

APPENDIX D
TRAFFIC, TAZ, SIGNAL TIMING DATA, CENSUS DATA
& FDOT TABLES

National Data & Surveying Services Intersection Turning Movement Count

Location: Michigan Ave & 5th St
 City: Miami Beach
 Control: Signalized

Project ID: 21-140172-003
 Date: 8/5/2021

Data - Total

NS/EW Streets:	Michigan Ave						5th St						5th St					
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			EASTBOUND			WESTBOUND		
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	2	1	0	0	3	1	6	0	3	126	2	0	0	108	3	0	255	
7:15 AM	3	1	0	0	0	1	4	0	6	115	3	0	1	121	0	0	255	
7:30 AM	5	2	1	0	1	4	13	0	1	115	1	0	1	95	0	0	238	
7:45 AM	3	1	0	0	2	5	7	1	5	148	3	1	2	106	3	1	288	
8:00 AM	3	7	1	0	2	3	10	0	5	156	2	0	1	115	2	0	307	
8:15 AM	7	3	1	0	1	5	9	0	7	184	6	0	0	140	0	0	363	
8:30 AM	7	9	2	0	5	5	15	1	6	182	6	0	0	137	2	0	377	
8:45 AM	5	5	1	0	4	6	12	0	4	189	4	1	0	169	1	0	401	
TOTAL VOLUMES :	35	29	6	0	18	30	76	2	36	1215	27	2	5	991	11	1	2484	
APPROACH %'s :	50.00%	41.43%	8.57%	0.00%	14.29%	23.81%	60.32%	1.59%	2.81%	94.92%	2.11%	0.16%	0.50%	98.31%	1.09%	0.10%		
PEAK HR :	22	24	5	0	12	19	46	1	22	711	18	1	1	561	5	0	1448	
PEAK HR VOL :	0.786	0.667	0.625	0.000	0.600	0.792	0.767	0.250	0.786	0.940	0.750	0.250	0.250	0.830	0.625	0.000	0.903	
PEAK HR FACTOR :																	0.834	

NS/EW Streets:	Michigan Ave						5th St						5th St					
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			EASTBOUND			WESTBOUND		
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	14	8	2	0	3	2	18	0	11	183	9	2	1	237	1	0	491	
4:15 PM	15	4	3	0	6	7	16	0	12	168	5	4	1	266	3	1	511	
4:30 PM	18	7	3	0	4	3	14	0	22	192	5	1	0	241	4	0	514	
4:45 PM	4	8	1	0	2	2	12	0	19	196	7	3	0	247	7	0	508	
5:00 PM	8	6	3	0	2	8	18	0	16	185	3	2	2	234	6	1	494	
5:15 PM	9	3	5	0	0	5	21	1	13	205	7	0	0	269	5	1	544	
5:30 PM	5	4	0	0	2	6	17	0	10	176	4	3	2	293	6	0	528	
5:45 PM	6	5	2	0	3	5	14	0	14	154	2	1	2	262	0	0	470	
TOTAL VOLUMES :	79	45	19	0	22	38	130	1	117	1459	42	16	8	2049	32	3	4060	
APPROACH %'s :	55.24%	31.47%	13.29%	0.00%	11.52%	19.90%	68.06%	0.52%	7.16%	89.29%	2.57%	0.98%	0.38%	97.94%	1.53%	0.14%		
PEAK HR :	26	21	9	0	6	21	68	1	58	762	21	8	4	1043	24	2	2074	
PEAK HR VOL :	0.722	0.656	0.450	0.000	0.750	0.656	0.810	0.250	0.763	0.929	0.750	0.667	0.500	0.890	0.857	0.500	0.953	
PEAK HR FACTOR :																	0.891	

PEAK HR	PEAK HR VOLUME	8:00 AM - 9:00 AM	5	0	12	19	46	1	22	711	18	1	1	561	5	0	TOTAL
		22	24	5	0	19	46	1	22	711	18	1	1	561	5	0	1448

PEAK HR	PEAK HR VOLUME	4:45 PM - 5:45 PM	9	0 <th>6</th> <th>21</th> <th>68</th> <th>1</th> <th>58</th> <th>762</th> <th>21</th> <th>8</th> <th>4</th> <th>1043</th> <th>24</th> <th>2</th> <th>TOTAL</th>	6	21	68	1	58	762	21	8	4	1043	24	2	TOTAL
		26	21	9	0	21	68	1	58	762	21	8	4	1043	24	2	2074

National Data & Surveying Services Intersection Turning Movement Count

Location: Michigan Ave & 5th St
City: Miami Beach
Control: Signalized

Project ID: 21-140172-003
Date: 8/5/2021

Data - Bikes

NS/EW Streets:	Michigan Ave				Michigan Ave				5th St				5th St						
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU			
7:00 AM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	0	0	3
7:45 AM	0	1	0	0	0	2	0	0	0	0	4	0	0	0	0	0	0	0	7
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL VOLUMES :	1	3	0	0	0	5	1	0	0	0	8	0	0	0	3	0	0	0	21
APPROACH %'s :	25.00%	75.00%	0.00%	0.00%	0.00%	83.33%	16.67%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																		
PEAK HR VOL :	1	1	0	0	0	3	1	0	0	0	1	0	0	0	0	0	0	0	7
PEAK HR FACTOR :	0.250	0.250	0.000	0.000	0.000	0.750	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.875
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU			
4:00 PM	0	1	0	0	0	2	0	0	0	0	0	2	0	1	2	2	0	0	10
4:15 PM	0	1	0	0	0	1	0	0	0	1	1	0	0	1	1	0	0	0	6
4:30 PM	0	0	0	0	0	2	0	0	0	1	0	0	0	0	1	0	0	0	4
4:45 PM	1	1	0	0	0	3	0	0	0	0	1	0	0	1	2	0	0	0	9
5:00 PM	1	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	6
5:15 PM	0	0	0	0	0	6	0	0	0	0	1	0	0	0	1	1	0	0	9
5:30 PM	1	0	0	0	1	2	0	0	0	0	3	0	0	0	4	1	0	0	12
5:45 PM	1	4	0	0	0	2	0	0	0	0	3	0	0	0	1	0	0	0	11
TOTAL VOLUMES :	4	7	0	0	1	20	0	0	0	2	9	2	0	3	15	4	0	0	67
APPROACH %'s :	36.36%	63.64%	0.00%	0.00%	4.76%	95.24%	0.00%	0.00%	0.00%	15.38%	69.23%	15.38%	0.00%	13.64%	68.18%	18.18%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																		
PEAK HR VOL :	3	1	0	0	1	13	0	0	0	0	5	0	0	1	10	2	0	0	36
PEAK HR FACTOR :	0.750	0.250	0.000	0.000	0.250	0.542	0.000	0.000	0.000	0.000	0.417	0.000	0.000	0.250	0.625	0.500	0.000	0.000	0.750

National Data & Surveying Services **Intersection Turning** Movement Count

Location: Michigan Ave & 5th St
City: Miami Beach

Project ID: 21-140172-003
Date: 8/5/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Michigan Ave		Michigan Ave		5th St		5th St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	4	4	0	1	0	0	0	9
7:15 AM	1	2	2	1	1	0	1	3	11
7:30 AM	7	4	0	3	0	1	0	1	16
7:45 AM	2	6	1	1	2	1	2	2	17
8:00 AM	3	3	3	1	0	0	2	1	13
8:15 AM	4	4	1	2	0	1	0	2	14
8:30 AM	0	5	0	4	0	0	3	1	13
8:45 AM	7	8	1	3	0	3	1	1	24
TOTAL VOLUMES :	EB 24	WB 36	EB 12	WB 15	NB 4	SB 6	NB 9	SB 11	TOTAL 117
APPROACH %'s :	40.00%	60.00%	44.44%	55.56%	40.00%	60.00%	45.00%	55.00%	
PEAK HR :	08:00 AM - 09:00 AM								TOTAL
PEAK HR VOL :	14	20	5	10	0	4	6	5	64
PEAK HR FACTOR :	0.500	0.625	0.417	0.625		0.333	0.500	0.625	0.667
	0.567		0.938		0.333		0.688		

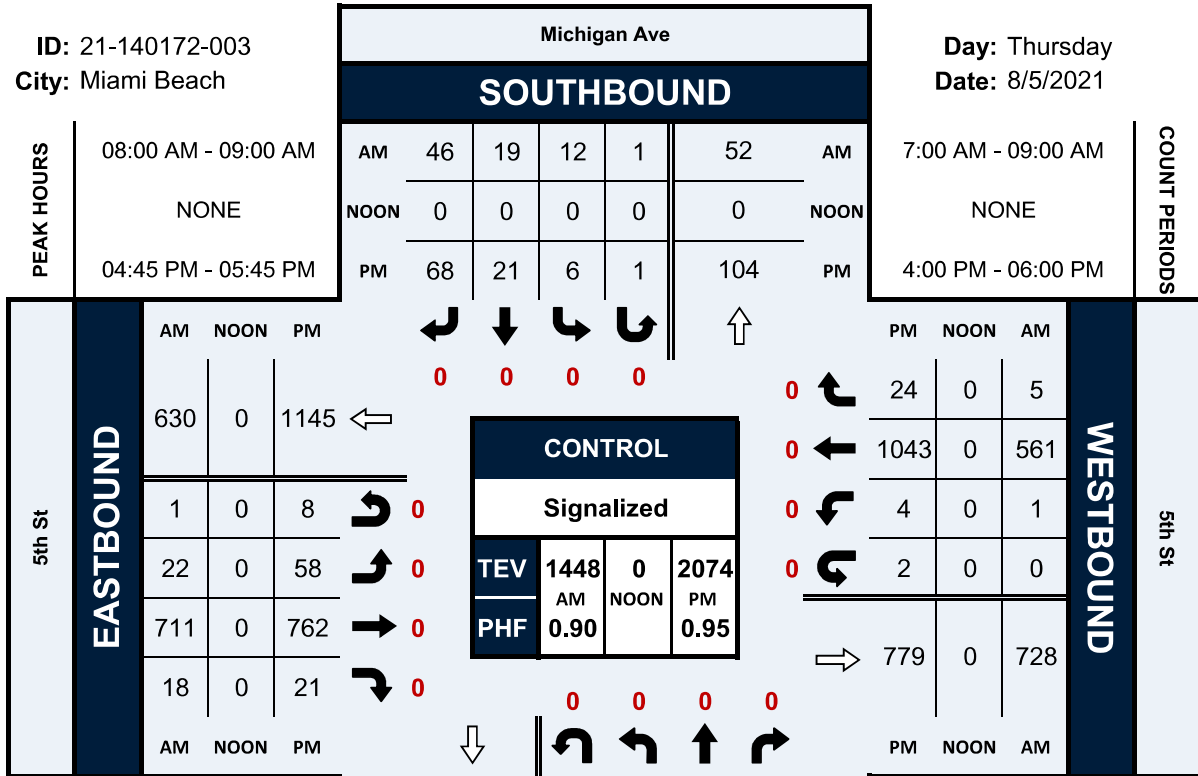
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	2	5	2	1	0	3	2	4	19
4:15 PM	11	7	4	3	0	0	3	2	30
4:30 PM	9	8	2	3	0	1	3	2	28
4:45 PM	3	9	2	6	1	2	2	0	25
5:00 PM	5	8	0	4	1	0	0	0	18
5:15 PM	5	10	2	8	1	2	0	1	29
5:30 PM	6	12	2	1	6	0	3	3	33
5:45 PM	6	16	4	2	0	2	1	4	35
TOTAL VOLUMES :	EB 47	WB 75	EB 18	WB 28	NB 9	SB 10	NB 14	SB 16	TOTAL 217
APPROACH %'s :	38.52%	61.48%	39.13%	60.87%	47.37%	52.63%	46.67%	53.33%	
PEAK HR :	04:45 PM - 05:45 PM								TOTAL
PEAK HR VOL :	19	39	6	19	9	4	5	4	105
PEAK HR FACTOR :	0.792	0.813	0.750	0.594	0.375	0.500	0.417	0.333	0.795
	0.806		0.625		0.542		0.375		

Michigan Ave & 5th St

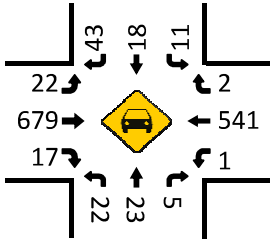
Peak Hour Turning Movement Count

ID: 21-140172-003
City: Miami Beach

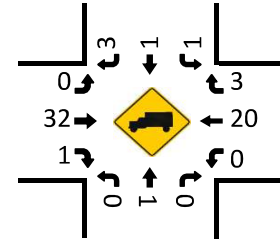
Day: Thursday
Date: 8/5/2021



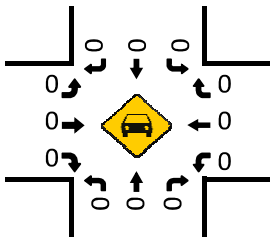
Cars (AM)



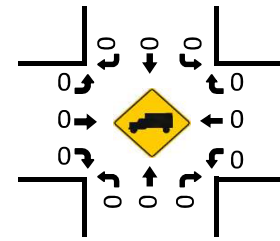
HT (AM)



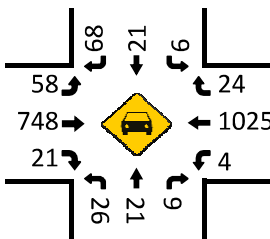
Cars (NOON)



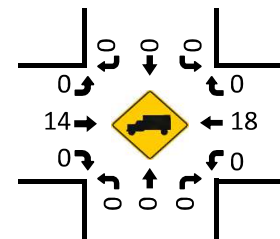
HT (NOON)



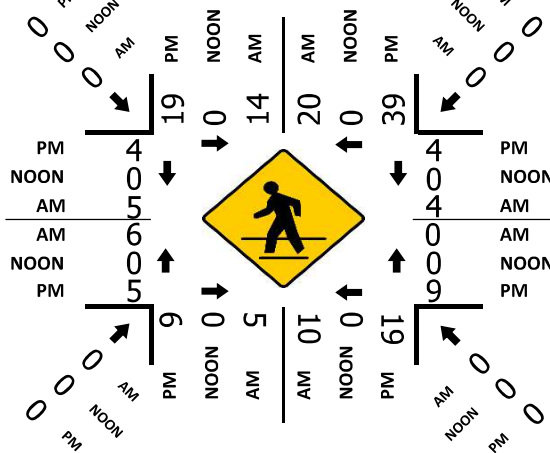
Cars (PM)



HT (PM)



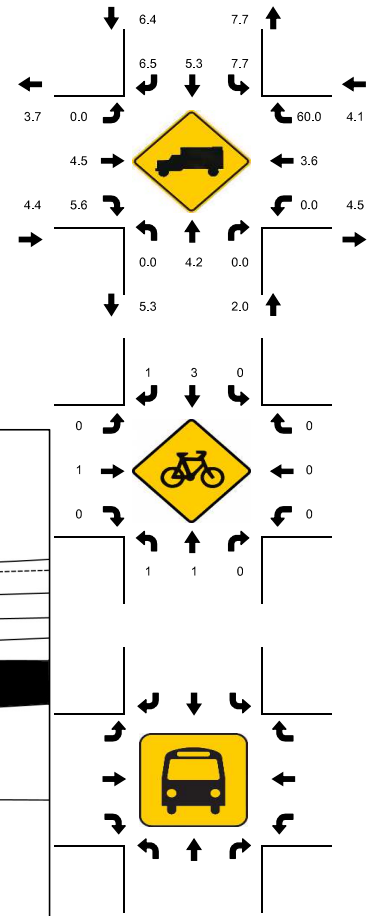
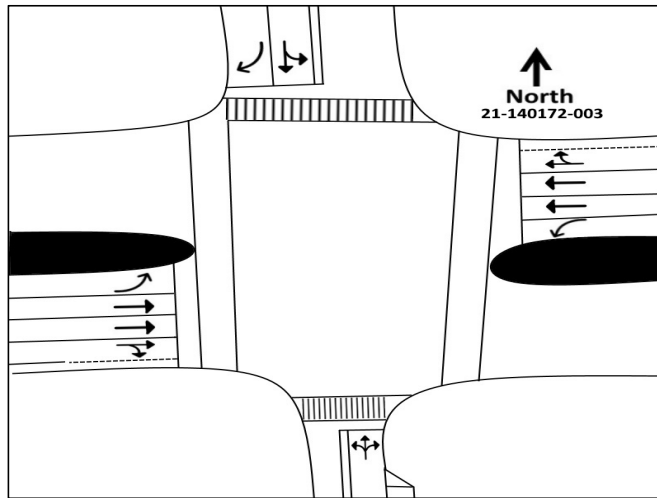
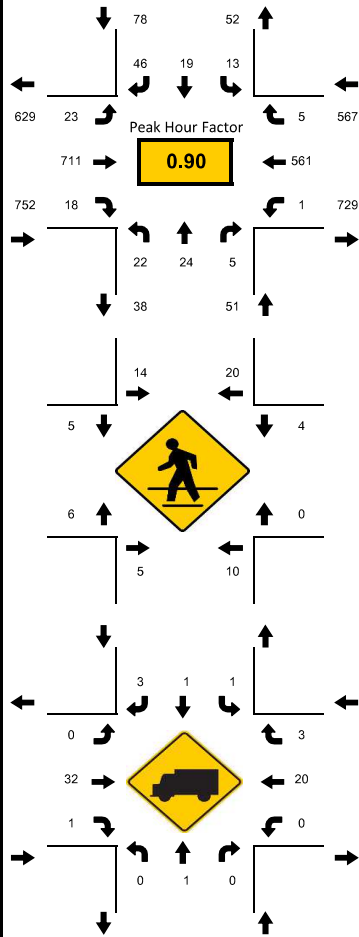
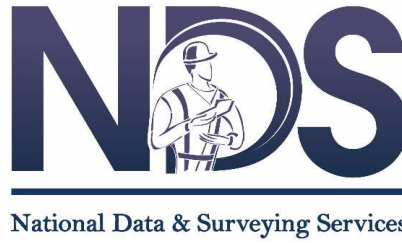
Pedestrians (Crosswalks)



LOCATION: Michigan Ave & 5th St
 CITY/STATE: Miami Beach, FL

PROJECT ID: 21-140172-003
 DATE: Thu, Aug 05, 2021

Peak-Hour: 08:00 AM - 09:00 AM
 Peak 15-Minute: 08:45 AM - 09:00 AM



15-Min Count Period Beginning At	Michigan Ave Northbound					Michigan Ave Southbound					5th St Eastbound				5th St Westbound				Total	Hourly Total		
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt			U	R*
07:00 AM	2	1	0	0		3	1	6	0		3	126	2	0		0	108	3	0		255	1036
07:15 AM	3	1	0	0		0	1	4	0		6	115	3	0		1	121	0	0		255	1088
07:30 AM	5	2	1	0		1	4	13	0		0	115	1	0		1	95	0	0		238	1196
07:45 AM	3	1	0	0		2	5	7	1		5	148	3	1		2	106	3	1		288	1335
08:00 AM	3	7	1	0		2	3	10	0		5	156	2	0		1	115	2	0		307	1448
08:15 AM	7	3	1	0		1	5	9	0		7	184	6	0		0	140	0	0		363	1141
08:30 AM	7	9	2	0		5	5	15	1		6	182	6	0		0	137	2	0		377	778
08:45 AM	5	5	1	0		4	6	12	0		4	189	4	1		0	169	1	0		401	401
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound				Westbound				Total			
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt			U	R*
All Vehicles	28	36	8	0		20	24	60	4		28	756	24	4		4	676	8	0		1680	
Heavy Trucks	0	4	0	0		4	4	8	0		0	52	4	0		0	36	4	0		116	
Pedestrians		16					60					16					12				104	
Bicycles	4	4	0	0		0	4	4	0		0	4	0	0		0	0	0	0		20	
Buses																						
Stopped Buses																						

National Data & Surveying Services Intersection Turning Movement Count

Location: Alton Rd & 4th St
 City: Miami Beach
 Control: Signalized

Project ID: 21-140172-001
 Date: 8/5/2021

Data - Total

NS/EW Streets:	Alton Rd						4th St						4th St					
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			EASTBOUND			WESTBOUND		
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	0	42	1	0	4	67	6	0	4	0	1	0	3	1	4	0	133	
7:15 AM	0	31	1	1	2	71	4	0	2	1	0	0	1	0	7	0	121	
7:30 AM	0	47	2	0	4	73	4	1	7	1	1	0	1	0	5	0	146	
7:45 AM	1	52	2	0	2	89	4	1	6	0	1	0	1	0	5	0	164	
8:00 AM	0	41	4	0	7	100	3	1	6	0	1	0	1	0	4	0	168	
8:15 AM	0	52	4	0	8	116	9	1	3	1	2	0	3	1	8	0	208	
8:30 AM	0	63	2	0	7	117	6	0	9	1	1	1	1	2	11	0	221	
8:45 AM	1	67	1	0	5	181	10	1	8	0	0	0	6	2	9	0	291	
TOTAL VOLUMES :	2	395	17	1	39	814	46	5	45	4	7	1	17	6	53	0	1452	
APPROACH %'s :	0.48%	95.18%	4.10%	0.24%	4.31%	90.04%	5.09%	0.55%	78.95%	7.02%	12.28%	1.75%	22.37%	7.89%	69.74%	0.00%		
PEAK HR VOL :	1	223	11	0	27	514	28	3	26	2	4	1	11	5	32	0	888	
PEAK HR FACTOR :	0.250	0.832	0.688	0.000	0.844	0.710	0.700	0.750	0.722	0.500	0.500	0.250	0.458	0.625	0.727	0.000	0.763	
																	0.706	

NS/EW Streets:	Alton Rd						4th St						4th St					
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			EASTBOUND			WESTBOUND		
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:00 PM	1	143	6	0	9	133	10	0	9	3	1	0	4	1	9	0	329	
4:15 PM	3	159	3	1	7	169	8	0	6	3	3	0	6	3	15	0	386	
4:30 PM	2	130	4	0	11	128	7	0	4	3	0	0	2	4	14	0	312	
4:45 PM	2	138	5	1	7	110	12	0	9	5	3	0	3	1	6	0	302	
5:00 PM	0	168	1	0	9	145	11	1	10	4	2	0	5	3	12	0	371	
5:15 PM	1	144	3	0	10	134	9	1	10	1	2	0	6	0	18	0	339	
5:30 PM	1	139	4	0	15	129	5	1	8	2	0	0	6	1	16	0	327	
5:45 PM	1	134	2	0	12	140	5	1	8	3	1	0	1	2	18	0	328	
TOTAL VOLUMES :	11	1155	28	2	80	1088	67	4	64	24	15	0	33	15	108	0	2694	
APPROACH %'s :	0.92%	96.57%	2.34%	0.17%	6.46%	87.81%	5.41%	0.32%	62.14%	23.30%	14.56%	0.00%	21.15%	9.62%	69.23%	0.00%		
PEAK HR VOL :	7	595	13	2	34	552	38	1	29	15	11	0	16	11	47	0	1371	
PEAK HR FACTOR :	0.583	0.885	0.650	0.500	0.773	0.817	0.792	0.250	0.725	0.750	0.917	0.000	0.667	0.688	0.783	0.000	0.888	
																	0.771	

PEAK HR	1	223	11	0	27	514	28	3	26	2	4	1	11	5	32	0	888
PEAK HR VOLUME	8:00 AM - 9:00 AM																

PEAK HR	4	589	13	1	41	518	37	3	37	12	7	0	20	5	52	0	1339
PEAK HR VOLUME	4:45 PM - 5:45 PM																

National Data & Surveying Services Intersection Turning Movement Count

Location: Alton Rd & 4th St
 City: Miami Beach
 Control: Signalized

Project ID: 21-140172-001
 Date: 8/5/2021

Data - Bikes

NS/EW Streets:	Alton Rd				Alton Rd				4th St				4th St								
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND								
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU					
	7:00 AM	0	1	1	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	6
	7:15 AM	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	3
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
	7:45 AM	0	2	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	7
	8:00 AM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	8:15 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	8:30 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	1	0	0	8	0	2	0	0	0	0	1	0	0	0	0	0	0	12	
TOTAL VOLUMES :	0	8	2	0	0	22	1	2	0	0	0	0	4	0	0	0	100.00%	0.00%	0.00%	0.00%	TOTAL
APPROACH %'s :	0.00%	80.00%	20.00%	0.00%	0.00%	88.00%	4.00%	8.00%	0	0	0	0	100.00%	0.00%	0.00%	0.00%					
PEAK HR :	08:00 AM - 09:00 AM																				TOTAL
PEAK HR VOL :	0	5	1	0	0	12	0	2	0	0	0	0	1	0	0	0	0.250	0.000	0.000	0.000	21
PEAK HR FACTOR :	0.000	0.417	0.250	0.000	0.000	0.375	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.438
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND								
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU					
	4:00 PM	0	0	2	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	5
	4:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	4:30 PM	0	3	0	0	0	1	0	0	0	0	0	4	0	0	0	0	0	0	0	8
	4:45 PM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2
	5:00 PM	0	3	2	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	9
	5:15 PM	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	6
	5:30 PM	0	2	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	5
5:45 PM	0	1	0	0	0	4	0	0	0	0	0	0	2	0	0	0	0	0	0	7	
TOTAL VOLUMES :	0	11	6	0	2	15	0	0	1	0	0	0	9	0	0	0	100.00%	0.00%	0.00%	0.00%	TOTAL
APPROACH %'s :	0.00%	64.71%	35.29%	0.00%	11.76%	88.24%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%					
PEAK HR :	04:15 PM - 05:15 PM																				TOTAL
PEAK HR VOL :	0	7	2	0	0	7	0	0	0	0	0	0	5	0	0	0	0.313	0.000	0.000	0.000	21
PEAK HR FACTOR :	0.000	0.583	0.250	0.000	0.000	0.438	0.000	0.000	0.000	0.000	0.000	0.000	0.313	0.000	0.000	0.000	0.313	0.000	0.000	0.000	0.583
PEAK HR	8:00 AM - 9:00 AM																				TOTAL
PEAK HR VOLUME	0	5	1	0	0	12	0	2	0	0	0	0	1	0	0	0					21
PEAK HR	4:45 PM - 5:45 PM																				TOTAL
PEAK HR VOLUME	0	6	4	0	2	8	0	0	1	0	0	0	1	0	0	0					22

National Data & Surveying Services **Intersection Turning** Movement Count

Location: Alton Rd & 4th St
City: Miami Beach

Project ID: 21-140172-001
Date: 8/5/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Alton Rd		Alton Rd		4th St		4th St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	1	2	0	2	1	1	1	8
7:15 AM	1	1	1	1	0	3	3	1	11
7:30 AM	0	0	1	1	1	4	3	0	10
7:45 AM	1	0	3	7	3	6	3	2	25
8:00 AM	0	0	2	4	3	5	2	3	19
8:15 AM	0	0	2	6	2	6	6	2	24
8:30 AM	0	0	3	5	1	5	1	1	16
8:45 AM	0	0	0	4	1	4	5	0	14
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	2	2	14	28	13	34	24	10	127
	50.00%	50.00%	33.33%	66.67%	27.66%	72.34%	70.59%	29.41%	
PEAK HR :	08:00 AM - 09:00 AM								TOTAL
PEAK HR VOL :	0	0	7	19	7	20	14	6	73
PEAK HR FACTOR :			0.583	0.792	0.583	0.833	0.583	0.500	0.760
			0.813		0.844		0.625		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	3	3	2	0	0	1	9
4:15 PM	0	0	1	0	2	4	1	3	11
4:30 PM	0	0	5	3	6	2	2	1	19
4:45 PM	0	0	3	9	7	6	1	3	29
5:00 PM	0	0	1	2	7	0	0	1	11
5:15 PM	3	0	0	5	0	2	1	0	11
5:30 PM	0	0	4	3	6	0	0	1	14
5:45 PM	0	1	2	2	4	2	1	0	12
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	3	1	19	27	34	16	6	10	116
	75.00%	25.00%	41.30%	58.70%	68.00%	32.00%	37.50%	62.50%	
PEAK HR :	04:15 PM - 05:15 PM								TOTAL
PEAK HR VOL :	0	0	10	14	22	12	4	8	70
PEAK HR FACTOR :			0.500	0.389	0.786	0.500	0.500	0.667	0.603
			0.500		0.654		0.750		

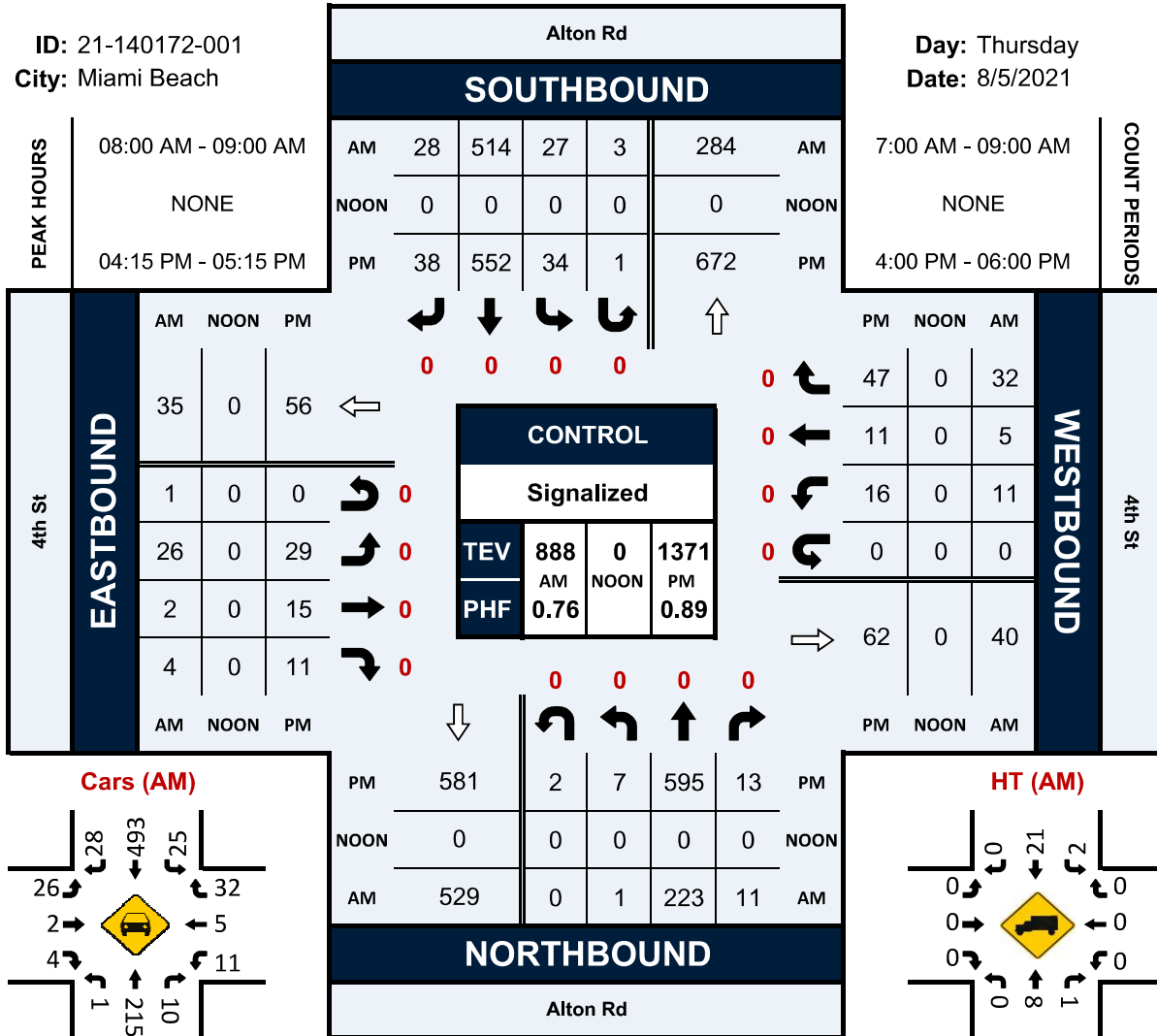
PEAK HR :	04:45 - 05:45 PM								TOTAL
PEAK HR VOL :	3	0	8	19	20	8	2	5	65

Alton Rd & 4th St

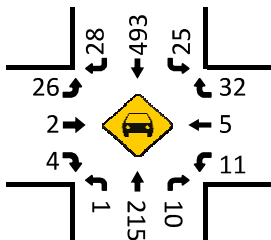
Peak Hour Turning Movement Count

ID: 21-140172-001
City: Miami Beach

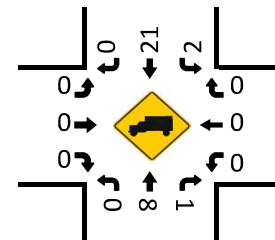
Day: Thursday
Date: 8/5/2021



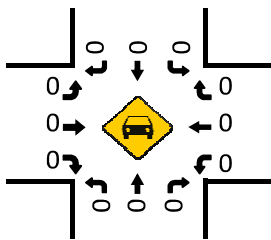
Cars (AM)



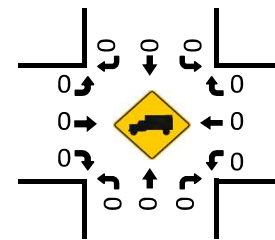
HT (AM)



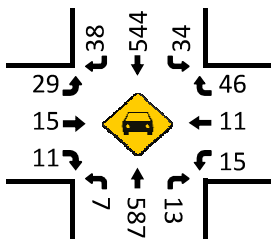
Cars (NOON)



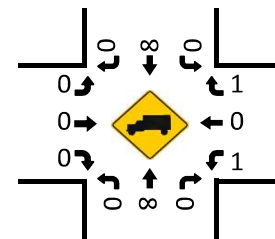
HT (NOON)



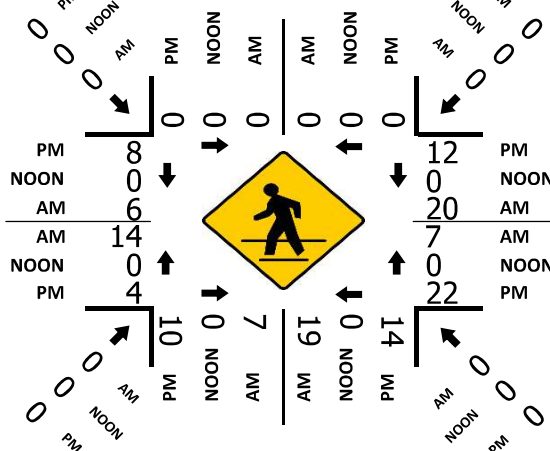
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



LOCATION: Alton Rd & 4th St
 CITY/STATE: Miami Beach, FL

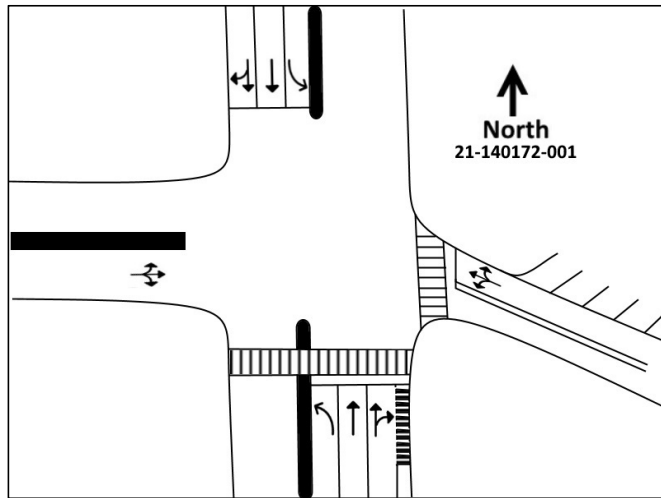
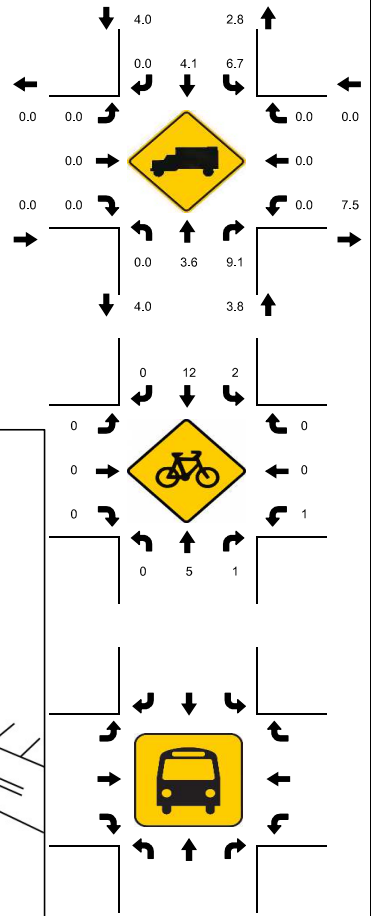
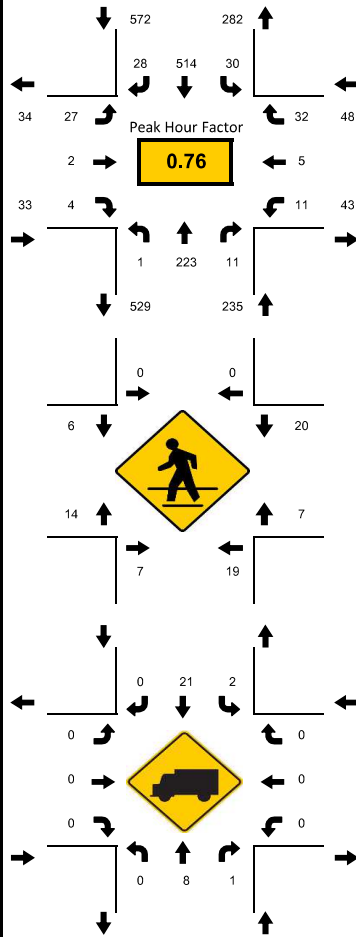
PROJECT ID: 21-140172-001
 DATE: Thu, Aug 05, 2021

Peak-Hour: 08:00 AM - 09:00 AM
 Peak 15-Minute: 08:45 AM - 09:00 AM

Peak Hour Factor
0.76



National Data & Surveying Services



15-Min Count Period Beginning At	Alton Rd Northbound				Alton Rd Southbound				4th St Eastbound				4th St Westbound				Total	Hourly Total				
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*							
07:00 AM	0	42	1	0	0	4	67	6	0	0	4	0	1	0	0	3	1	4	0	0	133	564
07:15 AM	0	31	1	1	0	2	71	4	0	0	2	1	0	0	0	1	0	7	0	0	121	599
07:30 AM	0	47	2	0	0	4	73	4	1	0	7	1	1	0	0	1	0	5	0	0	146	686
07:45 AM	1	52	2	0	0	2	89	4	1	0	6	0	1	0	0	1	0	5	0	0	164	761
08:00 AM	0	41	4	0	0	7	100	3	1	0	6	0	1	0	0	1	0	4	0	0	168	888
08:15 AM	0	52	4	0	0	8	116	9	1	0	3	1	2	0	0	3	1	8	0	0	208	720
08:30 AM	0	63	2	0	0	7	117	6	0	0	9	1	1	1	0	1	2	11	0	0	221	512
08:45 AM	1	67	1	0	0	5	181	10	1	0	8	0	0	0	0	6	2	9	0	0	291	291
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total					
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left			Thru	Rgt	U	R*
All Vehicles	4	268	16	0	0	32	724	40	4	0	36	4	8	4	0	24	8	44	0	0	1216	
Heavy Trucks	0	12	4	0	0	4	28	0	0	0	0	0	0	0	0	0	0	0	0	0	48	
Pedestrians		32					0					32					32				96	
Bicycles	0	12	4	0	0	0	32	0	8	0	0	0	0	0	0	4	0	0	0	0	52	
Buses																						
Stopped Buses																						

LOCATION: Alton Rd & 4th St
 CITY/STATE: Miami Beach, FL

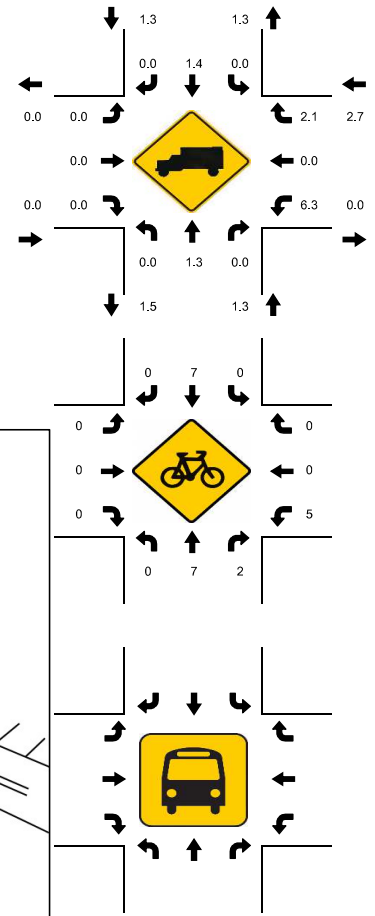
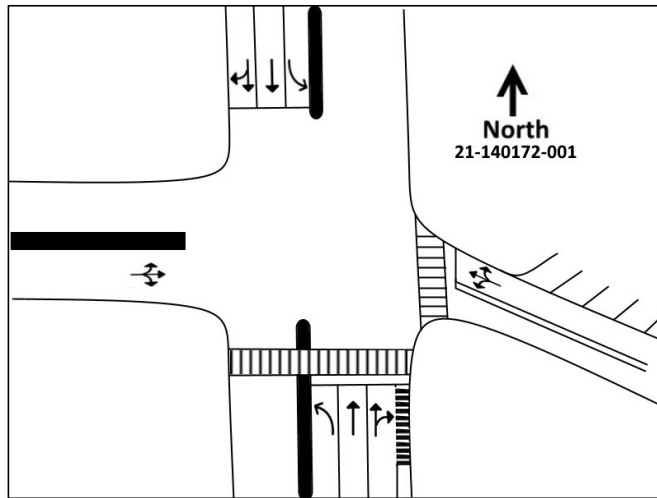
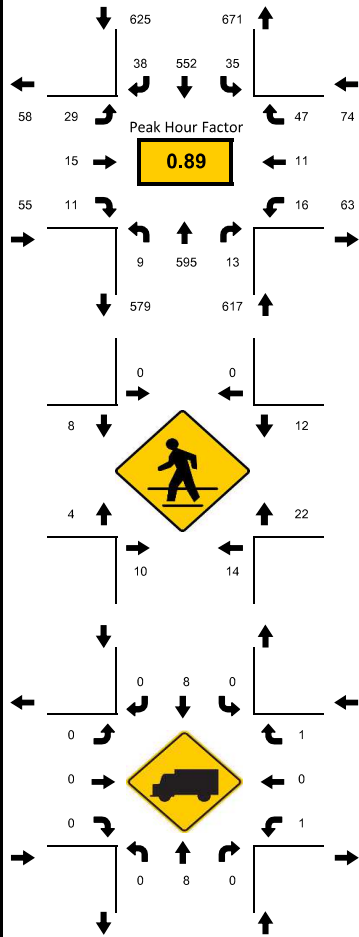
PROJECT ID: 21-140172-001
 DATE: Thu, Aug 05, 2021

Peak-Hour: 04:15 PM - 05:15 PM
 Peak 15-Minute: 04:15 PM - 04:30 PM

Peak Hour Factor
0.89



National Data & Surveying Services



15-Min Count Period Beginning At	Alton Rd Northbound					Alton Rd Southbound					4th St Eastbound				4th St Westbound				Total	Hourly Total		
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt			U	R*
04:00 PM	1	143	6	0		9	133	10	0		9	3	1	0		4	1	9	0		329	1329
04:15 PM	3	159	3	1		7	169	8	0		6	3	3	0		6	3	15	0		386	1371
04:30 PM	2	130	4	0		11	128	7	0		4	3	3	0		2	4	14	0		312	1324
04:45 PM	2	138	5	1		7	110	12	0		9	5	3	0		3	1	6	0		302	1339
05:00 PM	0	168	1	0		9	145	11	1		10	4	2	0		5	3	12	0		371	1365
05:15 PM	1	144	3	0		10	134	9	1		10	1	2	0		6	0	18	0		339	994
05:30 PM	1	139	4	0		15	129	5	1		8	2	0	0		6	1	16	0		327	655
05:45 PM	1	134	2	0		12	140	5	1		8	3	1	0		1	2	18	0		328	328
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound				Westbound				Total			
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt		U	R*	
All Vehicles	12	672	20	4		44	676	48	4		40	20	12	0		24	16	60	0		1652	
Heavy Trucks	0	12	0	0		0	12	0	0		0	0	0	0		4	0	4	0		32	
Pedestrians		48					0					16					52				116	
Bicycles	0	12	8	0		0	16	0	0		0	0	0	0		16	0	0	0		52	
Buses																						
Stopped Buses																						

National Data & Surveying Services Intersection Turning Movement Count

Location: Michigan Ave & 4th St
 City: Miami Beach
 Control: 4-Way Stop

Project ID: 21-140172-002
 Date: 8/5/2021

Data - Total

NS/EW Streets:	Michigan Ave						4th St						4th St					
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			WESTBOUND			WESTBOUND		
	NL	NT	NU	SL	ST	SU	EL	ET	EU	WL	WT	WR	WU	WL	WT	WR	WU	TOTAL
AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	3	3	0	1	2	0	0	2	1	0	4	0	0	0	4	0	0	16
7:15 AM	1	0	0	1	3	0	1	1	0	0	4	3	0	0	4	3	0	15
7:30 AM	1	7	0	0	4	0	0	4	0	0	4	0	0	0	4	0	0	22
7:45 AM	0	3	0	1	4	0	0	4	0	0	5	3	0	0	5	3	0	22
8:00 AM	3	7	1	0	6	0	2	3	0	0	4	0	0	0	4	0	0	30
8:15 AM	2	3	0	2	5	0	2	4	0	0	4	7	0	0	4	7	0	31
8:30 AM	1	10	0	1	5	0	4	6	0	0	9	4	0	0	9	4	0	43
8:45 AM	2	6	1	2	7	0	1	4	0	0	8	4	0	0	8	4	0	41
TOTAL VOLUMES :	13	39	2	8	36	2	10	28	16	0	42	21	0	2	42	21	0	220
APPROACH %'s :	24.07%	72.22%	3.70%	17.02%	76.60%	4.26%	18.52%	51.85%	29.63%	0.00%	3.08%	64.62%	32.31%	0.00%	64.62%	32.31%	0.00%	
PEAK HR VOL :	8	26	2	5	23	2	9	17	10	0	25	15	0	2	25	15	0	145
PEAK HR FACTOR :	0.667	0.650	0.500	0.625	0.821	0.500	0.563	0.708	0.833	0.000	0.694	0.536	0.000	0.250	0.694	0.536	0.000	0.843

NS/EW Streets:	Michigan Ave						4th St						4th St					
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			WESTBOUND			WESTBOUND		
	NL	NT	NU	SL	ST	SU	EL	ET	EU	WL	WT	WR	WU	WL	WT	WR	WU	TOTAL
PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	3	12	0	1	9	2	2	8	5	0	7	5	0	1	12	4	0	55
4:15 PM	3	15	2	3	11	1	3	16	3	0	1	4	0	1	12	4	0	74
4:30 PM	5	16	2	3	3	2	4	12	1	0	2	3	0	2	12	3	0	65
4:45 PM	4	12	0	0	7	2	1	15	1	0	0	2	0	0	13	2	0	57
5:00 PM	2	10	1	3	7	1	3	10	3	0	1	3	0	1	16	3	0	60
5:15 PM	4	10	0	6	10	0	0	10	2	0	3	8	0	3	19	8	0	72
5:30 PM	3	5	1	1	8	5	1	11	4	0	0	6	0	0	19	6	0	64
5:45 PM	5	9	0	1	7	0	4	15	2	0	0	5	0	0	9	5	0	57
TOTAL VOLUMES :	29	89	6	18	62	13	18	97	21	0	8	36	0	8	107	36	0	504
APPROACH %'s :	23.39%	71.77%	4.84%	19.35%	66.67%	13.98%	13.24%	71.32%	15.44%	0.00%	5.30%	70.86%	23.84%	5.30%	70.86%	23.84%	0.00%	
PEAK HR VOL :	14	53	5	9	28	6	11	53	8	0	4	12	0	4	53	12	0	256
PEAK HR FACTOR :	0.700	0.828	0.625	0.750	0.636	0.750	0.688	0.828	0.667	0.000	0.500	0.828	0.750	0.500	0.828	0.750	0.000	0.865

PEAK HR VOLUME :	8	26	2	5	23	2	9	17	10	0	2	25	15	0	25	15	0	145
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PEAK HR VOLUME :	13	37	2	10	32	8	5	46	10	0	4	67	19	0	67	19	0	253
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National Data & Surveying Services Intersection Turning Movement Count

Location: Michigan Ave & 4th St
City: Miami Beach
Control: 4-Way Stop

Project ID: 21-140172-002
Date: 8/5/2021

Data - Bikes

NS/EW Streets:	Michigan Ave				Michigan Ave				4th St				4th St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
7:45 AM	0	1	0	0	0	3	0	0	0	0	1	0	0	0	0	0	5
8:00 AM	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
8:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
TOTAL VOLUMES :	2	4	0	0	0	6	0	0	0	0	2	0	0	2	0	0	16
APPROACH %'s :	33.33%	66.67%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM																
PEAK HR VOL :	2	1	0	0	0	2	0	0	0	0	1	0	0	0	0	0	6
PEAK HR FACTOR :	0.250	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	0	0	0	1	3	2	0	0	0	0	0	0	0	0	0	6
4:15 PM	0	2	0	0	0	1	1	0	0	2	0	0	0	2	0	0	8
4:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	2	0	0	0	1	3	0	0	0	2	0	0	1	0	0	9
5:00 PM	0	0	0	0	0	2	0	0	0	0	3	0	0	1	0	0	6
5:15 PM	0	1	1	0	0	3	1	0	0	0	0	0	0	0	0	0	6
5:30 PM	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	4
5:45 PM	0	3	0	0	1	3	0	0	0	0	0	0	0	1	1	0	9
TOTAL VOLUMES :	0	9	1	0	3	17	7	0	0	2	5	0	0	5	1	0	50
APPROACH %'s :	0.00%	90.00%	10.00%	0.00%	11.11%	62.96%	25.93%	0.00%	0.00%	28.57%	71.43%	0.00%	0.00%	83.33%	16.67%	0.00%	
PEAK HR :	04:15 PM - 05:15 PM																
PEAK HR VOL :	0	4	0	0	0	6	4	0	0	2	5	0	0	4	0	0	25
PEAK HR FACTOR :	0.000	0.500	0.000	0.000	0.000	0.750	0.333	0.000	0.000	0.250	0.417	0.000	0.000	0.500	0.000	0.000	0.694

PEAK HR	4:45 PM - 5:45 PM																
PEAK HR VOLUME	0	4	1	0	1	8	4	0	0	0	5	0	0	2	0	0	25

National Data & Surveying Services **Intersection Turning** Movement Count

Location: Michigan Ave & 4th St
City: Miami Beach

Project ID: 21-140172-002
Date: 8/5/2021

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Michigan Ave		Michigan Ave		4th St		4th St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
7:00 AM	0	0	2	0	1	1	0	1	5
7:15 AM	0	0	1	0	0	0	0	2	3
7:30 AM	0	0	1	0	0	0	0	2	3
7:45 AM	0	1	0	2	2	0	1	2	8
8:00 AM	0	2	1	3	1	0	1	2	10
8:15 AM	0	0	1	0	1	2	0	3	7
8:30 AM	0	1	2	1	2	0	0	1	7
8:45 AM	0	2	3	1	0	1	3	1	11
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	0	6	11	7	7	4	5	14	54
PEAK HR :	08:00 AM - 09:00 AM								TOTAL
PEAK HR VOL :	0	5	7	5	4	3	4	7	35
PEAK HR FACTOR :	0.625		0.583 0.417		0.500 0.375		0.333 0.583		0.795
	0.625		0.750		0.583		0.688		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	2	1	3	3	9
4:15 PM	0	0	2	1	1	3	1	2	10
4:30 PM	0	0	1	0	0	0	1	4	6
4:45 PM	0	0	5	0	3	4	4	3	19
5:00 PM	0	0	3	0	3	0	0	0	6
5:15 PM	1	2	0	1	1	0	1	1	7
5:30 PM	0	3	2	1	5	0	0	4	15
5:45 PM	0	0	0	2	2	1	2	2	9
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	1	5	13	5	17	9	12	19	81
PEAK HR :	04:15 PM - 05:15 PM								TOTAL
PEAK HR VOL :	0	0	11	1	7	7	6	9	41
PEAK HR FACTOR :	0.600		0.550 0.250		0.583 0.438		0.375 0.563		0.539
	0.600		0.600		0.500		0.536		

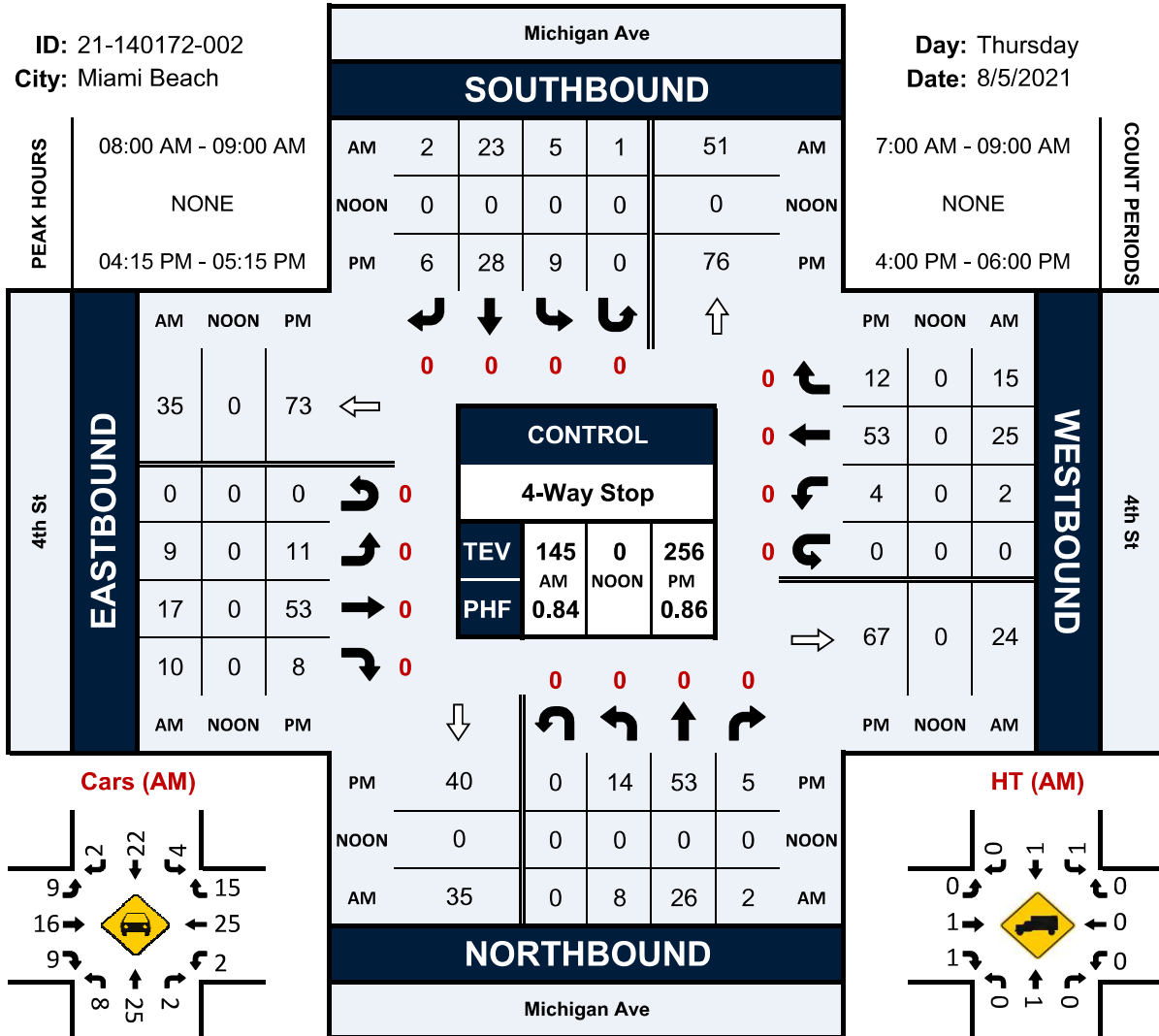
PEAK HR :	04:45 - 05:45 PM								TOTAL
PEAK HR VOL :	1	5	10	2	12	4	5	8	47

Michigan Ave & 4th St

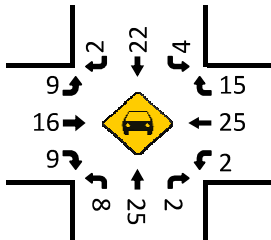
Peak Hour Turning Movement Count

ID: 21-140172-002
City: Miami Beach

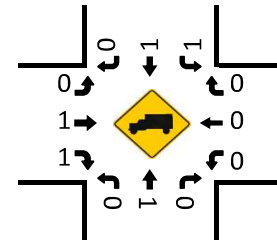
Day: Thursday
Date: 8/5/2021



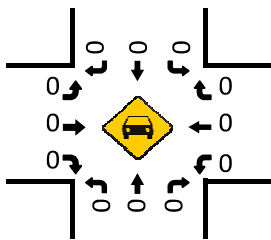
Cars (AM)



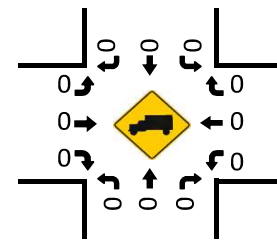
HT (AM)



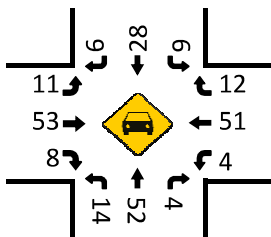
Cars (NOON)



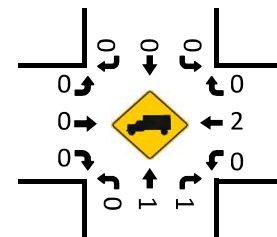
HT (NOON)



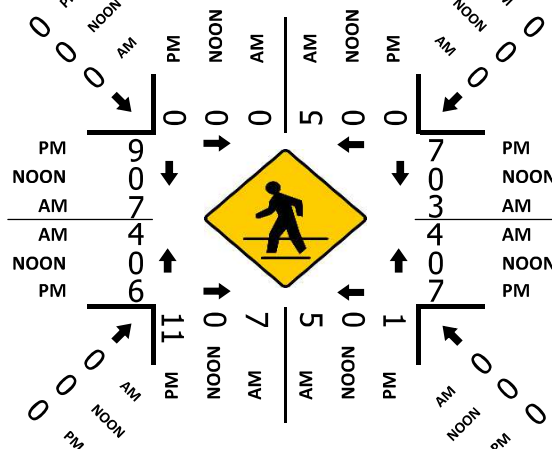
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)

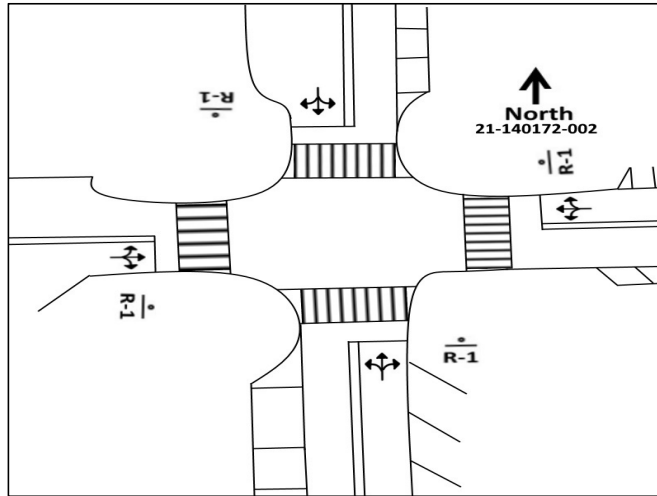
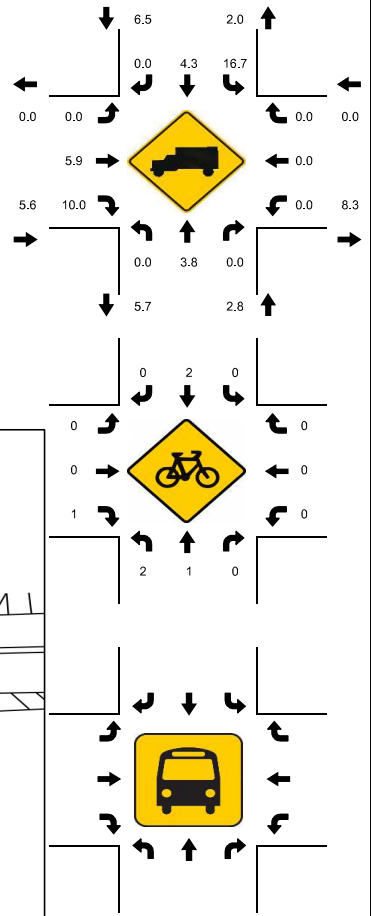
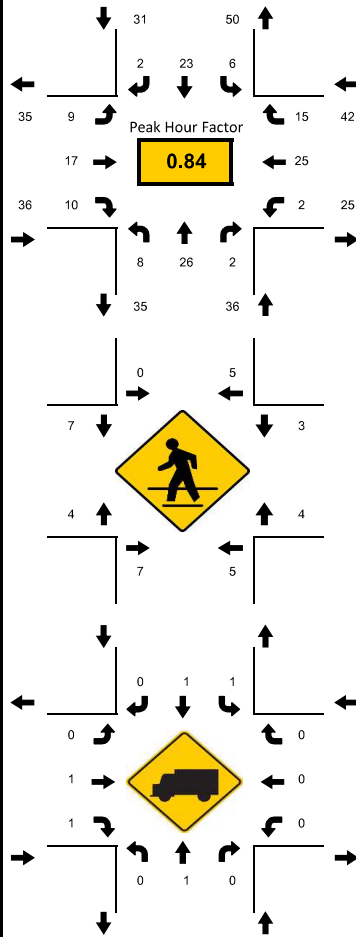
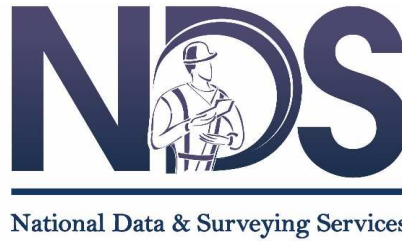


LOCATION: Michigan Ave & 4th St
 CITY/STATE: Miami Beach, FL

PROJECT ID: 21-140172-002
 DATE: Thu, Aug 05, 2021

Peak-Hour: 08:00 AM - 09:00 AM
 Peak 15-Minute: 08:30 AM - 08:45 AM

Peak Hour Factor
0.84

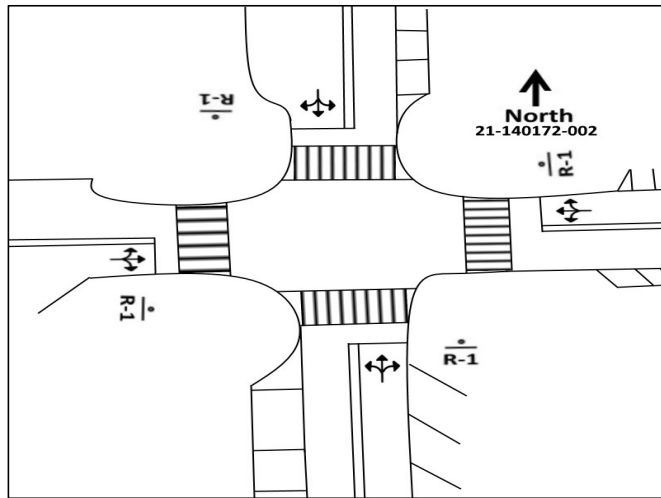
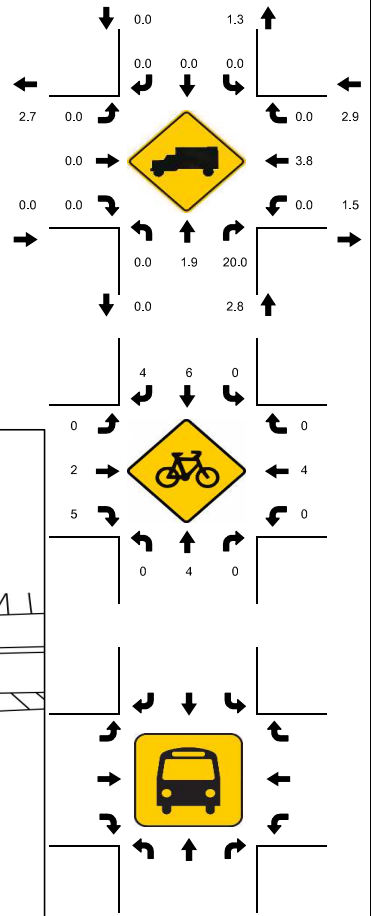
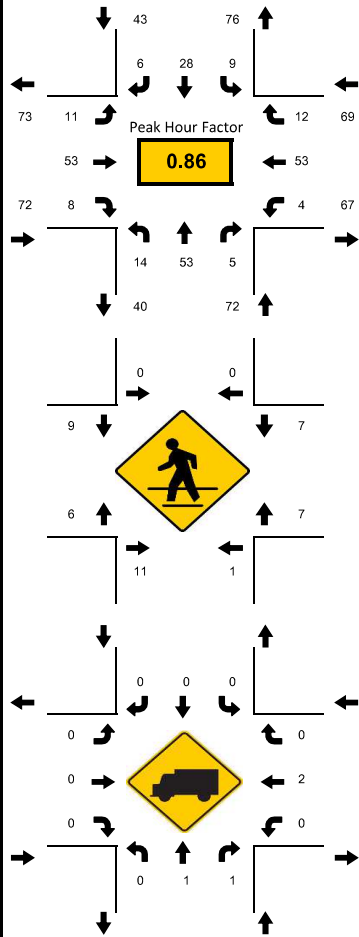
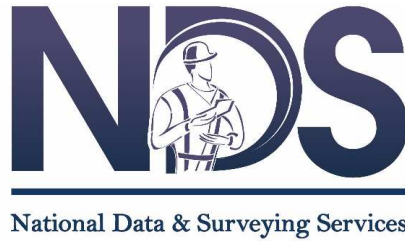


15-Min Count Period Beginning At	Michigan Ave Northbound					Michigan Ave Southbound					4th St Eastbound					4th St Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
07:00 AM	3	3	0	0		1	2	0	0		0	2	1	0		0	4	0	0		16	75
07:15 AM	1	0	0	0		1	3	0	0		1	1	1	0		0	4	3	0		15	89
07:30 AM	1	7	0	0		0	4	0	0		0	4	2	0		0	4	0	0		22	105
07:45 AM	0	3	0	0		1	4	0	0		0	4	2	0		0	5	3	0		22	126
08:00 AM	3	7	1	0		0	6	0	1		2	3	3	0		0	4	0	0		30	145
08:15 AM	2	3	0	0		2	5	1	0		2	4	1	0		0	4	7	0		31	115
08:30 AM	1	10	0	0		1	5	0	0		4	6	3	0		0	9	4	0		43	84
08:45 AM	2	6	1	0		2	7	1	0		1	4	3	0		2	8	4	0		41	41
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
All Vehicles	12	40	4	0		8	28	4	4		16	24	12	0		8	36	28	0			224
Heavy Trucks	0	4	0	0		4	4	0	0		0	4	4	0		0	0	0	0		20	
Pedestrians		16					8					16					12				52	
Bicycles	8	4	0	0		0	4	0	0		0	0	4	0		0	0	0	0		20	
Buses																						
Stopped Buses																						

LOCATION: Michigan Ave & 4th St
 CITY/STATE: Miami Beach, FL

PROJECT ID: 21-140172-002
 DATE: Thu, Aug 05, 2021

Peak-Hour: 04:15 PM - 05:15 PM
 Peak 15-Minute: 04:15 PM - 04:30 PM



15-Min Count Period Beginning At	Michigan Ave Northbound					Michigan Ave Southbound					4th St Eastbound					4th St Westbound					Total	Hourly Total
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
04:00 PM	3	12	0	0		1	9	2	0		2	8	5	0		1	7	5	0		55	251
04:15 PM	3	15	2	0		3	11	1	0		3	16	3	0		1	12	4	0		74	256
04:30 PM	5	16	2	0		3	3	2	0		4	12	1	0		2	12	3	0		65	254
04:45 PM	4	12	0	0		0	7	2	0		1	15	1	0		0	13	2	0		57	253
05:00 PM	2	10	1	0		3	7	1	0		3	10	3	0		1	16	3	0		60	253
05:15 PM	4	10	0	0		6	10	0	0		0	10	2	0		3	19	8	0		72	193
05:30 PM	3	5	1	0		1	8	5	0		1	11	4	0		0	19	6	0		64	121
05:45 PM	5	9	0	0		1	7	0	0		4	15	2	0		0	9	5	0		57	57
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*	Left	Thru	Rgt	U	R*		
All Vehicles	20	64	8	0		12	44	8	0		16	64	12	0		8	64	16	0		336	
Heavy Trucks	0	4	4	0		0	0	0	0		0	0	0	0		0	4	0	0		12	
Pedestrians		20					0					28					28				76	
Bicycles	0	8	0	0		0	8	12	0		0	8	12	0		0	8	0	0		56	
Buses																						
Stopped Buses																						

VOLUME

5th St Bet. Meridian Ave & Euclid Ave

Day: Thursday
Date: 8/5/2021

City: Miami Beach
Project #: FL21_140173_001

DAILY TOTALS					NB	SB	EB	WB	Total			
					0	0	11,222	14,421	25,643			
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL	
00:00			93	134	227	12:00			190	182	372	
00:15			92	116	208	12:15			165	212	377	
00:30			73	126	199	12:30			150	190	340	
00:45			80	338	100	12:45			163	668	213	797
01:00			58	105	163	13:00			151	212	363	
01:15			68	101	169	13:15			174	197	371	
01:30			44	70	114	13:30			162	197	359	
01:45			46	216	74	13:45			147	634	220	826
02:00			26	67	93	14:00			176	245	421	
02:15			46	51	97	14:15			186	244	430	
02:30			25	34	59	14:30			190	244	434	
02:45			36	133	52	14:45			199	751	254	987
03:00			24	44	68	15:00			164	218	382	
03:15			22	49	71	15:15			167	225	392	
03:30			25	38	63	15:30			178	216	394	
03:45			26	97	49	15:45			190	699	204	863
04:00			32	62	94	16:00			150	210	360	
04:15			37	65	102	16:15			154	247	401	
04:30			31	71	102	16:30			154	224	378	
04:45			31	131	48	16:45			185	643	214	895
05:00			26	58	84	17:00			161	222	383	
05:15			20	37	57	17:15			165	240	405	
05:30			33	38	71	17:30			146	211	357	
05:45			70	149	49	17:45			147	619	206	879
06:00			50	60	110	18:00			163	218	381	
06:15			57	62	119	18:15			127	250	377	
06:30			75	46	121	18:30			130	226	356	
06:45			84	266	45	18:45			176	596	178	872
07:00			116	109	225	19:00			139	210	349	
07:15			119	70	189	19:15			120	229	349	
07:30			101	101	202	19:30			152	209	361	
07:45			137	473	95	19:45			135	546	183	831
08:00			143	86	229	20:00			123	185	308	
08:15			136	141	277	20:15			147	192	339	
08:30			153	108	261	20:30			155	231	386	
08:45			181	613	122	20:45			109	534	182	790
09:00			145	146	291	21:00			120	192	312	
09:15			143	133	276	21:15			140	160	300	
09:30			160	167	327	21:30			117	158	275	
09:45			146	594	169	21:45			102	479	162	672
10:00			150	163	313	22:00			125	171	296	
10:15			165	180	345	22:15			146	165	311	
10:30			141	189	330	22:30			88	136	224	
10:45			168	624	185	22:45			115	474	140	612
11:00			180	203	383	23:00			102	169	271	
11:15			145	183	328	23:15			56	157	213	
11:30			141	205	346	23:30			77	136	213	
11:45			155	621	197	23:45			89	324	132	594
TOTALS			4255	4803	9058	TOTALS			6967	9618	16585	
SPLIT %			47.0%	53.0%	35.3%	SPLIT %			42.0%	58.0%	64.7%	

DAILY TOTALS					NB	SB	EB	WB	Total		
					0	0	11,222	14,421	25,643		
AM Peak Hour			11:45	11:30	11:30	PM Peak Hour			14:00	14:00	14:00
AM Pk Volume			660	796	1447	PM Pk Volume			751	987	1738
Pk Hr Factor			0.868	0.939	0.960	Pk Hr Factor			0.943	0.971	0.959
7 - 9 Volume	0	0	1086	832	1918	4 - 6 Volume	0	0	1262	1774	3036
7 - 9 Peak Hour			08:00	08:00	08:00	4 - 6 Peak Hour			16:30	16:15	16:30
7 - 9 Pk Volume	0	0	613	457	1070	4 - 6 Pk Volume	0	0	665	907	1565
Pk Hr Factor	0.000	0.000	0.847	0.810	0.883	Pk Hr Factor	0.000	0.000	0.899	0.918	0.966

County: 87
 Station: 2528
 Description: SR A1A/MACARTHUR CSWY, 150' N OF MERIDIAN AVE
 Start Date: 03/10/2020
 Start Time: 0000

Time	Direction: E					Direction: W					Combined	
	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total	
0000	128	144	151	150	573	173	161	91	114	539	1112	
0100	117	102	83	79	381	115	118	88	123	444	825	
0200	78	71	68	78	295	88	96	88	94	366	661	
0300	50	81	85	60	276	95	82	91	94	362	638	
0400	81	61	40	74	256	88	95	90	99	372	628	
0500	71	66	79	96	312	75	86	69	57	287	599	
0600	102	119	159	193	573	85	97	102	102	386	959	
0700	169	207	185	233	794	143	159	181	184	667	1461	
0800	200	245	251	306	1002	245	214	248	208	915	1917	
0900	322	313	245	288	1168	209	202	221	231	863	2031	
1000	259	242	224	248	973	232	215	230	235	912	1885	
1100	251	226	207	264	948	278	260	258	265	1061	2009	
1200	281	268	252	272	1073	307	295	314	308	1224	2297	
1300	317	299	279	257	1152	313	306	327	344	1290	2442	
1400	240	230	221	248	939	351	311	352	314	1328	2267	
1500	304	304	285	334	1227	361	356	380	386	1483	2710	
1600	323	279	294	283	1179	377	349	398	365	1489	2668	
1700	311	257	275	286	1129	454	345	365	353	1517	2646	
1800	317	223	264	307	1111	338	350	392	395	1475	2586	
1900	237	177	258	218	890	359	363	356	279	1357	2247	
2000	251	204	208	195	858	337	345	274	281	1237	2095	
2100	178	168	164	148	658	306	267	238	228	1039	1697	
2200	204	254	283	274	1015	199	201	215	219	834	1849	
2300	162	151	169	162	644	228	205	197	183	813	1457	
24-Hour Totals:	19426					22260					41686	

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	830	1192	800	915	830	2059
P.M.	1515	1246	1615	1566	1515	2745
Daily	1515	1246	1615	1566	1515	2745

Generated by SPS 5.0.53P

County: 87

Station: 2528

Description: SR A1A/MACARTHUR CSWY, 150' N OF MERIDIAN AVE

Start Date: 03/11/2020

Start Time: 0000

Time	Direction: E					Direction: W					Combined	
	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total	
0000	141	141	130	124	536	210	185	147	181	723	1259	
0100	108	96	95	89	388	135	159	134	129	557	945	
0200	77	89	106	71	343	139	148	105	129	521	864	
0300	69	108	66	57	300	125	139	121	127	512	812	
0400	68	61	92	60	281	104	113	98	101	416	697	
0500	74	95	60	93	322	97	109	90	87	383	705	
0600	105	121	165	206	597	96	122	125	123	466	1063	
0700	180	203	200	241	824	161	172	177	165	675	1499	
0800	211	260	275	290	1036	218	220	223	197	858	1894	
0900	336	272	272	267	1147	214	210	209	220	853	2000	
1000	220	255	264	282	1021	251	228	253	238	970	1991	
1100	310	268	247	272	1097	260	267	296	308	1131	2228	
1200	277	302	264	297	1140	319	306	350	304	1279	2419	
1300	286	269	314	301	1170	312	332	323	355	1322	2492	
1400	311	295	264	164	1034	359	338	374	327	1398	2432	
1500	279	321	321	320	1241	376	384	368	357	1485	2726	
1600	317	322	253	291	1183	346	350	381	329	1406	2589	
1700	304	259	314	276	1153	365	329	357	294	1345	2498	
1800	349	245	275	297	1166	394	340	319	327	1380	2546	
1900	243	252	294	258	1047	366	348	349	378	1441	2488	
2000	202	241	213	206	862	315	337	345	266	1263	2125	
2100	166	203	173	199	741	267	279	273	303	1122	1863	
2200	206	178	169	163	716	307	254	255	267	1083	1799	
2300	165	156	161	161	643	218	244	272	242	976	1619	

24-Hour Totals: 19988 23565 43553

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	830	1173	800	858	830	2017
P.M.	1530	1280	1500	1485	1515	2734
Daily	1530	1280	1500	1485	1515	2734

Generated by SPS 5.0.53P

County: 87

Station: 2528

Description: SR A1A/MACARTHUR CSWY, 150' N OF MERIDIAN AVE

Start Date: 03/12/2020

Start Time: 0000

Time	Direction: E					Direction: W					Combined	
	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total	
0000	156	146	161	136	599	228	206	187	190	811	1410	
0100	129	87	115	99	430	160	182	138	143	623	1053	
0200	83	82	98	109	372	124	146	106	151	527	899	
0300	108	112	151	129	500	154	166	127	163	610	1110	
0400	83	119	106	87	395	162	144	158	121	585	980	
0500	67	99	101	88	355	113	126	128	98	465	820	
0600	93	100	124	170	487	112	116	128	129	485	972	
0700	189	187	217	217	810	154	168	193	173	688	1498	
0800	246	268	281	310	1105	185	221	239	220	865	1970	
0900	271	309	306	291	1177	223	205	250	207	885	2062	
1000	273	300	309	250	1132	224	260	249	249	982	2114	
1100	268	297	237	281	1083	286	300	272	299	1157	2240	
1200	254	315	284	282	1135	304	302	318	307	1231	2366	
1300	296	236	257	284	1073	292	343	304	293	1232	2305	
1400	316	322	313	298	1249	323	345	338	349	1355	2604	
1500	301	311	280	316	1208	359	394	392	363	1508	2716	
1600	266	255	285	230	1036	407	399	347	359	1512	2548	
1700	284	274	297	258	1113	394	345	422	320	1481	2594	
1800	313	262	319	262	1156	364	324	312	361	1361	2517	
1900	203	190	206	198	797	348	342	325	316	1331	2128	
2000	181	196	190	172	739	319	274	285	266	1144	1883	
2100	218	164	157	172	711	230	238	224	184	876	1587	
2200	194	166	202	146	708	220	228	174	186	808	1516	
2300	140	127	151	142	560	197	200	179	171	747	1307	

24-Hour Totals: 19930 23269 43199

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	845	1196	815	903	845	2094
P.M.	1400	1249	1530	1561	1515	2729
Daily	1400	1249	1530	1561	1515	2729







TOD Schedule Report
for 7699: Alton Rd&4 St

Print Date:
4/8/2020

Print Time:
2:25 AM

<u>Asset</u>	<u>Intersection</u>	<u>TOD Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD Setting</u>	<u>Active PhaseBank</u>	<u>Active Maximum</u>
7699	Alton Rd&4 St	DOW-4	TOD	N/A	0	0	N/A	0	Max 0

Splits

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
SEL	SET	XPD	EBT	NWL	NWT	-	NBT
0	0	0	0	0	0	0	0
		N/A					

Active Phase Bank: Phase Bank 1

Phase	<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
1 SEL	0	0	0	0	0	0	5	5	5	3	-3	-3	9	9	9	18	18	18	4	3.4
2 SET	6	0	7	19	0	19	7	7	7	1	-1	-1	35	49	49	0	0	0	4	3.4
3 XPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 EBT	0	0	0	0	0	0	7	7	7	2.5	-2.5	-2.5	30	49	49	65	65	65	4	2.6
5 NWL	0	0	0	0	0	0	5	5	5	3	-3	-3	9	9	9	18	18	18	4	3.4
6 NWT	6	0	7	19	0	19	7	7	7	1	-1	-1	35	49	49	0	0	0	4	3.4
7 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 NBT	6	0	7	20	0	20	7	7	7	2.5	-2.5	-2.5	30	49	49	65	65	65	4	2.6

Last In Service Date: unknown

Permitted Phases	
	12345678
Default	123456-8
External Permit 0	123456-8
External Permit 1	123456-8
External Permit 2	123456-8

TOD Schedule Report
for 7699: Alton Rd&4 St

Print Date:
4/8/2020

Print Time:
2:25 AM

Current TOD Schedule	Plan	Cycle	Green Time								Ring Offset	Offset
			1 SEL	2 SET	3 XPD	4 EBT	5 NWL	6 NWT	7 -	8 NBT		
1		85	7	29	0	28	7	29	0	28	0	84
2		150	14	61	0	54	14	61	0	54	0	0
3		100	10	41	0	28	10	41	0	28	0	0
5		150	17	72	0	40	17	72	0	40	0	0
6		180	17	88	0	54	17	88	0	54	0	0
7		85	7	29	0	28	7	29	0	28	0	40
8		100	10	41	0	28	10	41	0	28	0	0
9		90	8	33	0	28	8	33	0	28	0	0
10		80	5	27	0	27	5	27	0	27	0	77
22		100	10	41	0	28	10	41	0	28	0	0
25		140	13	73	0	33	13	73	0	33	0	127
26		100	10	41	0	28	10	41	0	28	0	79

Local TOD Schedule		
Time	Plan	DOW
0000	Free	Su M T W Th F S
0500	2	M T W Th F
0500	Free	Su S
0800	6	M T W Th F
0850	9	M T W Th F
1000	10	Su S
1130	5	M T W Th F
1300	6	M T W Th F
1340	9	M T W Th F
1540	6	M T W Th F
1615	25	M T W Th F
1800	1	M T W Th F
1800	7	Su S
2200	Free	Su M T W Th F S

Current Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-7-----	SuM T W ThF S
0500	PED RECALL	8-6-432-	SuM T W ThF S
0700	TOD OUTPUTS	-----1	M T W ThF
0850	TOD OUTPUTS	-7-----	M T W ThF
1340	TOD OUTPUTS	-----1	M T W ThF
1540	TOD OUTPUTS	-7-----	M T W ThF
2200	PED RECALL	-----	SuM T W ThF S

Local Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	-7-----	SuM T W ThF S
0500	PED RECALL	8-6-432-	SuM T W ThF S
0700	TOD OUTPUTS	-----1	M T W ThF
0850	TOD OUTPUTS	-7-----	M T W ThF
1340	TOD OUTPUTS	-----1	M T W ThF
1540	TOD OUTPUTS	-7-----	M T W ThF
2200	PED RECALL	-----	SuM T W ThF 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







TOD Schedule Report
for 2752: Michigan Av&5 St

Print Date:
5/8/2020

Print Time:
2:07 AM

<u>Asset</u>	<u>Intersection</u>	<u>TOD Schedule</u>	<u>Op Mode</u>	<u>Plan #</u>	<u>Cycle</u>	<u>Offset</u>	<u>TOD Setting</u>	<u>Active PhaseBank</u>	<u>Active Maximum</u>
2752	Michigan Av&5 St	DOW-6		[03] AM PEAK	120	104	N/A	1	Max 2

Splits

<u>PH 1</u>	<u>PH 2</u>	<u>PH 3</u>	<u>PH 4</u>	<u>PH 5</u>	<u>PH 6</u>	<u>PH 7</u>	<u>PH 8</u>
EBL	WBT	-	NBT	WBL	EBT	-	SBT
12	36	0	54	6	42	0	54
							

Active Phase Bank: Phase Bank 1

<u>Phase</u>	<u>Walk</u>			<u>Don't Walk</u>			<u>Min Initial</u>			<u>Veh Ext</u>			<u>Max Limit</u>			<u>Max 2</u>			<u>Yellow</u>	<u>Red</u>
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
1 EBL	0	0	0	0	0	0	5	5	5	2	2	2	12	5	5	30	40	25	4	2
2 WBT	7	7	7	12	12	12	7	7	7	1	1	1	30	30	30	0	30	30	4	2
3 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4 NBT	7	7	7	29	29	29	7	7	7	2.5	2.5	2.5	8	8	12	60	20	18	4	2.5
5 WBL	0	0	0	0	0	0	5	5	5	2	2	2	5	5	5	16	12	12	4	2.5
6 EBT	7	7	7	12	12	12	7	7	7	1	1	1	30	30	30	0	30	30	4	2
7 -	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8 SBT	7	7	7	29	29	29	7	7	7	2.5	2.5	2.5	8	8	12	60	20	18	4	2.5

Last In Service Date: unknown

Permitted Phases	
	12345678
Default	12-456-8
External Permit 0	12-456-8
External Permit 1	12-456-8
External Permit 2	12-456-8

TOD Schedule Report
for 2752: Michigan Av&5 St

Print Date:
5/8/2020

Print Time:
2:07 AM

Current TOD Schedule	Plan	Cycle	Green Time								Ring Offset	Offset
			1 EBL	2 WBT	3 -	4 NBT	5 WBL	6 EBT	7 -	8 SBT		
1		170	17	86	0	49	9	94	0	49	0	62
2		150	12	66	0	54	6	72	0	54	0	39
3		120	12	36	0	54	6	42	0	54	0	104
4		150	12	66	0	54	6	72	0	54	0	76
5		150	12	66	0	54	6	72	0	54	0	49
6		180	12	96	0	54	6	102	0	54	0	128
7		170	12	86	0	54	6	92	0	54	0	167
8		160	12	76	0	54	6	82	0	54	0	58
10		160	13	93	0	36	13	93	0	36	0	58
14		120	12	36	0	54	6	42	0	54	0	9
15		130	20	43	0	49	16	47	0	49	0	4
16		120	12	36	0	54	6	42	0	54	0	7
22		110	12	26	0	54	6	32	0	54	0	14
23		110	12	26	0	54	6	32	0	54	0	109
25		140	12	56	0	54	6	62	0	54	0	54
26		200	12	116	0	54	6	122	0	54	0	29
27		140	12	56	0	54	6	62	0	54	0	18
28		220	35	113	0	54	6	142	0	54	0	54

Local TOD Schedule		
Time	Plan	DOW
0000	3	Su M T W Th F S
0500	2	M T W Th F
0500	3	Su S
0800	6	M T W Th F
1000	5	M T W Th F
1000	10	Su S
1300	6	M T W Th F
1615	25	M T W Th F
1800	1	M T W Th F
1800	7	Su S
2000	4	Su S
2200	8	M T W Th F

Current Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8-----	SuM T W ThF S
0000	TOD LOCAL MULTIFU	---4---	SuM T W ThF S
0500	TOD LOCAL MULTIFU	-----	SuM T W ThF S
0600	TOD OUTPUTS	-----	M T W ThF
1800	PED RECALL	8--4---	M T W ThF
1800	TOD OUTPUTS	8-----	M T W ThF
2200	PED RECALL	-----	M T W ThF

Local Time of Day Function			
Time	Function	Settings *	Day of Week
0000	TOD OUTPUTS	8-----	SuM T W ThF S
0000	TOD LOCAL MULTIFUNCT	---4---	SuM T W ThF S
0500	TOD LOCAL MULTIFUNCT	-----	SuM T W ThF S
0600	TOD OUTPUTS	-----	M T W ThF
0700	TOD OUTPUTS	-----1	Su S
0800	TOD OUTPUTS	-----	S
1000	TOD OUTPUTS	-----	Su
1000	PED RECALL	8--4---	Su S
1800	PED RECALL	-----	Su S
1800	PED RECALL	8--4---	M T W ThF
1800	TOD OUTPUTS	8-----	M T W ThF
1900	TOD OUTPUTS	8-----	Su S
2200	PED RECALL	-----	M T W ThF

* 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

TOD Schedule Report
for 2752: Michigan Av&5 St

Print Date:
5/8/2020

Print Time:
2:07 AM

<p><i>No Calendar Defined/Enabled</i></p>
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2019 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
 CATEGORY: 8700 MIAMI-DADE NORTH

WEEK	DATES	SF	MOCF: 0.97 PSCF
1	01/01/2019 - 01/05/2019	1.03	1.06
2	01/06/2019 - 01/12/2019	1.02	1.05
3	01/13/2019 - 01/19/2019	1.01	1.04
4	01/20/2019 - 01/26/2019	1.00	1.03
* 5	01/27/2019 - 02/02/2019	0.98	1.01
* 6	02/03/2019 - 02/09/2019	0.97	1.00
* 7	02/10/2019 - 02/16/2019	0.96	0.99
* 8	02/17/2019 - 02/23/2019	0.96	0.99
* 9	02/24/2019 - 03/02/2019	0.96	0.99
*10	03/03/2019 - 03/09/2019	0.96	0.99
*11	03/10/2019 - 03/16/2019	0.97	1.00
*12	03/17/2019 - 03/23/2019	0.97	1.00
*13	03/24/2019 - 03/30/2019	0.97	1.00
*14	03/31/2019 - 04/06/2019	0.97	1.00
*15	04/07/2019 - 04/13/2019	0.98	1.01
*16	04/14/2019 - 04/20/2019	0.98	1.01
*17	04/21/2019 - 04/27/2019	0.98	1.01
18	04/28/2019 - 05/04/2019	0.99	1.02
19	05/05/2019 - 05/11/2019	0.99	1.02
20	05/12/2019 - 05/18/2019	1.00	1.03
21	05/19/2019 - 05/25/2019	1.00	1.03
22	05/26/2019 - 06/01/2019	1.01	1.04
23	06/02/2019 - 06/08/2019	1.01	1.04
24	06/09/2019 - 06/15/2019	1.02	1.05
25	06/16/2019 - 06/22/2019	1.02	1.05
26	06/23/2019 - 06/29/2019	1.02	1.05
27	06/30/2019 - 07/06/2019	1.02	1.05
28	07/07/2019 - 07/13/2019	1.03	1.06
29	07/14/2019 - 07/20/2019	1.03	1.06
30	07/21/2019 - 07/27/2019	1.03	1.06
31	07/28/2019 - 08/03/2019	1.02	1.05
32	08/04/2019 - 08/10/2019	1.02	1.05
33	08/11/2019 - 08/17/2019	1.02	1.05
34	08/18/2019 - 08/24/2019	1.02	1.05
35	08/25/2019 - 08/31/2019	1.02	1.05
36	09/01/2019 - 09/07/2019	1.03	1.06
37	09/08/2019 - 09/14/2019	1.03	1.06
38	09/15/2019 - 09/21/2019	1.03	1.06
39	09/22/2019 - 09/28/2019	1.02	1.05
40	09/29/2019 - 10/05/2019	1.01	1.04
41	10/06/2019 - 10/12/2019	1.00	1.03
42	10/13/2019 - 10/19/2019	0.99	1.02
43	10/20/2019 - 10/26/2019	1.00	1.03
44	10/27/2019 - 11/02/2019	1.00	1.03
45	11/03/2019 - 11/09/2019	1.01	1.04
46	11/10/2019 - 11/16/2019	1.01	1.04
47	11/17/2019 - 11/23/2019	1.02	1.05
48	11/24/2019 - 11/30/2019	1.02	1.05
49	12/01/2019 - 12/07/2019	1.02	1.05
50	12/08/2019 - 12/14/2019	1.03	1.06
51	12/15/2019 - 12/21/2019	1.03	1.06
52	12/22/2019 - 12/28/2019	1.02	1.05
53	12/29/2019 - 12/31/2019	1.01	1.04

* PEAK SEASON

14-FEB-2020 15:39:30

830UPD

6_8700_PKSEASON.TXT

**COVID ADJUSTMENT FACTOR CALCULATION
411 MICHIGAN**

Description / Roadway	AM Covid Factor	PM Covid Factor
SR A1A/MacArthur Causeway/5th Street	1.46	1.62
Average	1.46	1.62

Description / Roadway	EB 5th Street	WB 5th Street
03/10/2020 AM Peak-Hour Counts *	1192	915
03/11/2020 AM Peak-Hour Counts *	1173	858
03/12/2020 AM Peak-Hour Counts *	1196	903
Average 2019 AM Peak-Hour Counts*	1187	892
08/05/2021 AM Peak-Hour Counts **	660	796
Average 2021 Peak Hour Counts**	660	796
AM Adjustment Factor	1.80	1.12
Average AM Adjustment Factor	1.46	
03/10/2020 PM Peak-Hour Counts *	1246	1566
03/11/2020 AM Peak-Hour Counts *	1280	1485
03/12/2020 AM Peak-Hour Counts *	1249	1561
Average 2019 AM Peak-Hour Counts*	1258	1537
08/05/2021 PM Peak-Hour Counts **	751	987
Average 2021 Peak Hour Counts**	751	987
PM Adjustment Factor	1.68	1.56
Average PM Adjustment Factor	1.62	

*2020 data based on EB & WB FDOT count station 2528 on 5th Street.

**2021 data based on EB & WB count data on SW 5th Street



**GROWTH RATE CALCULATION
411 MICHIGAN**

Roadway	FDOT Site	Linear		Exponential		Decaying	
		9 Year Trend	R ²	9 Year Trend	R ²	9 Year Trend	R ²
S POINTE DR -- 150 FT W OF WASHINGTON AVE	8590	-2.85%	42.43%	-3.46%	44.65%	-2.17%	20.75%
SR A1A/MACARTHUR CSWY -- 150' N OF MERIDIAN AVE	2528	1.36%	7.52%	1.16%	6.65%	1.65%	10.76%
SR A1A/COLLINS AV -- 200' N 5 ST(MIAMI BEACH)	5159	-2.32%	37.80%	-2.46%	36.13%	-3.03%	54.18%
11TH ST -- 200' EAST OF MERIDIAN CT	8532	-2.87%	80.20%	-3.21%	79.37%	-3.09%	74.25%
Average Annual Growth Rate		-1.67%	41.99%	-1.99%	41.70%	-1.66%	39.99%

Used 0.5% Growth Rate

Roadway	FDOT Site	Linear		Exponential		Decaying	
		5 Year Trend	R ²	5 Year Trend	R ²	5 Year Trend	R ²
S POINTE DR -- 150 FT W OF WASHINGTON AVE	8590	-9.32%	93.01%	-10.42%	92.38%	-9.64%	79.27%
SR A1A/MACARTHUR CSWY -- 150' N OF MERIDIAN AVE	2528	-0.54%	0.31%	-0.62%	0.41%	-0.68%	0.57%
SR A1A/COLLINS AV -- 200' N 5 ST(MIAMI BEACH)	5159	0.76%	2.18%	0.94%	1.99%	0.56%	0.68%
11TH ST -- 200' EAST OF MERIDIAN CT	8532	-2.36%	30.87%	-2.45%	31.02%	-1.94%	31.89%
Average Annual Growth Rate		-2.87%	31.59%	-3.14%	31.45%	-2.93%	28.10%

Used 0.5% Growth Rate

FLORIDA DEPARTMENT OF TRANSPORTATION
 TRANSPORTATION STATISTICS OFFICE
 2020 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 2528 - SR A1A/MACARTHUR CSWY, 150' N OF MERIDIAN AVE

YEAR	AADT		DIRECTION 1		DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2020	41000	C	E 19000	W	22000	9.00	54.30	9.20
2019	31000	F	E 15500	W	15500	9.00	54.00	5.00
2018	32000	C	E 16000	W	16000	9.00	55.20	5.60
2017	44000	C	E 20000	W	24000	9.00	54.00	5.30
2016	35500	C	E 18500	W	17000	9.00	55.50	7.80
2015	39500	C	E 20000	W	19500	9.00	55.10	4.60
2014	33000	C	E 17000	W	16000	9.00	54.30	5.10
2013	34000	C	E 17500	W	16500	9.00	54.10	6.10
2012	32500	C	E 14500	W	18000	9.00	53.40	8.40
2011	35000	C	E 16500	W	18500	9.00	51.90	7.50
2010	35000	C	E 16500	W	18500	7.16	52.27	8.80
2009	35500	C	E 16500	W	19000	9.21	57.60	8.40
2008	34500	C	E 16000	W	18500	7.42	52.15	5.30
2007	34000	C	E 16500	W	17500	7.11	53.51	4.90
2006	40500	C	E 19500	W	21000	7.18	52.50	2.20
2005	35000	C	E 16000	W	19000	7.30	52.50	5.50

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN

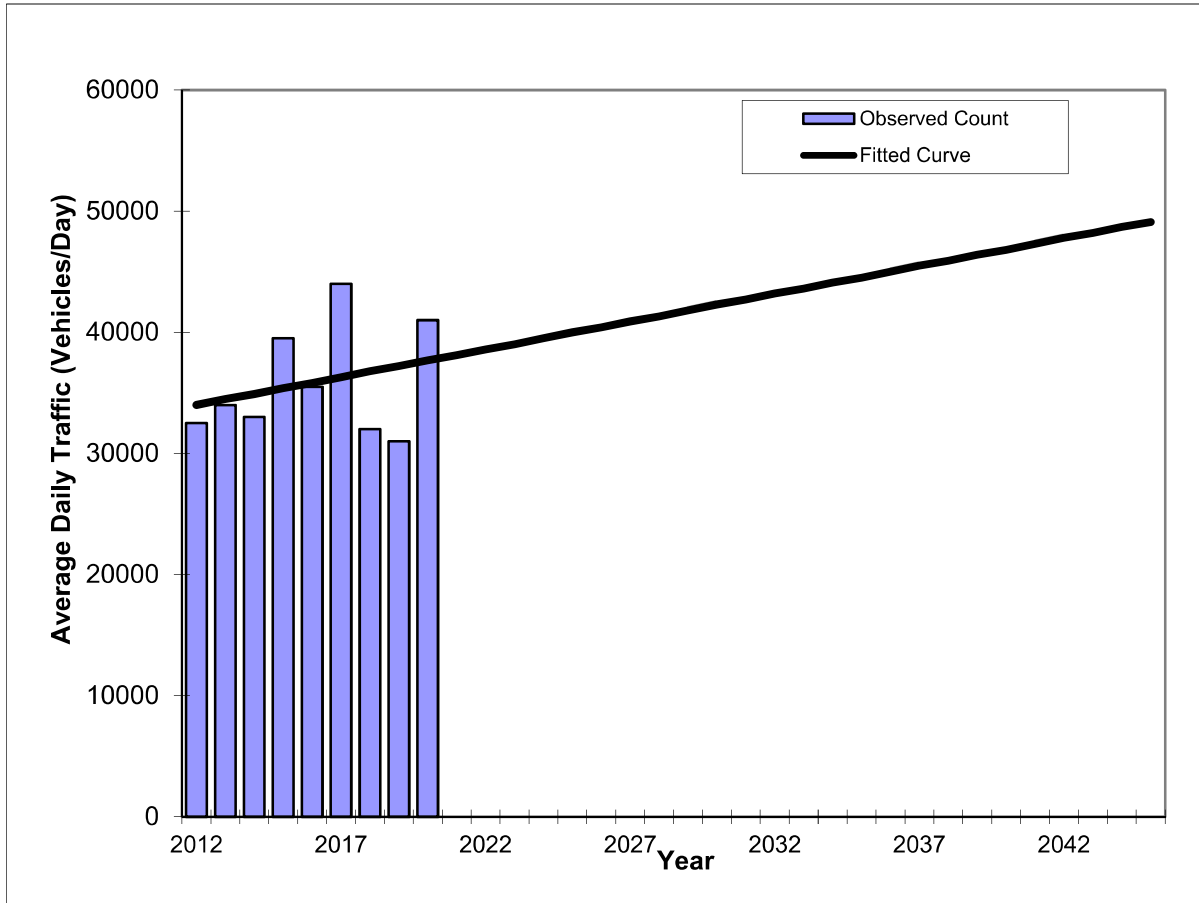
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Traffic Trends - V3.0

SR A1A/MACARTHUR CSWY -- 150' N OF MERIDIAN AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2528
Highway:	SR A1A/MACARTHUR CSWY



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	32500	34000
2013	34000	34500
2014	33000	34900
2015	39500	35400
2016	35500	35800
2017	44000	36300
2018	32000	36800
2019	31000	37200
2020	41000	37700
2023 Opening Year Trend		
2023	N/A	39000
2035 Mid-Year Trend		
2035	N/A	44500
2045 Design Year Trend		
2045	N/A	49100
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	458
Trend R-squared:	7.52%
Trend Annual Historic Growth Rate:	1.36%
Trend Growth Rate (2020 to Design Year):	1.21%
Printed:	17-Aug-21
Straight Line Growth Option	

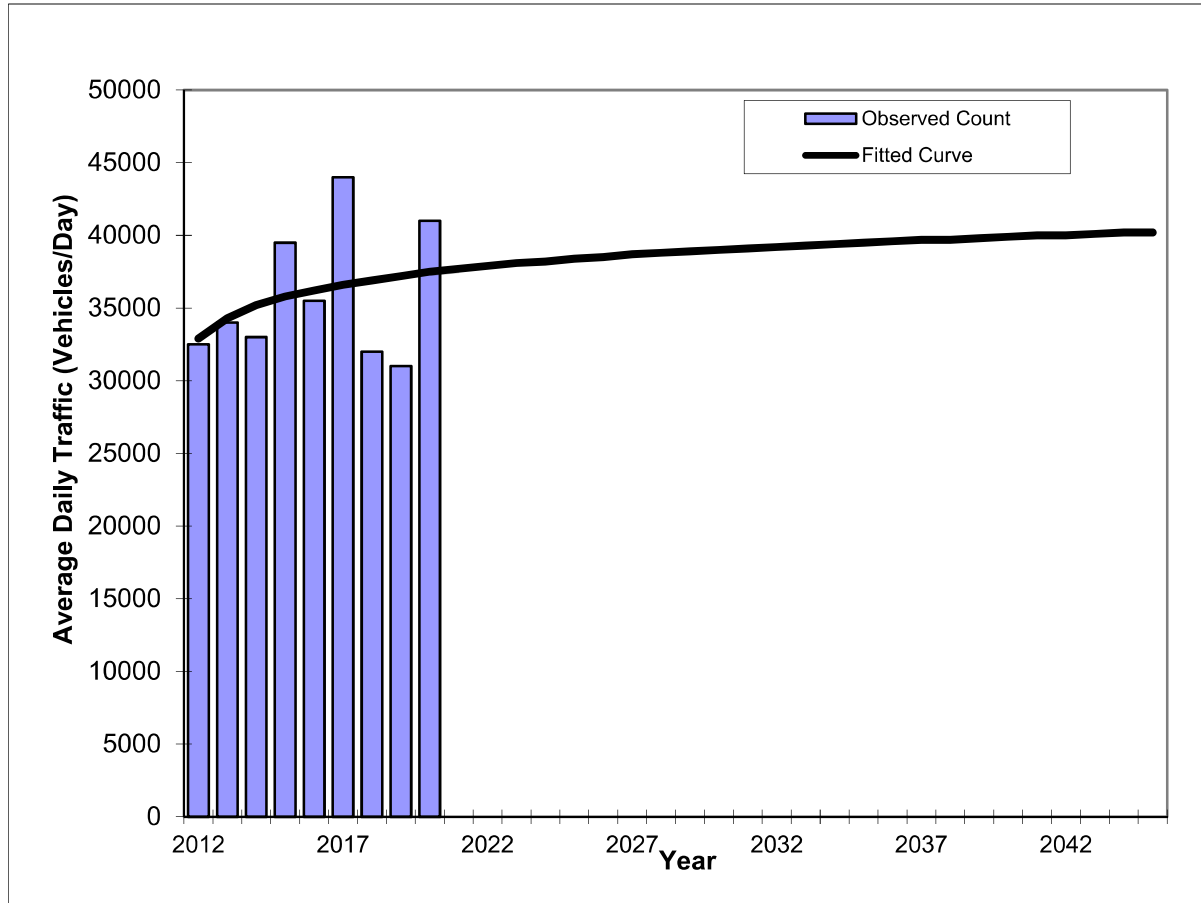
*Axle-Adjusted

Traffic Trends - V3.0

MACARTHUR CAUSEWAY -- 150' N OF MERIDIAN AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2528
Highway:	MACARTHUR CAUSEWAY



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	32500	32900
2013	34000	34300
2014	33000	35200
2015	39500	35800
2016	35500	36200
2017	44000	36600
2018	32000	36900
2019	31000	37200
2020	41000	37500
2023 Opening Year Trend		
2023	N/A	38100
2035 Mid-Year Trend		
2035	N/A	39500
2045 Design Year Trend		
2045	N/A	40200
TRANPLAN Forecasts/Trends		

Trend R-squared:	10.76%
Compounded Annual Historic Growth Rate:	1.65%
Compounded Growth Rate (2020 to Design Year):	0.28%
Printed:	1-Oct-21
Decaying Exponential Growth Option	

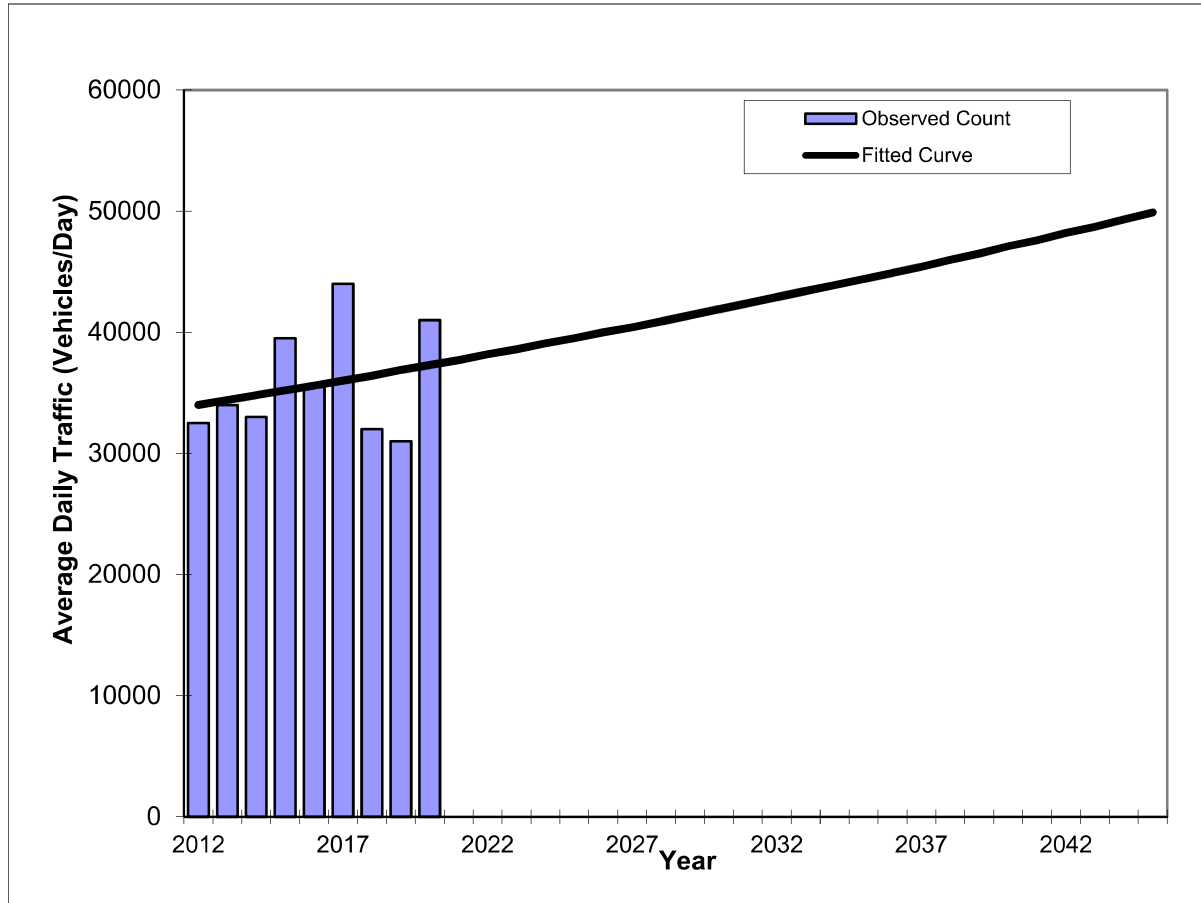
*Axle-Adjusted

Traffic Trends - V3.0

MACARTHUR CAUSEWAY -- 150' N OF MERIDIAN AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2528
Highway:	MACARTHUR CAUSEWAY



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	32500	34000
2013	34000	34400
2014	33000	34800
2015	39500	35200
2016	35500	35600
2017	44000	36000
2018	32000	36400
2019	31000	36900
2020	41000	37300
2023 Opening Year Trend		
2023	N/A	38600
2035 Mid-Year Trend		
2035	N/A	44400
2045 Design Year Trend		
2045	N/A	49900
TRANPLAN Forecasts/Trends		

Trend R-squared:	6.65%
Compounded Annual Historic Growth Rate:	1.16%
Compounded Growth Rate (2020 to Design Year):	1.17%
Printed:	1-Oct-21
Exponential Growth Option	

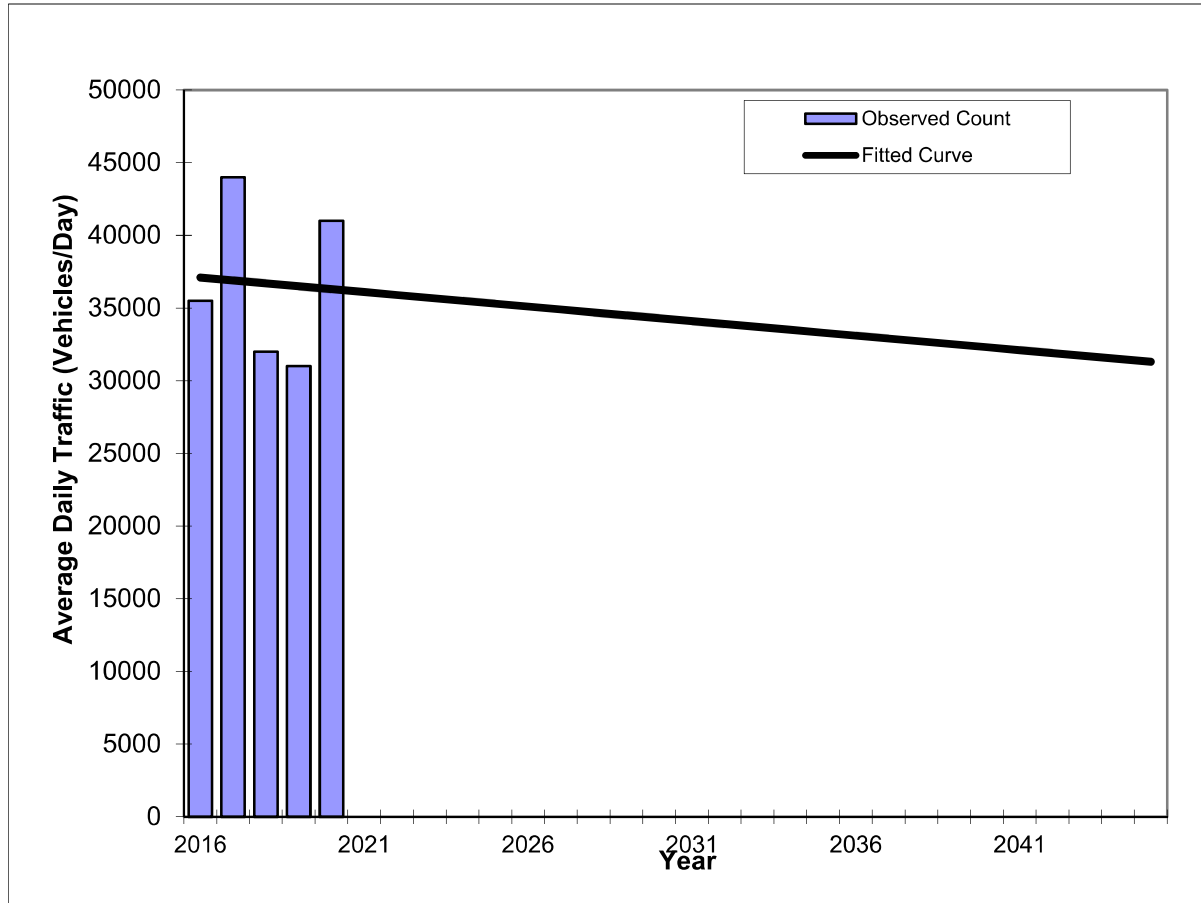
*Axle-Adjusted

Traffic Trends - V3.0

MACARTHUR CAUSEWAY -- 150' N OF MERIDIAN AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2528
Highway:	MACARTHUR CAUSEWAY



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	35500	37100
2017	44000	36900
2018	32000	36700
2019	31000	36500
2020	41000	36300
2023 Opening Year Trend		
2023	N/A	35700
2035 Mid-Year Trend		
2035	N/A	33300
2045 Design Year Trend		
2045	N/A	31300
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-200
Trend R-squared:	0.31%
Trend Annual Historic Growth Rate:	-0.54%
Trend Growth Rate (2020 to Design Year):	-0.55%
Printed:	1-Oct-21
Straight Line Growth Option	

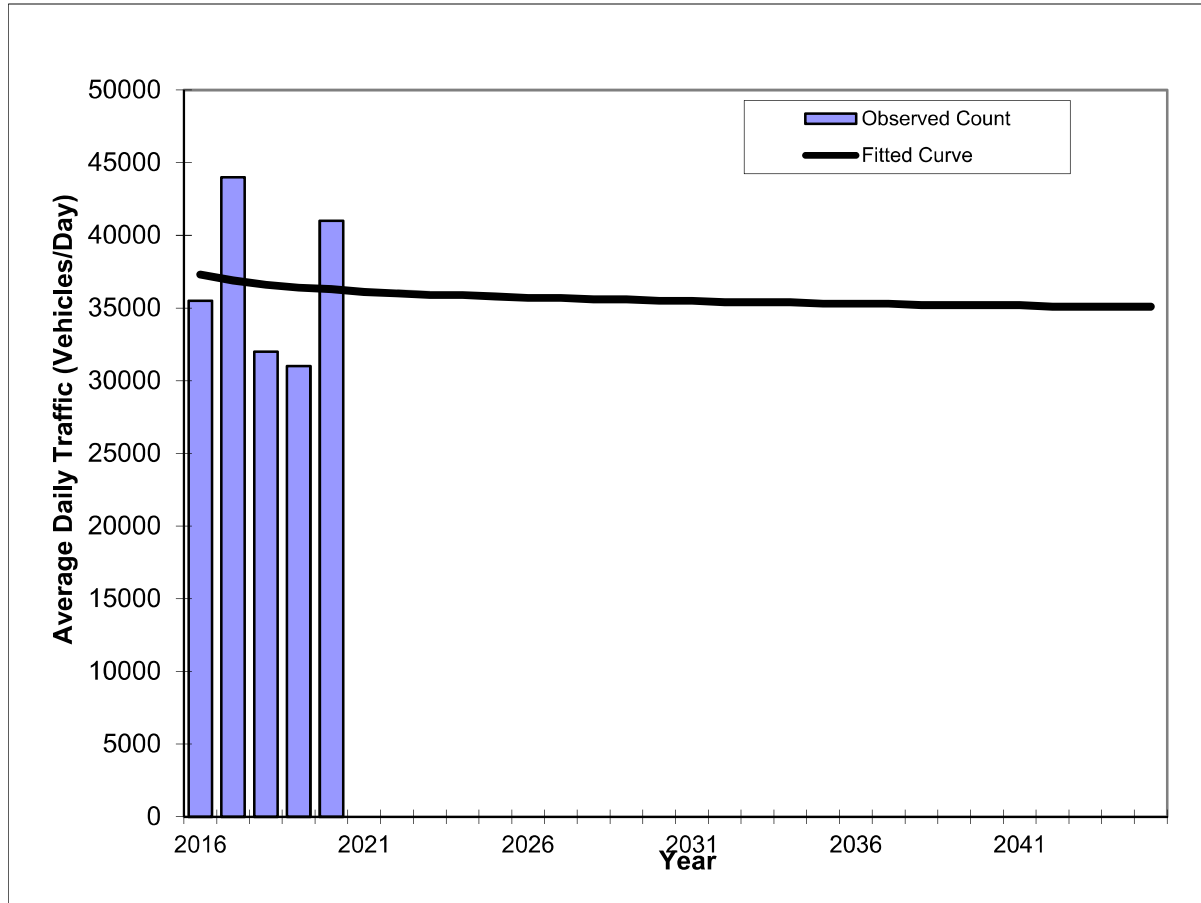
*Axle-Adjusted

Traffic Trends - V3.0

MACARTHUR CAUSEWAY -- 150' N OF MERIDIAN AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2528
Highway:	MACARTHUR CAUSEWAY



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	35500	37300
2017	44000	36900
2018	32000	36600
2019	31000	36400
2020	41000	36300
2023 Opening Year Trend		
2023	N/A	35900
2035 Mid-Year Trend		
2035	N/A	35300
2045 Design Year Trend		
2045	N/A	35100
TRANPLAN Forecasts/Trends		

Trend R-squared:	0.57%
Compounded Annual Historic Growth Rate:	-0.68%
Compounded Growth Rate (2020 to Design Year):	-0.13%
Printed:	1-Oct-21
Decaying Exponential Growth Option	

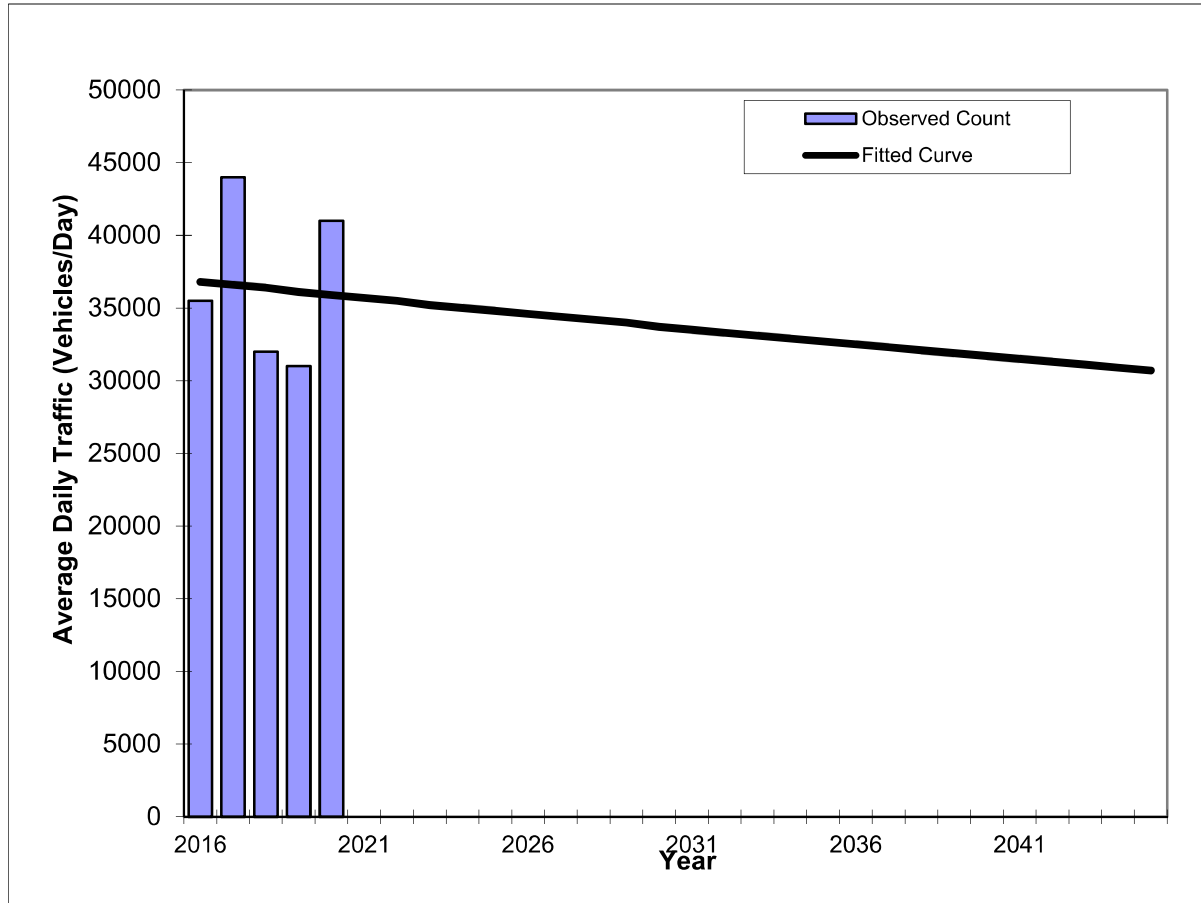
*Axle-Adjusted

Traffic Trends - V3.0

MACARTHUR CAUSEWAY -- 150' N OF MERIDIAN AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	2528
Highway:	MACARTHUR CAUSEWAY



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	35500	36800
2017	44000	36600
2018	32000	36400
2019	31000	36100
2020	41000	35900
2023 Opening Year Trend		
2023	N/A	35200
2035 Mid-Year Trend		
2035	N/A	32700
2045 Design Year Trend		
2045	N/A	30700
TRANPLAN Forecasts/Trends		

Trend R-squared:	0.41%
Compounded Annual Historic Growth Rate:	-0.62%
Compounded Growth Rate (2020 to Design Year):	-0.62%
Printed:	1-Oct-21
Exponential Growth Option	

*Axle-Adjusted

FLORIDA DEPARTMENT OF TRANSPORTATION
 TRANSPORTATION STATISTICS OFFICE
 2020 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 5159 - SR AIA/COLLINS AV, 200' N 5 ST(MIAMI BEACH)

YEAR	AADT		DIRECTION 1		DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2020	14500	C	N 6900		S 7600	9.00	54.20	9.20
2019	12900	C	N 6900		S 6000	9.00	54.60	5.00
2018	11800	C	N 6600		S 5200	9.00	54.30	5.60
2017	14600	C	N 8800		S 5800	9.00	55.00	5.30
2016	13100	C	N 6700		S 6400	9.00	54.50	7.80
2015	13800	C	N 5500		S 8300	9.00	54.70	4.60
2014	13400	C	N 6500		S 6900	9.00	54.50	5.10
2013	16400	C	N 7400		S 9000	9.00	52.40	6.10
2012	16700	C	N 7100		S 9600	9.00	55.70	8.40
2011	13600	C	N 6900		S 6700	9.00	55.10	7.50
2010	12900	C	N 6200		S 6700	8.98	54.08	8.80
2009	15300	C	N 7600		S 7700	8.99	53.24	8.40
2008	13600	C	N 6300		S 7300	9.09	55.75	5.30
2007	14300	C	N 6500		S 7800	8.01	54.34	4.90
2006	13100	C	N 5800		S 7300	7.97	54.22	2.20
2005	16100	C	N 7300		S 8800	8.80	53.80	5.50

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN

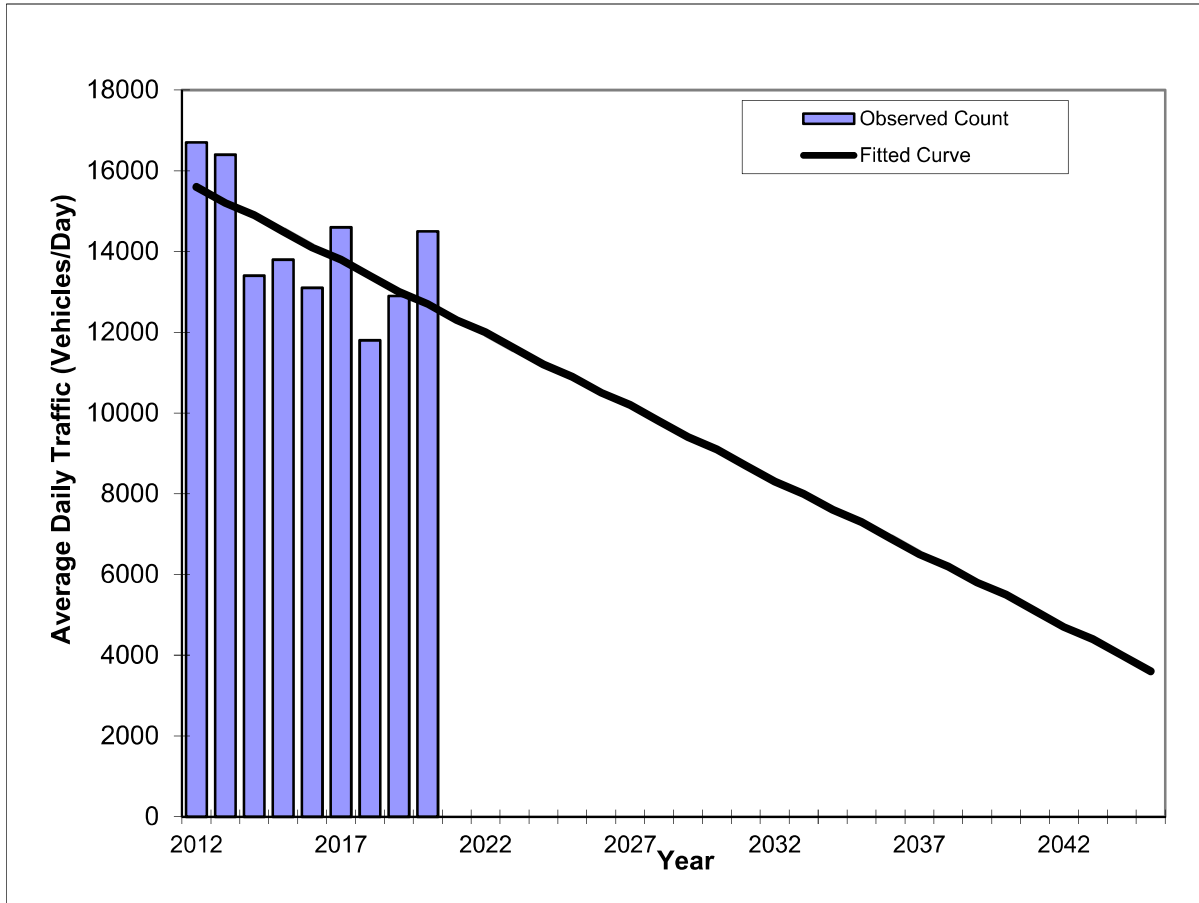
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Traffic Trends - V3.0

SR AIA/COLLINS AV -- 200' N 5 ST(MIAMI BEACH)

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	5159
Highway:	SR AIA/COLLINS AV



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	16700	15600
2013	16400	15200
2014	13400	14900
2015	13800	14500
2016	13100	14100
2017	14600	13800
2018	11800	13400
2019	12900	13000
2020	14500	12700
2023 Opening Year Trend		
2023	N/A	11600
2035 Mid-Year Trend		
2035	N/A	7300
2045 Design Year Trend		
2045	N/A	3600
TRANPLAN Forecasts/Trends		

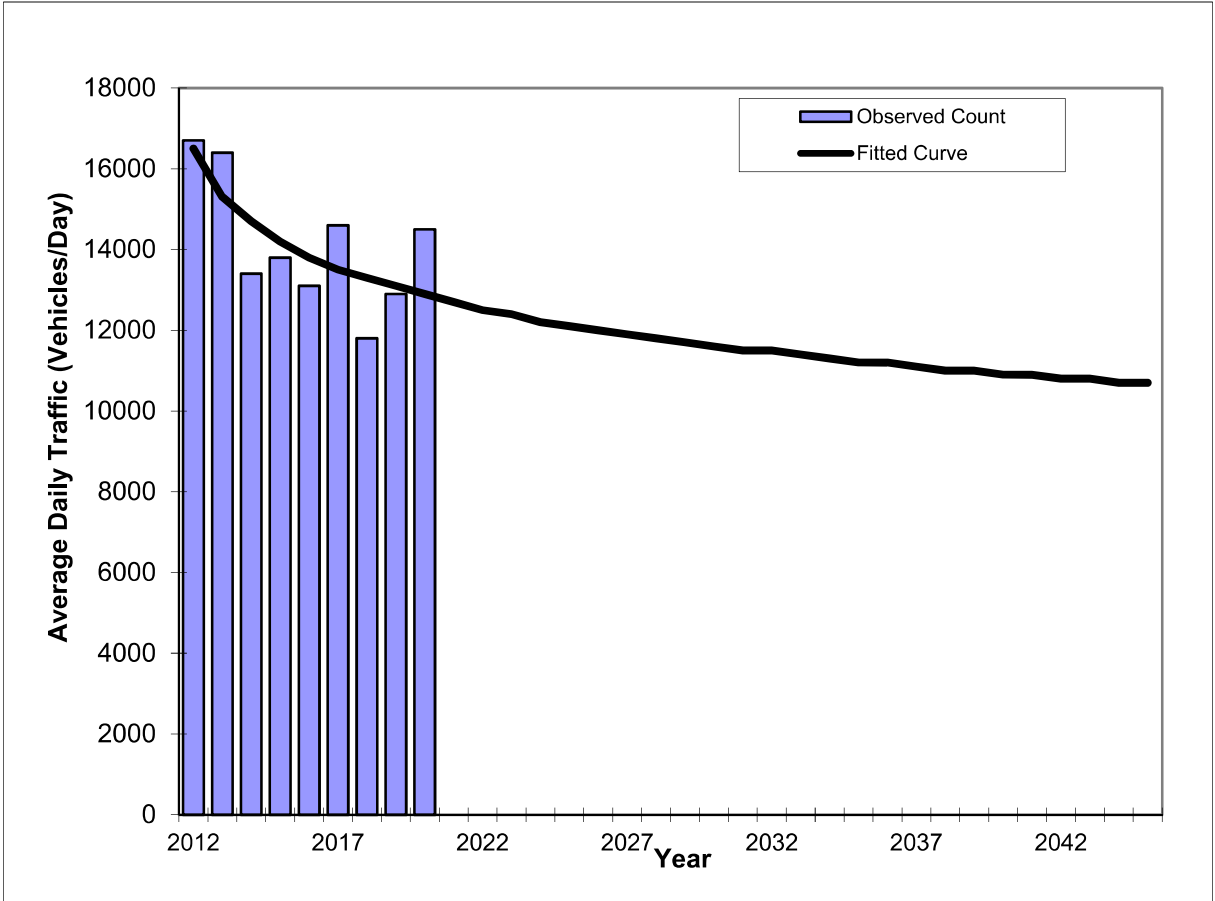
** Annual Trend Increase:	-362
Trend R-squared:	37.80%
Trend Annual Historic Growth Rate:	-2.32%
Trend Growth Rate (2020 to Design Year):	-2.87%
Printed:	17-Aug-21
Straight Line Growth Option	

*Axle-Adjusted

Traffic Trends - V3.0
COLLINS AVE -- 200' N 5 ST

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	5159
Highway:	COLLINS AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	16700	16500
2013	16400	15300
2014	13400	14700
2015	13800	14200
2016	13100	13800
2017	14600	13500
2018	11800	13300
2019	12900	13100
2020	14500	12900
2023 Opening Year Trend		
2023	N/A	12400
2035 Mid-Year Trend		
2035	N/A	11200
2045 Design Year Trend		
2045	N/A	10700
TRANPLAN Forecasts/Trends		

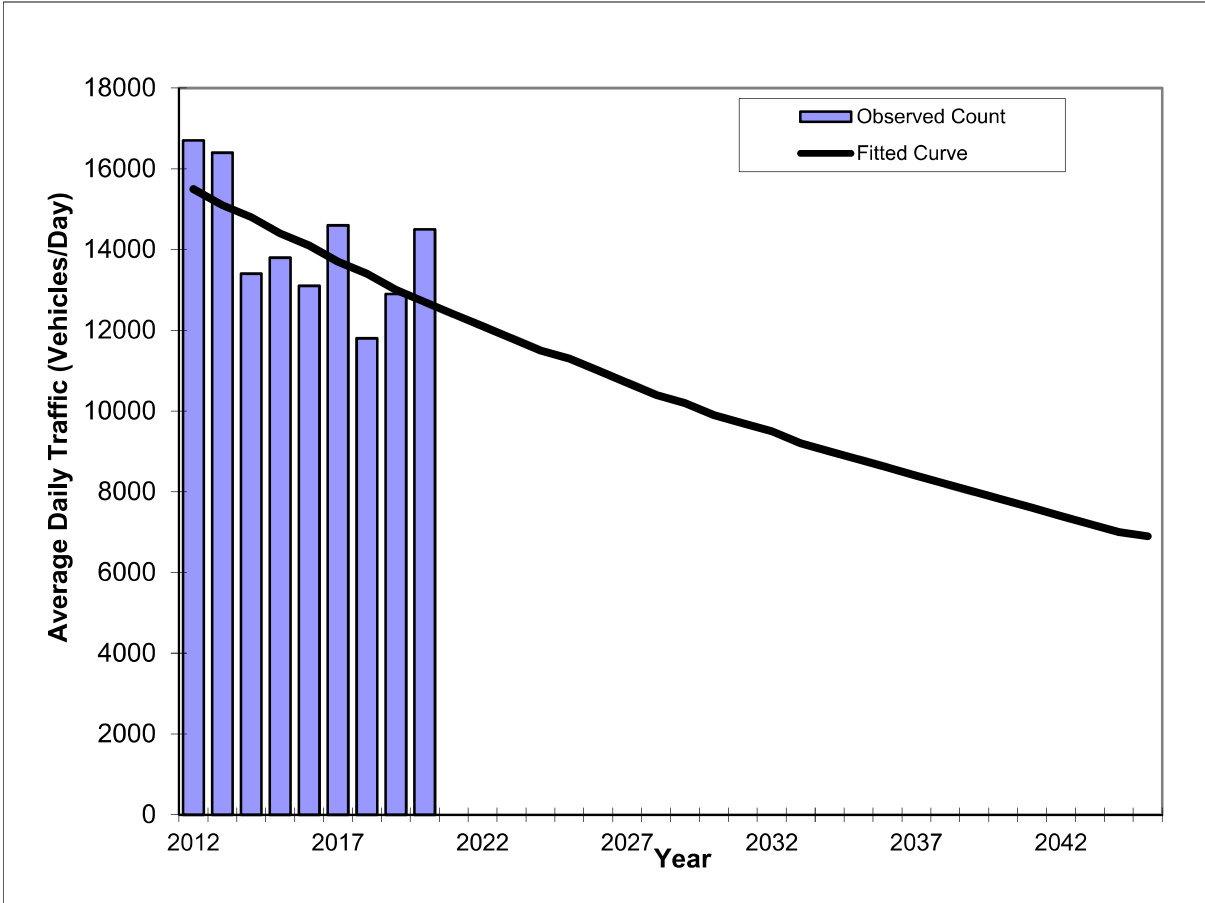
Trend R-squared:	54.18%
Compounded Annual Historic Growth Rate:	-3.03%
Compounded Growth Rate (2020 to Design Year):	-0.75%
Printed:	1-Oct-21
Decaying Exponential Growth Option	

*Axle-Adjusted

Traffic Trends - V3.0
COLLINS AVE -- 200' N 5 ST

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	5159
Highway:	COLLINS AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	16700	15500
2013	16400	15100
2014	13400	14800
2015	13800	14400
2016	13100	14100
2017	14600	13700
2018	11800	13400
2019	12900	13000
2020	14500	12700
2023 Opening Year Trend		
2023	N/A	11800
2035 Mid-Year Trend		
2035	N/A	8800
2045 Design Year Trend		
2045	N/A	6900
TRANPLAN Forecasts/Trends		

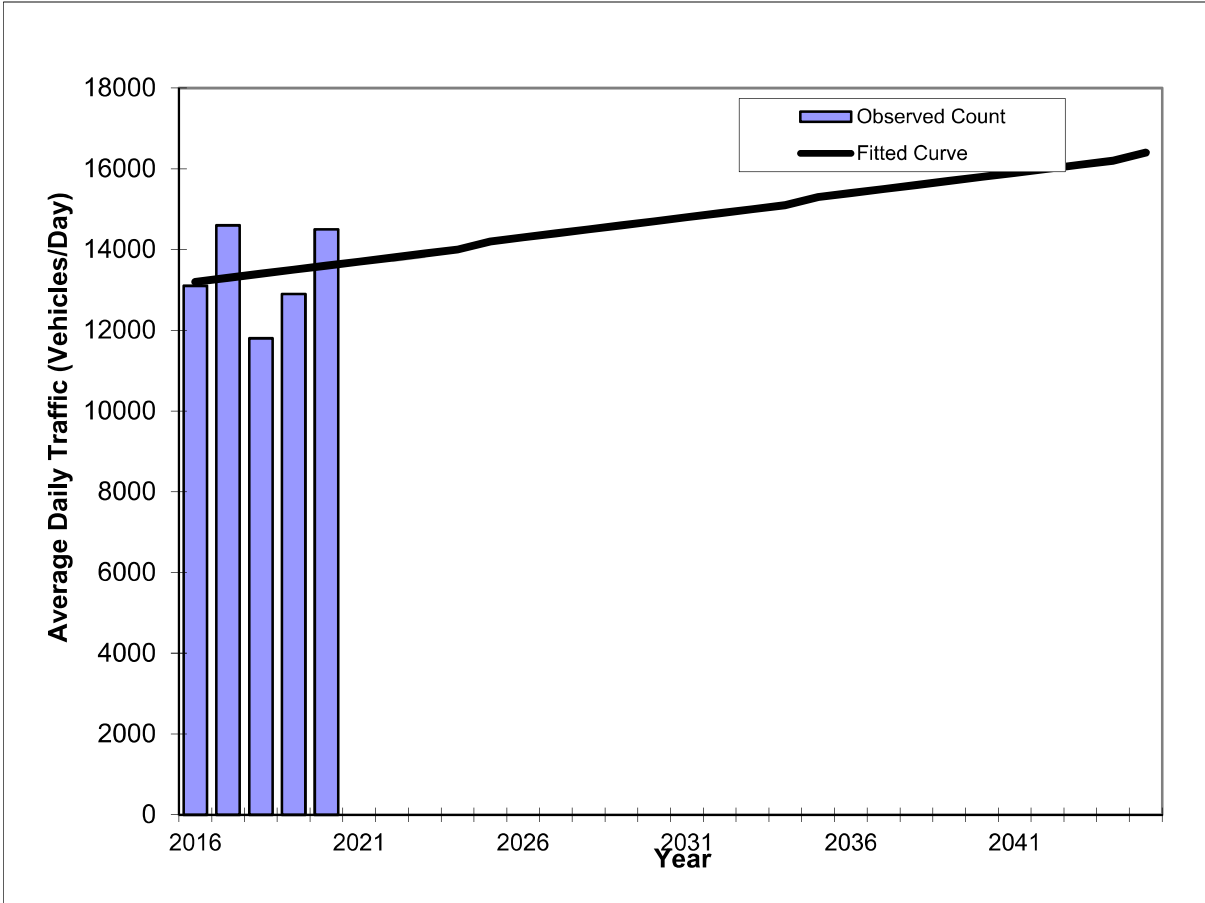
Trend R-squared:	36.13%
Compounded Annual Historic Growth Rate:	-2.46%
Compounded Growth Rate (2020 to Design Year):	-2.41%
Printed:	1-Oct-21
Exponential Growth Option	

*Axle-Adjusted

Traffic Trends - V3.0
COLLINS AVE -- 200' N 5 ST

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	5159
Highway:	COLLINS AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	13100	13200
2017	14600	13300
2018	11800	13400
2019	12900	13500
2020	14500	13600
2023 Opening Year Trend		
2023	N/A	13900
2035 Mid-Year Trend		
2035	N/A	15300
2045 Design Year Trend		
2045	N/A	16400
TRANPLAN Forecasts/Trends		

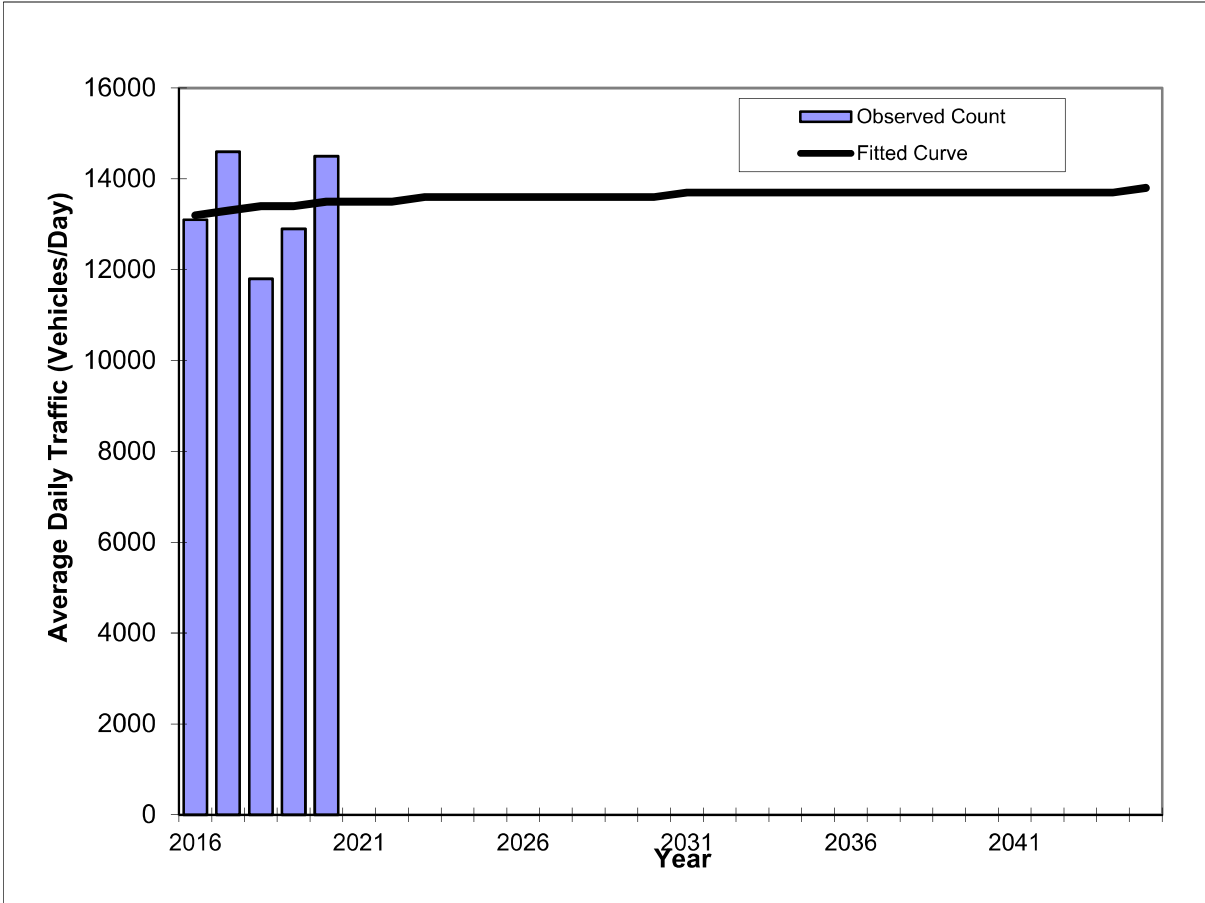
** Annual Trend Increase:	110
Trend R-squared:	2.18%
Trend Annual Historic Growth Rate:	0.76%
Trend Growth Rate (2020 to Design Year):	0.82%
Printed:	1-Oct-21
Straight Line Growth Option	

*Axle-Adjusted

Traffic Trends - V3.0
COLLINS AVE -- 200' N 5 ST

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	5159
Highway:	COLLINS AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	13100	13200
2017	14600	13300
2018	11800	13400
2019	12900	13400
2020	14500	13500
2023 Opening Year Trend		
2023	N/A	13600
2035 Mid-Year Trend		
2035	N/A	13700
2045 Design Year Trend		
2045	N/A	13800
TRANPLAN Forecasts/Trends		

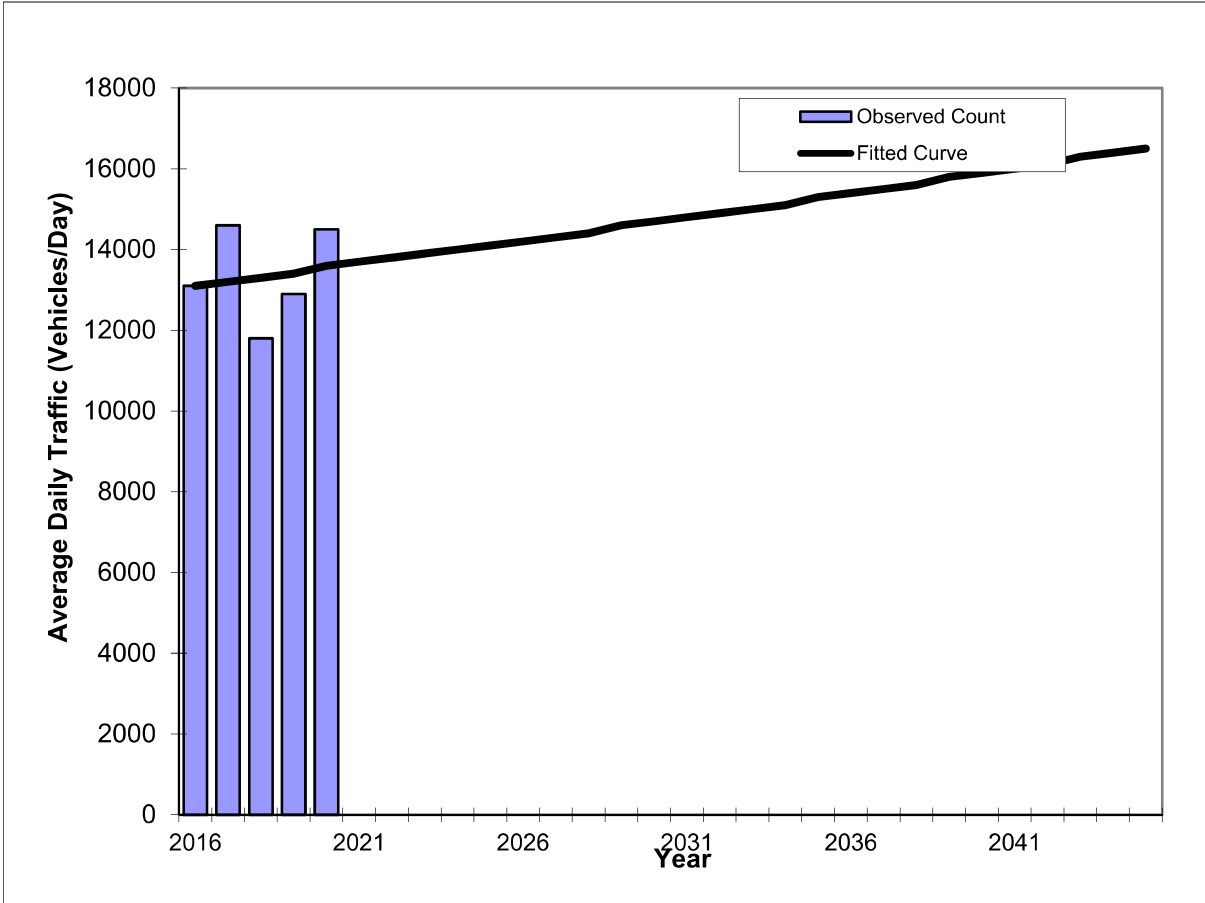
Trend R-squared:	0.68%
Compounded Annual Historic Growth Rate:	0.56%
Compounded Growth Rate (2020 to Design Year):	0.09%
Printed:	1-Oct-21
Decaying Exponential Growth Option	

*Axle-Adjusted

Traffic Trends - V3.0
COLLINS AVE -- 200' N 5 ST

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	5159
Highway:	COLLINS AVE



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	13100	13100
2017	14600	13200
2018	11800	13300
2019	12900	13400
2020	14500	13600
2023 Opening Year Trend		
2023	N/A	13900
2035 Mid-Year Trend		
2035	N/A	15300
2045 Design Year Trend		
2045	N/A	16500
TRANPLAN Forecasts/Trends		

Trend R-squared:	1.99%
Compounded Annual Historic Growth Rate:	0.94%
Compounded Growth Rate (2020 to Design Year):	0.78%
Printed:	1-Oct-21
Exponential Growth Option	

*Axle-Adjusted

FLORIDA DEPARTMENT OF TRANSPORTATION
 TRANSPORTATION STATISTICS OFFICE
 2020 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 8532 - 11TH ST, 200' EAST OF MERIDIAN CT (2011 OFF SYSTEM CYCLE)

YEAR	AADT		DIRECTION 1		DIRECTION 2		*K FACTOR	D FACTOR	T FACTOR
2020	4700	F	E	2500	W	2200	9.00	56.00	4.40
2019	5300	C	E	2800	W	2500	9.00	56.00	4.00
2018	4700	T	E	2700	W	2000	9.00	54.30	3.00
2017	5200	S	E	3000	W	2200	9.00	59.30	2.50
2016	5300	F	E	3100	W	2200	9.00	56.10	5.10
2015	5400	C	E	3200	W	2200	9.00	57.40	7.10
2014	6000	S					9.00	59.30	10.70
2013	6000	F		0		0	9.00	58.90	16.20
2012	6000	C	E	0	W	0	9.00	59.70	16.00

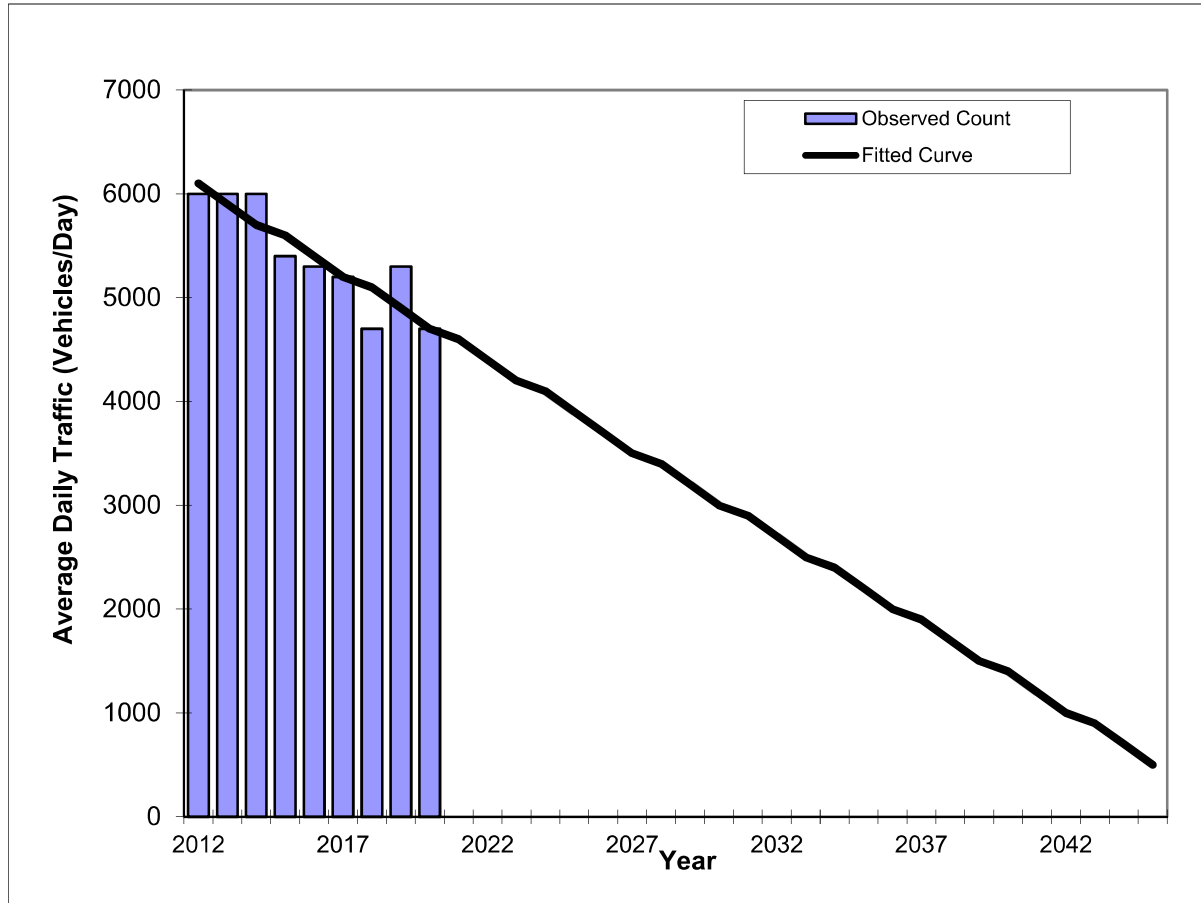
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
 S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE
 V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
 *K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Traffic Trends - V3.0

11TH ST -- 200' EAST OF MERIDIAN CT

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8532
Highway:	11TH ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	6000	6100
2013	6000	5900
2014	6000	5700
2015	5400	5600
2016	5300	5400
2017	5200	5200
2018	4700	5100
2019	5300	4900
2020	4700	4700
2023 Opening Year Trend		
2023	N/A	4200
2035 Mid-Year Trend		
2035	N/A	2200
2045 Design Year Trend		
2045	N/A	500
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-168
Trend R-squared:	80.20%
Trend Annual Historic Growth Rate:	-2.87%
Trend Growth Rate (2020 to Design Year):	-3.57%
Printed:	17-Aug-21
Straight Line Growth Option	

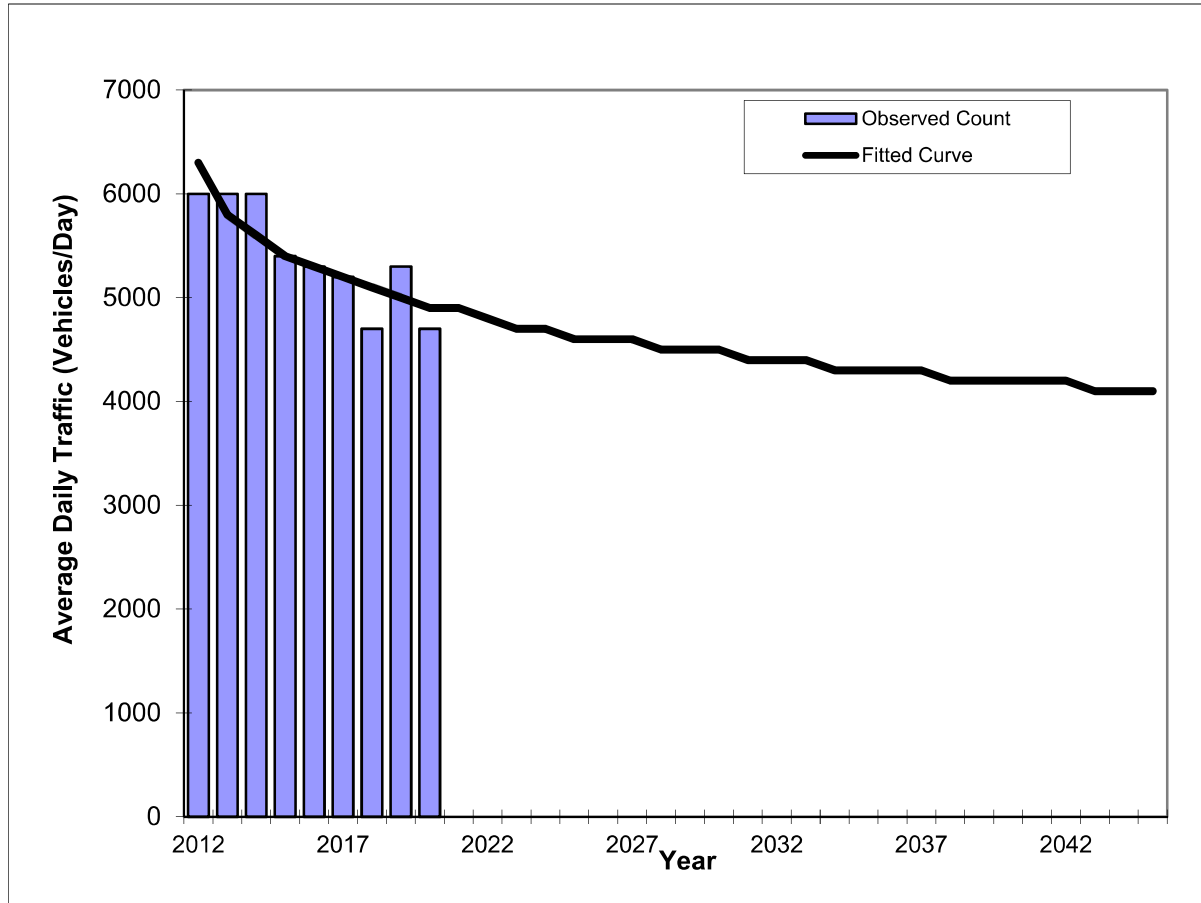
*Axle-Adjusted

Traffic Trends - V3.0

11TH ST -- 200' EAST OF MERIDIAN CT

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8532
Highway:	11TH ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	6000	6300
2013	6000	5800
2014	6000	5600
2015	5400	5400
2016	5300	5300
2017	5200	5200
2018	4700	5100
2019	5300	5000
2020	4700	4900
2023 Opening Year Trend		
2023	N/A	4700
2035 Mid-Year Trend		
2035	N/A	4300
2045 Design Year Trend		
2045	N/A	4100
TRANPLAN Forecasts/Trends		

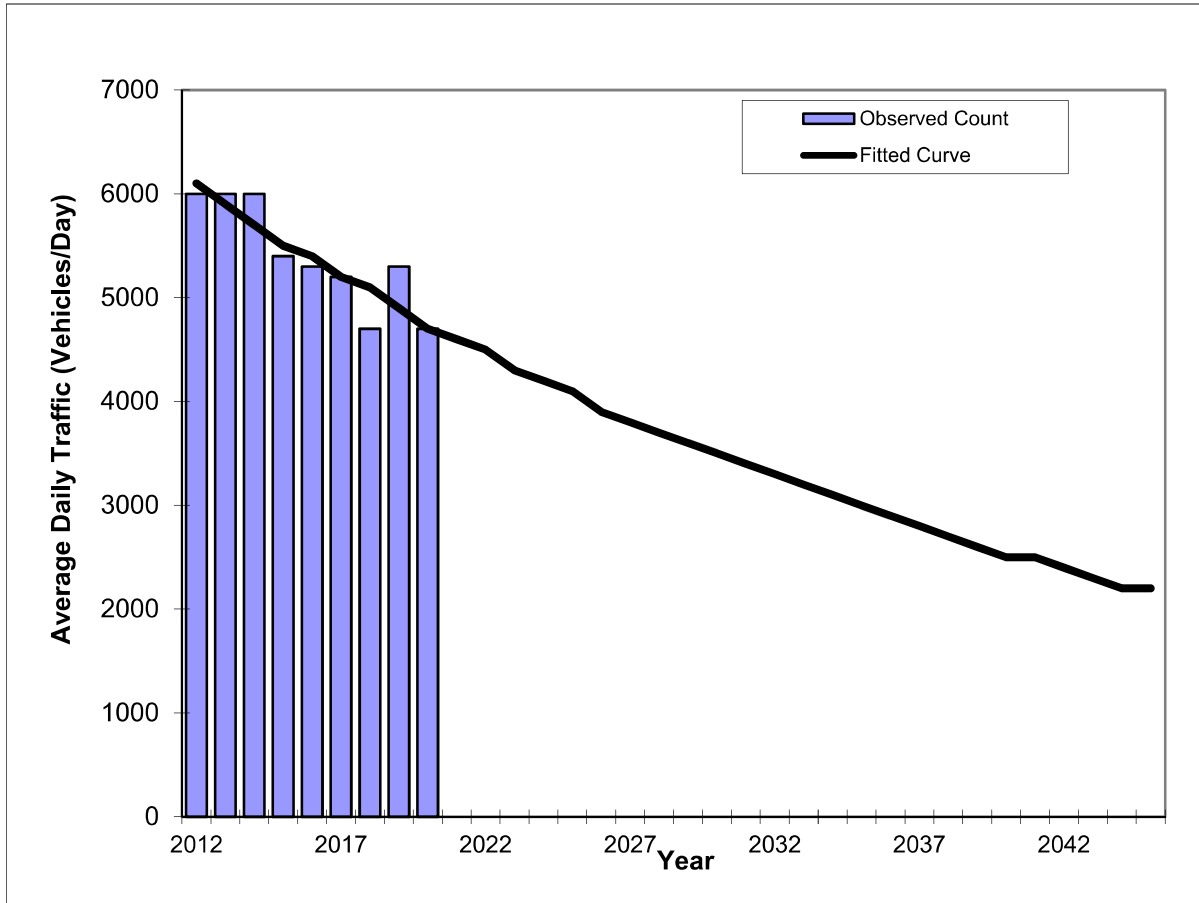
Trend R-squared:	74.25%
Compounded Annual Historic Growth Rate:	-3.09%
Compounded Growth Rate (2020 to Design Year):	-0.71%
Printed:	1-Oct-21
Decaying Exponential Growth Option	

*Axle-Adjusted

Traffic Trends - V3.0
11TH ST -- 200' EAST OF MERIDIAN CT

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8532
Highway:	11TH ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	6000	6100
2013	6000	5900
2014	6000	5700
2015	5400	5500
2016	5300	5400
2017	5200	5200
2018	4700	5100
2019	5300	4900
2020	4700	4700
2023 Opening Year Trend		
2023	N/A	4300
2035 Mid-Year Trend		
2035	N/A	3000
2045 Design Year Trend		
2045	N/A	2200
TRANPLAN Forecasts/Trends		

Trend R-squared:	79.37%
Compounded Annual Historic Growth Rate:	-3.21%
Compounded Growth Rate (2020 to Design Year):	-2.99%
Printed:	1-Oct-21
Exponential Growth Option	

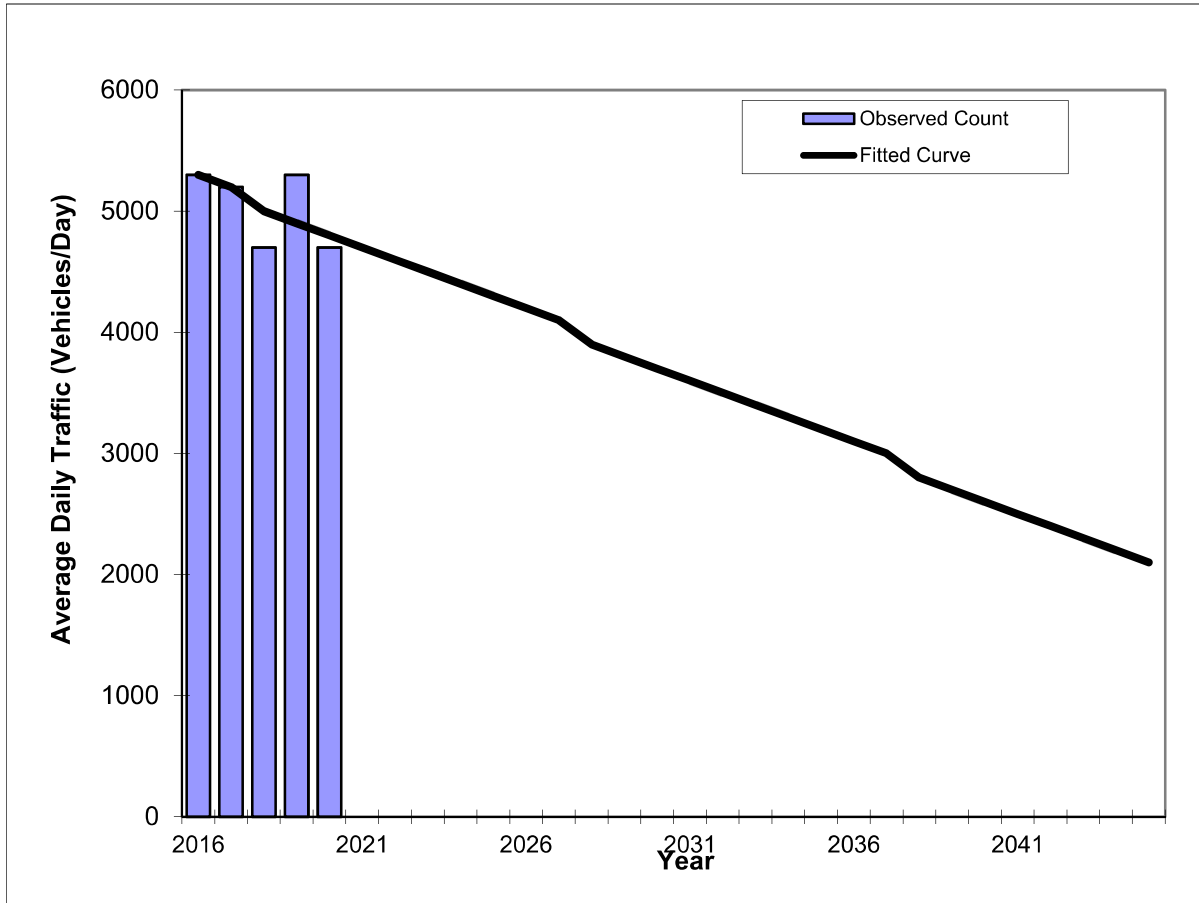
*Axle-Adjusted

Traffic Trends - V3.0

11TH ST -- 200' EAST OF MERIDIAN CT

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8532
Highway:	11TH ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	5300	5300
2017	5200	5200
2018	4700	5000
2019	5300	4900
2020	4700	4800
2023 Opening Year Trend		
2023	N/A	4500
2035 Mid-Year Trend		
2035	N/A	3200
2045 Design Year Trend		
2045	N/A	2100
TRANPLAN Forecasts/Trends		

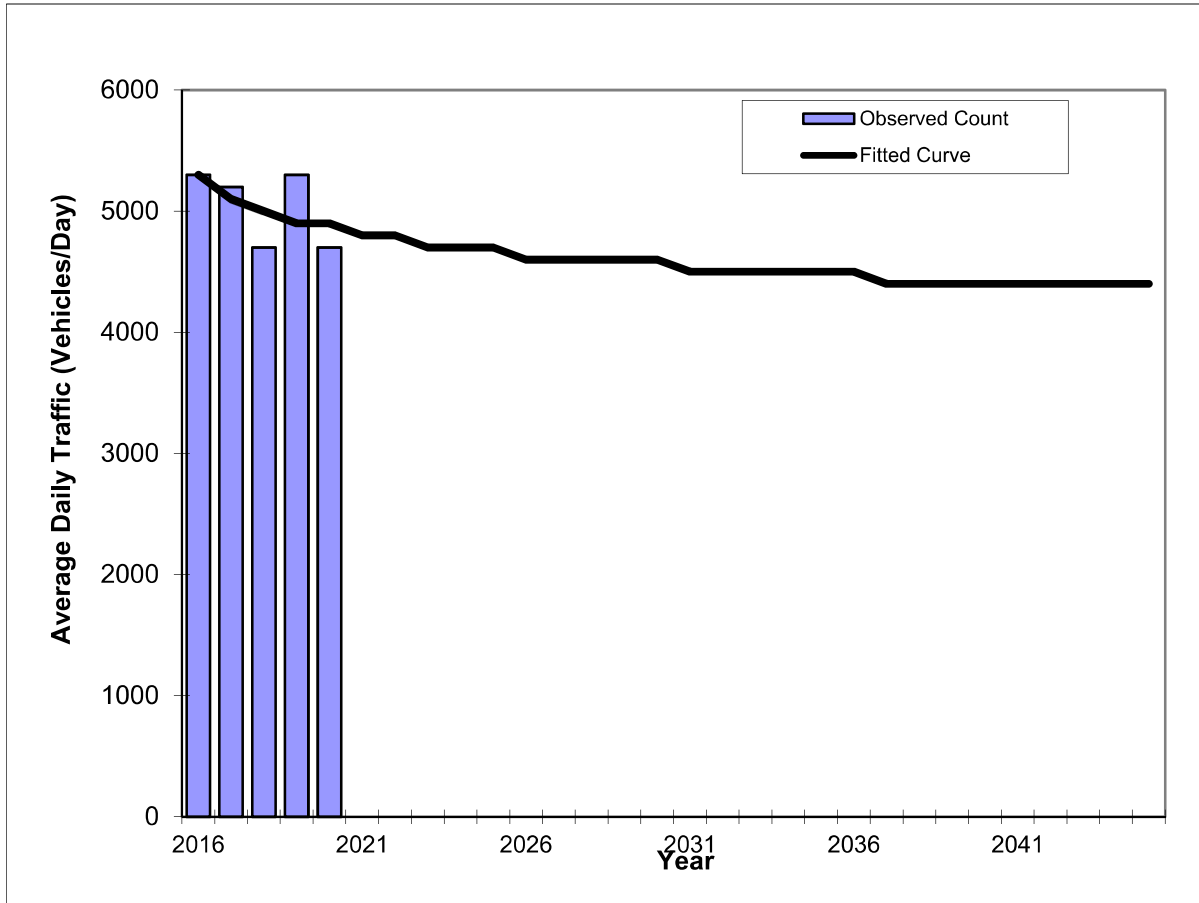
** Annual Trend Increase:	-110
Trend R-squared:	30.87%
Trend Annual Historic Growth Rate:	-2.36%
Trend Growth Rate (2020 to Design Year):	-2.25%
Printed:	1-Oct-21
Straight Line Growth Option	

*Axle-Adjusted

Traffic Trends - V3.0
11TH ST -- 200' EAST OF MERIDIAN CT

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8532
Highway:	11TH ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	5300	5300
2017	5200	5100
2018	4700	5000
2019	5300	4900
2020	4700	4900
2023 Opening Year Trend		
2023	N/A	4700
2035 Mid-Year Trend		
2035	N/A	4500
2045 Design Year Trend		
2045	N/A	4400
TRANPLAN Forecasts/Trends		

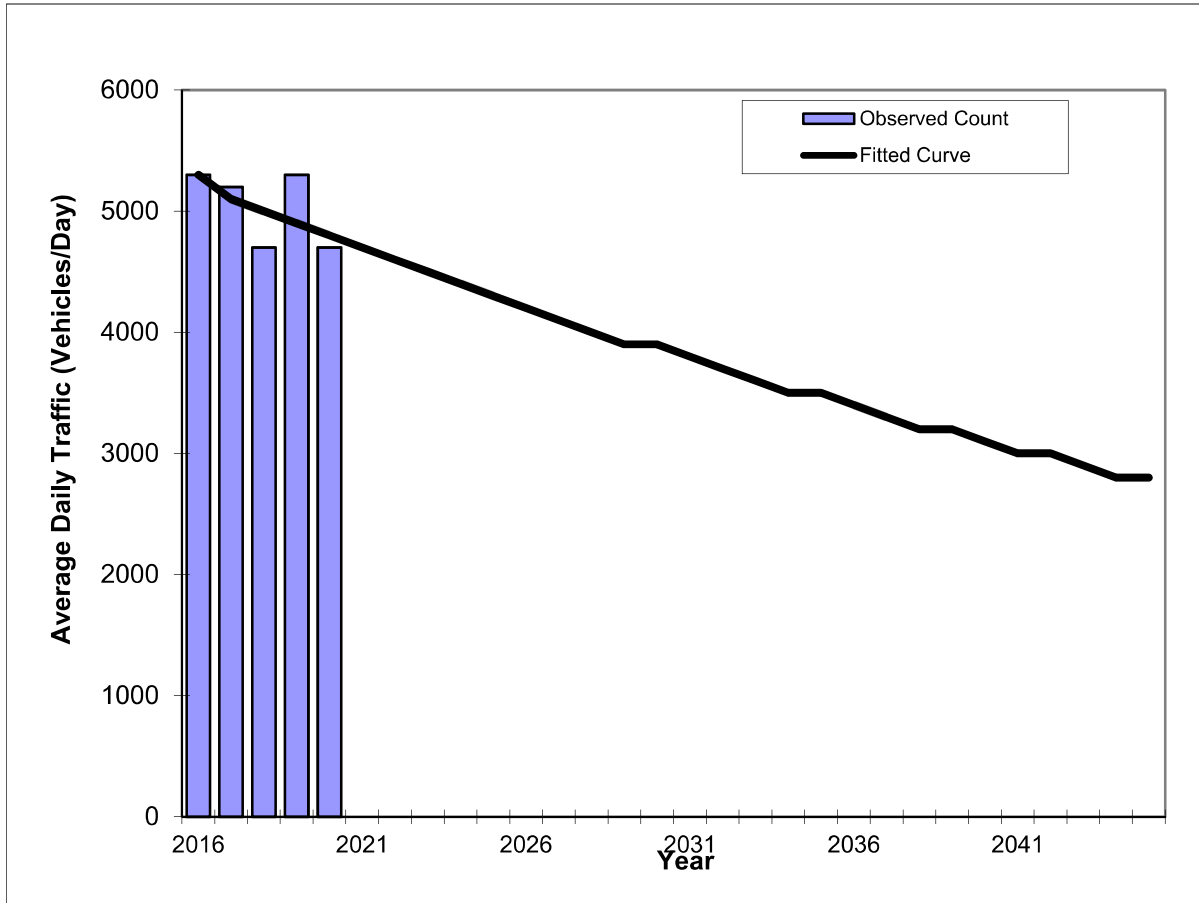
Trend R-squared:	31.89%
Compounded Annual Historic Growth Rate:	-1.94%
Compounded Growth Rate (2020 to Design Year):	-0.43%
Printed:	1-Oct-21
Decaying Exponential Growth Option	

*Axle-Adjusted

Traffic Trends - V3.0
11TH ST -- 200' EAST OF MERIDIAN CT

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8532
Highway:	11TH ST



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	5300	5300
2017	5200	5100
2018	4700	5000
2019	5300	4900
2020	4700	4800
2023 Opening Year Trend		
2023	N/A	4500
2035 Mid-Year Trend		
2035	N/A	3500
2045 Design Year Trend		
2045	N/A	2800
TRANPLAN Forecasts/Trends		

Trend R-squared:	31.02%
Compounded Annual Historic Growth Rate:	-2.45%
Compounded Growth Rate (2020 to Design Year):	-2.13%
Printed:	1-Oct-21
Exponential Growth Option	

*Axle-Adjusted

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2020 HISTORICAL AADT REPORT

COUNTY: 87 - MIAMI-DADE

SITE: 8590 - S POINTE DR, 150 FT W OF WASHINGTON AVE, MIAMI BEACH

YEAR	AADT		DIRECTION 1		DIRECTION 2		*K FACTOR	D FACTOR	T FACTOR
----	-----		-----	-----	-----	-----	-----	-----	-----
2020	3700	F	E	1900	W	1800	9.00	56.00	4.40
2019	4100	C	E	2100	W	2000	9.00	56.00	4.00
2018	5000	T	E	2700	W	2300	9.00	54.30	3.00
2017	5600	S	E	3000	W	2600	9.00	59.30	2.50
2016	5600	F	E	3000	W	2600	9.00	56.10	5.10
2015	5600	C	E	3000	W	2600	9.00	57.40	7.10
2014	5200	S	E	2700	W	2500	9.00	59.30	10.70
2013	5200	F	E	2700	W	2500	9.00	58.90	16.20
2012	5200	C	E	2700	W	2500	9.00	59.70	16.00

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN

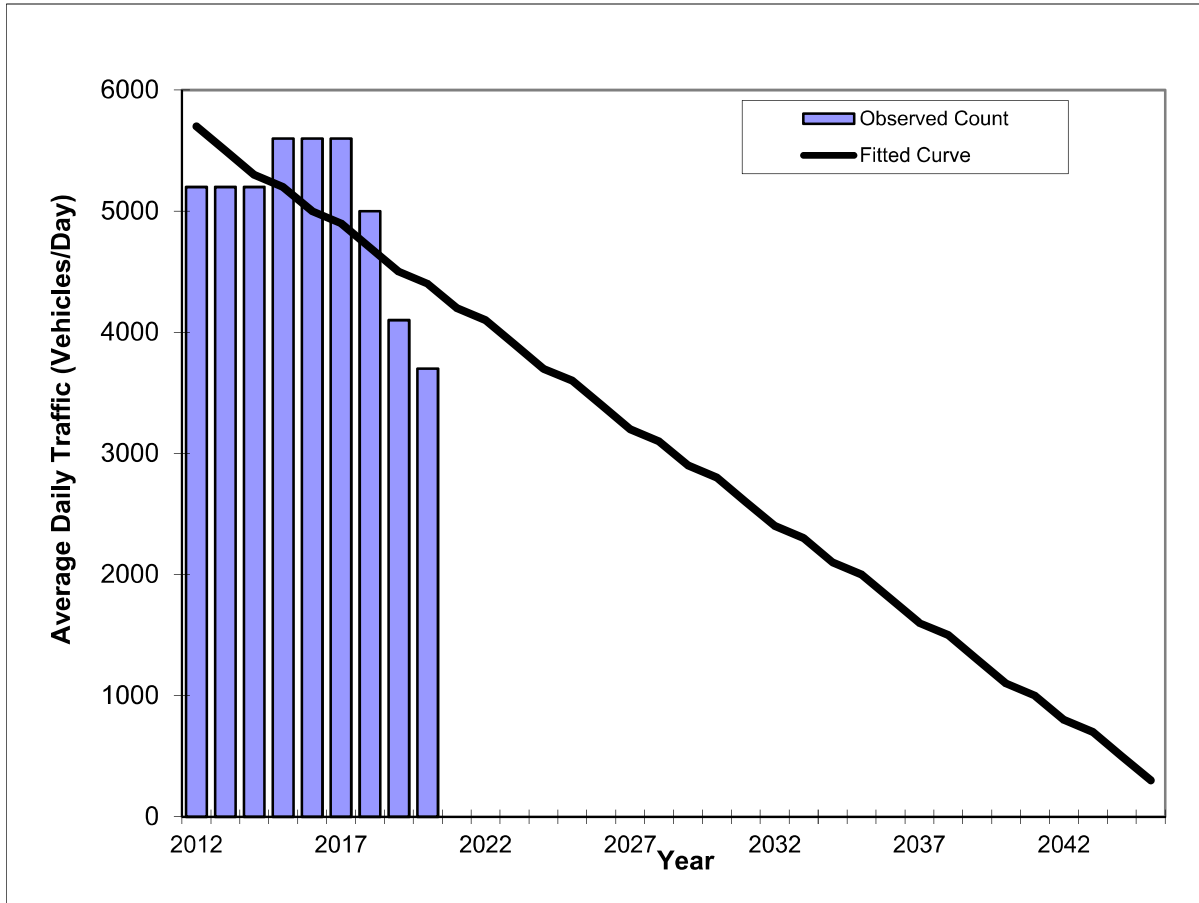
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

Traffic Trends - V3.0

S POINTE DR -- 150 FT W OF WASHINGTON AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8590
Highway:	S POINTE DR



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	5200	5700
2013	5200	5500
2014	5200	5300
2015	5600	5200
2016	5600	5000
2017	5600	4900
2018	5000	4700
2019	4100	4500
2020	3700	4400
2023 Opening Year Trend		
2023	N/A	3900
2035 Mid-Year Trend		
2035	N/A	2000
2045 Design Year Trend		
2045	N/A	300
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-162
Trend R-squared:	42.43%
Trend Annual Historic Growth Rate:	-2.85%
Trend Growth Rate (2020 to Design Year):	-3.73%
Printed:	17-Aug-21
Straight Line Growth Option	

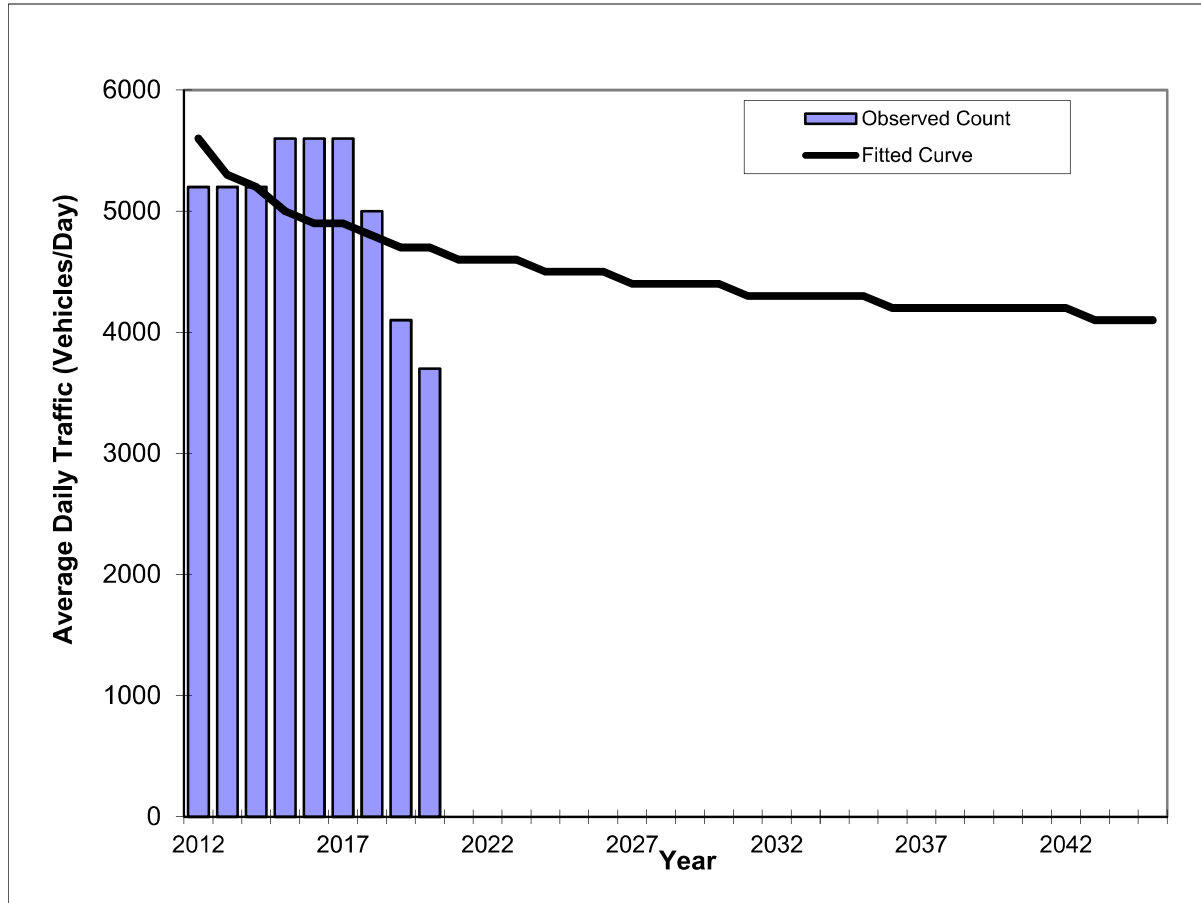
*Axle-Adjusted

Traffic Trends - V3.0

S POINTE DR -- 150' W OF WASHINGTON AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8590
Highway:	S POINTE DR



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	5200	5600
2013	5200	5300
2014	5200	5200
2015	5600	5000
2016	5600	4900
2017	5600	4900
2018	5000	4800
2019	4100	4700
2020	3700	4700
2023 Opening Year Trend		
2023	N/A	4600
2035 Mid-Year Trend		
2035	N/A	4300
2045 Design Year Trend		
2045	N/A	4100
TRANPLAN Forecasts/Trends		

Trend R-squared:	20.75%
Compounded Annual Historic Growth Rate:	-2.17%
Compounded Growth Rate (2020 to Design Year):	-0.54%
Printed:	1-Oct-21
Decaying Exponential Growth Option	

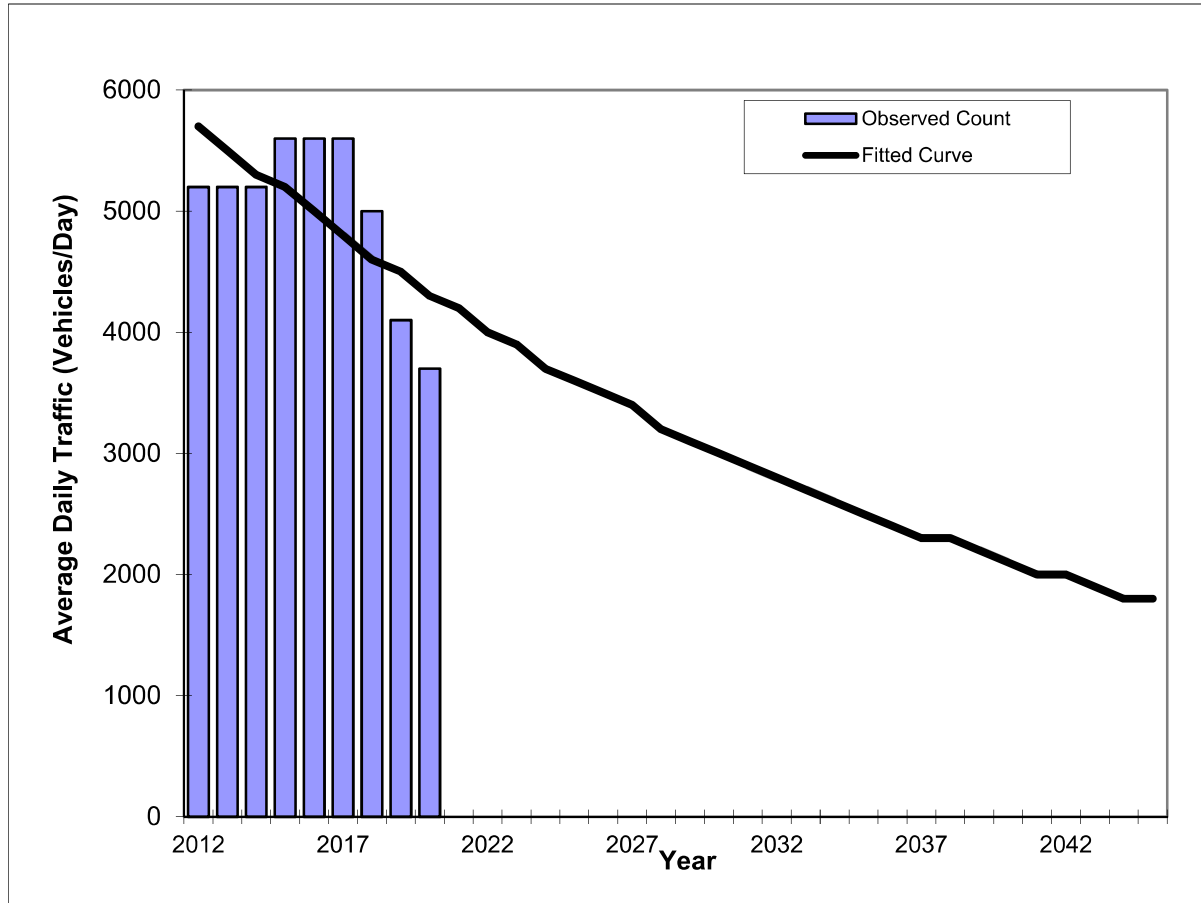
*Axle-Adjusted

Traffic Trends - V3.0

S POINTE DR -- 150' W OF WASHINGTON AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8590
Highway:	S POINTE DR



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2012	5200	5700
2013	5200	5500
2014	5200	5300
2015	5600	5200
2016	5600	5000
2017	5600	4800
2018	5000	4600
2019	4100	4500
2020	3700	4300
2023 Opening Year Trend		
2023	N/A	3900
2035 Mid-Year Trend		
2035	N/A	2500
2045 Design Year Trend		
2045	N/A	1800
TRANPLAN Forecasts/Trends		

Trend R-squared:	44.65%
Compounded Annual Historic Growth Rate:	-3.46%
Compounded Growth Rate (2020 to Design Year):	-3.42%
Printed:	1-Oct-21
Exponential Growth Option	

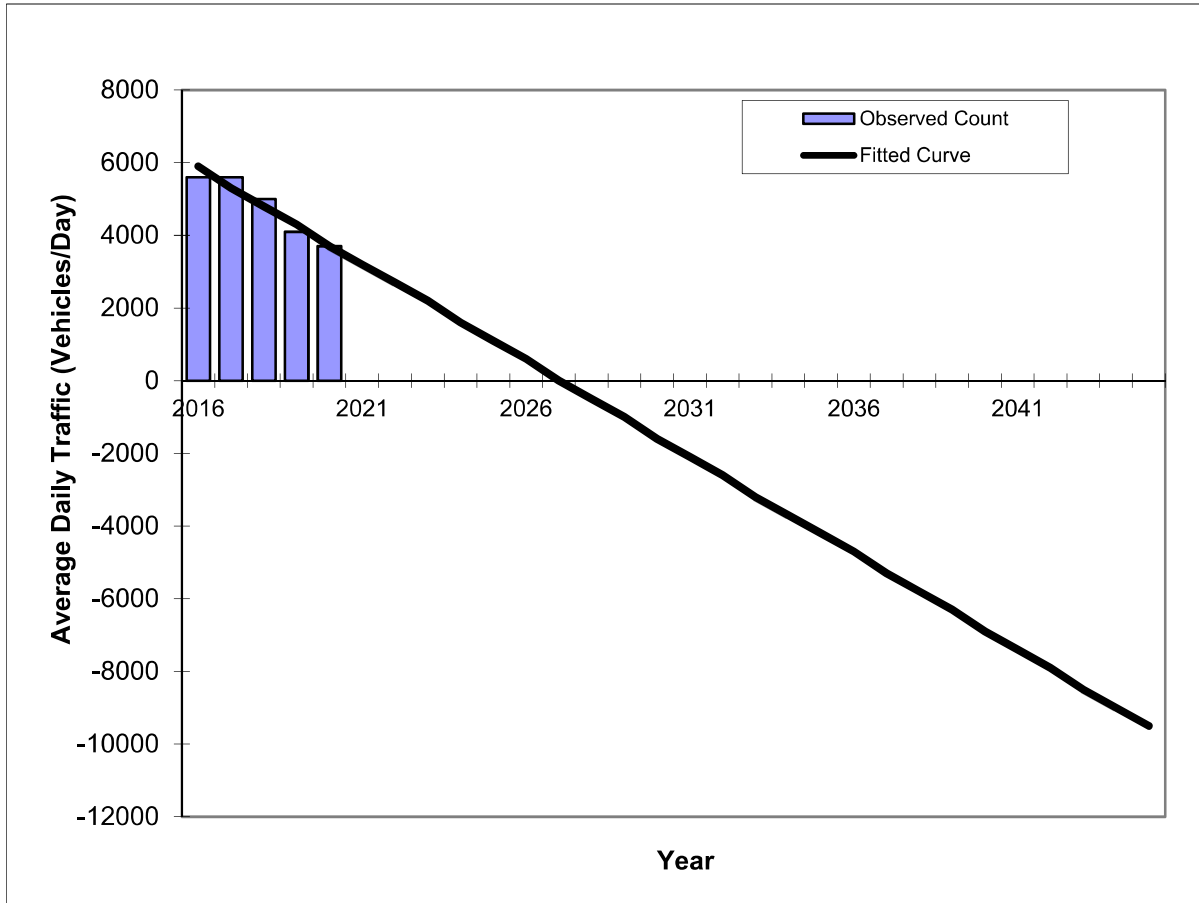
*Axle-Adjusted

Traffic Trends - V3.0

S POINTE DR -- 150' W OF WASHINGTON AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8590
Highway:	S POINTE DR



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	5600	5900
2017	5600	5300
2018	5000	4800
2019	4100	4300
2020	3700	3700
2023 Opening Year Trend		
2023	N/A	2200
2035 Mid-Year Trend		
2035	N/A	-4200
2045 Design Year Trend		
2045	N/A	-9500
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-530
Trend R-squared:	93.01%
Trend Annual Historic Growth Rate:	-9.32%
Trend Growth Rate (2020 to Design Year):	-14.27%
Printed:	1-Oct-21
Straight Line Growth Option	

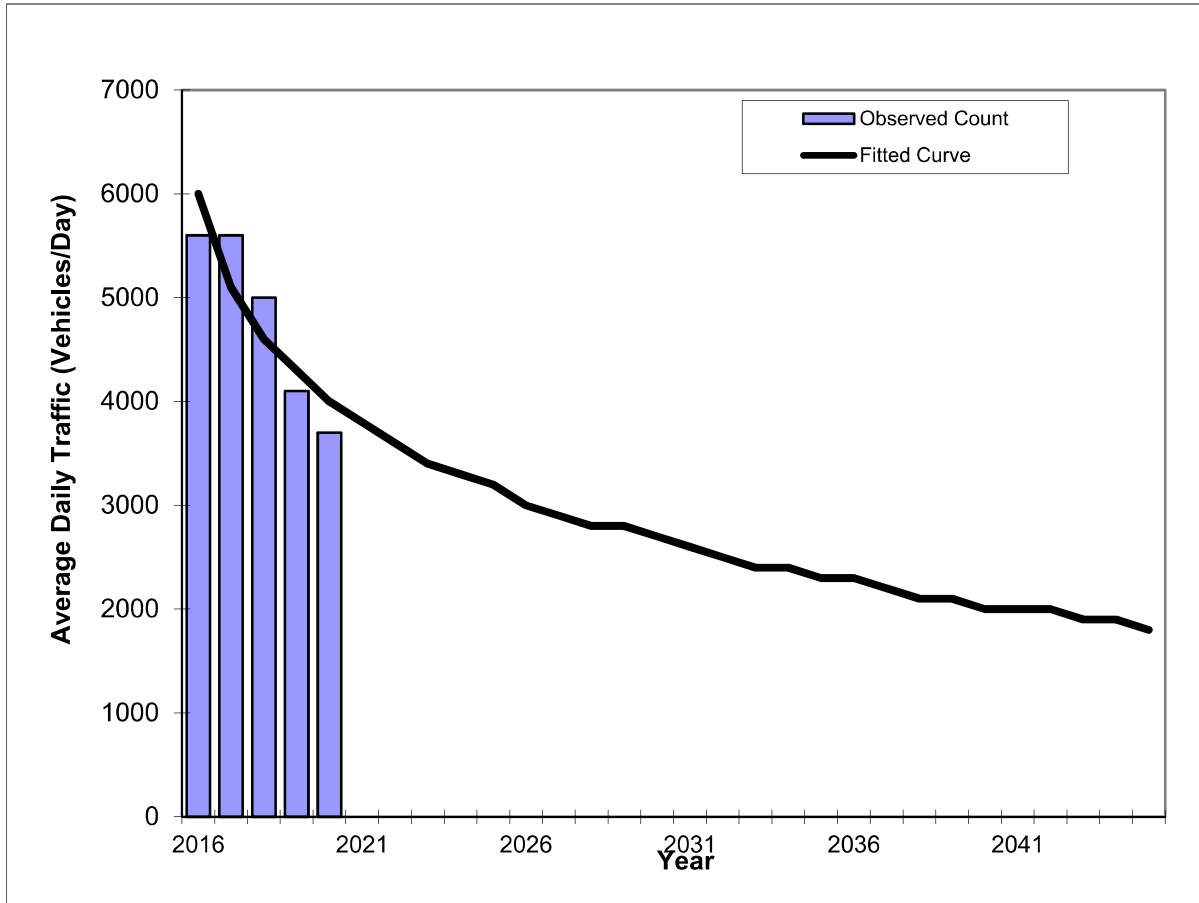
*Axle-Adjusted

Traffic Trends - V3.0

S POINTE DR -- 150' W OF WASHINGTON AVE

FIN#	0
Location	1

County:	Miami-Dade (87)
Station #:	8590
Highway:	S POINTE DR



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	5600	6000
2017	5600	5100
2018	5000	4600
2019	4100	4300
2020	3700	4000
2023 Opening Year Trend		
2023	N/A	3400
2035 Mid-Year Trend		
2035	N/A	2300
2045 Design Year Trend		
2045	N/A	1800
TRANPLAN Forecasts/Trends		

Trend R-squared:	79.27%
Compounded Annual Historic Growth Rate:	-9.64%
Compounded Growth Rate (2020 to Design Year):	-3.14%
Printed:	1-Oct-21
Decaying Exponential Growth Option	

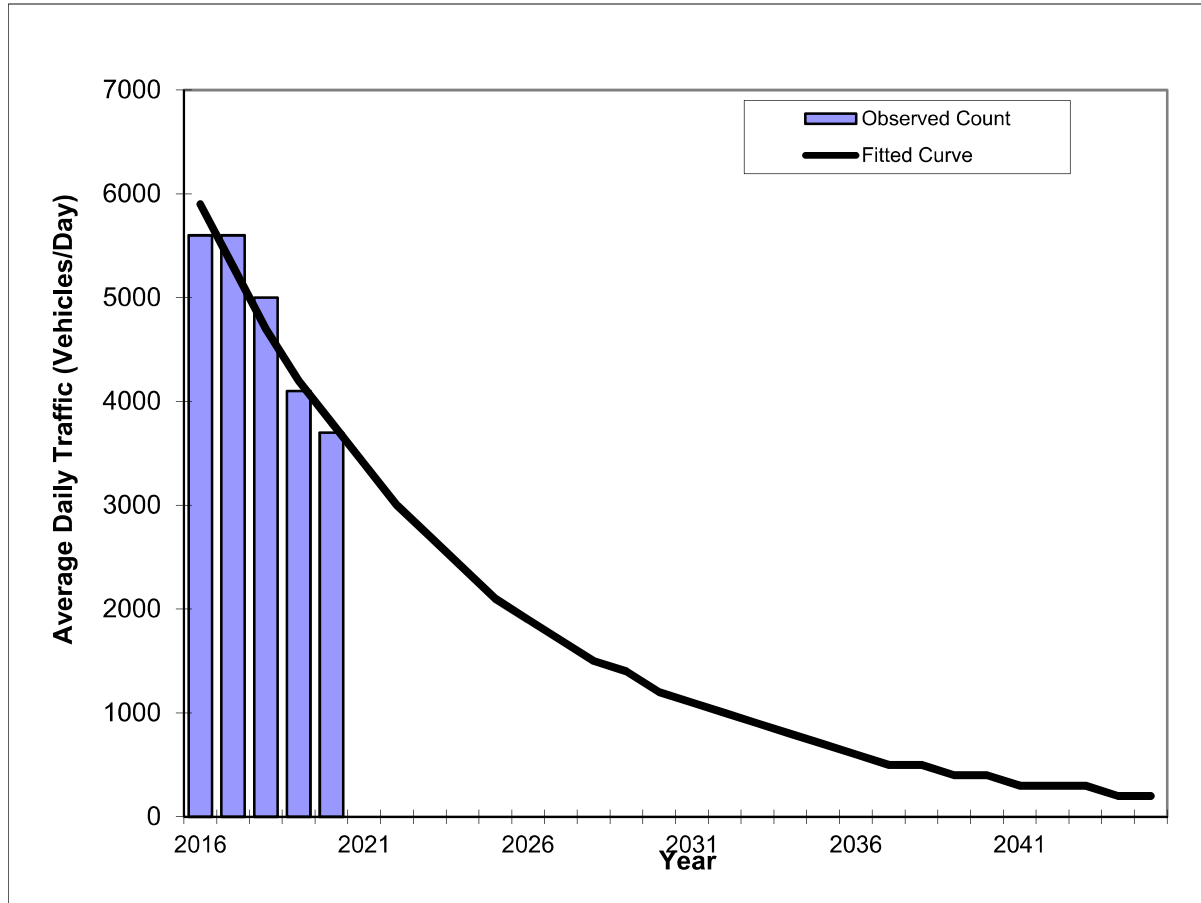
*Axle-Adjusted

Traffic Trends - V3.0

S POINTE DR -- 150' W OF WASHINGTON AVE

FIN#	0
Location	1

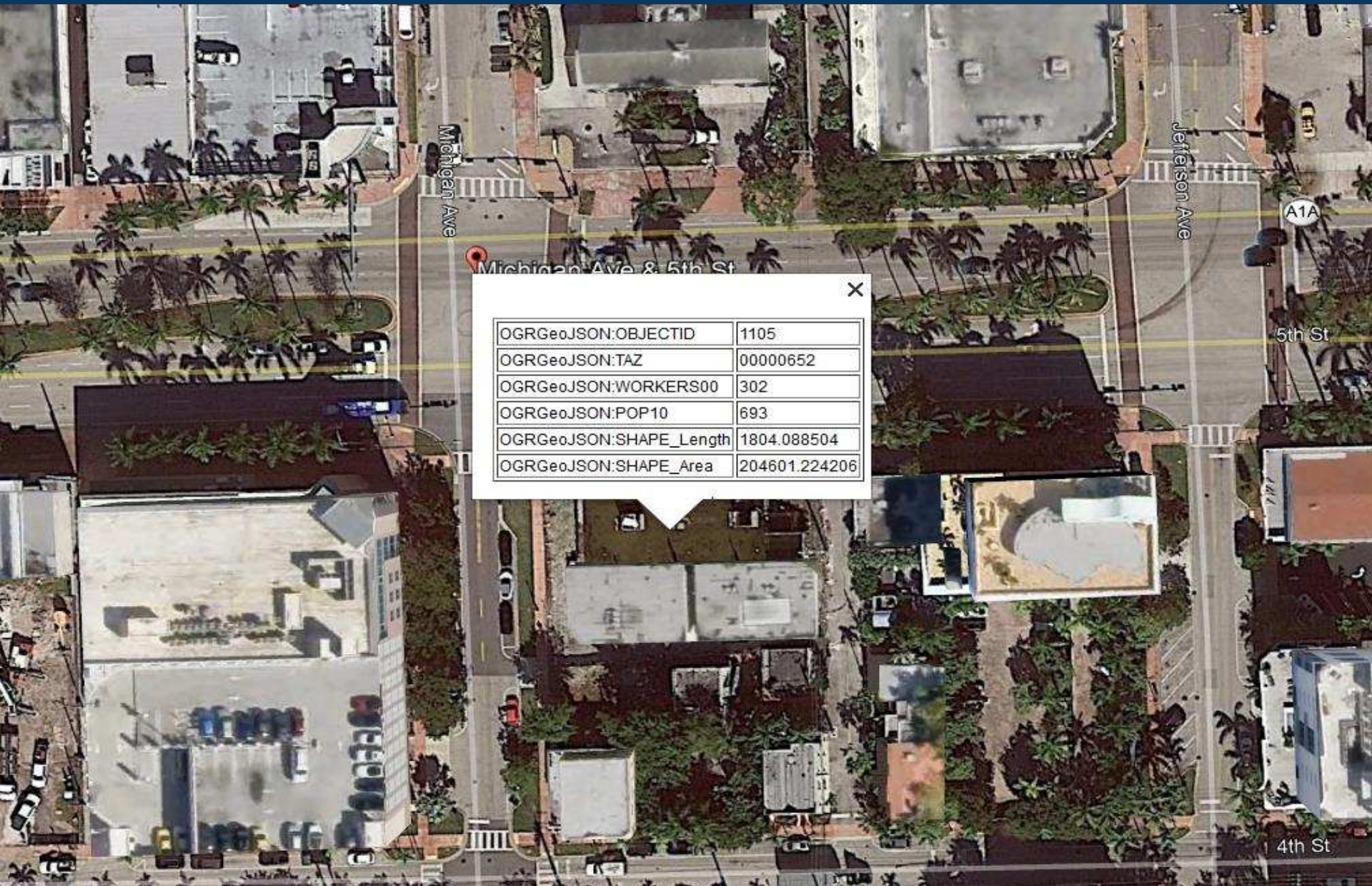
County:	Miami-Dade (87)
Station #:	8590
Highway:	S POINTE DR



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2016	5600	5900
2017	5600	5300
2018	5000	4700
2019	4100	4200
2020	3700	3800
2023 Opening Year Trend		
2023	N/A	2700
2035 Mid-Year Trend		
2035	N/A	700
2045 Design Year Trend		
2045	N/A	200
TRANPLAN Forecasts/Trends		

Trend R-squared:	92.38%
Compounded Annual Historic Growth Rate:	-10.42%
Compounded Growth Rate (2020 to Design Year):	-11.11%
Printed:	1-Oct-21
Exponential Growth Option	

*Axle-Adjusted



OGRGeoJSON:OBJECTID	1105
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Traffic Analysis Zones 2010

DIRECTIONAL TRIP DISTRIBUTION REPORT

Miami-Dade 2015 Base Year Direction Trip Distribution Summary											
TAZ of Origin		Trips / Percent	Cardinal Directions								Total Trips
County TAZ	Regional TAZ		NNE	ENE	ESE	SSE	SSW	WSW	WNW	NNW	
651	3551	Trips	601	40	126	-	25	267	541	390	2,069
651	3551	Percent	30.2	2.0	6.3	-	1.2	13.4	27.2	19.6	
652	3552	Trips	740	133	112	92	80	539	627	907	3,332
652	3552	Percent	22.9	4.1	3.5	2.8	2.5	16.7	19.4	28.1	
653	3553	Trips	597	120	187	238	48	604	488	661	2,984
653	3553	Percent	20.3	4.1	6.4	8.1	1.6	20.5	16.6	22.5	
654	3554	Trips	648	-	246	192	190	739	849	890	3,940
654	3554	Percent	17.3	-	6.6	5.1	5.1	19.7	22.6	23.7	
655	3555	Trips	2,579	-	-	-	1,029	2,523	3,354	2,903	13,375
655	3555	Percent	20.8	-	-	-	8.3	20.4	27.1	23.4	
656	3556	Trips	683	-	-	-	187	546	1,103	960	3,541
656	3556	Percent	19.6	-	-	-	5.4	15.7	31.7	27.6	
657	3557	Trips	223	26	3	49	34	152	244	154	913
657	3557	Percent	25.2	2.9	0.4	5.5	3.8	17.2	27.6	17.4	
658	3558	Trips	385	-	74	12	19	212	362	296	1,384
658	3558	Percent	28.3	-	5.4	0.9	1.4	15.6	26.6	21.8	
659	3559	Trips	1,748	-	-	-	186	1,331	2,542	2,823	9,143
659	3559	Percent	20.3	-	-	-	2.2	15.4	29.5	32.7	
660	3560	Trips	445	-	-	-	26	214	438	582	1,786
660	3560	Percent	26.1	-	-	-	1.5	12.5	25.7	34.1	
661	3561	Trips	561	-	-	-	29	307	686	550	2,237
661	3561	Percent	26.3	-	-	-	1.4	14.4	32.2	25.8	
662	3562	Trips	247	-	-	-	367	663	1,138	583	3,054
662	3562	Percent	8.2	-	-	-	12.3	22.1	38.0	19.4	
663	3563	Trips	28	-	-	-	80	28	129	132	397
663	3563	Percent	7.1	-	-	-	20.3	7.0	32.4	33.2	
664	3564	Trips	690	1,278	-	2	5	504	1,465	2,405	8,087
664	3564	Percent	10.9	20.1	-	0.0	0.1	7.9	23.1	37.9	
665	3565	Trips	1,047	-	-	16	12	2,003	2,621	4,069	11,382
665	3565	Percent	10.7	-	-	0.2	0.1	20.5	26.8	41.7	
666	3566	Trips	7	-	-	-	-	-	40	97	144
666	3566	Percent	4.6	-	-	-	-	-	27.9	67.5	
667	3567	Trips	69	191	371	354	52	-	-	11	1,049
667	3567	Percent	6.6	18.3	35.4	33.8	5.0	-	-	1.1	
668	3568	Trips	72	316	257	156	343	-	1	27	1,181
668	3568	Percent	6.2	27.0	21.9	13.3	29.2	-	0.1	2.3	
669	3569	Trips	708	1,153	1,379	1,013	424	-	6	148	4,982
669	3569	Percent	14.7	23.9	28.6	21.0	8.8	-	0.1	3.1	
670	3570	Trips	784	1,013	1,374	915	589	74	8	172	5,078
670	3570	Percent	15.9	20.6	27.9	18.6	11.9	1.5	0.2	3.5	
671	3571	Trips	868	1,044	1,129	712	718	1	40	169	4,757
671	3571	Percent	18.5	22.3	24.1	15.2	15.4	0.0	0.9	3.6	
672	3572	Trips	262	156	186	125	162	2	24	57	974
672	3572	Percent	26.9	16.0	19.1	12.8	16.7	0.3	2.4	5.8	
673	3573	Trips	172	261	359	224	207	12	36	140	1,412
673	3573	Percent	12.2	18.5	25.4	15.9	14.6	0.8	2.6	9.9	
674	3574	Trips	866	641	1,000	863	613	112	90	488	4,718
674	3574	Percent	18.5	13.7	21.4	18.5	13.1	2.4	1.9	10.4	
675	3575	Trips	904	864	749	472	371	46	31	226	3,703
675	3575	Percent	24.7	23.6	20.5	12.9	10.1	1.3	0.9	6.2	
676	3576	Trips	43	54	19	23	31	8	-	15	194
676	3576	Percent	22.4	27.9	9.7	11.7	16.2	4.3	-	7.9	

DIRECTIONAL TRIP DISTRIBUTION REPORT

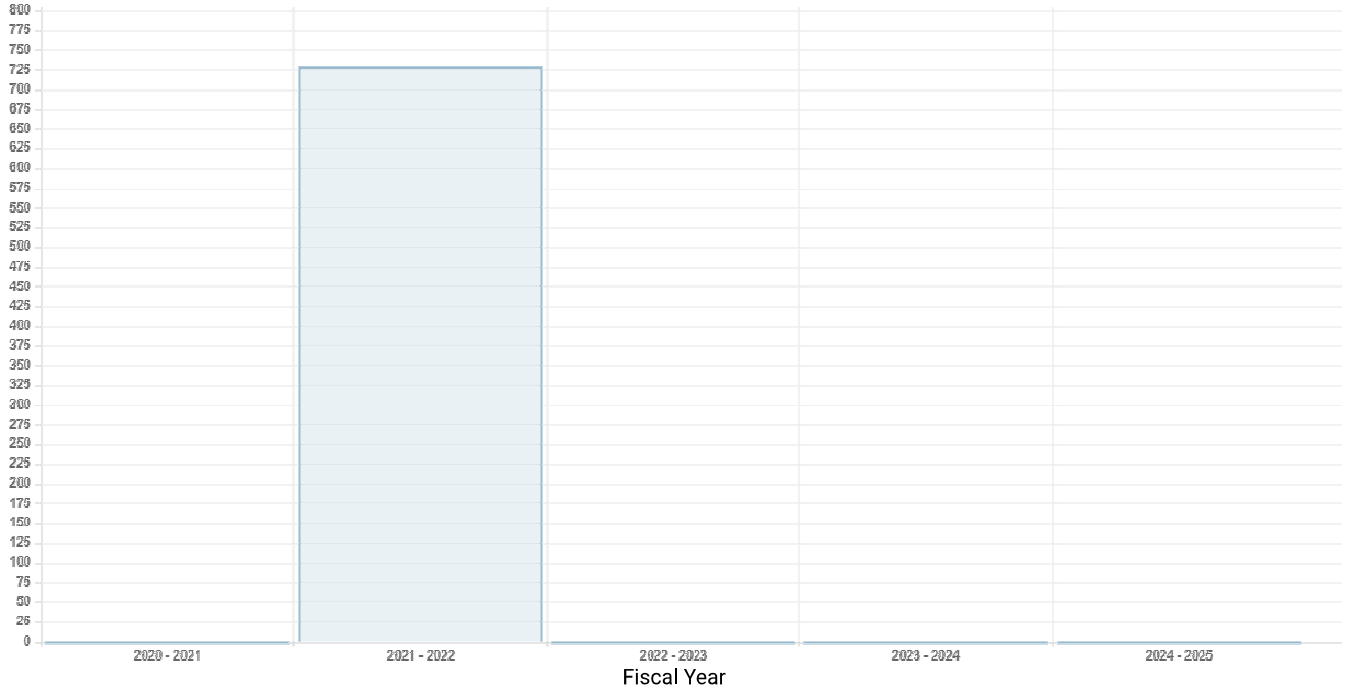
Miami-Dade 2045 Cost Feasible Plan Direction Trip Distribution Summary												
TAZ of Origin		Trips / Percent	Cardinal Directions								Total Trips	
County TAZ	Regional TAZ		NNE	ENE	ESE	SSE	SSW	WSW	WNW	NNW		
651	3551	Trips	500	33	118	-	44	610	964	424	2,777	
651	3551	Percent	18.6	1.2	4.4	-	1.6	22.7	35.8	15.8		
652	3552	Trips	834	141	140	71	102	864	1,319	966	4,613	
652	3552	Percent	18.8	3.2	3.2	1.6	2.3	19.5	29.7	21.8		
653	3553	Trips	563	73	181	185	40	875	1,115	522	3,691	
653	3553	Percent	15.8	2.1	5.1	5.2	1.1	24.6	31.4	14.7		
654	3554	Trips	527	-	154	189	209	1,276	1,357	971	4,960	
654	3554	Percent	11.3	-	3.3	4.0	4.5	27.2	29.0	20.7		
655	3555	Trips	2,507	-	-	-	984	3,119	4,529	3,116	15,245	
655	3555	Percent	17.6	-	-	-	6.9	21.9	31.8	21.9		
656	3556	Trips	752	-	-	-	201	872	1,503	1,028	4,509	
656	3556	Percent	17.3	-	-	-	4.6	20.0	34.5	23.6		
657	3557	Trips	255	42	13	51	17	325	482	206	1,441	
657	3557	Percent	18.4	3.0	1.0	3.7	1.2	23.4	34.6	14.8		
658	3558	Trips	398	-	50	10	22	302	673	339	1,860	
658	3558	Percent	22.2	-	2.8	0.6	1.2	16.8	37.5	18.9		
659	3559	Trips	1,874	-	-	-	244	1,675	3,472	2,524	10,393	
659	3559	Percent	19.1	-	-	-	2.5	17.1	35.5	25.8		
660	3560	Trips	386	-	-	-	28	335	726	479	2,047	
660	3560	Percent	19.8	-	-	-	1.5	17.2	37.1	24.5		
661	3561	Trips	756	-	-	-	54	536	1,539	649	3,810	
661	3561	Percent	21.4	-	-	-	1.5	15.2	43.6	18.4		
662	3562	Trips	292	-	-	-	279	909	1,772	764	4,053	
662	3562	Percent	7.3	-	-	-	7.0	22.6	44.1	19.0		
663	3563	Trips	23	-	-	-	29	57	119	164	393	
663	3563	Percent	5.9	-	-	-	7.3	14.5	30.4	41.9		
664	3564	Trips	776	1,012	-	8	8	823	2,336	4,104	11,172	
664	3564	Percent	8.6	11.2	-	0.1	0.1	9.1	25.8	45.3		
665	3565	Trips	896	-	-	16	21	1,811	3,091	5,025	12,548	
665	3565	Percent	8.3	-	-	0.2	0.2	16.7	28.5	46.3		
666	3566	Trips	14	-	-	-	0	4	56	145	235	
666	3566	Percent	6.4	-	-	-	0.0	2.0	25.5	66.1		
667	3567	Trips	62	202	356	394	51	-	-	12	1,076	
667	3567	Percent	5.8	18.8	33.0	36.6	4.7	-	-	1.1		
668	3568	Trips	190	394	278	333	392	-	1	32	1,620	
668	3568	Percent	11.7	24.3	17.2	20.6	24.2	-	0.1	2.0		
669	3569	Trips	1,117	1,381	1,871	1,307	750	-	10	135	6,631	
669	3569	Percent	17.0	21.0	28.5	19.9	11.4	-	0.2	2.1		
670	3570	Trips	1,284	1,233	1,894	1,616	1,059	85	15	177	7,535	
670	3570	Percent	17.4	16.8	25.7	22.0	14.4	1.2	0.2	2.4		
671	3571	Trips	1,240	959	1,638	945	797	1	46	211	5,998	
671	3571	Percent	21.2	16.4	28.1	16.2	13.7	0.0	0.8	3.6		
672	3572	Trips	186	161	294	189	226	24	35	120	1,234	
672	3572	Percent	15.0	13.0	23.8	15.4	18.3	1.9	2.8	9.7		
673	3573	Trips	410	361	600	469	343	30	46	233	2,524	
673	3573	Percent	16.5	14.5	24.1	18.8	13.8	1.2	1.8	9.4		
674	3574	Trips	1,543	1,530	2,122	1,962	1,401	177	145	1,154	10,169	
674	3574	Percent	15.4	15.3	21.2	19.6	14.0	1.8	1.4	11.5		
675	3575	Trips	896	1,067	1,015	818	747	40	74	465	5,206	
675	3575	Percent	17.5	20.8	19.8	16.0	14.6	0.8	1.4	9.1		
676	3576	Trips	151	160	192	100	100	18	-	45	766	
676	3576	Percent	19.8	20.9	25.1	13.1	13.0	2.3	-	5.9		

Project Type: Pedestrian/Bicycle
MPO Project No.: DT4434321
Type of Work: BIKE PATH/TRAIL
TIP Year: 2021
Construction Year: 2022
From: FROM SR 5/BISCAYNE BLV
To: TO SR 907/ALTON RD
Agency: FL Dept. of Transportation
Management Agency: FDOT
Agency Project No: 4434321
Status:
Contact Person:
Contact Email:
Contact Phone:
Description:

Funding Information \$(thousands)

Project Phase	Funding	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024	2024 - 2025
CONSTRUCTION	DDR	\$0	\$672	\$0	\$0	\$0
CONSTRUCTION	DIH	\$0	\$57	\$0	\$0	\$0
PRELIMINARY ENGINEERING	DIH	\$0	\$0	\$0	\$0	\$0
PRELIMINARY ENGINEERING	DS	\$0	\$0	\$0	\$0	\$0

Funding Chart \$(thousands)

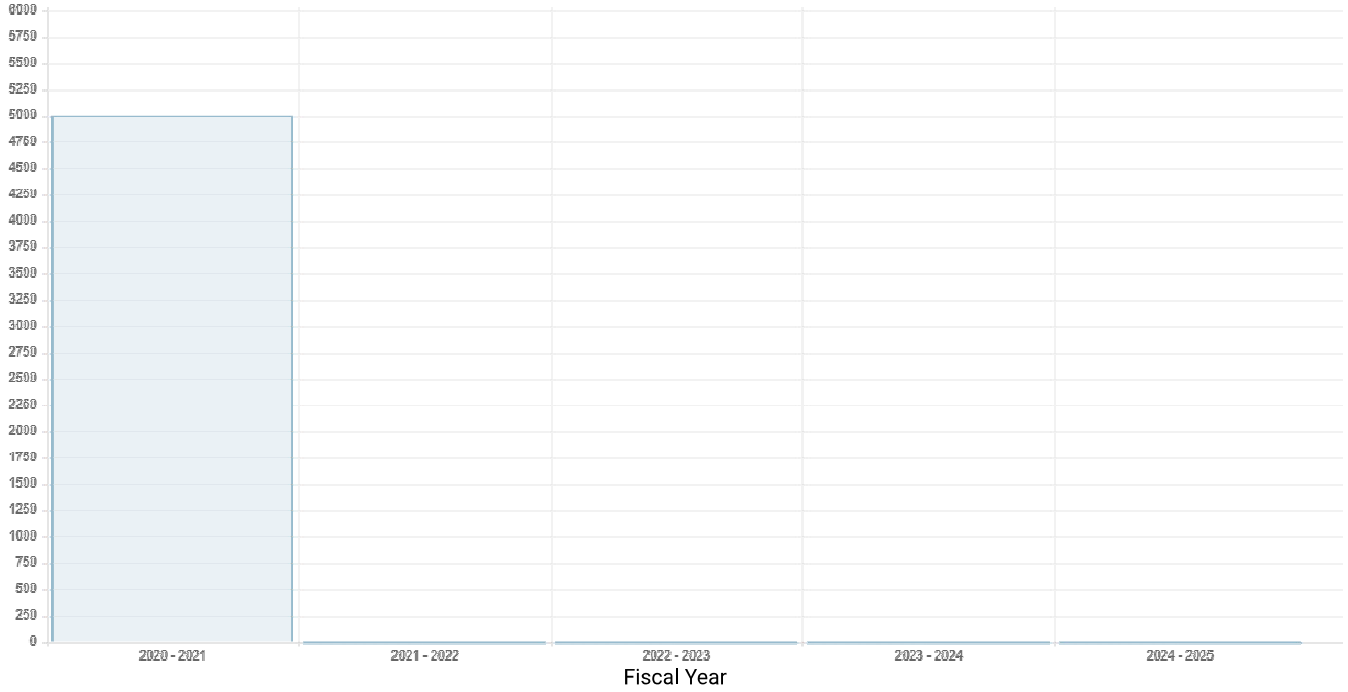


Project Type: Transit
MPO Project No.: TA4466531
Type of Work: TRANSIT SERVICE DEMONSTRATION
TIP Year: 2021
Construction Year:
From:
To:
Agency: FL Dept. of Transportation
Management Agency: FDOT
Agency Project No: 4466531
Status:
Contact Person:
Contact Email:
Contact Phone:
Description:

Funding Information \$(thousands)

Project Phase	Funding	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024	2024 - 2025
OPERATIONS	DPTO	\$1,250	\$0	\$0	\$0	\$0
OPERATIONS	LF	\$3,751	\$0	\$0	\$0	\$0

Funding Chart \$(thousands)



APPENDIX E
INTERSECTION VOLUME SPREADSHEETS

**AM PEAK HOUR TRAFFIC VOLUME CALCULATIONS
411 MICHIGAN**

Intersection	Scenario	Traffic Volumes											
		EBLT	EBT	EBRT	WBLT	WBT	WBRT	NBLT	NBT	NBRT	SBLT	SBT	SBRT
Alton Road & 4th Street	Traffic Count	27	2	4	11	5	32	1	223	11	30	514	28
	Peak Season Conversion Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
	COVID Factor	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
	2021 Peak Season Traffic	41	3	6	17	8	49	2	342	17	46	788	43
	Compound Growth Rate	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
	Existing plus Background Growth	42	3	6	17	8	50	2	345	17	46	796	43
	Committed Development Trips												
	2023 Background Traffic	42	3	6	17	8	50	2	345	17	46	796	43
	In/Out				Out		Out			In	In		
	Project Assignment				2%		18%			2%	18%		
Net New Project Trips	0	0	0	0	0	2	0	0	1	10	0	0	
2023 Total Traffic	42	3	6	17	8	52	2	345	18	56	796	43	
Michigan Avenue & 4th Street	Traffic Count	9	17	10	2	25	15	8	26	2	6	23	2
	Peak Season Conversion Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
	COVID Factor	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
	2021 Peak Season Traffic	14	26	15	3	38	23	12	40	3	9	35	3
	Compound Growth Rate	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
	Existing plus Background Growth	14	26	15	3	39	23	12	40	3	9	36	3
	Committed Development Trips												
	2023 Background Traffic	14	26	15	3	39	23	12	40	3	9	36	3
	In/Out	In					In		In				
	Project Assignment In	20%					3%		3%				
	Net New Project Trips	11	0	0	0	0	2	0	2	0	0	0	0
	In/Out				Out	Out	Out						
	Project Assignment Out				3%	20%	74%						
Net New Project Trips	0	0	0	0	2	9	0	0	0	0	0	0	
Net New Project Trips	11	0	0	0	2	11	0	2	0	0	0	0	
2023 Total Traffic	25	26	15	3	41	34	12	42	3	9	36	3	
Michigan Avenue & 5th Street	Traffic Count	23	711	18	1	561	5	22	24	5	13	19	46
	Peak Season Conversion Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
	COVID Factor	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
	2021 Peak Season Traffic	35	1,090	28	2	860	8	34	37	8	20	29	70
	Compound Growth Rate	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
	Existing plus Background Growth	36	1,101	28	2	868	8	34	37	8	20	29	71
	Committed Development Trips												
	2023 Background Traffic	36	1,101	28	2	868	8	34	37	8	20	29	71
	In/Out			In	In			Out	Out	Out		In	
	Project Assignment			35%	4%			35%	35%	4%		35%	
Net New Project Trips	0	0	19	2	0	0	4	4	0	0	19	0	
2023 Total Traffic	36	1,101	47	4	868	8	38	41	8	20	48	71	

PM PEAK HOUR TRAFFIC VOLUME CALCULATIONS
411 MICHIGAN

Intersection	Scenario	Traffic Volumes												
		EBLT	EBT	EBRT	WBUT	WBLT	WBT	WBRT	NBLT	NBT	NBRT	SBLT	SBT	SBRT
Alton Road & 4th Street	Traffic Count	37	12	7		20	5	52	5	589	13	44	518	37
	Peak Season Conversion Factor	1.05	1.05	1.05		1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
	COVID Factor	1.62	1.62	1.62		1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62
	2021 Peak Season Traffic	63	20	12		34	8	88	8	1,000	22	75	879	63
	Compound Growth Rate	0.50%	0.50%	0.50%		0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
	Existing plus Background Growth	63	21	12		34	9	89	9	1,010	22	75	888	63
	Committed Development Trips													
	2023 Background Traffic	63	21	12		34	9	89	9	1,010	22	75	888	63
	In/Out					Out		Out			In	In		
	Project Assignment					2%		18%			2%	18%		
	Net New Project Trips	0	0	0		1	0	12	0	0	1	5	0	0
2023 Total Traffic	63	21	12		35	9	101	9	1,010	23	80	888	63	
Michigan Avenue & 4th Street	Traffic Count	5	46	10		4	67	19	13	37	2	10	32	8
	Peak Season Conversion Factor	1.05	1.05	1.05		1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
	COVID Factor	1.62	1.62	1.62		1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62
	2021 Peak Season Traffic	8	78	17		7	114	32	22	63	3	17	54	14
	Compound Growth Rate	0.50%	0.50%	0.50%		0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
	Existing plus Background Growth	9	79	17		7	115	33	22	63	3	17	55	14
	Committed Development Trips													
	2023 Background Traffic	9	79	17		7	115	33	22	63	3	17	55	14
	In/Out	In						In		In		Out	Out	Out
	Project Assignment	20%						3%		3%		3%	3%	20%
	Net New Project Trips	5	0	0		0	0	1	0	1	0	2	2	13
2023 Total Traffic	14	79	17		7	115	34	22	64	3	19	57	27	
Michigan Avenue & 5th Street	Traffic Count	66	762	21	0	6	1,043	24	26	21	9	7	21	68
	Peak Season Conversion Factor	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
	COVID Factor	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62
	2021 Peak Season Traffic	112	1,293	36	0	10	1,770	41	44	36	15	12	36	115
	Compound Growth Rate	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
	Existing plus Background Growth	113	1,306	36	0	10	1,788	41	45	36	15	12	36	117
	Committed Development Trips													
	2023 Background Traffic	113	1,306	36	0	10	1,788	41	45	36	15	12	36	117
	In/Out		In		In						In	In		
	Project Assignment In		35%		4%						26%	35%		
	Net New Project Trips	0	9	0	1	0	0	0	0	0	7	9	0	0
	In/Out								Out	Out	Out			
	Project Assignment Out								35%	35%	4%			
	Net New Project Trips	0	0	0	0	0	0	0	23	23	3	0	0	0
Net New Project Trips	0	9	0	1	0	0	0	23	23	10	9	0	0	
2023 Total Traffic	113	1,315	36	1	10	1,788	41	68	59	25	21	36	117	

APPENDIX F
INTERSECTION CAPACITY REPORTS

EXISTING CONDITIONS

Table 1.1 - 2021 Existing Intersection Capacity Analysis Summary

Movement/Approach	Time	Level of Service ⁽¹⁾					
		Alton Road & 4th Street		Michigan Avenue & 4th Street		Michigan Avenue & 5th Street	
		LOS	Delay	LOS	Delay	LOS	Delay
EBL	AM	F	81.4			F	97.4
	PM	F	82.1			F	100.7
EBT	AM	A	0.0			C	26.8
	PM	A	0.0			A	6.5
EBR	AM	A	0.0			C	27.0
	PM	A	0.0			A	6.8
EB Approach	AM	F	81.4	A	7.5	C	29.0
	PM	F	82.1	A	8.4	B	13.9
WBL	AM	F	81.4			F	111.0
	PM	F	80.5			F	90.8
WBT	AM	A	0.0			A	5.9
	PM	A	0.0			B	12.1
WBR	AM	A	0.0			A	6.1
	PM	A	0.0			B	12.8
WB Approach	AM	F	81.4	A	7.5	A	6.2
	PM	F	80.5	A	8.7	B	12.8
NBL	AM	A	9.8			F	83.6
	PM	B	10.7			E	78.5
NBT	AM	A	6.2			A	0.0
	PM	B	10.2			A	0.0
NBR	AM	A	6.2			A	0.0
	PM	B	10.2			A	0.0
NB Approach	AM	A	6.2	A	7.7	F	83.6
	PM	B	10.2	A	8.5	E	78.5
SBL	AM	A	4.4			E	77.5
	PM	A	7.3			E	71.4
SBT	AM	C	32.2			A	0.0
	PM	C	34.3			A	0.0
SBR	AM	C	32.2			E	74.7
	PM	C	34.3			E	63.7
SB Approach	AM	C	30.7	A	7.6	E	75.8
	PM	C	32.3	A	8.4	E	65.9
Overall	AM	C	28.9			C	24.5
	PM	C	27.1			B	17.5

[1] Delay is average delay per vehicle in seconds

Table 1.2 - 2021 Existing Intersection Queue Lengths Summary

Location	Time	95th Percentile Queue Lengths (ft)															
		EBL		EBR		WBL		WBR		NBL		NBR		SBL		SBR	
		Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile
Alton Road & 4th Street	AM									62	2			124	18		
	PM										8				37		
Michigan Avenue & 4th Street	AM																
	PM																
Michigan Avenue & 5th Street	AM		92			155	13									58	49
	PM	140	200				35										147

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

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

411 Michigan
1: Alton Road & 4th Street

2021 Existing Conditions
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↗	↕	↗	↕
Traffic Volume (vph)	41	3	17	8	2	342	46	788
Future Volume (vph)	41	3	17	8	2	342	46	788
Lane Group Flow (vph)	0	66	0	97	3	472	61	1094
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)	7.0	7.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	25.0	25.0	25.0	25.0	12.0	25.0	14.0	25.0
Total Split (s)	61.0	61.0	61.0	61.0	24.0	95.0	24.0	95.0
Total Split (%)	33.9%	33.9%	33.9%	33.9%	13.3%	52.8%	13.3%	52.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	7.0	7.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		0.80		0.56	0.01	0.18	0.09	0.38
Control Delay		131.0		47.7	3.0	6.3	3.1	5.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	1.3
Total Delay		131.0		47.7	3.0	6.3	3.1	6.3
Queue Length 50th (ft)		72		47	1	78	11	151
Queue Length 95th (ft)		109		83	2	85	18	212
Internal Link Dist (ft)		161		515		1023		369
Turn Bay Length (ft)					62		124	
Base Capacity (vph)		291		490	512	2644	767	2854
Starvation Cap Reductn		0		0	0	0	0	1457
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.23		0.20	0.01	0.18	0.08	0.78

Intersection Summary

Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Alton Road & 4th Street



411 Michigan
1: Alton Road & 4th Street

2021 Existing Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	41	3	6	17	8	49	2	342	17	46	788	43
Future Volume (veh/h)	41	3	6	17	8	49	2	342	17	46	788	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.92	0.95		0.90	1.00		0.96	0.99		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	54	4	8	22	11	64	3	450	22	61	1037	57
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	116	10	12	49	26	99	319	2603	127	748	2661	146
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.00	0.76	0.76	0.01	0.26	0.26
Sat Flow, veh/h	842	104	130	263	281	1055	1767	3414	166	1767	3389	186
Grp Volume(v), veh/h	66	0	0	97	0	0	3	232	240	61	539	555
Grp Sat Flow(s),veh/h/ln	1076	0	0	1599	0	0	1767	1763	1817	1767	1763	1812
Q Serve(g_s), s	1.6	0.0	0.0	0.0	0.0	0.0	0.1	6.5	6.5	1.3	45.4	45.4
Cycle Q Clear(g_c), s	11.8	0.0	0.0	10.1	0.0	0.0	0.1	6.5	6.5	1.3	45.4	45.4
Prop In Lane	0.82		0.12	0.23		0.66	1.00		0.09	1.00		0.10
Lane Grp Cap(c), veh/h	138	0	0	175	0	0	319	1344	1386	748	1384	1423
V/C Ratio(X)	0.48	0.00	0.00	0.55	0.00	0.00	0.01	0.17	0.17	0.08	0.39	0.39
Avail Cap(c_a), veh/h	404	0	0	470	0	0	479	1344	1386	868	1384	1423
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
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	79.3	0.0	0.0	78.6	0.0	0.0	9.7	5.8	5.8	4.3	31.1	31.1
Incr Delay (d2), s/veh	1.9	0.0	0.0	2.7	0.0	0.0	0.0	0.3	0.3	0.0	0.8	0.8
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	3.1	0.0	0.0	4.5	0.0	0.0	0.0	2.5	2.6	0.5	22.0	22.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.2	0.0	0.0	81.3	0.0	0.0	9.7	6.1	6.1	4.4	32.0	31.9
LnGrp LOS	F	A	A	F	A	A	A	A	A	A	C	C
Approach Vol, veh/h		66			97			475			1155	
Approach Delay, s/veh		81.2			81.3			6.1			30.5	
Approach LOS		F			F			A			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.8	144.3		24.0	7.7	148.3		24.0				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	17.0	88.0		54.0	17.0	88.0		54.0				
Max Q Clear Time (g_c+I1), s	3.3	8.5		13.8	2.1	47.4		12.1				
Green Ext Time (p_c), s	0.1	2.5		0.3	0.0	2.7		0.7				
Intersection Summary												
HCM 6th Ctrl Delay				28.7								
HCM 6th LOS				C								

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	26	15	3	38	23	12	40	3	9	35	3
Future Vol, veh/h	14	26	15	3	38	23	12	40	3	9	35	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	31	18	4	45	27	14	48	4	11	42	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.5	7.7	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	25%	5%	19%
Vol Thru, %	73%	47%	59%	74%
Vol Right, %	5%	27%	36%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	55	64	47
LT Vol	12	14	3	9
Through Vol	40	26	38	35
RT Vol	3	15	23	3
Lane Flow Rate	65	65	76	56
Geometry Grp	1	1	1	1
Degree of Util (X)	0.077	0.075	0.085	0.066
Departure Headway (Hd)	4.251	4.108	4.005	4.247
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	832	860	882	832
Service Time	2.331	2.191	2.088	2.33
HCM Lane V/C Ratio	0.078	0.076	0.086	0.067
HCM Control Delay	7.7	7.5	7.5	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.3	0.2

411 Michigan
3: Michigan Avenue & 5th Street

2021 Existing Conditions
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	35	1090	2	860	34	37	20	29	70
Future Volume (vph)	35	1090	2	860	34	37	20	29	70
Lane Group Flow (vph)	39	1242	2	965	0	88	0	54	78
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	5	2	1	6		8		4	5
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	5
Switch Phase									
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	7.0	7.0	7.0	5.0
Minimum Split (s)	11.0	24.0	12.0	24.0	25.0	25.0	25.0	25.0	11.0
Total Split (s)	18.0	108.0	12.0	102.0	60.0	60.0	60.0	60.0	18.0
Total Split (%)	10.0%	60.0%	6.7%	56.7%	33.3%	33.3%	33.3%	33.3%	10.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	7.0	6.0		7.0		7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
v/c Ratio	0.48	0.30	0.04	0.25		0.69		0.46	0.29
Control Delay	101.4	4.2	86.5	6.9		103.3		89.4	13.2
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	101.4	4.2	86.5	6.9		103.3		89.4	13.2
Queue Length 50th (ft)	46	91	2	110		100		62	0
Queue Length 95th (ft)	91	191	13	161		161		110	49
Internal Link Dist (ft)		763		1859		253		306	
Turn Bay Length (ft)	140		155						58
Base Capacity (vph)	116	4155	49	3837		442		419	303
Starvation Cap Reductn	0	0	0	0		0		0	0
Spillback Cap Reductn	0	0	0	0		0		0	0
Storage Cap Reductn	0	0	0	0		0		0	0
Reduced v/c Ratio	0.34	0.30	0.04	0.25		0.20		0.13	0.26

Intersection Summary

Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 128 (71%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Michigan Avenue & 5th Street



411 Michigan
3: Michigan Avenue & 5th Street

2021 Existing Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↕			↖	↗
Traffic Volume (veh/h)	35	1090	28	2	860	8	34	37	8	20	29	70
Future Volume (veh/h)	35	1090	28	2	860	8	34	37	8	20	29	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	0.97		0.95	0.98		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	39	1211	31	2	956	9	38	41	9	22	32	78
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	50	4031	103	5	4006	38	68	65	12	72	94	181
Arrive On Green	0.01	0.26	0.26	0.00	0.77	0.77	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1767	5073	130	1767	5174	49	425	710	129	480	1020	1484
Grp Volume(v), veh/h	39	806	436	2	624	341	88	0	0	54	0	78
Grp Sat Flow(s),veh/h/ln	1767	1689	1826	1767	1689	1845	1264	0	0	1500	0	1484
Q Serve(g_s), s	4.0	34.4	34.4	0.2	9.2	9.2	7.3	0.0	0.0	0.0	0.0	8.8
Cycle Q Clear(g_c), s	4.0	34.4	34.4	0.2	9.2	9.2	12.9	0.0	0.0	5.7	0.0	8.8
Prop In Lane	1.00		0.07	1.00		0.03	0.43		0.10	0.41		1.00
Lane Grp Cap(c), veh/h	50	2683	1451	5	2615	1429	145	0	0	166	0	181
V/C Ratio(X)	0.78	0.30	0.30	0.43	0.24	0.24	0.61	0.00	0.00	0.33	0.00	0.43
Avail Cap(c_a), veh/h	118	2683	1451	49	2615	1429	448	0	0	488	0	482
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	88.6	26.3	26.3	89.6	5.6	5.6	80.6	0.0	0.0	76.6	0.0	73.5
Incr Delay (d2), s/veh	9.1	0.3	0.5	21.4	0.2	0.4	3.1	0.0	0.0	0.8	0.0	1.2
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	2.0	15.8	17.2	0.1	3.2	3.6	4.2	0.0	0.0	2.4	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	97.7	26.6	26.9	111.0	5.8	6.0	83.6	0.0	0.0	77.5	0.0	74.7
LnGrp LOS	F	C	C	F	A	A	F	A	A	E	A	E
Approach Vol, veh/h		1281			967			88			132	
Approach Delay, s/veh		28.9			6.1			83.6			75.9	
Approach LOS		C			A			F			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	149.0		23.5	11.1	145.4		23.5				
Change Period (Y+Rc), s	7.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	5.0	102.0		53.0	12.0	96.0		53.0				
Max Q Clear Time (g_c+I1), s	2.2	36.4		10.8	6.0	11.2		14.9				
Green Ext Time (p_c), s	0.0	3.2		0.5	0.0	2.3		0.4				
Intersection Summary												
HCM 6th Ctrl Delay			24.4									
HCM 6th LOS			C									

411 Michigan
1: Alton Road & 4th Street

2021 Existing Conditions
PM Peak Hour

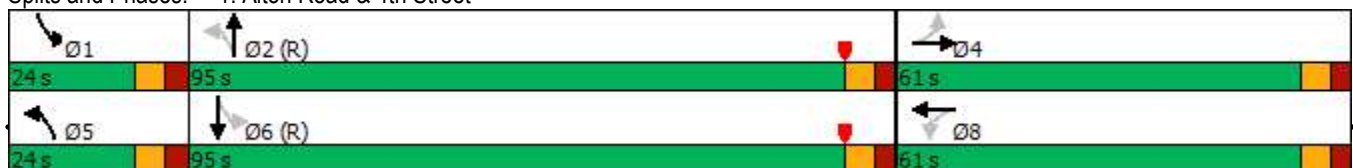


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↙	↕	↙	↕
Traffic Volume (vph)	63	20	34	8	8	1000	75	879
Future Volume (vph)	63	20	34	8	8	1000	75	879
Lane Group Flow (vph)	0	105	0	145	9	1135	83	1047
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	25.0	25.0	25.0	25.0	12.0	25.0	14.0	25.0
Total Split (s)	61.0	61.0	61.0	61.0	24.0	95.0	24.0	95.0
Total Split (%)	33.9%	33.9%	33.9%	33.9%	13.3%	52.8%	13.3%	52.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	7.0	7.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		0.99		0.68	0.02	0.45	0.23	0.39
Control Delay		158.5		59.5	4.6	11.0	5.5	7.8
Queue Delay		0.0		0.0	0.0	0.0	0.0	1.9
Total Delay		158.5		59.5	4.6	11.0	5.5	9.6
Queue Length 50th (ft)		~123		99	2	256	17	151
Queue Length 95th (ft)		#209		176	7	373	37	314
Internal Link Dist (ft)		161		515		1023		369
Turn Bay Length (ft)					62		124	
Base Capacity (vph)		278		471	506	2545	442	2701
Starvation Cap Reductn		0		0	0	0	0	1435
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.38		0.31	0.02	0.45	0.19	0.83

Intersection Summary

Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Alton Road & 4th Street



411 Michigan
1: Alton Road & 4th Street

2021 Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	63	20	12	34	8	88	8	1000	22	75	879	63
Future Volume (veh/h)	63	20	12	34	8	88	8	1000	22	75	879	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.92	1.00		0.92	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	70	22	13	38	9	98	9	1111	24	83	977	70
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	109	32	15	66	21	128	331	2600	56	392	2510	180
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.01	0.74	0.74	0.01	0.25	0.25
Sat Flow, veh/h	637	274	129	347	174	1085	1767	3524	76	1767	3325	238
Grp Volume(v), veh/h	105	0	0	145	0	0	9	556	579	83	518	529
Grp Sat Flow(s),veh/h/ln	1039	0	0	1606	0	0	1767	1763	1838	1767	1763	1800
Q Serve(g_s), s	3.2	0.0	0.0	0.0	0.0	0.0	0.2	21.7	21.7	2.1	44.0	44.0
Cycle Q Clear(g_c), s	18.7	0.0	0.0	15.6	0.0	0.0	0.2	21.7	21.7	2.1	44.0	44.0
Prop In Lane	0.67		0.12	0.26		0.68	1.00		0.04	1.00		0.13
Lane Grp Cap(c), veh/h	156	0	0	215	0	0	331	1301	1356	392	1331	1359
V/C Ratio(X)	0.67	0.00	0.00	0.67	0.00	0.00	0.03	0.43	0.43	0.21	0.39	0.39
Avail Cap(c_a), veh/h	405	0	0	477	0	0	480	1301	1356	510	1331	1359
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
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	78.5	0.0	0.0	76.9	0.0	0.0	10.5	9.0	9.0	6.9	33.1	33.1
Incr Delay (d2), s/veh	3.7	0.0	0.0	3.7	0.0	0.0	0.0	1.0	1.0	0.3	0.9	0.8
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	5.0	0.0	0.0	6.8	0.0	0.0	0.1	8.7	9.0	0.8	21.3	21.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.2	0.0	0.0	80.6	0.0	0.0	10.5	10.1	10.0	7.2	33.9	33.9
LnGrp LOS	F	A	A	F	A	A	B	B	B	A	C	C
Approach Vol, veh/h		105			145			1144				1130
Approach Delay, s/veh		82.2			80.6			10.0				31.9
Approach LOS		F			F			B				C
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.9	139.8		28.3	8.8	142.9		28.3				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	17.0	88.0		54.0	17.0	88.0		54.0				
Max Q Clear Time (g_c+I1), s	4.1	23.7		20.7	2.2	46.0		17.6				
Green Ext Time (p_c), s	0.1	7.9		0.5	0.0	2.6		1.0				
Intersection Summary												
HCM 6th Ctrl Delay				26.9								
HCM 6th LOS				C								

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	78	17	7	114	32	22	63	3	17	54	14
Future Vol, veh/h	8	78	17	7	114	32	22	63	3	17	54	14
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	9	89	19	8	130	36	25	72	3	19	61	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	8.7	8.5	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	8%	5%	20%
Vol Thru, %	72%	76%	75%	64%
Vol Right, %	3%	17%	21%	16%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	88	103	153	85
LT Vol	22	8	7	17
Through Vol	63	78	114	54
RT Vol	3	17	32	14
Lane Flow Rate	100	117	174	97
Geometry Grp	1	1	1	1
Degree of Util (X)	0.132	0.148	0.215	0.126
Departure Headway (Hd)	4.763	4.538	4.443	4.681
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	752	790	808	765
Service Time	2.799	2.568	2.471	2.716
HCM Lane V/C Ratio	0.133	0.148	0.215	0.127
HCM Control Delay	8.5	8.4	8.7	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.5	0.8	0.4

411 Michigan
3: Michigan Avenue & 5th Street

2021 Existing Conditions
PM Peak Hour

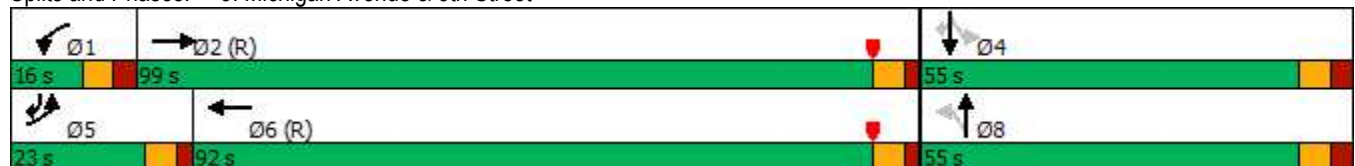


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑	↙	↑↑↑		↕		↕	↗
Traffic Volume (vph)	112	1293	10	1770	44	36	12	36	115
Future Volume (vph)	112	1293	10	1770	44	36	12	36	115
Lane Group Flow (vph)	118	1399	11	1906	0	100	0	51	121
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	5	2	1	6		8		4	5
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	5
Switch Phase									
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	7.0	7.0	7.0	5.0
Minimum Split (s)	11.0	24.0	12.0	24.0	25.0	25.0	25.0	25.0	11.0
Total Split (s)	23.0	99.0	16.0	92.0	55.0	55.0	55.0	55.0	23.0
Total Split (%)	13.5%	58.2%	9.4%	54.1%	32.4%	32.4%	32.4%	32.4%	13.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	7.0	6.0		7.0		7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
v/c Ratio	0.72	0.35	0.18	0.54		0.71		0.35	0.39
Control Delay	98.4	6.0	86.2	13.8		96.2		77.3	47.9
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	98.4	6.0	86.2	13.8		96.2		77.3	47.9
Queue Length 50th (ft)	130	112	12	349		104		54	95
Queue Length 95th (ft)	198	241	35	491		167		99	145
Internal Link Dist (ft)		763		1859		253		306	
Turn Bay Length (ft)	140		155						58
Base Capacity (vph)	188	3993	92	3505		417		447	330
Starvation Cap Reductn	0	0	0	0		0		0	0
Spillback Cap Reductn	0	0	0	0		0		0	0
Storage Cap Reductn	0	0	0	0		0		0	0
Reduced v/c Ratio	0.63	0.35	0.12	0.54		0.24		0.11	0.37

Intersection Summary

Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 62 (36%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Michigan Avenue & 5th Street



411 Michigan
3: Michigan Avenue & 5th Street

2021 Existing Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	1293	36	10	1770	41	44	36	15	12	36	115
Future Volume (veh/h)	112	1293	36	10	1770	41	44	36	15	12	36	115
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	0.97		0.94	0.98		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	118	1361	38	11	1863	43	46	38	16	13	38	121
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	137	3900	109	21	3617	83	79	59	20	54	140	266
Arrive On Green	0.08	0.77	0.77	0.01	0.71	0.71	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1767	5056	141	1767	5084	117	487	594	206	281	1412	1447
Grp Volume(v), veh/h	118	909	490	11	1237	669	100	0	0	51	0	121
Grp Sat Flow(s),veh/h/ln	1767	1689	1820	1767	1689	1825	1287	0	0	1693	0	1447
Q Serve(g_s), s	11.2	14.3	14.3	1.1	28.3	28.4	9.0	0.0	0.0	0.0	0.0	12.8
Cycle Q Clear(g_c), s	11.2	14.3	14.3	1.1	28.3	28.4	13.3	0.0	0.0	4.3	0.0	12.8
Prop In Lane	1.00		0.08	1.00		0.06	0.46		0.16	0.25		1.00
Lane Grp Cap(c), veh/h	137	2605	1404	21	2403	1298	158	0	0	194	0	266
V/C Ratio(X)	0.86	0.35	0.35	0.52	0.51	0.52	0.63	0.00	0.00	0.26	0.00	0.46
Avail Cap(c_a), veh/h	177	2605	1404	94	2403	1298	420	0	0	502	0	531
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	77.5	6.1	6.1	83.5	11.2	11.2	75.4	0.0	0.0	70.9	0.0	62.9
Incr Delay (d2), s/veh	22.8	0.4	0.7	7.3	0.8	1.5	3.1	0.0	0.0	0.5	0.0	0.9
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	6.0	4.9	5.4	0.5	10.5	11.6	4.5	0.0	0.0	2.1	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	100.3	6.4	6.8	90.8	12.0	12.6	78.4	0.0	0.0	71.5	0.0	63.8
LnGrp LOS	F	A	A	F	B	B	E	A	A	E	A	E
Approach Vol, veh/h		1517			1917			100				172
Approach Delay, s/veh		13.9			12.6			78.4				66.1
Approach LOS		B			B			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	137.1		23.8	19.2	126.9		23.8				
Change Period (Y+Rc), s	7.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	9.0	93.0		48.0	17.0	86.0		48.0				
Max Q Clear Time (g_c+I1), s	3.1	16.3		14.8	13.2	30.4		15.3				
Green Ext Time (p_c), s	0.0	3.8		0.6	0.0	6.0		0.5				
Intersection Summary												
HCM 6th Ctrl Delay				17.4								
HCM 6th LOS				B								

FUTURE NO BUILD CONDITIONS

Table 2.1 - 2023 No Build Intersection Capacity Analysis Summary

Movement/Approach	Time	Level of Service ^[1]					
		Alton Road & 4th Street		Michigan Avenue & 4th Street		Michigan Avenue & 5th Street	
		LOS	Delay	LOS	Delay	LOS	Delay
EBL	AM	F	81.4			F	97.4
	PM	F	82.1			F	100.7
EBT	AM	A	0.0			C	26.8
	PM	A	0.0			A	6.5
EBR	AM	A	0.0			C	27.0
	PM	A	0.0			A	6.8
EB Approach	AM	F	81.4	A	7.5	C	29.0
	PM	F	82.1	A	8.4	B	13.9
WBL	AM	F	81.4			F	111.0
	PM	F	80.5			F	90.8
WBT	AM	A	0.0			A	5.9
	PM	A	0.0			B	12.1
WBR	AM	A	0.0			A	6.1
	PM	A	0.0			B	12.8
WB Approach	AM	F	81.4	A	7.5	A	6.2
	PM	F	80.5	A	8.7	B	12.8
NBL	AM	A	9.8			F	83.6
	PM	B	10.7			E	78.5
NBT	AM	A	6.2			A	0.0
	PM	B	10.2			A	0.0
NBR	AM	A	6.2			A	0.0
	PM	B	10.2			A	0.0
NB Approach	AM	A	6.2	A	7.7	F	83.6
	PM	B	10.2	A	8.5	E	78.5
SBL	AM	A	4.4			E	77.5
	PM	A	7.3			E	71.4
SBT	AM	C	32.2			A	0.0
	PM	C	34.3			A	0.0
SBR	AM	C	32.2			E	74.7
	PM	C	34.3			E	63.7
SB Approach	AM	C	30.7	A	7.6	E	75.8
	PM	C	32.3	A	8.4	E	65.9
Overall	AM	C	28.9			C	24.5
	PM	C	27.1			B	17.5

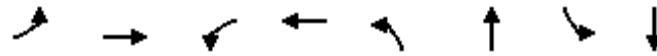
[1] Delay is average delay per vehicle in seconds

Table 2.2 - 2023 No Build Intersection Queue Lengths Summary

Location	Time	95th Percentile Queue Lengths (ft)															
		EBL		EBR		WBL		WBR		NBL		NBR		SBL		SBR	
		Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile
Alton Road & 4th Street	AM									62	2			124	18		
	PM										8				37		
Michigan Avenue & 4th Street	AM																
	PM																
Michigan Avenue & 5th Street	AM	140	92			155	13									58	49
	PM		200				35										147

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

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

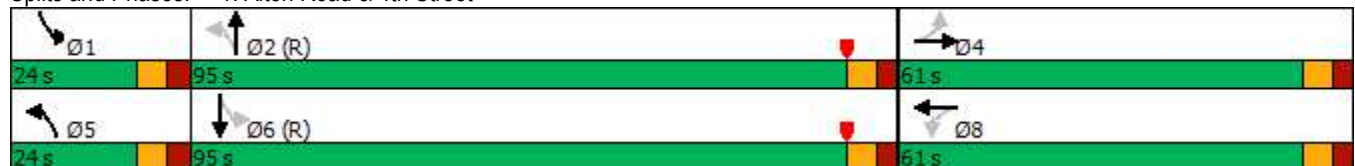


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↗	↕	↗	↕
Traffic Volume (vph)	42	3	17	8	2	345	46	796
Future Volume (vph)	42	3	17	8	2	345	46	796
Lane Group Flow (vph)	0	67	0	99	3	476	61	1104
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	25.0	25.0	25.0	25.0	12.0	25.0	14.0	25.0
Total Split (s)	61.0	61.0	61.0	61.0	24.0	95.0	24.0	95.0
Total Split (%)	33.9%	33.9%	33.9%	33.9%	13.3%	52.8%	13.3%	52.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	7.0	7.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		0.83		0.56	0.01	0.18	0.09	0.39
Control Delay		135.1		47.1	3.5	6.3	3.1	5.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	1.3
Total Delay		135.1		47.1	3.5	6.3	3.1	6.4
Queue Length 50th (ft)		73		47	1	78	11	153
Queue Length 95th (ft)		111		84	2	86	18	215
Internal Link Dist (ft)		161		515		1023		369
Turn Bay Length (ft)					62		124	
Base Capacity (vph)		286		492	507	2642	764	2853
Starvation Cap Reductn		0		0	0	0	0	1450
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.23		0.20	0.01	0.18	0.08	0.79

Intersection Summary

Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Alton Road & 4th Street



411 Michigan
1: Alton Road & 4th Street

2023 No Build Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	42	3	6	17	8	50	2	345	17	46	796	43
Future Volume (veh/h)	42	3	6	17	8	50	2	345	17	46	796	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.92	0.95		0.91	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	55	4	8	22	11	66	3	454	22	61	1047	57
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	115	10	12	49	26	101	315	2603	126	744	2661	145
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.00	0.76	0.76	0.01	0.26	0.26
Sat Flow, veh/h	834	101	127	259	276	1069	1767	3415	165	1767	3391	185
Grp Volume(v), veh/h	67	0	0	99	0	0	3	234	242	61	544	560
Grp Sat Flow(s),veh/h/ln	1061	0	0	1604	0	0	1767	1763	1818	1767	1763	1812
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	0.1	6.5	6.6	1.4	45.9	45.9
Cycle Q Clear(g_c), s	12.1	0.0	0.0	10.3	0.0	0.0	0.1	6.5	6.6	1.4	45.9	45.9
Prop In Lane	0.82		0.12	0.22		0.67	1.00		0.09	1.00		0.10
Lane Grp Cap(c), veh/h	137	0	0	176	0	0	315	1343	1385	744	1383	1422
V/C Ratio(X)	0.49	0.00	0.00	0.56	0.00	0.00	0.01	0.17	0.17	0.08	0.39	0.39
Avail Cap(c_a), veh/h	402	0	0	471	0	0	475	1343	1385	864	1383	1422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
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	79.4	0.0	0.0	78.6	0.0	0.0	9.8	5.9	5.9	4.4	31.3	31.4
Incr Delay (d2), s/veh	2.0	0.0	0.0	2.8	0.0	0.0	0.0	0.3	0.3	0.0	0.8	0.8
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	3.1	0.0	0.0	4.6	0.0	0.0	0.0	2.5	2.6	0.5	22.2	22.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.4	0.0	0.0	81.4	0.0	0.0	9.8	6.2	6.2	4.4	32.2	32.2
LnGrp LOS	F	A	A	F	A	A	A	A	A	A	C	C
Approach Vol, veh/h		67			99			479			1165	
Approach Delay, s/veh		81.4			81.4			6.2			30.7	
Approach LOS		F			F			A			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.8	144.2		24.1	7.7	148.2		24.1				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	17.0	88.0		54.0	17.0	88.0		54.0				
Max Q Clear Time (g_c+I1), s	3.4	8.6		14.1	2.1	47.9		12.3				
Green Ext Time (p_c), s	0.1	2.5		0.3	0.0	2.7		0.7				
Intersection Summary												
HCM 6th Ctrl Delay				28.9								
HCM 6th LOS				C								

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	26	15	3	39	23	12	40	3	9	36	3
Future Vol, veh/h	14	26	15	3	39	23	12	40	3	9	36	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	31	18	4	46	27	14	48	4	11	43	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.5	7.5	7.7	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	25%	5%	19%
Vol Thru, %	73%	47%	60%	75%
Vol Right, %	5%	27%	35%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	55	65	48
LT Vol	12	14	3	9
Through Vol	40	26	39	36
RT Vol	3	15	23	3
Lane Flow Rate	65	65	77	57
Geometry Grp	1	1	1	1
Degree of Util (X)	0.077	0.075	0.086	0.067
Departure Headway (Hd)	4.254	4.111	4.01	4.249
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	832	859	881	832
Service Time	2.334	2.194	2.094	2.332
HCM Lane V/C Ratio	0.078	0.076	0.087	0.069
HCM Control Delay	7.7	7.5	7.5	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.3	0.2

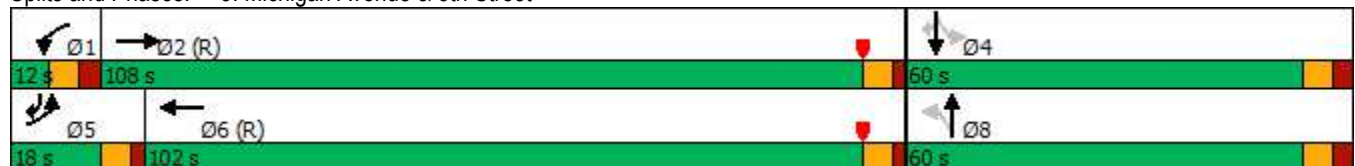


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑	↙	↑↑↑		↕		↕	↗
Traffic Volume (vph)	36	1101	2	868	34	37	20	29	71
Future Volume (vph)	36	1101	2	868	34	37	20	29	71
Lane Group Flow (vph)	40	1254	2	973	0	88	0	54	79
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	5	2	1	6		8		4	5
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	5
Switch Phase									
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	7.0	7.0	7.0	5.0
Minimum Split (s)	11.0	24.0	12.0	24.0	25.0	25.0	25.0	25.0	11.0
Total Split (s)	18.0	108.0	12.0	102.0	60.0	60.0	60.0	60.0	18.0
Total Split (%)	10.0%	60.0%	6.7%	56.7%	33.3%	33.3%	33.3%	33.3%	10.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	7.0	6.0		7.0		7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
v/c Ratio	0.48	0.30	0.04	0.25		0.69		0.46	0.29
Control Delay	101.8	4.2	86.5	6.9		103.3		89.4	13.0
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	101.8	4.2	86.5	6.9		103.3		89.4	13.0
Queue Length 50th (ft)	47	93	2	111		100		62	0
Queue Length 95th (ft)	92	194	13	163		161		110	49
Internal Link Dist (ft)		763		1859		253		306	
Turn Bay Length (ft)	140		155						58
Base Capacity (vph)	116	4155	49	3834		442		419	304
Starvation Cap Reductn	0	0	0	0		0		0	0
Spillback Cap Reductn	0	0	0	0		0		0	0
Storage Cap Reductn	0	0	0	0		0		0	0
Reduced v/c Ratio	0.34	0.30	0.04	0.25		0.20		0.13	0.26

Intersection Summary

Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 128 (71%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Michigan Avenue & 5th Street



411 Michigan
3: Michigan Avenue & 5th Street

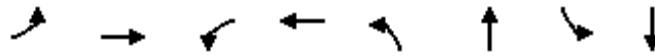
2023 No Build Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↕			↖	↗
Traffic Volume (veh/h)	36	1101	28	2	868	8	34	37	8	20	29	71
Future Volume (veh/h)	36	1101	28	2	868	8	34	37	8	20	29	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	0.97		0.95	0.98		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	40	1223	31	2	964	9	38	41	9	22	32	79
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	4032	102	5	4003	37	68	65	12	72	94	182
Arrive On Green	0.01	0.26	0.26	0.00	0.77	0.77	0.09	0.09	0.09	0.09	0.09	0.09
Sat Flow, veh/h	1767	5074	129	1767	5174	48	425	710	129	480	1020	1484
Grp Volume(v), veh/h	40	814	440	2	629	344	88	0	0	54	0	79
Grp Sat Flow(s),veh/h/ln	1767	1689	1826	1767	1689	1846	1264	0	0	1500	0	1484
Q Serve(g_s), s	4.1	34.8	34.8	0.2	9.3	9.3	7.3	0.0	0.0	0.0	0.0	8.9
Cycle Q Clear(g_c), s	4.1	34.8	34.8	0.2	9.3	9.3	12.9	0.0	0.0	5.7	0.0	8.9
Prop In Lane	1.00		0.07	1.00		0.03	0.43		0.10	0.41		1.00
Lane Grp Cap(c), veh/h	52	2683	1451	5	2612	1428	145	0	0	166	0	182
V/C Ratio(X)	0.78	0.30	0.30	0.43	0.24	0.24	0.61	0.00	0.00	0.33	0.00	0.43
Avail Cap(c_a), veh/h	118	2683	1451	49	2612	1428	448	0	0	488	0	483
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	88.5	26.5	26.5	89.6	5.7	5.7	80.6	0.0	0.0	76.6	0.0	73.5
Incr Delay (d2), s/veh	8.9	0.3	0.5	21.4	0.2	0.4	3.1	0.0	0.0	0.8	0.0	1.2
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	2.0	16.0	17.4	0.1	3.3	3.6	4.2	0.0	0.0	2.4	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	97.4	26.8	27.0	111.0	5.9	6.1	83.6	0.0	0.0	77.5	0.0	74.7
LnGrp LOS	F	C	C	F	A	A	F	A	A	E	A	E
Approach Vol, veh/h		1294			975			88			133	
Approach Delay, s/veh		29.0			6.2			83.6			75.8	
Approach LOS		C			A			F			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.5	149.0		23.5	11.3	145.2		23.5				
Change Period (Y+Rc), s	7.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	5.0	102.0		53.0	12.0	96.0		53.0				
Max Q Clear Time (g_c+I1), s	2.2	36.8		10.9	6.1	11.3		14.9				
Green Ext Time (p_c), s	0.0	3.2		0.5	0.0	2.3		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				24.5								
HCM 6th LOS				C								

411 Michigan
1: Alton Road & 4th Street

2023 No Build Conditions
PM Peak Hour

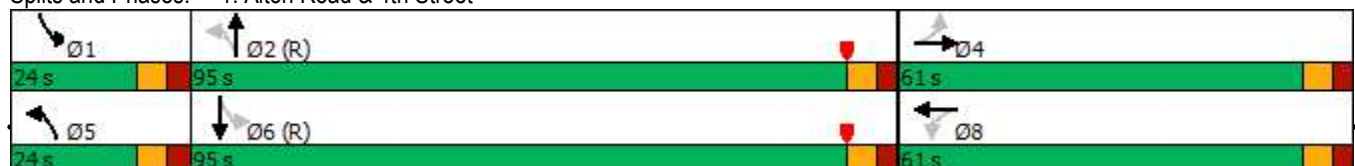


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↙	↕	↙	↕
Traffic Volume (vph)	63	21	34	9	9	1010	75	888
Future Volume (vph)	63	21	34	9	9	1010	75	888
Lane Group Flow (vph)	0	106	0	147	10	1146	83	1057
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	25.0	25.0	25.0	25.0	12.0	25.0	14.0	25.0
Total Split (s)	61.0	61.0	61.0	61.0	24.0	95.0	24.0	95.0
Total Split (%)	33.9%	33.9%	33.9%	33.9%	13.3%	52.8%	13.3%	52.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	7.0	7.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		1.00		0.69	0.03	0.45	0.23	0.39
Control Delay		161.4		61.1	4.7	11.1	5.6	7.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	1.9
Total Delay		161.4		61.1	4.7	11.1	5.6	9.8
Queue Length 50th (ft)		~125		102	2	262	17	154
Queue Length 95th (ft)		#214		178	8	378	37	319
Internal Link Dist (ft)		161		515		1023		369
Turn Bay Length (ft)					62		124	
Base Capacity (vph)		277		471	501	2542	438	2699
Starvation Cap Reductn		0		0	0	0	0	1427
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.38		0.31	0.02	0.45	0.19	0.83

Intersection Summary

Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Alton Road & 4th Street



411 Michigan
1: Alton Road & 4th Street

2023 No Build Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	63	21	12	34	9	89	9	1010	22	75	888	63
Future Volume (veh/h)	63	21	12	34	9	89	9	1010	22	75	888	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.92	1.00		0.92	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	70	23	13	38	10	99	10	1122	24	83	987	70
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	108	34	15	66	22	129	327	2596	56	387	2505	178
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.01	0.74	0.74	0.01	0.25	0.25
Sat Flow, veh/h	628	282	127	341	183	1081	1767	3525	75	1767	3327	236
Grp Volume(v), veh/h	106	0	0	147	0	0	10	561	585	83	523	534
Grp Sat Flow(s),veh/h/ln	1037	0	0	1605	0	0	1767	1763	1838	1767	1763	1801
Q Serve(g_s), s	3.2	0.0	0.0	0.0	0.0	0.0	0.3	22.1	22.1	2.1	44.5	44.5
Cycle Q Clear(g_c), s	19.0	0.0	0.0	15.8	0.0	0.0	0.3	22.1	22.1	2.1	44.5	44.5
Prop In Lane	0.66		0.12	0.26		0.67	1.00		0.04	1.00		0.13
Lane Grp Cap(c), veh/h	157	0	0	217	0	0	327	1298	1354	387	1327	1356
V/C Ratio(X)	0.67	0.00	0.00	0.68	0.00	0.00	0.03	0.43	0.43	0.21	0.39	0.39
Avail Cap(c_a), veh/h	405	0	0	478	0	0	475	1298	1354	506	1327	1356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
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	78.4	0.0	0.0	76.8	0.0	0.0	10.7	9.2	9.2	7.0	33.4	33.4
Incr Delay (d2), s/veh	3.7	0.0	0.0	3.7	0.0	0.0	0.0	1.1	1.0	0.3	0.9	0.9
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	5.1	0.0	0.0	6.9	0.0	0.0	0.1	8.9	9.2	0.8	21.6	22.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.1	0.0	0.0	80.5	0.0	0.0	10.7	10.2	10.2	7.3	34.3	34.3
LnGrp LOS	F	A	A	F	A	A	B	B	B	A	C	C
Approach Vol, veh/h		106			147			1156			1140	
Approach Delay, s/veh		82.1			80.5			10.2			32.3	
Approach LOS		F			F			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.9	139.6		28.5	9.0	142.5		28.5				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	17.0	88.0		54.0	17.0	88.0		54.0				
Max Q Clear Time (g_c+I1), s	4.1	24.1		21.0	2.3	46.5		17.8				
Green Ext Time (p_c), s	0.1	8.0		0.5	0.0	2.6		1.0				
Intersection Summary												
HCM 6th Ctrl Delay				27.1								
HCM 6th LOS				C								

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	9	79	17	7	115	33	22	63	3	17	55	14
Future Vol, veh/h	9	79	17	7	115	33	22	63	3	17	55	14
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	10	90	19	8	131	38	25	72	3	19	63	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	8.7	8.5	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	9%	5%	20%
Vol Thru, %	72%	75%	74%	64%
Vol Right, %	3%	16%	21%	16%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	88	105	155	86
LT Vol	22	9	7	17
Through Vol	63	79	115	55
RT Vol	3	17	33	14
Lane Flow Rate	100	119	176	98
Geometry Grp	1	1	1	1
Degree of Util (X)	0.133	0.151	0.218	0.127
Departure Headway (Hd)	4.776	4.548	4.447	4.693
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	750	789	807	762
Service Time	2.812	2.578	2.475	2.73
HCM Lane V/C Ratio	0.133	0.151	0.218	0.129
HCM Control Delay	8.5	8.4	8.7	8.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.5	0.8	0.4

411 Michigan
3: Michigan Avenue & 5th Street

2023 No Build Conditions
PM Peak Hour

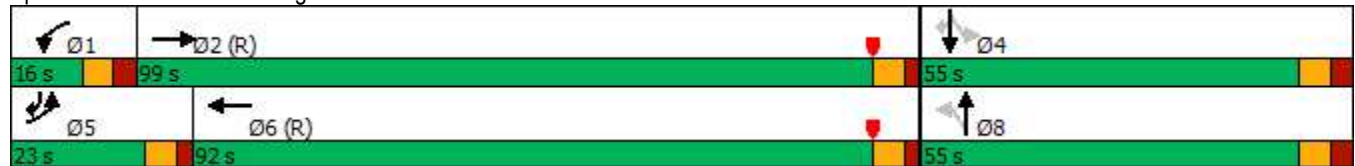


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑	↙	↑↑↑		↕		↕	↗
Traffic Volume (vph)	113	1306	10	1788	45	36	12	36	117
Future Volume (vph)	113	1306	10	1788	45	36	12	36	117
Lane Group Flow (vph)	119	1413	11	1925	0	101	0	51	123
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	5	2	1	6		8		4	5
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	5
Switch Phase									
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	7.0	7.0	7.0	5.0
Minimum Split (s)	11.0	24.0	12.0	24.0	25.0	25.0	25.0	25.0	11.0
Total Split (s)	23.0	99.0	16.0	92.0	55.0	55.0	55.0	55.0	23.0
Total Split (%)	13.5%	58.2%	9.4%	54.1%	32.4%	32.4%	32.4%	32.4%	13.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	7.0	6.0		7.0		7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
v/c Ratio	0.73	0.35	0.18	0.55		0.72		0.35	0.40
Control Delay	98.1	6.0	86.2	14.0		96.4		77.0	48.0
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	98.1	6.0	86.2	14.0		96.4		77.0	48.0
Queue Length 50th (ft)	131	114	12	357		105		54	97
Queue Length 95th (ft)	200	245	35	500		168		99	147
Internal Link Dist (ft)		763		1859		253		306	
Turn Bay Length (ft)	140		155						58
Base Capacity (vph)	188	3989	92	3499		417		448	331
Starvation Cap Reductn	0	0	0	0		0		0	0
Spillback Cap Reductn	0	0	0	0		0		0	0
Storage Cap Reductn	0	0	0	0		0		0	0
Reduced v/c Ratio	0.63	0.35	0.12	0.55		0.24		0.11	0.37

Intersection Summary

Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 62 (36%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Michigan Avenue & 5th Street



411 Michigan
3: Michigan Avenue & 5th Street

2023 No Build Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↕			↖	↗
Traffic Volume (veh/h)	113	1306	36	10	1788	41	45	36	15	12	36	117
Future Volume (veh/h)	113	1306	36	10	1788	41	45	36	15	12	36	117
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	0.97		0.94	0.98		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	119	1375	38	11	1882	43	47	38	16	13	38	123
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	138	3898	108	21	3612	82	80	58	20	55	141	267
Arrive On Green	0.08	0.77	0.77	0.01	0.71	0.71	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1767	5057	140	1767	5086	116	493	584	203	281	1409	1448
Grp Volume(v), veh/h	119	918	495	11	1249	676	101	0	0	51	0	123
Grp Sat Flow(s),veh/h/ln	1767	1689	1820	1767	1689	1825	1280	0	0	1690	0	1448
Q Serve(g_s), s	11.3	14.6	14.6	1.1	28.9	29.0	9.2	0.0	0.0	0.0	0.0	13.0
Cycle Q Clear(g_c), s	11.3	14.6	14.6	1.1	28.9	29.0	13.5	0.0	0.0	4.3	0.0	13.0
Prop In Lane	1.00		0.08	1.00		0.06	0.47		0.16	0.25		1.00
Lane Grp Cap(c), veh/h	138	2603	1403	21	2398	1296	159	0	0	195	0	267
V/C Ratio(X)	0.86	0.35	0.35	0.52	0.52	0.52	0.64	0.00	0.00	0.26	0.00	0.46
Avail Cap(c_a), veh/h	177	2603	1403	94	2398	1296	418	0	0	501	0	532
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	77.4	6.1	6.1	83.5	11.3	11.3	75.4	0.0	0.0	70.8	0.0	62.8
Incr Delay (d2), s/veh	23.3	0.4	0.7	7.3	0.8	1.5	3.1	0.0	0.0	0.5	0.0	0.9
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	6.1	5.0	5.5	0.5	10.7	11.9	4.5	0.0	0.0	2.1	0.0	4.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	100.7	6.5	6.8	90.8	12.1	12.8	78.5	0.0	0.0	71.4	0.0	63.7
LnGrp LOS	F	A	A	F	B	B	E	A	A	E	A	E
Approach Vol, veh/h		1532			1936			101				174
Approach Delay, s/veh		13.9			12.8			78.5				65.9
Approach LOS		B			B			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	137.0		24.0	19.3	126.7		24.0				
Change Period (Y+Rc), s	7.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	9.0	93.0		48.0	17.0	86.0		48.0				
Max Q Clear Time (g_c+I1), s	3.1	16.6		15.0	13.3	31.0		15.5				
Green Ext Time (p_c), s	0.0	3.8		0.6	0.0	6.1		0.5				
Intersection Summary												
HCM 6th Ctrl Delay				17.5								
HCM 6th LOS				B								

FUTURE BUILD CONDITIONS

Table 5.1 - 2023 Build Intersection Capacity Analysis Summary

Movement/Approach	Time	Level of Service ^[1]					
		Alton Road & 4th Street		Michigan Avenue & 4th Street		Michigan Avenue & 5th Street	
		LOS	Delay	LOS	Delay	LOS	Delay
EBL	AM	F	81.4			F	97.4
	PM	F	81.5			F	100.7
EBT	AM	A	0.0			C	28.1
	PM	A	0.0			A	9.3
EBR	AM	A	0.0			C	28.4
	PM	A	0.0			A	9.7
EB Approach	AM	F	81.4	A	7.7	C	30.3
	PM	F	81.5	A	8.5	B	16.5
WBL	AM	F	81.5			F	101.9
	PM	F	80.5			F	90.5
WBT	AM	A	0.0			A	6.4
	PM	A	0.0			B	16.1
WBR	AM	A	0.0			A	6.6
	PM	A	0.0			B	17.0
WB Approach	AM	F	81.5	A	7.5	A	6.9
	PM	F	80.5	A	8.8	B	16.9
NBL	AM	A	9.8			F	84.5
	PM	B	11.0			E	76.7
NBT	AM	A	6.2			A	0.0
	PM	B	10.7			A	0.0
NBR	AM	A	6.2			A	0.0
	PM	B	10.6			A	0.0
NB Approach	AM	A	6.2	A	7.8	F	84.5
	PM	B	10.7	A	8.6	E	76.7
SBL	AM	A	4.5			E	76.8
	PM	A	7.8			E	64.8
SBT	AM	C	32.2			A	0.0
	PM	C	34.9			A	0.0
SBR	AM	C	32.2			E	72.7
	PM	C	34.8			E	56.5
SB Approach	AM	C	30.4	A	7.7	E	74.7
	PM	C	32.8	A	8.5	E	59.2
Overall	AM	C	28.8			C	26.1
	PM	C	27.8			C	21.2

[1] Delay is average delay per vehicle in seconds

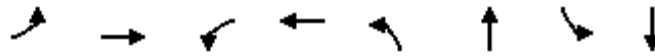
Table 5.2 - 2023 Build Intersection Queue Lengths Summary

Location	Time	95th Percentile Queue Lengths (ft)															
		EBL		EBR		WBL		WBR		NBL		NBR		SBL		SBR	
		Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile	Storage (ft)	95 th %tile
Alton Road & 4th Street	AM									62	2			124	21		
	PM										8				40		
Michigan Avenue & 4th Street	AM																
	PM																
Michigan Avenue & 5th Street	AM	140	92			155	20									58	48
	PM		200				38										135

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

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

[1] Optimized signal timing without changing cycle length

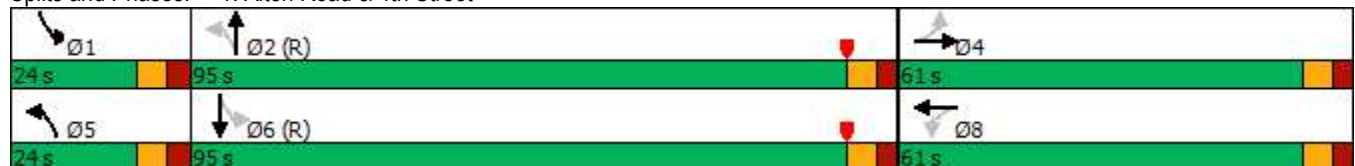


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↗	↕	↗	↕
Traffic Volume (vph)	42	3	17	8	2	345	56	795
Future Volume (vph)	42	3	17	8	2	345	56	795
Lane Group Flow (vph)	0	67	0	101	3	478	74	1103
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	25.0	25.0	25.0	25.0	12.0	25.0	14.0	25.0
Total Split (s)	61.0	61.0	61.0	61.0	24.0	95.0	24.0	95.0
Total Split (%)	33.9%	33.9%	33.9%	33.9%	13.3%	52.8%	13.3%	52.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	7.0	7.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		0.85		0.57	0.01	0.18	0.10	0.39
Control Delay		139.1		46.7	3.5	6.4	3.2	5.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	1.3
Total Delay		139.1		46.7	3.5	6.4	3.2	6.4
Queue Length 50th (ft)		73		47	1	80	14	153
Queue Length 95th (ft)		111		84	2	87	21	215
Internal Link Dist (ft)		161		515		1023		369
Turn Bay Length (ft)					62		124	
Base Capacity (vph)		280		494	507	2633	763	2853
Starvation Cap Reductn		0		0	0	0	0	1451
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.24		0.20	0.01	0.18	0.10	0.79

Intersection Summary

Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Splits and Phases: 1: Alton Road & 4th Street



411 Michigan
1: Alton Road & 4th Street

2023 Build Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕↔		↕	↕↔	
Traffic Volume (veh/h)	42	3	6	17	8	52	2	345	18	56	795	43
Future Volume (veh/h)	42	3	6	17	8	52	2	345	18	56	795	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		0.92	0.95		0.91	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	55	4	8	22	11	68	3	454	24	74	1046	57
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	115	10	12	49	26	103	315	2587	136	743	2660	145
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.00	0.76	0.76	0.01	0.26	0.26
Sat Flow, veh/h	823	100	125	255	270	1082	1767	3398	179	1767	3390	185
Grp Volume(v), veh/h	67	0	0	101	0	0	3	235	243	74	544	559
Grp Sat Flow(s),veh/h/ln	1048	0	0	1607	0	0	1767	1763	1814	1767	1763	1812
Q Serve(g_s), s	1.8	0.0	0.0	0.0	0.0	0.0	0.1	6.6	6.7	1.6	45.8	45.8
Cycle Q Clear(g_c), s	12.3	0.0	0.0	10.6	0.0	0.0	0.1	6.6	6.7	1.6	45.8	45.8
Prop In Lane	0.82		0.12	0.22		0.67	1.00		0.10	1.00		0.10
Lane Grp Cap(c), veh/h	136	0	0	177	0	0	315	1342	1381	743	1383	1422
V/C Ratio(X)	0.49	0.00	0.00	0.57	0.00	0.00	0.01	0.18	0.18	0.10	0.39	0.39
Avail Cap(c_a), veh/h	400	0	0	471	0	0	476	1342	1381	862	1383	1422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
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	79.4	0.0	0.0	78.6	0.0	0.0	9.8	5.9	5.9	4.4	31.4	31.4
Incr Delay (d2), s/veh	2.0	0.0	0.0	2.9	0.0	0.0	0.0	0.3	0.3	0.1	0.8	0.8
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	3.1	0.0	0.0	4.7	0.0	0.0	0.0	2.6	2.6	0.6	22.2	22.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.4	0.0	0.0	81.5	0.0	0.0	9.8	6.2	6.2	4.5	32.2	32.2
LnGrp LOS	F	A	A	F	A	A	A	A	A	A	C	C
Approach Vol, veh/h		67			101			481			1177	
Approach Delay, s/veh		81.4			81.5			6.2			30.4	
Approach LOS		F			F			A			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.9	144.0		24.1	7.7	148.2		24.1				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	17.0	88.0		54.0	17.0	88.0		54.0				
Max Q Clear Time (g_c+I1), s	3.6	8.7		14.3	2.1	47.8		12.6				
Green Ext Time (p_c), s	0.1	2.5		0.3	0.0	2.7		0.7				
Intersection Summary												
HCM 6th Ctrl Delay				28.8								
HCM 6th LOS				C								

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	26	15	3	41	34	12	42	3	9	36	3
Future Vol, veh/h	25	26	15	3	41	34	12	42	3	9	36	3
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	30	31	18	4	49	40	14	50	4	11	43	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.5	7.8	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	38%	4%	19%
Vol Thru, %	74%	39%	53%	75%
Vol Right, %	5%	23%	44%	6%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	57	66	78	48
LT Vol	12	25	3	9
Through Vol	42	26	41	36
RT Vol	3	15	34	3
Lane Flow Rate	68	79	93	57
Geometry Grp	1	1	1	1
Degree of Util (X)	0.081	0.091	0.103	0.068
Departure Headway (Hd)	4.304	4.179	3.974	4.301
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	820	844	887	819
Service Time	2.399	2.272	2.067	2.4
HCM Lane V/C Ratio	0.083	0.094	0.105	0.07
HCM Control Delay	7.8	7.7	7.5	7.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.3	0.3	0.2

411 Michigan
3: Michigan Avenue & 5th Street

2023 Build Conditions
AM Peak Hour

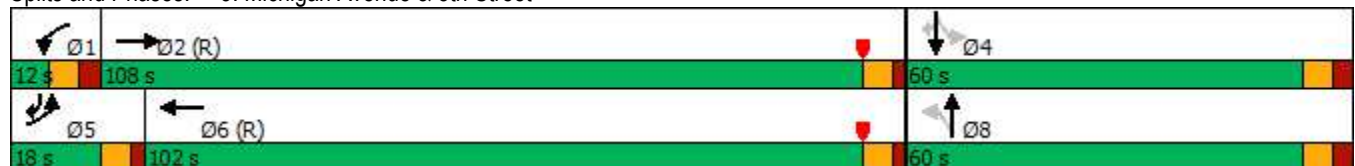


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↘	↑↑↑	↘	↑↑↑		↕		↕	↗
Traffic Volume (vph)	36	1101	4	868	38	41	20	48	71
Future Volume (vph)	36	1101	4	868	38	41	20	48	71
Lane Group Flow (vph)	40	1275	4	973	0	97	0	75	79
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	5	2	1	6		8		4	5
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	5
Switch Phase									
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	7.0	7.0	7.0	5.0
Minimum Split (s)	11.0	24.0	12.0	24.0	25.0	25.0	25.0	25.0	11.0
Total Split (s)	18.0	108.0	12.0	102.0	60.0	60.0	60.0	60.0	18.0
Total Split (%)	10.0%	60.0%	6.7%	56.7%	33.3%	33.3%	33.3%	33.3%	10.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	7.0	6.0		7.0		7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
v/c Ratio	0.48	0.31	0.08	0.26		0.72		0.56	0.28
Control Delay	101.8	4.6	88.0	7.2		105.1		93.3	12.6
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	101.8	4.6	88.0	7.2		105.1		93.3	12.6
Queue Length 50th (ft)	47	100	5	115		110		87	0
Queue Length 95th (ft)	92	208	20	168		174		143	48
Internal Link Dist (ft)		763		1859		253		306	
Turn Bay Length (ft)	140		155						58
Base Capacity (vph)	116	4108	51	3804		434		441	313
Starvation Cap Reductn	0	0	0	0		0		0	0
Spillback Cap Reductn	0	0	0	0		0		0	0
Storage Cap Reductn	0	0	0	0		0		0	0
Reduced v/c Ratio	0.34	0.31	0.08	0.26		0.22		0.17	0.25

Intersection Summary

Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 128 (71%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Michigan Avenue & 5th Street



411 Michigan
3: Michigan Avenue & 5th Street

2023 Build Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↕			↖	↗
Traffic Volume (veh/h)	36	1101	47	4	868	8	38	41	8	20	48	71
Future Volume (veh/h)	36	1101	47	4	868	8	38	41	8	20	48	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	0.98		0.95	0.99		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	40	1223	52	4	964	9	42	46	9	22	53	79
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	52	3888	165	9	3950	37	68	66	11	59	128	198
Arrive On Green	0.01	0.26	0.26	0.01	0.76	0.76	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	1767	4972	211	1767	5174	48	382	653	106	327	1255	1491
Grp Volume(v), veh/h	40	831	444	4	629	344	97	0	0	75	0	79
Grp Sat Flow(s),veh/h/ln	1767	1689	1807	1767	1689	1846	1141	0	0	1582	0	1491
Q Serve(g_s), s	4.1	35.7	35.8	0.4	9.7	9.8	8.4	0.0	0.0	0.0	0.0	8.8
Cycle Q Clear(g_c), s	4.1	35.7	35.8	0.4	9.7	9.8	15.8	0.0	0.0	7.5	0.0	8.8
Prop In Lane	1.00		0.12	1.00		0.03	0.43		0.09	0.29		1.00
Lane Grp Cap(c), veh/h	52	2641	1413	9	2578	1409	145	0	0	187	0	198
V/C Ratio(X)	0.78	0.31	0.31	0.45	0.24	0.24	0.67	0.00	0.00	0.40	0.00	0.40
Avail Cap(c_a), veh/h	118	2641	1413	49	2578	1409	431	0	0	506	0	485
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	88.5	27.8	27.8	89.3	6.2	6.2	80.6	0.0	0.0	75.8	0.0	71.8
Incr Delay (d2), s/veh	8.9	0.3	0.6	12.6	0.2	0.4	3.9	0.0	0.0	1.0	0.0	1.0
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	2.0	16.4	17.7	0.2	3.4	3.8	4.7	0.0	0.0	3.4	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	97.4	28.1	28.4	101.9	6.4	6.6	84.5	0.0	0.0	76.8	0.0	72.7
LnGrp LOS	F	C	C	F	A	A	F	A	A	E	A	E
Approach Vol, veh/h		1315			977			97				154
Approach Delay, s/veh		30.3			6.9			84.5				74.7
Approach LOS		C			A			F				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.9	146.8		25.3	11.3	143.4		25.3				
Change Period (Y+Rc), s	7.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	5.0	102.0		53.0	12.0	96.0		53.0				
Max Q Clear Time (g_c+I1), s	2.4	37.8		10.8	6.1	11.8		17.8				
Green Ext Time (p_c), s	0.0	3.3		0.6	0.0	2.3		0.5				
Intersection Summary												
HCM 6th Ctrl Delay				26.1								
HCM 6th LOS				C								

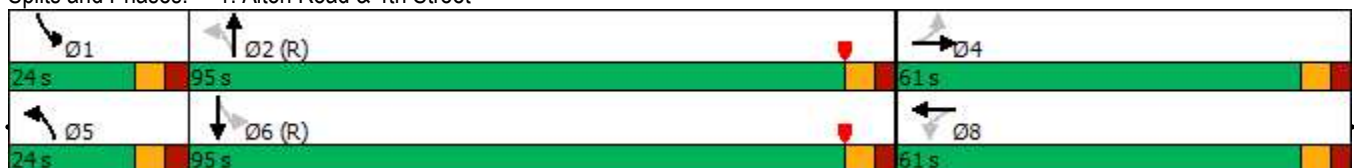


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕	↙	↕	↙	↕
Traffic Volume (vph)	63	21	35	9	9	1010	80	888
Future Volume (vph)	63	21	35	9	9	1010	80	888
Lane Group Flow (vph)	0	106	0	161	10	1148	89	1057
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases		4		8	5	2	1	6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	5.0	5.0	5.0	7.0	5.0	7.0
Minimum Split (s)	25.0	25.0	25.0	25.0	12.0	25.0	14.0	25.0
Total Split (s)	61.0	61.0	61.0	61.0	24.0	95.0	24.0	95.0
Total Split (%)	33.9%	33.9%	33.9%	33.9%	13.3%	52.8%	13.3%	52.8%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		7.0		7.0	7.0	7.0	7.0	7.0
Lead/Lag					Lead	Lag	Lead	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	None	C-Max
v/c Ratio		1.06		0.73	0.03	0.45	0.25	0.39
Control Delay		176.2		62.8	4.9	11.4	5.9	8.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	1.9
Total Delay		176.2		62.8	4.9	11.4	5.9	9.9
Queue Length 50th (ft)		~134		112	2	266	18	156
Queue Length 95th (ft)		#224		193	8	385	40	323
Internal Link Dist (ft)		161		515		1023		369
Turn Bay Length (ft)					62		124	
Base Capacity (vph)		256		477	500	2531	436	2692
Starvation Cap Reductn		0		0	0	0	0	1420
Spillback Cap Reductn		0		0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0
Reduced v/c Ratio		0.41		0.34	0.02	0.45	0.20	0.83

Intersection Summary

Cycle Length: 180
 Actuated Cycle Length: 180
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Alton Road & 4th Street



411 Michigan
1: Alton Road & 4th Street

2023 Build Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (veh/h)	63	21	12	35	9	101	9	1010	23	80	888	63
Future Volume (veh/h)	63	21	12	35	9	101	9	1010	23	80	888	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.92	1.00		0.92	1.00		0.96	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	70	23	13	39	10	112	10	1122	26	89	987	70
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, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	108	34	15	65	21	141	324	2569	60	382	2485	176
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.01	0.73	0.73	0.01	0.25	0.25
Sat Flow, veh/h	598	268	121	322	169	1122	1767	3518	82	1767	3327	236
Grp Volume(v), veh/h	106	0	0	161	0	0	10	562	586	89	523	534
Grp Sat Flow(s),veh/h/ln	987	0	0	1613	0	0	1767	1763	1836	1767	1763	1800
Q Serve(g_s), s	2.8	0.0	0.0	0.0	0.0	0.0	0.3	22.7	22.7	2.3	44.6	44.6
Cycle Q Clear(g_c), s	20.0	0.0	0.0	17.2	0.0	0.0	0.3	22.7	22.7	2.3	44.6	44.6
Prop In Lane	0.66		0.12	0.24		0.70	1.00		0.04	1.00		0.13
Lane Grp Cap(c), veh/h	157	0	0	227	0	0	324	1288	1341	382	1317	1345
V/C Ratio(X)	0.67	0.00	0.00	0.71	0.00	0.00	0.03	0.44	0.44	0.23	0.40	0.40
Avail Cap(c_a), veh/h	397	0	0	480	0	0	471	1288	1341	500	1317	1345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
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	77.8	0.0	0.0	76.5	0.0	0.0	11.0	9.6	9.6	7.5	34.0	34.0
Incr Delay (d2), s/veh	3.7	0.0	0.0	4.0	0.0	0.0	0.0	1.1	1.0	0.3	0.9	0.9
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	5.1	0.0	0.0	7.6	0.0	0.0	0.1	9.1	9.5	0.9	21.6	22.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.5	0.0	0.0	80.5	0.0	0.0	11.0	10.7	10.6	7.8	34.9	34.8
LnGrp LOS	F	A	A	F	A	A	B	B	B	A	C	C
Approach Vol, veh/h		106			161			1158			1146	
Approach Delay, s/veh		81.5			80.5			10.7			32.8	
Approach LOS		F			F			B			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.9	138.5		29.6	9.0	141.4		29.6				
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0				
Max Green Setting (Gmax), s	17.0	88.0		54.0	17.0	88.0		54.0				
Max Q Clear Time (g_c+I1), s	4.3	24.7		22.0	2.3	46.6		19.2				
Green Ext Time (p_c), s	0.1	8.0		0.5	0.0	2.6		1.1				
Intersection Summary												
HCM 6th Ctrl Delay				27.8								
HCM 6th LOS				C								

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	79	17	7	115	34	22	64	3	19	57	27
Future Vol, veh/h	14	79	17	7	115	34	22	64	3	19	57	27
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	90	19	8	131	39	25	73	3	22	65	31
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.5	8.8	8.6	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	25%	13%	4%	18%
Vol Thru, %	72%	72%	74%	55%
Vol Right, %	3%	15%	22%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	89	110	156	103
LT Vol	22	14	7	19
Through Vol	64	79	115	57
RT Vol	3	17	34	27
Lane Flow Rate	101	125	177	117
Geometry Grp	1	1	1	1
Degree of Util (X)	0.135	0.16	0.222	0.151
Departure Headway (Hd)	4.821	4.611	4.499	4.655
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	742	776	798	769
Service Time	2.861	2.647	2.532	2.694
HCM Lane V/C Ratio	0.136	0.161	0.222	0.152
HCM Control Delay	8.6	8.5	8.8	8.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.6	0.8	0.5

411 Michigan
3: Michigan Avenue & 5th Street

2023 Build Conditions
PM Peak Hour

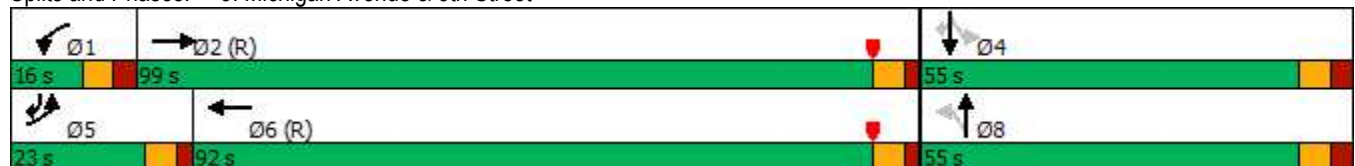


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↙	↑↑↑	↙	↑↑↑		↕		↕	↗
Traffic Volume (vph)	113	1315	11	1788	68	59	21	36	117
Future Volume (vph)	113	1315	11	1788	68	59	21	36	117
Lane Group Flow (vph)	119	1422	12	1925	0	160	0	60	123
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA	pm+ov
Protected Phases	5	2	1	6		8		4	5
Permitted Phases					8		4		4
Detector Phase	5	2	1	6	8	8	4	4	5
Switch Phase									
Minimum Initial (s)	5.0	7.0	5.0	7.0	7.0	7.0	7.0	7.0	5.0
Minimum Split (s)	11.0	24.0	12.0	24.0	25.0	25.0	25.0	25.0	11.0
Total Split (s)	23.0	99.0	16.0	92.0	55.0	55.0	55.0	55.0	23.0
Total Split (%)	13.5%	58.2%	9.4%	54.1%	32.4%	32.4%	32.4%	32.4%	13.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	7.0	6.0		7.0		7.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag					Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					Yes
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
v/c Ratio	0.73	0.38	0.20	0.59		0.79		0.31	0.33
Control Delay	98.1	8.7	86.7	18.3		93.7		68.4	41.4
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Delay	98.1	8.7	86.7	18.3		93.7		68.4	41.4
Queue Length 50th (ft)	131	150	13	415		169		61	92
Queue Length 95th (ft)	200	300	38	580		244		106	135
Internal Link Dist (ft)		763		1859		253		306	
Turn Bay Length (ft)	140		155						58
Base Capacity (vph)	188	3777	92	3288		417		406	393
Starvation Cap Reductn	0	0	0	0		0		0	0
Spillback Cap Reductn	0	0	0	0		0		0	0
Storage Cap Reductn	0	0	0	0		0		0	0
Reduced v/c Ratio	0.63	0.38	0.13	0.59		0.38		0.15	0.31

Intersection Summary

Cycle Length: 170
 Actuated Cycle Length: 170
 Offset: 62 (36%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Splits and Phases: 3: Michigan Avenue & 5th Street



411 Michigan
3: Michigan Avenue & 5th Street

2023 Build Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖	↑↑↑			↕			↖	↗
Traffic Volume (veh/h)	113	1315	36	11	1788	41	68	59	25	21	36	117
Future Volume (veh/h)	113	1315	36	11	1788	41	68	59	25	21	36	117
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.93	0.98		0.96	1.00		0.94
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	119	1384	38	12	1882	43	72	62	26	22	38	123
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	138	3668	101	22	3384	77	104	79	29	91	144	337
Arrive On Green	0.08	0.73	0.73	0.01	0.67	0.67	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1767	5058	139	1767	5085	116	504	546	204	427	998	1480
Grp Volume(v), veh/h	119	924	498	12	1249	676	160	0	0	60	0	123
Grp Sat Flow(s),veh/h/ln	1767	1689	1820	1767	1689	1824	1255	0	0	1425	0	1480
Q Serve(g_s), s	11.3	17.6	17.6	1.1	33.4	33.5	16.3	0.0	0.0	0.0	0.0	12.0
Cycle Q Clear(g_c), s	11.3	17.6	17.6	1.1	33.4	33.5	21.7	0.0	0.0	5.5	0.0	12.0
Prop In Lane	1.00		0.08	1.00		0.06	0.45		0.16	0.37		1.00
Lane Grp Cap(c), veh/h	138	2449	1320	22	2247	1214	212	0	0	235	0	337
V/C Ratio(X)	0.86	0.38	0.38	0.53	0.56	0.56	0.76	0.00	0.00	0.26	0.00	0.37
Avail Cap(c_a), veh/h	177	2449	1320	94	2247	1214	411	0	0	456	0	541
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	77.4	8.8	8.8	83.4	15.1	15.1	72.7	0.0	0.0	64.4	0.0	56.0
Incr Delay (d2), s/veh	23.3	0.4	0.8	7.1	1.0	1.8	4.0	0.0	0.0	0.4	0.0	0.5
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	6.1	6.4	7.1	0.6	12.9	14.2	7.2	0.0	0.0	2.4	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	100.7	9.3	9.7	90.5	16.1	17.0	76.7	0.0	0.0	64.8	0.0	56.5
LnGrp LOS	F	A	A	F	B	B	E	A	A	E	A	E
Approach Vol, veh/h		1541			1937			160				183
Approach Delay, s/veh		16.5			16.9			76.7				59.2
Approach LOS		B			B			E				E
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.2	129.3		31.6	19.3	119.1		31.6				
Change Period (Y+Rc), s	7.0	6.0		7.0	6.0	6.0		7.0				
Max Green Setting (Gmax), s	9.0	93.0		48.0	17.0	86.0		48.0				
Max Q Clear Time (g_c+I1), s	3.1	19.6		14.0	13.3	35.5		23.7				
Green Ext Time (p_c), s	0.0	3.9		0.6	0.0	6.1		0.8				
Intersection Summary												
HCM 6th Ctrl Delay				21.2								
HCM 6th LOS				C								

DRIVEWAYS

411 Michigan
5: Alley & Driveway

2023 Build Conditions + Driveway
AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↑↑			↑	
Traffic Volume (veh/h)	0	12	0	0	0	0
Future Volume (Veh/h)	0	12	0	0	0	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	13	0	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				166		
pX, platoon unblocked						
vC, conflicting volume	0	0	0			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0	0	0			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	1023	1085	1623			
Direction, Lane #	EB 1	EB 2	SB 1			
Volume Total	6	6	0			
Volume Left	0	0	0			
Volume Right	6	6	0			
cSH	1085	1085	1700			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	8.3	8.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.3		0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			8.3			
Intersection Capacity Utilization			6.7%		ICU Level of Service	A
Analysis Period (min)			15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	19	53	112	0	0	83
Future Volume (Veh/h)	19	53	112	0	0	83
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	58	122	0	0	90
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (ft)						195
pX, platoon unblocked						
vC, conflicting volume						
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol						
tC, single (s)						
tC, 2 stage (s)						
tF (s)						
p0 queue free %						
cM capacity (veh/h)						
Direction, Lane #	WB 1	WB 2	NB 1	SB 1		
Volume Total	21	58	122	90		
Volume Left	21	0	0	0		
Volume Right	0	58	0	0		
cSH	779	929	1700	1700		
Volume to Capacity	0.03	0.06	0.07	0.05		
Queue Length 95th (ft)	2	5	0	0		
Control Delay (s)	9.7	9.1	0.0	0.0		
Lane LOS	A	A				
Approach Delay (s)	9.3		0.0	0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			15.9%		ICU Level of Service	
Analysis Period (min)			15		A	

APPENDIX G
TRIP GENERATION DATA

**TRIP GENERATION ANALYSIS
411 MICHIGAN**

DAILY

Land Use	ITE Code	Size	Trip Generation Rate	In	Out	Total Trips			Pass-by		Net New Trips		
						In	Out	Total	Trips	%	In	Out	Total
<u>Proposed Uses</u> General Office Shopping Center	710	200 Employees	Ln (T) = 0.80 Ln(X) + 2.51	50%	50%	427	426	853	0	0%	427	426	853
	820	4,320 SF	Ln (T) = 0.68 Ln(X) + 5.57	50%	50%	355	355	710	0	0%	355	355	710
Total						782	781	1,563	0		782	781	1,563
Non-vehicular reduction (20%)						156	156	313			156	156	313
Net-New Trips						626	625	1,250			626	625	1,250

MORNING PEAK HOUR

Land Use	ITE Code	Size	Trip Generation Rate	In	Out	Total Trips			Pass-by		Net New Trips		
						In	Out	Total	Trips	%	In	Out	Total
<u>Proposed Uses</u> General Office Shopping Center	710	200 Employees	Ln (T) = 0.72 Ln(X) + 0.56	83%	17%	66	13	79	0	0%	66	13	79
	820	4,320 SF	T = 0.94 (X)	62%	38%	2	2	4	0	0%	2	2	4
Total						68	15	83	0		68	15	83
Non-vehicular reduction (20%)						14	3	17			14	3	17
Net-New Trips						54	12	66	0	0	54	12	66

AFTERNOON PEAK HOUR

Land Use	ITE Code	Size	Trip Generation Rate	In	Out	Total Trips			Pass-by		Net New Trips		
						In	Out	Total	Trips	%	In	Out	Total
<u>Proposed Uses</u> General Office Shopping Center	710	200 Employees	T = 0.27 (X) + 23.57	20%	80%	16	62	78	0	0%	16	62	78
	820	4,320 SF	Ln (T) = 0.74 Ln(X) + 2.89	48%	52%	25	28	53	18	34%	16	19	35
Total						41	90	131	18		32	81	113
Non-vehicular reduction (20%)						8	18	26	4		6	16	23
Net-New Trips						33	72	105	14	0	26	65	90

General Office Building (710)

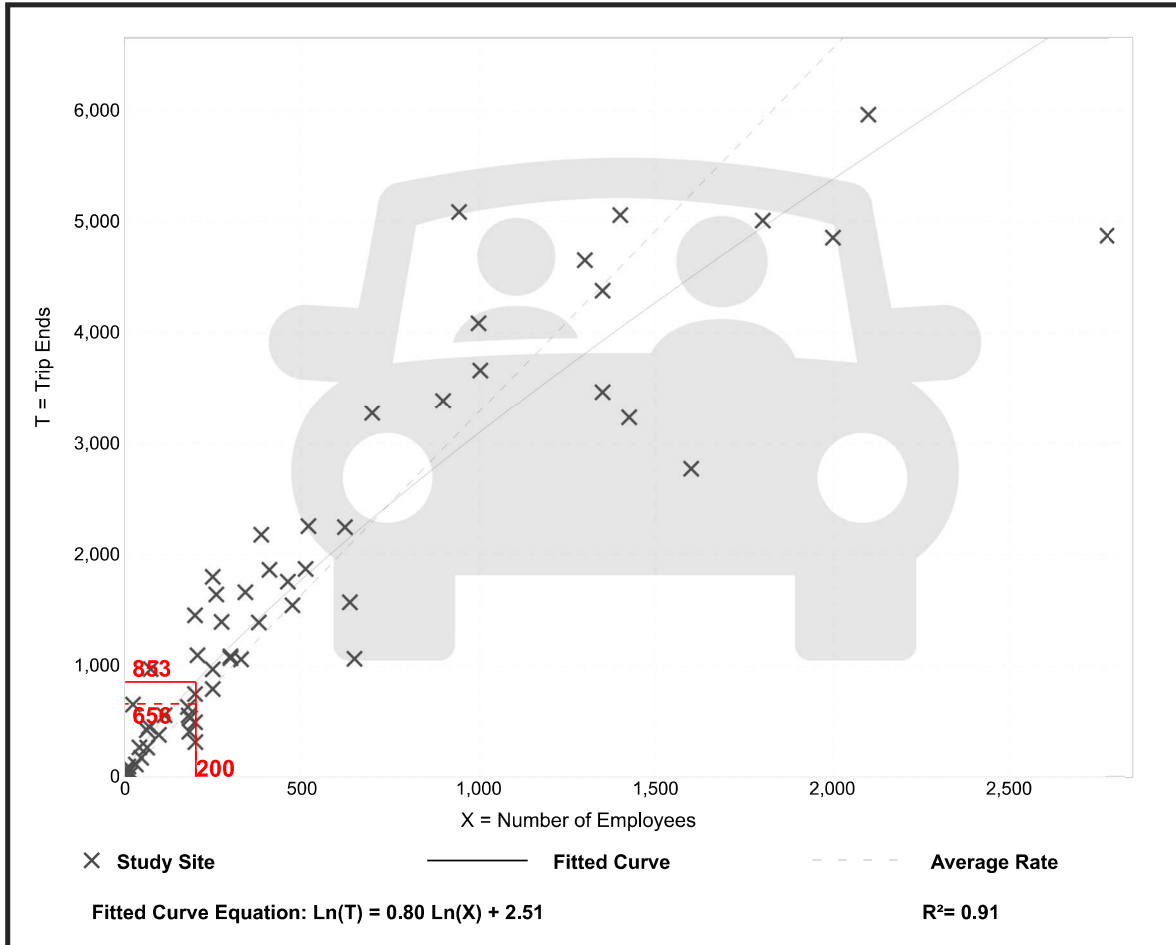
Vehicle Trip Ends vs: Employees
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 60
Avg. Num. of Employees: 528
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
3.28	1.59 - 26.24	1.44

Data Plot and Equation



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General Office Building (710)

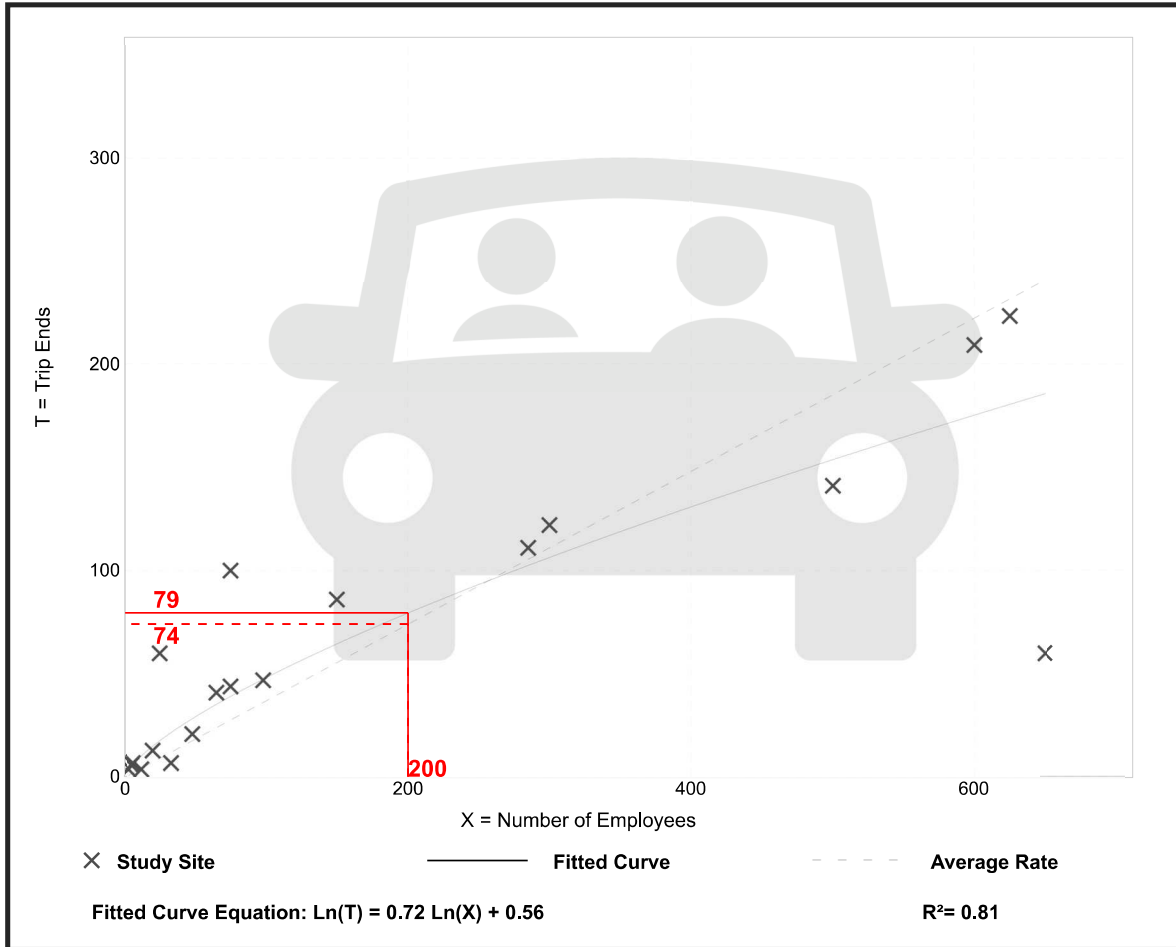
Vehicle Trip Ends vs: Employees
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 19
 Avg. Num. of Employees: 188
 Directional Distribution: 83% entering, 17% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.37	0.09 - 2.40	0.27

Data Plot and Equation



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General Office Building (710)

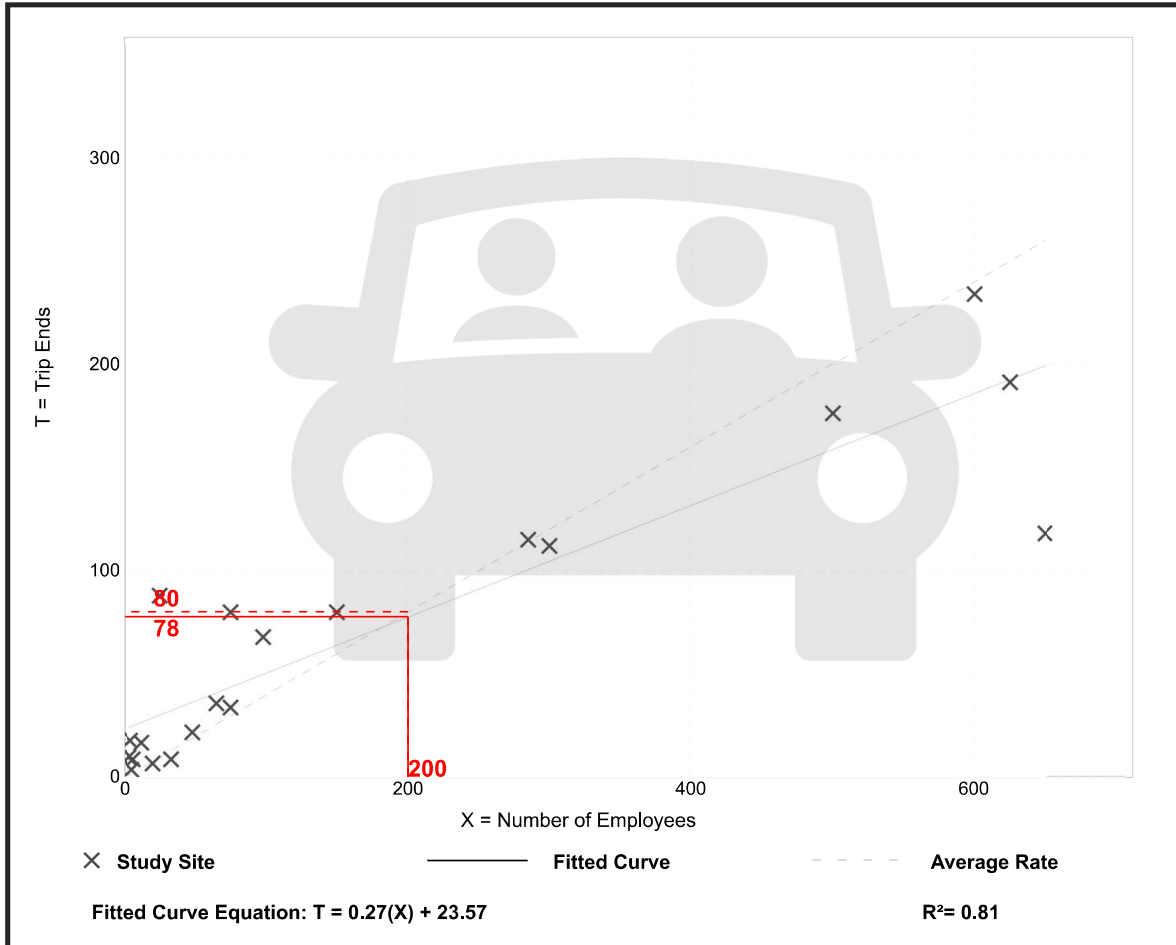
Vehicle Trip Ends vs: Employees
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 20
 Avg. Num. of Employees: 179
 Directional Distribution: 20% entering, 80% exiting

Vehicle Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.40	0.18 - 4.50	0.36

Data Plot and Equation



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Shopping Center (820)

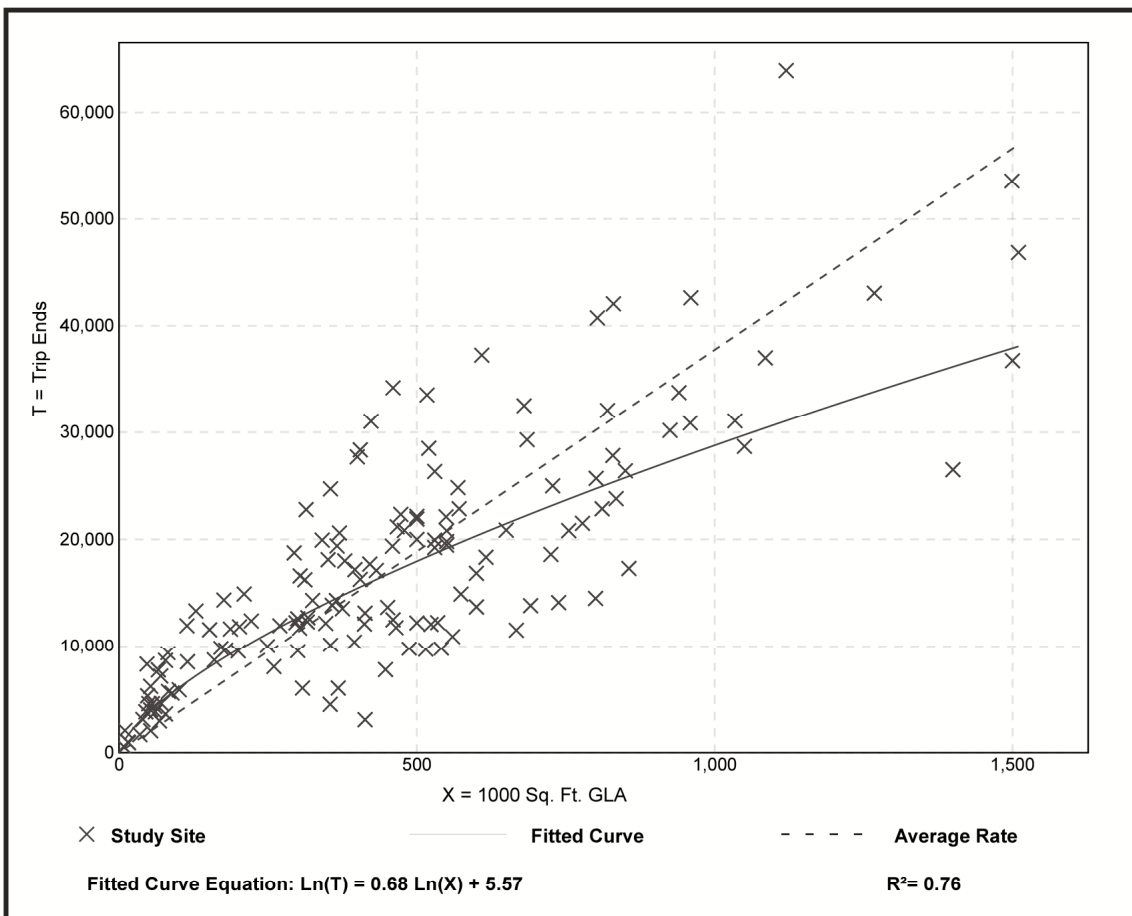
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 147
1000 Sq. Ft. GLA: 453
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

Data Plot and Equation



Shopping Center (820)

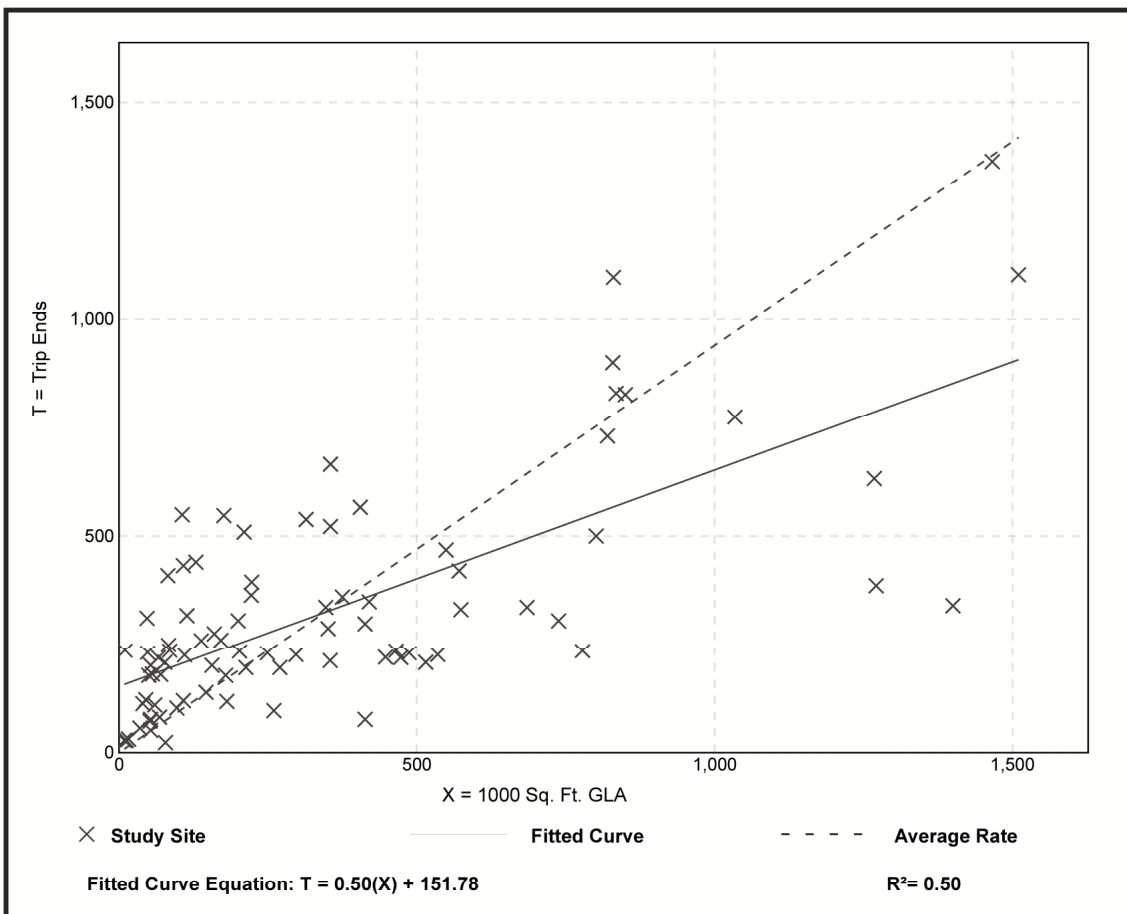
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 84
 1000 Sq. Ft. GLA: 351
 Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



Shopping Center (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
 Number of Studies: 261
 1000 Sq. Ft. GLA: 327
 Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation

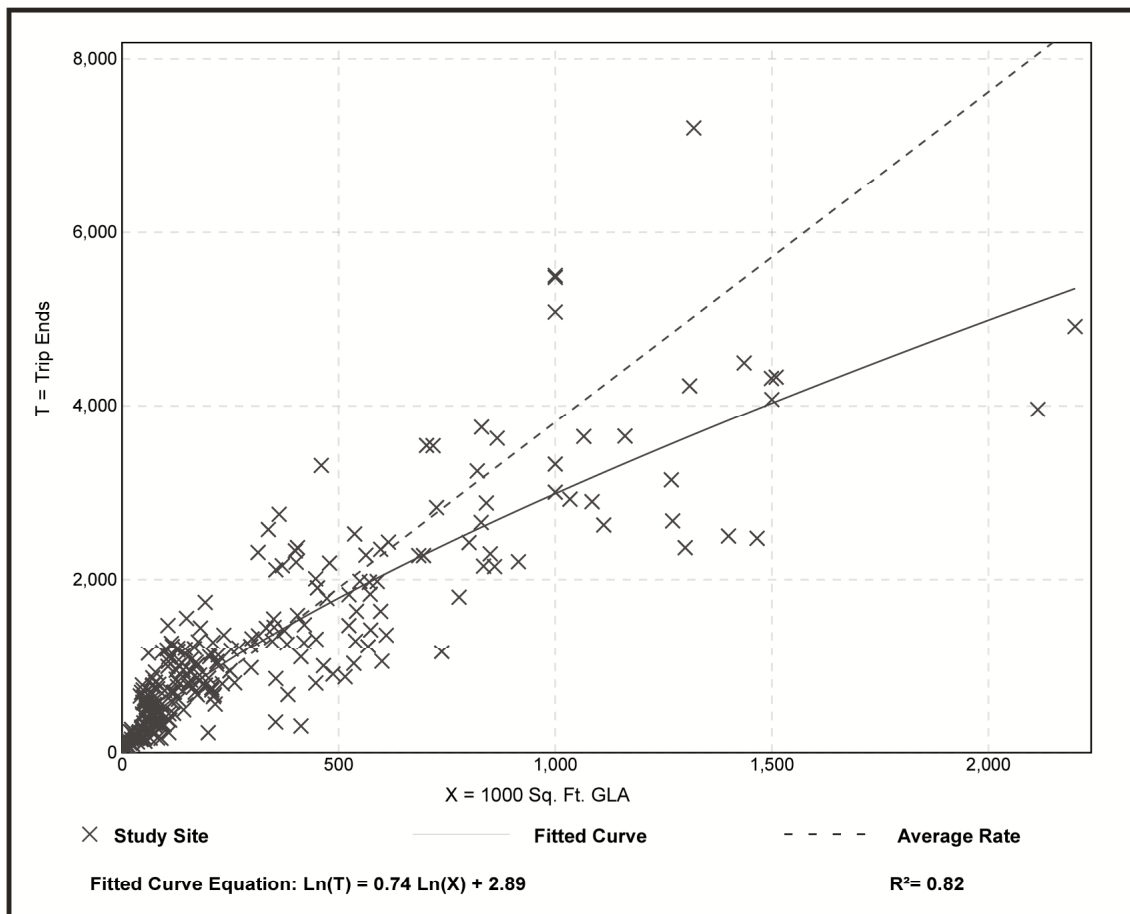


Table E.9 (Cont'd) Pass-By and Non-Pass-By Trips Weekday, PM Peak Period Land Use Code 820—Shopping Center

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIP (%)			ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
						PRIMARY	DIVERTED	TOTAL			
921	Albany, NY	July & Aug. 1985	196	4:00–6:00 p.m.	23	42	35	77	—	60,950	Raymond Keyes Assoc.
108	Overland Park, KS	July 1988	111	4:30–5:30 p.m.	26	61	13	74	—	34,000	—
118	Overland Park, KS	Aug. 1988	123	4:30–5:30 p.m.	25	55	20	75	—	—	—
256	Greece, NY	June 1988	120	4:00–6:00 p.m.	38	62	—	62	—	23,410	Sear Brown
160	Greece, NY	June 1988	78	4:00–6:00 p.m.	29	71	—	71	—	57,306	Sear Brown
550	Greece, NY	June 1988	117	4:00–6:00 p.m.	48	52	—	52	—	40,763	Sear Brown
51	Boca Raton, FL	Dec. 1987	110	4:00–6:00 p.m.	33	34	33	67	—	42,225	Kimley-Horn and Assoc. Inc.
1,090	Ross Twp, PA	July 1988	411	2:00–8:00 p.m.	34	56	10	66	—	51,500	Wilbur Smith and Assoc.
97	Upper Dublin Twp, PA	Winter 1988/89	—	4:00–6:00 p.m.	41	—	—	59	—	34,000	McMahon Associates
118	Tredyffrin Twp, PA	Winter 1988/89	—	4:00–6:00 p.m.	24	—	—	76	—	10,000	Booz Allen & Hamilton
122	Lawnside, NJ	Winter 1988/89	—	4:00–6:00 p.m.	37	—	—	63	—	20,000	Pennoni Associates
126	Boca Raton, FL	Winter 1988/89	—	4:00–6:00 p.m.	43	—	—	57	—	40,000	McMahon Associates
150	Willow Grove, PA	Winter 1988/89	—	4:00–6:00 p.m.	39	—	—	61	—	26,000	Booz Allen & Hamilton
153	Broward Cnty., FL	Winter 1988/89	—	4:00–6:00 p.m.	50	—	—	50	—	85,000	McMahon Associates
153	Arden, DE	Winter 1988/89	—	4:00–6:00 p.m.	30	—	—	70	—	26,000	Orth-Rodgers & Assoc. Inc.
154	Doylestown, PA	Winter 1988/89	—	4:00–6:00 p.m.	32	—	—	68	—	29,000	Orth Rodgore & Assoc. Inc.
164	Middletown Twp, PA	Winter 1988/89	—	4:00–6:00 p.m.	33	—	—	67	—	25,000	Booz Allen & Hamilton
166	Haddon Twp, NJ	Winter 1988/89	—	4:00–6:00 p.m.	20	—	—	80	—	6,000	Pennoni Associates
205	Broward Cnty., FL	Winter 1988/89	—	4:00–6:00 p.m.	55	—	—	45	—	62,000	McMahon Associates

Table E.9 (Cont'd) Pass-By and Non-Pass-By Trips Weekday, PM Peak Period Land Use Code 820—Shopping Center

SIZE (1,000 SQ. FT. GLA)	LOCATION	WEEKDAY SURVEY DATE	NO. OF INTERVIEWS	TIME PERIOD	PASS-BY TRIP (%)	NON-PASS-BY TRIP (%)			ADJ. STREET PEAK HOUR VOLUME	AVERAGE 24-HOUR TRAFFIC	SOURCE
						PRIMARY	DIVERTED	TOTAL			
237	W. Windsor Twp, NJ	Winter 1988/89	—	4:00–6:00 p.m.	48	—	—	52	—	46,000	Booz Allen & Hamilton
242	Willow Grove, PA	Winter 1988/89	—	4:00–6:00 p.m.	37	—	—	63	—	26,000	McMahon Associates
297	Whitehall, PA	Winter 1988/89	—	4:00–6:00 p.m.	33	—	—	67	—	26,000	Orth-Rodgers & Assoc. Inc.
360	Broward Cnty., FL	Winter 1988/89	—	4:00–6:00 p.m.	44	—	—	56	—	73,000	McMahon Associates
370	Pittsburgh, PA	Winter 1988/89	—	4:00–6:00 p.m.	19	—	—	81	—	33,000	Wilbur Smith
150	Portland, OR	—	519	4:00–6:00 p.m.	68	6	26	32	—	25,000	Kittelson and Associates
150	Portland, OR	—	655	4:00–6:00 p.m.	65	7	28	35	—	30,000	Kittelson and Associates
760	Calgary, Alberta	Oct.-Dec. 1987	15,436	4:00–6:00 p.m.	20	39	41	80	—	—	City of Calgary DOT
178	Bordentown, NJ	Apr. 1989	154	2:00–6:00 p.m.	35	—	—	65	—	37,980	Raymond Keyes Assoc.
144	Manalapan, NJ	July 1990	176	3:30–6:15 p.m.	32	44	24	68	—	69,347	Raymond Keyes Assoc.
549	Natick, MA	Feb. 1989	—	4:45–5:45 p.m.	33	26	41	67	—	48,782	Raymond Keyes Assoc.

Average Pass-By Trip Percentage: 34

“—” means no data were provided

the use of bicycle, pedestrian and transit modes as a means of commuting and recreational mobility. These may include, but are not limited to:

- carpools,
- van pools,
- demand response service,
- public/private provision of transit service,
- bicycle sharing, or shared car initiatives, transfer hubs, transfer stops, parking facilities dedicated to transit patrons, and carpools
- provision of short term and long term bicycle parking, showers and changing facilities,
- provision of parking for carpools,
- alternative hours of travel, including flexible work hours, staggered work shifts, compressed work weeks and telecommuting options,
- subsidy of transit fares,
- use of long term parking to be developed at City's entry points,
- shared vehicular and pedestrian access for compatible land uses, where possible,
- shared parking agreements for compatible land uses, where possible.

POLICY TE 1.7.3: INTELLIGENT TRANSPORTATION SYSTEMS

The City shall coordinate with and support FDOT and MDC in the pursuit of Intelligent Transportation Systems (ITS), to help manage congestion on facilities within Miami Beach as well as those facilities connecting the City with the mainland transportation system. This may include using various forms of technology, not limited to cameras, and electronic signage, to inform travelers of the condition of the transportation system, roadway level of service, adaptive signal controls, and availability of parking citywide. Additionally, the City is currently pursuing FDOT independent ITS projects and shall continue to pursue such independent projects to better manage the movement of traffic within the City's transportation network.

POLICY TE 1.7.4: BALANCING MODAL SPLIT

The City shall attempt to better balance the mode split between automobiles and alternative modes of transportation, such as bicycling and transit, particularly in the morning, afternoon and evening peak hour periods. In the meantime, the City will use the TPO's regional model to establish the modal split within the City. The City shall create transit hubs, transit centers and stops to integrate the various modes at one location according to modal priority.

POLICY TE 1.7.5: MODE SPLIT ANALYSIS

The City currently has a transportation mode split of its daily population of 64% private vehicles, 11% mass transit, 10% walking, 5% biking, and 10% others. The City shall strive to achieve its 2035 vision of a minimum transportation mode split of 20% mass transit, 17% walking, 8% bicycling, and 12% other modes through support of and implementation of multimodal transportation improvements.

POLICY TE 1.7.6: MODAL SPLIT DATA COLLECTION

As a tool for accomplishing the desired modal split envisioned for 2035, the city shall perform and retain a series of origin-destination studies in which the modes of transportation used within the city and by different people are recorded. These studies could be performed through surveys of tourists, residents, and commuters provided electronically and capturing a desired sample size.

APPENDIX H
ITE EXCERPTS & QUEUING ANALYSIS CALCULATIONS

Valet Service Time Calculations

411 MICHIGAN VALET OPERATIONS

Scenario 1: Driveway operates as Ingress in the Morning and egress in the Afternoon; Alley operates as two-way in the portion of our site (assumed drop-off for only AM and pick-up for only PM)

Valet Service Time Drop-off	
Activity	Service Time (min)
Vehicle Pick-Up	0.40
Vehicle Travel Time (Weighted Avg.)	0.21
Signal Delay Based on Synchro	0.00
Lift Time Get on (Weighted Avg.)	1.51
Car Elevator Time (Weighted Avg.)	1.33
Return to Valet booth (Weighted Avg.)	0.40
Total Service Time	3.85

Valet Service Time Pick-up	
Activity	Service Time (min)
Get Ticket/Keys	0.15
Pickup Car Time (Weighted Avg.)	0.40
Lift Time Get off (Weighted Avg.)	2.17
Car Elevator Time (Weighted Avg.)	1.33
Vehicle Travel Time (Weighted Avg.)	0.21
Signal Delay Based on Synchro	0.00
Return car	0.20
Total Service Time	4.47

Travel Time from Valet Booth to Valet Parking Spaces

	Speed (mph)	Speed (mps)	Distance to Car Elevator Parking (m)	Travel Time (sec)
From Valet	10	4.44	60.00	13.50

	Speed (mph)	Speed (mps)	Distance to Ground Floor Parking (m)	Travel Time (sec)
From Basement	10	4.44	50.00	11.25

	Speed (mph)	Speed (mps)	Distance to Basement Floor Parking (m)	Travel Time (sec)
From Car elevator	10	4.44	0.00	120.00

	Speed (mph)	Speed (mps)	Distance to Valet Pick-up (m)	Travel Time (sec)
From Car elevator	10	4.44	60.00	13.50

Valet Parking Spaces

Lift Spaces Ground Floor	30	spaces
Lift Spaces in the Basement Floor	59	spaces

Valet Operator time to return to Valet Booth

Return to Valet booth from Basement	1	min
Return to Valet booth from Ground Floor	0.1	min

Lift Time Get On

Double Stackers Lift-Time*	1	min
Tripple Stackers Lift-Time	2.5	min

Lift Time Get Off

Double Stackers Lift-Time*	1.5	min
Tripple Stackers Lift-Time	3.5	min

* Assumes one personnel at basement floor controlling lifts.

Valet Service Time Calculations

411 MICHIGAN VALET OPERATIONS

Scenario 2: All Vehicles Enter through the Alley and exit through the Driveway

Valet Service Time Drop-off	
Activity	Service Time (min)
Vehicle Pick-Up	0.40
Vehicle Travel Time (Weighted Avg.)	0.46
Signal Delay Based on Synchro	1.41
Lift Time Get on (Weighted Avg.)	1.51
Car Elevator Time (Weighted Avg.)	1.33
Return to Valet booth (Weighted Avg.)	0.40
Total Service Time	5.50

Valet Service Time Pick-up	
Activity	Service Time (min)
Get Ticket/Keys	0.15
Pickup Car Time (Weighted Avg.)	0.40
Lift Time Get off (Weighted Avg.)	2.17
Car Elevator Time (Weighted Avg.)	1.33
Vehicle Travel Time (Weighted Avg.)	0.21
Signal Delay Based on Synchro	0.00
Return car	0.20
Total Service Time	4.47

Travel Time from Valet Booth to Valet Parking Spaces

	Speed (mph)	Speed (mps)	Distance to Car Elevator Parking (m)	Travel Time (sec)
From Valet	10	4.44	160.00	36.00

	Speed (mph)	Speed (mps)	Distance to Ground Floor Parking (m)	Travel Time (sec)
From Basement	10	4.44	50.00	11.25

	Speed (mph)	Speed (mps)	Distance to Basement Floor Parking (m)	Travel Time (sec)
From Car elevator	10	4.44	0.00	120.00

	Speed (mph)	Speed (mps)	Distance to Valet Pick-up (m)	Travel Time (sec)
From Car elevator	10	4.44	60.00	13.50

Valet Parking Spaces	
Lift Spaces Ground Floor	30 spaces
Lift Spaces in the Basement Floor	59 spaces

Valet Operator time to return to Valet Booth	
Return to Valet booth from Basement	1 min
Return to Valet booth from Ground Floor	0.1 min

Lift Time Get On	
Double Stackers Lift-Time*	1 min
Tripple Stackers Lift-Time	2.5 min

Lift Time Get Off	
Double Stackers Lift-Time*	1.5 min
Tripple Stackers Lift-Time	3.5 min

* Assumes one personnel at basement floor controlling lifts.

Valet Service Time Calculations

411 MICHIGAN VALET OPERATIONS

Scenario 3: All Vehicles Enter through the Driveway and exit through the Alley

Valet Service Time Drop-off	
Activity	Service Time (min)
Vehicle Pick-Up	0.40
Vehicle Travel Time (Weighted Avg.)	0.81
Signal Delay Based on Synchro	1.56
Lift Time Get on (Weighted Avg.)	1.51
Car Elevator Time (Weighted Avg.)	1.33
Return to Valet booth (Weighted Avg.)	0.40
Total Service Time	6.00

Valet Service Time Pick-up	
Activity	Service Time (min)
Get Ticket/Keys	0.15
Pickup Car Time (Weighted Avg.)	0.40
Lift Time Get off (Weighted Avg.)	2.17
Car Elevator Time (Weighted Avg.)	1.33
Vehicle Travel Time (Weighted Avg.)	0.51
Signal Delay Based on Synchro	0.15
Return car	0.20
Total Service Time	4.91

Travel Time from Valet Booth to Valet Parking Spaces

	Speed (mph)	Speed (mps)	Distance to Car Elevator Parking (m)	Travel Time (sec)
From Valet	10	4.44	300.00	67.50

	Speed (mph)	Speed (mps)	Distance to Ground Floor Parking (m)	Travel Time (sec)
From Basement	10	4.44	50.00	11.25

	Speed (mph)	Speed (mps)	Distance to Basement Floor Parking (m)	Travel Time (sec)
From Car elevator	10	4.44	0.00	120.00

	Speed (mph)	Speed (mps)	Distance to Valet Pick-up (m)	Travel Time (sec)
From Car elevator	10	4.44	180.00	40.50

Valet Parking Spaces	
Lift Spaces Ground Floor	30 spaces
Lift Spaces in the Basement Floor	59 spaces

Valet Operator time to return to Valet Booth	
Return to Valet booth from Basement	1 min
Return to Valet booth from Ground Floor	0.1 min

Lift Time Get On	
Double Stackers Lift-Time*	1 min
Tripple Stackers Lift-Time	2.5 min

Lift Time Get Off	
Double Stackers Lift-Time*	1.5 min
Tripple Stackers Lift-Time	3.5 min

* Assumes one personnel at basement floor controlling lifts.

Valet Service Time Calculations

411 MICHIGAN VALET OPERATIONS

Scenario 4: Driveway operates as Ingress in the Morning and egress in the Afternoon; Alley operates as one-way in the portion of our site (assumed drop-off for only AM and pick-up for only PM)

Valet Service Time Drop-off	
Activity	Service Time (min)
Vehicle Pick-Up	0.40
Vehicle Travel Time (Weighted Avg.)	0.81
Signal Delay Based on Synchro	1.56
Lift Time Get on (Weighted Avg.)	1.51
Car Elevator Time (Weighted Avg.)	1.33
Return to Valet booth (Weighted Avg.)	0.40
Total Service Time	6.00

Valet Service Time Pick-up	
Activity	Service Time (min)
Get Ticket/Keys	0.15
Pickup Car Time (Weighted Avg.)	0.40
Lift Time Get off (Weighted Avg.)	2.17
Car Elevator Time (Weighted Avg.)	1.33
Vehicle Travel Time (Weighted Avg.)	0.21
Signal Delay Based on Synchro	0.00
Return car	0.20
Total Service Time	4.47

Travel Time from Valet Booth to Valet Parking Spaces

	Speed (mph)	Speed (mps)	Distance to Car Elevator Parking (m)	Travel Time (sec)
From Valet	10	4.44	300.00	67.50

	Speed (mph)	Speed (mps)	Distance to Ground Floor Parking (m)	Travel Time (sec)
From Basement	10	4.44	50.00	11.25

	Speed (mph)	Speed (mps)	Distance to Basement Floor Parking (m)	Travel Time (sec)
From Car elevator	10	4.44	0.00	120.00

	Speed (mph)	Speed (mps)	Distance to Valet Pick-up (m)	Travel Time (sec)
From Car elevator	10	4.44	60.00	13.50

Valet Parking Spaces

Lift Spaces Ground Floor	30	spaces
Lift Spaces in the Basement Floor	59	spaces

Valet Operator time to return to Valet Booth

Return to Valet booth from Basement	1	min
Return to Valet booth from Ground Floor	0.1	min

Lift Time Get On

Double Stackers Lift-Time*	1	min
Tripple Stackers Lift-Time	2.5	min

Lift Time Get Off

Double Stackers Lift-Time*	1.5	min
Tripple Stackers Lift-Time	3.5	min

* Assumes one personnel at basement floor controlling lifts.

QUEUING ANALYSIS 411 MICHIGAN - Scenario 1

Estimated Service Time

Entrance Type	Time (min)*
Drop-off Valet Operation	3.85
Pick-up Valet Operation	4.47

Morning Ingress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **54**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **3.85**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	78.00	54	0.3462	0.1801	0.2

Morning Egress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **12**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **4.47**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	68.00	12	0.0882	0.0125	0.0

Afternoon Ingress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **33**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **3.85**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	78.00	33	0.2115	0.0749	0.0

Afternoon Egress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **72**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **4.47**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	68.00	72	0.5294	0.3676	2.1

Morning Peak Hour Trip Generation Summary

Land Use	ITE Code	In	Out	Total Trips
General Office	710	53	10	63
Shopping Center	820	1	2	3
Total		54	12	66

Afternoon Peak Hour Trip Generation Summary

Land Use	ITE Code	In	Out	Total Trips
General Office	710	13	50	63
Shopping Center	820	20	22	42
Total		33	72	105

r	N=1	2	3	4	6	8	10
0.1	0.1000	0.0182	0.0037	0.0008	0.0000	0.0000	0.0000
0.2	0.2000	0.0666	0.0247	0.0093	0.0015	0.0002	0.0000
0.3	0.3000	0.1385	0.0700	0.0370	0.0111	0.0036	0.0011
0.4	0.4000	0.2286	0.1411	0.0907	0.0400	0.0185	0.0088
0.5	0.5000	0.3333	0.2368	0.1739	0.0991	0.0591	0.0360
0.6	0.6000	0.4501	0.3548	0.2870	0.1965	0.1395	0.1013
0.7	0.7000	0.5766	0.4923	0.4286	0.3359	0.2706	0.2218
0.8	0.8000	0.7111	0.6472	0.5964	0.5178	0.4576	0.4093
0.9	0.9000	0.8526	0.8172	0.7878	0.7401	0.7014	0.6687
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

* ITE Transportation and Development Table 8.11

Required queuing storage equation:

$$M = \frac{\ln(0.05) - \ln(Q_m)}{\ln \rho} - 1$$

where:

- N** = Number of Lanes
- Q** = Average Service Rate (veh/hr)
- q** = Peak Hour Arrival Rate (veh/hr)
- r** = Coefficient of Utilization (q/NQ)
- Q_m** = ITE table value of relationship between queue length, number of attendants and utilization factor (ITE Transportation and Land Development Table 8.11)
- M** = Queue length which is exceeded 5% of the time (veh)

QUEUING ANALYSIS 411 MICHIGAN - Scenario 2

Estimated Service Time

Entrance Type	Time (min)*
Drop-off Valet Operation	5.50
Pick-up Valet Operation	4.47

Morning Ingress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **54**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **5.50**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	55.00	54	0.4909	0.3238	1.6

Morning Egress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **12**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **4.47**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	68.00	12	0.0882	0.0125	0.0

Afternoon Ingress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **33**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **5.50**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	55.00	33	0.3000	0.1385	0.0

Afternoon Egress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **72**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **4.47**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	68.00	72	0.5294	0.3677	2.1

Morning Peak Hour Trip Generation Summary

Land Use	ITE Code	In	Out	Total Trips
General Office	710	53	10	63
Shopping Center	820	1	2	3
Total		54	12	66

Afternoon Peak Hour Trip Generation Summary

Land Use	ITE Code	In	Out	Total Trips
General Office	710	13	50	63
Shopping Center	820	20	22	42
Total		33	72	105

r	N=1	2	3	4	6	8	10
0.1	0.1000	0.0182	0.0037	0.0008	0.0000	0.0000	0.0000
0.2	0.2000	0.0666	0.0247	0.0093	0.0015	0.0002	0.0000
0.3	0.3000	0.1385	0.0700	0.0370	0.0111	0.0036	0.0011
0.4	0.4000	0.2286	0.1411	0.0907	0.0400	0.0185	0.0088
0.5	0.5000	0.3333	0.2368	0.1739	0.0991	0.0591	0.0360
0.6	0.6000	0.4501	0.3548	0.2870	0.1965	0.1395	0.1013
0.7	0.7000	0.5766	0.4923	0.4286	0.3359	0.2706	0.2218
0.8	0.8000	0.7111	0.6472	0.5964	0.5178	0.4576	0.4093
0.9	0.9000	0.8526	0.8172	0.7878	0.7401	0.7014	0.6687
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

* ITE Transportation and Development Table 8.11

Required queuing storage equation:

$$M = \frac{\ln(0.05) - \ln(Q_m)}{\ln \rho} - 1$$

where:

- N** = Number of Lanes
- Q** = Average Service Rate (veh/hr)
- q** = Peak Hour Arrival Rate (veh/hr)
- r** = Coefficient of Utilization (q/NQ)
- Q_m** = ITE table value of relationship between queue length, number of attendants and utilization factor (ITE Transportation and Land Development Table 8.11)
- M** = Queue length which is exceeded 5% of the time (veh)

QUEUING ANALYSIS 411 MICHIGAN - Scenario 3

Estimated Service Time

Entrance Type	Time (min)*
Drop-off Valet Operation	6.00
Pick-up Valet Operation	4.91

Morning Ingress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **54**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **6.00**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	51.00	54	0.5294	0.3676	2.1

Morning Egress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **12**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **4.91**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	62.00	12	0.0968	0.0166	0.0

Afternoon Ingress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **33**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **6.00**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	51.00	33	0.3235	0.1597	0.0

Afternoon Egress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **72**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **4.91**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	62.00	72	0.5806	0.4274	2.9

Morning Peak Hour Trip Generation Summary

Land Use	ITE Code	In	Out	Total Trips
General Office	710	53	10	63
Shopping Center	820	1	2	3
Total		54	12	66

Afternoon Peak Hour Trip Generation Summary

Land Use	ITE Code	In	Out	Total Trips
General Office	710	13	50	63
Shopping Center	820	20	22	42
Total		33	72	105

r	N=1	2	3	4	6	8	10
0.1	0.1000	0.0182	0.0037	0.0008	0.0000	0.0000	0.0000
0.2	0.2000	0.0666	0.0247	0.0093	0.0015	0.0002	0.0000
0.3	0.3000	0.1385	0.0700	0.0370	0.0111	0.0036	0.0011
0.4	0.4000	0.2286	0.1411	0.0907	0.0400	0.0185	0.0088
0.5	0.5000	0.3333	0.2368	0.1739	0.0991	0.0591	0.0360
0.6	0.6000	0.4501	0.3548	0.2870	0.1965	0.1395	0.1013
0.7	0.7000	0.5766	0.4923	0.4286	0.3359	0.2706	0.2218
0.8	0.8000	0.7111	0.6472	0.5964	0.5178	0.4576	0.4093
0.9	0.9000	0.8526	0.8172	0.7878	0.7401	0.7014	0.6687
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

* ITE Transportation and Development Table 8.11

Required queuing storage equation:

$$M = \frac{\ln(0.05) - \ln(Q_m)}{\ln \rho} - 1$$

where:

- N** = Number of Lanes
- Q** = Average Service Rate (veh/hr)
- q** = Peak Hour Arrival Rate (veh/hr)
- r** = Coefficient of Utilization (q/NQ)
- Q_m** = ITE table value of relationship between queue length, number of attendants and utilization factor (ITE Transportation and Land Development Table 8.11)
- M** = Queue length which is exceeded 5% of the time (veh)

QUEUING ANALYSIS 411 MICHIGAN - Scenario 3

Estimated Service Time

Entrance Type	Time (min)*
Drop-off Valet Operation	6.00
Pick-up Valet Operation	4.47

Morning Ingress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **54**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **6.00**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	51.00	54	0.5294	0.3676	2.1

Morning Egress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **12**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **4.47**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	68.00	12	0.0882	0.0125	0.0

Afternoon Ingress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **33**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **6.00**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	51.00	33	0.3235	0.1597	0.0

Afternoon Egress Peak Hour Valet Parking Queuing Analysis

Peak Hour Arrival Rate (veh/hr): **72**
 Probability of Back-up on Adjacent Street: **5%**
 Service Time (min): **4.47**
 Number of Operators: **5**

N	Q	q	r	Q _m	M
2	68.00	72	0.5294	0.3676	2.1

Morning Peak Hour Trip Generation Summary

Land Use	ITE Code	In	Out	Total Trips
General Office	710	53	10	63
Shopping Center	820	1	2	3
Total		54	12	66

Afternoon Peak Hour Trip Generation Summary

Land Use	ITE Code	In	Out	Total Trips
General Office	710	13	50	63
Shopping Center	820	20	22	42
Total		33	72	105

r	N=1	2	3	4	6	8	10
0.1	0.1000	0.0182	0.0037	0.0008	0.0000	0.0000	0.0000
0.2	0.2000	0.0666	0.0247	0.0093	0.0015	0.0002	0.0000
0.3	0.3000	0.1385	0.0700	0.0370	0.0111	0.0036	0.0011
0.4	0.4000	0.2286	0.1411	0.0907	0.0400	0.0185	0.0088
0.5	0.5000	0.3333	0.2368	0.1739	0.0991	0.0591	0.0360
0.6	0.6000	0.4501	0.3548	0.2870	0.1965	0.1395	0.1013
0.7	0.7000	0.5766	0.4923	0.4286	0.3359	0.2706	0.2218
0.8	0.8000	0.7111	0.6472	0.5964	0.5178	0.4576	0.4093
0.9	0.9000	0.8526	0.8172	0.7878	0.7401	0.7014	0.6687
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

* ITE Transportation and Development Table 8.11

Required queuing storage equation:

$$M = \frac{\ln(0.05) - \ln(Q_m)}{\ln \rho} - 1$$

where:

- N** = Number of Lanes
- Q** = Average Service Rate (veh/hr)
- q** = Peak Hour Arrival Rate (veh/hr)
- r** = Coefficient of Utilization (q/NQ)
- Q_m** = ITE table value of relationship between queue length, number of attendants and utilization factor (ITE Transportation and Land Development Table 8.11)
- M** = Queue length which is exceeded 5% of the time (veh)

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APPLICATIONS OF QUEUEING ANALYSIS

Providing an adequate and well-defined storage area for drive-thru traffic is particularly critical, especially at fast-food restaurants and drive-thru bank facilities where queues can, and do, become quite long. Waiting vehicles should be stored on private property clear of driveways so that traffic back-up does not interfere with movement on the arterial street. At fast-food restaurants, the menu board should be installed upstream of the service window to permit drive-thru customers to place their orders prior to their arrival at the service window. Preparation of their order can then begin before they reach the service window, thus minimizing their time at the service window. A well-defined storage area for the waiting traffic should be located so that the waiting vehicles do not block or impede the movement of driveway traffic.

Where a single service position is involved, the situation is referred to as a *single-channel problem*. *Multiple-channel problems* arise when two or more service positions are available. Such problems commonly arise with bank tellers (indoor as well as drive-in windows), entrances and exits at large parking lots and garages, at passenger pick-up areas at transit stations and taxi stands, truck terminals or loading/unloading areas, supermarket checkout counters, telephone calls, building entrances, and transit-station turnstiles. The assumptions of Poisson arrivals and negative exponential service time are commonly acceptable and used for both single- and multiple-channel problems. Thurgood [11] found these assumptions to be representative of drive-in facilities.

Customers arriving randomly at a drive-in facility may enter into service immediately or may have to enter the queue until they can be served. Waiting lines occur whenever the immediate demand for service exceeds the current capacity of the facility providing that service.

Basic Notation and Terminology

The following notation is employed throughout this section:

- n = number of customers in the drive-in system
- M = number of customers in the queue waiting to be served (number of customers in the system minus the number being served)
- $P(n)$ = steady-state probability that exactly n customers are in the queueing system
- $P(0)$ = probability that zero vehicles are in the queueing system
- N = number of parallel service positions
- q = mean average arrival rate of vehicles into the system (vehicles/hour)
- Q = mean average service rate per service position (vehicles/hour/position)
- Avg (t) = $\frac{m}{q}$ = mean service time expressed in minutes per vehicle
- ρ = $\frac{q}{Q}$ = coefficient of utilization
- $E(m)$ = expected (average) number of customers in the system
- $E(n)$ = expected (average) number of customers waiting in the queue
- $E(t)$ = expected (average) waiting time in system (includes service time)
- $E(w)$ = expected (average) waiting time in queue (excludes service time)

The equations employed in the analysis of queueing problems are given in Table 8-10.

Jones, Woods, and Thurgood [4] have developed a graph (Figure 8-6) for determining the probability that there will be no customers in the system—values for $P(0)$. They also developed graphs for determining the average number of waiting customers (Figure 8-7), the average waiting time (Figure 8-8), and average queue length (Figure 8-9). These figures avoid the necessity to perform the time-consuming, although simple, queueing-analysis calculations. See pp. 228–30.

TABLE 8-10
Queuing System Equations

Equation Number	Variable	Equation
(8-1)	Coefficient of utilization	$\rho = \frac{q}{NQ}$
(8-2)	Probability of no customers in the system	$P(0) = \left[\sum_{n=0}^{N-1} \frac{\left(\frac{q}{Q}\right)^n}{n!} + \frac{\left(\frac{q}{Q}\right)^N}{N!(1-\rho)} \right]^{-1}$
(8-3)	Mean number in the queue	$E(m) = \left[\frac{\rho \left(\frac{q}{Q}\right)^N}{N!(1-\rho)^2} \right] P(0)$
(8-4)	Mean number in the system	$E(n) = E(m) + \frac{q}{Q}$
(8-5)	Mean wait time in queue (hours)	$E(w) = \frac{E(m)}{q}$
(8-6)	Mean time in the system (hours)	$E(t) = E(w) + \frac{1}{Q}$ $= E(w) + \text{Avg}(t)$
(8-7)	Proportion of customers who wait	$P[E(w) > 0] = \left[\frac{\left(\frac{q}{Q}\right)^N}{N!(1-\rho)} \right] P(0)$
(8-8)	Probability of a queue exceeding a length M	$P(x > M) = (\rho^{N+1})P[E(w) > 0]$
(8-9a)	Queue storage required	$M = \left[\frac{\ln P(x > M) - \ln E(w) > 0}{\ln \rho} \right] - 1$
(8-9b)*	Queue storage required	$M = \left[\frac{\ln P(x > M) - \ln Q_M}{\ln \rho} \right] - 1$

* Q_M is a statistic which is a function of the utilization rate and the number of service channels (service positions); see Table 8-11. The table of Q_M values and use of Equation (8-9b) greatly simplifies the calculations compared to those using Equations (8-9a).

Use of the equations and the graphs may be illustrated by the following example of a drive-in bank.

Conditions:

Number of drive-in windows, $N = 3$

Demand on the system, $q = 70$

Service capacity per channel, $Q = 28.6$ for an average service time, $\text{Avg}(t) = 2.1$ minutes

Solution Using Graphs:

- Coefficient of utilization = $70/(3)(28.6) = 0.816$
- Probability that there are customers waiting in the system, Figure 8-6:
 $P(0) = 0.05$
- Expected average number of customers waiting in the queue, Figure 8-7:
 $E(m)/N = 1.0$; and the average number $E(m) = (3)(1.0) = 3$

location, a 5% probability of back-up onto the adjacent street is judged to be acceptable. Demand on the system for design is expected to be 110 vehicles in a 45-minute period. Average service time was expected to be 2.2 minutes. Is the queue storage adequate?

Such problems can be quickly solved using Equation (8-9b) given in Table 8-10 and repeated below for convenience.

$$M = \left[\frac{\ln P(x > M) - \ln Q_M}{\ln \rho} \right] - 1$$

where:

M = queue length which is exceeded p percent of the time

N = number of service channels (drive-in positions)

Q = service rate per channel (vehicles per hour)

$$\rho = \frac{\text{demand rate}}{\text{service rate}} = \frac{q}{NQ} = \text{utilization factor}$$

q = demand rate on the system (vehicles per hour)

Q_M = tabled values of the relationship between queue length, number of channels, and utilization factor (see Table 8.11)

TABLE 8-11
Table of Q_M Values

	$N = 1$	2	3	4	6	8	10
0.0	0.0000	0.0000	0.0000	0.0000			
0.1	.1000	.0182	.0037	.0008	.0000	0.0000	0.0000
.2	.2000	.0666	.0247	.0096	.0015	.0002	.0000
.3	.3000	.1385	.0700	.0370	.0111	.0036	.0011
.4	.4000	.2286	.1411	.0907	.0400	.0185	.0088
.5	.5000	.3333	.2368	.1739	.0991	.0591	.0360
.6	.6000	.4501	.3548	.2870	.1965	.1395	.1013
.7	.7000	.5766	.4923	.4286	.3359	.2706	.2218
.8	.8000	.7111	.6472	.5964	.5178	.4576	.4093
.9	.9000	.8526	.8172	.7878	.7401	.7014	.6687
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

$$\rho = \frac{q}{NQ} = \frac{\text{arrival rate, total}}{\text{(number of channels)(service rate per channel)}}$$

N = number of channels (service positions)

Solution

Step 1: $Q = \frac{60 \text{ min/hr}}{2.2 \text{ min/service}} = 27.3$ services per hour

Step 2: $q = (110 \text{ veh/45 min}) \times (60 \text{ min/hr}) = 146.7$ vehicles per hour

Step 3: $\rho = \frac{q}{NQ} = \frac{146.7}{(6)(27.3)} = 0.8956$

Step 4: $Q_M = 0.7303$ by interpolation between 0.8 and 0.9 for $N = 6$ from the table of Q_M values (see Table 8-11).

Step 5: The acceptable probability of the queue, M , being longer than the storage, 18 spaces in this example, was stated to be 5%. $P(x > M) = 0.05$, and:

$$M = \left[\frac{\ln 0.05 - \ln 0.7303}{\ln 0.8956} \right] - 1 = \left[\frac{-2.996 - (-0.314)}{-0.110} \right] - 1$$

$$= 24.38 - 1 = 23.38, \text{ say } 23 \text{ vehicles.}$$

The number of vehicles in the queue would be expected to exceed 23 more than 5% of the time. Since the site plan will accommodate a queue of 18 vehicles, the storage is not sufficient for the conditions stated.

It is important to realize that, for any $P(x > M)$ value, the queue length required increases very rapidly for values of $\rho > 0.85$ (see Figure 8-9). When $\rho > 1.0$, the solution is indeterminate and the queue length theoretically becomes infinite.

Analysis of Service Times. In many instances it is effective to demonstrate that a proposed design not only is inadequate to store vehicles waiting for service but will result in unacceptable wait times as well. The necessary equations are given in Table 8-10.

For purposes of checking computations it is convenient to know that the limit of $P(0)$, as the number of channels approaches infinity (in practical terms when $N > 10$), is:

$$\lim_{N \rightarrow \infty} P(0) = e^{-\lambda} \quad \text{where } \lambda = q/Q$$

Drive-In Bank Example: Under the site-development approval requirements, representatives of a bank presented a site plan for the construction of a new bank having three service positions. Information provided by bank officials and observations at other local banks provided the following data:

- Expected average arrival rate during the design hour (4:30–5:30 p.m. on Fridays) = 70 vehicles per hour (vph)
- Average service time per customer = 2.1 minutes

Does the site plan provide for sufficient storage to accommodate all vehicles arriving 95% of the time?

$$q = 70 \text{ vph arrival rate}$$

$$Q = \frac{60 \text{ minutes per hour}}{2.1 \text{ minutes per service}} = 28.6 \text{ vph service rate}$$

$$\rho = \frac{70}{(3)(28.6)} = 0.816$$

$$\frac{q}{Q} = \frac{70}{28.6} = 2.45$$

$$Q_M = 0.674 \text{ by interpolation from Table 8-11}$$

$$P(x > M) = 1.00 - 0.95 = 0.05$$

By Equation (8-9b)

$$M = \left[\frac{\ln 0.05 - \ln 0.674}{\ln 0.816} \right] - 1 = \left[\frac{-2.996 - (-0.396)}{-0.203} \right] - 1 = 11.8, \text{ say } 12$$

Thus, it would be necessary to store 12 vehicles, exclusive of the three service positions, in order to accommodate the arriving vehicles 95% of the time; or alternatively, to have waiting vehicles extending back into the adjacent street no more than 5% of the time between 4:30 and 5:30 p.m. on Fridays. Since the site plan provides for six spaces, the site plan as submitted is inadequate and should be disapproved.

A solution to the problem would be to increase the storage, or if this is not possible add a service position in order to reduce the average service time.

Addition of a service position would reduce the number of storage spaces needed to three (three storage plus four service positions)—assuming the same arrival rate and service time:

$$M = \left[\frac{\ln 0.05 - \ln 0.301}{\ln 0.612} \right] - 1 = 2.7, \text{ say } 3$$

A redesign to provide four service positions would have the additional benefit of substantially reducing the expected waiting time (from over 4 minutes to less than $\frac{1}{2}$ minute) for the bank customers using the drive-in windows:

With Three Service Positions:

$$q = 70 \text{ vph}$$

$$Q = 28.6 \text{ vph}$$

$$\frac{q}{Q} = 2.45$$

$$\rho = \frac{70}{(3)(28.6)} = 0.816$$

$$P(0) = \left[\frac{(2.45)^0}{0!} + \frac{(2.45)^1}{1!} + \frac{(2.45)^2}{2!} + \frac{(2.45)^3}{3! \left[1 - \left(\frac{2.45}{3} \right) \right]} \right]^{-1}$$

$$= [1 + 2.45 + 3.00 + 13.37]^{-1} = 0.0505$$

$$E(m) = \left[\frac{(0.816) \left(\frac{70}{28.6} \right)^3}{3!(1 - 0.816)^2} \right] 0.0505 = 2.97$$

$$E(n) = 2.97 + \frac{70 \cdot 2.45}{2.45 \cdot 28.6} = 5.42$$

$$E(t) = \frac{2.97}{70} = 0.0424 \text{ hours or } 2.55 \text{ minutes}$$

$$E(w) = 0.0424 + \frac{1}{28.6} = 0.0774 \text{ hours or } 4.64 \text{ minutes}$$

With Four Service Positions:

$$q = 70 \text{ vph}$$

$$Q = 28.6 \text{ vph}$$

$$\frac{q}{Q} = 2.45$$

$$\rho = \frac{70}{(4)(28.6)} = 0.612$$

$$P(0) = \left[\frac{(2.45)^0}{0!} + \frac{(2.45)^1}{1!} + \frac{(2.45)^2}{2!} + \frac{(2.45)^3}{3!} + \frac{(2.45)^4}{4! \left[1 - \left(\frac{2.45}{4} \right) \right]} \right]^{-1}$$

$$= 0.0783$$

$$E(m) = \left[\frac{(0.612)(2.45)^4}{4!(1 - 0.612)^2} \right] 0.0783 = 0.48$$

$$E(n) = 0.48 + 2.45 = 2.93$$

$$E(t) = 0.007 + \frac{1}{28.6} = 0.042 \text{ hours or } 2.51 \text{ minutes}$$

$$E(w) = \frac{0.48}{70} = 0.007 \text{ hours or } 0.41 \text{ minutes}$$

However, the service time would increase somewhat unless an additional teller were also added. Nevertheless, an increase to 2.5 minutes, or more, would still reduce the storage space required and result in better service (less time in the system). Besides, time spent being served is less irritating to the customer than an equal time spent waiting.

Conversion of a Residence. An existing single-family residence was situated on a 2.5-acre tract fronting on the major north-south arterial in the urbanizing fringe of a metropolitan area of 100,000 population. The 85th percentile speed exceeded 50 mph; however, it was anticipated that the speed limit would be reduced to 45 mph as further urbanization occurred.

Requests for rezoning from single-family residential to general commercial had received negative recommendations from the Planning and Zoning Commission and denied by the City Council. Nevertheless, the fact that changing conditions in the vicinity of the site were making the property less desirable as a single-family residence was generally recognized. Therefore, when an application was submitted for a Conditional Use Permit to establish a private school using the existing residence for classrooms, the Planning and Zoning Commission was very favorably disposed to the request. The applicant provided the following information prior to the public hearing.

1. The completed application for a conditional use
2. A statement that the intended use was for a Montessori school using the existing structure
3. A site plan as required for all proposed development, other than single-family and duplex residential development, before a building permit will be issued for a new structure and for remodeling of an existing one

The following information was presented at the public hearing by the applicant:

1. At least 40 students would be enrolled before any change would be made in the site circulation.
2. Eighty percent of the students were expected to be picked up within a 20-minute period—a substantial additional fee was to be charged for children picked up more than 30 minutes after school.
3. A strong parent-school relationship was intended, so that average pick-up time of at least 2 minutes and visits of 5 minutes or longer would not be unusual.

The following were agreed upon at the public hearing:

1. The probability of vehicles backing up onto the main lane of the major arterial should be negligible, less than 1%.
2. The site plan, with no change in the circulation pattern, would provide for four service positions and three storage positions.

Based upon these conditions, the following analysis was performed using Equation (8-9b):

$$M = 3$$

$$N = 4$$

$$Q = 60 \text{ minutes per hour} \div 2 \text{ minutes per service} = 30 \text{ vph}$$

$$q = (40 \text{ students}) (80\% \text{ in } 20 \text{ minutes}) \left(\frac{60}{20}\right) = 96 \text{ vph}$$

$$\rho = \frac{96}{(4)(30)} = 0.8000$$

$$P(x > 3) = 0.01 \text{ (a 1\% chance of vehicles backing up onto the arterial)}$$

$$Q_M = 0.8585, \text{ from Table 8-11}$$

$$3 = \left[\frac{\ln P(x > 3) - \ln 0.5964}{\ln 0.8000} \right] - 1$$

$$3 = \left[\frac{\ln P(x > 3) - (-0.5168)}{-0.2231} \right] - 1$$

Then,

$$\ln P(x > 3) = (4)(-0.2231) - 0.5168 = -1.4092$$

and

$$P(x > 3) = e^{-1.4092} = 0.244 \text{ or } 24\%$$

Thus, the calculated probability that the queue could back up onto the arterial is 24% (given the stated conditions), which is considerably greater than the acceptable probability of less than 1%, and the application was denied. The Planning and Zoning Commission suggested various compromises of redesign of the site and issuance of a conditional use permit for a school (under the ordinance, a school can be located in any zoning district by condition) with the condition that the maximum enrollment would not exceed 24 students, which is the number necessary to achieve a value of $P(x > 3) < 0.01$. All such proposals were rejected by the applicant. The site was subsequently rezoned to the Administrative and Professional District (a restricted office district) and is now being used as a dentist's office.

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