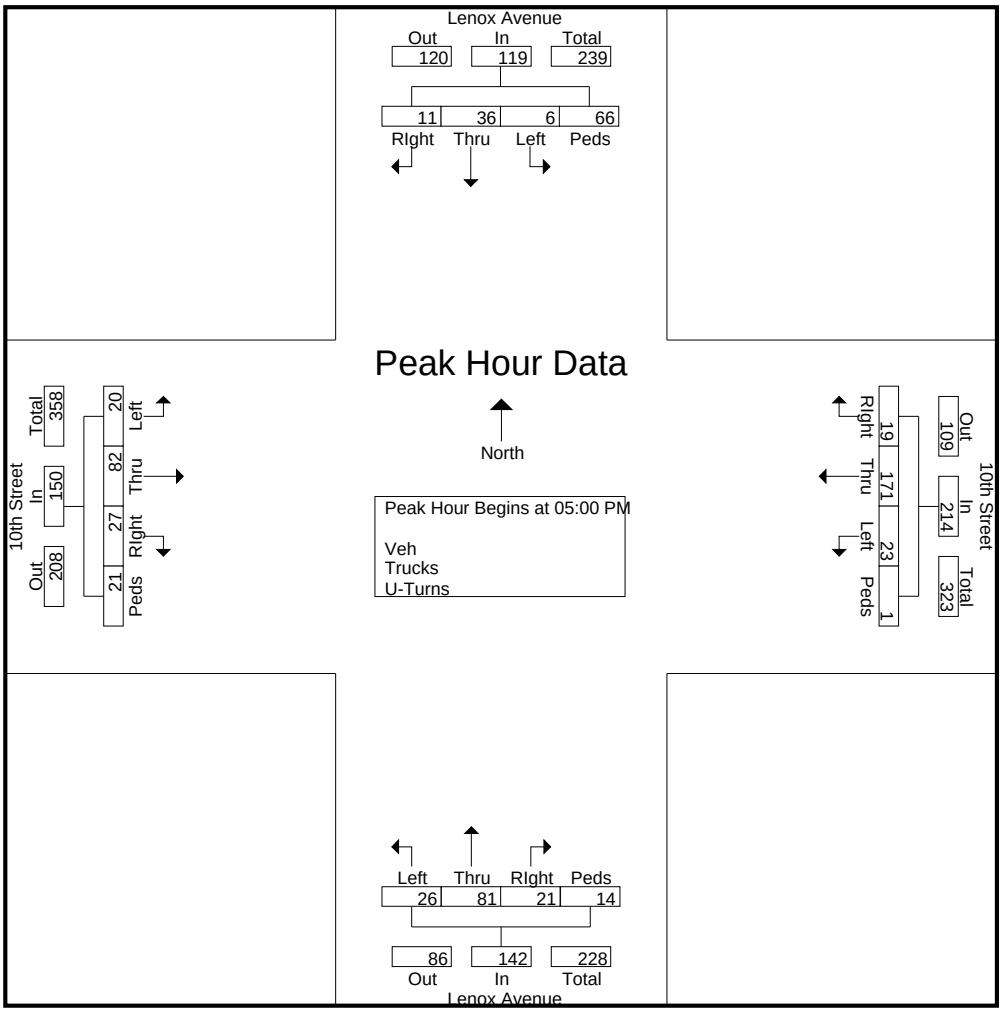
	Lenox Avenue Southbound					Lenox Avenue Northbound					10th Street Westbound					10th Street Eastbound					
Start Time	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Left	Thru	Right	Peds/Bike	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	1	8	2	15	26	6	7	5	2	20	6	43	4	**1**	54	3	**23**	5	7	38	138
05:15 PM	**3**	**12**	2	12	29	5	23	4	2	34	3	37	3	0	43	4	17	7	4	32	138
05:30 PM	1	9	0	16	26	7	24	**6**	**6**	43	**11**	42	5	0	58	6	21	4	2	33	160
05:45 PM	1	7	**7**	**23**	**38**	**8**	**27**	6	4	**45**	3	**49**	**7**	0	**59**	**7**	21	**11**	**8**	**47**	**189**
Total Volume	6	36	11	66	119	26	81	21	14	142	23	171	19	1	214	20	82	27	21	150	625
% App. Total	5	30.3	9.2	55.5		18.3	57	14.8	9.9		10.7	79.9	8.9	0.5		13.3	54.7	18	14		
PHF	.500	.750	.393	.717	.783	.813	.750	.875	.583	.789	.523	.872	.679	.250	.907	.714	.891	.614	.656	.798	.827



APPENDIX C

OTISS Reports

Project Information	
Project Name:	Alton Office Only
No:	
Date:	7/11/2016
City:	Miami
State/Province:	FL
Zip/Postal Code:	
Country:	USA
Client Name:	
Analyst's Name:	Moe Lavasani
Edition:	ITE-TGM 9th Edition

Land Use	**Size**	**AM Peak, Retail**		**PM Peak, Retail**	
		Entry	**Exit**	**Entry**	**Exit**
710 - General Office Building	11.12 1000 Sq. Feet Gross Floor Area	29	4	15	76
Reduction		0	0	0	0
Internal		0	0	0	0
Pass-by		0	0	0	0
Non-pass-by		29	4	15	76
Total		29	4	15	76
Total Reduction		0	0	0	0
Total Internal		0	0	0	0
Total Pass-by		0	0	0	0
Total Non-pass-by		29	4	15	76

Project Information	
Project Name:	Alton Retail Only
No:	
Date:	7/11/2016
City:	Miami
State/Province:	FL
Zip/Postal Code:	
Country:	USA
Client Name:	
Analyst's Name:	Moe Lavasani
Edition:	ITE-TGM 9th Edition

Land Use	Size	AM Peak, Retail		PM Peak, Retail	
		Entry	Exit	Entry	Exit
820 - Shopping Center	11.5 1000 Sq. Feet Gross Leasable Area	26	16	68	73
Reduction		0	0	0	0
Internal		0	0	0	0
Pass-by		0	0	50	53
Non-pass-by		26	16	18	20
Total		26	16	68	73
Total Reduction		0	0	0	0
Total Internal		0	0	0	0
Total Pass-by		0	0	50	53
Total Non-pass-by		26	16	18	20

APPENDIX D

Internal Trip Capture

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Alton Building	**Organization:**	CALTRAN Engineering Group
Project Location:	Miami Beach, FL	**Performed By:**	Moe Lavasani
Scenario Description:	Future Build Condition, AM	**Date:**	7/18/2016
Analysis Year:	2017	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710			33	29	4
Retail	820			42	26	16
Restaurant				0		
Cinema/Entertainment				0		
Residential				0		
Hotel				0		
All Other Land Uses[2]				0		
				75	55	20

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.08	0%	0%	1.08	0%	0%
Retail	1.08	0%	0%	1.08	0%	0%
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	1		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	80	59	21
Internal Capture Percentage	5%	3%	10%
External Vehicle-Trips[5]	71	53	18
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	3%	25%
Retail	4%	6%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

NCHRP 684 Internal Trip Capture Estimation Tool			
Project Name:	Alton Building	**Organization:**	CALTRAN Engineering Group
Project Location:	Miami Beach, FL	**Performed By:**	Moe Lavasani
Scenario Description:	Future Build Condition, PM	**Date:**	7/18/2016
Analysis Year:	2017	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips[3]		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710			91	15	76
Retail	820			141	68	73
Restaurant				0		
Cinema/Entertainment				0		
Residential				0		
Hotel				0		
All Other Land Uses[2]				0		
				232	83	149

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.[4]	% Transit	% Non-Motorized	Veh. Occ.[4]	% Transit	% Non-Motorized
Office	1.08	0%	0%	1.08	0%	0%
Retail	1.08	0%	0%	1.08	0%	0%
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		23	0	0	0	0
Retail	1		0	0	0	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	0	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	250	89	161
Internal Capture Percentage	19%	27%	15%
External Vehicle-Trips[5]	187	60	127
External Transit-Trips[6]	0	0	0
External Non-Motorized Trips[6]	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	6%	28%
Retail	32%	1%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	N/A	N/A
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Manual*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.

[3]Enter trips assuming no transit or non-motorized trips (as assumed in ITE *Trip Generation Manual*).

[4]Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.

[5]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.

[6]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

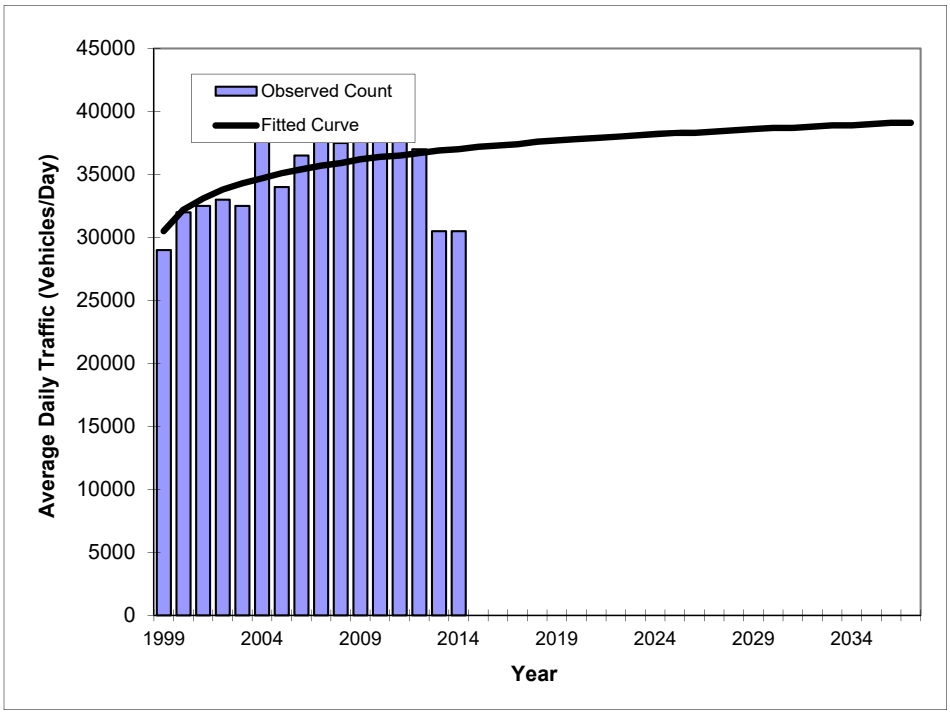
APPENDIX E

Growth Analysis

Alton Road --

FIN#	0
Location	1

County:	Miami (87)
Station #:	0
Highway:	Alton Road



Year	Traffic (ADT/AADT) Count*	Trend**
1999	29000	30500
2000	32000	32200
2001	32500	33100
2002	33000	33800
2003	32500	34300
2004	39000	34700
2005	34000	35100
2006	36500	35400
2007	39500	35700
2008	37500	35900
2009	38500	36200
2010	39000	36400
2011	39500	36500
2012	37000	36700
2013	30500	36900
2014	30500	37000
2017 Opening Year Trend		
2017	N/A	37400
2027 Mid-Year Trend		
2027	N/A	38400
2037 Design Year Trend		
2037	N/A	39100
TRANPLAN Forecasts/Trends		

*Axle-Adjusted

Trend R-squared:	25.63%
Compounded Annual Historic Growth Rate:	1.30%
Compounded Growth Rate (2014 to Design Year):	0.24%
Printed:	18-Jul-16

Decaying Exponential Growth Option

APPENDIX F

TOD and SOP

TOD Schedule Report

for 2642: Alton Rd&8 St

Print Date: 5/29/2016

Print Time: 2:03 AM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
2642	Alton Rd&8 St	HOLIDAY-1		N/A	0	0	N/A	0	Max 0

Splits

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

Active Phase Bank: Phase Bank 1

Phase		Walk (Phase Bank 1 - 2 - 3)	Don't Walk (1 - 2 - 3)	Min Initial (1 - 2 - 3)	Veh Ext (1 - 2 - 3)	Max Limit (1 - 2 - 3)	Max 2 (1 - 2 - 3)	Yellow	Red
1	NBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 5	2 - 2 - 2	5 - 5 - 5	15 - 15 - 15	4	2
2	SBT	7 - 7 - 7	10 - 10 - 10	7 - 7 - 7	1 - 1 - 1	40 - 40 - 40	0 - 0 - 0	4	2
3	-	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	24 - 24 - 24	7 - 7 - 7	2.5 - 2.5 - 2.5	7 - 7 - 7	26 - 28 - 28	4	2.4
5	SBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 5	2 - 2 - 2	5 - 5 - 5	15 - 15 - 15	4	2
6	NBT	7 - 7 - 7	10 - 10 - 10	16 - 16 - 16	1 - 1 - 1	40 - 40 - 40	0 - 0 - 0	4	2
7	-	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
8	EBT	4 - 4 - 4	24 - 24 - 24	7 - 7 - 7	2.5 - 2.5 - 2.5	7 - 7 - 7	26 - 28 - 28	4	2.4

Last In Service Date: unknown

Permitted Phases

	12345678
Default	12-456-8
External Permit 0	-2-4-6-8
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

TOD Schedule Report

for 2642: Alton Rd&8 St

Print Date: 5/29/2016

Print Time: 2:03 AM

Current TOD Schedule	Plan	Cycle	Green Time 1 NBL	2 SBT	3 -	4 WBT	5 SBL	6 NBT	7 -	8 EBT	Ring Offset	Offset
	1	100	7	46	0	29	7	46	0	29	0	5
	3	120	8	66	0	28	8	66	0	28	0	11
	5	150	8	96	0	28	8	96	0	28	0	95
	10	150	7	96	0	29	7	96	0	29	0	44
	13	130	8	74	0	30	8	74	0	30	0	93
	19	120	6	67	0	29	6	67	0	29	0	109
	20	140	8	84	0	30	8	84	0	30	0	90
	21	140	8	84	0	30	8	84	0	30	0	110
	22	120	7	66	0	29	7	66	0	29	0	110
	25	140	8	84	0	30	8	84	0	30	0	0
	26	180	16	106	0	40	16	106	0	40	0	78
	27	140	8	84	0	30	8	84	0	30	0	14

Local TOD Schedule

Time	Plan	DOW
0000	1	Su M T W Th F S
0600	3	Su M T W Th F S
0800	5	M T W Th F
0800	19	Su S
1000	20	Su S
1300	10	M T W Th F
1900	13	Su M T W Th F S
2000	22	Su S

Current Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8-------	SuM T W ThF S
0700	TOD OUTPUTS	--------	Su S
2200	TOD OUTPUTS	8-------	Su S

Local Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8-------	SuM T W ThF S
0600	TOD OUTPUTS	--------	M T W ThF
0700	TOD OUTPUTS	--------	Su S
2000	TOD OUTPUTS	8-------	M T W ThF
2200	TOD OUTPUTS	8-------	Su S

* Settings

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

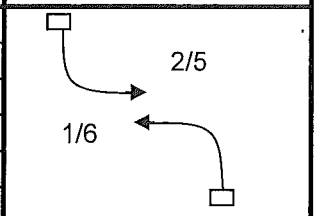
No Calendar Defined/Enabled

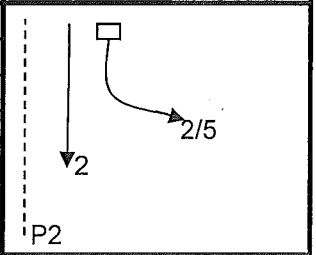
SIGNAL OPERATING PLAN

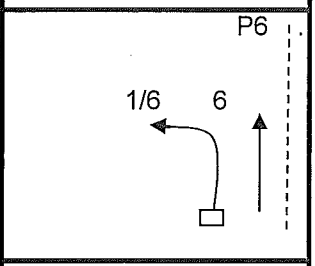
N

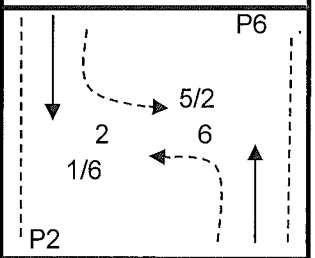
Timing Phases	Direction	NB		SB		EB		WB		Ped Heads			
	Head No.	1/6	6	5/2	2		8		4	P2	P6	P4	P8
(1+5)	Dwell	<G/R	R	<G/R	R		R		R	DW	DW	DW	DW
	Clear to (1+6)	<G/R	R	<Y/R	R		R		R	DW	DW	DW	DW
N/SBLT	(2+5)	<Y/R	R	<G/R	R		R		R	DW	DW	DW	DW
ALTON RD	(2+6)	<Y/R	R	<Y/R	R		R		R	DW	DW	DW	DW
(ACTUATE)													
(2+5)	Dwell	R	R	<G/G	G		R		R	W/F	DW	DW	DW
	Clear to (2+6)	R	R	<Y/G	G		R		R	DW	DW	DW	DW
NB													
ALTON RD													
(ACTUATE)													
(1+6)	Dwell	<G/G	G	R	R		R		R	DW	W/F	DW	DW
	Clear to (2+6)	<Y/G	G	R	R		R		R	DW	DW	DW	DW
SB													
ALTON RD													
(RECALL)													
(2+6)	Dwell	G	G	G	G		R		R	W/F	W/F	DW	DW
	Clear to (4+8)	Y	Y	Y	Y		R		R	DW	DW	DW	DW
N/SB													
ALTON RD													
(RECALL)													
	Dwell												
	Clear to												
(4+8)	Dwell	R	R	R	R		G		G	DW	DW	W/F	W/F
	Clear to (1+5)	R	R	R	R		Y		Y	DW	DW	DW	DW
E/WB	(1+6)	R	R	R	R		Y		Y	DW	DW	DW	DW
	(2+6)	R	R	R	R		Y		Y	DW	DW	DW	DW
8 ST	(2+6)	R	R	R	R		Y		Y	DW	DW	DW	DW
(ACTUATED)													
Flashing Operation		FY	FY	FY	FY		FR		FR				

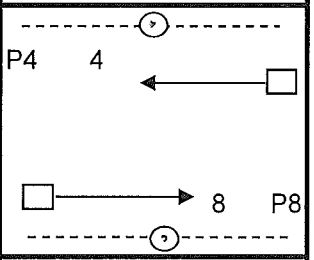
Movements/Display/Actuation











Page 1 of 1

Miami-Dade County Public Works Department

Drawn	Date	ALTON RD & 8 ST			
WILLIAM RIVERA PAZ	12/18/2014				
Checked	Date	Placed in Service		Phasing No.	Asset Number
H. HERNANDEZ	12/23/14	Date 1/21/15	By EEC	5	2642

TOD Schedule Report

for 3372: Alton Rd&10 St

Print Date: 5/29/2016

Print Time: 2:08 AM

Asset	Intersection	TOD Schedule	Op Mode	Plan #	Cycle	Offset	TOD Setting	Active PhaseBank	Active Maximum
3372	Alton Rd&10 St	HOLIDAY-1		N/A	0	0	N/A	0	Max 0

Splits

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

Active Phase Bank: Phase Bank 1

Phase		Walk (Phase Bank 1 - 2 - 3)	Don't Walk (1 - 2 - 3)	Min Initial (1 - 2 - 3)	Veh Ext (1 - 2 - 3)	Max Limit (1 - 2 - 3)	Max 2 (1 - 2 - 3)	Yellow	Red
1	NBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 5	2 - 2 - 2	5 - 5 - 5	12 - 12 - 12	4	2
2	SBT	7 - 7 - 7	9 - 9 - 9	7 - 7 - 7	1 - 1 - 1	50 - 50 - 50	0 - 0 - 0	4	2
3	-	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
4	WBT	5 - 5 - 5	21 - 21 - 21	7 - 7 - 7	2.5 - 2.5 - 2.5	12 - 12 - 12	33 - 28 - 28	4	2.1
5	SBL	0 - 0 - 0	0 - 0 - 0	5 - 5 - 5	2 - 2 - 2	5 - 5 - 5	12 - 12 - 12	4	2
6	NBT	7 - 7 - 7	9 - 9 - 9	7 - 7 - 7	1 - 1 - 1	50 - 50 - 50	0 - 0 - 0	4	2
7	-	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0 - 0 - 0	0	0
8	EBT	5 - 5 - 5	21 - 21 - 21	7 - 7 - 7	2.5 - 2.5 - 2.5	12 - 12 - 12	33 - 28 - 28	4	2.1

Last In Service Date: 05/13/2010 11:34

Permitted Phases

	12345678
Default	12-456-8
External Permit 0	-2-4-6-8
External Permit 1	-2-4-6-8
External Permit 2	-2-4-6-8

TOD Schedule Report

for 3372: Alton Rd&10 St

Print Date: 5/29/2016

Print Time: 2:08 AM

Current TOD Schedule	Plan	Cycle	Green Time 1 NBL	2 SBT	3 -	4 WBT	5 SBL	6 NBT	7 -	8 EBT	Ring Offset	Offset
	1	100	8	47	0	27	8	47	0	27	0	34
	3	120	7	69	0	26	7	69	0	26	0	10
	5	150	11	88	0	33	11	88	0	33	0	90
	10	150	15	84	0	33	15	84	0	33	0	38
	13	130	8	77	0	0	8	77	0	27	0	88
	19	120	8	67	0	0	8	67	0	27	0	100
	20	140	15	74	0	0	15	74	0	33	0	81
	21	140	15	74	0	0	15	74	0	33	0	7
	22	120	8	67	0	0	8	67	0	27	0	105
	25	140	15	74	0	33	15	74	0	33	0	8
	26	180	15	114	0	33	15	114	0	33	0	94
	27	140	15	74	0	33	15	74	0	33	0	35

Local TOD Schedule

Time	Plan	DOW
0000	1	Su M T W Th F S
0600	3	Su M T W Th F S
0800	5	M T W Th F
0800	19	Su S
1000	20	Su S
1300	10	M T W Th F
1900	13	Su M T W Th F S
2000	22	Su S

Current Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8-------	SuM T W ThF S
0700	TOD OUTPUTS	--------	Su S
2200	TOD OUTPUTS	8-------	Su S

Local Time of Day Function

Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8-------	SuM T W ThF S
0600	TOD OUTPUTS	--------	M T W ThF
0700	TOD OUTPUTS	--------	Su S
2000	TOD OUTPUTS	8-------	M T W ThF
2200	TOD OUTPUTS	8-------	Su S

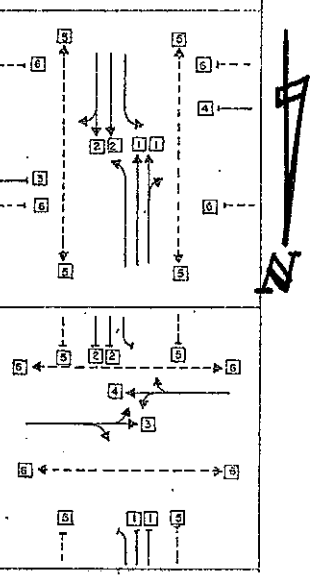
* Settings

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

TRAFFIC SIGNAL INTERVAL DIAGRAMS

PHASE	INT	1	2	3	4	5	6	7	8	9	10	11	12
		SIGNAL HEAD NUMBER											
ØA3+ØA4 ALTON RD. (RECALL) ØA	R/W	G	G	R	R	FW	DW						
	PED.CLEAR	G	G	R	R	FDW	DW						
	B3+B4	Y	Y	R	R	DW	DW						
	TO CLEAR												
ØB3+ØB4 10 ST. (ACTUATED) ØB	R/W	R	R	G	G	DW	FW						
	PED.CLEAR	R	R	G	G	DW	FDW						
	A3+A4	R	R	Y	Y	DW	DW						
	TO CLEAR												



LEGEND

- A legal movement on green indication.
- A movement that must yield to green indication.
- Movement on yellow indication.
- Stopped condition on red indication.
- XXXXXXXXXXX Pedestrian movement
- XX XX Pedestrian clearance

ASSET # 33372

Drawn	Date	METROPOLITAN DADE COUNTY DEPARTMENT OF TRAFFIC AND TRANSPORTATION
C.L. ROQUE	6/3/76	
Check: Wadsworth, Division Engineer	Date: 9/13/76	ALTON ROAD & 10 STREET
	Date	

Placed in Service		Timing Number	Phasing Number
Date: 1/29/76	By CONTRACTOR	—	2

APPENDIX G

Synchro Reports

Existing Condition, AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	12	118	36	14	27	72	1429	29	47	1301	14
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)	0.99		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1861	1900	1881	1845	1900	1845	1863	1900
Adj Flow Rate, veh/h	5	13	130	40	15	30	79	1570	32	52	1430	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	3	2	2
Cap, veh/h	28	32	258	135	54	84	292	2247	46	251	2296	24
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.05	0.64	0.64	0.05	0.64	0.64
Sat Flow, veh/h	19	175	1400	543	295	458	1792	3511	71	1757	3587	38
Grp Volume(v), veh/h	148	0	0	85	0	0	79	782	820	52	705	740
Grp Sat Flow(s),veh/h/ln	1594	0	0	1296	0	0	1792	1752	1830	1757	1770	1855
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	2.1	43.5	43.8	1.4	35.8	35.8
Cycle Q Clear(g_c), s	12.5	0.0	0.0	9.4	0.0	0.0	2.1	43.5	43.8	1.4	35.8	35.8
Prop In Lane	0.03		0.88	0.47		0.35	1.00		0.04	1.00		0.02
Lane Grp Cap(c), veh/h	318	0	0	274	0	0	292	1122	1171	251	1133	1187
V/C Ratio(X)	0.47	0.00	0.00	0.31	0.00	0.00	0.27	0.70	0.70	0.21	0.62	0.62
Avail Cap(c_a), veh/h	318	0	0	274	0	0	292	1122	1171	251	1133	1187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.0	0.0	0.0	53.3	0.0	0.0	12.8	17.6	17.6	14.9	16.2	16.2
Incr Delay (d2), s/veh	4.8	0.0	0.0	2.9	0.0	0.0	2.3	3.6	3.5	1.9	2.6	2.5
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	5.9	0.0	0.0	3.3	0.0	0.0	1.2	22.0	23.0	0.9	18.2	19.1
LnGrp Delay(d),s/veh	59.9	0.0	0.0	56.3	0.0	0.0	15.1	21.2	21.1	16.8	18.7	18.6
LnGrp LOS	E			E			B	C	C	B	B	B
Approach Vol, veh/h		148			85			1681			1497	
Approach Delay, s/veh		59.9			56.3			20.8			18.6	
Approach LOS		E			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	102.0		34.0	14.0	102.0		34.0
Change Period (Y+Rc), s	6.0	6.0		6.4	6.0	6.0		6.4
Max Green Setting (Gmax), s	8.0	96.0		27.6	8.0	96.0		27.6
Max Q Clear Time (g_c+I1), s	3.4	45.8		14.5	4.1	37.8		11.4
Green Ext Time (p_c), s	0.0	40.3		1.1	0.0	45.2		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.4
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	192	0	0	46	51	1391	27	17	1189	27
Conflicting Peds, #/hr	0	0	8	0	0	15	0	0	24	0	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	145	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	0	0	4	0	3	4	9	2	2
Mvmt Flow	0	0	211	0	0	51	56	1529	30	19	1307	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2258	3052	700	2369	3052	810	1344	0	0	1573	0	0
Stage 1	1367	1367	-	1670	1670	-	-	-	-	-	-	-
Stage 2	891	1685	-	699	1382	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.94	7.5	6.5	6.98	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.32	3.5	4	3.34	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	23	13	382	19	13	319	519	-	-	383	-	-
Stage 1	158	217	-	102	154	-	-	-	-	-	-	-
Stage 2	308	152	-	401	213	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	17	11	372	7	11	311	509	-	-	378	-	-
Mov Cap-2 Maneuver	17	11	-	7	11	-	-	-	-	-	-	-
Stage 1	140	205	-	90	135	-	-	-	-	-	-	-
Stage 2	226	134	-	162	201	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.6	18.8	0.4	0.2
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	509	-	-	372	311	378	-	-
HCM Lane V/C Ratio	0.11	-	-	0.567	0.163	0.049	-	-
HCM Control Delay (s)	12.9	-	-	26.6	18.8	15	-	-
HCM Lane LOS	B	-	-	D	C	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.4	0.6	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	32	108	34	30	48	81	1365	39	35	1170	59
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)	0.99		0.98	1.00		0.95	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1885	1900	1900	1895	1900	1900	1863	1900	1881	1865	1900
Adj Flow Rate, veh/h	31	36	120	38	33	53	90	1517	43	39	1300	66
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	1	1	1	0	2	2	1	2	2
Cap, veh/h	69	85	226	114	102	138	316	2062	58	300	2011	102
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.10	0.78	0.78	0.07	0.59	0.59
Sat Flow, veh/h	186	390	1031	378	464	629	1810	3514	99	1792	3428	174
Grp Volume(v), veh/h	187	0	0	124	0	0	90	763	797	39	671	695
Grp Sat Flow(s),veh/h/ln	1607	0	0	1471	0	0	1810	1770	1843	1792	1771	1831
Q Serve(g_s), s	4.2	0.0	0.0	0.0	0.0	0.0	2.6	33.3	33.6	1.1	37.8	38.0
Cycle Q Clear(g_c), s	14.9	0.0	0.0	10.7	0.0	0.0	2.6	33.3	33.6	1.1	37.8	38.0
Prop In Lane	0.17		0.64	0.31		0.43	1.00		0.05	1.00		0.09
Lane Grp Cap(c), veh/h	380	0	0	354	0	0	316	1038	1081	300	1039	1074
V/C Ratio(X)	0.49	0.00	0.00	0.35	0.00	0.00	0.29	0.73	0.74	0.13	0.65	0.65
Avail Cap(c_a), veh/h	380	0	0	354	0	0	316	1038	1081	300	1039	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	0.0	0.0	49.6	0.0	0.0	14.9	10.5	10.5	13.1	20.6	20.7
Incr Delay (d2), s/veh	4.5	0.0	0.0	2.7	0.0	0.0	2.3	4.6	4.5	0.9	3.1	3.0
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	7.3	0.0	0.0	4.6	0.0	0.0	1.5	17.0	18.1	0.6	19.3	20.0
LnGrp Delay(d),s/veh	56.0	0.0	0.0	52.3	0.0	0.0	17.1	15.1	15.0	14.0	23.7	23.7
LnGrp LOS	E			D			B	B	B	B	C	C
Approach Vol, veh/h		187			124			1650			1405	
Approach Delay, s/veh		56.0			52.3			15.2			23.4	
Approach LOS		E			D			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.0	94.0		39.0	17.0	94.0		39.0
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1
Max Green Setting (Gmax), s	11.0	88.0		32.9	11.0	88.0		32.9
Max Q Clear Time (g_c+I1), s	3.1	35.6		16.9	4.6	40.0		12.7
Green Ext Time (p_c), s	0.0	40.0		1.7	0.1	37.4		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	26	14	17	35	2	14	46	11	8	68	5
Conflicting Peds, #/hr	0	0	7	0	0	19	0	0	13	0	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	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	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	5	2	0	0	3	0	7	1	0	4	3	4
Mvmt Flow	7	32	17	21	43	2	17	57	14	10	84	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	254	238	107	255	234	94	97	0	0	89	0	0
Stage 1	114	114	-	117	117	-	-	-	-	-	-	-
Stage 2	140	124	-	138	117	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.2	7.1	6.53	6.2	4.17	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.3	3.5	4.027	3.3	2.263	-	-	2.236	-	-
Pot Cap-1 Maneuver	693	663	953	702	665	968	1466	-	-	1494	-	-
Stage 1	884	801	-	892	797	-	-	-	-	-	-	-
Stage 2	856	793	-	870	797	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	636	636	937	636	638	944	1450	-	-	1480	-	-
Mov Cap-2 Maneuver	636	636	-	636	638	-	-	-	-	-	-	-
Stage 1	868	791	-	867	775	-	-	-	-	-	-	-
Stage 2	789	771	-	805	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	11.2	1.5	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1450	-	-	705	645	1480	-	-
HCM Lane V/C Ratio	0.012	-	-	0.081	0.103	0.007	-	-
HCM Control Delay (s)	7.5	0	-	10.6	11.2	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	6	81	21	0	17	97	8	0	16	24	8
Peak Hour Factor	0.92	0.87	0.87	0.87	0.92	0.87	0.87	0.87	0.92	0.87	0.87	0.87
Heavy Vehicles, %	2	1	2	5	2	2	1	4	2	10	1	2
Mvmt Flow	0	7	93	24	0	20	111	9	0	18	28	9
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8	8.2	8.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	6%	14%	4%
Vol Thru, %	50%	75%	80%	81%
Vol Right, %	17%	19%	7%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	48	108	122	48
LT Vol	16	6	17	2
Through Vol	24	81	97	39
RT Vol	8	21	8	7
Lane Flow Rate	55	124	140	55
Geometry Grp	1	1	1	1
Degree of Util (X)	0.072	0.146	0.168	0.07
Departure Headway (Hd)	4.687	4.223	4.315	4.542
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	766	852	834	791
Service Time	2.706	2.237	2.329	2.559
HCM Lane V/C Ratio	0.072	0.146	0.168	0.07
HCM Control Delay	8.1	8	8.2	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.5	0.6	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	2	39	7
Peak Hour Factor	0.92	0.87	0.87	0.87
Heavy Vehicles, %	2	4	2	4
Mvmt Flow	0	2	45	8
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	7.9
HCM LOS	A

Lane

Intersection: 1: Alton Road & 8th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	180	94	94	450	431	73	324	308
Average Queue (ft)	111	61	67	392	304	40	202	211
95th Queue (ft)	184	106	102	501	475	72	315	318
Link Distance (ft)	365			416	416		334	334
Upstream Blk Time (%)				8	2		0	
Queuing Penalty (veh)				0	0		1	
Storage Bay Dist (ft)			180			160		
Storage Blk Time (%)				22			7	
Queuing Penalty (veh)				16			3	

Intersection: 2: Alton Road & 9th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	R	R	L	T	TR	L	T	TR
Maximum Queue (ft)	134	52	91	177	153	31	118	96
Average Queue (ft)	82	42	46	60	51	15	42	38
95th Queue (ft)	127	65	85	167	146	37	128	115
Link Distance (ft)	373	335		334	334		400	400
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			145			210		
Storage Blk Time (%)				6				
Queuing Penalty (veh)				3				

Intersection: 3: Alton Road & 10th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	117	140	92	420	401	31	446	446
Average Queue (ft)	94	71	47	371	360	16	298	274
95th Queue (ft)	130	132	86	453	443	39	443	423
Link Distance (ft)	384	338		400	400		431	431
Upstream Blk Time (%)				10	8		5	0
Queuing Penalty (veh)				71	60		0	0
Storage Bay Dist (ft)			160			150		
Storage Blk Time (%)				33			26	
Queuing Penalty (veh)				26			9	

Intersection: 4: Lenox Ave/Lenox Avenue & 9th Street

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	31	31	30
Average Queue (ft)	24	31	6
95th Queue (ft)	44	32	26
Link Distance (ft)	335	345	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Lenox Avenue & 10th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	31	56	78	55
Average Queue (ft)	31	41	26	29
95th Queue (ft)	32	60	73	58
Link Distance (ft)	338	337	399	410
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 190

Existing Condition, PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	21	86	44	30	49	130	1443	99	58	1455	15
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)	0.99		0.95	0.98		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1856	1900	1881	1845	1900	1845	1863	1900
Adj Flow Rate, veh/h	8	21	88	45	31	50	133	1472	101	59	1485	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	3	2	2
Cap, veh/h	34	66	227	121	86	115	267	2129	145	243	2297	23
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.05	0.64	0.64	0.05	0.64	0.64
Sat Flow, veh/h	45	347	1190	464	450	601	1792	3326	227	1757	3589	36
Grp Volume(v), veh/h	117	0	0	126	0	0	133	772	801	59	732	768
Grp Sat Flow(s),veh/h/ln	1582	0	0	1515	0	0	1792	1752	1801	1757	1770	1855
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	0.0	3.8	42.5	43.2	1.6	38.1	38.2
Cycle Q Clear(g_c), s	9.6	0.0	0.0	10.6	0.0	0.0	3.8	42.5	43.2	1.6	38.1	38.2
Prop In Lane	0.07		0.75	0.36		0.40	1.00		0.13	1.00		0.02
Lane Grp Cap(c), veh/h	327	0	0	321	0	0	267	1122	1152	243	1133	1187
V/C Ratio(X)	0.36	0.00	0.00	0.39	0.00	0.00	0.50	0.69	0.69	0.24	0.65	0.65
Avail Cap(c_a), veh/h	327	0	0	321	0	0	267	1122	1152	243	1133	1187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	0.0	0.0	53.3	0.0	0.0	15.8	17.4	17.5	15.3	16.6	16.6
Incr Delay (d2), s/veh	3.0	0.0	0.0	3.6	0.0	0.0	6.5	3.5	3.5	2.4	2.9	2.7
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	4.5	0.0	0.0	4.9	0.0	0.0	2.7	21.5	22.5	1.0	19.4	20.3
LnGrp Delay(d),s/veh	56.0	0.0	0.0	56.8	0.0	0.0	22.2	20.8	21.0	17.6	19.4	19.3
LnGrp LOS	E			E			C	C	C	B	B	B
Approach Vol, veh/h		117			126			1706			1559	
Approach Delay, s/veh		56.0			56.8			21.0			19.3	
Approach LOS		E			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	102.0		35.0	13.0	102.0		35.0
Change Period (Y+Rc), s	6.0	6.0		6.4	6.0	6.0		6.4
Max Green Setting (Gmax), s	7.0	96.0		28.6	7.0	96.0		28.6
Max Q Clear Time (g_c+I1), s	3.6	45.2		11.6	5.8	40.2		12.6
Green Ext Time (p_c), s	0.0	41.0		1.3	0.0	44.3		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	147	0	0	78	39	1371	51	28	1407	34
Conflicting Peds, #/hr	0	0	8	0	0	18	0	0	30	0	0	51
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	145	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	4	0	3	4	9	2	2
Mvmt Flow	0	0	155	0	0	82	41	1443	54	29	1481	36

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2388	3163	796	2377	3154	817	1525	0	0	1515	0	0
Stage 1	1566	1566	-	1570	1570	-	-	-	-	-	-	-
Stage 2	822	1597	-	807	1584	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.94	7.5	6.5	6.98	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.32	3.5	4	3.34	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	18	11	330	19	11	315	443	-	-	404	-	-
Stage 1	118	174	-	118	173	-	-	-	-	-	-	-
Stage 2	339	168	-	346	170	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	11	9	320	8	9	297	432	-	-	387	-	-
Mov Cap-2 Maneuver	11	9	-	8	9	-	-	-	-	-	-	-
Stage 1	106	160	-	105	154	-	-	-	-	-	-	-
Stage 2	213	150	-	161	156	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.3	21.7	0.4	0.3
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	432	-	-	320	297	387	-	-
HCM Lane V/C Ratio	0.095	-	-	0.484	0.276	0.076	-	-
HCM Control Delay (s)	14.2	-	-	26.3	21.7	15.1	-	-
HCM Lane LOS	B	-	-	D	C	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-	2.5	1.1	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	50	113	68	63	71	113	1359	47	43	1314	75
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		0.97	1.00		0.85	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1885	1900	1900	1894	1900	1900	1863	1900	1881	1865	1900
Adj Flow Rate, veh/h	56	52	118	71	66	74	118	1416	49	45	1369	78
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	1	1	1	0	2	2	1	2	2
Cap, veh/h	93	89	167	113	103	99	327	1954	67	349	1902	108
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.13	0.74	0.74	0.10	0.56	0.56
Sat Flow, veh/h	289	407	760	368	472	454	1810	3489	121	1792	3397	193
Grp Volume(v), veh/h	226	0	0	211	0	0	118	717	748	45	712	735
Grp Sat Flow(s),veh/h/ln	1456	0	0	1293	0	0	1810	1770	1839	1792	1771	1819
Q Serve(g_s), s	0.0	0.0	0.0	2.2	0.0	0.0	3.5	33.6	33.9	1.3	44.3	44.8
Cycle Q Clear(g_c), s	21.8	0.0	0.0	24.0	0.0	0.0	3.5	33.6	33.9	1.3	44.3	44.8
Prop In Lane	0.25		0.52	0.34		0.35	1.00		0.07	1.00		0.11
Lane Grp Cap(c), veh/h	349	0	0	316	0	0	327	991	1030	349	992	1018
V/C Ratio(X)	0.65	0.00	0.00	0.67	0.00	0.00	0.36	0.72	0.73	0.13	0.72	0.72
Avail Cap(c_a), veh/h	349	0	0	316	0	0	327	991	1030	349	992	1018
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	0.0	54.6	0.0	0.0	18.2	12.7	12.7	13.3	24.3	24.4
Incr Delay (d2), s/veh	8.9	0.0	0.0	10.7	0.0	0.0	3.1	4.6	4.5	0.8	4.5	4.4
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	9.1	0.0	0.0	2.3	17.4	18.1	0.7	22.8	23.7
LnGrp Delay(d),s/veh	62.7	0.0	0.0	65.4	0.0	0.0	21.3	17.3	17.2	14.0	28.7	28.8
LnGrp LOS	E			E			C	B	B	B	C	C
Approach Vol, veh/h		226			211			1583			1492	
Approach Delay, s/veh		62.7			65.4			17.6			28.3	
Approach LOS		E			E			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.0	90.0		39.0	21.0	90.0		39.0
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1
Max Green Setting (Gmax), s	15.0	84.0		32.9	15.0	84.0		32.9
Max Q Clear Time (g_c+I1), s	3.3	35.9		23.8	5.5	46.8		26.0
Green Ext Time (p_c), s	0.0	37.2		1.9	0.2	30.3		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	27.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	53	17	15	54	8	22	106	14	5	78	11
Conflicting Peds, #/hr	0	0	18	0	0	23	0	0	29	0	0	25
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	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	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	5	2	0	0	3	0	7	1	0	4	3	4
Mvmt Flow	7	55	18	15	56	8	23	109	14	5	80	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	331	306	133	335	305	164	110	0	0	147	0	0
Stage 1	114	114	-	185	185	-	-	-	-	-	-	-
Stage 2	217	192	-	150	120	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.2	7.1	6.53	6.2	4.17	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.3	3.5	4.027	3.3	2.263	-	-	2.236	-	-
Pot Cap-1 Maneuver	617	608	922	622	607	886	1449	-	-	1423	-	-
Stage 1	884	801	-	821	745	-	-	-	-	-	-	-
Stage 2	779	742	-	857	794	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	537	575	886	533	574	851	1414	-	-	1393	-	-
Mov Cap-2 Maneuver	537	575	-	533	574	-	-	-	-	-	-	-
Stage 1	856	786	-	792	718	-	-	-	-	-	-	-
Stage 2	685	715	-	760	779	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	12.1	1.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1414	-	-	619	585	1393	-	-
HCM Lane V/C Ratio	0.016	-	-	0.128	0.136	0.004	-	-
HCM Control Delay (s)	7.6	0	-	11.7	12.1	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.5	0	-	-

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	21	86	28	0	24	180	20	0	27	85	22
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	1	2	5	2	2	1	4	2	10	1	2
Mvmt Flow	0	25	104	34	0	29	217	24	0	33	102	27
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.1	10.3	9.7
HCM LOS	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	16%	11%	11%
Vol Thru, %	63%	64%	80%	68%
Vol Right, %	16%	21%	9%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	134	135	224	56
LT Vol	27	21	24	6
Through Vol	85	86	180	38
RT Vol	22	28	20	12
Lane Flow Rate	161	163	270	67
Geometry Grp	1	1	1	1
Degree of Util (X)	0.229	0.214	0.351	0.096
Departure Headway (Hd)	5.112	4.732	4.682	5.102
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	697	753	764	696
Service Time	3.179	2.794	2.737	3.18
HCM Lane V/C Ratio	0.231	0.216	0.353	0.096
HCM Control Delay	9.7	9.1	10.3	8.7
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.9	0.8	1.6	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	6	38	12
Peak Hour Factor	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	4	2	4
Mvmt Flow	0	7	46	14
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.7
HCM LOS	A

Lane

Intersection: 1: Alton Road & 8th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	177	177	205	431	431	182	307	310
Average Queue (ft)	88	117	157	346	344	72	207	203
95th Queue (ft)	163	205	222	464	470	165	324	327
Link Distance (ft)	365			416	416		334	334
Upstream Blk Time (%)				4	3			
Queuing Penalty (veh)				0	0			
Storage Bay Dist (ft)			180			160		
Storage Blk Time (%)				14			6	
Queuing Penalty (veh)				18			4	

Intersection: 2: Alton Road & 9th Street

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	R	R	L	T	TR	L	TR
Maximum Queue (ft)	177	94	31	134	136	50	67
Average Queue (ft)	91	60	16	86	38	25	13
95th Queue (ft)	163	100	38	166	126	53	58
Link Distance (ft)	373	335		334	334		400
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			145			210	
Storage Blk Time (%)				0			
Queuing Penalty (veh)				0			

Intersection: 3: Alton Road & 10th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	271	205	134	417	417	31	483	446
Average Queue (ft)	232	136	78	388	393	12	432	317
95th Queue (ft)	301	219	137	438	421	36	490	457
Link Distance (ft)	384	338		400	400		431	431
Upstream Blk Time (%)				8	6		8	2
Queuing Penalty (veh)				61	47		0	0
Storage Bay Dist (ft)			160			150		
Storage Blk Time (%)				37			31	
Queuing Penalty (veh)				42			13	

Intersection: 4: Lenox Ave & 9th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	50	55	48	21
Average Queue (ft)	38	36	16	4
95th Queue (ft)	54	51	49	18
Link Distance (ft)	335	345		399
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Lenox Ave & 10th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	71	74	54	31
Average Queue (ft)	43	54	35	31
95th Queue (ft)	71	76	51	31
Link Distance (ft)	338	337	399	410
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 185

Future No Build Condition, AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	12	118	36	14	27	73	1432	29	47	1304	14
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)	0.99		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1861	1900	1881	1845	1900	1845	1863	1900
Adj Flow Rate, veh/h	5	13	130	40	15	30	80	1574	32	52	1433	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	3	2	2
Cap, veh/h	28	32	258	135	54	84	292	2247	46	250	2296	24
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.05	0.64	0.64	0.05	0.64	0.64
Sat Flow, veh/h	19	175	1400	543	295	458	1792	3511	71	1757	3587	38
Grp Volume(v), veh/h	148	0	0	85	0	0	80	784	822	52	707	741
Grp Sat Flow(s),veh/h/ln	1594	0	0	1296	0	0	1792	1752	1830	1757	1770	1855
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	2.2	43.7	44.0	1.4	35.9	35.9
Cycle Q Clear(g_c), s	12.5	0.0	0.0	9.4	0.0	0.0	2.2	43.7	44.0	1.4	35.9	35.9
Prop In Lane	0.03		0.88	0.47		0.35	1.00		0.04	1.00		0.02
Lane Grp Cap(c), veh/h	318	0	0	274	0	0	292	1122	1171	250	1133	1187
V/C Ratio(X)	0.47	0.00	0.00	0.31	0.00	0.00	0.27	0.70	0.70	0.21	0.62	0.62
Avail Cap(c_a), veh/h	318	0	0	274	0	0	292	1122	1171	250	1133	1187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.0	0.0	0.0	53.3	0.0	0.0	12.9	17.6	17.6	15.0	16.2	16.2
Incr Delay (d2), s/veh	4.8	0.0	0.0	2.9	0.0	0.0	2.3	3.6	3.5	1.9	2.6	2.5
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	5.9	0.0	0.0	3.3	0.0	0.0	1.2	22.0	23.3	0.9	18.3	19.1
LnGrp Delay(d),s/veh	59.9	0.0	0.0	56.3	0.0	0.0	15.2	21.2	21.2	16.9	18.8	18.7
LnGrp LOS	E			E			B	C	C	B	B	B
Approach Vol, veh/h		148			85			1686			1500	
Approach Delay, s/veh		59.9			56.3			20.9			18.7	
Approach LOS		E			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	102.0		34.0	14.0	102.0		34.0
Change Period (Y+Rc), s	6.0	6.0		6.4	6.0	6.0		6.4
Max Green Setting (Gmax), s	8.0	96.0		27.6	8.0	96.0		27.6
Max Q Clear Time (g_c+I1), s	3.4	46.0		14.5	4.2	37.9		11.4
Green Ext Time (p_c), s	0.0	40.2		1.1	0.0	45.3		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	193	0	0	46	52	1395	27	17	1191	27
Conflicting Peds, #/hr	0	0	8	0	0	15	0	0	24	0	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	145	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	0	0	4	0	3	4	9	2	2
Mvmt Flow	0	0	212	0	0	51	57	1533	30	19	1309	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2265	3061	701	2377	3061	812	1346	0	0	1578	0	0
Stage 1	1369	1369	-	1677	1677	-	-	-	-	-	-	-
Stage 2	896	1692	-	700	1384	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.94	7.5	6.5	6.98	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.32	3.5	4	3.34	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	23	13	381	19	13	318	518	-	-	382	-	-
Stage 1	157	216	-	101	153	-	-	-	-	-	-	-
Stage 2	306	151	-	401	213	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	17	11	371	7	11	310	508	-	-	377	-	-
Mov Cap-2 Maneuver	17	11	-	7	11	-	-	-	-	-	-	-
Stage 1	138	204	-	89	134	-	-	-	-	-	-	-
Stage 2	224	132	-	160	201	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.9	18.9	0.5	0.2
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	508	-	-	371	310	377	-	-
HCM Lane V/C Ratio	0.112	-	-	0.572	0.163	0.05	-	-
HCM Control Delay (s)	13	-	-	26.9	18.9	15	-	-
HCM Lane LOS	B	-	-	D	C	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.4	0.6	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	32	108	34	31	48	81	1368	39	35	1173	59
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)	0.99		0.98	1.00		0.95	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1885	1900	1900	1895	1900	1900	1863	1900	1881	1865	1900
Adj Flow Rate, veh/h	31	36	120	38	34	53	90	1520	43	39	1303	66
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	1	1	1	0	2	2	1	2	2
Cap, veh/h	69	85	226	114	104	137	315	2062	58	299	2011	102
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.10	0.78	0.78	0.07	0.59	0.59
Sat Flow, veh/h	186	390	1031	376	474	626	1810	3514	99	1792	3429	173
Grp Volume(v), veh/h	187	0	0	125	0	0	90	764	799	39	672	697
Grp Sat Flow(s),veh/h/ln	1607	0	0	1475	0	0	1810	1770	1843	1792	1771	1831
Q Serve(g_s), s	4.2	0.0	0.0	0.0	0.0	0.0	2.6	33.4	33.7	1.1	37.9	38.1
Cycle Q Clear(g_c), s	14.9	0.0	0.0	10.7	0.0	0.0	2.6	33.4	33.7	1.1	37.9	38.1
Prop In Lane	0.17		0.64	0.30		0.42	1.00		0.05	1.00		0.09
Lane Grp Cap(c), veh/h	380	0	0	355	0	0	315	1038	1081	299	1039	1074
V/C Ratio(X)	0.49	0.00	0.00	0.35	0.00	0.00	0.29	0.74	0.74	0.13	0.65	0.65
Avail Cap(c_a), veh/h	380	0	0	355	0	0	315	1038	1081	299	1039	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	0.0	0.0	49.6	0.0	0.0	14.9	10.5	10.5	13.2	20.6	20.7
Incr Delay (d2), s/veh	4.5	0.0	0.0	2.7	0.0	0.0	2.3	4.6	4.5	0.9	3.1	3.0
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	7.3	0.0	0.0	4.7	0.0	0.0	1.5	17.4	18.1	0.6	19.4	20.1
LnGrp Delay(d),s/veh	56.0	0.0	0.0	52.3	0.0	0.0	17.2	15.1	15.0	14.1	23.8	23.7
LnGrp LOS	E			D			B	B	B	B	C	C
Approach Vol, veh/h		187			125			1653			1408	
Approach Delay, s/veh		56.0			52.3			15.2			23.5	
Approach LOS		E			D			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.0	94.0		39.0	17.0	94.0		39.0
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1
Max Green Setting (Gmax), s	11.0	88.0		32.9	11.0	88.0		32.9
Max Q Clear Time (g_c+I1), s	3.1	35.7		16.9	4.6	40.1		12.7
Green Ext Time (p_c), s	0.0	40.0		1.7	0.1	37.4		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	26	14	17	35	2	14	46	11	8	68	5
Conflicting Peds, #/hr	0	0	7	0	0	19	0	0	13	0	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	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	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	5	2	0	0	3	0	7	1	0	4	3	4
Mvmt Flow	7	32	17	21	43	2	17	57	14	10	84	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	254	238	107	255	234	94	97	0	0	89	0	0
Stage 1	114	114	-	117	117	-	-	-	-	-	-	-
Stage 2	140	124	-	138	117	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.2	7.1	6.53	6.2	4.17	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.3	3.5	4.027	3.3	2.263	-	-	2.236	-	-
Pot Cap-1 Maneuver	693	663	953	702	665	968	1466	-	-	1494	-	-
Stage 1	884	801	-	892	797	-	-	-	-	-	-	-
Stage 2	856	793	-	870	797	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	636	636	937	636	638	944	1450	-	-	1480	-	-
Mov Cap-2 Maneuver	636	636	-	636	638	-	-	-	-	-	-	-
Stage 1	868	791	-	867	775	-	-	-	-	-	-	-
Stage 2	789	771	-	805	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	11.2	1.5	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1450	-	-	705	645	1480	-	-
HCM Lane V/C Ratio	0.012	-	-	0.081	0.103	0.007	-	-
HCM Control Delay (s)	7.5	0	-	10.6	11.2	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	6	81	21	0	17	97	8	0	16	24	8
Peak Hour Factor	0.92	0.87	0.87	0.87	0.92	0.87	0.87	0.87	0.92	0.87	0.87	0.87
Heavy Vehicles, %	2	1	2	5	2	2	1	4	2	10	1	2
Mvmt Flow	0	7	93	24	0	20	111	9	0	18	28	9
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8	8.2	8.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	6%	14%	4%
Vol Thru, %	50%	75%	80%	81%
Vol Right, %	17%	19%	7%	15%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	48	108	122	48
LT Vol	16	6	17	2
Through Vol	24	81	97	39
RT Vol	8	21	8	7
Lane Flow Rate	55	124	140	55
Geometry Grp	1	1	1	1
Degree of Util (X)	0.072	0.146	0.168	0.07
Departure Headway (Hd)	4.687	4.223	4.315	4.542
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	766	852	834	791
Service Time	2.706	2.237	2.329	2.559
HCM Lane V/C Ratio	0.072	0.146	0.168	0.07
HCM Control Delay	8.1	8	8.2	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.5	0.6	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	2	39	7
Peak Hour Factor	0.92	0.87	0.87	0.87
Heavy Vehicles, %	2	4	2	4
Mvmt Flow	0	2	45	8
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	7.9
HCM LOS	A

Lane

Intersection: 1: Alton Road & 8th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	180	96	92	431	380	30	340	305
Average Queue (ft)	92	85	49	384	271	21	199	221
95th Queue (ft)	187	112	97	488	387	41	342	315
Link Distance (ft)	365			416	416		334	334
Upstream Blk Time (%)				6			1	
Queuing Penalty (veh)				0			3	
Storage Bay Dist (ft)			180			160		
Storage Blk Time (%)				23			6	
Queuing Penalty (veh)				17			3	

Intersection: 2: Alton Road & 9th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	R	R	L	T	TR	L	T	TR
Maximum Queue (ft)	94	77	50	159	161	30	55	55
Average Queue (ft)	60	53	28	82	66	12	11	11
95th Queue (ft)	98	77	55	194	167	37	47	47
Link Distance (ft)	373	335		334	334		400	400
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			145			210		
Storage Blk Time (%)				2				
Queuing Penalty (veh)				1				

Intersection: 3: Alton Road & 10th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	207	138	184	406	412	31	418	334
Average Queue (ft)	113	86	71	366	362	22	270	235
95th Queue (ft)	217	134	168	441	449	42	413	326
Link Distance (ft)	384	338		400	400		431	431
Upstream Blk Time (%)				11	8		0	
Queuing Penalty (veh)				82	56		0	
Storage Bay Dist (ft)			160			150		
Storage Blk Time (%)				32			24	
Queuing Penalty (veh)				26			8	

Intersection: 4: Lenox Ave/Lenox Avenue & 9th Street

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	31	52	29
Average Queue (ft)	18	35	6
95th Queue (ft)	43	49	25
Link Distance (ft)	335	345	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Lenox Avenue & 10th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	50	53	78	55
Average Queue (ft)	35	36	40	30
95th Queue (ft)	47	50	71	59
Link Distance (ft)	338	337	399	410
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 197

Future No Build Condition, PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	21	86	44	31	49	131	1446	99	58	1459	15
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)	0.99		0.95	0.98		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1856	1900	1881	1845	1900	1845	1863	1900
Adj Flow Rate, veh/h	8	21	88	45	32	50	134	1476	101	59	1489	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	3	2	2
Cap, veh/h	34	66	227	120	88	114	266	2129	145	242	2297	23
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.05	0.64	0.64	0.05	0.64	0.64
Sat Flow, veh/h	45	347	1190	461	460	598	1792	3327	227	1757	3589	36
Grp Volume(v), veh/h	117	0	0	127	0	0	134	774	803	59	734	770
Grp Sat Flow(s),veh/h/ln	1582	0	0	1519	0	0	1792	1752	1801	1757	1770	1855
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	0.0	3.8	42.7	43.4	1.6	38.2	38.3
Cycle Q Clear(g_c), s	9.6	0.0	0.0	10.6	0.0	0.0	3.8	42.7	43.4	1.6	38.2	38.3
Prop In Lane	0.07		0.75	0.35		0.39	1.00		0.13	1.00		0.02
Lane Grp Cap(c), veh/h	327	0	0	322	0	0	266	1122	1152	242	1133	1187
V/C Ratio(X)	0.36	0.00	0.00	0.39	0.00	0.00	0.50	0.69	0.70	0.24	0.65	0.65
Avail Cap(c_a), veh/h	327	0	0	322	0	0	266	1122	1152	242	1133	1187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	0.0	0.0	53.3	0.0	0.0	15.9	17.4	17.5	15.3	16.6	16.6
Incr Delay (d2), s/veh	3.0	0.0	0.0	3.6	0.0	0.0	6.6	3.5	3.5	2.4	2.9	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	4.5	0.0	0.0	4.9	0.0	0.0	2.8	21.5	22.5	1.0	19.5	20.4
LnGrp Delay(d),s/veh	56.0	0.0	0.0	56.9	0.0	0.0	22.5	20.9	21.0	17.7	19.5	19.4
LnGrp LOS	E			E			C	C	C	B	B	B
Approach Vol, veh/h		117			127			1711			1563	
Approach Delay, s/veh		56.0			56.9			21.1			19.4	
Approach LOS		E			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	102.0		35.0	13.0	102.0		35.0
Change Period (Y+Rc), s	6.0	6.0		6.4	6.0	6.0		6.4
Max Green Setting (Gmax), s	7.0	96.0		28.6	7.0	96.0		28.6
Max Q Clear Time (g_c+I1), s	3.6	45.4		11.6	5.8	40.3		12.6
Green Ext Time (p_c), s	0.0	41.0		1.3	0.0	44.3		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	147	0	0	78	39	1375	52	28	1410	34
Conflicting Peds, #/hr	0	0	8	0	0	18	0	0	30	0	0	51
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	145	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	4	0	3	4	9	2	2
Mvmt Flow	0	0	155	0	0	82	41	1447	55	29	1484	36

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2393	3171	798	2384	3162	820	1528	0	0	1520	0	0
Stage 1	1569	1569	-	1575	1575	-	-	-	-	-	-	-
Stage 2	824	1602	-	809	1587	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.94	7.5	6.5	6.98	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.32	3.5	4	3.34	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	18	11	329	18	11	314	442	-	-	403	-	-
Stage 1	118	173	-	117	172	-	-	-	-	-	-	-
Stage 2	338	167	-	345	170	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	11	9	319	8	9	296	431	-	-	386	-	-
Mov Cap-2 Maneuver	11	9	-	8	9	-	-	-	-	-	-	-
Stage 1	106	159	-	104	153	-	-	-	-	-	-	-
Stage 2	212	149	-	160	156	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.5	21.8	0.4	0.3
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	431	-	-	319	296	386	-	-
HCM Lane V/C Ratio	0.095	-	-	0.485	0.277	0.076	-	-
HCM Control Delay (s)	14.2	-	-	26.5	21.8	15.1	-	-
HCM Lane LOS	B	-	-	D	C	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-	2.5	1.1	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	51	114	68	63	72	114	1362	47	43	1317	75
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		0.97	1.00		0.85	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1886	1900	1900	1894	1900	1900	1863	1900	1881	1865	1900
Adj Flow Rate, veh/h	56	53	119	71	66	75	119	1419	49	45	1372	78
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	1	1	1	0	2	2	1	2	2
Cap, veh/h	93	90	166	112	103	100	326	1954	67	348	1903	108
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.13	0.74	0.74	0.10	0.56	0.56
Sat Flow, veh/h	286	409	759	364	468	456	1810	3489	120	1792	3398	193
Grp Volume(v), veh/h	228	0	0	212	0	0	119	719	749	45	713	737
Grp Sat Flow(s),veh/h/ln	1454	0	0	1288	0	0	1810	1770	1839	1792	1771	1819
Q Serve(g_s), s	0.0	0.0	0.0	2.2	0.0	0.0	3.5	33.8	34.0	1.3	44.5	44.9
Cycle Q Clear(g_c), s	22.1	0.0	0.0	24.3	0.0	0.0	3.5	33.8	34.0	1.3	44.5	44.9
Prop In Lane	0.25		0.52	0.33		0.35	1.00		0.07	1.00		0.11
Lane Grp Cap(c), veh/h	349	0	0	315	0	0	326	991	1030	348	992	1019
V/C Ratio(X)	0.65	0.00	0.00	0.67	0.00	0.00	0.36	0.73	0.73	0.13	0.72	0.72
Avail Cap(c_a), veh/h	349	0	0	315	0	0	326	991	1030	348	992	1019
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	0.0	0.0	54.7	0.0	0.0	18.3	12.7	12.8	13.3	24.3	24.4
Incr Delay (d2), s/veh	9.2	0.0	0.0	11.0	0.0	0.0	3.1	4.6	4.5	0.8	4.5	4.5
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	9.6	0.0	0.0	9.3	0.0	0.0	2.3	17.4	18.1	0.7	22.8	23.8
LnGrp Delay(d),s/veh	63.1	0.0	0.0	65.7	0.0	0.0	21.4	17.3	17.3	14.1	28.8	28.9
LnGrp LOS	E			E			C	B	B	B	C	C
Approach Vol, veh/h		228			212			1587			1495	
Approach Delay, s/veh		63.1			65.7			17.6			28.4	
Approach LOS		E			E			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.0	90.0		39.0	21.0	90.0		39.0
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1
Max Green Setting (Gmax), s	15.0	84.0		32.9	15.0	84.0		32.9
Max Q Clear Time (g_c+I1), s	3.3	36.0		24.1	5.5	46.9		26.3
Green Ext Time (p_c), s	0.0	37.2		1.9	0.2	30.3		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	53	17	15	54	8	22	106	14	5	78	11
Conflicting Peds, #/hr	0	0	18	0	0	23	0	0	29	0	0	25
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	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	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	5	2	0	0	3	0	7	1	0	4	3	4
Mvmt Flow	7	55	18	15	56	8	23	109	14	5	80	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	331	306	133	335	305	164	110	0	0	147	0	0
Stage 1	114	114	-	185	185	-	-	-	-	-	-	-
Stage 2	217	192	-	150	120	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.2	7.1	6.53	6.2	4.17	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.3	3.5	4.027	3.3	2.263	-	-	2.236	-	-
Pot Cap-1 Maneuver	617	608	922	622	607	886	1449	-	-	1423	-	-
Stage 1	884	801	-	821	745	-	-	-	-	-	-	-
Stage 2	779	742	-	857	794	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	537	575	886	533	574	851	1414	-	-	1393	-	-
Mov Cap-2 Maneuver	537	575	-	533	574	-	-	-	-	-	-	-
Stage 1	856	786	-	792	718	-	-	-	-	-	-	-
Stage 2	685	715	-	760	779	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	12.1	1.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1414	-	-	619	585	1393	-	-
HCM Lane V/C Ratio	0.016	-	-	0.128	0.136	0.004	-	-
HCM Control Delay (s)	7.6	0	-	11.7	12.1	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.5	0	-	-

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	21	86	28	0	24	180	20	0	27	85	22
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	1	2	5	2	2	1	4	2	10	1	2
Mvmt Flow	0	25	104	34	0	29	217	24	0	33	102	27
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.1	10.3	9.7
HCM LOS	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	16%	11%	11%
Vol Thru, %	63%	64%	80%	68%
Vol Right, %	16%	21%	9%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	134	135	224	56
LT Vol	27	21	24	6
Through Vol	85	86	180	38
RT Vol	22	28	20	12
Lane Flow Rate	161	163	270	67
Geometry Grp	1	1	1	1
Degree of Util (X)	0.229	0.214	0.351	0.096
Departure Headway (Hd)	5.112	4.732	4.682	5.102
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	697	753	764	696
Service Time	3.179	2.794	2.737	3.18
HCM Lane V/C Ratio	0.231	0.216	0.353	0.096
HCM Control Delay	9.7	9.1	10.3	8.7
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.9	0.8	1.6	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	6	38	12
Peak Hour Factor	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	4	2	4
Mvmt Flow	0	7	46	14
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.7
HCM LOS	A

Lane

Intersection: 1: Alton Road & 8th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	117	177	204	431	395	182	254	279
Average Queue (ft)	82	107	126	283	280	68	170	196
95th Queue (ft)	122	197	241	409	412	171	281	303
Link Distance (ft)	365			416	416		334	334
Upstream Blk Time (%)				2				
Queuing Penalty (veh)				0				
Storage Bay Dist (ft)			180			160		
Storage Blk Time (%)				14			5	
Queuing Penalty (veh)				18			3	

Intersection: 2: Alton Road & 9th Street

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	R	R	L	T	TR	L	TR
Maximum Queue (ft)	177	75	50	113	80	90	45
Average Queue (ft)	115	60	16	55	26	18	9
95th Queue (ft)	180	87	50	126	82	77	39
Link Distance (ft)	373	335		334	334		400
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			145			210	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Alton Road & 10th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	185	203	183	420	400	174	446	354
Average Queue (ft)	148	152	97	393	389	46	381	316
95th Queue (ft)	224	226	191	447	407	154	456	373
Link Distance (ft)	384	338		400	400		431	431
Upstream Blk Time (%)				7	3		2	
Queuing Penalty (veh)				53	21		0	
Storage Bay Dist (ft)			160			150		
Storage Blk Time (%)				35			31	
Queuing Penalty (veh)				40			13	

Intersection: 4: Lenox Ave & 9th Street

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	50	31	48
Average Queue (ft)	35	30	10
95th Queue (ft)	48	32	42
Link Distance (ft)	335	345	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Lenox Ave & 10th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	74	56	52	31
Average Queue (ft)	44	46	35	30
95th Queue (ft)	73	65	49	32
Link Distance (ft)	338	337	399	410
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 148

Future Build Condition, AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	12	118	36	14	27	73	1455	29	47	1312	14
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)	0.99		0.98	1.00		0.98	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1861	1900	1881	1845	1900	1845	1863	1900
Adj Flow Rate, veh/h	5	13	130	40	15	30	80	1599	32	52	1442	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	3	2	2
Cap, veh/h	28	32	258	135	54	84	289	2248	45	245	2296	24
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.05	0.64	0.64	0.05	0.64	0.64
Sat Flow, veh/h	19	175	1400	543	295	458	1792	3513	70	1757	3588	37
Grp Volume(v), veh/h	148	0	0	85	0	0	80	796	835	52	711	746
Grp Sat Flow(s),veh/h/ln	1594	0	0	1296	0	0	1792	1752	1831	1757	1770	1855
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	2.2	45.0	45.3	1.4	36.3	36.3
Cycle Q Clear(g_c), s	12.5	0.0	0.0	9.4	0.0	0.0	2.2	45.0	45.3	1.4	36.3	36.3
Prop In Lane	0.03		0.88	0.47		0.35	1.00		0.04	1.00		0.02
Lane Grp Cap(c), veh/h	318	0	0	274	0	0	289	1122	1172	245	1133	1187
V/C Ratio(X)	0.47	0.00	0.00	0.31	0.00	0.00	0.28	0.71	0.71	0.21	0.63	0.63
Avail Cap(c_a), veh/h	318	0	0	274	0	0	289	1122	1172	245	1133	1187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.0	0.0	0.0	53.3	0.0	0.0	13.0	17.8	17.9	15.5	16.2	16.3
Incr Delay (d2), s/veh	4.8	0.0	0.0	2.9	0.0	0.0	2.4	3.8	3.7	2.0	2.6	2.5
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	5.9	0.0	0.0	3.3	0.0	0.0	1.2	22.9	23.9	0.9	18.4	19.3
LnGrp Delay(d),s/veh	59.9	0.0	0.0	56.3	0.0	0.0	15.4	21.6	21.6	17.5	18.9	18.8
LnGrp LOS	E			E			B	C	C	B	B	B
Approach Vol, veh/h		148			85			1711			1509	
Approach Delay, s/veh		59.9			56.3			21.3			18.8	
Approach LOS		E			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	102.0		34.0	14.0	102.0		34.0
Change Period (Y+Rc), s	6.0	6.0		6.4	6.0	6.0		6.4
Max Green Setting (Gmax), s	8.0	96.0		27.6	8.0	96.0		27.6
Max Q Clear Time (g_c+I1), s	3.4	47.3		14.5	4.2	38.3		11.4
Green Ext Time (p_c), s	0.0	39.9		1.1	0.0	45.6		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	193	0	0	47	52	1417	27	17	1199	27
Conflicting Peds, #/hr	0	0	8	0	0	15	0	0	24	0	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	145	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	0	0	4	0	3	4	9	2	2
Mvmt Flow	0	0	212	0	0	52	57	1557	30	19	1318	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2286	3094	706	2405	3094	824	1355	0	0	1602	0	0
Stage 1	1378	1378	-	1701	1701	-	-	-	-	-	-	-
Stage 2	908	1716	-	704	1393	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.94	7.5	6.5	6.98	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.32	3.5	4	3.34	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	22	12	378	18	12	312	514	-	-	373	-	-
Stage 1	155	214	-	98	149	-	-	-	-	-	-	-
Stage 2	301	146	-	398	211	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	16	10	368	6	10	304	504	-	-	368	-	-
Mov Cap-2 Maneuver	16	10	-	6	10	-	-	-	-	-	-	-
Stage 1	137	202	-	86	130	-	-	-	-	-	-	-
Stage 2	219	128	-	157	199	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.3	19.3	0.5	0.2
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	504	-	-	368	304	368	-	-
HCM Lane V/C Ratio	0.113	-	-	0.576	0.17	0.051	-	-
HCM Control Delay (s)	13.1	-	-	27.3	19.3	15.3	-	-
HCM Lane LOS	B	-	-	D	C	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.5	0.6	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	32	109	34	31	48	81	1373	39	35	1186	59
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)	0.99		0.98	1.00		0.95	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1885	1900	1900	1895	1900	1900	1863	1900	1881	1864	1900
Adj Flow Rate, veh/h	31	36	121	38	34	53	90	1526	43	39	1318	66
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	1	1	1	0	2	2	1	2	2
Cap, veh/h	68	85	227	114	104	137	311	2062	58	298	2013	101
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.10	0.78	0.78	0.07	0.59	0.59
Sat Flow, veh/h	185	388	1034	375	473	624	1810	3515	99	1792	3431	172
Grp Volume(v), veh/h	188	0	0	125	0	0	90	767	802	39	679	705
Grp Sat Flow(s),veh/h/ln	1607	0	0	1473	0	0	1810	1770	1843	1792	1771	1831
Q Serve(g_s), s	4.2	0.0	0.0	0.0	0.0	0.0	2.6	33.7	34.0	1.1	38.6	38.8
Cycle Q Clear(g_c), s	15.0	0.0	0.0	10.8	0.0	0.0	2.6	33.7	34.0	1.1	38.6	38.8
Prop In Lane	0.16		0.64	0.30		0.42	1.00		0.05	1.00		0.09
Lane Grp Cap(c), veh/h	380	0	0	354	0	0	311	1038	1082	298	1039	1074
V/C Ratio(X)	0.49	0.00	0.00	0.35	0.00	0.00	0.29	0.74	0.74	0.13	0.65	0.66
Avail Cap(c_a), veh/h	380	0	0	354	0	0	311	1038	1082	298	1039	1074
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	0.0	0.0	49.6	0.0	0.0	15.1	10.5	10.6	13.2	20.8	20.8
Incr Delay (d2), s/veh	4.5	0.0	0.0	2.7	0.0	0.0	2.3	4.7	4.6	0.9	3.2	3.1
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	7.3	0.0	0.0	4.7	0.0	0.0	1.5	17.4	18.2	0.6	19.6	20.5
LnGrp Delay(d),s/veh	56.0	0.0	0.0	52.3	0.0	0.0	17.5	15.2	15.1	14.1	24.0	24.0
LnGrp LOS	E			D			B	B	B	B	C	C
Approach Vol, veh/h		188			125			1659			1423	
Approach Delay, s/veh		56.0			52.3			15.3			23.7	
Approach LOS		E			D			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.0	94.0		39.0	17.0	94.0		39.0
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1
Max Green Setting (Gmax), s	11.0	88.0		32.9	11.0	88.0		32.9
Max Q Clear Time (g_c+I1), s	3.1	36.0		17.0	4.6	40.8		12.8
Green Ext Time (p_c), s	0.0	40.1		1.7	0.1	37.2		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	22.4
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	27	14	17	38	2	15	46	11	8	68	5
Conflicting Peds, #/hr	0	0	7	0	0	19	0	0	13	0	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	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	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	5	2	0	0	3	0	7	1	0	4	3	4
Mvmt Flow	7	33	17	21	47	2	19	57	14	10	84	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	258	240	107	259	237	94	97	0	0	89	0	0
Stage 1	114	114	-	120	120	-	-	-	-	-	-	-
Stage 2	144	126	-	139	117	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.2	7.1	6.53	6.2	4.17	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.3	3.5	4.027	3.3	2.263	-	-	2.236	-	-
Pot Cap-1 Maneuver	689	661	953	698	662	968	1466	-	-	1494	-	-
Stage 1	884	801	-	889	794	-	-	-	-	-	-	-
Stage 2	852	792	-	869	797	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	629	633	937	630	634	944	1450	-	-	1480	-	-
Mov Cap-2 Maneuver	629	633	-	630	634	-	-	-	-	-	-	-
Stage 1	867	791	-	863	770	-	-	-	-	-	-	-
Stage 2	780	769	-	803	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	11.3	1.6	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1450	-	-	700	640	1480	-	-
HCM Lane V/C Ratio	0.013	-	-	0.083	0.11	0.007	-	-
HCM Control Delay (s)	7.5	0	-	10.6	11.3	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.4	0	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	6	84	22	0	17	105	8	0	17	24	8
Peak Hour Factor	0.92	0.87	0.87	0.87	0.92	0.87	0.87	0.87	0.92	0.87	0.87	0.87
Heavy Vehicles, %	2	1	2	5	2	2	1	4	2	10	1	2
Mvmt Flow	0	7	97	25	0	20	121	9	0	20	28	9
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8	8.3	8.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	35%	5%	13%	4%
Vol Thru, %	49%	75%	81%	80%
Vol Right, %	16%	20%	6%	16%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	112	130	49
LT Vol	17	6	17	2
Through Vol	24	84	105	39
RT Vol	8	22	8	8
Lane Flow Rate	56	129	149	56
Geometry Grp	1	1	1	1
Degree of Util (X)	0.074	0.152	0.18	0.071
Departure Headway (Hd)	4.724	4.238	4.326	4.562
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	760	848	831	786
Service Time	2.745	2.252	2.341	2.584
HCM Lane V/C Ratio	0.074	0.152	0.179	0.071
HCM Control Delay	8.1	8	8.3	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.5	0.7	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	2	39	8
Peak Hour Factor	0.92	0.87	0.87	0.87
Heavy Vehicles, %	2	4	2	4
Mvmt Flow	0	2	45	9
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	7.9
HCM LOS	A

Lane

Intersection: 1: Alton Road & 8th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	163	54	204	431	294	185	266	277
Average Queue (ft)	100	32	68	324	234	60	179	193
95th Queue (ft)	170	75	185	457	335	167	296	317
Link Distance (ft)	365			416	416		334	334
Upstream Blk Time (%)				1				
Queuing Penalty (veh)				0				
Storage Bay Dist (ft)			180			160		
Storage Blk Time (%)				18			6	
Queuing Penalty (veh)				13			3	

Intersection: 2: Alton Road & 9th Street

Movement	EB	WB	NB	NB	NB	SB	SB
Directions Served	R	R	L	T	TR	T	TR
Maximum Queue (ft)	116	50	55	146	98	95	52
Average Queue (ft)	73	33	38	88	53	36	17
95th Queue (ft)	119	48	60	175	125	95	52
Link Distance (ft)	373	335		334	334	400	400
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			145				
Storage Blk Time (%)				0			
Queuing Penalty (veh)				0			

Intersection: 3: Alton Road & 10th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	161	94	184	400	413	174	446	337
Average Queue (ft)	119	57	80	374	389	45	345	279
95th Queue (ft)	171	119	221	443	421	156	486	433
Link Distance (ft)	384	338		400	400		431	431
Upstream Blk Time (%)				7	2		3	
Queuing Penalty (veh)				50	17		0	
Storage Bay Dist (ft)			160			150		
Storage Blk Time (%)				32			25	
Queuing Penalty (veh)				26			9	

Intersection: 4: Lenox Ave/Lenox Avenue & 9th Street

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	53	31
Average Queue (ft)	35	24
95th Queue (ft)	50	44
Link Distance (ft)	335	345
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Lenox Avenue & 10th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	55	55	31	31
Average Queue (ft)	41	40	31	18
95th Queue (ft)	60	57	31	43
Link Distance (ft)	338	337	399	410
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 118

Future Build Condition, PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	21	86	44	31	49	131	1446	99	58	1459	15
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)	0.99		0.95	0.98		0.98	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1856	1900	1881	1845	1900	1845	1863	1900
Adj Flow Rate, veh/h	8	21	88	45	32	50	134	1476	101	59	1489	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	3	2	2
Cap, veh/h	34	66	227	120	88	114	266	2129	145	242	2297	23
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.05	0.64	0.64	0.05	0.64	0.64
Sat Flow, veh/h	45	347	1190	461	460	598	1792	3327	227	1757	3589	36
Grp Volume(v), veh/h	117	0	0	127	0	0	134	774	803	59	734	770
Grp Sat Flow(s),veh/h/ln	1582	0	0	1519	0	0	1792	1752	1801	1757	1770	1855
Q Serve(g_s), s	0.0	0.0	0.0	1.0	0.0	0.0	3.8	42.7	43.4	1.6	38.2	38.3
Cycle Q Clear(g_c), s	9.6	0.0	0.0	10.6	0.0	0.0	3.8	42.7	43.4	1.6	38.2	38.3
Prop In Lane	0.07		0.75	0.35		0.39	1.00		0.13	1.00		0.02
Lane Grp Cap(c), veh/h	327	0	0	322	0	0	266	1122	1152	242	1133	1187
V/C Ratio(X)	0.36	0.00	0.00	0.39	0.00	0.00	0.50	0.69	0.70	0.24	0.65	0.65
Avail Cap(c_a), veh/h	327	0	0	322	0	0	266	1122	1152	242	1133	1187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	0.0	0.0	53.3	0.0	0.0	15.9	17.4	17.5	15.3	16.6	16.6
Incr Delay (d2), s/veh	3.0	0.0	0.0	3.6	0.0	0.0	6.6	3.5	3.5	2.4	2.9	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	4.5	0.0	0.0	4.9	0.0	0.0	2.8	21.5	22.5	1.0	19.5	20.4
LnGrp Delay(d),s/veh	56.0	0.0	0.0	56.9	0.0	0.0	22.5	20.9	21.0	17.7	19.5	19.4
LnGrp LOS	E			E			C	C	C	B	B	B
Approach Vol, veh/h		117			127			1711			1563	
Approach Delay, s/veh		56.0			56.9			21.1			19.4	
Approach LOS		E			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	102.0		35.0	13.0	102.0		35.0
Change Period (Y+Rc), s	6.0	6.0		6.4	6.0	6.0		6.4
Max Green Setting (Gmax), s	7.0	96.0		28.6	7.0	96.0		28.6
Max Q Clear Time (g_c+I1), s	3.6	45.4		11.6	5.8	40.3		12.6
Green Ext Time (p_c), s	0.0	41.0		1.3	0.0	44.3		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	147	0	0	78	39	1375	52	28	1410	34
Conflicting Peds, #/hr	0	0	8	0	0	18	0	0	30	0	0	51
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	145	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	4	0	3	4	9	2	2
Mvmt Flow	0	0	155	0	0	82	41	1447	55	29	1484	36

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2393	3171	798	2384	3162	820	1528	0	0	1520	0	0
Stage 1	1569	1569	-	1575	1575	-	-	-	-	-	-	-
Stage 2	824	1602	-	809	1587	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.94	7.5	6.5	6.98	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.32	3.5	4	3.34	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	18	11	329	18	11	314	442	-	-	403	-	-
Stage 1	118	173	-	117	172	-	-	-	-	-	-	-
Stage 2	338	167	-	345	170	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	11	9	319	8	9	296	431	-	-	386	-	-
Mov Cap-2 Maneuver	11	9	-	8	9	-	-	-	-	-	-	-
Stage 1	106	159	-	104	153	-	-	-	-	-	-	-
Stage 2	212	149	-	160	156	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.5	21.8	0.4	0.3
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	431	-	-	319	296	386	-	-
HCM Lane V/C Ratio	0.095	-	-	0.485	0.277	0.076	-	-
HCM Control Delay (s)	14.2	-	-	26.5	21.8	15.1	-	-
HCM Lane LOS	B	-	-	D	C	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-	2.5	1.1	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	51	114	68	63	72	114	1362	47	43	1317	75
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		0.97	1.00		0.85	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1886	1900	1900	1894	1900	1900	1863	1900	1881	1865	1900
Adj Flow Rate, veh/h	56	53	119	71	66	75	119	1419	49	45	1372	78
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	1	1	1	0	2	2	1	2	2
Cap, veh/h	93	90	166	112	103	100	326	1954	67	348	1903	108
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.13	0.74	0.74	0.10	0.56	0.56
Sat Flow, veh/h	286	409	759	364	468	456	1810	3489	120	1792	3398	193
Grp Volume(v), veh/h	228	0	0	212	0	0	119	719	749	45	713	737
Grp Sat Flow(s),veh/h/ln	1454	0	0	1288	0	0	1810	1770	1839	1792	1771	1819
Q Serve(g_s), s	0.0	0.0	0.0	2.2	0.0	0.0	3.5	33.8	34.0	1.3	44.5	44.9
Cycle Q Clear(g_c), s	22.1	0.0	0.0	24.3	0.0	0.0	3.5	33.8	34.0	1.3	44.5	44.9
Prop In Lane	0.25		0.52	0.33		0.35	1.00		0.07	1.00		0.11
Lane Grp Cap(c), veh/h	349	0	0	315	0	0	326	991	1030	348	992	1019
V/C Ratio(X)	0.65	0.00	0.00	0.67	0.00	0.00	0.36	0.73	0.73	0.13	0.72	0.72
Avail Cap(c_a), veh/h	349	0	0	315	0	0	326	991	1030	348	992	1019
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	0.0	0.0	54.7	0.0	0.0	18.3	12.7	12.8	13.3	24.3	24.4
Incr Delay (d2), s/veh	9.2	0.0	0.0	11.0	0.0	0.0	3.1	4.6	4.5	0.8	4.5	4.5
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	9.6	0.0	0.0	9.3	0.0	0.0	2.3	17.4	18.1	0.7	22.8	23.8
LnGrp Delay(d),s/veh	63.1	0.0	0.0	65.7	0.0	0.0	21.4	17.3	17.3	14.1	28.8	28.9
LnGrp LOS	E			E			C	B	B	B	C	C
Approach Vol, veh/h		228			212			1587			1495	
Approach Delay, s/veh		63.1			65.7			17.6			28.4	
Approach LOS		E			E			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.0	90.0		39.0	21.0	90.0		39.0
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1
Max Green Setting (Gmax), s	15.0	84.0		32.9	15.0	84.0		32.9
Max Q Clear Time (g_c+I1), s	3.3	36.0		24.1	5.5	46.9		26.3
Green Ext Time (p_c), s	0.0	37.2		1.9	0.2	30.3		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	53	17	15	54	8	22	106	14	5	78	11
Conflicting Peds, #/hr	0	0	18	0	0	23	0	0	29	0	0	25
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	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	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	5	2	0	0	3	0	7	1	0	4	3	4
Mvmt Flow	7	55	18	15	56	8	23	109	14	5	80	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	331	306	133	335	305	164	110	0	0	147	0	0
Stage 1	114	114	-	185	185	-	-	-	-	-	-	-
Stage 2	217	192	-	150	120	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.2	7.1	6.53	6.2	4.17	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.3	3.5	4.027	3.3	2.263	-	-	2.236	-	-
Pot Cap-1 Maneuver	617	608	922	622	607	886	1449	-	-	1423	-	-
Stage 1	884	801	-	821	745	-	-	-	-	-	-	-
Stage 2	779	742	-	857	794	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	537	575	886	533	574	851	1414	-	-	1393	-	-
Mov Cap-2 Maneuver	537	575	-	533	574	-	-	-	-	-	-	-
Stage 1	856	786	-	792	718	-	-	-	-	-	-	-
Stage 2	685	715	-	760	779	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	12.1	1.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1414	-	-	619	585	1393	-	-
HCM Lane V/C Ratio	0.016	-	-	0.128	0.136	0.004	-	-
HCM Control Delay (s)	7.6	0	-	11.7	12.1	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.5	0	-	-

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	21	86	28	0	24	180	20	0	27	85	22
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	1	2	5	2	2	1	4	2	10	1	2
Mvmt Flow	0	25	104	34	0	29	217	24	0	33	102	27
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.1	10.3	9.7
HCM LOS	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	16%	11%	11%
Vol Thru, %	63%	64%	80%	68%
Vol Right, %	16%	21%	9%	21%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	134	135	224	56
LT Vol	27	21	24	6
Through Vol	85	86	180	38
RT Vol	22	28	20	12
Lane Flow Rate	161	163	270	67
Geometry Grp	1	1	1	1
Degree of Util (X)	0.229	0.214	0.351	0.096
Departure Headway (Hd)	5.112	4.732	4.682	5.102
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	697	753	764	696
Service Time	3.179	2.794	2.737	3.18
HCM Lane V/C Ratio	0.231	0.216	0.353	0.096
HCM Control Delay	9.7	9.1	10.3	8.7
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.9	0.8	1.6	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	6	38	12
Peak Hour Factor	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	4	2	4
Mvmt Flow	0	7	46	14
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.7
HCM LOS	A

Lane

Intersection: 1: Alton Road & 8th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	166	110	204	450	431	52	282	312
Average Queue (ft)	108	71	139	369	296	29	187	234
95th Queue (ft)	168	107	234	488	425	56	303	356
Link Distance (ft)	365			416	416		334	334
Upstream Blk Time (%)				8	3			
Queuing Penalty (veh)				0	0			
Storage Bay Dist (ft)			180			160		
Storage Blk Time (%)				23			6	
Queuing Penalty (veh)				30			4	

Intersection: 2: Alton Road & 9th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	R	R	L	T	TR	L	T	TR
Maximum Queue (ft)	94	51	170	229	204	31	53	75
Average Queue (ft)	77	32	74	91	95	12	11	21
95th Queue (ft)	103	63	183	217	202	37	45	70
Link Distance (ft)	373	335		334	334		400	400
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			145			210		
Storage Blk Time (%)			0	6				
Queuing Penalty (veh)			1	2				

Intersection: 3: Alton Road & 10th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	229	193	184	414	424	31	446	336
Average Queue (ft)	142	125	105	395	394	22	346	284
95th Queue (ft)	259	207	213	431	426	42	438	344
Link Distance (ft)	384	338		400	400		431	431
Upstream Blk Time (%)				12	9		3	
Queuing Penalty (veh)				85	70		0	
Storage Bay Dist (ft)			160			150		
Storage Blk Time (%)				37			31	
Queuing Penalty (veh)				43			13	

Intersection: 4: Lenox Ave & 9th Street

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	31	31
Average Queue (ft)	31	25
95th Queue (ft)	31	45
Link Distance (ft)	335	345
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Lenox Ave & 10th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	77	169	96	53
Average Queue (ft)	50	68	54	29
95th Queue (ft)	78	153	93	57
Link Distance (ft)	338	337	399	410
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 249

Future Build Condition, Optimized Splits, AM

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	5	12	36	14	73	1455	47	1312
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	10.0	20.0	10.0	20.0
Total Split (s)	28.0	28.0	28.0	28.0	17.0	108.0	14.0	105.0
Total Split (%)	18.7%	18.7%	18.7%	18.7%	11.3%	72.0%	9.3%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.4		6.4	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		21.6		21.6	113.0	102.0	107.0	99.0
Actuated g/C Ratio		0.14		0.14	0.75	0.68	0.71	0.66
v/c Ratio		0.44		0.54	0.28	0.69	0.25	0.63
Control Delay		17.3		62.4	6.6	16.3	6.6	12.8
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.4
Total Delay		17.3		62.4	6.6	16.3	6.6	13.1
LOS		B		E	A	B	A	B
Approach Delay		17.3		62.4		15.9		12.9
Approach LOS		B		E		B		B

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 40 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Pretimed
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 15.8 Intersection LOS: B
Intersection Capacity Utilization 81.9% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Alton Road & 8th Street

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	28	32	34	31	81	1373	35	1186
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	19.5	19.5	20.0	20.0	10.0	22.0	10.0	22.0
Total Split (s)	29.0	29.0	29.0	29.0	17.0	110.0	11.0	104.0
Total Split (%)	19.3%	19.3%	19.3%	19.3%	11.3%	73.3%	7.3%	69.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.1		6.1	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		22.9		22.9	115.0	104.0	103.0	98.0
Actuated g/C Ratio		0.15		0.15	0.77	0.69	0.69	0.65
v/c Ratio		0.70		0.66	0.30	0.64	0.19	0.61
Control Delay		58.1		67.6	7.6	13.0	7.0	16.2
Queue Delay		0.0		0.0	0.0	0.1	0.0	0.0
Total Delay		58.1		67.6	7.6	13.0	7.0	16.2
LOS		E		E	A	B	A	B
Approach Delay		58.1		67.6		12.7		16.0
Approach LOS		E		E		B		B

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 65
Control Type: Pretimed
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 18.6 — Intersection LOS: B
Intersection Capacity Utilization 70.1% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: Alton Road & 10th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	5	12	118	36	14	27	73	1455	29	47	1312	14
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)	0.99		0.98	1.00		0.97	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1861	1900	1881	1845	1900	1845	1863	1900
Adj Flow Rate, veh/h	5	13	130	40	15	30	80	1599	32	52	1442	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	3	2	2
Cap, veh/h	28	25	201	106	43	62	338	2389	48	267	2368	25
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.07	0.68	0.68	0.05	0.66	0.66
Sat Flow, veh/h	20	173	1393	493	302	433	1792	3513	70	1757	3588	37
Grp Volume(v), veh/h	148	0	0	85	0	0	80	796	835	52	711	746
Grp Sat Flow(s),veh/h/ln	1586	0	0	1228	0	0	1792	1752	1831	1757	1770	1855
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.9	40.0	40.2	1.3	34.2	34.3
Cycle Q Clear(g_c), s	13.2	0.0	0.0	10.3	0.0	0.0	1.9	40.0	40.2	1.3	34.2	34.3
Prop In Lane	0.03		0.88	0.47		0.35	1.00		0.04	1.00		0.02
Lane Grp Cap(c), veh/h	253	0	0	212	0	0	338	1192	1245	267	1168	1224
V/C Ratio(X)	0.58	0.00	0.00	0.40	0.00	0.00	0.24	0.67	0.67	0.19	0.61	0.61
Avail Cap(c_a), veh/h	253	0	0	212	0	0	338	1192	1245	267	1168	1224
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.6	0.0	0.0	58.8	0.0	0.0	10.6	14.1	14.1	11.9	14.5	14.5
Incr Delay (d2), s/veh	9.5	0.0	0.0	5.6	0.0	0.0	1.6	3.0	2.9	1.6	2.4	2.3
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	6.5	0.0	0.0	3.6	0.0	0.0	1.1	20.2	21.2	0.8	17.4	18.2
LnGrp Delay(d),s/veh	70.1	0.0	0.0	64.4	0.0	0.0	12.2	17.1	17.0	13.5	16.9	16.8
LnGrp LOS	E			E			B	B	B	B	B	B
Approach Vol, veh/h		148			85			1711			1509	
Approach Delay, s/veh		70.1			64.4			16.8			16.7	
Approach LOS		E			E			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	108.0		28.0	17.0	105.0		28.0
Change Period (Y+Rc), s	6.0	6.0		6.4	6.0	6.0		6.4
Max Green Setting (Gmax), s	8.0	102.0		21.6	11.0	99.0		21.6
Max Q Clear Time (g_c+I1), s	3.3	42.2		15.2	3.9	36.3		12.3
Green Ext Time (p_c), s	0.0	46.9		0.7	0.1	48.7		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	193	0	0	47	52	1417	27	17	1199	27
Conflicting Peds, #/hr	0	0	8	0	0	15	0	0	24	0	0	16
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	145	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	0	0	2	0	0	4	0	3	4	9	2	2
Mvmt Flow	0	0	212	0	0	52	57	1557	30	19	1318	30

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2286	3094	706	2405	3094	824	1355	0	0	1602	0	0
Stage 1	1378	1378	-	1701	1701	-	-	-	-	-	-	-
Stage 2	908	1716	-	704	1393	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.94	7.5	6.5	6.98	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.32	3.5	4	3.34	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	22	12	378	18	12	312	514	-	-	373	-	-
Stage 1	155	214	-	98	149	-	-	-	-	-	-	-
Stage 2	301	146	-	398	211	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	16	10	368	6	10	304	504	-	-	368	-	-
Mov Cap-2 Maneuver	16	10	-	6	10	-	-	-	-	-	-	-
Stage 1	137	202	-	86	130	-	-	-	-	-	-	-
Stage 2	219	128	-	157	199	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.3	19.3	0.5	0.2
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	504	-	-	368	304	368	-	-
HCM Lane V/C Ratio	0.113	-	-	0.576	0.17	0.051	-	-
HCM Control Delay (s)	13.1	-	-	27.3	19.3	15.3	-	-
HCM Lane LOS	B	-	-	D	C	C	-	-
HCM 95th %tile Q(veh)	0.4	-	-	3.5	0.6	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	28	32	109	34	31	48	81	1373	39	35	1186	59
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		0.97	1.00		0.93	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1885	1900	1900	1895	1900	1900	1863	1900	1881	1864	1900
Adj Flow Rate, veh/h	31	36	121	38	34	53	90	1526	43	39	1318	66
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	0	0	1	1	1	0	2	2	1	2	2
Cap, veh/h	58	59	161	81	74	91	354	2437	69	322	2242	112
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.15	1.00	1.00	0.03	0.65	0.65
Sat Flow, veh/h	194	389	1052	327	486	599	1810	3515	99	1792	3431	172
Grp Volume(v), veh/h	188	0	0	125	0	0	90	767	802	39	679	705
Grp Sat Flow(s),veh/h/ln	1635	0	0	1412	0	0	1810	1770	1844	1792	1771	1831
Q Serve(g_s), s	3.9	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	1.0	32.4	32.5
Cycle Q Clear(g_c), s	16.2	0.0	0.0	12.3	0.0	0.0	2.0	0.0	0.0	1.0	32.4	32.5
Prop In Lane	0.16		0.64	0.30		0.42	1.00		0.05	1.00		0.09
Lane Grp Cap(c), veh/h	278	0	0	247	0	0	354	1227	1278	322	1157	1197
V/C Ratio(X)	0.68	0.00	0.00	0.51	0.00	0.00	0.25	0.62	0.63	0.12	0.59	0.59
Avail Cap(c_a), veh/h	278	0	0	247	0	0	354	1227	1278	322	1157	1197
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	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.6	0.0	0.0	58.6	0.0	0.0	9.5	0.0	0.0	7.5	14.6	14.7
Incr Delay (d2), s/veh	12.5	0.0	0.0	7.2	0.0	0.0	1.7	2.4	2.3	0.8	2.2	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	8.4	0.0	0.0	5.3	0.0	0.0	1.2	0.8	0.8	0.6	16.4	17.0
LnGrp Delay(d),s/veh	73.2	0.0	0.0	65.9	0.0	0.0	11.3	2.4	2.3	8.3	16.8	16.8
LnGrp LOS	E			E			B	A	A	A	B	B
Approach Vol, veh/h		188			125			1659			1423	
Approach Delay, s/veh		73.2			65.9			2.9			16.6	
Approach LOS		E			E			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	110.0		29.0	17.0	104.0		29.0
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1
Max Green Setting (Gmax), s	5.0	104.0		22.9	11.0	98.0		22.9
Max Q Clear Time (g_c+I1), s	3.0	2.0		18.2	4.0	34.5		14.3
Green Ext Time (p_c), s	0.0	63.6		0.8	0.1	46.5		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	14.8
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	27	14	17	38	2	15	46	11	8	68	5
Conflicting Peds, #/hr	0	0	7	0	0	19	0	0	13	0	0	11
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	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	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	5	2	0	0	3	0	7	1	0	4	3	4
Mvmt Flow	7	33	17	21	47	2	19	57	14	10	84	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	258	240	107	259	237	94	97	0	0	89	0	0
Stage 1	114	114	-	120	120	-	-	-	-	-	-	-
Stage 2	144	126	-	139	117	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.2	7.1	6.53	6.2	4.17	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.3	3.5	4.027	3.3	2.263	-	-	2.236	-	-
Pot Cap-1 Maneuver	689	661	953	698	662	968	1466	-	-	1494	-	-
Stage 1	884	801	-	889	794	-	-	-	-	-	-	-
Stage 2	852	792	-	869	797	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	629	633	937	630	634	944	1450	-	-	1480	-	-
Mov Cap-2 Maneuver	629	633	-	630	634	-	-	-	-	-	-	-
Stage 1	867	791	-	863	770	-	-	-	-	-	-	-
Stage 2	780	769	-	803	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	11.3	1.6	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1450	-	-	700	640	1480	-	-
HCM Lane V/C Ratio	0.013	-	-	0.083	0.11	0.007	-	-
HCM Control Delay (s)	7.5	0	-	10.6	11.3	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.4	0	-	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	6	84	22	0	17	105	8	0	17	24	8
Peak Hour Factor	0.92	0.87	0.87	0.87	0.92	0.87	0.87	0.87	0.92	0.87	0.87	0.87
Heavy Vehicles, %	2	1	2	5	2	2	1	4	2	10	1	2
Mvmt Flow	0	7	97	25	0	20	121	9	0	20	28	9
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	8	8.3	8.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	35%	5%	13%	4%
Vol Thru, %	49%	75%	81%	80%
Vol Right, %	16%	20%	6%	16%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	112	130	49
LT Vol	17	6	17	2
Through Vol	24	84	105	39
RT Vol	8	22	8	8
Lane Flow Rate	56	129	149	56
Geometry Grp	1	1	1	1
Degree of Util (X)	0.074	0.152	0.18	0.071
Departure Headway (Hd)	4.724	4.238	4.326	4.562
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	760	848	831	786
Service Time	2.745	2.252	2.341	2.584
HCM Lane V/C Ratio	0.074	0.152	0.179	0.071
HCM Control Delay	8.1	8	8.3	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.5	0.7	0.2

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	2	39	8
Peak Hour Factor	0.92	0.87	0.87	0.87
Heavy Vehicles, %	2	4	2	4
Mvmt Flow	0	2	45	9
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	7.9
HCM LOS	A

Lane

Intersection: 1: Alton Road & 8th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	112	116	94	313	276	184	208	222
Average Queue (ft)	60	60	47	228	186	66	152	182
95th Queue (ft)	120	114	88	349	278	165	265	250
Link Distance (ft)	365			416	416		334	334
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			180			160		
Storage Blk Time (%)				11			6	
Queuing Penalty (veh)				8			3	

Intersection: 2: Alton Road & 9th Street

Movement	EB	WB	NB	NB	SB	SB	SB
Directions Served	R	R	L	T	L	T	TR
Maximum Queue (ft)	114	53	50	30	30	99	54
Average Queue (ft)	83	29	38	6	15	50	23
95th Queue (ft)	130	57	55	26	38	123	56
Link Distance (ft)	373	335		334		400	400
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			145		210		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 3: Alton Road & 10th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	158	117	30	311	287	49	358	310
Average Queue (ft)	112	109	22	259	243	22	270	208
95th Queue (ft)	173	124	41	320	307	54	387	361
Link Distance (ft)	384	338		400	400		431	431
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			160			150		
Storage Blk Time (%)				17			20	
Queuing Penalty (veh)				14			7	

Intersection: 4: Lenox Ave/Lenox Avenue & 9th Street

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	31	74
Average Queue (ft)	31	33
95th Queue (ft)	31	72
Link Distance (ft)	335	345
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Lenox Avenue & 10th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	74	51	31	32
Average Queue (ft)	49	39	29	31
95th Queue (ft)	75	55	32	32
Link Distance (ft)	338	337	399	410
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 32

Future Build Condition, Optimized Splits, PM

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	8	21	44	31	131	1472	60	1512
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	10.0	22.0	10.0	22.0
Total Split (s)	27.0	27.0	27.0	27.0	23.0	110.0	13.0	100.0
Total Split (%)	18.0%	18.0%	18.0%	18.0%	15.3%	73.3%	8.7%	66.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.4		6.4	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		20.6		20.6	117.0	104.0	101.0	94.0
Actuated g/C Ratio		0.14		0.14	0.78	0.69	0.67	0.63
v/c Ratio		0.42		0.69	0.43	0.67	0.29	0.71
Control Delay		24.7		72.7	12.1	14.8	7.3	12.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	2.2
Total Delay		24.7		72.7	12.1	14.8	7.3	14.8
LOS		C		E	B	B	A	B
Approach Delay		24.7		72.7		14.6		14.5
Approach LOS		C		E		B		B

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 40 (27%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Pretimed
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 17.0 — Intersection LOS: B
Intersection Capacity Utilization 79.3% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 1: Alton Road & 8th Street

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	54	51	69	63	117	1394	43	1332
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	10.0	22.0	10.0	22.0
Total Split (s)	44.0	44.0	44.0	44.0	21.0	94.0	12.0	85.0
Total Split (%)	29.3%	29.3%	29.3%	29.3%	14.0%	62.7%	8.0%	56.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.1		6.1	6.0	6.0	6.0	6.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)		37.9		37.9	100.0	88.0	85.0	79.0
Actuated g/C Ratio		0.25		0.25	0.67	0.59	0.57	0.53
v/c Ratio		0.61		0.71	0.48	0.73	0.26	0.81
Control Delay		49.7		61.4	32.9	23.1	13.6	33.4
Queue Delay		0.0		0.0	0.0	0.2	0.0	0.4
Total Delay		49.7		61.4	32.9	23.3	13.6	33.8
LOS		D		E	C	C	B	C
Approach Delay		49.7		61.4		24.0		33.2
Approach LOS		D		E		C		C

Intersection Summary

Cycle Length: 150
Actuated Cycle Length: 150
Offset: 0 (0%), Referenced to phase 2:NBTL, Start of Green
Natural Cycle: 65
Control Type: Pretimed
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 31.7 — Intersection LOS: C
Intersection Capacity Utilization 80.8% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Alton Road & 10th Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	21	86	44	31	50	131	1472	99	60	1512	16
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		0.93	0.99		0.97	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1900	1856	1900	1881	1845	1900	1845	1863	1900
Adj Flow Rate, veh/h	8	21	88	45	32	51	134	1502	101	61	1543	16
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	1	3	3	3	2	2
Cap, veh/h	32	47	162	90	66	82	366	2310	155	267	2248	23
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.11	0.69	0.69	0.05	0.63	0.63
Sat Flow, veh/h	48	340	1177	423	482	600	1792	3331	223	1757	3588	37
Grp Volume(v), veh/h	117	0	0	128	0	0	134	786	817	61	761	798
Grp Sat Flow(s),veh/h/ln	1565	0	0	1505	0	0	1792	1752	1802	1757	1770	1855
Q Serve(g_s), s	0.0	0.0	0.0	1.5	0.0	0.0	3.0	37.5	38.1	1.8	42.2	42.3
Cycle Q Clear(g_c), s	10.4	0.0	0.0	11.9	0.0	0.0	3.0	37.5	38.1	1.8	42.2	42.3
Prop In Lane	0.07		0.75	0.35		0.40	1.00		0.12	1.00		0.02
Lane Grp Cap(c), veh/h	241	0	0	239	0	0	366	1215	1249	267	1109	1163
V/C Ratio(X)	0.49	0.00	0.00	0.54	0.00	0.00	0.37	0.65	0.65	0.23	0.69	0.69
Avail Cap(c_a), veh/h	241	0	0	239	0	0	366	1215	1249	267	1109	1163
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.3	0.0	0.0	60.7	0.0	0.0	15.9	12.8	12.9	11.6	18.3	18.4
Incr Delay (d2), s/veh	6.9	0.0	0.0	8.3	0.0	0.0	2.8	2.7	2.7	2.0	3.5	3.3
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	5.0	0.0	0.0	5.6	0.0	0.0	3.0	18.8	19.8	1.0	21.6	22.6
LnGrp Delay(d),s/veh	67.2	0.0	0.0	69.1	0.0	0.0	18.7	15.5	15.6	13.5	21.8	21.7
LnGrp LOS	E			E			B	B	B	B	C	C
Approach Vol, veh/h		117			128			1737			1620	
Approach Delay, s/veh		67.2			69.1			15.8			21.4	
Approach LOS		E			E			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	110.0		27.0	23.0	100.0		27.0
Change Period (Y+Rc), s	6.0	6.0		6.4	6.0	6.0		6.4
Max Green Setting (Gmax), s	7.0	104.0		20.6	17.0	94.0		20.6
Max Q Clear Time (g_c+I1), s	3.8	40.1		12.4	5.0	44.3		13.9
Green Ext Time (p_c), s	0.0	50.8		0.9	0.2	41.4		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	21.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	147	0	0	79	39	1401	52	29	1464	35
Conflicting Peds, #/hr	0	0	8	0	0	18	0	0	30	0	0	51
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	145	-	-	210	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	4	0	3	4	9	2	2
Mvmt Flow	0	0	155	0	0	83	41	1475	55	31	1541	37

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2466	3259	827	2442	3249	834	1586	0	0	1547	0	0
Stage 1	1629	1629	-	1602	1602	-	-	-	-	-	-	-
Stage 2	837	1630	-	840	1647	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.94	7.5	6.5	6.98	4.1	-	-	4.28	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.32	3.5	4	3.34	2.2	-	-	2.29	-	-
Pot Cap-1 Maneuver	16	9	315	17	9	307	420	-	-	393	-	-
Stage 1	108	162	-	113	167	-	-	-	-	-	-	-
Stage 2	332	162	-	330	158	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	9	7	305	7	7	290	410	-	-	376	-	-
Mov Cap-2 Maneuver	9	7	-	7	7	-	-	-	-	-	-	-
Stage 1	97	148	-	100	148	-	-	-	-	-	-	-
Stage 2	204	144	-	145	144	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.4	22.3	0.4	0.3
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	410	-	-	305	290	376	-	-
HCM Lane V/C Ratio	0.1	-	-	0.507	0.287	0.081	-	-
HCM Control Delay (s)	14.8	-	-	28.4	22.3	15.4	-	-
HCM Lane LOS	B	-	-	D	C	C	-	-
HCM 95th %tile Q(veh)	0.3	-	-	2.7	1.2	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	51	115	69	63	72	117	1394	48	43	1332	75
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		0.97	1.00		0.89	1.00		0.98	1.00		0.95
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1886	1900	1900	1894	1900	1900	1863	1900	1881	1865	1900
Adj Flow Rate, veh/h	56	53	120	72	66	75	122	1452	50	45	1388	78
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	1	1	1	0	2	2	1	2	2
Cap, veh/h	105	104	197	132	120	119	302	2047	70	254	1790	100
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.13	0.78	0.78	0.04	0.53	0.53
Sat Flow, veh/h	297	412	781	394	475	472	1810	3490	120	1792	3400	190
Grp Volume(v), veh/h	229	0	0	213	0	0	122	735	767	45	721	745
Grp Sat Flow(s),veh/h/ln	1490	0	0	1342	0	0	1810	1770	1840	1792	1771	1819
Q Serve(g_s), s	0.0	0.0	0.0	2.1	0.0	0.0	3.9	30.6	30.8	1.7	48.7	49.3
Cycle Q Clear(g_c), s	20.7	0.0	0.0	22.8	0.0	0.0	3.9	30.6	30.8	1.7	48.7	49.3
Prop In Lane	0.24		0.52	0.34		0.35	1.00		0.07	1.00		0.10
Lane Grp Cap(c), veh/h	406	0	0	371	0	0	302	1039	1079	254	933	958
V/C Ratio(X)	0.56	0.00	0.00	0.57	0.00	0.00	0.40	0.71	0.71	0.18	0.77	0.78
Avail Cap(c_a), veh/h	406	0	0	371	0	0	302	1039	1079	254	933	958
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.2	0.0	0.0	50.0	0.0	0.0	22.4	10.2	10.2	16.3	28.3	28.5
Incr Delay (d2), s/veh	5.6	0.0	0.0	6.3	0.0	0.0	4.0	4.1	4.0	1.5	6.2	6.2
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	9.0	0.0	0.0	8.6	0.0	0.0	2.8	15.8	16.4	0.9	25.4	26.3
LnGrp Delay(d),s/veh	54.7	0.0	0.0	56.3	0.0	0.0	26.4	14.2	14.2	17.8	34.5	34.7
LnGrp LOS	D			E			C	B	B	B	C	C
Approach Vol, veh/h		229			213			1624			1511	
Approach Delay, s/veh		54.7			56.3			15.1			34.1	
Approach LOS		D			E			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	94.0		44.0	21.0	85.0		44.0
Change Period (Y+Rc), s	6.0	6.0		6.1	6.0	6.0		6.1
Max Green Setting (Gmax), s	6.0	88.0		37.9	15.0	79.0		37.9
Max Q Clear Time (g_c+I1), s	3.7	32.8		22.7	5.9	51.3		24.8
Green Ext Time (p_c), s	0.0	42.2		2.5	0.2	24.0		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	28.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	8	60	19	15	57	8	23	106	14	5	78	12
Conflicting Peds, #/hr	0	0	18	0	0	23	0	0	29	0	0	25
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	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	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	5	2	0	0	3	0	7	1	0	4	3	4
Mvmt Flow	8	62	20	15	59	8	24	109	14	5	80	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	335	309	134	343	308	164	111	0	0	147	0	0
Stage 1	115	115	-	187	187	-	-	-	-	-	-	-
Stage 2	220	194	-	156	121	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.52	6.2	7.1	6.53	6.2	4.17	-	-	4.14	-	-
Critical Hdwy Stg 1	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.52	-	6.1	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4.018	3.3	3.5	4.027	3.3	2.263	-	-	2.236	-	-
Pot Cap-1 Maneuver	613	605	920	615	604	886	1448	-	-	1423	-	-
Stage 1	883	800	-	819	743	-	-	-	-	-	-	-
Stage 2	776	740	-	851	794	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	530	572	884	519	571	851	1413	-	-	1393	-	-
Mov Cap-2 Maneuver	530	572	-	519	571	-	-	-	-	-	-	-
Stage 1	854	785	-	789	716	-	-	-	-	-	-	-
Stage 2	678	713	-	745	779	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.9	12.2	1.2	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1413	-	-	615	579	1393	-	-
HCM Lane V/C Ratio	0.017	-	-	0.146	0.142	0.004	-	-
HCM Control Delay (s)	7.6	0	-	11.9	12.2	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.5	0	-	-

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Vol, veh/h	0	25	102	33	0	24	190	20	0	28	85	22
Peak Hour Factor	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	1	2	5	2	2	1	4	2	10	1	2
Mvmt Flow	0	30	123	40	0	29	229	24	0	34	102	27
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	9.5	10.6	9.9
HCM LOS	A	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	16%	10%	11%
Vol Thru, %	63%	64%	81%	67%
Vol Right, %	16%	21%	9%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	135	160	234	57
LT Vol	28	25	24	6
Through Vol	85	102	190	38
RT Vol	22	33	20	13
Lane Flow Rate	163	193	282	69
Geometry Grp	1	1	1	1
Degree of Util (X)	0.236	0.255	0.371	0.099
Departure Headway (Hd)	5.217	4.766	4.737	5.204
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	683	748	756	681
Service Time	3.295	2.836	2.799	3.296
HCM Lane V/C Ratio	0.239	0.258	0.373	0.101
HCM Control Delay	9.9	9.5	10.6	8.9
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.9	1	1.7	0.3

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Vol, veh/h	0	6	38	13
Peak Hour Factor	0.92	0.83	0.83	0.83
Heavy Vehicles, %	2	4	2	4
Mvmt Flow	0	7	46	16
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	8.9
HCM LOS	A

Lane

Intersection: 1: Alton Road & 8th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	98	156	204	386	285	74	213	230
Average Queue (ft)	65	84	76	264	217	36	128	154
95th Queue (ft)	104	159	193	379	307	85	227	238
Link Distance (ft)	365			416	416		334	334
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			180			160		
Storage Blk Time (%)				15			3	
Queuing Penalty (veh)				19			2	

Intersection: 2: Alton Road & 9th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	R	R	L	T	TR	L	T	TR
Maximum Queue (ft)	94	96	52	49	30	74	77	121
Average Queue (ft)	73	48	34	21	6	21	15	30
95th Queue (ft)	111	90	49	53	26	68	66	108
Link Distance (ft)	373	335		334	334		400	400
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			145			210		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 3: Alton Road & 10th Street

Movement	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	226	198	76	417	400	31	446	431
Average Queue (ft)	177	168	71	361	352	9	384	363
95th Queue (ft)	240	218	85	475	475	29	519	459
Link Distance (ft)	384	338		400	400		431	431
Upstream Blk Time (%)				6	3		10	0
Queuing Penalty (veh)				48	26		0	0
Storage Bay Dist (ft)			160			150		
Storage Blk Time (%)				33			32	
Queuing Penalty (veh)				39			14	

Intersection: 4: Lenox Ave & 9th Street

Movement	EB	WB
Directions Served	LTR	LTR
Maximum Queue (ft)	53	31
Average Queue (ft)	39	31
95th Queue (ft)	57	31
Link Distance (ft)	335	345
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Lenox Ave & 10th Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	55	74	71	55
Average Queue (ft)	48	52	48	35
95th Queue (ft)	63	82	74	68
Link Distance (ft)	338	337	399	410
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 147

APPENDIX H

MDC Design Requirements

Miami-Dade Fire Rescue
Access Road Requirements

The requirements identified in this document are minimum standards. The Authority Having Jurisdiction (AHJ), based on specific fire fighting/and or Emergency Medical Service (EMS) needs, may require necessary modifications to these minimum standards on a case-by-case basis.

Fire department access roads must be provided for every community, facility, building, or portion of a building. Set-up sites, fire lanes, and slopes in a project must be able to accommodate a truck with dimensions as follows.

Overall length:	46 feet, 10 inches
Bumper to bump:	32 feet
Wheelbase length:	256 inches

Requirements for changes of elevation on Fire Department access roads

- Angle of approach: 11 degrees max = (1: 5.14 ratio) =(19.4%)
- Brake-over angle: 7 degrees max = (1: 8.14 ratio) =(12.3%)
- Angle of departure: 8 degrees max = (1: 7.12 ratio) =(14%)
- Driving inclines 11 degrees max = (1: 5.14 ratio) =(19.4%)

Required dimensions for fire department access roads

- All pertinent dimensions of fire department access roads such as drivable roadway width, turn radii, cul-de-sacs, and T or Y turn-arounds must be identified on a site plan. All sidewalks and green space shall be identified separate from roadway dimensions.

- The minimum dimensions for fire department access roads shall be 20 feet unobstructed width (two-way traffic) and not less than 13 feet 6 inches of unobstructed vertical clearance NFPA 1 18.2.2.5.1. The AHJ

will accept one-way traffic lanes to be a minimum of 15 feet unobstructed width.

- Dead end fire department access roads exceeding 150 feet shall be provided with approved provisions for the turning around of fire apparatus NFPA 1 18.2.2.5.4. An approved turn-around shall be by means described below.
    - A minimum 50 feet centerline radius cul-de-sac of which must be a suitable surface as described in *Emergency vehicle support capability* and approved by the AHJ.
    - A T-Turn or Y-Turn with an extension of the "T or Y" to be a minimum of 46 feet from the edge of each side of the roadway (not the center of the roadway) which must be a suitable surface as described below and approved by the AHJ.

Building access

- A fire department access road shall extend to within 50 feet of a single exterior door providing access to the interior of any and all buildings NFPA 1 18.2.2.2

- Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet (450 feet if fully sprinklered) from a fire department access road as measured by an approved route around the exterior of the building or facility NFPA 1 18.2.2.3.1

Gated communities or properties

- Gates to communities or properties shall be a minimum 15 feet clear width if the approach to and/or departure from the gate is not within a turn radius.
- Gates that are within a turn radius shall be a minimum 20 feet clear width
- Fire Department access to gated communities shall be by Knox Key Switch model 3502 ONLY or Knox padlock model 3753 on manual gates where permitted

Emergency vehicle support capability

- Fire department access roads shall be designed and maintained to support a minimum of 32 tons and shall be provided with a surface suitable for all-weather driving capabilities NFPA 1 (18 2.2.5.2)

Non-Paved Fire Department Access Roads

- Fire Department access roads permitted to traverse through non-paved areas via "grass pavers" or other approved means that will allow grass, foliage, or other landscaping material to grow shall be clearly delineated with signs complying with NFPA 1 Florida Edition (18.2.2.5.8). The edges of non-paved Fire Department access roads shall also be delineated in a manner that will make the access road apparent under all conditions.

Arial apparatus set-up sites

- Sites shall be provided at the corner of each building over three stories in height and at the approximate center of buildings in excess of 125 feet in length for fire fighting operations.
- Sites shall be no closer than 10 feet and no further than 30 feet from any building. Each site shall be a minimum 21 feet wide and 36 feet long with a cross slope no greater than 5 percent.
- Sites shall comply with the requirements of the emergency vehicle support capabilities above and also capable of withstanding any point forces resulting from outriggers

Fire hydrants, sprinkler systems, and other fire related devices

- Clearance from landscaping, parking, or other obstructions around fire hydrants and fire department connections to sprinkler systems shall be a minimum of seven and one-half feet in front of and to the sides of each appliance NFPA 1 18.3.4.1, 18, 3.4.2
- Any required fire sprinkler post indicator valve and/or fire department connection shall be located not less than 40 feet from the protected building
- The fire department connection shall be within 150 feet of the closest fire hydrant.

Should you desire to review your plans with the Miami Dade Fire Rescue Department prior to submittal of an application, please

- ✍ **Contact Fire Water Engineering at 786-315-2773 to set up a consultation meeting.**
- ✍ **Consultation meeting has a fee of $190.00 (1st) hour or portion thereof and $65.00 each additional hour or portion thereof.**