

10 November 2023

City of Camden
Department of Planning & Development
520 Market Street
City Hall, Room 224
P.O. Box 95120
Camden, NJ 08101-5120

**Re: Traffic Statement
Subaru Head Quarters Traffic Calming
City of Camden, Camden County, New Jersey
Langan Project No.: 220140301**

Langan Engineering & Environmental Services (Langan) has prepared this traffic statement for the proposed internal driveway/security upgrades along Subaru Drive at the Subaru Head Quarters in Camden, NJ. Based on a meeting with city representatives we were asked to analyze whether the internal driveway modifications would impact the adjacent signalized intersections of 11th Street and Subaru Drive, 11th Street and Newton Avenue, and 11th Street and Memorial Avenue/Campbell Place.

In addition, based on a previous conceptual plan provided to the city, there were preliminary discussions about constructing an exclusive right-turn lane along 11th Street, however; as discussed below, we do not believe that an exclusive right-turn lane is necessary at this time.

PROPOSED DEVELOPMENT PROJECT

As part of the proposed improvements, Subaru Drive will be widened to provide an additional employee entrance lane that will be approximately 75 feet in length. In addition, the existing employee entrance lane will be extended by moving the gate access further into the site. Both employee entrance lanes will be equipped with gates and some type of card reader capabilities which will activate the gate to open and close for every employee passenger car entering the site. The visitor entrance lane will also be extended and will continue to operate with a gate and a security booth.

TRAFFIC OBSERVATIONS

Langan arranged for traffic counts to be conducted, utilizing MioVision video cameras, on Tuesday, October 3, 2023, from 6:00-10:00 AM and 3:00-6:00 PM at the three study area intersections. Utilizing the videos, we did a detailed observation at the intersection of 11th Street and Subaru Drive to determine existing operations. The traffic counts used for this traffic statement have been included as an attachment.

The eastbound approach along 11th Street consists of one exclusive left turn lane and one exclusive through lane. The westbound approach along 11th Street consists of one exclusive through lane and one shared through and right-turn lane. The southbound approach along Subaru Drive consists of one exclusive left-turn lane, and one exclusive right turn lane. The ingress to the site consists of one exclusive lane for the employees and one exclusive lane for visitors.

The existing traffic conditions along the eastbound and westbound approaches of 11th Street show some minimal queuing during the weekday morning and evening peak hours. When there was queuing along the westbound approach, it was more noticeable in the inner through lane as compared with the shared through/right-turn lane because of the vehicles staying in the left-most lane in anticipation of making a left-turn onto Newton Avenue at the adjacent intersection. There were times when the traffic flow was slow moving, however; the queue within the road segment dissipated within less than sixty seconds.

At the time of observation, the gate for the visitor's lane was fully operational and the gate for the employee lane was operating on a schedule. The employee gate was open (up) between 8:00 to about 8:50 AM, and employees were allowed to enter without stopping. We monitored the vehicle flow during the peak 15-minute window before the gates were raised open. Between 7:45 to 8:00 AM, our manual count shows a total of 66 employee vehicles and 10 visitor vehicles. Within this time, the maximum number of vehicles we observed per minute was 9 employees and 2 visitors. The operational rate of the gate from opening to closing was observed to be approximately 6 seconds. We observed that when two or more vehicles arrived within a short period, the gate stayed up to allow the vehicles through and did not close until no car was observed in the queue. There was one instance where the flow was stopped, and 4 vehicles were observed in the lane, however, all cars within the lane were able to go through within a minute.

Based on our manual traffic counts, we determined that the entering peak 15-minute volume was 99 vehicles from 8:30 to 8:45 AM, with a maximum of 11 employee vehicles arrived within a one-minute period. As previously mentioned, the gates were raised during this time and no queueing was observed. The entering peak hour volume was 316 vehicles from 7:45 to 8:45 AM. In general, approximately 29% of the entering trips are making the eastbound left-turn from 11th Street and approximately 72% of the entering trips are making the westbound right-turn from 11th Street. During the entering peak hour, 93 vehicles were from the west and 223 vehicles were from the east. During the entering peak 15-minute, 30 vehicles were from the west and 69 vehicles were from the east, and all vehicles during the peak entering minute came from the east.

QUEUING ANALYSIS

Langan has performed a queue analysis to assess the adequacy of the proposed entrance for Subaru assuming that all employee entering vehicles will need to access through a security gate that will open and close for each individual car. Based on the latest concept plan, an additional employee lane will be constructed with a queue capacity of approximately three cars. To analyze the average length of queue and average waiting time per vehicle, we have utilized the M/M/N queueing theory, with the assumption that there will be random arrival and departure patterns and two gates operational during the peak hours.

At this time, we do not know the operational characteristics of the proposed gate, however; to be consistent with previous studies done, we conservatively estimated that the processing rate for the gate will be 8 seconds per passenger car (approximately 2 seconds for the gate to open, 4 seconds for the vehicle to clear the gate, and 2 seconds for the gate to close). Based on a review of the existing gate operations, the processing rate is currently about 6 seconds,

therefore, we are showing a conservative analysis as the processing rate may be faster than the 8 seconds analyzed. The results of the M/M/N queuing analysis are shown in the table below:

Gate Queue Analysis Table using M/M/N Queuing Model					
Time Period (Entering)	Trips (ln)	Avg Service Rate (car/min)	Avg Arrival Rate (car/min/lane)	Avg Queue Length (car)	Avg Wait Time (sec)
AM Peak Hour	268	7.5	4.47	1	0.78
Entering Peak	316	7.5	5.27	1	1.12
Peak 15-minute	99	7.5	6.60	1	1.92
Peak 1-minute	11	0.13 car/sec	0.18 car/sec/ln	2	9.31

The entering peak hour volume was 316 between 7:45 to 8:45 AM. Utilizing this entering volume, it is projected that average wait time for each vehicle is about 1 second and the average queue length is 1 car per lane. The entering peak 15-minute volume was 99 employee vehicles and 2 visitor vehicles between 8:30 to 8:45 AM, with a recorded maximum of 11 vehicles arrival within a minute. For the peak 15-minute analysis, the projected average wait time for each vehicle is about 2 seconds and an average queue length of 1 car per lane. For the peak 1-minute analysis, the average wait time for each car is about 9 seconds and an average queue length of 2 cars per lane.

The current concept plan shows that the location of the security gate for the existing employee lane is proposed to be extended by about 65 feet, which is estimated to provide storage for approximately 7 vehicles. The proposed additional employee lane will be constructed to provide storage for approximately 3 vehicles. Based on the queuing analysis, with two employee gates operational, the entering employee vehicles will be processed efficiently with the potential for queuing that should not extend beyond the internal driveway storage that will be provided. The upstream and downstream platooning of vehicles, as provided by the traffic signals, allows a certain number of vehicles to enter the site at any give time. This allows for a constant flow of vehicles over the peak periods which provides an arrival pattern that can be processed by the proposed security gates with minimal interruption and backups.

CAPACITY ANALYSIS

We conducted capacity analyses for the existing conditions at the three study area intersections utilizing the Synchro software package. During the three peak hours analyzed, all intersections operate at acceptable overall level of service (LOS) C or better, with all specific movements operating at LOS D or better. The specific intersection of 11th Street and Subaru Drive operates at optimal overall LOS A during the weekday morning peak periods when the majority of employees are entering the site. The following tables show the corresponding levels of service and delay and the 95th percentile queues. The capacity analyses worksheets have been included as an attachment.

Synchro LOS Table

LOCATION	MOVEMENTS		EXISTING CONDITION		
			AM	ENTERING	
				PEAK	PM
11th Street and Newton Avenue	EB	L	B (18.9)	B (18.9)	B (17.3)
		T,R	C (20.1)	C (20.4)	B (17.8)
	WB	L	D (41.5)	E (60.9)	B (16.5)
		T,R	C (20.3)	C (20.7)	C (20.3)
	NB	L,T,R	C (29.2)	C (29.1)	C (30.7)
	SB	L,T,R	C (25.1)	C (24.3)	C (27.1)
	OVERALL	C (25.4)	C (29.2)	C (21.8)	
11th Street and Subaru Drive	EB	L	A (2.7)	A (3.1)	A (5.5)
		T	A (1.1)	A (1.1)	A (3.5)
	WB	T,R	A (6.3)	A (6.4)	A (8.3)
	SB	L	C (32.0)	C (32.0)	D (35.3)
		R	C (22.7)	C (21.0)	D (42.5)
		OVERALL	A (4.6)	A (4.8)	B (10.2)
11th Street and Memorial Avenue/ Campbell Place	EB	L	B (11.4)	B (13.9)	A (7.8)
		T	C (24.4)	C (21.9)	B (10.2)
		R	A (0.1)	A (0.1)	A (6.8)
	WB	L	A (6.9)	A (7.5)	A (7.4)
		T,R	B (18.6)	B (19.5)	B (11.8)
	NB	L,T	C (29.2)	C (28.9)	C (33.9)
		R	A (0.1)	A (0.1)	C (32.4)
	SB	L,T,R	D (37.2)	D (39.9)	C (30.7)
		OVERALL	C (20.1)	C (20.5)	B (14.1)

Synchro 95th Percentile Queue Length Table

LOCATION	MOVEMENTS		Storage	EXISTING CONDITION		
				AM	ENTERING	
					PEAK	PM
11th Street and Newton Avenue	EB	L	100'	152'	142'	208'
		T,R	250'	187'	182'	116'
	WB	L	100'	313'	370'	196'
		T,R	335'	183'	181'	176'
	NB	L,T,R	105'	137'	140'	158'
	SB	L,T,R	590'	111'	107'	127'
11th Street and Subaru Drive	EB	L	120'	18'	22'	3'
		T	350'	62'	56'	54'
	WB	T,R	185'	238'	243'	197'
	SB	L	120'	18'	18'	62'
		R	120'	8'	10'	45'
	11th Street and Memorial Avenue/ Campbell Place	EB	L	125'	43'	54'
T			185'	303'	263'	267'
R			125'	0'	0'	0'
WB		L	150'	49'	57'	14'
		T,R	1000'+	408'	408'	251'
NB		L,T	270'	22'	25'	133'
		R	40'	0'	0'	47'
SB		L,T,R	630'	143'	171'	35'

Based on a review of the analysis, there does not appear to be an operational need for an exclusive westbound right-turn lane along 11th Street at the intersection with Subaru Drive. As it stands, the signal timing and platooning of vehicles based on the existing conditions is accommodated within the existing geometry, and it is anticipated that operations will continue to be efficient after the installation of the safety upgrades/modifications along Subaru Drive.

CONCLUSION

Langan has concluded that the proposed internal driveway/security upgrades along Subaru Drive at the Subaru Head Quarters can be constructed with no noticeable impacts to the intersection of 11th Street and Subaru Drive or the adjacent intersections of 11th Street and Newton Avenue and 11th Street and Memorial Avenue/Campbell Place. Based on the queuing analyses, we determined that with the proposed second employee entrance lane (and with the gates being always operational), that the queue length will average approximately 1-2 vehicles for each lane during the peak entering times. The employee passenger vehicle queues are expected to be accommodated within the proposed available storage lengths for each lane.

The proposed construction of an additional employee lane, along with the relocation of the security gates to accommodate more storage, will provide efficient entrance operations and vehicular traffic flow during the peak periods. We recommend retaining the existing lane configurations at the adjacent study area intersections.

ATTACHMENTS

EXISTING TRAFFIC COUNT DATA



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Camden County, NJ
11th St & Subaru Dr
Tuesday, October 3, 2023
Location: 39.941499, -
75.109103

Count Name: 11th St. & Subaru
Dr.
Site Code:
Start Date: 10/03/2023
Page No: 1

Turning Movement Data

Start Time	11th St. Eastbound					11th St. Westbound					Subaru Dr. Southbound					Int. Total		
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn		Peds	App. Total
6:00 AM	1	40	0	0	41	98	4	0	0	0	102	1	0	0	0	0	1	144
6:15 AM	2	44	0	0	46	131	2	0	0	0	133	0	0	0	0	0	0	179
6:30 AM	3	60	0	0	63	218	7	0	0	0	225	0	0	0	0	0	0	288
6:45 AM	6	59	0	0	65	186	11	0	0	0	197	0	0	0	0	0	0	262
Hourly Total	12	203	0	0	215	633	24	0	0	0	657	1	0	0	0	0	1	873
7:00 AM	9	75	0	1	84	197	17	0	0	0	214	1	0	1	0	3	2	300
7:15 AM	12	106	0	0	118	229	23	0	0	0	252	0	1	0	0	0	1	371
7:30 AM	8	150	0	0	158	238	38	0	0	0	276	1	0	0	0	0	1	435
7:45 AM	21	181	0	0	202	237	51	0	0	0	288	3	1	0	0	0	4	494
Hourly Total	50	512	0	1	562	901	129	0	0	0	1030	5	2	1	0	3	8	1600
8:00 AM	15	120	0	0	135	234	41	0	0	0	275	4	1	0	0	3	5	415
8:15 AM	30	151	0	0	181	236	59	5	0	0	300	0	1	0	0	0	1	482
8:30 AM	27	103	0	0	130	228	66	1	0	0	295	1	1	1	0	1	3	428
8:45 AM	17	104	0	0	121	243	53	0	0	0	296	0	2	0	0	0	2	419
Hourly Total	89	478	0	0	567	941	219	6	0	0	1166	5	5	1	0	4	11	1744
9:00 AM	8	80	0	0	88	178	31	0	0	1	209	0	0	1	0	0	1	298
9:15 AM	0	77	0	0	77	162	8	0	0	0	170	1	0	0	0	0	1	248
9:30 AM	4	69	0	0	73	185	15	0	0	0	200	1	1	0	0	0	2	275
9:45 AM	3	74	0	0	77	159	10	0	0	0	169	2	2	0	0	0	4	250
Hourly Total	15	300	0	0	315	684	64	0	0	1	748	4	3	1	0	0	8	1071
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	1	132	0	0	133	215	1	0	0	0	216	2	1	3	0	0	6	355
3:15 PM	1	110	0	0	111	253	2	0	0	0	255	4	1	2	0	0	7	373
3:30 PM	1	122	0	0	123	235	0	0	0	0	235	0	0	1	0	1	1	359
3:45 PM	1	141	0	0	142	202	2	0	0	0	204	2	3	0	0	0	5	351
Hourly Total	4	505	0	0	509	905	5	0	0	0	910	8	5	6	0	1	19	1438
4:00 PM	0	115	0	0	115	209	2	0	0	0	211	10	2	6	0	0	18	344
4:15 PM	0	126	0	0	126	183	2	0	0	0	185	6	5	8	0	0	19	330
4:30 PM	2	107	0	0	109	182	6	0	0	0	188	18	9	10	0	0	37	334
4:45 PM	0	122	0	0	122	169	1	0	0	0	170	8	3	7	0	0	18	310
Hourly Total	2	470	0	0	472	743	11	0	0	0	754	42	19	31	0	0	92	1318
5:00 PM	2	137	1	0	140	203	7	0	0	0	210	25	8	26	0	1	59	409
5:15 PM	0	126	0	0	126	224	3	0	0	0	227	14	17	19	0	0	50	403
5:30 PM	0	90	0	0	90	250	0	0	0	0	250	8	10	8	0	0	26	366
5:45 PM	1	93	0	0	94	233	1	0	0	0	234	6	6	10	0	0	22	350
Hourly Total	3	446	1	0	450	910	11	0	0	0	921	53	41	63	0	1	157	1528
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	175	2914	1	1	3090	5717	463	6	0	1	6186	118	75	103	0	9	296	9572
Approach %	5.7	94.3	0.0	-	-	92.4	7.5	0.1	0.0	-	-	39.9	25.3	34.8	0.0	-	-	-
Total %	1.8	30.4	0.0	-	32.3	59.7	4.8	0.1	0.0	-	64.6	1.2	0.8	1.1	0.0	-	3.1	-
Lights	173	2749	1	-	2923	5480	460	6	0	-	5946	116	74	101	0	-	291	9160
% Lights	98.9	94.3	100.0	-	94.6	95.9	99.4	100.0	-	-	96.1	98.3	98.7	98.1	-	-	98.3	95.7
Buses	1	77	0	-	78	93	2	0	0	-	95	1	0	2	0	-	3	176
% Buses	0.6	2.6	0.0	-	2.5	1.6	0.4	0.0	-	-	1.5	0.8	0.0	1.9	-	-	1.0	1.8
Trucks	1	88	0	-	89	144	1	0	0	-	145	1	1	0	0	-	2	236
% Trucks	0.6	3.0	0.0	-	2.9	2.5	0.2	0.0	-	-	2.3	0.8	1.3	0.0	-	-	0.7	2.5
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	-	3	-	-	-
% Bicycles on Crosswalk	-	-	-	100.0	-	-	-	-	0.0	-	-	-	-	-	33.3	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	-	6	-	-	-
% Pedestrians	-	-	-	0.0	-	-	-	-	100.0	-	-	-	-	-	66.7	-	-	-



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Camden County, NJ
11th St & Subaru Dr
Tuesday, October 3, 2023
Location: 39.941499, -
75.109103

Count Name: 11th St. & Subaru
Dr.
Site Code:
Start Date: 10/03/2023
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	11th St. Eastbound					11th St. Westbound					Subaru Dr. Southbound					Int. Total		
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn		Peds	App. Total
7:30 AM	8	150	0	0	158	238	38	0	0	0	276	1	0	0	0	0	1	435
7:45 AM	21	181	0	0	202	237	51	0	0	0	288	3	1	0	0	0	4	494
8:00 AM	15	120	0	0	135	234	41	0	0	0	275	4	1	0	0	3	5	415
8:15 AM	30	151	0	0	181	236	59	5	0	0	300	0	1	0	0	0	1	482
Total	74	602	0	0	676	945	189	5	0	0	1139	8	3	0	0	3	11	1826
Approach %	10.9	89.1	0.0	-	-	83.0	16.6	0.4	0.0	-	-	72.7	27.3	0.0	0.0	-	-	-
Total %	4.1	33.0	0.0	-	37.0	51.8	10.4	0.3	0.0	-	62.4	0.4	0.2	0.0	0.0	-	0.6	-
PHF	0.617	0.831	0.000	-	0.837	0.993	0.801	0.250	0.000	-	0.949	0.500	0.750	0.000	0.000	-	0.550	0.924
Lights	72	572	0	-	644	896	188	5	0	-	1089	7	3	0	0	-	10	1743
% Lights	97.3	95.0	-	-	95.3	94.8	99.5	100.0	-	-	95.6	87.5	100.0	-	-	-	90.9	95.5
Buses	1	13	0	-	14	19	1	0	0	-	20	0	0	0	0	-	0	34
% Buses	1.4	2.2	-	-	2.1	2.0	0.5	0.0	-	-	1.8	0.0	0.0	-	-	-	0.0	1.9
Trucks	1	17	0	-	18	30	0	0	0	-	30	1	0	0	0	-	1	49
% Trucks	1.4	2.8	-	-	2.7	3.2	0.0	0.0	-	-	2.6	12.5	0.0	-	-	-	9.1	2.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-

Turning Movement Peak Hour Data (5:00 PM)

Start Time	11th St. Eastbound					11th St. Westbound					Subaru Dr. Southbound					Int. Total		
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn		Peds	App. Total
5:00 PM	2	137	1	0	140	203	7	0	0	0	210	25	8	26	0	1	59	409
5:15 PM	0	126	0	0	126	224	3	0	0	0	227	14	17	19	0	0	50	403
5:30 PM	0	90	0	0	90	250	0	0	0	0	250	8	10	8	0	0	26	366
5:45 PM	1	93	0	0	94	233	1	0	0	0	234	6	6	10	0	0	22	350
Total	3	446	1	0	450	910	11	0	0	0	921	53	41	63	0	1	157	1528
Approach %	0.7	99.1	0.2	-	-	98.8	1.2	0.0	0.0	-	-	33.8	26.1	40.1	0.0	-	-	-
Total %	0.2	29.2	0.1	-	29.5	59.6	0.7	0.0	0.0	-	60.3	3.5	2.7	4.1	0.0	-	10.3	-
PHF	0.375	0.814	0.250	-	0.804	0.910	0.393	0.000	0.000	-	0.921	0.530	0.603	0.606	0.000	-	0.665	0.934
Lights	3	440	1	-	444	890	10	0	0	-	900	52	41	61	0	-	154	1498
% Lights	100.0	98.7	100.0	-	98.7	97.8	90.9	-	-	-	97.7	98.1	100.0	96.8	-	-	98.1	98.0
Buses	0	2	0	-	2	13	1	0	0	-	14	1	0	2	0	-	3	19
% Buses	0.0	0.4	0.0	-	0.4	1.4	9.1	-	-	-	1.5	1.9	0.0	3.2	-	-	1.9	1.2
Trucks	0	4	0	-	4	7	0	0	0	-	7	0	0	0	0	-	0	11
% Trucks	0.0	0.9	0.0	-	0.9	0.8	0.0	-	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-



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184 Baker Rd

Camden County, NJ
11th St & Memorial Ave
Tuesday, October 3, 2023
Location: 39.941164, -
75.108029

Coatesville, Pennsylvania, United States 19320
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Count Name: 11th St. &
Memorial Ave.
Site Code:
Start Date: 10/03/2023
Page No: 1

Turning Movement Data

Start Time	11th St. Eastbound							11th St. Westbound							Campbells Driveway Northbound							Memorial Ave. Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
6:00 AM	4	39	0	0	0	0	43	2	103	7	1	0	0	113	0	0	1	0	0	2	1	1	1	1	3	0	0	6	163
6:15 AM	3	38	0	0	0	0	41	6	148	4	0	0	0	158	0	0	0	0	0	0	0	0	3	0	1	0	0	4	203
6:30 AM	5	55	1	1	0	0	62	6	246	3	0	0	0	255	0	0	1	0	0	0	1	2	4	3	1	0	0	10	328
6:45 AM	8	57	0	0	0	0	65	10	208	6	0	0	0	224	0	0	1	0	0	0	1	1	1	4	5	0	0	11	301
Hourly Total	20	189	1	1	0	0	211	24	705	20	1	0	0	750	0	0	3	0	0	2	3	4	9	8	10	0	0	31	995
7:00 AM	4	68	1	0	0	0	73	10	210	9	4	0	0	233	1	0	0	0	0	1	1	1	5	6	1	0	0	13	320
7:15 AM	11	91	1	1	0	0	104	8	246	14	2	0	0	270	2	1	0	0	0	0	3	0	11	4	1	0	0	16	393
7:30 AM	10	138	2	1	1	0	152	27	281	27	2	0	0	337	1	1	1	2	0	1	5	1	23	11	0	0	1	35	529
7:45 AM	38	139	4	3	0	0	184	30	280	33	4	0	0	347	0	2	1	0	0	1	3	1	20	17	2	0	0	40	574
Hourly Total	63	436	8	5	1	0	513	75	1017	83	12	0	0	1187	4	4	2	2	0	3	12	3	59	38	4	0	1	104	1816
8:00 AM	29	89	7	1	0	0	126	32	257	29	2	0	0	320	2	2	2	1	0	1	7	2	27	9	3	0	1	41	494
8:15 AM	31	100	8	2	0	0	141	37	289	25	3	0	0	354	0	5	1	0	0	1	6	1	41	17	1	0	0	60	561
8:30 AM	18	75	4	3	0	0	100	41	264	15	1	0	0	321	4	1	2	2	0	1	9	3	41	21	1	0	1	66	496
8:45 AM	21	79	3	2	0	0	105	52	278	18	6	0	0	354	2	4	2	1	0	0	9	1	37	13	1	0	0	52	520
Hourly Total	99	343	22	8	0	0	472	162	1088	87	12	0	0	1349	8	12	7	4	0	3	31	7	146	60	6	0	2	219	2071
9:00 AM	9	65	2	0	0	0	76	36	192	11	6	0	0	245	5	0	2	0	0	0	7	3	15	15	0	0	0	33	361
9:15 AM	11	66	2	0	0	2	79	11	168	9	1	0	0	189	1	4	1	2	0	0	8	4	14	8	2	0	2	28	304
9:30 AM	18	54	0	0	0	0	72	7	187	14	1	0	0	209	2	5	1	0	0	0	8	2	9	7	1	0	0	19	308
9:45 AM	8	65	3	0	0	0	76	6	177	13	6	0	0	202	1	0	1	0	0	0	2	2	3	3	2	0	0	10	290
Hourly Total	46	250	7	0	0	2	303	60	724	47	14	0	0	845	9	9	5	2	0	0	25	11	41	33	5	0	2	90	1263
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	12	115	0	0	0	0	127	5	213	19	1	0	0	238	3	4	0	0	0	1	7	1	2	0	6	0	0	9	381
3:15 PM	29	83	1	0	0	0	113	4	238	30	0	0	0	272	1	15	7	5	0	0	28	2	4	4	4	0	0	14	427
3:30 PM	38	90	0	0	0	0	128	0	224	24	3	0	0	251	3	20	5	1	0	0	29	2	0	0	9	0	0	11	419
3:45 PM	24	109	3	0	0	0	136	6	190	26	2	0	0	224	2	8	3	3	0	0	16	3	1	4	8	0	0	16	392
Hourly Total	103	397	4	0	0	0	504	15	865	99	6	0	0	985	9	47	15	9	0	1	80	8	7	8	27	0	0	50	1619
4:00 PM	18	99	2	0	0	0	119	2	199	16	1	0	0	218	5	21	14	10	0	2	50	5	1	3	1	0	0	10	397
4:15 PM	33	98	1	0	0	0	132	0	179	23	3	0	0	205	0	28	13	4	0	1	45	3	0	2	1	0	0	6	388
4:30 PM	32	96	1	0	1	0	130	5	186	21	3	0	0	215	4	30	20	9	0	7	63	5	1	2	0	0	0	8	416
4:45 PM	28	108	1	0	0	0	137	6	166	19	4	0	0	195	3	33	18	11	0	5	65	6	2	1	3	0	0	12	409
Hourly Total	111	401	5	0	1	0	518	13	730	79	11	0	0	833	12	112	65	34	0	15	223	19	4	8	5	0	0	36	1610
5:00 PM	32	125	1	0	0	0	158	7	204	19	3	0	0	233	3	45	15	18	0	2	81	2	1	5	3	0	0	11	483
5:15 PM	34	102	3	0	0	0	139	6	224	30	0	0	0	260	3	21	17	17	0	0	58	1	1	0	2	0	0	4	461
5:30 PM	18	78	1	1	0	0	98	1	225	24	0	0	0	250	3	24	10	18	0	5	55	2	0	6	3	0	0	11	414
5:45 PM	17	77	2	0	0	0	96	0	223	13	4	0	0	240	2	22	9	7	0	2	40	2	0	3	3	0	0	8	384
Hourly Total	101	382	7	1	0	0	491	14	876	86	7	0	0	983	11	112	51	60	0	9	234	7	2	14	11	0	0	34	1742
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	543	2398	54	15	2	2	3012	363	6005	501	63	0	0	6932	53	296	148	111	0	33	608	59	268	169	68	0	5	564	11116
Approach %	18.0	79.6	1.8	0.5	0.1	-	-	5.2	86.6	7.2	0.9	0.0	-	-	8.7	48.7	24.3	18.3	0.0	-	-	10.5	47.5	30.0	12.1	0.0	-	-	-
Total %	4.9	21.6	0.5	0.1	0.0	-	27.1	3.3	54.0	4.5	0.6	0.0	-	62.4	0.5	2.7	1.3	1.0	0.0	-	5.5	0.5	2.4	1.5	0.6	0.0	-	5.1	-
Lights	530	2246	53	14	2	-	2845	360	5768	461	55	0	-	6644	52	295	146	109	0	-	602	57	266	164	66	0	-	553	10644
% Lights	97.6	93.7	98.1	93.3	100.0	-	94.5	99.2	96.1	92.0	87.3	-	-	95.8	98.1	99.7	98.6	98.2	-	-	99.0	96.6	99.3	97.0	97.1	-	-	98.0	95.8
Buses	4	75	1	0	0	-	80	1	85	4	1	0	-	91	0	0	0	2	0	-	2	0	1	0	1	0	-	2	175
% Buses	0.7	3.1	1.9	0.0	0.0	-	2.7	0.3	1.4	0.8	1.6	-	-	1.3	0.0	0.0	0.0	1.8	-	-	0.3	0.0	0.4	0.0	1.5	-	-	0.4	1.6
Trucks	9	77	0	1	0	-	87	2	152	36	7	0	-	197	1	1	2	0	0	-	4	2	1	5	1	0	-	9	297
% Trucks	1.7	3.2	0.0	6.7	0.0	-	2.9	0.6	2.5	7.2	11.1	-	-	2.8	1.9	0.3	1.4	0.0	-	-	0.7	3.4	0.4	3.0	1.5	-	-	1.6	2.7
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	-	-	11	-	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.3	-	-	-	-	-	20.0	-	-
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	-	-	22	-	-	-	-	-	4	-	-	
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.7	-	-	-	-	80.0	-	-	-



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184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Camden County, NJ
11th St & Memorial Ave
Tuesday, October 3, 2023
Location: 39.941164, -
75.108029

Count Name: 11th St. &
Memorial Ave.
Site Code:
Start Date: 10/03/2023
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	11th St. Eastbound							11th St. Westbound							Campbells Driveway Northbound							Memorial Ave. Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:30 AM	10	138	2	1	1	0	152	27	281	27	2	0	0	337	1	1	1	2	0	1	5	1	23	11	0	0	1	35	529
7:45 AM	38	139	4	3	0	0	184	30	280	33	4	0	0	347	0	2	1	0	0	1	3	1	20	17	2	0	0	40	574
8:00 AM	29	89	7	1	0	0	126	32	257	29	2	0	0	320	2	2	2	1	0	1	7	2	27	9	3	0	1	41	494
8:15 AM	31	100	8	2	0	0	141	37	289	25	3	0	0	354	0	5	1	0	0	1	6	1	41	17	1	0	0	60	561
Total	108	466	21	7	1	0	603	126	1107	114	11	0	0	1358	3	10	5	3	0	4	21	5	111	54	6	0	2	176	2158
Approach %	17.9	77.3	3.5	1.2	0.2	-	-	9.3	81.5	8.4	0.8	0.0	-	-	14.3	47.6	23.8	14.3	0.0	-	-	2.8	63.1	30.7	3.4	0.0	-	-	-
Total %	5.0	21.6	1.0	0.3	0.0	-	27.9	5.8	51.3	5.3	0.5	0.0	-	62.9	0.1	0.5	0.2	0.1	0.0	-	1.0	0.2	5.1	2.5	0.3	0.0	-	8.2	-
PHF	0.71	0.838	0.656	0.583	0.250	-	0.819	0.851	0.958	0.864	0.688	0.000	-	0.959	0.375	0.500	0.625	0.375	0.000	-	0.750	0.625	0.677	0.794	0.500	0.000	-	0.733	0.940
Lights	107	441	21	6	1	-	576	125	1060	99	9	0	-	1293	3	10	5	2	0	-	20	5	110	54	6	0	-	175	2064
% Lights	99.1	94.6	100.0	85.7	100.0	-	95.5	99.2	95.8	86.8	81.8	-	-	95.2	100.0	100.0	100.0	66.7	-	-	95.2	100.0	99.1	100.0	100.0	-	-	99.4	95.6
Buses	0	13	0	0	0	-	13	0	17	1	0	0	-	18	0	0	0	1	0	-	1	0	1	0	0	0	-	1	33
% Buses	0.0	2.8	0.0	0.0	0.0	-	2.2	0.0	1.5	0.9	0.0	-	-	1.3	0.0	0.0	0.0	33.3	-	-	4.8	0.0	0.9	0.0	0.0	-	-	0.6	1.5
Trucks	1	12	0	1	0	-	14	1	30	14	2	0	-	47	0	0	0	0	0	-	0	0	0	0	0	0	-	0	61
% Trucks	0.9	2.6	0.0	14.3	0.0	-	2.3	0.8	2.7	12.3	18.2	-	-	3.5	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	-	0.0	2.8
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	4	-	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-



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184 Baker Rd

Camden County, NJ
11th St & Newton Ave
Tuesday, October 3, 2023
Location: 39.942254, -
75.110409

Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Count Name: 11th St. & Newton
Ave.
Site Code:
Start Date: 10/03/2023
Page No: 1

Turning Movement Data

Start Time	11th St. Eastbound							11th St. Westbound							Newton Ave. Northbound							Newton Ave. Southbound							Int. Total		
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total			
6:00 AM	6	28	1	2	0	0	37	33	62	0	0	0	0	95	9	30	8	4	0	0	51	0	10	0	4	0	0	14	197		
6:15 AM	16	31	0	3	0	1	50	78	69	0	0	0	2	147	7	18	7	4	0	0	36	1	8	9	3	0	0	21	254		
6:30 AM	11	34	6	7	0	1	58	112	128	0	0	0	1	240	10	27	22	4	0	0	63	0	18	4	1	0	0	23	384		
6:45 AM	38	57	4	8	0	0	107	105	111	0	0	0	1	216	10	33	14	0	0	0	57	0	25	8	1	0	0	34	414		
Hourly Total	71	150	11	20	0	2	252	328	370	0	0	0	4	698	36	108	51	12	0	0	207	1	61	21	9	0	0	92	1249		
7:00 AM	31	73	3	3	0	0	110	85	115	0	0	0	0	200	13	27	9	1	0	0	50	0	7	9	2	0	0	18	378		
7:15 AM	50	75	7	1	0	0	133	90	118	1	0	0	1	209	25	33	27	3	0	0	88	0	15	13	0	0	0	28	458		
7:30 AM	65	128	10	1	0	0	204	89	144	1	0	0	1	234	25	51	24	6	0	0	106	0	21	7	2	0	0	30	574		
7:45 AM	83	156	16	1	0	0	256	85	150	0	0	0	0	235	21	50	33	2	0	0	106	2	25	18	0	0	0	45	642		
Hourly Total	229	432	36	6	0	0	703	349	527	2	0	0	2	878	84	161	93	12	0	0	350	2	68	47	4	0	0	121	2052		
8:00 AM	78	104	10	5	0	1	197	115	110	0	1	0	1	226	21	61	19	6	0	0	107	1	27	6	12	0	2	46	576		
8:15 AM	51	129	10	2	0	0	192	89	144	0	0	0	0	233	9	54	38	6	0	1	107	1	24	5	4	0	0	34	566		
8:30 AM	48	96	5	7	0	1	156	109	122	0	0	0	0	231	23	51	25	4	0	0	103	1	14	5	2	0	1	22	512		
8:45 AM	55	85	1	12	0	0	153	111	122	3	0	0	1	236	27	35	27	8	0	0	97	2	16	8	3	0	0	29	515		
Hourly Total	232	414	26	26	0	2	698	424	498	3	1	0	2	926	80	201	109	24	0	1	414	5	81	24	21	0	3	131	2169		
9:00 AM	53	57	5	2	0	0	117	89	89	1	1	0	1	180	15	29	30	0	0	0	74	1	14	6	1	0	0	22	393		
9:15 AM	43	50	8	1	0	0	102	83	71	0	0	0	0	154	14	39	21	3	0	0	77	0	16	6	0	0	1	22	355		
9:30 AM	39	42	5	2	0	1	88	80	99	0	1	0	0	180	16	34	23	6	0	0	79	0	10	5	1	0	0	16	363		
9:45 AM	32	51	1	0	0	0	84	68	92	0	0	0	0	160	15	30	15	5	0	0	65	0	11	7	0	0	0	18	327		
Hourly Total	167	200	19	5	0	1	391	320	351	1	2	0	1	674	60	132	89	14	0	0	295	1	51	24	2	0	1	78	1438		
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	61	86	1	0	0	1	148	86	130	1	0	0	1	217	38	54	35	8	0	0	135	0	21	12	0	0	1	33	533		
3:15 PM	73	73	2	0	0	0	148	116	120	0	1	0	1	237	20	59	31	6	0	0	116	1	30	24	0	0	0	55	556		
3:30 PM	79	79	2	0	0	1	160	106	123	2	0	0	3	231	23	69	40	2	0	0	134	2	27	17	0	0	0	46	571		
3:45 PM	68	75	0	0	0	2	143	92	115	0	0	0	6	207	20	61	59	1	0	1	141	1	15	8	0	0	0	24	515		
Hourly Total	281	313	5	0	0	4	599	400	488	3	1	0	11	892	101	243	165	17	0	1	526	4	93	61	0	0	1	158	2175		
4:00 PM	74	64	0	1	0	1	139	80	118	0	0	0	0	198	41	74	47	1	0	0	163	0	18	12	2	0	0	32	532		
4:15 PM	81	89	0	0	0	0	170	78	127	0	0	0	2	205	30	58	32	2	0	0	122	2	21	9	4	0	0	36	533		
4:30 PM	107	72	0	0	0	0	179	90	106	1	0	0	1	197	31	54	35	4	0	0	124	1	20	22	4	0	0	47	547		
4:45 PM	82	85	4	0	0	1	171	72	101	0	0	0	0	173	31	44	35	2	0	0	112	3	27	9	7	0	0	46	502		
Hourly Total	344	310	4	1	0	2	659	320	452	1	0	0	3	773	133	230	149	9	0	0	521	6	86	52	17	0	0	161	2114		
5:00 PM	65	94	5	2	0	0	166	97	144	0	0	0	0	241	25	53	41	1	0	0	120	1	17	18	9	0	0	45	572		
5:15 PM	63	83	2	1	0	0	149	85	169	0	0	0	0	254	41	53	34	7	0	0	135	3	33	16	0	0	0	52	590		
5:30 PM	50	57	6	1	0	0	114	99	173	0	0	0	0	272	24	44	30	4	0	0	102	0	17	12	0	0	0	29	517		
5:45 PM	43	67	0	0	0	0	110	81	158	0	0	0	0	239	17	42	21	4	0	0	84	1	14	16	0	0	0	31	464		
Hourly Total	221	301	13	4	0	0	539	362	644	0	0	0	0	1006	107	192	126	16	0	0	441	5	81	62	9	0	0	157	2143		
6:00 PM	0	0	1	0	0	0	1	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
Grand Total	1545	2120	115	62	0	11	3842	2503	3332	10	4	0	23	5849	601	1267	782	104	0	2	2754	24	521	291	62	0	5	898	13343		
Approach %	40.2	55.2	3.0	1.6	0.0	-	-	42.8	57.0	0.2	0.1	0.0	-	-	21.8	46.0	28.4	3.8	0.0	-	-	2.7	58.0	32.4	6.9	0.0	-	-	-		
Total %	11.6	15.9	0.9	0.5	0.0	-	28.8	18.8	25.0	0.1	0.0	0.0	-	43.8	4.5	9.5	5.9	0.8	0.0	-	20.6	0.2	3.9	2.2	0.5	0.0	-	6.7	-		
Lights	1515	2001	115	62	0	-	3693	2437	3170	9	3	0	-	5619	546	1220	736	99	0	-	2601	24	494	278	62	0	-	858	12771		
% Lights	98.1	94.4	100.0	100.0	-	-	96.1	97.4	95.1	90.0	75.0	-	-	96.1	90.8	96.3	94.1	95.2	-	-	94.4	100.0	94.8	95.5	100.0	-	-	95.5	95.7		
Buses	13	35	0	0	0	-	48	48	51	0	0	0	-	99	36	24	36	3	0	-	99	0	24	4	0	0	-	28	274		
% Buses	0.8	1.7	0.0	0.0	-	-	1.2	1.9	1.5	0.0	0.0	-	-	1.7	6.0	1.9	4.6	2.9	-	-	3.6	0.0	4.6	1.4	0.0	-	-	3.1	2.1		
Trucks	17	84	0	0	0	-	101	18	111	1	1	0	-	131	19	23	10	2	0	-	54	0	3	9	0	0	-	12	298		
% Trucks	1.1	4.0	0.0	0.0	-	-	2.6	0.7	3.3	10.0	25.0	-	-	2.2	3.2	1.8	1.3	1.9	-	-	2.0	0.0	0.6	3.1	0.0	-	-	1.3	2.2		
Bicycles on Crosswalk	-	-	-	-	-	3	-	-	-	-	-	-	6	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-		
% Bicycles on Crosswalk	-	-	-	-	-	27.3	-	-	-	-	-	-	26.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-		
Pedestrians	-	-	-	-	-	8	-	-	-	-	-	-	17	-	-	-	-	-	-	2	-	-	-	-	-	-	5	-	-		
% Pedestrians	-	-	-	-	-	72.7	-	-	-	-	-	-	73.9	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-		



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Camden County, NJ
11th St & Newton Ave
Tuesday, October 3, 2023
Location: 39.942254, -
75.110409

Count Name: 11th St. & Newton Ave.
Site Code:
Start Date: 10/03/2023
Page No: 3

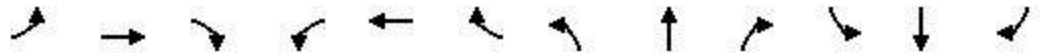
Turning Movement Peak Hour Data (7:30 AM)

Start Time	11th St. Eastbound							11th St. Westbound							Newton Ave. Northbound							Newton Ave. Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:30 AM	65	128	10	1	0	0	204	89	144	1	0	0	1	234	25	51	24	6	0	0	106	0	21	7	2	0	0	30	574
7:45 AM	83	156	16	1	0	0	256	85	150	0	0	0	0	235	21	50	33	2	0	0	106	2	25	18	0	0	0	45	642
8:00 AM	78	104	10	5	0	1	197	115	110	0	1	0	1	226	21	61	19	6	0	0	107	1	27	6	12	0	2	46	576
8:15 AM	51	129	10	2	0	0	192	89	144	0	0	0	0	233	9	54	38	6	0	1	107	1	24	5	4	0	0	34	566
Total	277	517	46	9	0	1	849	378	548	1	1	0	2	928	76	216	114	20	0	1	426	4	97	36	18	0	2	155	2358
Approach %	32.6	60.9	5.4	1.1	0.0	-	-	40.7	59.1	0.1	0.1	0.0	-	-	17.8	50.7	26.8	4.7	0.0	-	-	2.6	62.6	23.2	11.6	0.0	-	-	-
Total %	11.7	21.9	2.0	0.4	0.0	-	36.0	16.0	23.2	0.0	0.0	0.0	-	39.4	3.2	9.2	4.8	0.8	0.0	-	18.1	0.2	4.1	1.5	0.8	0.0	-	6.6	-
PHF	0.834	0.829	0.719	0.450	0.000	-	0.829	0.822	0.913	0.250	0.250	0.000	-	0.987	0.760	0.885	0.750	0.833	0.000	-	0.995	0.500	0.898	0.500	0.375	0.000	-	0.842	0.918
Lights	269	496	46	9	0	-	820	371	512	1	1	0	-	885	65	207	109	16	0	-	397	4	93	33	18	0	-	148	2250
% Lights	97.1	95.9	100.0	100.0	-	-	96.6	98.1	93.4	100.0	100.0	-	95.4	85.5	95.8	95.6	80.0	-	-	93.2	100.0	95.9	91.7	100.0	-	-	95.5	95.4	
Buses	6	7	0	0	0	-	13	6	10	0	0	0	-	16	7	4	3	2	0	-	16	0	4	0	0	0	-	4	49
% Buses	2.2	1.4	0.0	0.0	-	-	1.5	1.6	1.8	0.0	0.0	-	1.7	9.2	1.9	2.6	10.0	-	-	3.8	0.0	4.1	0.0	0.0	-	-	2.6	2.1	
Trucks	2	14	0	0	0	-	16	1	26	0	0	0	-	27	4	5	2	2	0	-	13	0	0	3	0	0	-	3	59
% Trucks	0.7	2.7	0.0	0.0	-	-	1.9	0.3	4.7	0.0	0.0	-	2.9	5.3	2.3	1.8	10.0	-	-	3.1	0.0	0.0	8.3	0.0	-	-	1.9	2.5	
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	50.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	50.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

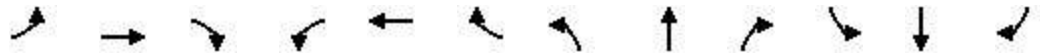
CAPACITY ANALYSES PRINTOUTS

Subaru
1: Newton Ave & 11th St

2023 Existing AM
11/10/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	277	517	55	378	548	2	76	216	134	4	97	54
Future Volume (vph)	277	517	55	378	548	2	76	216	134	4	97	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	12	11	11	10	12	10	12
Storage Length (ft)	100		0	100		0	105		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			45			25			25		
Satd. Flow (prot)	1694	3321	0	1711	3321	0	0	3088	0	0	1614	0
Flt Permitted	0.381			0.366				0.862			0.981	
Satd. Flow (perm)	679	3321	0	659	3321	0	0	2686	0	0	1585	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13						88				32
Link Speed (mph)		25			25			30				30
Link Distance (ft)		233			445			341				319
Travel Time (s)		6.4			12.1			7.8				7.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	4%	0%	2%	5%	0%	14%	4%	7%	0%	4%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	301	622	0	411	598	0	0	464	0	0	168	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4				8
Permitted Phases	2			6			4			8		
Detector Phase	5	2		1	6		4	4		8		8
Switch Phase												
Minimum Initial (s)	5.0	3.0		3.0	3.0		2.0	2.0		2.0		2.0
Minimum Split (s)	12.0	15.0		15.0	15.0		15.0	15.0		15.0		15.0
Total Split (s)	16.0	37.0		16.0	37.0		37.0	37.0		37.0		37.0
Total Split (%)	17.8%	41.1%		17.8%	41.1%		41.1%	41.1%		41.1%		41.1%
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0		5.0
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			8.0				8.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	Max		None	None		None		None
Act Effct Green (s)	39.1	30.1		39.1	30.1			16.9				16.9
Actuated g/C Ratio	0.50	0.39		0.50	0.39			0.22				0.22
v/c Ratio	0.66	0.48		0.91	0.47			0.71				0.46
Control Delay (s/veh)	18.9	20.1		41.5	20.3			29.2				25.1
Queue Delay	0.0	0.0		0.0	0.0			0.0				0.0
Total Delay (s/veh)	18.9	20.1		41.5	20.3			29.2				25.1
LOS	B	C		D	C			C				C
Approach Delay (s/veh)		19.7			28.9			29.2				25.1
Approach LOS		B			C			C				C
Queue Length 50th (ft)	64	112		95	110			88				57
Queue Length 95th (ft)	#152	187		#313	183			137				111
Internal Link Dist (ft)		153			365			261				239
Turn Bay Length (ft)	100			100								



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	457	1288		451	1280			1056			610	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.66	0.48		0.91	0.47			0.44			0.28	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	78.1
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.91
Intersection Signal Delay (s/veh):	25.4
Intersection LOS:	C
Intersection Capacity Utilization:	83.1%
ICU Level of Service:	E
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Newton Ave & 11th St



Subaru
2: 11th St & Subaru Dr

2023 Existing AM
11/10/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	74	602	945	194	8	3
Future Volume (vph)	74	602	945	194	8	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	11	12	12	12	12
Grade (%)		0%	1%		0%	
Storage Length (ft)	120			0	110	110
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Satd. Flow (prot)	1869	3323	3354	0	1597	1615
Flt Permitted	0.171				0.950	
Satd. Flow (perm)	336	3323	3354	0	1597	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			41			3
Link Speed (mph)		25	25		25	
Link Distance (ft)		445	319		206	
Travel Time (s)		12.1	8.7		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	5%	1%	13%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	80	654	1238	0	9	3
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Detector Phase	5	2	6		8	8
Switch Phase						
Minimum Initial (s)	4.0	5.0	5.0		5.0	5.0
Minimum Split (s)	11.0	25.0	25.0		24.0	24.0
Total Split (s)	11.0	66.0	55.0		24.0	24.0
Total Split (%)	12.2%	73.3%	61.1%		26.7%	26.7%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		7.0	7.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Max	Max		None	None
Act Effct Green (s)	62.2	68.0	54.3		6.0	6.0
Actuated g/C Ratio	0.87	0.95	0.76		0.08	0.08
v/c Ratio	0.21	0.21	0.49		0.07	0.02
Control Delay (s/veh)	2.7	1.1	5.7		32.0	22.7
Queue Delay	0.0	0.0	0.6		0.0	0.0
Total Delay (s/veh)	2.7	1.1	6.3		32.0	22.7
LOS	A	A	A		C	C
Approach Delay (s/veh)		1.3	6.3		29.7	
Approach LOS		A	A		C	
Queue Length 50th (ft)	1	0	82		3	0
Queue Length 95th (ft)	18	62	238		18	8
Internal Link Dist (ft)		365	239		126	

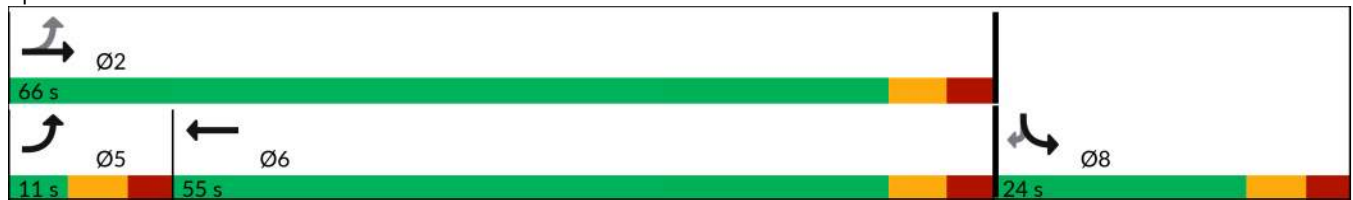


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Bay Length (ft)	120				110	110
Base Capacity (vph)	377	3148	2546		381	388
Starvation Cap Reductn	0	0	830		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.21	0.21	0.72		0.02	0.01

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	71.8
Natural Cycle:	65
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.49
Intersection Signal Delay (s/veh):	4.6
Intersection LOS:	A
Intersection Capacity Utilization:	58.1%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 2: 11th St & Subaru Dr



Subaru
3: Campbell PI/Memorial Ave & 11th St

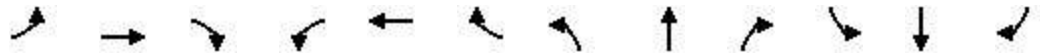
2023 Existing AM
11/10/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	108	466	28	126	1107	125	3	10	8	5	111	60
Future Volume (vph)	108	466	28	126	1107	125	3	10	8	5	111	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	12	12	12	12	12	12
Grade (%)		-1%			-4%			0%			0%	
Storage Length (ft)	125		125	150		0	0		40	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1736	1758	1509	1823	3454	0	0	1879	1429	0	1799	0
Flt Permitted	0.130			0.374				0.932			0.992	
Satd. Flow (perm)	238	1758	1509	718	3454	0	0	1771	1429	0	1787	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			133		18				133			27
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		319			582			252			606	
Travel Time (s)		8.7			15.9			6.9			16.5	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	5%	4%	1%	4%	14%	0%	0%	13%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	115	496	30	134	1311	0	0	14	9	0	187	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			4				8
Permitted Phases	2		2	6			4		4	8		
Detector Phase	5	2	2	1	6		4	4	4	8		8
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	5.0	5.0		3.0	3.0	3.0	3.0	3.0	
Minimum Split (s)	10.0	10.0	10.0	12.0	27.0		10.0	10.0	10.0	10.0	10.0	
Total Split (s)	15.0	48.0	48.0	15.0	48.0		27.0	27.0	27.0	27.0	27.0	
Total Split (%)	16.7%	53.3%	53.3%	16.7%	53.3%		30.0%	30.0%	30.0%	30.0%	30.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lost Time Adjust (s)	0.0	0.0	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	7.0		7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	
Act Effct Green (s)	48.3	41.1	41.1	50.0	44.0			12.7	12.7			12.7
Actuated g/C Ratio	0.59	0.50	0.50	0.61	0.54			0.15	0.15			0.15
v/c Ratio	0.43	0.56	0.04	0.25	0.70			0.05	0.03			0.63
Control Delay (s/veh)	11.4	18.4	0.1	6.9	18.6			29.2	0.1			37.2
Queue Delay	0.0	6.0	0.0	0.0	0.0			0.0	0.0			0.0
Total Delay (s/veh)	11.4	24.4	0.1	6.9	18.6			29.2	0.1			37.2
LOS	B	C	A	A	B			C	A			D
Approach Delay (s/veh)		20.9			17.5			17.8				37.2
Approach LOS		C			B			B				D
Queue Length 50th (ft)	18	170	0	21	266			6	0			78
Queue Length 95th (ft)	43	303	0	49	408			22	0			143
Internal Link Dist (ft)		239			502			172				526

Subaru
3: Campbell PI/Memorial Ave & 11th St

2023 Existing AM
11/10/2023

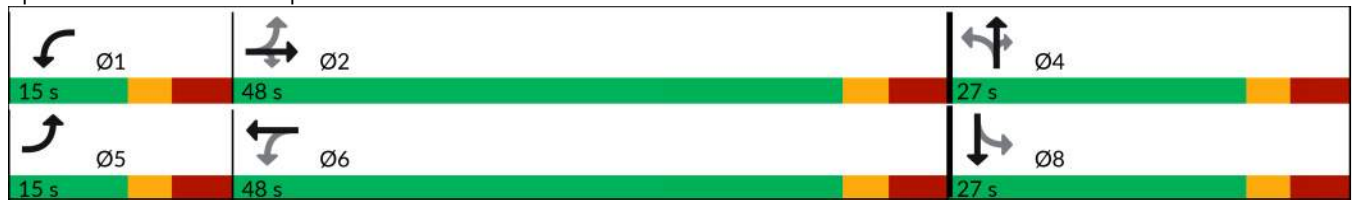


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	125		125	150					40			
Base Capacity (vph)	288	880	822	547	1860			432	449		456	
Starvation Cap Reductn	0	322	0	0	0			0	0		0	
Spillback Cap Reductn	0	0	0	0	0			0	0		0	
Storage Cap Reductn	0	0	0	0	0			0	0		0	
Reduced v/c Ratio	0.40	0.89	0.04	0.24	0.70			0.03	0.02		0.41	

Intersection Summary

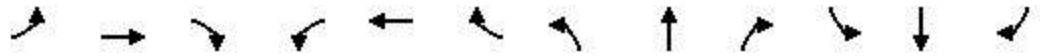
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	82.1
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.70
Intersection Signal Delay (s/veh):	20.1
Intersection LOS:	C
Intersection Capacity Utilization	71.8%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 3: Campbell PI/Memorial Ave & 11th St

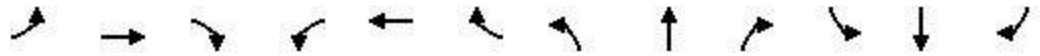


Subaru
1: Newton Ave & 11th St

2023 Existing 7:45
11/10/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	485	56	398	526	1	74	216	133	5	90	52
Future Volume (vph)	260	485	56	398	526	1	74	216	133	5	90	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	12	11	11	10	12	10	12
Storage Length (ft)	100		0	100		0	105		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			45			25			25		
Satd. Flow (prot)	1678	3287	0	1694	3292	0	0	3058	0	0	1623	0
Flt Permitted	0.383			0.373				0.865			0.970	
Satd. Flow (perm)	676	3287	0	665	3292	0	0	2670	0	0	1577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15						87				32
Link Speed (mph)		25			25			30				30
Link Distance (ft)		233			445			341				319
Travel Time (s)		6.4			12.1			7.8				7.3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	4%	5%	0%	3%	6%	0%	19%	5%	6%	0%	3%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	292	608	0	447	592	0	0	475	0	0	165	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4				8
Permitted Phases	2			6			4			8		
Detector Phase	5	2		1	6		4	4		8		8
Switch Phase												
Minimum Initial (s)	5.0	3.0		3.0	3.0		2.0	2.0		2.0		2.0
Minimum Split (s)	12.0	15.0		15.0	15.0		15.0	15.0		15.0		15.0
Total Split (s)	16.0	37.0		16.0	37.0		37.0	37.0		37.0		37.0
Total Split (%)	17.8%	41.1%		17.8%	41.1%		41.1%	41.1%		41.1%		41.1%
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0		5.0
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			8.0				8.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	Max		None	None		None		None
Act Effct Green (s)	39.1	30.1		39.1	30.1			17.6				17.6
Actuated g/C Ratio	0.50	0.38		0.50	0.38			0.22				0.22
v/c Ratio	0.65	0.48		1.00	0.47			0.72				0.44
Control Delay (s/veh)	18.9	20.4		60.9	20.7			29.1				24.3
Queue Delay	0.0	0.0		0.0	0.0			0.0				0.0
Total Delay (s/veh)	18.9	20.4		60.9	20.7			29.1				24.3
LOS	B	C		E	C			C				C
Approach Delay (s/veh)		19.9			38.0			29.1				24.3
Approach LOS		B			D			C				C
Queue Length 50th (ft)	66	113		~113	112			92				56
Queue Length 95th (ft)	#142	182		#370	181			140				107
Internal Link Dist (ft)		153			365			261				239
Turn Bay Length (ft)	100			100								



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	450	1264		448	1257			1040			602	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.65	0.48		1.00	0.47			0.46			0.27	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	78.8
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.00
Intersection Signal Delay (s/veh):	29.2
Intersection LOS:	C
Intersection Capacity Utilization:	82.8%
ICU Level of Service:	E
Analysis Period (min):	15
~ 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: Newton Ave & 11th St



Subaru
2: 11th St & Subaru Dr

2023 Existing 7:45
11/10/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	93	555	935	223	8	5
Future Volume (vph)	93	555	935	223	8	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	11	12	12	12	12
Grade (%)		0%	1%		0%	
Storage Length (ft)	120			0	110	110
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Satd. Flow (prot)	1888	3323	3352	0	1597	1615
Flt Permitted	0.167				0.950	
Satd. Flow (perm)	332	3323	3352	0	1597	1615
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			49			5
Link Speed (mph)		25	25		25	
Link Distance (ft)		445	319		206	
Travel Time (s)		12.1	8.7		5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	5%	0%	13%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	101	603	1258	0	9	5
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Detector Phase	5	2	6		8	8
Switch Phase						
Minimum Initial (s)	4.0	5.0	5.0		5.0	5.0
Minimum Split (s)	11.0	25.0	25.0		24.0	24.0
Total Split (s)	11.0	66.0	55.0		24.0	24.0
Total Split (%)	12.2%	73.3%	61.1%		26.7%	26.7%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		7.0	7.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Max	Max		None	None
Act Effct Green (s)	62.2	68.0	54.3		6.0	6.0
Actuated g/C Ratio	0.87	0.95	0.76		0.08	0.08
v/c Ratio	0.27	0.19	0.49		0.07	0.04
Control Delay (s/veh)	3.1	1.1	5.8		32.0	21.0
Queue Delay	0.0	0.0	0.6		0.0	0.0
Total Delay (s/veh)	3.1	1.1	6.4		32.0	21.0
LOS	A	A	A		C	C
Approach Delay (s/veh)		1.4	6.4		28.1	
Approach LOS		A	A		C	
Queue Length 50th (ft)	1	0	83		3	0
Queue Length 95th (ft)	22	56	243		18	10
Internal Link Dist (ft)		365	239		126	

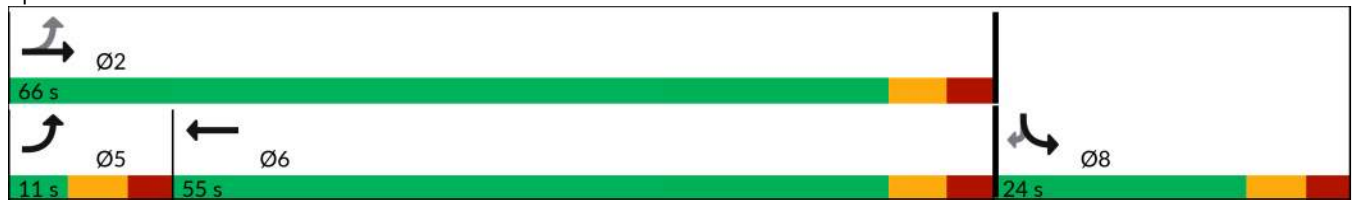


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Bay Length (ft)	120				110	110
Base Capacity (vph)	375	3148	2547		381	389
Starvation Cap Reductn	0	0	820		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.27	0.19	0.73		0.02	0.01

Intersection Summary

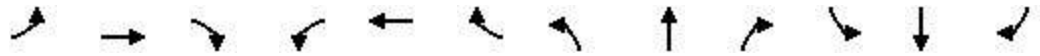
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	71.8
Natural Cycle:	70
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.49
Intersection Signal Delay (s/veh):	4.8
Intersection LOS:	A
Intersection Capacity Utilization	59.8%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 2: 11th St & Subaru Dr



Subaru
3: Campbell PI/Memorial Ave & 11th St

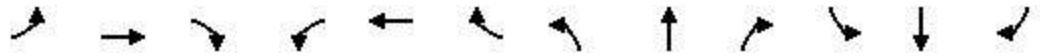
2023 Existing 7:45
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	403	32	140	1090	112	6	10	9	7	129	71
Future Volume (vph)	116	403	32	140	1090	112	6	10	9	7	129	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	12	12	12	12	12	12
Grade (%)		-1%			-4%			0%				0%
Storage Length (ft)	125		125	150		0	0		40	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1719	1741	1523	1823	3482	0	0	1868	1455	0	1789	0
Flt Permitted	0.130			0.419				0.857			0.989	
Satd. Flow (perm)	235	1741	1523	804	3482	0	0	1628	1455	0	1773	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			133		16				133			27
Link Speed (mph)		25			25			25				25
Link Distance (ft)		319			582			252				606
Travel Time (s)		8.7			15.9			6.9				16.5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	2%	6%	3%	1%	4%	7%	0%	0%	11%	14%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	433	34	151	1292	0	0	17	10	0	223	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			4				8
Permitted Phases	2		2	6			4		4	8		
Detector Phase	5	2	2	1	6		4	4	4	8		8
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	5.0	5.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	10.0	10.0	10.0	12.0	27.0		10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	15.0	48.0	48.0	15.0	48.0		27.0	27.0	27.0	27.0	27.0	27.0
Total Split (%)	16.7%	53.3%	53.3%	16.7%	53.3%		30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	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	7.0			7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	None
Act Effect Green (s)	48.4	41.1	41.1	50.2	44.1			14.3	14.3			14.3
Actuated g/C Ratio	0.58	0.49	0.49	0.60	0.53			0.17	0.17			0.17
v/c Ratio	0.47	0.51	0.04	0.26	0.70			0.06	0.03			0.69
Control Delay (s/veh)	13.9	18.1	0.1	7.5	19.5			28.9	0.1			39.9
Queue Delay	0.0	3.8	0.0	0.0	0.0			0.0	0.0			0.0
Total Delay (s/veh)	13.9	21.9	0.1	7.5	19.5			28.9	0.1			39.9
LOS	B	C	A	A	B			C	A			D
Approach Delay (s/veh)		19.0			18.2			18.2				39.9
Approach LOS		B			B			B				D
Queue Length 50th (ft)	21	151	0	26	276			8	0			98
Queue Length 95th (ft)	54	263	0	57	408			25	0			171
Internal Link Dist (ft)		239			502			172				526

Subaru
3: Campbell PI/Memorial Ave & 11th St

2023 Existing 7:45
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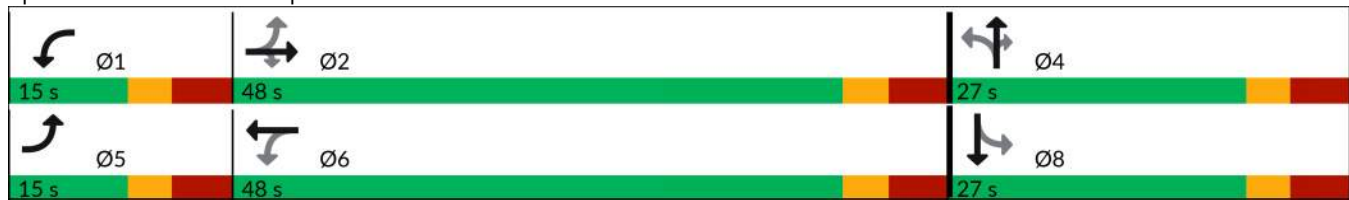


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	125		125	150					40			
Base Capacity (vph)	279	853	814	579	1836			388	448		444	
Starvation Cap Reductn	0	325	0	0	0			0	0		0	
Spillback Cap Reductn	0	0	0	0	0			0	0		0	
Storage Cap Reductn	0	0	0	0	0			0	0		0	
Reduced v/c Ratio	0.45	0.82	0.04	0.26	0.70			0.04	0.02		0.50	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	83.9
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.70
Intersection Signal Delay (s/veh):	20.5
Intersection LOS:	C
Intersection Capacity Utilization:	74.7%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 3: Campbell PI/Memorial Ave & 11th St

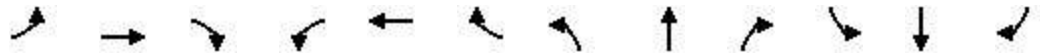


Subaru
1: Newton Ave & 11th St

2023 Existing PM
11/10/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	317	334	14	344	520	1	128	204	159	8	97	85
Future Volume (vph)	317	334	14	344	520	1	128	204	159	8	97	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	12	11	11	10	12	10	12
Storage Length (ft)	100		0	100		0	105		0	0		0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (ft)	25			45			25			25		
Satd. Flow (prot)	1728	3341	0	1711	3421	0	0	3204	0	0	1607	0
Flt Permitted	0.404			0.532				0.799			0.959	
Satd. Flow (perm)	735	3341	0	958	3421	0	0	2594	0	0	1544	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5						94				47
Link Speed (mph)		25			25			30				30
Link Distance (ft)		233			445			341				319
Travel Time (s)		6.4			12.1			7.8				7.3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	4%	0%	2%	2%	0%	2%	1%	4%	0%	6%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	337	370	0	366	554	0	0	522	0	0	202	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4				8
Permitted Phases	2			6			4			8		
Detector Phase	5	2		1	6		4	4		8		8
Switch Phase												
Minimum Initial (s)	5.0	3.0		3.0	3.0		2.0	2.0		2.0		2.0
Minimum Split (s)	12.0	15.0		15.0	15.0		15.0	15.0		15.0		15.0
Total Split (s)	16.0	37.0		16.0	37.0		37.0	37.0		37.0		37.0
Total Split (%)	17.8%	41.1%		17.8%	41.1%		41.1%	41.1%		41.1%		41.1%
Yellow Time (s)	4.0	4.0		4.0	4.0		5.0	5.0		5.0		5.0
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			8.0				8.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	None		None	Max		None	None		None		None
Act Effct Green (s)	39.2	30.1		39.2	30.1			19.3				19.3
Actuated g/C Ratio	0.49	0.37		0.49	0.37			0.24				0.24
v/c Ratio	0.72	0.30		0.67	0.43			0.75				0.50
Control Delay (s/veh)	23.3	19.3		20.0	21.1			30.2				24.0
Queue Delay	0.0	0.0		0.0	0.0			0.0				0.0
Total Delay (s/veh)	23.3	19.3		20.0	21.1			30.2				24.0
LOS	C	B		B	C			C				C
Approach Delay (s/veh)		21.2			20.7			30.2				24.0
Approach LOS		C			C			C				C
Queue Length 50th (ft)	83	66		92	107			105				66
Queue Length 95th (ft)	#208	116		#196	176			158				127
Internal Link Dist (ft)		153			365			261				239
Turn Bay Length (ft)	100			100								



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)	468	1252		549	1278			997			587	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.72	0.30		0.67	0.43			0.52			0.34	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	80.6
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.75
Intersection Signal Delay (s/veh):	23.2
Intersection LOS:	C
Intersection Capacity Utilization:	82.2%
ICU Level of Service:	E
Analysis Period (min):	15
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 1: Newton Ave & 11th St



Subaru
2: 11th St & Subaru Dr

2023 Existing PM
11/10/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	3	446	910	11	53	104
Future Volume (vph)	3	446	910	11	53	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	11	12	12	12	12
Grade (%)		0%	1%		0%	
Storage Length (ft)	120			0	110	110
Storage Lanes	1			0	1	0
Taper Length (ft)	50				25	
Satd. Flow (prot)	1925	3455	3512	0	1770	1583
Flt Permitted	0.239				0.950	
Satd. Flow (perm)	484	3455	3512	0	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			2			112
Link Speed (mph)		25	25		25	
Link Distance (ft)		445	319		206	
Travel Time (s)		12.1	8.7		5.6	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	2%	9%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	3	480	990	0	57	112
Turn Type	pm+pt	NA	NA		Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2					8
Detector Phase	5	2	6		8	8
Switch Phase						
Minimum Initial (s)	4.0	5.0	5.0		5.0	5.0
Minimum Split (s)	11.0	25.0	25.0		24.0	24.0
Total Split (s)	11.0	66.0	55.0		24.0	24.0
Total Split (%)	12.2%	73.3%	61.1%		26.7%	26.7%
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	3.0	3.0	3.0		3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0		7.0	7.0
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None	Max	Max		None	None
Act Effct Green (s)	62.0	63.4	61.3		8.0	8.0
Actuated g/C Ratio	0.76	0.78	0.75		0.10	0.10
v/c Ratio	0.01	0.18	0.37		0.33	0.44
Control Delay (s/veh)	3.7	3.5	5.9		39.0	12.9
Queue Delay	0.0	0.0	0.5		0.0	0.0
Total Delay (s/veh)	3.7	3.5	6.4		39.0	12.9
LOS	A	A	A		D	B
Approach Delay (s/veh)		3.5	6.4		21.7	
Approach LOS		A	A		C	
Queue Length 50th (ft)	0	32	80		27	0
Queue Length 95th (ft)	3	54	197		62	45
Internal Link Dist (ft)		365	239		126	

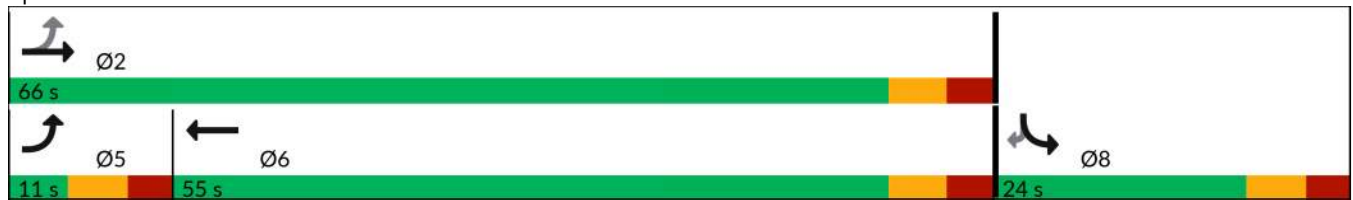


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Turn Bay Length (ft)	120				110	110
Base Capacity (vph)	439	2688	2641		369	418
Starvation Cap Reductn	0	0	1105		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.01	0.18	0.64		0.15	0.27

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	81.5
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.44
Intersection Signal Delay (s/veh):	7.2
Intersection LOS:	A
Intersection Capacity Utilization:	43.6%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 2: 11th St & Subaru Dr



Subaru
3: Campbell PI/Memorial Ave & 11th St

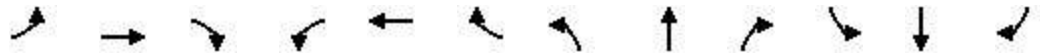
2023 Existing PM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	431	6	24	780	99	13	129	125	14	5	16
Future Volume (vph)	126	431	6	24	780	99	13	129	125	14	5	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	12	12	12	12	12	12	12	12
Grade (%)		-1%			-4%			0%			0%	
Storage Length (ft)	125		125	150		0	0		40	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1736	1775	1569	1841	3526	0	0	1890	1599	0	1747	0
Flt Permitted	0.216			0.491				0.965			0.812	
Satd. Flow (perm)	395	1775	1569	952	3526	0	0	1834	1599	0	1447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			133		20				133			17
Link Speed (mph)		25			25			25				25
Link Distance (ft)		319			582			252				606
Travel Time (s)		8.7			15.9			6.9				16.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	4%	0%	0%	3%	0%	0%	0%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	137	468	7	26	956	0	0	154	136	0	37	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			4				8
Permitted Phases	2		2	6			4		4	8		
Detector Phase	5	2	2	1	6		4	4	4	8		8
Switch Phase												
Minimum Initial (s)	3.0	3.0	3.0	5.0	5.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Split (s)	10.0	10.0	10.0	12.0	27.0		10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	15.0	48.0	48.0	15.0	48.0		27.0	27.0	27.0	27.0	27.0	27.0
Total Split (%)	16.7%	53.3%	53.3%	16.7%	53.3%		30.0%	30.0%	30.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	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	7.0			7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag							
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Recall Mode	None	Max	Max	None	Max		None	None	None	None	None	None
Act Effect Green (s)	53.6	50.6	50.6	47.0	41.1			12.2	12.2			12.2
Actuated g/C Ratio	0.65	0.62	0.62	0.57	0.50			0.15	0.15			0.15
v/c Ratio	0.36	0.43	0.01	0.04	0.54			0.57	0.39			0.16
Control Delay (s/veh)	8.1	12.1	0.0	5.8	15.6			40.7	9.7			21.1
Queue Delay	0.0	2.9	0.0	0.0	0.0			0.0	0.0			0.0
Total Delay (s/veh)	8.1	15.0	0.0	5.8	15.6			40.7	9.7			21.1
LOS	A	B	A	A	B			D	A			C
Approach Delay (s/veh)		13.3			15.4			26.2				21.1
Approach LOS		B			B			C				C
Queue Length 50th (ft)	21	89	0	4	163			75	1			9
Queue Length 95th (ft)	49	267	0	14	251			133	47			35
Internal Link Dist (ft)		239			502			172				526

Subaru
3: Campbell PI/Memorial Ave & 11th St

2023 Existing PM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	125		125	150					40			
Base Capacity (vph)	390	1096	1020	657	1778			448	491		366	
Starvation Cap Reductn	0	503	0	0	0			0	0		0	
Spillback Cap Reductn	0	0	0	0	0			0	0		0	
Storage Cap Reductn	0	0	0	0	0			0	0		0	
Reduced v/c Ratio	0.35	0.79	0.01	0.04	0.54			0.34	0.28		0.10	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	81.9
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.57
Intersection Signal Delay (s/veh):	16.4
Intersection LOS:	B
Intersection Capacity Utilization:	63.8%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 3: Campbell PI/Memorial Ave & 11th St

