

MEMORANDUM

TO: McDonald Keohane Funeral Home
c/o Mr. Dennis Keohane
809 Main Street
Weymouth, MA 02190

FROM: Mr. Jeffrey S. Dirk, P.E., PTOE, FITE 
Managing Partner
Vanasse & Associates, Inc.
35 New England Business Center Drive
Suite 140
Andover, MA 01810-1066
(978) 269-6830
jdirk@rdva.com
Professional Engineer in CT, MA, ME, NH, RI and VA

DATE: October 25, 2022

RE: 8135

SUBJECT: Supplemental Transportation Impact Assessment
McDonald-Keohane Funeral Home Expansion – 809 Main Street
Weymouth, Massachusetts

Vanasse & Associates, Inc. (VAI) has conducted a supplemental Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed expansion of the existing McDonald-Keohane Funeral Home, a licensed Funeral Establishment under 239 Code of Massachusetts Regulations (CMR) 3.00, located at 809 Main Street (Route 18) in Weymouth, Massachusetts (hereafter referred to as the “Project”). This assessment is responsive to the scope of work that was identified in consultation with the Town Traffic Engineer and provides an assessment of traffic operations (motorists, delays, vehicle queueing and level of service) at critical intersections along Route 18 proximate to the Project site during the weekday evening peak-hour assuming that the Project would result in a measurable increase in traffic associated with the operation of the funeral home. This assessment supplements and expands upon the information that was presented in the August 9, 2022 TIA (the “August 2022 TIA”) that was prepared by VAI in support of the Project.

Based on this assessment, we have concluded that to the extent that the Project would result in an increase in traffic over existing conditions, the resulting increase would not cause a significant impact (increase) on motorist delays or vehicle queuing over current conditions. As such, the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with the implementation of the recommendations presented in the August 2022 TIA.

The following details our supplemental assessment of the Project.

PROJECT DESCRIPTION

As proposed, the Project will entail the modernization and expansion of the McDonald-Keohane Funeral Home located at 809 Main Street (Route 18) in Weymouth, Massachusetts. Specifically, the Project includes the following elements: i) construction of a 5,269± square foot (sf) addition to the existing 3,411± sf funeral home; ii) construction of an enclosed attached garage for regulated removal, preparation and transportation under 239 CMR 3.10; iii) the demolition of the existing 1,288± sf detached garage and the construction of a 1,200± sf detached garage in western portion of the site to accommodate enclosed



parking for a hearse and two (2) limousines and that are currently parked on-site; and iv) associated building access, parking, and circulation improvements in the western portion of the Project site.

As stated in the Operations Plan developed for the Project, *the Project is not intended to result in an increase in the frequency of services, the number of attendees (which can vary) or the number of clients served.* That being said and as suggested by the Town Traffic Engineer, an evaluation of impacts on the transportation infrastructure that would be associated with a 40 percent increase in weekday evening peak-hour traffic associated with funeral home operations was completed. The weekday evening peak-hour was selected as it represents the critical analysis period for both the Project and the Route 18 corridor. This assessment does not imply that the Project will result in such an increase and is intended to provide context as to potential impacts to the extent that there is an increase in traffic attributable to the Project.

EXISTING TRAFFIC VOLUMES

In order to determine existing traffic-volume demands and flow patterns within the study area, turning movement counts (TMCs) and vehicle classification counts were obtained for intersections of Route 18 at Park Avenue and Park Avenue West and Route 18 at Columbian Street from counts that were performed in October 2015 and January 2019, respectively, prior to the COVID-19 pandemic and while public schools were in regular session. The October 2015 traffic counts were provided by the Town of Weymouth for the Route 18/Park Avenue/Park Avenue West intersection.

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, traffic-volume data from the Massachusetts Department of Transportation (MassDOT) Continuous Count Station No. 6255 located on Route 3, north of Route 18, in Weymouth were reviewed.¹ Based on a review of this data, it was determined that traffic volumes for the month of October are approximately 0.7 percent *above* average-month conditions, with traffic volumes for the month of January approximately 9.2 percent *below* average-month conditions. As such, the January traffic volumes were adjusted upward to average-month conditions, with no adjustment applied to the October traffic volumes as they are representative of traffic-volume conditions that are higher than those under average-month conditions. The 2015 traffic volumes were expanded to 2019 (considered by MassDOT to be representative of “Existing” conditions) by applying the traffic growth procedure detailed in the April 2020 “Guidance on Traffic Counting Data” published by MassDOT.²

As detailed in the August 2022 TIA, automatic traffic recorder (ATR) counts were conducted on the Project site driveways in April 2022 to define traffic volumes associated with existing funeral home operations (discussion follows).

The 2022 Existing weekday evening peak-hour traffic volumes are graphically depicted on Figure 1.

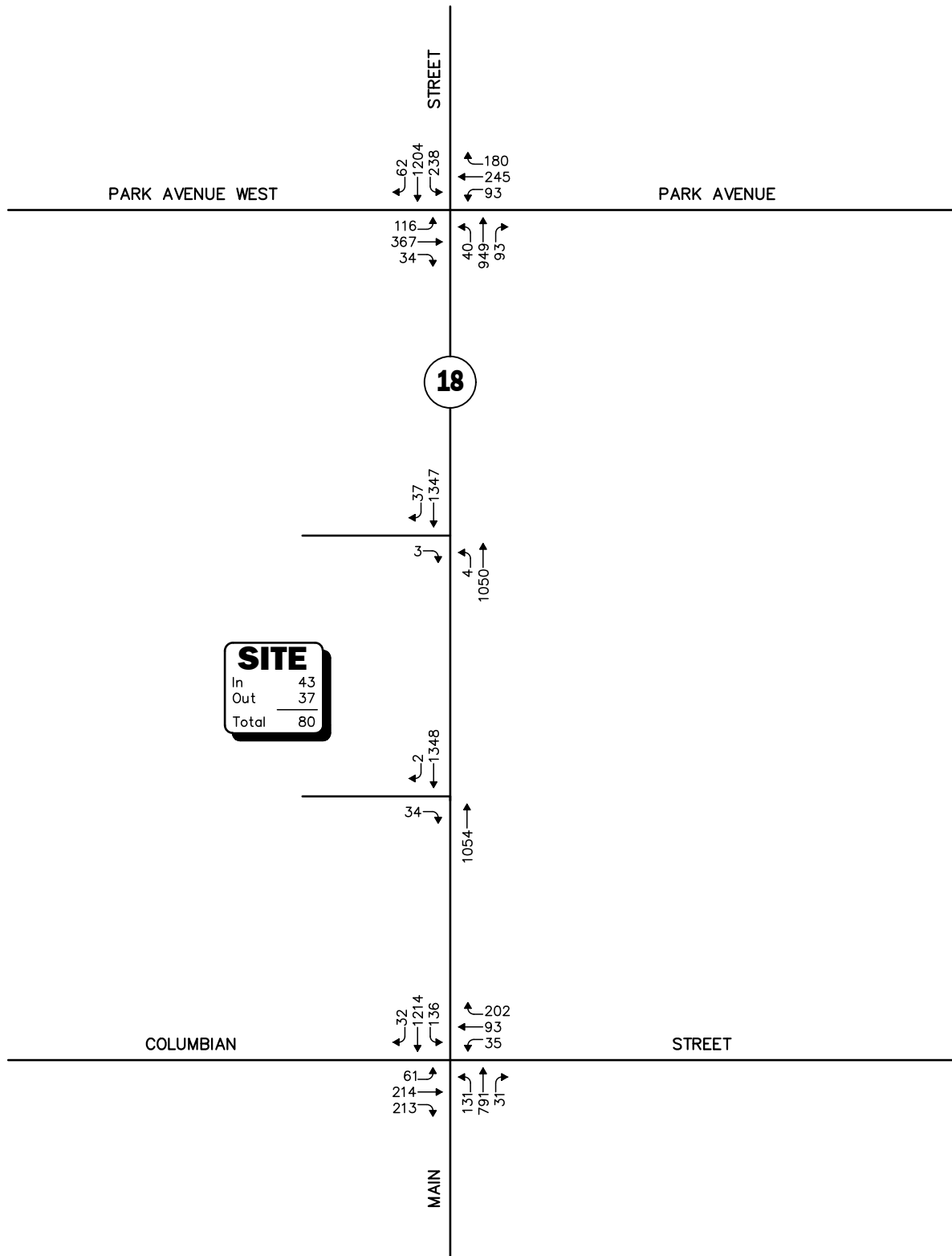
PROJECT-GENERATED TRAFFIC

As detailed in the August 2022 TIA, ATR counts were conducted over a four-day period from April 6th through April 9, 2022 (Wednesday through Saturday, inclusive) on the two (2) driveways that serve the Project site. Based on a review of this data, it was determined that traffic volumes observed on Thursday, April 7, 2022 were the highest experienced during the observation period, and were therefore selected for analysis and trip-generation purposes.

¹MassDOT Traffic Volumes for the Commonwealth of Massachusetts; 2022.

²*Guidance on Traffic Count Data*; MassDOT; revised April 2020.





Not To Scale



Figure 1

2022 Existing
Weekday Evening
Peak-Hour Traffic Volumes

Table 1 summarizes the traffic characteristics of the Project during the weekday evening peak-hour as observed on Thursday, April 7, 2022 (Column A) and assuming an increase in traffic of up to 40 percent as a result of the Project (Column B). For reference, the funeral home hosted three (3) events on that day: one (1) funeral; one (1) planning consultation meeting; and one (1) visitation/wake.

Table 1
TRIP-GENERATION SUMMARY

Time Period	Vehicle Trips		
	(A) Observed Traffic Volumes ^a	(B = A x 0.40) Potential Traffic Volume Increase	(C = A + B) Resulting Traffic Volume
<i>Weekday Evening Peak-Hour:</i>			
Entering	43	17	60
<u>Exiting</u>	<u>37</u>	<u>15</u>	<u>52</u>
Total	80	32	112

^aAs observed on Thursday, April 7, 2022.

As can be seen in Table 1, under current operating conditions, the funeral home was observed to generate 80 vehicle trips (43 entering and 37 exiting) during the weekday evening peak-hour on a typical day. Assuming a 40 percent increase in existing traffic as a result of the Project, the funeral home would generate 32 additional vehicle trips during the weekday evening peak-hour (17 vehicles entering and 15 exiting), resulting in a total of 112 vehicle trips (60 vehicles entering and 52 exiting) during the weekday evening peak-hour after the Project is complete.

Trip Distribution and Assignment

The directional distribution of generated trips to and from the Project site was determined based on a review of existing traffic patterns within the study area and then refined based on a review of the regional roadway network. The general trip distribution for the Project is graphically depicted on Figure 2, with the potential traffic volumes attributable to the Project (Column B of Table 1) assigned on the study area roadway network as shown on Figure 3.

Build Traffic Volumes

The 2022 Build condition traffic volumes consist of the 2022 Existing traffic volumes with the potential traffic generated by the Project added to them. The 2022 Build weekday evening peak-hour traffic volumes are graphically depicted on Figure 4.



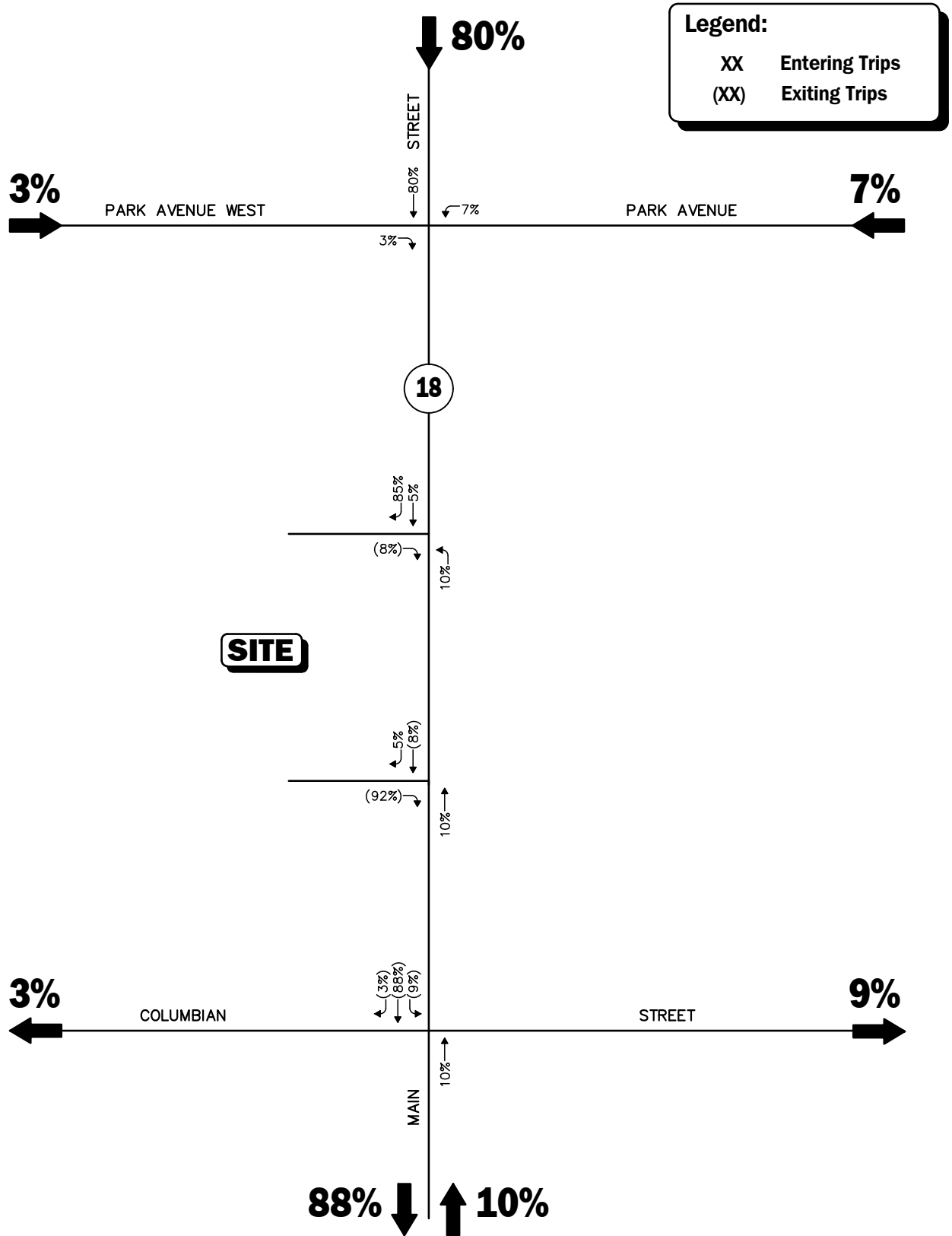
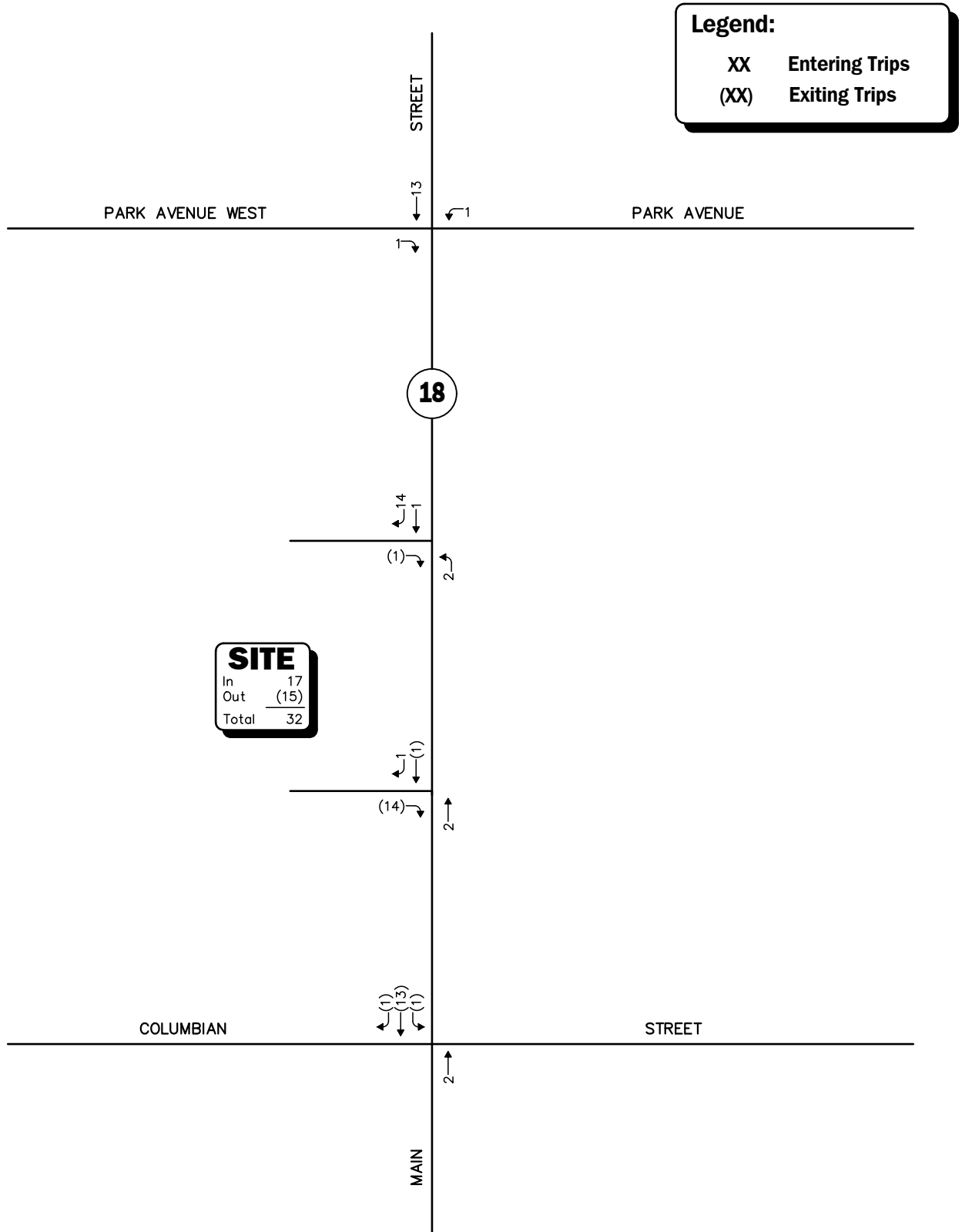


Figure 2

Trip Distribution Map



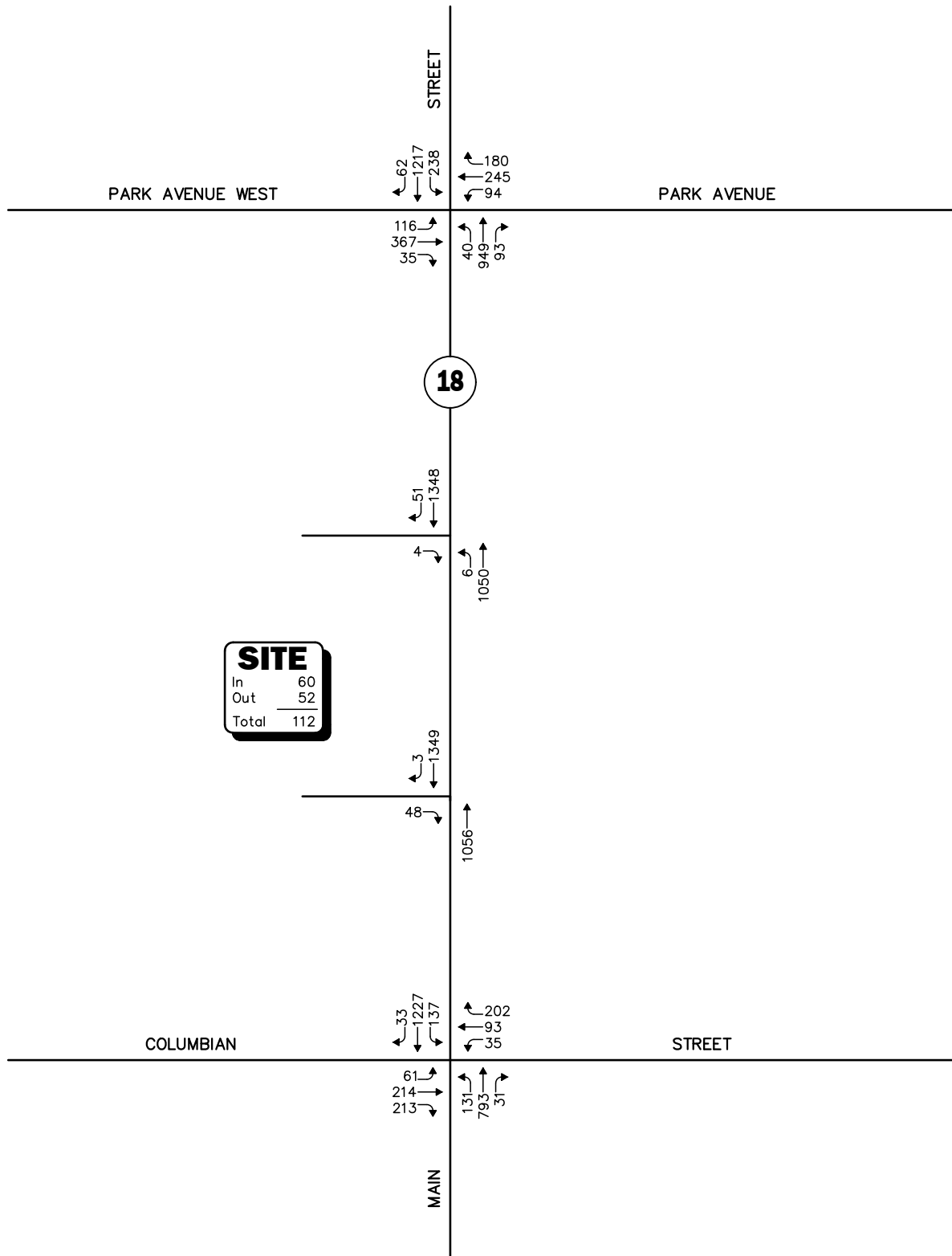


Not To Scale



Figure 3

**Project-Generated
Weekday Evening
Peak-Hour Traffic Volumes**



Not To Scale



Figure 4

2022 Build
Weekday Evening
Peak-Hour Traffic Volumes

TRAFFIC OPERATIONS ANALYSIS

In order to assess the potential impact of the Project on the roadway network, a detailed traffic operations analysis (motorist delays, vehicle queuing, and level-of-service) was performed within the study area. Capacity analyses provide an indication of how well transportation facilities serve the traffic demands placed upon them, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

In brief, six levels of service are defined for each type of facility. They are given letter designations ranging from A to F, with level-of-service (LOS) “A” representing the best operating conditions and LOS “F” representing congested or constrained operations. An LOS of “E” is representative of a transportation facility that is operating at its design capacity with an LOS of “D” generally defined as the limit of “acceptable” traffic operations. Since the level-of-service of a traffic facility is a function of the flows placed upon it, such a facility may operate at a wide range of levels of service depending on the time of day, day of week, or period of the year. The Synchro® intersection capacity analysis software, which is based on the analysis methodologies and procedures presented in the 2000³ and 2010⁴ *Highway Capacity Manual* (HCM) for signalized and unsignalized intersections, respectively, were used to complete the level-of-service and vehicle queue analyses.

ANALYSIS RESULTS

Level-of-service and vehicle queue analyses were conducted for 2022 Existing and 2022 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized in Tables 2 and 3, with the detailed analysis results provided as an attachment.

The following is a summary of the level-of-service and vehicle queue analyses for the intersections within the study area. For context, we note that an LOS of “D” or better is generally defined as “acceptable” operating conditions.

³*Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2000.

⁴*Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.



Table 2
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2022 Existing				2022 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
Route 18 at Columbian Street								
<i>Weekday Evening:</i>								
Columbian Street EB LT/TH	0.72	38.8	D	6/12	0.72	38.8	D	6/12
Columbian Street EB RT	0.35	22.2	C	3/8	0.35	22.2	C	3/8
Columbian Street WB LT/TH	0.55	32.9	C	3/6	0.55	32.9	C	3/6
Columbian Street WB RT	0.40	22.9	C	4/8	0.40	22.9	C	4/8
Route 18 NB LT	0.48	17.5	B	1/6	0.48	17.7	B	1/6
Route 18 NB TH/RT	0.58	20.8	C	7/17	0.58	20.9	C	7/17
Route 18 SB LT	0.40	12.9	B	1/5	0.40	12.9	B	1/5
Route 18 SB TH/RT	0.89	31.4	C	12/34	0.90	32.2	C	12/34
Overall	--	26.8	C	--	--	27.1	C	--
Route 18 at Park Avenue and Park Avenue West								
<i>Weekday Evening:</i>								
Park Avenue West EB LT	0.53	33.3	C	2/6	0.53	33.3	C	2/6
Park Avenue West EB TH/RT	0.60	40.5	D	5/10	0.60	40.6	D	5/10
Park Avenue WB LT	0.43	31.5	C	2/5	0.44	31.6	C	2/5
Park Avenue WB TH	0.75	48.5	D	7/14	0.75	48.5	D	7/14
Park Avenue WB RT	0.38	30.6	C	4/9	0.38	30.6	C	4/9
Route 18 NB LT	0.25	22.6	C	1/2	0.25	22.9	C	1/2
Route 18 NB TH/RT	0.77	31.0	C	12/25	0.77	31.0	C	12/25
Route 18 SB LT	1.08	>80.0	F	5/17	1.08	>80.0	F	5/17
Route 18 SB TH/RT	0.90	36.0	D	17/36	0.91	37.2	D	17/36
Overall	--	40.2	D	--	--	40.6	D	--

^aVolume-to-capacity ratio.

^bControl (signal) delay per vehicle in seconds.

^cLevel-of-Service.

^dQueue length in vehicles based on 25-feet per vehicle.

NB = northbound; SB = southbound; EB = eastbound; WB = westbound;

LT = left-turning movements; TH = through movements; RT = right-turning movements.

Route 18 at Columbian Street – No change in level of service or vehicle queuing is predicted to occur for any movement over Existing conditions, with Project-related impacts defined as an increase in overall average motorist delay of less than 1.0 seconds.

Route 18 at Park Avenue and Park Avenue West – No change in level of service or vehicle queuing is predicted to occur for any movement over Existing conditions, with Project-related impacts defined as an increase in overall average motorist delay of less than 1.0 seconds. Independent of the Project, left-turn movements along Route 18 southbound were found to operate over capacity (i.e. LOS “F”) during the weekday evening peak-hour.



Table 3
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/ Peak Hour/Movement	2022 Existing				2022 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th
Route 18 at the South Project Site Driveway								
<i>Weekday Evening:</i>								
Project Site driveway EB RT	34	16.0	C	1	48	16.6	C	1
Route 18 NB TH	1,054	0.0	A	0	1,056	0.0	A	0
Route 18 SB TH/RT	1,350	0.0	A	0	1,352	0.0	A	0
Route 18 at the North Project Site Driveway								
<i>Weekday Evening:</i>								
Project Site driveway EB RT	3	15.3	C	0	4	15.4	C	0
Route 18 NB LT/TH	1,054	0.2	A	0	1,056	0.4	A	0
Route 18 SB TH/RT	1,384	0.0	A	0	1,399	0.0	A	0

^aDemand in vehicles per hour.

^bAverage control delay per vehicle (in seconds).

^cLevel-of-Service.

^dQueue length in vehicles.

NB = northbound; SB = southbound; EB = eastbound.

TH = through movements; RT = right-turning movements.

Route 18 at South Project Site Driveway – All movements exiting the east Project site driveway are predicted to operate at LOS C during the weekday evening peak-hour, with residual vehicle queues of up to one (1) vehicle. All movements along Route 18 were shown to operate at LOS A during the weekday evening peak-hour with negligible vehicle queuing predicted.

Route 18 at North Project Site Driveway – All movements exiting the east Project site driveway are predicted to operate at LOS C during the weekday evening peak-hour with negligible vehicle queuing. All movements along Route 18 were shown to operate at LOS A during the weekday evening peak-hour, also with negligible vehicle queuing predicted.

SUMMARY

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed expansion of the existing McDonald-Keohane Funeral Home, a licensed Funeral Establishment under 239 CMR 3.00, located at 809 Main Street (Route 18) in Weymouth, Massachusetts. This assessment is responsive to the scope of work that was identified in consultation with the Town Traffic Engineer and provides an assessment of traffic operations (motorists, delays, vehicle queuing and level of service) at critical intersections along Route 18 proximate to the Project site during the weekday evening peak-hour assuming that the Project would result in a measurable increase in traffic associated with the operation of the funeral home.

Based on this assessment, *we have concluded that to the extent that the Project would result in an increase in traffic over existing conditions, the resulting increase would not cause a significant impact (increase) on motorist delays or vehicle queuing over current conditions. As such, the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with the implementation of the recommendations presented in the August 2022 TIA.*



ATTACHMENTS

TURNING MOVEMENT COUNT DATA
SEASONAL ADJUSTMENT DATA
COVID-19 ADJUSTMENT DATA
CAPACITY ANALYSIS WORKSHEETS



TURNING MOVEMENT COUNT DATA



Accurate Counts

978-664-2565

N/S Street : Route 18
E/W Street: Columbian Street
City/State : Weymouth, MA
Weather : Clear

File Name : 81350001
Site Code : 81350001
Start Date : 1/10/2019
Page No : 1

Groups Printed- Cars - Trucks

	Route 18 From North			Columbian St From East			Route 18 From South			Columbian St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	51	237	10	9	32	44	35	181	8	9	44	43	703
04:15 PM	41	238	3	5	16	42	25	156	3	13	50	48	640
04:30 PM	41	223	7	11	24	56	36	177	2	16	39	42	674
04:45 PM	41	251	7	5	39	48	29	165	7	9	36	51	688
Total	174	949	27	30	111	190	125	679	20	47	169	184	2705
05:00 PM	37	267	9	7	20	56	25	197	8	19	44	51	740
05:15 PM	27	295	11	11	27	54	38	172	8	16	55	47	761
05:30 PM	25	264	2	6	15	34	32	188	5	13	50	47	681
05:45 PM	36	286	7	8	23	41	25	164	7	8	47	50	702
Total	125	1112	29	32	85	185	120	721	28	56	196	195	2884
Grand Total	299	2061	56	62	196	375	245	1400	48	103	365	379	5589
Apprch %	12.4	85.3	2.3	9.8	31	59.2	14.5	82.7	2.8	12.2	43.1	44.7	
Total %	5.3	36.9	1	1.1	3.5	6.7	4.4	25	0.9	1.8	6.5	6.8	
Cars	291	2042	55	62	196	373	245	1386	48	103	364	379	5544
% Cars	97.3	99.1	98.2	100	100	99.5	100	99	100	100	99.7	100	99.2
Trucks	8	19	1	0	0	2	0	14	0	0	1	0	45
% Trucks	2.7	0.9	1.8	0	0	0.5	0	1	0	0	0.3	0	0.8

Accurate Counts

978-664-2565

File Name : 81350001

Site Code : 81350001

Start Date : 1/10/2019

Page No : 2

N/S Street : Route 18
E/W Street: Columbian Street
City/State : Weymouth, MA
Weather : Clear

	Route 18 From North				Columbian St From East				Route 18 From South				Columbian St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

05:00 PM	37	267	9	313	7	20	56	83	25	197	8	230	19	44	51	114	740
05:15 PM	27	295	11	333	11	27	54	92	38	172	8	218	16	55	47	118	761
05:30 PM	25	264	2	291	6	15	34	55	32	188	5	225	13	50	47	110	681
05:45 PM	36	286	7	329	8	23	41	72	25	164	7	196	8	47	50	105	702
Total Volume	125	1112	29	1266	32	85	185	302	120	721	28	869	56	196	195	447	2884
% App. Total	9.9	87.8	2.3		10.6	28.1	61.3		13.8	83	3.2		12.5	43.8	43.6		
PHF	.845	.942	.659	.950	.727	.787	.826	.821	.789	.915	.875	.945	.737	.891	.956	.947	.947
Cars	122	1105	29	1256	32	85	185	302	120	717	28	865	56	196	195	447	2870
% Cars	97.6	99.4	100	99.2	100	100	100	100	100	99.4	100	99.5	100	100	100	100	99.5
Trucks	3	7	0	10	0	0	0	0	0	4	0	4	0	0	0	0	14
% Trucks	2.4	0.6	0	0.8	0	0	0	0	0	0.6	0	0.5	0	0	0	0	0.5

Accurate Counts

978-664-2565

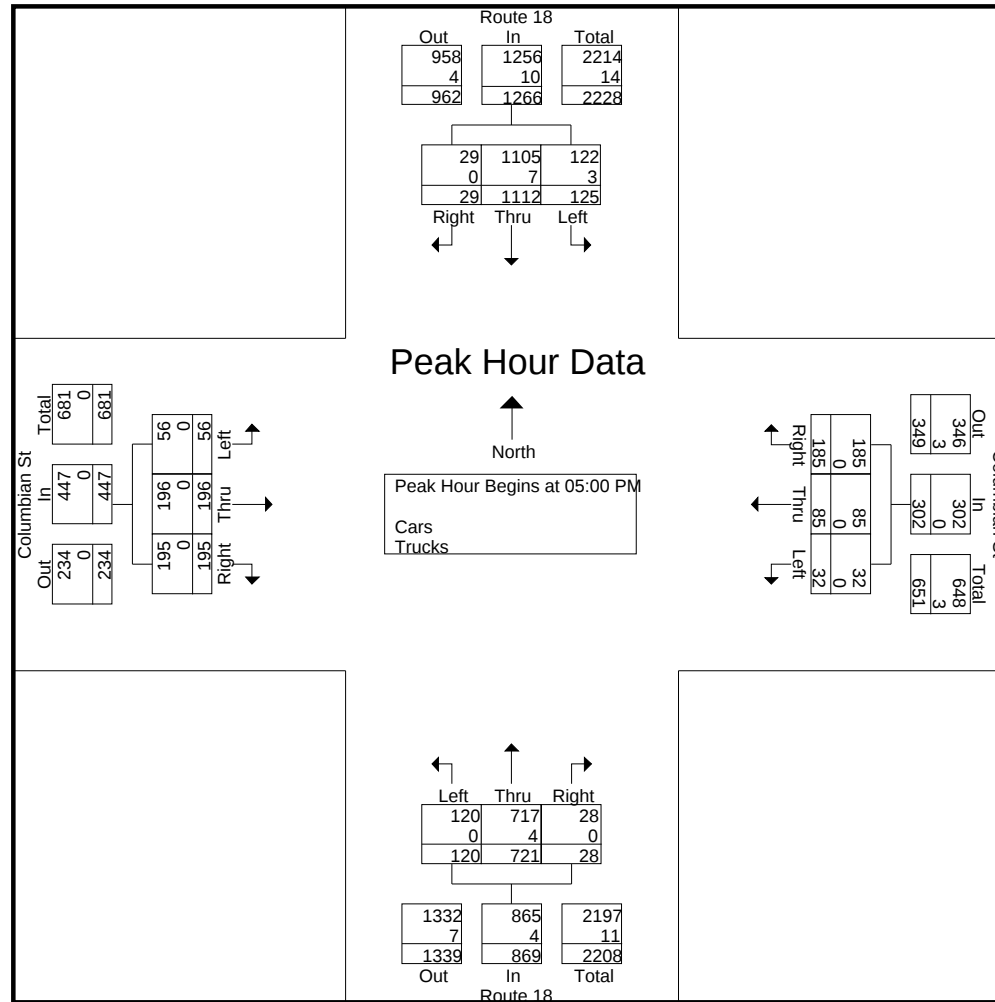
File Name : 81350001

Site Code : 81350001

Start Date : 1/10/2019

Page No : 3

N/S Street : Route 18
E/W Street: Columbian Street
City/State : Weymouth, MA
Weather : Clear



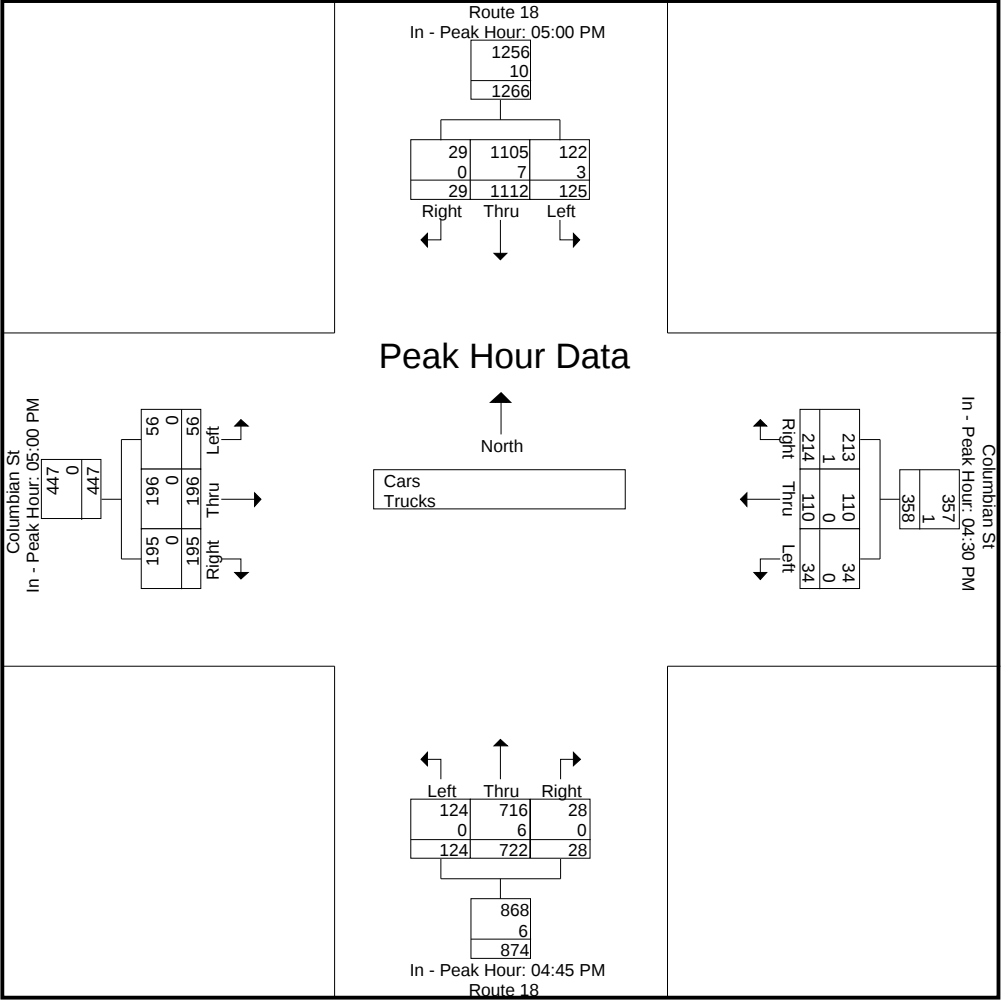
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				04:45 PM				05:00 PM			
+0 mins.	37	267	9	313	11	24	56	91	29	165	7	201	19	44	51	114
+15 mins.	27	295	11	333	5	39	48	92	25	197	8	230	16	55	47	118
+30 mins.	25	264	2	291	7	20	56	83	38	172	8	218	13	50	47	110
+45 mins.	36	286	7	329	11	27	54	92	32	188	5	225	8	47	50	105
Total Volume	125	1112	29	1266	34	110	214	358	124	722	28	874	56	196	195	447

Accurate Counts
978-664-2565

% App. Total	9.9	87.8	2.3		9.5	30.7	59.8		14.2	82.6	3.2		12.5	43.8	43.6	
PHF	.845	.942	.659	.950	.773	.705	.955	.973	.816	.916	.875	.950	.737	.891	.956	.947
Cars	122	1105	29	1256	34	110	213	357	124	716	28	868	56	196	195	447
% Cars	97.6	99.4	100	99.2	100	100	99.5	99.7	100	99.2	100	99.3	100	100	100	100
Trucks	3	7	0	10	0	0	1	1	0	6	0	6	0	0	0	0
% Trucks	2.4	0.6	0	0.8	0	0	0.5	0.3	0	0.8	0	0.7	0	0	0	0



Accurate Counts

978-664-2565

N/S Street : Route 18
E/W Street: Columbian Street
City/State : Weymouth, MA
Weather : Clear

File Name : 81350001
Site Code : 81350001
Start Date : 1/10/2019
Page No : 5

Groups Printed- Cars

	Route 18 From North			Columbian St From East			Route 18 From South			Columbian St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	48	231	9	9	32	44	35	178	8	9	44	43	690
04:15 PM	41	236	3	5	16	41	25	153	3	13	50	48	634
04:30 PM	40	220	7	11	24	55	36	176	2	16	39	42	668
04:45 PM	40	250	7	5	39	48	29	162	7	9	35	51	682
Total	169	937	26	30	111	188	125	669	20	47	168	184	2674
05:00 PM	37	265	9	7	20	56	25	197	8	19	44	51	738
05:15 PM	25	293	11	11	27	54	38	171	8	16	55	47	756
05:30 PM	25	262	2	6	15	34	32	186	5	13	50	47	677
05:45 PM	35	285	7	8	23	41	25	163	7	8	47	50	699
Total	122	1105	29	32	85	185	120	717	28	56	196	195	2870
Grand Total	291	2042	55	62	196	373	245	1386	48	103	364	379	5544
Apprch %	12.2	85.5	2.3	9.8	31.1	59.1	14.6	82.5	2.9	12.2	43	44.8	
Total %	5.2	36.8	1	1.1	3.5	6.7	4.4	25	0.9	1.9	6.6	6.8	

Accurate Counts

978-664-2565

File Name : 81350001

Site Code : 81350001

Start Date : 1/10/2019

Page No : 6

N/S Street : Route 18
E/W Street: Columbian Street
City/State : Weymouth, MA
Weather : Clear

	Route 18 From North				Columbian St From East				Route 18 From South				Columbian St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	37	265	9	311	7	20	56	83	25	197	8	230	19	44	51	114	738
05:15 PM	25	293	11	329	11	27	54	92	38	171	8	217	16	55	47	118	756
05:30 PM	25	262	2	289	6	15	34	55	32	186	5	223	13	50	47	110	677
05:45 PM	35	285	7	327	8	23	41	72	25	163	7	195	8	47	50	105	699
Total Volume	122	1105	29	1256	32	85	185	302	120	717	28	865	56	196	195	447	2870
% App. Total	9.7	88	2.3		10.6	28.1	61.3		13.9	82.9	3.2		12.5	43.8	43.6		
PHF	.824	.943	.659	.954	.727	.787	.826	.821	.789	.910	.875	.940	.737	.891	.956	.947	.949

Accurate Counts

978-664-2565

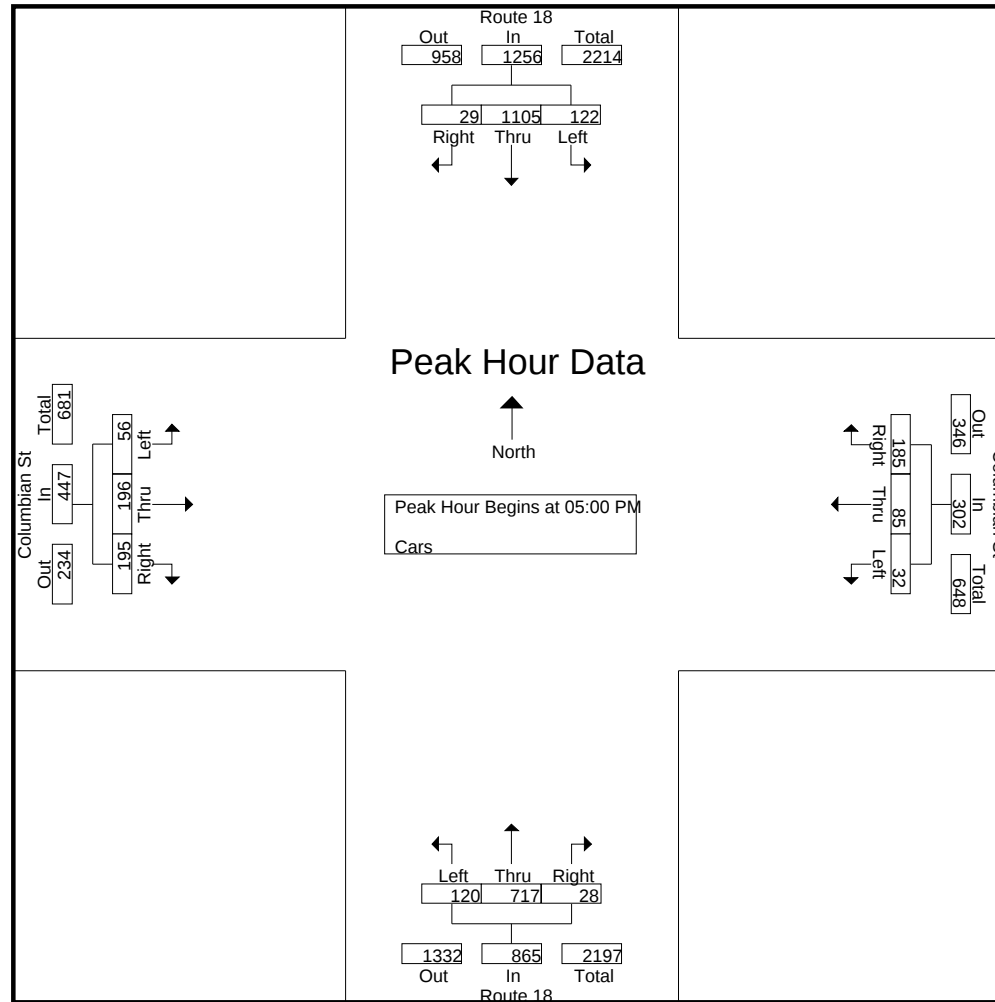
File Name : 81350001

Site Code : 81350001

Start Date : 1/10/2019

Page No : 7

N/S Street : Route 18
E/W Street: Columbian Street
City/State : Weymouth, MA
Weather : Clear



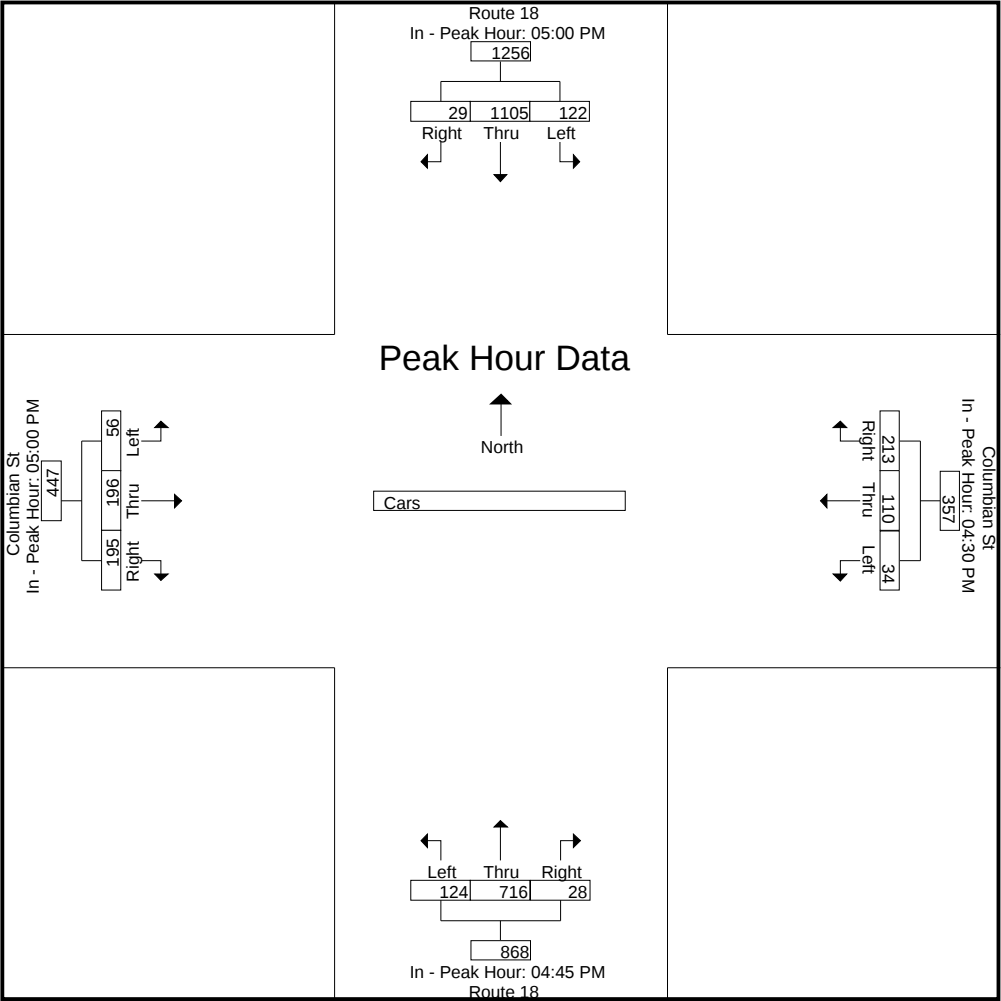
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				04:45 PM				05:00 PM			
+0 mins.	37	265	9	311	11	24	55	90	29	162	7	198	19	44	51	114
+15 mins.	25	293	11	329	5	39	48	92	25	197	8	230	16	55	47	118
+30 mins.	25	262	2	289	7	20	56	83	38	171	8	217	13	50	47	110
+45 mins.	35	285	7	327	11	27	54	92	32	186	5	223	8	47	50	105
Total Volume	122	1105	29	1256	34	110	213	357	124	716	28	868	56	196	195	447

Accurate Counts
978-664-2565

% App. Total	9.7	88	2.3		9.5	30.8	59.7		14.3	82.5	3.2		12.5	43.8	43.6	
PHF	.824	.943	.659	.954	.773	.705	.951	.970	.816	.909	.875	.943	.737	.891	.956	.947



Accurate Counts

978-664-2565

N/S Street : Route 18
E/W Street: Columbian Street
City/State : Weymouth, MA
Weather : Clear

File Name : 81350001
Site Code : 81350001
Start Date : 1/10/2019
Page No : 9

Groups Printed- Trucks

	Route 18 From North			Columbian St From East			Route 18 From South			Columbian St From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	3	6	1	0	0	0	0	3	0	0	0	0	13
04:15 PM	0	2	0	0	0	1	0	3	0	0	0	0	6
04:30 PM	1	3	0	0	0	1	0	1	0	0	0	0	6
04:45 PM	1	1	0	0	0	0	0	3	0	0	1	0	6
Total	5	12	1	0	0	2	0	10	0	0	1	0	31
05:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
05:15 PM	2	2	0	0	0	0	0	1	0	0	0	0	5
05:30 PM	0	2	0	0	0	0	0	2	0	0	0	0	4
05:45 PM	1	1	0	0	0	0	0	1	0	0	0	0	3
Total	3	7	0	0	0	0	0	4	0	0	0	0	14
Grand Total	8	19	1	0	0	2	0	14	0	0	1	0	45
Apprch %	28.6	67.9	3.6	0	0	100	0	100	0	0	100	0	
Total %	17.8	42.2	2.2	0	0	4.4	0	31.1	0	0	2.2	0	

Accurate Counts

978-664-2565

File Name : 81350001

Site Code : 81350001

Start Date : 1/10/2019

Page No : 10

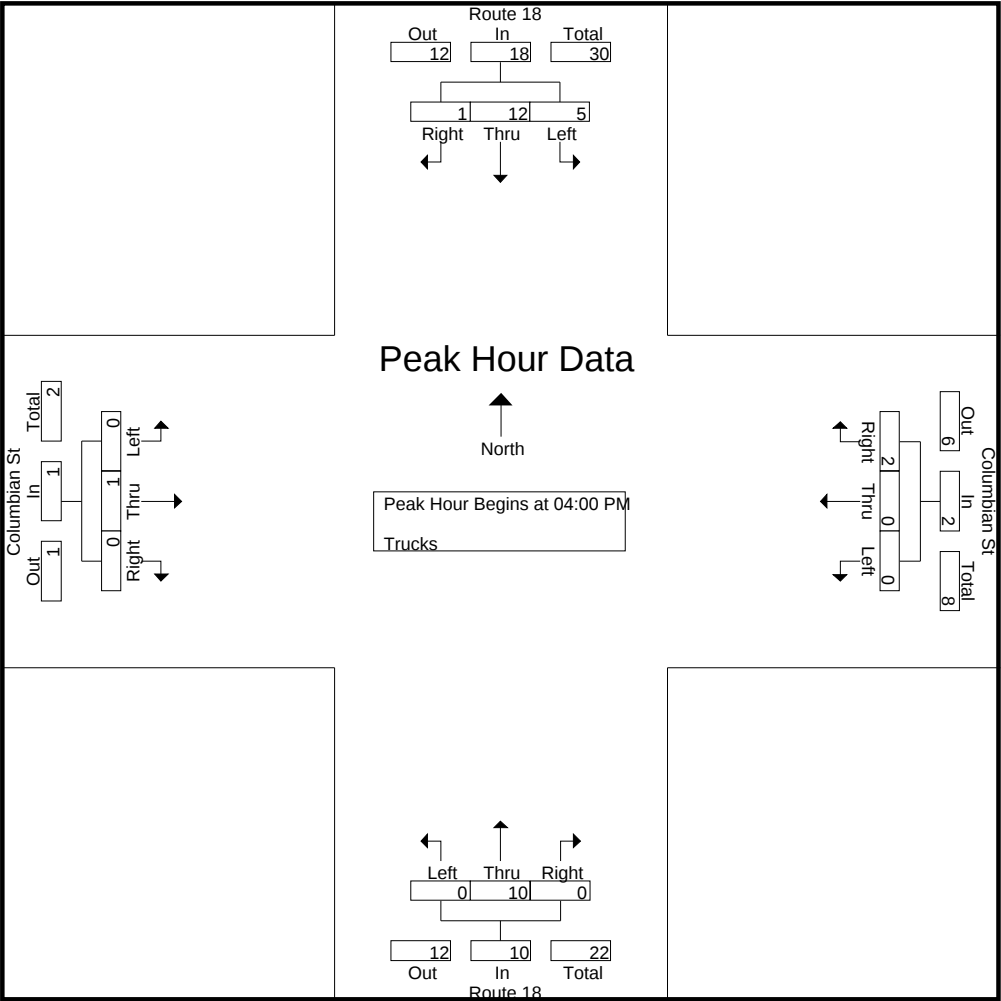
N/S Street : Route 18
E/W Street: Columbian Street
City/State : Weymouth, MA
Weather : Clear

	Route 18 From North				Columbian St From East				Route 18 From South				Columbian St From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	3	6	1	10	0	0	0	0	0	3	0	3	0	0	0	0	13
04:15 PM	0	2	0	2	0	0	1	1	0	3	0	3	0	0	0	0	6
04:30 PM	1	3	0	4	0	0	1	1	0	1	0	1	0	0	0	0	6
04:45 PM	1	1	0	2	0	0	0	0	0	3	0	3	0	1	0	1	6
Total Volume	5	12	1	18	0	0	2	2	0	10	0	10	0	1	0	1	31
% App. Total	27.8	66.7	5.6		0	0	100		0	100	0		0	100	0		
PHF	.417	.500	.250	.450	.000	.000	.500	.500	.000	.833	.000	.833	.000	.250	.000	.250	.596

Accurate Counts
978-664-2565

N/S Street : Route 18
E/W Street: Columbian Street
City/State : Weymouth, MA
Weather : Clear

File Name : 81350001
Site Code : 81350001
Start Date : 1/10/2019
Page No : 11



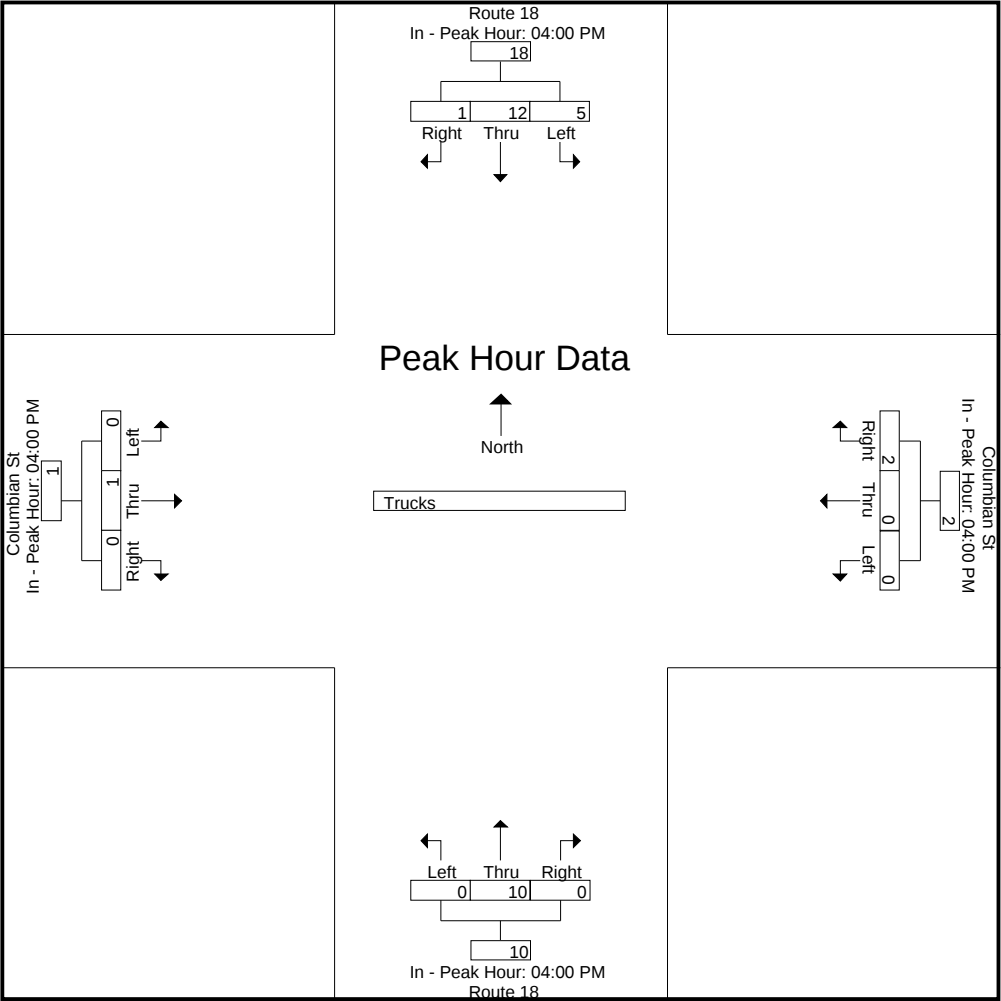
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	3	6	1	10	0	0	0	0	0	3	0	3	0	0	0	0
+15 mins.	0	2	0	2	0	0	1	1	0	3	0	3	0	0	0	0
+30 mins.	1	3	0	4	0	0	1	1	0	1	0	1	0	0	0	0
+45 mins.	1	1	0	2	0	0	0	0	0	3	0	3	0	1	0	1
Total Volume	5	12	1	18	0	0	2	2	0	10	0	10	0	1	0	1

Accurate Counts
978-664-2565

% App. Total	27.8	66.7	5.6		0	0	100		0	100	0		0	100	0	
PHF	.417	.500	.250	.450	.000	.000	.500	.500	.000	.833	.000	.833	.000	.250	.000	.250



978-664-2565

File Name : 81350001
Site Code : 81350001
Start Date : 1/10/2019
Page No : 13

	Group A - Bikes + Peds																			
	Route 18 From North				Columbian St From East				Route 18 From South				Columbian St From West							
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total	
04:00 PM	0	0	0	4	0	0	0	0	0	0	0	3	0	0	0	4	11	0	11	
04:15 PM	0	0	0	1	0	0	0	2	0	0	0	2	0	0	0	6	11	0	11	
04:30 PM	0	0	0	5	0	0	0	4	0	0	0	6	0	0	0	2	17	0	17	
04:45 PM	0	0	0	0	0	0	0	1	0	0	0	6	0	0	0	5	12	0	12	
Total	0	0	0	10	0	0	0	7	0	0	0	17	0	0	0	17	51	0	51	
05:00 PM	0	0	0	2	0	0	0	3	0	0	0	4	0	0	0	1	10	0	10	
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
05:30 PM	0	0	0	1	0	0	0	0	0	0	0	4	0	0	0	0	5	0	5	
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	0	0	0	3	0	0	0	3	0	0	0	8	0	0	0	1	15	0	15	
Grand Total	0	0	0	13	0	0	0	10	0	0	0	25	0	0	0	18	66	0	66	
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0					
Total %																	100	0		

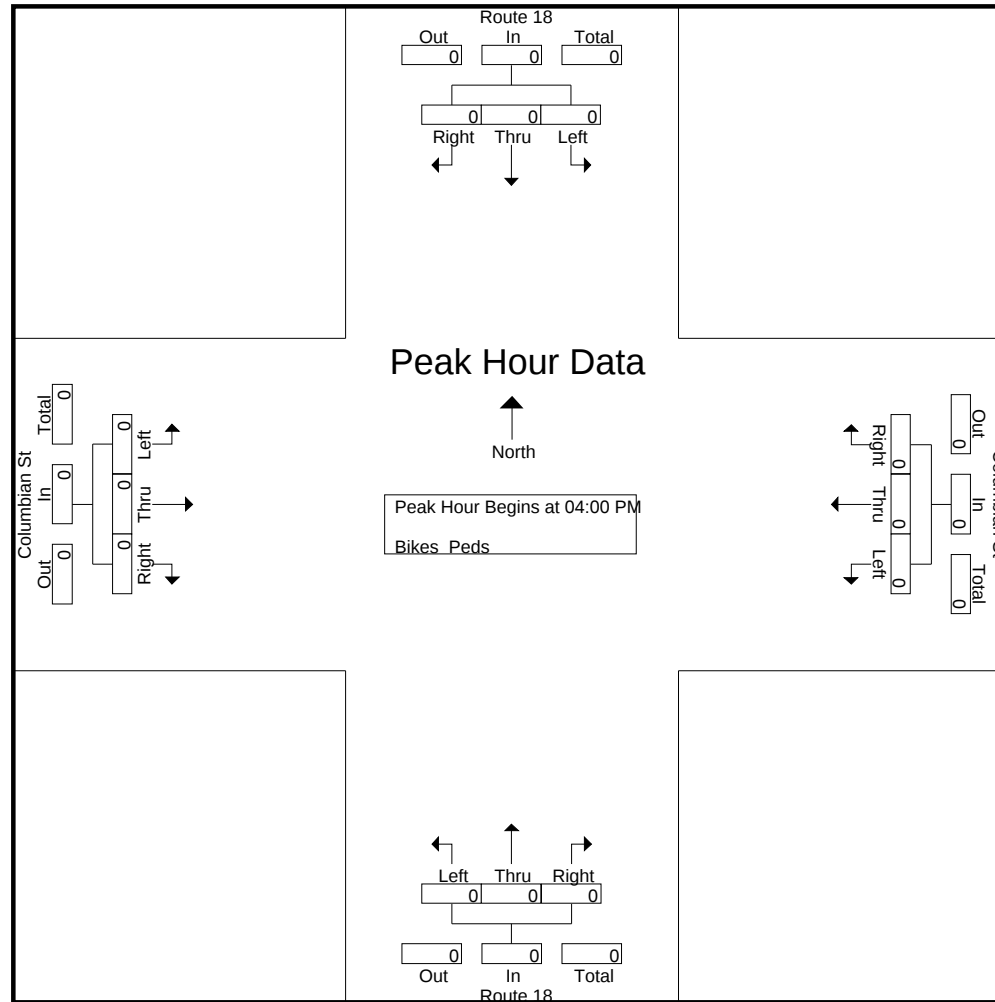
978-664-2565

File Name : 81350001
Site Code : 81350001
Start Date : 1/10/2019
Page No : 14

[illegible]

978-664-2565

File Name : 81350001
Site Code : 81350001
Start Date : 1/10/2019
Page No : 15

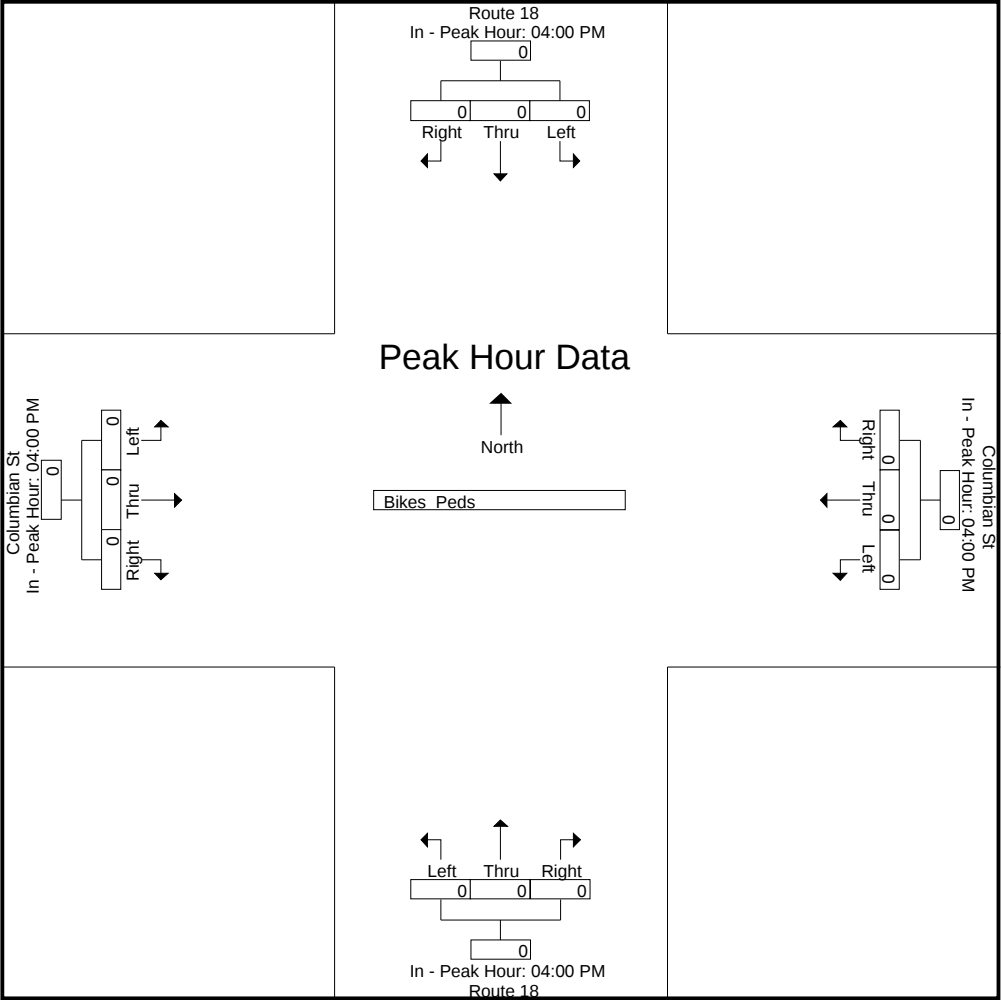


Peak Hour for Each Approach Begins at:

[illegible]

Accurate Counts
978-664-2565

% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000





PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Main Street (Route 18)
E/W: Park Avenue/ Park Avenue West
City, State: Weymouth, MA
Client: Tetra Tech/ C. Jones

File Name : 154745 A
Site Code : 14342892
Start Date : 10/27/2015
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Main Street (Route 18) From North				Park Avenue From East				Main Street (Route 18) From South				Park Avenue West From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	5	154	58	0	80	93	17	0	11	281	32	0	7	99	29	0	866
07:15 AM	17	180	55	0	109	98	20	0	10	302	29	0	14	82	34	0	950
07:30 AM	16	127	26	0	103	117	24	0	13	253	27	0	18	57	34	0	815
07:45 AM	8	181	26	0	53	103	12	0	11	323	27	0	11	55	33	0	843
Total	46	642	165	0	345	411	73	0	45	1159	115	0	50	293	130	0	3474
08:00 AM	7	145	26	0	64	84	14	0	4	293	37	0	16	47	40	0	777
08:15 AM	11	143	20	0	67	95	14	0	9	208	31	0	13	49	38	0	698
08:30 AM	10	179	30	0	64	109	12	0	11	288	42	0	13	70	33	0	861
08:45 AM	12	188	44	0	66	68	25	0	6	243	32	0	21	70	34	0	809
Total	40	655	120	0	261	356	65	0	30	1032	142	0	63	236	145	0	3145
Grand Total	86	1297	285	0	606	767	138	0	75	2191	257	0	113	529	275	0	6619
Apprch %	5.2	77.8	17.1	0	40.1	50.8	9.1	0	3	86.8	10.2	0	12.3	57.7	30	0	
Total %	1.3	19.6	4.3	0	9.2	11.6	2.1	0	1.1	33.1	3.9	0	1.7	8	4.2	0	
Cars	80	1226	274	0	596	741	131	0	65	2100	243	0	105	506	266	0	6333
% Cars	93	94.5	96.1	0	98.3	96.6	94.9	0	86.7	95.8	94.6	0	92.9	95.7	96.7	0	95.7
Heavy Vehicles	6	71	11	0	10	26	7	0	10	91	14	0	8	23	9	0	286
% Heavy Vehicles	7	5.5	3.9	0	1.7	3.4	5.1	0	13.3	4.2	5.4	0	7.1	4.3	3.3	0	4.3

	Main Street (Route 18) From North					Park Avenue From East					Main Street (Route 18) From South					Park Avenue West From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	5	154	58	0	217	80	93	17	0	190	11	281	32	0	324	7	99	29	0	135	866
07:15 AM	17	180	55	0	252	109	98	20	0	227	10	302	29	0	341	14	82	34	0	130	950
07:30 AM	16	127	26	0	169	103	117	24	0	244	13	253	27	0	293	18	57	34	0	109	815
07:45 AM	8	181	26	0	215	53	103	12	0	168	11	323	27	0	361	11	55	33	0	99	843
Total Volume	46	642	165	0	853	345	411	73	0	829	45	1159	115	0	1319	50	293	130	0	473	3474
% App. Total	5.4	75.3	19.3	0		41.6	49.6	8.8	0		3.4	87.9	8.7	0		10.6	61.9	27.5	0		
PHF	.676	.887	.711	.000	.846	.791	.878	.760	.000	.849	.865	.897	.898	.000	.913	.694	.740	.956	.000	.876	.914
Cars	43	619	158	0	820	339	397	69	0	805	42	1106	108	0	1256	46	281	127	0	454	3335
% Cars	93.5	96.4	95.8	0	96.1	98.3	96.6	94.5	0	97.1	93.3	95.4	93.9	0	95.2	92.0	95.9	97.7	0	96.0	96.0
Heavy Vehicles	3	23	7	0	33	6	14	4	0	24	3	53	7	0	63	4	12	3	0	19	139
% Heavy Vehicles	6.5	3.6	4.2	0	3.9	1.7	3.4	5.5	0	2.9	6.7	4.6	6.1	0	4.8	8.0	4.1	2.3	0	4.0	4.0



PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Main Street (Route 18)
E/W: Park Avenue/ Park Avenue West
City, State: Weymouth, MA
Client: Tetra Tech/ C. Jones

File Name : 154745 A
Site Code : 14342892
Start Date : 10/27/2015
Page No : 1

Groups Printed- Cars

	Main Street (Route 18) From North				Park Avenue From East				Main Street (Route 18) From South				Park Avenue West From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	4	148	54	0	77	91	17	0	11	274	31	0	7	96	28	0	838
07:15 AM	16	174	54	0	107	95	18	0	9	287	27	0	13	80	34	0	914
07:30 AM	15	124	25	0	102	114	22	0	12	238	24	0	15	51	34	0	776
07:45 AM	8	173	25	0	53	97	12	0	10	307	26	0	11	54	31	0	807
Total	43	619	158	0	339	397	69	0	42	1106	108	0	46	281	127	0	3335
08:00 AM	7	138	25	0	63	78	13	0	3	285	36	0	14	45	37	0	744
08:15 AM	10	133	19	0	67	92	14	0	7	202	29	0	12	46	38	0	669
08:30 AM	9	169	29	0	62	107	12	0	9	279	38	0	13	68	31	0	826
08:45 AM	11	167	43	0	65	67	23	0	4	228	32	0	20	66	33	0	759
Total	37	607	116	0	257	344	62	0	23	994	135	0	59	225	139	0	2998
Grand Total	80	1226	274	0	596	741	131	0	65	2100	243	0	105	506	266	0	6333
Apprch %	5.1	77.6	17.3	0	40.6	50.5	8.9	0	2.7	87.2	10.1	0	12	57.7	30.3	0	
Total %	1.3	19.4	4.3	0	9.4	11.7	2.1	0	1	33.2	3.8	0	1.7	8	4.2	0	

	Main Street (Route 18) From North					Park Avenue From East					Main Street (Route 18) From South					Park Avenue West From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	4	148	54	0	206	77	91	17	0	185	11	274	31	0	316	7	96	28	0	131	838
07:15 AM	16	174	54	0	244	107	95	18	0	220	9	287	27	0	323	13	80	34	0	127	914
07:30 AM	15	124	25	0	164	102	114	22	0	238	12	238	24	0	274	15	51	34	0	100	776
07:45 AM	8	173	25	0	206	53	97	12	0	162	10	307	26	0	343	11	54	31	0	96	807
Total Volume	43	619	158	0	820	339	397	69	0	805	42	1106	108	0	1256	46	281	127	0	454	3335
% App. Total	5.2	75.5	19.3	0		42.1	49.3	8.6	0		3.3	88.1	8.6	0		10.1	61.9	28	0		
PHF	.672	.889	.731	.000	.840	.792	.871	.784	.000	.846	.875	.901	.871	.000	.915	.767	.732	.934	.000	.866	.912



PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Main Street (Route 18)
E/W: Park Avenue/ Park Avenue West
City, State: Weymouth, MA
Client: Tetra Tech/ C. Jones

File Name : 154745 A
Site Code : 14342892
Start Date : 10/27/2015
Page No : 1

Groups Printed- Heavy Vehicles

	Main Street (Route 18) From North				Park Avenue From East				Main Street (Route 18) From South				Park Avenue West From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	1	6	4	0	3	2	0	0	0	7	1	0	0	3	1	0	28
07:15 AM	1	6	1	0	2	3	2	0	1	15	2	0	1	2	0	0	36
07:30 AM	1	3	1	0	1	3	2	0	1	15	3	0	3	6	0	0	39
07:45 AM	0	8	1	0	0	6	0	0	1	16	1	0	0	1	2	0	36
Total	3	23	7	0	6	14	4	0	3	53	7	0	4	12	3	0	139
08:00 AM	0	7	1	0	1	6	1	0	1	8	1	0	2	2	3	0	33
08:15 AM	1	10	1	0	0	3	0	0	2	6	2	0	1	3	0	0	29
08:30 AM	1	10	1	0	2	2	0	0	2	9	4	0	0	2	2	0	35
08:45 AM	1	21	1	0	1	1	2	0	2	15	0	0	1	4	1	0	50
Total	3	48	4	0	4	12	3	0	7	38	7	0	4	11	6	0	147
Grand Total	6	71	11	0	10	26	7	0	10	91	14	0	8	23	9	0	286
Apprch %	6.8	80.7	12.5	0	23.3	60.5	16.3	0	8.7	79.1	12.2	0	20	57.5	22.5	0	
Total %	2.1	24.8	3.8	0	3.5	9.1	2.4	0	3.5	31.8	4.9	0	2.8	8	3.1	0	

	Main Street (Route 18) From North					Park Avenue From East					Main Street (Route 18) From South					Park Avenue West From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	7	1	0	8	1	6	1	0	8	1	8	1	0	10	2	2	3	0	7	33
08:15 AM	1	10	1	0	12	0	3	0	0	3	2	6	2	0	10	1	3	0	0	4	29
08:30 AM	1	10	1	0	12	2	2	0	0	4	2	9	4	0	15	0	2	2	0	4	35
08:45 AM	1	21	1	0	23	1	1	2	0	4	2	15	0	0	17	1	4	1	0	6	50
Total Volume	3	48	4	0	55	4	12	3	0	19	7	38	7	0	52	4	11	6	0	21	147
% App. Total	5.5	87.3	7.3	0		21.1	63.2	15.8	0		13.5	73.1	13.5	0		19	52.4	28.6	0		
PHF	.750	.571	1.00	.000	.598	.500	.500	.375	.000	.594	.875	.633	.438	.000	.765	.500	.688	.500	.000	.750	.735



PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Main Street (Route 18)
E/W: Park Avenue/ Park Avenue West
City, State: Weymouth, MA
Client: Tetra Tech/ C. Jones

File Name : 154745 A
Site Code : 14342892
Start Date : 10/27/2015
Page No : 1

Groups Printed- Peds and Bicycles

	Main Street (Route 18) From North						Park Avenue From East					Main Street (Route 18) From South					Park Avenue West From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB		Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	0	1	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3
07:15 AM	0	0	0	2	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
07:30 AM	0	0	0	0	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	3	1		0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	7
08:00 AM	0	1	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	1	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	1		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Grand Total	0	1	0	4	2		0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	10
Apprch %	0	14.3	0	57.1	28.6		0	0	0	100	0	0	0	0	0	100	0	0	0	0	100	
Total %	0	10	0	40	20		0	0	0	10	0	0	0	0	0	10	0	0	0	0	10	

	Main Street (Route 18) From North						Park Avenue From East						Main Street (Route 18) From South						Park Avenue West From West							
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 07:00 AM																										
07:00 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	3
07:15 AM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
07:30 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	3	1	4	0	0	0	1	0	1	0	0	0	0	1	1	0	0	0	0	1	1	7	
% App. Total	0	0	0	75	25		0	0	0	100	0		0	0	0	0	100		0	0	0	0	100			
PHF	.000	.000	.000	.375	.250	.500	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000	.250	.250	.583	



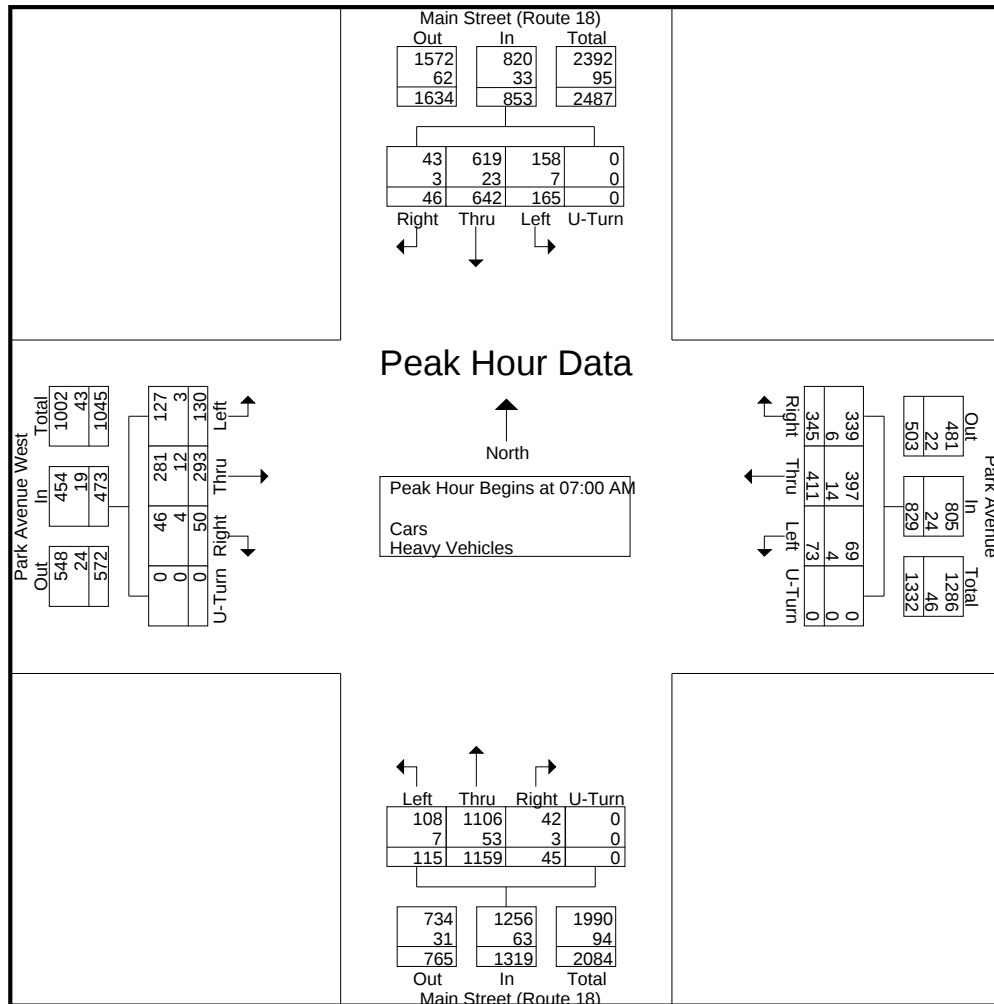
PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Main Street (Route 18)
E/W: Park Avenue/ Park Avenue West
City, State: Weymouth, MA
Client: Tetra Tech/ C. Jones

File Name : 154745 A
Site Code : 14342892
Start Date : 10/27/2015
Page No : 1

	Main Street (Route 18) From North					Park Avenue From East					Main Street (Route 18) From South					Park Avenue West From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	5	154	58	0	217	80	93	17	0	190	11	281	32	0	324	7	99	29	0	135	866
07:15 AM	17	180	55	0	252	109	98	20	0	227	10	302	29	0	341	14	82	34	0	130	950
07:30 AM	16	127	26	0	169	103	117	24	0	244	13	253	27	0	293	18	57	34	0	109	815
07:45 AM	8	181	26	0	215	53	103	12	0	168	11	323	27	0	361	11	55	33	0	99	843
Total Volume	46	642	165	0	853	345	411	73	0	829	45	1159	115	0	1319	50	293	130	0	473	3474
% App. Total	5.4	75.3	19.3	0		41.6	49.6	8.8	0		3.4	87.9	8.7	0		10.6	61.9	27.5	0		
PHF	.676	.887	.711	.000	.846	.791	.878	.760	.000	.849	.865	.897	.898	.000	.913	.694	.740	.956	.000	.876	.914
Cars	43	619	158	0	820	339	397	69	0	805	42	1106	108	0	1256	46	281	127	0	454	3335
% Cars	93.5	96.4	95.8	0	96.1	98.3	96.6	94.5	0	97.1	93.3	95.4	93.9	0	95.2	92.0	95.9	97.7	0	96.0	96.0
Heavy Vehicles	3	23	7	0	33	6	14	4	0	24	3	53	7	0	63	4	12	3	0	19	139
% Heavy Vehicles	6.5	3.6	4.2	0	3.9	1.7	3.4	5.5	0	2.9	6.7	4.6	6.1	0	4.8	8.0	4.1	2.3	0	4.0	4.0





PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Main Street (Route 18)
E/W: Park Avenue/ Park Avenue West
City, State: Weymouth, MA
Client: Tetra Tech/ C. Jones

File Name : 154745 AA
Site Code : 14342892
Start Date : 10/27/2015
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Main Street (Route 18) From North				Park Avenue From East				Main Street (Route 18) From South				Park Avenue West From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	7	322	51	0	38	57	13	0	18	230	11	0	12	89	20	0	868
04:15 PM	13	316	60	0	55	64	22	0	18	230	11	0	8	100	25	0	922
04:30 PM	15	270	56	0	35	57	23	0	28	210	9	0	8	86	25	0	822
04:45 PM	15	270	58	0	43	54	22	0	29	218	10	0	12	79	29	0	839
Total	50	1178	225	0	171	232	80	0	93	888	41	0	40	354	99	0	3451
05:00 PM	16	298	54	0	40	60	22	0	14	252	8	0	5	87	32	0	888
05:15 PM	12	275	49	0	49	59	25	0	16	230	11	0	12	88	14	0	840
05:30 PM	11	272	57	0	44	53	21	0	16	240	14	0	8	86	26	0	848
05:45 PM	17	261	61	0	55	51	16	0	13	180	9	0	9	87	27	0	786
Total	56	1106	221	0	188	223	84	0	59	902	42	0	34	348	99	0	3362
Grand Total	106	2284	446	0	359	455	164	0	152	1790	83	0	74	702	198	0	6813
Apprch %	3.7	80.5	15.7	0	36.7	46.5	16.8	0	7.5	88.4	4.1	0	7.6	72.1	20.3	0	
Total %	1.6	33.5	6.5	0	5.3	6.7	2.4	0	2.2	26.3	1.2	0	1.1	10.3	2.9	0	
Cars	102	2226	440	0	351	449	159	0	151	1749	79	0	69	695	197	0	6667
% Cars	96.2	97.5	98.7	0	97.8	98.7	97	0	99.3	97.7	95.2	0	93.2	99	99.5	0	97.9
Heavy Vehicles	4	58	6	0	8	6	5	0	1	41	4	0	5	7	1	0	146
% Heavy Vehicles	3.8	2.5	1.3	0	2.2	1.3	3	0	0.7	2.3	4.8	0	6.8	1	0.5	0	2.1

	Main Street (Route 18) From North					Park Avenue From East					Main Street (Route 18) From South					Park Avenue West From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	13	316	60	0	389	55	64	22	0	141	18	230	11	0	259	8	100	25	0	133	922
04:30 PM	15	270	56	0	341	35	57	23	0	115	28	210	9	0	247	8	86	25	0	119	822
04:45 PM	15	270	58	0	343	43	54	22	0	119	29	218	10	0	257	12	79	29	0	120	839
05:00 PM	16	298	54	0	368	40	60	22	0	122	14	252	8	0	274	5	87	32	0	124	888
Total Volume	59	1154	228	0	1441	173	235	89	0	497	89	910	38	0	1037	33	352	111	0	496	3471
% App. Total	4.1	80.1	15.8	0		34.8	47.3	17.9	0		8.6	87.8	3.7	0		6.7	71	22.4	0		
PHF	.922	.913	.950	.000	.926	.786	.918	.967	.000	.881	.767	.903	.864	.000	.946	.688	.880	.867	.000	.932	.941
Cars	55	1117	223	0	1395	169	231	87	0	487	88	898	37	0	1023	28	348	110	0	486	3391
% Cars	93.2	96.8	97.8	0	96.8	97.7	98.3	97.8	0	98.0	98.9	98.7	97.4	0	98.6	84.8	98.9	99.1	0	98.0	97.7
Heavy Vehicles	4	37	5	0	46	4	4	2	0	10	1	12	1	0	14	5	4	1	0	10	80
% Heavy Vehicles	6.8	3.2	2.2	0	3.2	2.3	1.7	2.2	0	2.0	1.1	1.3	2.6	0	1.4	15.2	1.1	0.9	0	2.0	2.3



PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Main Street (Route 18)
E/W: Park Avenue/ Park Avenue West
City, State: Weymouth, MA
Client: Tetra Tech/ C. Jones

File Name : 154745 AA
Site Code : 14342892
Start Date : 10/27/2015
Page No : 1

Groups Printed- Cars

	Main Street (Route 18) From North				Park Avenue From East				Main Street (Route 18) From South				Park Avenue West From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	7	312	50	0	37	55	11	0	18	218	10	0	12	86	20	0	836
04:15 PM	10	305	59	0	55	63	20	0	18	226	10	0	5	97	25	0	893
04:30 PM	15	263	55	0	34	56	23	0	28	208	9	0	8	86	25	0	810
04:45 PM	15	260	55	0	43	52	22	0	29	215	10	0	10	79	29	0	819
Total	47	1140	219	0	169	226	76	0	93	867	39	0	35	348	99	0	3358
05:00 PM	15	289	54	0	37	60	22	0	13	249	8	0	5	86	31	0	869
05:15 PM	12	268	49	0	46	59	25	0	16	225	10	0	12	88	14	0	824
05:30 PM	11	270	57	0	44	53	21	0	16	234	13	0	8	86	26	0	839
05:45 PM	17	259	61	0	55	51	15	0	13	174	9	0	9	87	27	0	777
Total	55	1086	221	0	182	223	83	0	58	882	40	0	34	347	98	0	3309
Grand Total	102	2226	440	0	351	449	159	0	151	1749	79	0	69	695	197	0	6667
Apprch %	3.7	80.4	15.9	0	36.6	46.8	16.6	0	7.6	88.4	4	0	7.2	72.3	20.5	0	
Total %	1.5	33.4	6.6	0	5.3	6.7	2.4	0	2.3	26.2	1.2	0	1	10.4	3	0	

	Main Street (Route 18) From North					Park Avenue From East					Main Street (Route 18) From South					Park Avenue West From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	10	305	59	0	374	55	63	20	0	138	18	226	10	0	254	5	97	25	0	127	893
04:30 PM	15	263	55	0	333	34	56	23	0	113	28	208	9	0	245	8	86	25	0	119	810
04:45 PM	15	260	55	0	330	43	52	22	0	117	29	215	10	0	254	10	79	29	0	118	819
05:00 PM	15	289	54	0	358	37	60	22	0	119	13	249	8	0	270	5	86	31	0	122	869
Total Volume	55	1117	223	0	1395	169	231	87	0	487	88	898	37	0	1023	28	348	110	0	486	3391
% App. Total	3.9	80.1	16	0		34.7	47.4	17.9	0		8.6	87.8	3.6	0		5.8	71.6	22.6	0		
PHF	.917	.916	.945	.000	.932	.768	.917	.946	.000	.882	.759	.902	.925	.000	.947	.700	.897	.887	.000	.957	.949



PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Main Street (Route 18)
E/W: Park Avenue/ Park Avenue West
City, State: Weymouth, MA
Client: Tetra Tech/ C. Jones

File Name : 154745 AA
Site Code : 14342892
Start Date : 10/27/2015
Page No : 1

Groups Printed- Heavy Vehicles

	Main Street (Route 18) From North				Park Avenue From East				Main Street (Route 18) From South				Park Avenue West From West				Int. Total
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	10	1	0	1	2	2	0	0	12	1	0	0	3	0	0	32
04:15 PM	3	11	1	0	0	1	2	0	0	4	1	0	3	3	0	0	29
04:30 PM	0	7	1	0	1	1	0	0	0	2	0	0	0	0	0	0	12
04:45 PM	0	10	3	0	0	2	0	0	0	3	0	0	2	0	0	0	20
Total	3	38	6	0	2	6	4	0	0	21	2	0	5	6	0	0	93
05:00 PM	1	9	0	0	3	0	0	0	1	3	0	0	0	1	1	0	19
05:15 PM	0	7	0	0	3	0	0	0	0	5	1	0	0	0	0	0	16
05:30 PM	0	2	0	0	0	0	0	0	0	6	1	0	0	0	0	0	9
05:45 PM	0	2	0	0	0	0	1	0	0	6	0	0	0	0	0	0	9
Total	1	20	0	0	6	0	1	0	1	20	2	0	0	1	1	0	53
Grand Total	4	58	6	0	8	6	5	0	1	41	4	0	5	7	1	0	146
Apprch %	5.9	85.3	8.8	0	42.1	31.6	26.3	0	2.2	89.1	8.7	0	38.5	53.8	7.7	0	
Total %	2.7	39.7	4.1	0	5.5	4.1	3.4	0	0.7	28.1	2.7	0	3.4	4.8	0.7	0	

	Main Street (Route 18) From North					Park Avenue From East					Main Street (Route 18) From South					Park Avenue West From West					Int. Total
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	10	1	0	11	1	2	2	0	5	0	12	1	0	13	0	3	0	0	3	32
04:15 PM	3	11	1	0	15	0	1	2	0	3	0	4	1	0	5	3	3	0	0	6	29
04:30 PM	0	7	1	0	8	1	1	0	0	2	0	2	0	0	2	0	0	0	0	0	12
04:45 PM	0	10	3	0	13	0	2	0	0	2	0	3	0	0	3	2	0	0	0	2	20
Total Volume	3	38	6	0	47	2	6	4	0	12	0	21	2	0	23	5	6	0	0	11	93
% App. Total	6.4	80.9	12.8	0		16.7	50	33.3	0		0	91.3	8.7	0		45.5	54.5	0	0		
PHF	.250	.864	.500	.000	.783	.500	.750	.500	.000	.600	.000	.438	.500	.000	.442	.417	.500	.000	.000	.458	.727



PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Main Street (Route 18)
E/W: Park Avenue/ Park Avenue West
City, State: Weymouth, MA
Client: Tetra Tech/ C. Jones

File Name : 154745 AA
Site Code : 14342892
Start Date : 10/27/2015
Page No : 1

Groups Printed- Peds and Bicycles

	Main Street (Route 18) From North						Park Avenue From East					Main Street (Route 18) From South					Park Avenue West From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB		Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	0	0	1	1		0	0	0	0	1	0	0	0	1	0	0	0	0	5	3	12
04:15 PM	0	0	0	1	1		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
04:30 PM	0	0	0	0	0		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0		0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	3
Total	0	0	0	2	2		0	0	0	1	2	0	0	0	1	0	0	0	0	8	3	19
05:00 PM	0	0	0	0	0		0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	3
05:15 PM	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
05:45 PM	0	0	0	1	0		0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	3
Total	0	0	0	1	0		0	0	0	0	2	0	0	0	0	2	0	1	0	1	0	7
Grand Total	0	0	0	3	2		0	0	0	1	4	0	0	0	1	2	0	1	0	9	3	26
Apprch %	0	0	0	60	40		0	0	0	20	80	0	0	0	33.3	66.7	0	7.7	0	69.2	23.1	
Total %	0	0	0	11.5	7.7		0	0	0	3.8	15.4	0	0	0	3.8	7.7	0	3.8	0	34.6	11.5	

	Main Street (Route 18) From North						Park Avenue From East						Main Street (Route 18) From South						Park Avenue West From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:00 PM																									
04:00 PM	0	0	0	1	1	2	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	5	3	8	12
04:15 PM	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	
04:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0	2	3	
Total Volume	0	0	0	2	2	4	0	0	0	1	2	3	0	0	0	1	0	1	0	0	8	3	11	19	
% App. Total	0	0	0	50	50		0	0	0	33.3	66.7		0	0	0	100	0		0	0	72.7	27.3			
PHF	.000	.000	.000	.500	.500	.500	.000	.000	.000	.250	.500	.750	.000	.000	.000	.250	.000	.250	.000	.000	.400	.250	.344	.396	



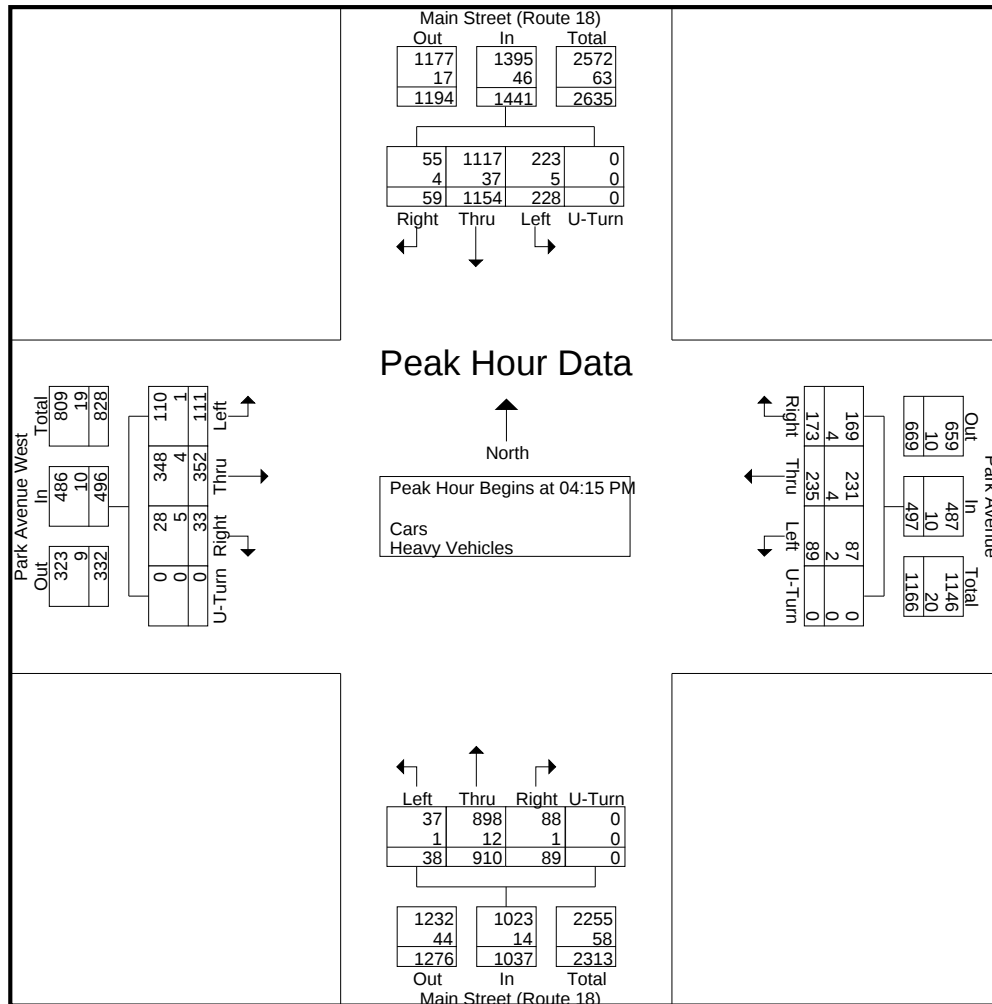
PRECISION
D A T A
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

N/S: Main Street (Route 18)
E/W: Park Avenue/ Park Avenue West
City, State: Weymouth, MA
Client: Tetra Tech/ C. Jones

File Name : 154745 AA
Site Code : 14342892
Start Date : 10/27/2015
Page No : 1

	Main Street (Route 18) From North					Park Avenue From East					Main Street (Route 18) From South					Park Avenue West From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	13	316	60	0	389	55	64	22	0	141	18	230	11	0	259	8	100	25	0	133	922
04:30 PM	15	270	56	0	341	35	57	23	0	115	28	210	9	0	247	8	86	25	0	119	822
04:45 PM	15	270	58	0	343	43	54	22	0	119	29	218	10	0	257	12	79	29	0	120	839
05:00 PM	16	298	54	0	368	40	60	22	0	122	14	252	8	0	274	5	87	32	0	124	888
Total Volume	59	1154	228	0	1441	173	235	89	0	497	89	910	38	0	1037	33	352	111	0	496	3471
% App. Total	4.1	80.1	15.8	0		34.8	47.3	17.9	0		8.6	87.8	3.7	0		6.7	71	22.4	0		
PHF	.922	.913	.950	.000	.926	.786	.918	.967	.000	.881	.767	.903	.864	.000	.946	.688	.880	.867	.000	.932	.941
Cars	55	1117	223	0	1395	169	231	87	0	487	88	898	37	0	1023	28	348	110	0	486	3391
% Cars	93.2	96.8	97.8	0	96.8	97.7	98.3	97.8	0	98.0	98.9	98.7	97.4	0	98.6	84.8	98.9	99.1	0	98.0	97.7
Heavy Vehicles	4	37	5	0	46	4	4	2	0	10	1	12	1	0	14	5	4	1	0	10	80
% Heavy Vehicles	6.8	3.2	2.2	0	3.2	2.3	1.7	2.2	0	2.0	1.1	1.3	2.6	0	1.4	15.2	1.1	0.9	0	2.0	2.3



SEASONAL ADJUSTMENT DATA



Massachusetts Highway Department

6255: Monthly Hourly Volume for January 2018

Location ID: 6255
County: Norfolk
Functional Class: 2
Location: PILGRIM HIGHWAY

Seasonal Factor Group: U2
Daily Factor Group:
Axle Factor Group: U2
Growth Factor Group:

	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1	1987	2286	1327	1082	789	952	1603	1778	2253	3324	4945	6473	7415	7349	7301	7083	6410	5613	4727	3935	3212	2399	1986	1491	87720	Accepted
2	890	498	398	591	1935	6166	7733	8488	8180	7473	7117	7147	7354	6610	8173	8287	8269	8458	7318	5557	4250	3377	2516	1796	128581	Accepted
3	1021	674	557	635	2040	6504	8194	8244	8277	8640	8042	8091	8082	8147	8585	8244	8503	8827	6536	7115	5776	4364	3436	2628	141162	Accepted
4																										
5	562	367	368	493	1209	3634	5190	5978	6321	5980	5731	5921	6051	6443	7126	6989	7133	7536	6417	4402	3963	3244	3057	2226	106341	Accepted
6	1357	945	685	587	955	2061	2901	4018	5059	5990	6766	7543	7489	7750	7919	7691	7461	6738	5942	4752	3819	3581	3539	2616	108164	Accepted
7	1723	1119	774	631	677	1077	2139	2567	3464	4727	5835	6695	7646	7531	7258	7289	6964	6369	5508	4579	3686	2722	2063	1705	94748	Accepted
8	1032	686	484	641	2027	6415	7803	7993	8171	7789	6888	6804	7081	7343	7956	8146	8134	8007	6880	5876	4457	3221	2395	1733	127962	Accepted
9	1037	585	479	586	1962	6245	7652	8034	7543	7964	7202	7179	7505	7453	8133	8526	8382	8485	7531	6130	5073	3699	2633	1833	131851	Accepted
10	1091	600	458	590	2187	6342	8060	8443	8287	7907	7291	7398	7220	7643	8215	8333	8249	8484	7596	6536	5268	3963	2796	2071	135028	Accepted
11																										
12	1274	770	565	642	1830	5817	7557	8643	8404	7479	7485	7760	7596	7862	7965	8176	8118	8137	7550	6153	5001	3895	3569	2668	134916	Accepted
13	1673	1105	787	605	882	1859	3028	4066	5485	6663	7574	7938	8292	8142	8328	8205	7842	7298	6331	4993	3839	2944	2921	3120	113920	Accepted
14	3069	1722	995	545	732	1102	2051	2751	3875	5527	6656	7882	8312	8149	7804	7600	7416	7131	6008	4741	4321	3500	2783	2040	106712	Accepted
15	1196	610	496	681	1891	4418	5673	6344	6378	6595	7376	7862	7979	7627	8056	8460	8027	7930	6148	4773	3860	2997	2339	1345	119061	Accepted
16	1128	745	412	562	1953	6202	6860	7135	7234	8080	7437	7550	7537	7720	8408	8580	8449	8638	7435	6082	4676	3600	2775	2132	131330	Accepted
17	1084	580	478	699	1896	5336	6860	7641	6695	5693	5340	5413	5652	5992	7114	7491	7693	7887	6242	5087	4176	3215	2782	2070	113116	Accepted
18	1141	688	430	617	1947	6564	7938	8061	8463	8222	7640	7707	7582	7808	8491	8492	8636	8507	7482	6159	4973	4142	3272	2181	137143	Accepted
19	1435	973	699	716	2044	6165	8202	8851	8760	7795	7580	7841	7761	7777	8733	8690	8526	8640	7966	5968	4824	4154	3505	2718	140323	Accepted
20	1632	1144	705	637	975	2269	3465	4658	5905	6965	7948	8629	8939	8453	8759	8812	8357	7982	7066	5443	4580	3955	3691	2793	123762	Accepted
21	1776	1448	952	556	577	932	2052	2904	3999	5754	7030	7964	8355	8657	8688	6491	5175	4486	5161	5783	4570	3163	2209	1449	100131	Accepted
22	818	593	422	524	2067	6370	7601	7980	7864	7518	6804	7116	7307	7205	7940	8102	7951	8078	7122	5328	4206	3217	2370	1612	126115	Accepted
23	884	541	412	584	1875	6143	7824	8215	7897	7397	7107	6826	6937	6943	7572	7661	7935	8114	7351	5749	4469	3451	2869	1974	126730	Accepted
24	906	512	430	556	1909	6441	7281	8251	8371	7792	7371	7475	7433	7818	8349	8555	8278	8494	7714	6225	5036	3869	2710	1881	133657	Accepted
25	1059	613	627	769	1971	6445	8159	8873	8446	7942	7447	7584	7441	7914	8418	8055	8306	8630	7633	6003	4919	4429	3122	2109	136914	Accepted
26	1287	915	559	804	1983	6094	7908	8713	8397	7842	7564	7727	7871	8100	8644	8045	8219	8578	7705	5929	4935	4070	3565	2707	138161	Accepted
27	1722	1095	807	614	882	2159	3396	4557	5929	7060	8044	8690	8708	8843	8742	8732	8411	7800	7035	5416	4136	3701	3706	2859	123044	Accepted
28	1951	1244	835	520	565	905	1832	2525	3531	5015	6441	7707	8345	8208	8164	8022	7640	7070	5775	4863	4025	2884	2101	1540	101708	Accepted
29	852	516	391	581	2053	6128	8068	8622	8477	7457	7022	6883	6887	7188	8086	8324	8232	8222	6948	5209	4203	3172	2211	1606	127338	Accepted
30	912	560	451	650	1571	5396	5903	5793	5932	5954	5094	5465	5631	6015	7290	7678	7633	7714	6479	4856	3998	3181	2674	1716	108546	Accepted
31	993	681	614	761	2151	6367	8061	8338	8040	7868	7517	7368	6882	7764	8283	8343	8169	8434	7654	6485	5106	3885	3040	2205	135009	Accepted

January Average 122041

2018 AADT 133238

Seasonal Adjustment 1.092

Location ID:		6255 Norfolk										Seasonal Factor Group:					U2									
County:		2										Daily Factor Group:					U2									
Functional Class		2										Axle Factor Group:					U2									
Location:		PILGRIM HIGHWAY										Growth Factor Group:														
	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	TOTAL	QC Status
1																										
2	1057	646	422	629	2222	6344	7587	7531	7773	7982	7502	7726	7485	7689	8208	8466	8112	8222	7534	6482	4714	3735	2769	2067	132904	Accepted
3	1094	587	447	674	2233	6408	7577	8194	8357	7996	7736	7690	7962	8277	8547	8776	8666	8893	7956	6663	5286	4054	2944	2226	139243	Accepted
4	1179	664	550	729	2312	6647	7847	8583	8903	7919	8152	8152	8093	8275	9021	9124	9197	9170	7936	7052	5362	4188	3190	2496	144741	Accepted
5	1952	1210	723	715	2171	6108	7953	8915	8485	8127	8116	8706	8636	8682	8429	8243	8674	8826	8067	6372	4857	4628	3890	3242	145727	Accepted
6	2504	1259	850	710	1099	2348	3971	5373	6945	8084	8855	8243	8549	8577	8632	8541	8515	8364	7526	6491	5298	4153	3993	3259	132139	Accepted
7	2297	1830	1016	595	689	1227	2472	3354	4705	6505	8029	8610	9170	8582	8457	8677	8002	7640	7263	6102	4859	3828	2940	2305	119154	Accepted
8	1315	718	517	609	1286	3311	5022	6428	6677	7228	8133	8668	8630	8301	8954	8611	8623	8506	7577	6187	4886	3567	2578	1761	128093	Accepted
9	1097	618	486	622	2304	6722	7841	8458	8608	7899	7659	8102	8001	8163	8987	9213	8863	9240	8405	6601	5022	3884	2787	2367	141949	Accepted
10	1336	596	486	643	2329	6596	7928	8364	7660	7894	7589	8127	7960	7861	8549	8660	8955	9157	8284	6986	5357	4225	3049	2051	140642	Accepted
11	1313	656	480	738	2281	5197	6996	8032	8409	8067	7808	7919	7825	7993	8429	7953	8031	8412	7364	6505	5290	4158	3437	2213	135506	Accepted
12	1440	902	641	777	2137	6238	7114	7611	8033	7452	7608	7902	8261	8324	8654	8218	8417	8601	8072	6882	5388	4297	3890	3116	139975	Accepted
13	2025	1191	783	687	1093	2394	3824	5273	6813	7523	8346	8671	8294	8484	8646	8788	8615	8545	7792	6348	5038	4630	3977	3159	130939	Accepted
14	2562	1774	910	627	684	1286	2512	3724	4956	6983	8234	8921	8941	8744	9203	9227	8535	8383	7945	6007	4735	3063	2472	2315	122743	Accepted
15	1983	978	626	701	2252	6641	8067	8185	8678	7769	7498	7704	7690	8113	8745	8765	8615	8292	7909	5789	4504	3386	2461	1640	136991	Accepted
16	961	531	462	675	2226	6500	7728	8071	8150	7783	7685	7721	7497	7757	8653	8350	8510	8919	794							

COVID-19 ADJUSTMENT DATA



MassDOT Yearly Growth Rates

for data from 2014 to 2018

Growth					
Group	Grow 2014 to 2015	Grow 2015 to 2016	Grow 2016 to 2017	Grow 2017 to 2018	Grow 2018 to 2019
R1	0	0.023	0.004	0.018	0.016
R2	0.05	0.068	0.004	0.014	0.014
R3	-0.038	0.002	0.008	0.011	0.06
R4-7	-0.01	0.003	0.001	0.011	0.012
Rec - East		0.032	0.02	0.041	0.025
Rec - West		0.051	-0.008	0.029	0
U1-Boston	0.061	0.07	-0.003	0.012	0.006
U1-Essex	0.024	0.025	0.007	0.014	0.011
U1-Southeast	0.05	0.062	0.021	0.014	0
U1-West	0.03	-0.027	0.02	0.028	0.013
U1-Worcester	0.042	0.005	0.018	0.01	0.01
U2	0.04	0.048	0.008	0.01	0.02
U3	0.011	0.013	0.011	0.014	0.004
U4-7	0.023	0.062	0.017	0.003	-0.004

updated 5/1/2020

CAPACITY ANALYSIS WORKSHEETS

Route 18 at Columbian Street

Route 18 at the south Project site driveway

Route 18 at the north Project site driveway

Route 18 at Park Avenue and Park Avenue West



Route 18 at Columbian Street



2022 Existing Weekday Evening Peak Hour
1: Route 18 & Columbian Street

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	214	213	35	93	202	131	791	31	136	1214	32
Future Volume (vph)	61	214	213	35	93	202	131	791	31	136	1214	32
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.994			0.996	
Flt Protected		0.989			0.986		0.950			0.950		
Satd. Flow (prot)	0	1879	1615	0	1811	1561	1805	3554	0	1734	3490	0
Flt Permitted		0.874			0.650		0.101			0.209		
Satd. Flow (perm)	0	1661	1615	0	1194	1561	192	3554	0	382	3490	0
Satd. Flow (RTOR)												
Adj. Flow (vph)	64	225	224	43	113	246	139	841	33	143	1278	34
Lane Group Flow (vph)	0	289	224	0	156	246	139	874	0	143	1312	0
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0	5.0	5.0	3.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	45.0	45.0	14.0	45.0	45.0	14.0	14.0	40.0		14.0	41.0	
Total Split (s)	45.0	45.0	15.0	45.0	45.0	15.0	15.0	42.0		15.0	42.0	
Total Split (%)	34.6%	34.6%	11.5%	34.6%	34.6%	11.5%	11.5%	32.3%		11.5%	32.3%	
Maximum Green (s)	39.0	39.0	9.0	39.0	39.0	9.0	9.0	36.0		9.0	36.0	
Yellow Time (s)	4.0	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	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.69	0.33		0.52	0.38	0.46	0.55		0.38	0.85	
Control Delay		40.5	20.0		36.7	20.9	19.6	23.3		14.7	31.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		40.5	20.0		36.7	20.9	19.6	23.3		14.7	31.3	
Queue Length 50th (ft)		134	72		69	81	24	161		25	291	
Queue Length 95th (ft)		299	188		154	187	#133	427		118	#835	
Internal Link Dist (ft)		220			220			220			120	
Turn Bay Length (ft)			185			200	230			220		
Base Capacity (vph)		792	688		569	665	316	1580		391	1543	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.36	0.33		0.27	0.37	0.44	0.55		0.37	0.85	
Intersection Summary												
Cycle Length: 130												

2022 Existing Weekday Evening Peak Hour
1: Route 18 & Columbian Street

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	28.0
Total Split (s)	28.0
Total Split (%)	22%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	11
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2022 Existing Weekday Evening Peak Hour

1: Route 18 & Colombian Street

Actuated Cycle Length: 89

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 18 & Colombian Street

 Ø1	 Ø2	 Ø9	 Ø4
15 s	42 s	28 s	45 s
 Ø5	 Ø6		 Ø8
15 s	42 s		45 s

2022 Existing Weekday Evening Peak Hour
1: Route 18 & Columbian Street

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	61	214	213	35	93	202	131	791	31	136	1214	32	
Future Volume (vph)	61	214	213	35	93	202	131	791	31	136	1214	32	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	11	11	12	12	12	12	12	12	
Grade (%)		0%			0%			0%			4%		
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95		
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00		
Flt Protected		0.99	1.00		0.99	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1879	1615		1812	1561	1805	3555		1734	3490		
Flt Permitted		0.87	1.00		0.65	1.00	0.10	1.00		0.21	1.00		
Satd. Flow (perm)		1661	1615		1193	1561	192	3555		381	3490		
Peak-hour factor, PHF	0.95	0.95	0.95	0.82	0.82	0.82	0.94	0.94	0.94	0.95	0.95	0.95	
Adj. Flow (vph)	64	225	224	43	113	246	139	841	33	143	1278	34	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	289	224	0	156	246	139	874	0	143	1312	0	
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%	1%	0%	
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA		
Protected Phases		4	5		8	1	5	2		1	6		
Permitted Phases	4		4	8		8	2			6			
Actuated Green, G (s)		20.3	29.1		20.3	28.9	46.3	37.5		45.9	37.3		
Effective Green, g (s)		22.3	33.1		22.3	32.9	50.3	39.5		49.9	39.3		
Actuated g/C Ratio		0.24	0.36		0.24	0.35	0.54	0.43		0.54	0.42		
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0		
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		399	646		286	621	292	1514		359	1479		
v/s Ratio Prot			0.04			c0.05	0.06	0.25		0.05	c0.38		
v/s Ratio Perm		c0.17	0.10		0.13	0.11	0.20			0.17			
v/c Ratio		0.72	0.35		0.55	0.40	0.48	0.58		0.40	0.89		
Uniform Delay, d1		32.4	21.9		30.8	22.4	16.2	20.2		12.2	24.7		
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2		6.4	0.3		2.1	0.4	1.2	0.5		0.7	6.8		
Delay (s)		38.8	22.2		32.9	22.9	17.5	20.8		12.9	31.5		
Level of Service		D	C		C	C	B	C		B	C		
Approach Delay (s)		31.5			26.8			20.3			29.6		
Approach LOS		C			C			C			C		
Intersection Summary													
HCM 2000 Control Delay			26.8									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.74										
Actuated Cycle Length (s)			92.7									Sum of lost time (s)	17.0
Intersection Capacity Utilization			76.6%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

2022 Existing Weekday Evening Peak Hour
1: Route 18 & Columbian Street

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	214	213	35	93	202	131	793	31	137	1227	33
Future Volume (vph)	61	214	213	35	93	202	131	793	31	137	1227	33
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850			0.850		0.994			0.996	
Flt Protected		0.989			0.986		0.950			0.950		
Satd. Flow (prot)	0	1879	1615	0	1811	1561	1805	3554	0	1734	3490	0
Flt Permitted		0.875			0.651		0.102			0.206		
Satd. Flow (perm)	0	1662	1615	0	1196	1561	194	3554	0	376	3490	0
Satd. Flow (RTOR)												
Adj. Flow (vph)	64	225	224	43	113	246	139	844	33	144	1292	35
Lane Group Flow (vph)	0	289	224	0	156	246	139	877	0	144	1327	0
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	3.0	5.0	5.0	3.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	45.0	45.0	14.0	45.0	45.0	14.0	14.0	40.0		14.0	41.0	
Total Split (s)	45.0	45.0	15.0	45.0	45.0	15.0	15.0	42.0		15.0	42.0	
Total Split (%)	34.6%	34.6%	11.5%	34.6%	34.6%	11.5%	11.5%	32.3%		11.5%	32.3%	
Maximum Green (s)	39.0	39.0	9.0	39.0	39.0	9.0	9.0	36.0		9.0	36.0	
Yellow Time (s)	4.0	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	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0	-2.0		-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.69	0.33		0.52	0.38	0.46	0.56		0.39	0.86	
Control Delay		40.5	20.0		36.6	20.9	19.4	23.4		14.8	31.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		40.5	20.0		36.6	20.9	19.4	23.4		14.8	31.8	
Queue Length 50th (ft)		134	72		69	81	24	161		25	296	
Queue Length 95th (ft)		299	188		154	187	#132	428		120	#849	
Internal Link Dist (ft)		220			220			220			120	
Turn Bay Length (ft)			185			200	230			220		
Base Capacity (vph)		793	688		571	665	317	1578		388	1544	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.36	0.33		0.27	0.37	0.44	0.56		0.37	0.86	
Intersection Summary												
Cycle Length: 130												

2022 Existing Weekday Evening Peak Hour
1: Route 18 & Columbian Street

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	28.0
Total Split (s)	28.0
Total Split (%)	22%
Maximum Green (s)	23.0
Yellow Time (s)	2.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	16.0
Pedestrian Calls (#/hr)	11
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2022 Existing Weekday Evening Peak Hour

1: Route 18 & Columbian Street

Actuated Cycle Length: 88.9

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Route 18 & Columbian Street

 Ø1	 Ø2	 Ø9	 Ø4
15 s	42 s	28 s	45 s
 Ø5	 Ø6		 Ø8
15 s	42 s		45 s

2022 Existing Weekday Evening Peak Hour
1: Route 18 & Columbian Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	214	213	35	93	202	131	793	31	137	1227	33
Future Volume (vph)	61	214	213	35	93	202	131	793	31	137	1227	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	11	12	12	12	12	12	12
Grade (%)		0%			0%			0%			4%	
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.99	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1879	1615		1812	1561	1805	3555		1734	3490	
Flt Permitted		0.87	1.00		0.65	1.00	0.10	1.00		0.21	1.00	
Satd. Flow (perm)		1662	1615		1195	1561	193	3555		377	3490	
Peak-hour factor, PHF	0.95	0.95	0.95	0.82	0.82	0.82	0.94	0.94	0.94	0.95	0.95	0.95
Adj. Flow (vph)	64	225	224	43	113	246	139	844	33	144	1292	35
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	289	224	0	156	246	139	877	0	144	1327	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	2%	1%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)		20.3	29.0		20.3	28.9	46.1	37.4		45.9	37.3	
Effective Green, g (s)		22.3	33.0		22.3	32.9	50.1	39.4		49.9	39.3	
Actuated g/C Ratio		0.24	0.36		0.24	0.36	0.54	0.43		0.54	0.42	
Clearance Time (s)		6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		400	645		287	622	290	1512		358	1481	
v/s Ratio Prot			0.04			c0.05	0.06	0.25		0.05	c0.38	
v/s Ratio Perm		c0.17	0.10		0.13	0.11	0.20			0.17		
v/c Ratio		0.72	0.35		0.54	0.40	0.48	0.58		0.40	0.90	
Uniform Delay, d1		32.3	21.9		30.7	22.4	16.4	20.3		12.2	24.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		6.3	0.3		2.1	0.4	1.3	0.6		0.7	7.4	
Delay (s)		38.6	22.2		32.8	22.8	17.7	20.9		12.9	32.2	
Level of Service		D	C		C	C	B	C		B	C	
Approach Delay (s)		31.5			26.7			20.4			30.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			27.1		HCM 2000 Level of Service					C		
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			92.6		Sum of lost time (s)					17.0		
Intersection Capacity Utilization			77.0%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

Route 18 at the south Project site driveway



2022 Existing Weekday Evening Peak Hour
2: Route 18 & South Project Site Driveway

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	34	0	1054	1348	2
Future Vol, veh/h	0	34	0	1054	1348	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	37	0	1146	1465	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	734	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	363	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	363	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 363		-	-		
HCM Lane V/C Ratio	- 0.102		-	-		
HCM Control Delay (s)	- 16		-	-		
HCM Lane LOS	- C		-	-		
HCM 95th %tile Q(veh)	- 0.3		-	-		

2022 Existing Weekday Evening Peak Hour
2: Route 18 & South Project Site Driveway

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	48	0	1056	1349	3
Future Vol, veh/h	0	48	0	1056	1349	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	52	0	1148	1466	3
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	735	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	362	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	362	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	16.6	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	362	-	-		
HCM Lane V/C Ratio	-	0.144	-	-		
HCM Control Delay (s)	-	16.6	-	-		
HCM Lane LOS	-	C	-	-		
HCM 95th %tile Q(veh)	-	0.5	-	-		

Route 18 at the north Project site driveway



2022 Existing Weekday Evening Peak Hour
3: Route 18 & North Project Site Driveway

Intersection

Int Delay, s/veh 0.1

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 0 3 4 1050 1347 37

Future Vol, veh/h 0 3 4 1050 1347 37

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length - 0 - - - -

Veh in Median Storage, # 0 - - 0 0 -

Grade, % 0 - - 0 0 -

Peak Hour Factor 92 92 92 92 92 92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 0 3 4 1141 1464 40

Major/Minor Minor2 Major1 Major2

Conflicting Flow All - 752 1504 0 - 0

Stage 1 - - - - - -

Stage 2 - - - - - -

Critical Hdwy - 6.94 4.14 - - -

Critical Hdwy Stg 1 - - - - - -

Critical Hdwy Stg 2 - - - - - -

Follow-up Hdwy - 3.32 2.22 - - -

Pot Cap-1 Maneuver 0 353 441 - - -

Stage 1 0 - - - - -

Stage 2 0 - - - - -

Platoon blocked, % - - - - - -

Mov Cap-1 Maneuver - 353 441 - - -

Mov Cap-2 Maneuver - - - - - -

Stage 1 - - - - - -

Stage 2 - - - - - -

Approach EB NB SB

HCM Control Delay, s 15.3 0.2 0

HCM LOS C

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h) 441 - 353 - -

HCM Lane V/C Ratio 0.01 - 0.009 - -

HCM Control Delay (s) 13.2 0.2 15.3 - -

HCM Lane LOS B A C - -

HCM 95th %tile Q(veh) 0 - 0 - -

2022 Existing Weekday Evening Peak Hour
3: Route 18 & North Project Site Driveway

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	6	1050	1348	51
Future Vol, veh/h	0	4	6	1050	1348	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	7	1141	1465	55

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	760	1520
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.94	4.14
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.32	2.22
Pot Cap-1 Maneuver	0	349	435
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	349	435
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.4	0.4	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	435	-	349	-	-
HCM Lane V/C Ratio	0.015	-	0.012	-	-
HCM Control Delay (s)	13.4	0.3	15.4	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Route 18 at Park Avenue and Park Avenue West



2022 Existing Weekday Evening Peak Hour
4: Route 18 & Park Avenue West/Park Avenue

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	367	34	93	245	180	40	949	93	238	1204	62
Future Volume (vph)	116	367	34	93	245	180	40	949	93	238	1204	62
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.987				0.850		0.987			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	3486	0	1711	1801	1583	1787	3598	0	1770	3474	0
Flt Permitted	0.280			0.312			0.092			0.090		
Satd. Flow (perm)	509	3486	0	562	1801	1583	173	3598	0	168	3474	0
Satd. Flow (RTOR)												
Adj. Flow (vph)	125	395	37	106	278	205	42	999	98	256	1295	67
Lane Group Flow (vph)	125	432	0	106	278	205	42	1097	0	256	1362	0
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	5.0		3.0	5.0	3.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	9.0	11.0		9.0	11.0	9.0	9.0	16.0		9.0	16.0	
Total Split (s)	12.0	30.0		12.0	30.0	14.0	14.0	48.0		14.0	48.0	
Total Split (%)	9.0%	22.6%		9.0%	22.6%	10.5%	10.5%	36.1%		10.5%	36.1%	
Maximum Green (s)	6.0	24.0		6.0	24.0	8.0	8.0	42.0		8.0	42.0	
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		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.50	0.56		0.41	0.70	0.36	0.19	0.77		1.04	0.84	
Control Delay	35.8	40.5		32.7	49.5	29.0	17.0	32.8		95.3	33.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	35.8	40.5		32.7	49.5	29.0	17.0	32.8		95.3	33.2	
Queue Length 50th (ft)	55	127		46	162	93	11	296		~119	408	
Queue Length 95th (ft)	139	240		117	#348	214	44	#610		#419	#882	
Internal Link Dist (ft)		220			220			570			220	
Turn Bay Length (ft)	160			85		320	160			370		
Base Capacity (vph)	250	908		261	469	570	247	1587		247	1614	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.50	0.48		0.41	0.59	0.36	0.17	0.69		1.04	0.84	
Intersection Summary												
Cycle Length: 133												

2022 Existing Weekday Evening Peak Hour
4: Route 18 & Park Avenue West/Park Avenue

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	29.0
Total Split (s)	29.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2022 Existing Weekday Evening Peak Hour

4: Route 18 & Park Avenue West/Park Avenue

Actuated Cycle Length: 102.3

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

~ 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: 4: Route 18 & Park Avenue West/Park Avenue

 Ø1	 Ø2	 Ø9	 Ø3	 Ø4
14 s	48 s	29 s	12 s	30 s
 Ø5	 Ø6		 Ø7	 Ø8
14 s	48 s		12 s	30 s

2022 Existing Weekday Evening Peak Hour
4: Route 18 & Park Avenue West/Park Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	367	34	93	245	180	40	949	93	238	1204	62
Future Volume (vph)	116	367	34	93	245	180	40	949	93	238	1204	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	12	12	12	12	12	12	12
Grade (%)		0%			0%			-4%			0%	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1728	3487		1711	1801	1583	1787	3597		1770	3472	
Flt Permitted	0.28	1.00		0.31	1.00	1.00	0.09	1.00		0.09	1.00	
Satd. Flow (perm)	510	3487		561	1801	1583	174	3597		167	3472	
Peak-hour factor, PHF	0.93	0.93	0.93	0.88	0.88	0.88	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	125	395	37	106	278	205	42	999	98	256	1295	67
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	125	432	0	106	278	205	42	1097	0	256	1362	0
Heavy Vehicles (%)	1%	1%	15%	2%	2%	2%	3%	1%	1%	2%	3%	7%
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	26.7	20.5		26.7	20.5	28.7	45.3	41.3		53.7	45.5	
Effective Green, g (s)	30.7	22.5		30.7	22.5	32.7	49.3	43.3		57.5	47.5	
Actuated g/C Ratio	0.28	0.21		0.28	0.21	0.30	0.45	0.40		0.53	0.44	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	235	720		244	372	533	167	1430		238	1514	
v/s Ratio Prot	c0.04	0.12		0.03	c0.15	0.04	0.01	0.30		c0.10	0.39	
v/s Ratio Perm	0.11			0.09		0.09	0.10			c0.47		
v/c Ratio	0.53	0.60		0.43	0.75	0.38	0.25	0.77		1.08	0.90	
Uniform Delay, d1	31.0	39.1		30.3	40.5	30.1	21.8	28.4		29.6	28.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	1.4		1.2	8.0	0.5	0.8	2.5		79.9	7.5	
Delay (s)	33.3	40.5		31.5	48.5	30.6	22.6	31.0		109.5	36.0	
Level of Service	C	D		C	D	C	C	C		F	D	
Approach Delay (s)		38.9			39.2			30.6			47.6	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			40.2		HCM 2000 Level of Service					D		
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			108.9		Sum of lost time (s)					21.0		
Intersection Capacity Utilization			75.0%		ICU Level of Service					D		
Analysis Period (min)			15									
c Critical Lane Group												

2022 Existing Weekday Evening Peak Hour
4: Route 18 & Park Avenue West/Park Avenue

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	367	35	94	245	180	40	949	93	238	1219	62
Future Volume (vph)	116	367	35	94	245	180	40	949	93	238	1219	62
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.987				0.850		0.987			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1728	3485	0	1711	1801	1583	1787	3598	0	1770	3474	0
Flt Permitted	0.280			0.311			0.092			0.090		
Satd. Flow (perm)	509	3485	0	560	1801	1583	173	3598	0	168	3474	0
Satd. Flow (RTOR)												
Adj. Flow (vph)	125	395	38	107	278	205	42	999	98	256	1311	67
Lane Group Flow (vph)	125	433	0	107	278	205	42	1097	0	256	1378	0
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		3	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	3.0	5.0		3.0	5.0	3.0	3.0	10.0		3.0	10.0	
Minimum Split (s)	9.0	11.0		9.0	11.0	9.0	9.0	16.0		9.0	16.0	
Total Split (s)	12.0	30.0		12.0	30.0	14.0	14.0	48.0		14.0	48.0	
Total Split (%)	9.0%	22.6%		9.0%	22.6%	10.5%	10.5%	36.1%		10.5%	36.1%	
Maximum Green (s)	6.0	24.0		6.0	24.0	8.0	8.0	42.0		8.0	42.0	
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		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	None	Min		None	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.50	0.57		0.41	0.70	0.36	0.19	0.77		1.04	0.85	
Control Delay	35.8	40.5		32.8	49.5	29.0	17.0	32.8		95.3	33.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	35.8	40.5		32.8	49.5	29.0	17.0	32.8		95.3	33.7	
Queue Length 50th (ft)	55	128		47	162	93	11	296		~119	416	
Queue Length 95th (ft)	139	241		118	#348	214	44	#610		#419	#897	
Internal Link Dist (ft)		220			220			570			220	
Turn Bay Length (ft)	160			85		320	160			370		
Base Capacity (vph)	250	908		260	469	570	247	1587		247	1614	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.50	0.48		0.41	0.59	0.36	0.17	0.69		1.04	0.85	
Intersection Summary												
Cycle Length: 133												

2022 Existing Weekday Evening Peak Hour
4: Route 18 & Park Avenue West/Park Avenue

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	29.0
Total Split (s)	29.0
Total Split (%)	22%
Maximum Green (s)	24.0
Yellow Time (s)	2.0
All-Red Time (s)	3.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	17.0
Pedestrian Calls (#/hr)	5
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2022 Existing Weekday Evening Peak Hour

4: Route 18 & Park Avenue West/Park Avenue

Actuated Cycle Length: 102.3

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

~ 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: 4: Route 18 & Park Avenue West/Park Avenue

 Ø1	 Ø2	 Ø9	 Ø3	 Ø4
14 s	48 s	29 s	12 s	30 s
 Ø5	 Ø6		 Ø7	 Ø8
14 s	48 s		12 s	30 s

2022 Existing Weekday Evening Peak Hour
4: Route 18 & Park Avenue West/Park Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	367	35	94	245	180	40	949	93	238	1219	62
Future Volume (vph)	116	367	35	94	245	180	40	949	93	238	1219	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	11	12	12	12	12	12	12	12
Grade (%)		0%			0%			-4%			0%	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1728	3485		1711	1801	1583	1787	3597		1770	3473	
Flt Permitted	0.28	1.00		0.31	1.00	1.00	0.09	1.00		0.09	1.00	
Satd. Flow (perm)	510	3485		559	1801	1583	174	3597		167	3473	
Peak-hour factor, PHF	0.93	0.93	0.93	0.88	0.88	0.88	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	125	395	38	107	278	205	42	999	98	256	1311	67
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	125	433	0	107	278	205	42	1097	0	256	1378	0
Heavy Vehicles (%)	1%	1%	15%	2%	2%	2%	3%	1%	1%	2%	3%	7%
Turn Type	pm+pt	NA		pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	26.7	20.5		26.7	20.5	28.7	45.3	41.3		53.7	45.5	
Effective Green, g (s)	30.7	22.5		30.7	22.5	32.7	49.3	43.3		57.5	47.5	
Actuated g/C Ratio	0.28	0.21		0.28	0.21	0.30	0.45	0.40		0.53	0.44	
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	235	720		244	372	533	167	1430		238	1514	
v/s Ratio Prot	c0.04	0.12		0.03	c0.15	0.04	0.01	0.30		c0.10	0.40	
v/s Ratio Perm	0.11			0.09		0.09	0.10			c0.47		
v/c Ratio	0.53	0.60		0.44	0.75	0.38	0.25	0.77		1.08	0.91	
Uniform Delay, d1	31.0	39.1		30.3	40.5	30.1	22.1	28.4		29.6	28.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	1.4		1.3	8.0	0.5	0.8	2.5		79.9	8.5	
Delay (s)	33.3	40.6		31.6	48.5	30.6	22.9	31.0		109.5	37.2	
Level of Service	C	D		C	D	C	C	C		F	D	
Approach Delay (s)		38.9			39.2			30.7			48.5	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			40.6									HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			108.9									Sum of lost time (s) 21.0
Intersection Capacity Utilization			75.0%									ICU Level of Service D
Analysis Period (min)			15									
c Critical Lane Group												