



Overland Traffic Consultants, Inc.
952 Manhattan Beach Boulevard, # 100
Manhattan Beach, CA 90266
Phone (661) 799 - 8423
E-mail: otc@overlandtraffic.com

August 7, 2020

Chevron Extra Mile
Attn: Mr. David Shamsian
1752 W. Avenue K
Lancaster, CA 93534

APPROVED

By Matthew Simons at 1:08 pm, Aug 12, 2020

RE: Updated Access and Circulation Review for the Chevron Extra Mile Project
(SEC 10th Street West and Avenue K - 8)

Dear Mr. Shamsian,

Overland Traffic Consultants has prepared this updated review to assist in the evaluation of the vehicular access and circulation for the proposed Chevron Extra Mile gas station and retail / restaurant center located at the southeast corner of 10th Street West and Avenue K – 8 in the City of Lancaster. The location of the project site is shown in Figure 1.

The following analysis has been updated to address city comments that we received from the previous City staff review dated July 15, 2020. The update consists of replacing the site plan and text edits requested by the City of Lancaster.

Project Description

The project is located at the southeast corner of 10th Street West and Avenue K – 8 in the City of Lancaster. The lot area is approximately 189,150 square feet in size (4.34 acres) and currently vacant.

The proposed project consists of the construction of a Chevron Extra Mile convenience market with 12 gasoline fueling positions, 4 separate commercial retail / restaurant pads and associated surface parking. The 5 project buildings total 28,075 square feet.

- Extra Mile Store consists of 3,360 square feet;
- Pad “A” consists of 3,920 square feet;
- Pad “B” consists of 6,953 square feet;
- Pad “C” consists of 6,921 square feet; and.
- Pad “D” consists of 6,921 square feet



FIGURE 1

1/2020

PROJECT LOCATION



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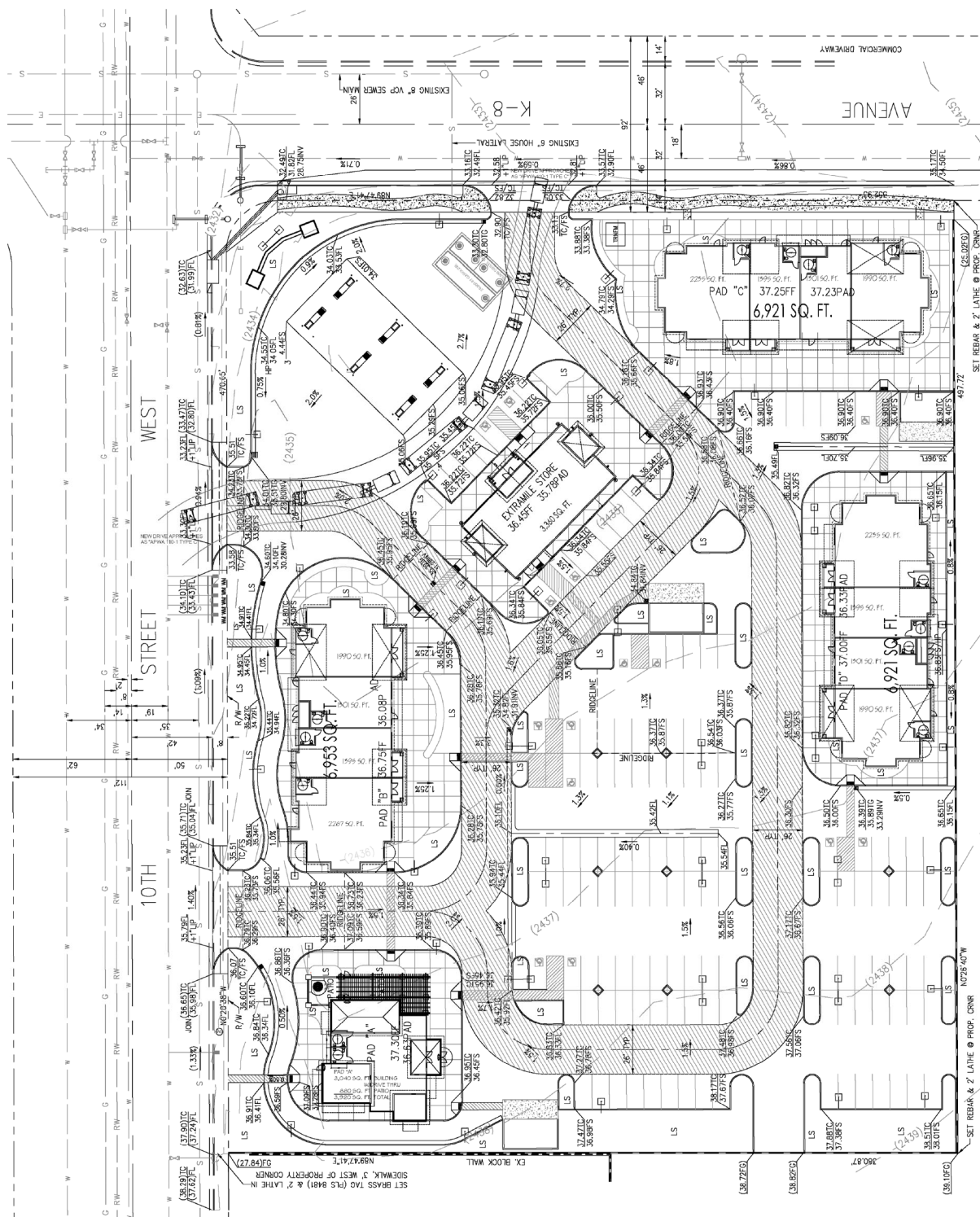
24325 Main Street #202, Santa Clarita, CA 91321
(661) 799-8423 OTC@overlandtraffic.com

Project Access and Parking

Vehicular access to the project site will be provided by three new driveways: one on the south side of Avenue K – 8 approximately 150 feet east of 10th Street West and two on the east side of 10th Street West south of Avenue K – 8, approximately 150 feet and 360 feet south of Avenue K – 8.

A raised median island will be constructed on 10th Street West south of Avenue K – 8 prohibiting left – turns to and from the project site. Therefore, the 10th Street West project driveways will be restricted to right – turns only, i.e., right turn in and right turn out only. The proposed driveway on Avenue K – 8 is proposed as a full access driveway, i.e., all turns allowed.

A total of 139 parking spaces will be provided. The site plan is illustrated in Figure 2.



8/7/2020

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Project Traffic Generation

Traffic - generating data has been surveyed by the Institute of Transportation Engineers (ITE) and published in the Trip Generation Manual, 10th Edition. This publication of traffic generation data is the industry standard for estimating traffic for different land uses. Using this database, the project's traffic generation has been estimated. ITE trip rates are shown in Table 1 with the trip generation provided in Table 2.

Table 1 - Project Trip Generation Rates

ITE Code	Description	Daily Traffic	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
820	Retail (per 1,000 sf gla)	37.75	62%	38%	0.94	48%	52%	3.81
934	Fast Food with drive thru Restaurant (per 1,000 sf gla)	470.95	51%	49%	40.19	52%	48%	32.67
960	Super Convenience Market/Gas Station (per VFP)	230.52	50%	50%	28.08	50%	50%	22.96

Table 2 - Estimated Project Trip Generation

ITE PROJECT TRIPS			Daily	AM Peak Hour			PM Peak Hour		
Code	Description	Size	Traffic	In	Out	Total	In	Out	Total
<u>Pad A</u>									
934	Fast Food	3,920	1,846	81	77	158	67	61	128
	Pass-By	50%	<u>-923</u>	<u>-40</u>	<u>-39</u>	<u>-79</u>	<u>-33</u>	<u>-31</u>	<u>-64</u>
	Sub Total		923	41	38	79	34	30	64
<u>Pad B</u>									
934	Fast Food	6,953	3,274	142	137	279	118	109	227
	Pass-By	50%	<u>-1,637</u>	<u>-71</u>	<u>-69</u>	<u>-140</u>	<u>-59</u>	<u>-55</u>	<u>-114</u>
	Sub Total		1,637	71	68	139	59	54	113
<u>Pad C</u>									
820	Retail	6,921	261	4	2	6	13	13	26
	Pass-By	50%	<u>-131</u>	<u>-2</u>	<u>-1</u>	<u>-3</u>	<u>-7</u>	<u>-6</u>	<u>-13</u>
	Sub Total		130	2	1	3	6	7	13
<u>Pad D</u>									
820	Retail	6,921	261	4	2	6	13	13	26
	Pass-By	50%	<u>-131</u>	<u>-2</u>	<u>-1</u>	<u>-3</u>	<u>-7</u>	<u>-6</u>	<u>-13</u>
	Sub Total		130	2	1	3	6	7	13
<u>Gas Station</u>									
960	Convenience Market/Gas Station (per VFP)	12	2,766	169	168	337	138	138	276
	Pass-By	50%	<u>-1,383</u>	<u>-85</u>	<u>-84</u>	<u>-169</u>	<u>-69</u>	<u>-69</u>	<u>-138</u>
	Sub Total		1,383	84	84	168	69	69	138
Project Total for Streets			4,203	200	192	392	174	167	341
No Pass-by adjustment (Driveway)			8,408	400	385	785	349	333	682

Project Access and Circulation Methodology

The project's access and circulation has been evaluated using the Highway Capacity Manual (HCM) methodology to identify potential circulation and access deficiencies. The HCM methodology calculates vehicle queues and average delay per vehicle using traffic volume, street configurations and traffic signal timing parameters.

Once the vehicle delay value has been calculated, operating characteristics are assigned a level of service grade (A through F) to estimate the level of congestion and stability of the traffic flow. The term "Level of Service" (LOS) is used by traffic engineers to describe the quality of traffic flow. Definitions of the LOS grades in terms of vehicle delay are shown in Table 3.

Table 3 - Level of Service Definitions

LOS	HCM (delay in seconds)	<u>Operating Conditions</u>
A	Less than 10	No loaded cycles and few are even close. No approach phase is fully utilized with no delay.
B	>10 to 20	A stable flow of traffic.
C	>20 to 35	Stable operation continues. Loading is intermittent. Occasionally drivers may have to wait more on red signal and backups may develop behind turning vehicles.
D	>35-55	Approaching instability. Delays may be lengthy during short time periods within the peak hour. Vehicles may be required to wait through more than one signal cycle.
E	>55 to 80	At or near capacity with possible long queues for left-turning vehicles. Full utilization of every signal cycle is seldom attained.
F	> 80	Gridlock conditions with stoppages of long duration.

The access evaluation for the project's driveways have been conducted to review expected driveway LOS conditions and vehicle queueing associated with project traffic exiting the project site. The three project driveways are:

1. North driveway on 10th Street West south of Avenue K – 8;
2. South driveway on 10th Street West south of Avenue K – 8; and
3. Avenue K – 8 driveway east of 10th Street West.

All three driveways were analyzed for the morning and afternoon peak hours with the estimated project driveway traffic added to the existing adjacent street traffic volume.

A circulation evaluation has been conducted at three near - by intersections listed below. The project's traffic effect on these intersections has been estimated by adding the project traffic volumes to the existing traffic volume at each intersection during the peak morning and afternoon hours.

1. 10th Street West and Avenue K;
2. 10th Street West and Avenue K - 8; and
3. 10th Street West and Avenue L.

Figure 3 provides the intersection characteristics and existing peak hour traffic volumes.

Figure 4 contains the estimated peak hour project traffic volumes and future traffic volume with the project traffic added. Appendix A contains the traffic volume data.

Daily traffic volume on 10th Street West north of and south of Avenue K - 8 was also measured on December 18th and 19th, 2019, results are provided in Table 4 below.

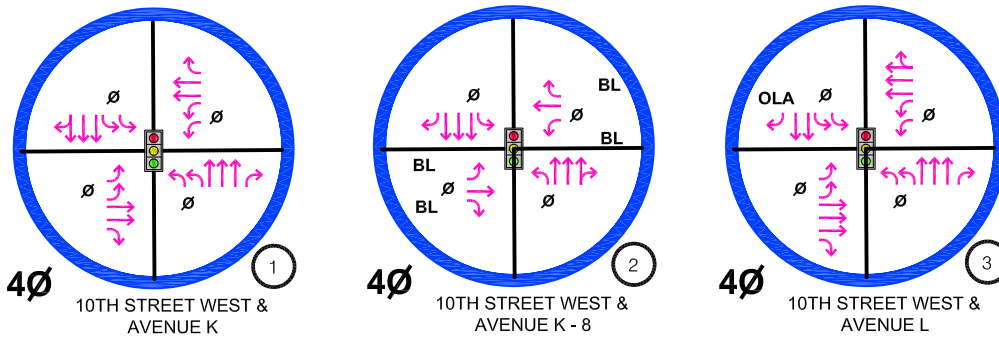
Daily traffic on 10th Street West is approximately 27,000 to 29,000 vehicles per day.

Table 4 - Daily Traffic Volume for 10th Street West at Avenue K - 8

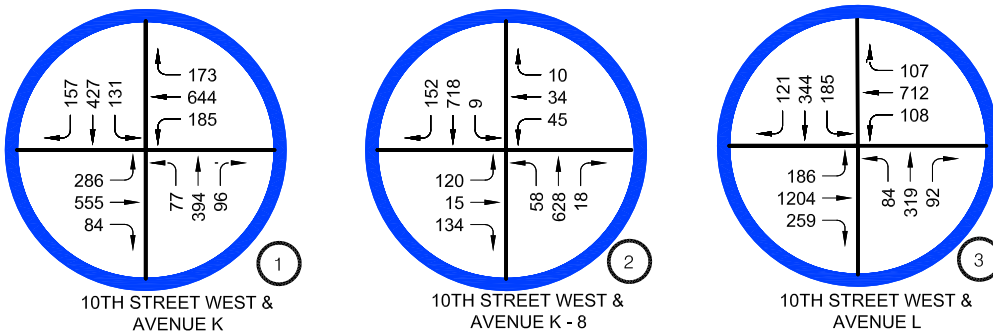
<u>Location</u>	<u>Daily</u>	<u>Dec. 18, 2019</u>	<u>Dec. 19, 2019</u>
10th Street West	N/B	13,349	13,319
North of Avenue K - 8	S/B	15,532	15,391
10th Street West	N/B	13,246	13,217
South of Avenue K - 8	S/B	13,612	13,653

LANE CONFIGURATION

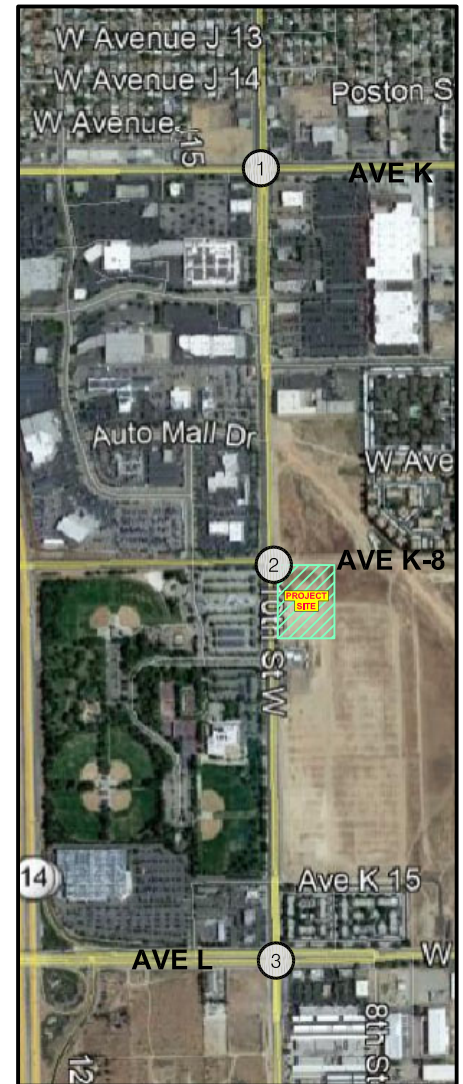
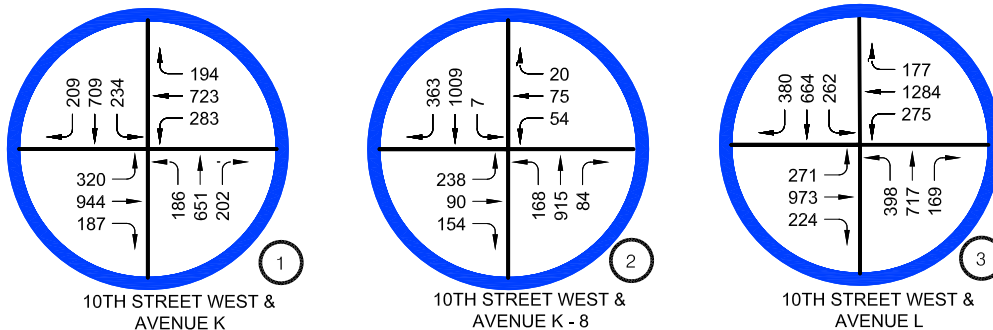
LEGEND
 Ø TRAFFIC SIGNAL PHASE
 BL BIKE LANE
 OLA RIGHT TURN OVERLAP SIGNAL



AM PEAK HOUR TRAFFIC VOLUME



PM PEAK HOUR TRAFFIC VOLUME



DAILY TRAFFIC VOLUME

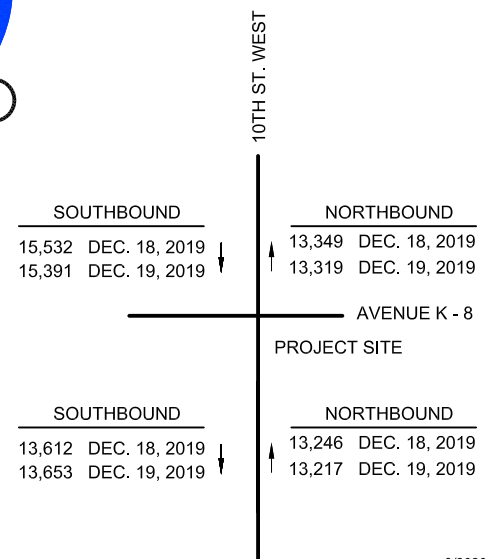


FIGURE 3

**STUDY INTERSECTION LANE CONFIGURATIONS
AND TRAFFIC VOLUME**

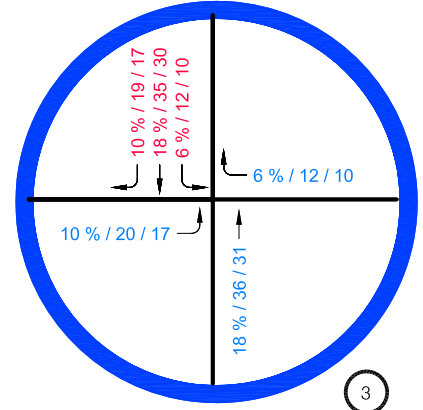
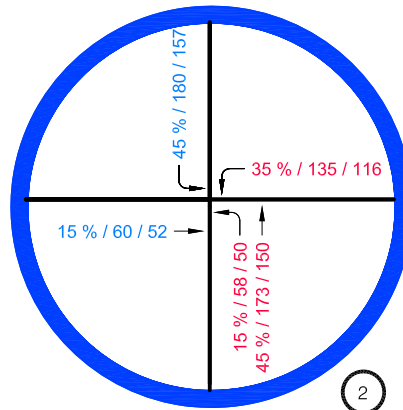
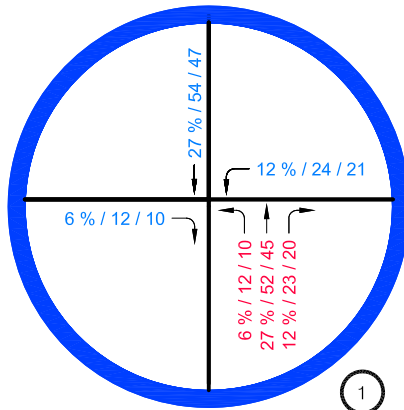


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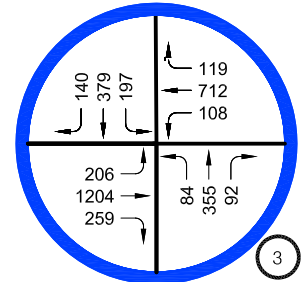
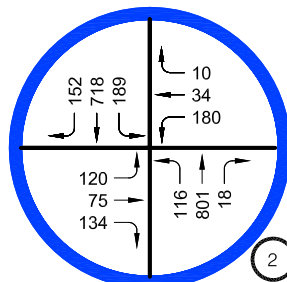
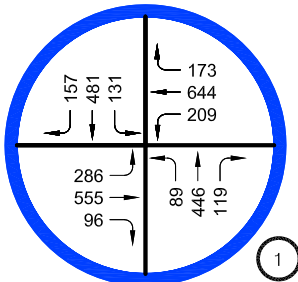
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 (661) 799 - 8423, OTC@overlandtraffic.com

PROJECT TRAFFIC CHARACTERISTICS

% ASSIGNMENT / AM PEAK HOUR VOLUME / PM PEAK HOUR VOLUME



AM PEAK HOUR TRAFFIC VOLUME WITH PROJECT



PM PEAK HOUR TRAFFIC VOLUME WITH PROJECT

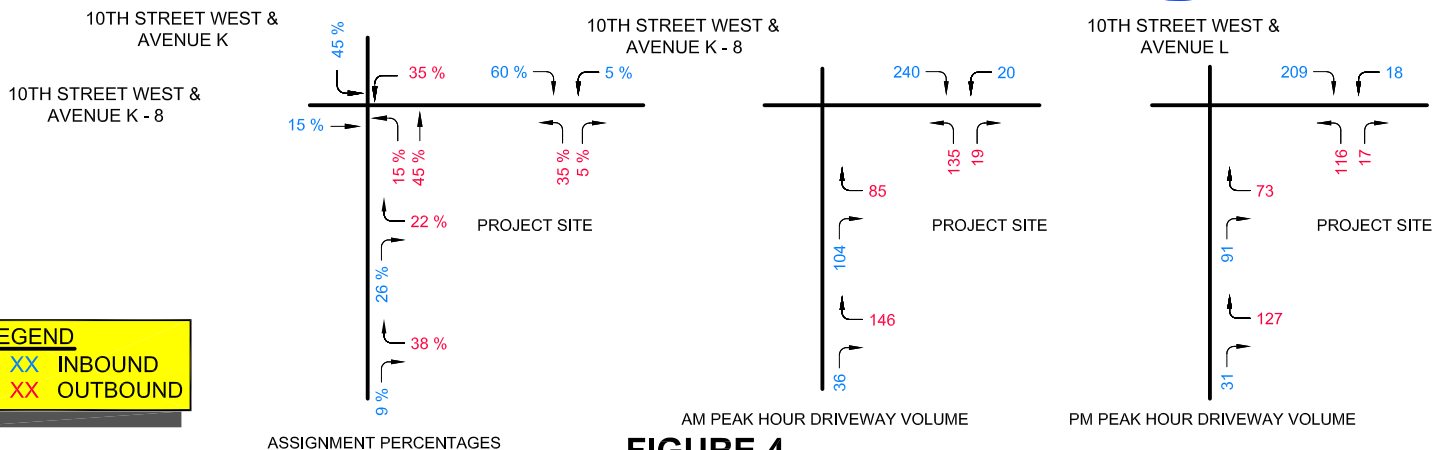
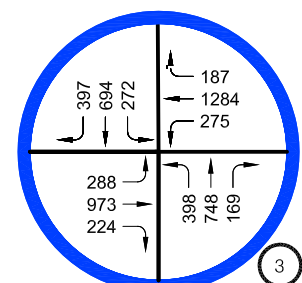
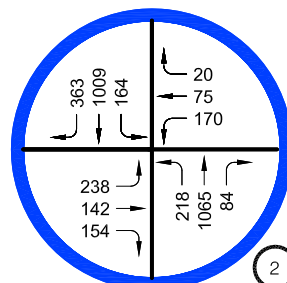
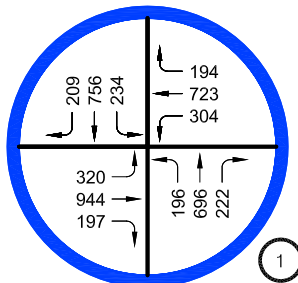


FIGURE 4

3/2020

ESTIMATED PROJECT TRAFFIC AND
FUTURE TRAFFIC VOLUME WITH PROJECT



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Analysis of Project Driveway Traffic Conditions

Project access is considered constrained if the project's traffic would contribute to unacceptable queuing on project driveway(s) or would cause or substantially extend queuing at near - by signalized intersections.

Estimated project driveway traffic volume, as shown in Table 2 and Figure 4, have been added to the existing traffic volume on the adjacent street. The results of the HCM analyses are provided in Table 5, which shows the average vehicle delay exiting the project site and the maximum vehicle queue at the driveway(s) during the morning and afternoon peak hours.

Based on this analysis, all project driveways would operate at LOS C or better and short vehicle queues. Appendix B contains the driveway level of service worksheets.

Table 5 - Project Driveway Conditions
Seconds of Delay and Level of Service

<u>Project Driveway</u>	<u>Peak Hour</u>	<u>With Project</u>		<u>Driveway 95 % Queue (Veh.)</u>
		<u>Sec. Delay</u>	<u>LOS</u>	
10th Street West & North Project Driveway	AM	15.7	C	0.8
	PM	21.2	C	1.0
10th Street West & South Project Driveway	AM	16.6	C	1.5
	PM	24.0	C	2.0
Avenue K - 8 & Project Driveway	AM	11.6	B	0.9
	PM	12.9	B	0.9

Analysis of Traffic Conditions at Nearby Intersections

Traffic conditions at three nearby intersections have been evaluated for existing conditions and future conditions with the project. As shown in the Table 6 below, the LOS conditions do not change with the project traffic added at both 10th Street West at its intersection with Avenue K and at Avenue L.

However, at 10th Street West and Avenue K – 8, the project will increase average vehicle delays. Factors effecting the increased vehicle delay include the restricted capacity of the single southbound left - turn lane, new raised median island on 10th Street West south of Avenue K – 8 and the overall increased traffic demand generated by the project. Table 6 contains the results of the existing plus project traffic conditions. See Appendix C for LOS capacity reports.

Table 6 - Existing + Project Traffic Conditions

No.	<u>Intersection</u>	Peak Hour	Existing		With Project	
			<u>Delay</u>	<u>LOS</u>	<u>Delay</u>	<u>LOS</u>
1	10th Street West and Avenue K	AM	39.2	D	43.0	D
		PM	46.6	D	51.9	D
2	10th Street West and Avenue K - 8	AM	33.7	C	47.0	D
		PM	48.4	D	61.5	E
3	10th Street West and Avenue L	AM	31.2	C	31.7	C
		PM	59.0	E	63.9	E

10th Street West and Avenue K – 8 Vehicle Queue Review

A review of the intersection capacity reports for 10th Street West and Avenue K – 8 during the peak hours indicate that the 95 percentile westbound left - turn vehicle queue on Avenue K – 8 is estimated at 144 feet during the morning peak hour and 139 feet during the afternoon peak hour which is within the 200 foot left - turn lane. This estimated queue storage length would require left - turns exiting the project to cross or enter the westbound lanes on Avenue K – 8 with current traffic conditions.

Note that future traffic conditions will change with the opening of Avenue K – 8 to the east and this modification to the street network may require the vehicle queueing on Avenue K – 8 to be re-evaluated with the new street connection. If future traffic conditions show that vehicle queueing is expected to extend beyond the driveway location on Avenue K-8, the applicant, or owner, shall dedicate to the City the right to restrict the outbound left-turn movement from the project onto westbound Avenue K-8 to the satisfaction of the City Engineer.

The review of the northbound 10th Street West left - turn vehicle queue indicates that the future left - turn lane should be approximately 300 feet in length with a 90 - foot transition to satisfy the typical left – turn demand. This queue estimate would allow right turns out of the project's 10th Street driveway(s) to enter the northbound left - turn lane to proceed west on Avenue K – 8, if necessary. Heavy northbound through traffic, however, may delay project vehicles from accessing the northbound left – turn lane. Please contact me if you have any questions.

Sincerely,


Jerry T. Overland

Attachments

- Traffic Volume Data
- Driveway LOS Worksheets
- Intersection LOS Worksheets

APPENDIX A

TRAFFIC VOLUME DATA

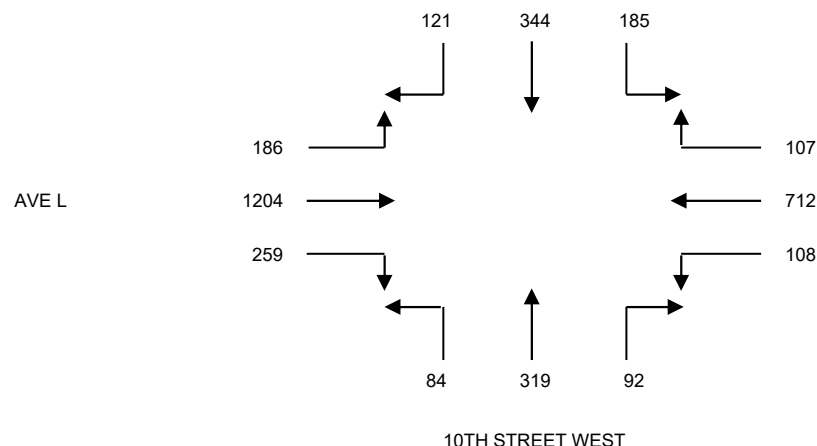
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 07:00 AM TO 10:00 AM
 INTERSECTION: N/S 10TH STREET WEST
 E/W AVE L
 FILE NUMBER: 1_AM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0700-0715	33	56	18	19	199	16	12	42	18	33	203	30
0715-0730	29	75	36	18	219	27	18	51	15	37	249	25
0730-0745	20	87	40	20	197	21	24	74	17	51	308	40
0745-0800	30	86	46	24	161	21	31	91	20	62	338	58
0800-0815	32	78	40	35	175	27	20	71	21	77	297	50
0815-0830	39	93	59	28	179	39	17	83	26	69	261	38
0830-0845	28	101	33	23	159	29	18	80	35	52	226	45
0845-0900	34	95	34	18	171	24	23	103	39	65	205	43
0900-0915	36	90	39	20	184	38	20	94	47	58	182	40
0915-0930	49	103	30	21	167	30	18	105	43	34	159	53
0930-0945	53	118	35	33	177	41	22	121	59	42	178	39
0945-1000	53	121	45	28	179	44	33	108	61	40	163	33

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	TOTALS
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	
0700-0800	112	304	140	81	776	85	85	258	70	183	1098	153	3345
0715-0815	111	326	162	97	752	96	93	287	73	227	1192	173	3589
0730-0830	121	344	185	107	712	108	92	319	84	259	1204	186	3721
0745-0845	129	358	178	110	674	116	86	325	102	260	101	191	2630
0800-0900	133	367	166	104	684	119	78	337	121	263	989	176	3537
0815-0915	137	379	165	89	693	130	78	360	147	244	874	166	3462
0830-0930	147	389	136	82	681	121	79	382	164	209	772	181	3343
0845-0945	172	406	138	92	699	133	83	423	188	199	724	175	3432
0900-1000	191	432	149	102	707	153	93	428	210	174	682	165	3486

A.M. PEAK HOUR
0730-0830



DATA PROVIDED BY:

THE TRAFFIC SOLUTION
 329 DIAMOND STREET
 ARCADIA, CALIFORNIA 91005
 PH: 626-446-7978
 FAX: 626-446-2877

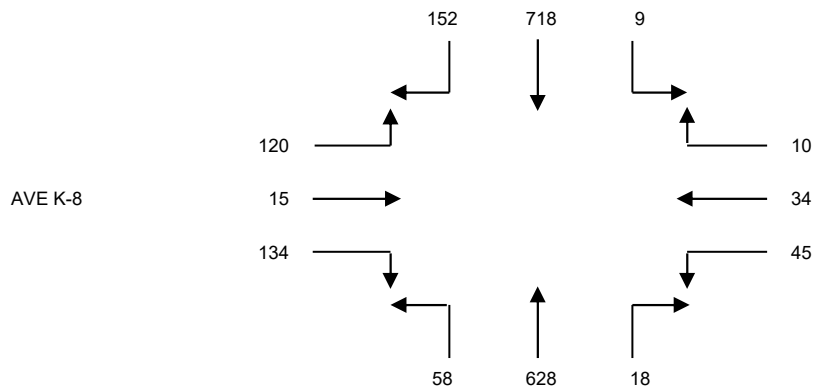
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 07:00 AM TO 10:00 AM
 INTERSECTION: N/S 10TH STREET WEST
 E/W AVE K-8
 FILE NUMBER: 2_AM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0700-0715	20	44	2	0	10	12	5	63	8	17	5	24
0715-0730	24	55	3	0	11	15	7	72	10	20	7	28
0730-0745	27	67	4	1	12	17	8	90	12	21	8	30
0745-0800	23	95	2	0	15	11	9	118	10	30	15	58
0800-0815	26	110	3	0	17	12	11	129	11	32	15	54
0815-0830	37	135	1	4	15	18	8	127	14	23	10	48
0830-0845	37	140	1	3	17	16	7	120	15	25	8	35
0845-0900	28	150	2	4	19	14	5	135	17	22	7	43
0900-0915	30	155	2	3	11	12	5	141	15	24	6	41
0915-0930	35	173	2	2	7	10	5	156	15	36	4	31
0930-0945	46	199	2	3	8	14	4	170	14	34	3	25
0945-1000	41	191	3	2	8	9	4	161	14	40	2	23

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTALS
0700-0800	94	261	11	1	48	55	29	343	40	88	35	140	1145
0715-0815	100	327	12	1	55	55	35	409	43	103	45	170	1355
0730-0830	113	407	10	5	59	58	36	464	47	106	48	190	1543
0745-0845	123	480	7	7	64	57	35	494	50	110	48	195	1670
0800-0900	128	535	7	11	68	60	31	511	57	102	40	180	1730
0815-0915	132	580	6	14	62	60	25	523	61	94	31	167	1755
0830-0930	130	618	7	12	54	52	22	552	62	107	25	150	1791
0845-0945	139	677	8	12	45	50	19	602	61	116	20	140	1889
0900-1000	152	718	9	10	34	45	18	628	58	134	15	120	1941

A.M. PEAK HOUR
 0900-1000



DATA PROVIDED BY:

THE TRAFFIC SOLUTION
 329 DIAMOND STREET
 ARCADIA, CALIFORNIA 91005
 PH: 626-446-7978
 FAX: 626-446-2877

10TH STREET WEST

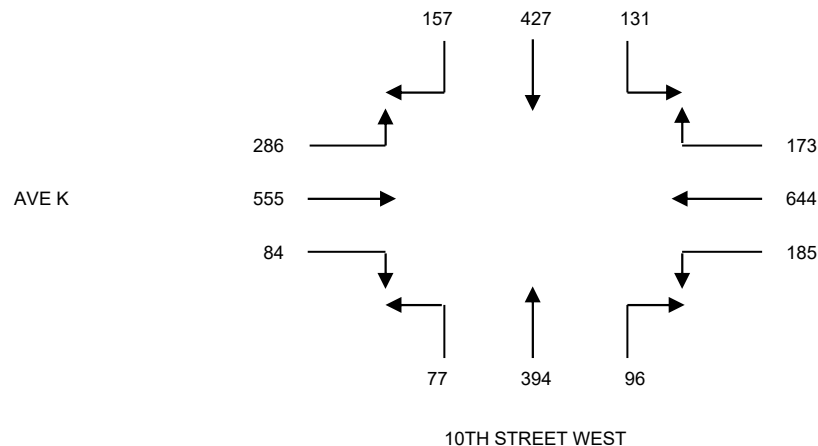
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
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 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 07:00 AM TO 10:00 AM
 INTERSECTION: N/S 10TH STREET WEST
 E/W AVE K
 FILE NUMBER: 3_AM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
0700-0715	21	30	26	17	103	23	10	39	12	5	71	39
0715-0730	27	51	31	24	123	26	12	58	13	10	117	40
0730-0745	25	59	25	24	173	33	20	75	19	17	136	52
0745-0800	36	84	39	31	154	37	31	105	16	15	164	60
0800-0815	31	95	31	35	148	46	24	95	19	19	169	76
0815-0830	35	115	35	54	153	44	28	92	18	18	132	61
0830-0845	49	106	39	44	165	46	21	93	20	24	123	78
0845-0900	42	111	26	40	178	49	23	114	20	23	131	71
0900-0915	30	91	21	32	141	45	20	85	18	20	123	67
0915-0930	46	107	21	32	120	44	24	112	25	30	114	62
0930-0945	48	114	27	35	122	48	23	91	33	28	120	56
0945-1000	32	112	34	42	127	49	31	119	33	35	113	57

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
0700-0800	109	224	121	96	553	119	73	277	60	47	488	191	2358
0715-0815	119	289	126	114	598	142	87	333	67	61	586	228	2750
0730-0830	127	353	130	144	628	160	103	367	72	69	601	249	3003
0745-0845	151	400	144	164	620	173	104	385	73	76	588	275	3153
0800-0900	157	427	131	173	644	185	96	394	77	84	555	286	3209
0815-0915	156	423	121	170	637	184	92	384	76	85	509	277	3114
0830-0930	167	415	107	148	604	184	88	404	83	97	491	278	3066
0845-0945	166	423	95	139	561	186	90	402	96	101	488	256	3003
0900-1000	156	424	103	141	510	186	98	407	109	113	470	242	2959

A.M. PEAK HOUR
0800-0900



DATA PROVIDED BY:

THE TRAFFIC SOLUTION
 329 DIAMOND STREET
 ARCADIA, CALIFORNIA 91005
 PH: 626-446-7978
 FAX: 626-446-2877

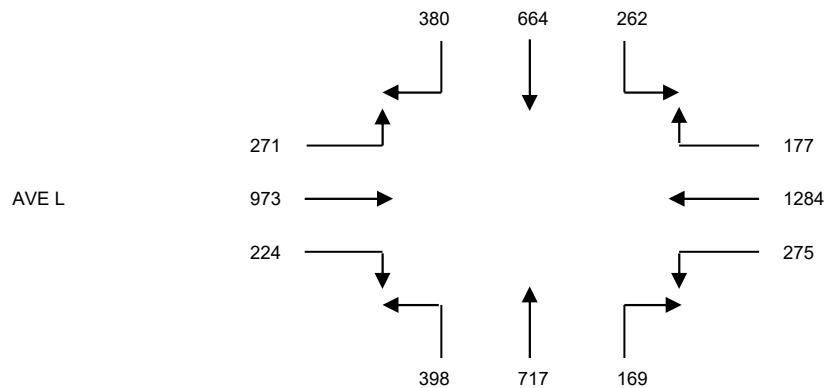
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 04:00 PM TO 07:00 PM
 INTERSECTION: N/S 10TH STREET WEST
 E/W AVE L
 FILE NUMBER: 1_PM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
0400-0415	70	143	46	40	250	65	35	155	80	63	234	66
0415-0430	73	175	58	45	301	60	33	162	102	70	269	61
0430-0445	87	145	54	45	323	79	40	175	92	61	230	73
0445-0500	92	150	65	45	324	67	51	181	86	50	245	73
0500-0515	128	194	85	42	336	69	45	199	118	43	229	64
0515-0530	94	141	57	37	332	55	34	191	83	55	220	73
0530-0545	83	149	61	27	247	39	31	165	90	38	219	57
0545-0600	75	125	59	29	177	33	25	146	74	39	194	55
0600-0615	76	116	63	22	151	23	16	133	70	30	200	67
0615-0630	55	114	42	28	168	16	26	114	59	32	247	61
0630-0645	65	109	58	21	150	22	21	126	72	27	220	51
0645-0700	60	100	57	20	173	19	20	115	45	26	249	43

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
0400-0500	322	613	223	175	1198	271	159	673	360	244	978	273	5489
0415-0515	380	664	262	177	1284	275	169	717	398	224	973	271	5794
0430-0530	401	630	261	169	1315	270	170	746	379	209	924	283	5757
0445-0545	397	634	268	151	1239	230	161	736	377	186	913	267	5559
0500-0600	380	609	262	135	1092	196	135	701	365	175	862	249	5161
0515-0615	328	531	240	115	907	150	106	635	317	162	833	252	4576
0530-0630	289	504	225	106	743	111	98	558	293	139	860	240	4166
0545-0645	271	464	222	100	646	94	88	519	275	128	861	234	3902
0600-0700	256	439	220	91	642	80	83	488	246	115	916	222	3798

P.M. PEAK HOUR
0415-0515



DATA PROVIDED BY:

THE TRAFFIC SOLUTION
 329 DIAMOND STREET
 ARCADIA, CALIFORNIA 91005
 PH: 626-446-7978
 FAX: 626-446-2877

10TH STREET WEST

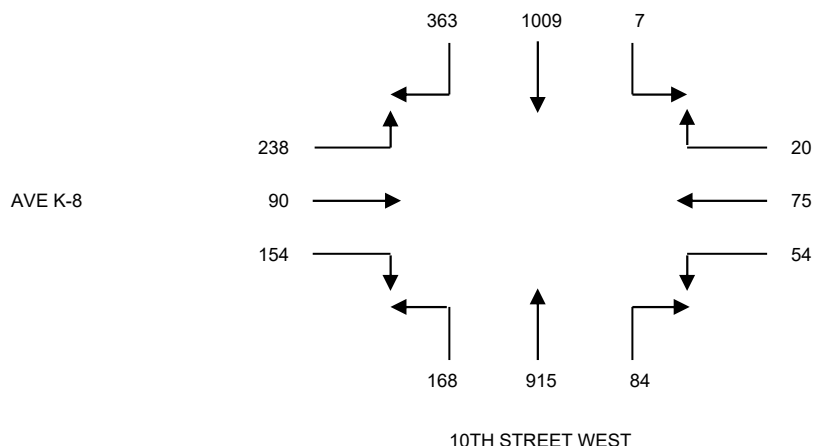
INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 04:00 PM TO 07:00 PM
 INTERSECTION: N/S 10TH STREET WEST
 E/W AVE K-8
 FILE NUMBER: 2_PM

15 MINUTE TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT
0400-0415	84	255	0	7	15	11	22	232	33	33	15	44
0415-0430	93	266	0	10	18	14	26	215	39	37	22	51
0430-0445	84	220	2	5	17	15	20	221	38	44	17	50
0445-0500	94	231	2	8	20	17	22	227	41	38	20	55
0500-0515	89	283	1	3	20	11	20	242	49	32	27	64
0515-0530	96	275	2	4	18	11	22	225	40	40	26	69
0530-0545	82	232	1	2	13	19	18	200	30	43	23	52
0545-0600	83	215	1	2	11	19	17	187	20	38	20	44
0600-0615	72	203	1	1	8	17	18	178	21	27	18	40
0615-0630	63	200	1	1	7	16	25	178	19	20	17	30
0630-0645	61	192	0	1	7	12	20	164	17	18	15	22
0645-0700	54	183	1	0	7	10	17	156	15	15	12	20

1 HOUR TOTALS	1 SBRT	2 SBTH	3 SBLT	4 WBRT	5 WBTH	6 WBLT	7 NBRT	8 NBTH	9 NBLT	10 EBRT	11 EBTH	12 EBLT	TOTALS
0400-0500	355	972	4	30	70	57	90	895	151	152	74	200	3050
0415-0515	360	1000	5	26	75	57	88	905	167	151	86	220	3140
0430-0530	363	1009	7	20	75	54	84	915	168	154	90	238	3177
0445-0545	361	1021	6	17	71	58	82	894	160	153	96	240	3159
0500-0600	350	1005	5	11	62	60	77	854	139	153	96	229	3041
0515-0615	333	925	5	9	50	66	75	790	111	148	87	205	2804
0530-0630	300	850	4	6	39	71	78	743	90	128	78	166	2553
0545-0645	279	810	3	5	33	64	80	707	77	103	70	136	2367
0600-0700	250	778	3	3	29	55	80	676	72	80	62	112	2200

P.M. PEAK HOUR
 0430-0530



DATA PROVIDED BY:

THE TRAFFIC SOLUTION
 329 DIAMOND STREET
 ARCADIA, CALIFORNIA 91005
 PH: 626-446-7978
 FAX: 626-446-2877

INTERSECTION TURNING MOVEMENT COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 04:00 PM TO 07:00 PM
 INTERSECTION: N/S 10TH STREET WEST
 E/W AVE K
 FILE NUMBER: 3_PM

15 MINUTE	1	2	3	4	5	6	7	8	9	10	11	12
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT
0400-0415	36	148	56	23	151	59	40	133	42	37	194	59
0415-0430	44	153	47	36	165	70	42	145	55	50	201	67
0430-0445	63	172	63	57	196	79	49	164	46	43	237	80
0445-0500	51	177	55	51	163	78	52	150	47	42	223	68
0500-0515	42	192	55	48	186	67	59	167	43	46	258	83
0515-0530	53	168	61	38	178	59	42	170	50	56	226	89
0530-0545	50	165	45	34	143	41	47	150	56	38	200	64
0545-0600	35	148	35	30	159	51	44	123	43	36	220	70
0600-0615	48	158	49	22	139	43	32	136	47	32	213	88
0615-0630	40	122	38	20	144	52	32	120	35	22	168	56
0630-0645	38	110	42	26	130	50	39	112	38	30	178	78
0645-0700	28	105	33	17	105	40	23	90	28	20	140	56

1 HOUR	1	2	3	4	5	6	7	8	9	10	11	12	TOTALS
TOTALS	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	
0400-0500	194	650	221	167	675	286	183	592	190	172	855	274	4459
0415-0515	200	694	220	192	710	294	202	626	191	181	919	298	4727
0430-0530	209	709	234	194	723	283	202	651	186	187	944	320	4842
0445-0545	196	702	216	171	670	245	200	637	196	182	907	304	4626
0500-0600	180	673	196	150	666	218	192	610	192	176	904	306	4463
0515-0615	186	639	190	124	619	194	165	579	196	162	859	311	4224
0530-0630	173	593	167	106	585	187	155	529	181	128	801	278	3883
0545-0645	161	538	164	98	572	196	147	491	163	120	779	292	3721
0600-0700	154	495	162	85	518	185	126	458	148	104	699	278	3412

P.M. PEAK HOUR
 0430-0530



DATA PROVIDED BY:

THE TRAFFIC SOLUTION
 329 DIAMOND STREET
 ARCADIA, CALIFORNIA 91005
 PH: 626-446-7978
 FAX: 626-446-2877

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 07:00 AM TO 10:00 AM
 INTERSECTION: 10TH STREET WEST / AVE L

FILE: 1AMPED-BIKE

15-MINUTE PERIOD	PEDESTRIAN MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0700-0715	0	0	1	0
0715-0730	0	0	0	0
0730-0745	0	0	0	0
0745-0800	0	0	0	2
0800-0815	0	0	0	0
0815-0830	0	0	1	0
0830-0845	1	1	0	0
0845-0900	0	0	0	2
0900-0915	0	2	3	1
0915-0930	1	1	2	0
0930-0945	1	0	0	1
0945-1000	0	1	0	1

15-MINUTE PERIOD	BICYCLIST MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0700-0715	0	0	0	0
0715-0730	0	0	0	0
0730-0745	0	0	0	0
0745-0800	0	2	0	0
0800-0815	0	0	0	0
0815-0830	0	0	0	0
0830-0845	0	0	0	0
0845-0900	0	0	0	0
0900-0915	0	0	0	0
0915-0930	0	0	0	0
0930-0945	0	0	0	0
0945-1000	0	0	0	0

1-HOUR PERIOD	PEDESTRIAN MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0700-0800	0	0	1	2	3
0715-0815	0	0	0	2	2
0730-0830	0	0	1	2	3
0745-0845	1	1	1	2	5
0800-0900	1	1	1	2	5
0815-0915	1	3	4	3	11
0830-0930	2	4	5	3	14
0845-0945	2	3	5	4	14
0900-1000	2	4	5	3	14

1-HOUR PERIOD	BICYCLIST MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0700-0800	0	2	0	0	2
0715-0815	0	2	0	0	2
0730-0830	0	2	0	0	2
0745-0845	0	2	0	0	2
0800-0900	0	0	0	0	0
0815-0915	0	0	0	0	0
0830-0930	0	0	0	0	0
0845-0945	0	0	0	0	0
0900-1000	0	0	0	0	0

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 04:00 PM TO 07:00 PM
 INTERSECTION: 10TH STREET WEST / AVE L

FILE: 1PMPED-BIKE

15-MINUTE PERIOD	PEDESTRIAN MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0400-0415	1	1	0	0
0415-0430	0	1	0	1
0430-0445	0	0	0	0
0445-0500	1	1	0	1
0500-0515	2	1	2	2
0515-0530	1	1	0	0
0530-0545	0	0	0	0
0545-0600	0	0	0	0
0600-0615	0	0	0	0
0615-0630	0	0	0	1
0630-0645	0	0	0	0
0645-0700	0	0	0	1

15-MINUTE PERIOD	BICYCLIST MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0400-0415	0	0	0	0
0415-0430	0	0	0	0
0430-0445	0	0	0	0
0445-0500	0	0	0	0
0500-0515	0	0	0	0
0515-0530	0	0	0	0
0530-0545	0	0	0	0
0545-0600	0	0	0	0
0600-0615	0	0	0	0
0615-0630	0	0	1	1
0630-0645	0	1	0	0
0645-0700	0	0	0	0

1-HOUR PERIOD	PEDESTRIAN MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0400-0500	2	3	0	2	7
0415-0515	3	3	2	4	12
0430-0530	4	3	2	3	12
0445-0545	4	3	2	3	12
0500-0600	3	2	2	2	9
0515-0615	1	1	0	0	2
0530-0630	0	0	0	1	1
0545-0645	0	0	0	1	1
0600-0700	0	0	0	2	2

1-HOUR PERIOD	BICYCLIST MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0400-0500	0	0	0	0	0
0415-0515	0	0	0	0	0
0430-0530	0	0	0	0	0
0445-0545	0	0	0	0	0
0500-0600	0	0	0	0	0
0515-0615	0	0	0	0	0
0530-0630	0	0	1	1	2
0545-0645	0	1	1	1	3
0600-0700	0	1	1	1	3

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 07:00 AM TO 10:00 AM
 INTERSECTION: 10TH STREET WEST / AVE K-8

FILE: 2AMPED-BIKE

15-MINUTE PERIOD	PEDESTRIAN MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0700-0715	0	0	0	0
0715-0730	0	0	0	0
0730-0745	0	1	1	0
0745-0800	0	1	1	0
0800-0815	0	2	2	1
0815-0830	1	0	0	2
0830-0845	0	2	2	1
0845-0900	1	0	0	1
0900-0915	0	1	1	0
0915-0930	1	0	1	0
0930-0945	0	0	0	1
0945-1000	0	0	0	1

15-MINUTE PERIOD	BICYCLIST MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0700-0715	0	0	0	0
0715-0730	0	0	0	0
0730-0745	0	0	0	0
0745-0800	1	1	0	0
0800-0815	0	0	0	0
0815-0830	0	0	0	0
0830-0845	0	0	0	0
0845-0900	0	0	0	0
0900-0915	0	0	0	0
0915-0930	0	0	0	0
0930-0945	0	0	0	0
0945-1000	0	1	0	0

1-HOUR PERIOD	PEDESTRIAN MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0700-0800	0	2	2	0	4
0715-0815	0	4	4	1	9
0730-0830	1	4	4	3	12
0745-0845	1	5	5	4	15
0800-0900	2	4	4	5	15
0815-0915	2	3	3	4	12
0830-0930	2	3	4	2	11
0845-0945	2	1	2	2	7
0900-1000	1	1	2	2	6

1-HOUR PERIOD	BICYCLIST MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0700-0800	1	1	0	0	2
0715-0815	1	1	0	0	2
0730-0830	1	1	0	0	2
0745-0845	1	1	0	0	2
0800-0900	0	0	0	0	0
0815-0915	0	0	0	0	0
0830-0930	0	0	0	0	0
0845-0945	0	0	0	0	0
0900-1000	0	1	0	0	1

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 04:00 PM TO 07:00 PM
 INTERSECTION: 10TH STREET WEST / AVE K-8

FILE: 2PMPED-BIKE

15-MINUTE PERIOD	PEDESTRIAN MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0400-0415	0	0	0	6
0415-0430	0	3	1	2
0430-0445	0	2	1	1
0445-0500	0	0	0	0
0500-0515	0	0	0	2
0515-0530	0	1	1	1
0530-0545	0	1	0	0
0545-0600	1	1	1	2
0600-0615	0	1	1	1
0615-0630	0	0	0	0
0630-0645	0	0	0	0
0645-0700	0	0	0	0

15-MINUTE PERIOD	BICYCLIST MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0400-0415	0	0	0	0
0415-0430	0	0	0	0
0430-0445	1	0	0	0
0445-0500	0	0	0	1
0500-0515	0	0	0	0
0515-0530	0	0	0	0
0530-0545	0	0	0	0
0545-0600	0	0	0	1
0600-0615	0	0	0	0
0615-0630	0	0	0	0
0630-0645	0	0	0	0
0645-0700	0	0	0	0

1-HOUR PERIOD	PEDESTRIAN MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0400-0500	0	5	2	9	16
0415-0515	0	5	2	5	12
0430-0530	0	3	2	4	9
0445-0545	0	2	1	3	6
0500-0600	1	3	2	5	11
0515-0615	1	4	3	4	12
0530-0630	1	3	2	3	9
0545-0645	1	2	2	3	8
0600-0700	0	1	1	1	3

1-HOUR PERIOD	BICYCLIST MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0400-0500	1	0	0	1	2
0415-0515	1	0	0	1	2
0430-0530	1	0	0	1	2
0445-0545	0	0	0	1	1
0500-0600	0	0	0	1	1
0515-0615	0	0	0	1	1
0530-0630	0	0	0	1	1
0545-0645	0	0	0	1	1
0600-0700	0	0	0	0	0

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 07:00 AM TO 10:00 AM
 INTERSECTION: 10TH STREET WEST / AVE K

FILE: 3AMPED-BIKE

15-MINUTE PERIOD	PEDESTRIAN MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0700-0715	2	1	0	1
0715-0730	1	0	1	3
0730-0745	6	4	2	2
0745-0800	1	1	1	0
0800-0815	2	2	2	1
0815-0830	1	2	2	0
0830-0845	1	4	1	0
0845-0900	0	3	0	0
0900-0915	3	1	1	1
0915-0930	3	6	2	1
0930-0945	2	3	0	2
0945-1000	1	3	4	2

15-MINUTE PERIOD	BICYCLIST MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0700-0715	1	0	0	0
0715-0730	0	0	0	0
0730-0745	0	0	0	0
0745-0800	0	0	0	0
0800-0815	0	0	0	0
0815-0830	0	0	0	0
0830-0845	0	0	0	0
0845-0900	0	0	1	0
0900-0915	0	0	0	0
0915-0930	1	2	2	1
0930-0945	0	1	0	0
0945-1000	0	0	0	1

1-HOUR PERIOD	PEDESTRIAN MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0700-0800	10	6	4	6	26
0715-0815	10	7	6	6	29
0730-0830	10	9	7	3	29
0745-0845	5	9	6	1	21
0800-0900	4	11	5	1	21
0815-0915	5	10	4	1	20
0830-0930	7	14	4	2	27
0845-0945	8	13	3	4	28
0900-1000	9	13	7	6	35

1-HOUR PERIOD	BICYCLIST MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0700-0800	1	0	0	0	1
0715-0815	0	0	0	0	0
0730-0830	0	0	0	0	0
0745-0845	0	0	0	0	0
0800-0900	0	0	1	0	1
0815-0915	0	0	1	0	1
0830-0930	1	2	3	1	7
0845-0945	1	3	3	1	8
0900-1000	1	3	2	2	8

PEDESTRIAN - BICYCLE COUNT SUMMARY

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 DATE: WEDNESDAY, DECEMBER 18, 2019
 PERIOD: 04:00 PM TO 07:00 PM
 INTERSECTION: 10TH STREET WEST / AVE K

FILE: 3PMPED-BIKE

15-MINUTE PERIOD	PEDESTRIAN MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0400-0415	1	2	3	1
0415-0430	2	2	2	1
0430-0445	3	1	2	1
0445-0500	2	3	2	0
0500-0515	4	6	4	0
0515-0530	1	1	2	4
0530-0545	0	7	3	1
0545-0600	3	1	3	0
0600-0615	4	2	3	2
0615-0630	2	2	2	1
0630-0645	5	2	0	3
0645-0700	1	0	2	1

15-MINUTE PERIOD	BICYCLIST MOVEMENTS			
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG
	A	B	C	D
0400-0415	0	0	0	0
0415-0430	0	0	0	1
0430-0445	0	1	0	0
0445-0500	2	2	0	0
0500-0515	0	0	1	0
0515-0530	0	0	1	0
0530-0545	0	0	0	0
0545-0600	1	0	0	1
0600-0615	0	1	0	0
0615-0630	0	0	1	0
0630-0645	0	0	0	0
0645-0700	0	0	0	0

1-HOUR PERIOD	PEDESTRIAN MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0400-0500	8	8	9	3	28
0415-0515	11	12	10	2	35
0430-0530	10	11	10	5	36
0445-0545	7	17	11	5	40
0500-0600	8	15	12	5	40
0515-0615	8	11	11	7	37
0530-0630	9	12	11	4	36
0545-0645	14	7	8	6	35
0600-0700	12	6	7	7	32

1-HOUR PERIOD	BICYCLIST MOVEMENTS				TOTALS
	NORTH LEG	EAST LEG	SOUTH LEG	WEST LEG	
	A	B	C	D	
0400-0500	2	3	0	1	6
0415-0515	2	3	1	1	7
0430-0530	2	3	2	0	7
0445-0545	2	2	2	0	6
0500-0600	1	0	2	1	4
0515-0615	1	1	1	1	4
0530-0630	1	1	1	1	4
0545-0645	1	1	1	1	4
0600-0700	0	1	1	0	2

THE TRAFFIC SOLUTION - ADT WORKSHEET

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 LOCATION: 10TH STREET WEST N/O AVE K-8
 DATE: WEDNESDAY, DECEMBER 18, 2019
 FILE NO: 1_ADT

DIRECTION:		NORTHBOUND			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	21	26	24	12	83
01:00	8	7	6	9	30
02:00	4	8	9	19	40
03:00	11	8	4	14	37
04:00	6	13	14	18	51
05:00	13	23	26	28	90
06:00	44	37	42	85	208
07:00	100	105	159	189	553
08:00	158	149	170	206	683
09:00	172	186	193	204	755
10:00	201	234	255	256	946
11:00	244	250	285	275	1054
12:00	284	272	244	298	1098
13:00	253	249	286	250	1038
14:00	277	298	279	296	1150
15:00	273	242	285	242	1042
16:00	259	243	263	268	1033
17:00	284	289	228	241	1042
18:00	226	199	185	187	797
19:00	180	161	139	157	637
20:00	120	119	115	83	437
21:00	70	79	67	40	256
22:00	51	61	41	34	187
23:00	33	23	25	21	102
				TOTAL	13349
AM PEAK HOUR			11:00-12:00		
VOLUME			1054		
PM PEAK HOUR			14:00-15:00		
VOLUME			1150		

DIRECTION:		SOUTHBOUND			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	22	21	16	11	70
01:00	9	9	9	4	31
02:00	7	5	10	8	30
03:00	9	10	23	31	73
04:00	25	17	30	22	94
05:00	42	19	51	45	157
06:00	36	37	42	70	185
07:00	72	84	106	124	386
08:00	130	164	180	186	660
09:00	163	195	256	230	844
10:00	297	287	290	296	1170
11:00	342	329	339	363	1373
12:00	336	384	375	388	1483
13:00	407	384	368	338	1497
14:00	324	262	297	309	1192
15:00	285	338	361	341	1325
16:00	335	295	316	306	1252
17:00	376	335	303	264	1278
18:00	298	241	209	190	938
19:00	159	150	139	133	581
20:00	139	116	101	68	424
21:00	73	55	60	69	257
22:00	39	46	28	24	137
23:00	31	25	16	23	95
				TOTAL	15532
AM PEAK HOUR			11:00-12:00		
VOLUME			1373		
PM PEAK HOUR			12:15-13:15		
VOLUME			1554		

TOTAL BI-DIRECTIONAL VOLUME	28881
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THE TRAFFIC SOLUTION - ADT WORKSHEET

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 LOCATION: 10TH STREET WEST N/O AVE K-8
 DATE: THURSDAY, DECEMBER 19, 2019
 FILE NO: 2_ADT

DIRECTION:		NORTHBOUND			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	29	15	19	11	74
01:00	9	11	15	6	41
02:00	7	2	11	13	33
03:00	9	7	10	16	42
04:00	12	12	11	19	54
05:00	16	20	25	31	92
06:00	36	27	55	79	197
07:00	94	129	142	193	558
08:00	162	148	167	175	652
09:00	161	195	186	211	753
10:00	217	201	201	214	833
11:00	276	278	269	284	1107
12:00	287	266	261	265	1079
13:00	257	254	248	270	1029
14:00	280	282	285	267	1114
15:00	254	273	267	260	1054
16:00	260	241	306	253	1060
17:00	259	269	272	224	1024
18:00	205	211	171	182	769
19:00	189	159	151	159	658
20:00	118	131	130	123	502
21:00	126	81	63	59	329
22:00	51	47	31	37	166
23:00	38	20	18	23	99
				TOTAL	13319
AM PEAK HOUR			11:00-12:00		
VOLUME			1107		
PM PEAK HOUR			13:45-14:45		
VOLUME			1117		

DIRECTION:		SOUTHBOUND			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	26	12	10	13	61
01:00	7	8	6	7	28
02:00	9	6	8	10	33
03:00	4	12	24	28	68
04:00	27	32	33	29	121
05:00	40	25	37	47	149
06:00	35	40	52	65	192
07:00	75	67	96	130	368
08:00	153	168	180	188	689
09:00	192	175	204	197	768
10:00	222	238	260	254	974
11:00	302	283	288	286	1159
12:00	361	348	388	353	1450
13:00	346	359	355	342	1402
14:00	335	313	316	326	1290
15:00	326	320	293	363	1302
16:00	351	335	371	353	1410
17:00	360	333	307	284	1284
18:00	277	231	256	194	958
19:00	177	189	170	114	650
20:00	142	121	108	102	473
21:00	72	71	67	53	263
22:00	68	42	43	36	189
23:00	37	25	30	18	110
				TOTAL	15391
AM PEAK HOUR			11:00-12:00		
VOLUME			1159		
PM PEAK HOUR			12:30-13:30		
VOLUME			1446		

TOTAL BI-DIRECTIONAL VOLUME	28710
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THE TRAFFIC SOLUTION - ADT WORKSHEET

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 LOCATION: 10TH STREET WEST S/O AVE K-8
 DATE: WEDNESDAY, DECEMBER 18, 2019
 FILE NO: 1_ADT

DIRECTION:		NORTHBOUND			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	21	27	23	17	88
01:00	7	5	8	11	31
02:00	6	12	14	23	55
03:00	16	9	4	6	35
04:00	6	11	11	14	42
05:00	10	24	19	18	71
06:00	38	24	46	74	182
07:00	94	93	143	153	483
08:00	146	120	165	189	620
09:00	173	174	186	195	728
10:00	202	225	263	240	930
11:00	250	243	288	259	1040
12:00	290	287	246	288	1111
13:00	282	288	263	281	1114
14:00	285	280	285	295	1145
15:00	267	256	279	251	1053
16:00	250	256	276	267	1049
17:00	283	294	222	223	1022
18:00	217	214	180	190	801
19:00	177	170	139	155	641
20:00	112	115	115	88	430
21:00	80	80	74	40	274
22:00	55	62	48	27	192
23:00	30	26	26	27	109
				TOTAL	13246
AM PEAK HOUR			11:00-12:00		
VOLUME			1040		
PM PEAK HOUR			14:00-15:00		
VOLUME			1145		

DIRECTION:		SOUTHBOUND			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	19	19	14	19	71
01:00	10	6	7	4	27
02:00	4	2	9	13	28
03:00	8	14	16	16	54
04:00	20	13	24	22	79
05:00	27	28	39	52	146
06:00	33	46	45	72	196
07:00	87	88	120	148	443
08:00	138	152	176	165	631
09:00	173	203	237	224	837
10:00	281	251	266	255	1053
11:00	289	276	295	282	1142
12:00	291	292	313	311	1207
13:00	314	307	294	272	1187
14:00	264	235	266	266	1031
15:00	267	298	311	280	1156
16:00	287	273	282	277	1119
17:00	319	272	277	210	1078
18:00	263	201	182	171	817
19:00	158	128	114	121	521
20:00	124	91	82	61	358
21:00	67	53	44	55	219
22:00	35	44	28	24	131
23:00	27	25	19	10	81
				TOTAL	13612
AM PEAK HOUR			11:00-12:00		
VOLUME			1142		
PM PEAK HOUR			12:30-13:30		
VOLUME			1245		

TOTAL BI-DIRECTIONAL VOLUME	26858
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THE TRAFFIC SOLUTION - ADT WORKSHEET

CLIENT: OVERLAND TRAFFIC CONSULTANTS
 PROJECT: CITY OF LANCASTER
 LOCATION: 10TH STREET WEST S/O AVE K-8
 DATE: THURSDAY, DECEMBER 19, 2019
 FILE NO: 2_ADT

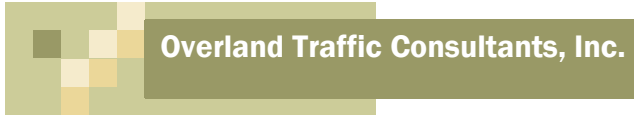
DIRECTION:		NORTHBOUND			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	26	18	20	10	74
01:00	13	14	12	8	47
02:00	5	4	13	18	40
03:00	13	11	12	9	45
04:00	8	7	8	13	36
05:00	17	17	21	23	78
06:00	33	21	48	67	169
07:00	67	114	135	148	464
08:00	145	135	163	161	604
09:00	164	180	180	183	707
10:00	228	189	202	222	841
11:00	265	264	276	272	1077
12:00	275	272	294	256	1097
13:00	245	267	254	236	1002
14:00	284	278	276	271	1109
15:00	255	275	281	261	1072
16:00	287	267	310	266	1130
17:00	273	270	258	212	1013
18:00	203	204	179	174	760
19:00	177	166	162	157	662
20:00	133	133	131	131	528
21:00	129	101	61	70	361
22:00	51	57	34	42	184
23:00	44	27	20	26	117
				TOTAL	13217
AM PEAK HOUR			11:00-12:00		
VOLUME			1077		
PM PEAK HOUR			16:00-17:00		
VOLUME			1130		

DIRECTION:		SOUTHBOUND			
TIME	00-15	15-30	30-45	45-60	HOUR TOTALS
00:00	20	14	10	14	58
01:00	6	9	6	8	29
02:00	5	5	7	8	25
03:00	6	13	14	20	53
04:00	22	19	27	31	99
05:00	27	27	38	54	146
06:00	37	63	60	69	229
07:00	92	93	100	145	430
08:00	151	162	180	179	672
09:00	187	176	206	191	760
10:00	239	226	261	224	950
11:00	286	248	278	252	1064
12:00	300	286	336	293	1215
13:00	274	301	304	276	1155
14:00	286	248	284	281	1099
15:00	285	267	270	289	1111
16:00	302	281	328	255	1166
17:00	320	285	271	226	1102
18:00	235	209	228	171	843
19:00	152	144	170	112	578
20:00	120	114	85	83	402
21:00	66	51	57	42	216
22:00	57	39	37	26	159
23:00	30	22	24	16	92
				TOTAL	13653
AM PEAK HOUR			11:00-12:00		
VOLUME			1064		
PM PEAK HOUR			12:00-13:00		
VOLUME			1215		

TOTAL BI-DIRECTIONAL VOLUME	26870
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APPENDIX B

DRIVEWAY LEVEL OF SERVICE WORKSHEETS



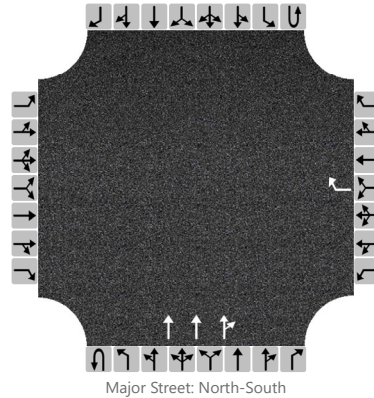
10TH STREET WEST NORTH DRIVEWAY

HCS7 Two-Way Stop-Control Report

General Information

Analyst	jto	Intersection	10th Street West driveway
Agency/Co.	otc	Jurisdiction	Lancaster
Date Performed	3/24/2020	East/West Street	North Project Driveway
Analysis Year	2020	North/South Street	10th Street West
Time Analyzed	am peak hour future	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	SWC 10th Street West and Avenue K-8		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	3	0	0	0	0	0
Configuration								R			T	TR				
Volume, V (veh/h)								85			850	104				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

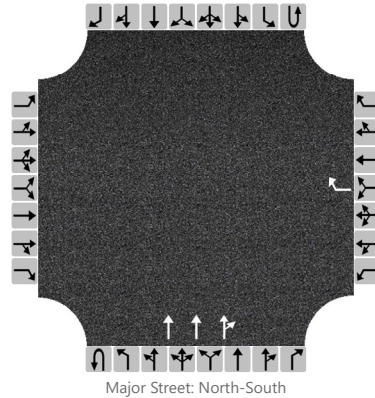
Flow Rate, v (veh/h)								92								
Capacity, c (veh/h)								428								
v/c Ratio								0.22								
95% Queue Length, Q ₉₅ (veh)								0.8								
Control Delay (s/veh)								15.7								
Level of Service, LOS								C								
Approach Delay (s/veh)					15.7											
Approach LOS					C											

HCS7 Two-Way Stop-Control Report

General Information

Analyst	jto	Intersection	10th Street West driveway
Agency/Co.	otc	Jurisdiction	Lancaster
Date Performed	3/25/2020	East/West Street	North Project Driveway
Analysis Year	2020	North/South Street	10th Street West
Time Analyzed	pm peak hour future	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	SWC 10th Street West and Avenue K-8		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	3	0	0	0	0	0
Configuration								R			T	TR				
Volume, V (veh/h)								73			1294	91				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								79								
Capacity, c (veh/h)								301								
v/c Ratio								0.26								
95% Queue Length, Q ₉₅ (veh)								1.0								
Control Delay (s/veh)								21.2								
Level of Service, LOS								C								
Approach Delay (s/veh)					21.2											
Approach LOS					C											



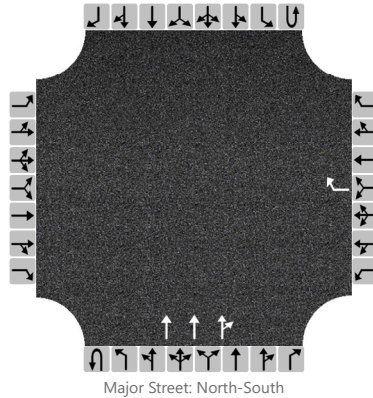
10TH STREET WEST SOUTH DRIVEWAY

HCS7 Two-Way Stop-Control Report

General Information

Analyst	jto	Intersection	10th Street West driveway
Agency/Co.	otc	Jurisdiction	Lancaster
Date Performed	3/25/2020	East/West Street	South Project Driveway
Analysis Year	2020	North/South Street	10th Street West
Time Analyzed	am peak hour future	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	SWC 10th Street West and Avenue K-8		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	3	0	0	0	0	0
Configuration								R			T	TR				
Volume, V (veh/h)								146			808	36				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

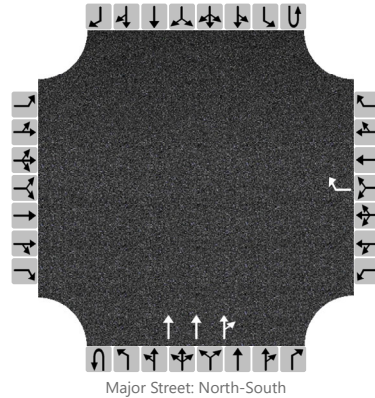
Flow Rate, v (veh/h)								159								
Capacity, c (veh/h)								468								
v/c Ratio								0.34								
95% Queue Length, Q ₉₅ (veh)								1.5								
Control Delay (s/veh)								16.6								
Level of Service, LOS								C								
Approach Delay (s/veh)					16.6											
Approach LOS					C											

HCS7 Two-Way Stop-Control Report

General Information

Analyst	jto	Intersection	10th Street West driveway
Agency/Co.	otc	Jurisdiction	Lancaster
Date Performed	3/25/2020	East/West Street	South Project Driveway
Analysis Year	2020	North/South Street	10th Street West
Time Analyzed	pm peak hour future	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	SWC 10th Street West and Avenue K-8		

Lanes



Vehicle Volumes and Adjustments

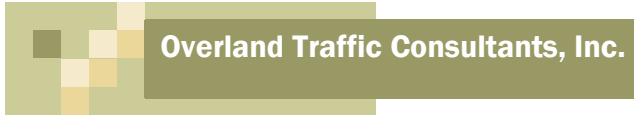
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	1	0	0	3	0	0	0	0	0
Configuration								R			T	TR				
Volume, V (veh/h)								127			1258	31				
Percent Heavy Vehicles (%)								3								
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)								138								
Capacity, c (veh/h)								325								
v/c Ratio								0.42								
95% Queue Length, Q ₉₅ (veh)								2.0								
Control Delay (s/veh)								24.0								
Level of Service, LOS								C								
Approach Delay (s/veh)					24.0											
Approach LOS					C											



AVENUE K – 8 DRIVEWAY

HCS7 Two-Way Stop-Control Report

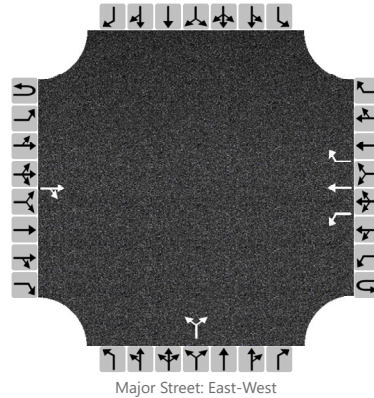
General Information

Analyst	jto
Agency/Co.	otc
Date Performed	3/24/2020
Analysis Year	2020
Time Analyzed	am peak hour future
Intersection Orientation	East-West
Project Description	SWC 10th Street West and Avenue K-8

Site Information

Intersection	Avenue K - 8 Driveway
Jurisdiction	Lancaster
East/West Street	Project Driveway
North/South Street	Driveway
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	1		0	1	0		0	0	0
Configuration				TR		L	T	R			LR					
Volume, V (veh/h)			42	240		20	89	0		135		19				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage					Left Only				1							

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1					7.1		6.2			
Critical Headway (sec)						4.13					6.43		6.23			
Base Follow-Up Headway (sec)						2.2					3.5		3.3			
Follow-Up Headway (sec)						2.23					3.53		3.33			

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						22					167					
Capacity, c (veh/h)						1247					712					
v/c Ratio						0.02					0.24					
95% Queue Length, Q ₉₅ (veh)						0.1					0.9					
Control Delay (s/veh)						7.9					11.6					
Level of Service, LOS						A					B					
Approach Delay (s/veh)					1.5				11.6							
Approach LOS									B							

HCS7 Two-Way Stop-Control Report

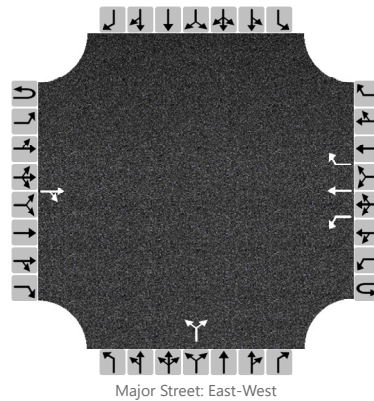
General Information

Analyst	jto
Agency/Co.	otc
Date Performed	3/24/2020
Analysis Year	2020
Time Analyzed	pm peak hour future
Intersection Orientation	East-West
Project Description	SWC 10th Street West and Avenue K-8

Site Information

Intersection	Avenue K - 8 Driveway
Jurisdiction	Lancaster
East/West Street	Project Driveway
North/South Street	Driveway
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	1		0	1	0		0	0	0
Configuration				TR		L	T	R			LR					
Volume, V (veh/h)			181	209		18	149	0		116		17				
Percent Heavy Vehicles (%)						3				3		3				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Left Only								1							

Critical and Follow-up Headways

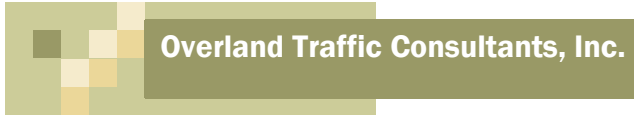
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						20					145					
Capacity, c (veh/h)						1129					601					
v/c Ratio						0.02					0.24					
95% Queue Length, Q ₉₅ (veh)						0.1					0.9					
Control Delay (s/veh)						8.2					12.9					
Level of Service, LOS						A					B					
Approach Delay (s/veh)					0.9				12.9							
Approach LOS									B							

APPENDIX C

INTERSECTION LEVEL OF SERVICE WORKSHEETS



EXISTING AM PEAK HOUR

Lanes, Volumes, Timings

3: 10TH STREET WEST & AVENUE K

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	286	555	84	185	644	173	77	394	96	131	427	157
Future Volume (vph)	286	555	84	185	644	173	77	394	96	131	427	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	12	10	10	10	10	10	12	10	10	10
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	220		0	200		200	150		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	100			100			90			115		
Satd. Flow (prot)	3090	3303	1583	3204	3303	1478	3204	4746	1583	3204	4518	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3074	3303	1550	3184	3303	1439	3166	4746	1548	3180	4518	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			188			173			74
Link Speed (mph)		40			40			50			50	
Link Distance (ft)		1348			1287			2628			1182	
Travel Time (s)		23.0			21.9			35.8			16.1	
Confl. Peds. (#/hr)	9		7	13		9	13		6	6		13
Confl. Bikes (#/hr)			2			1			2			3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	311	603	91	201	700	188	84	428	104	142	464	171
Shared Lane Traffic (%)												
Lane Group Flow (vph)	311	603	91	201	700	188	84	428	104	142	635	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	10.0	9.0	9.0	11.0	9.0	9.0	9.0	7.0	7.0	11.0	7.0	
Minimum Split (s)	19.0	39.0	39.0	16.0	16.0	16.0	17.0	16.0	16.0	19.0	34.0	
Total Split (s)	24.0	48.0	48.0	18.0	42.0	42.0	17.0	35.0	35.0	19.0	37.0	
Total Split (%)	20.0%	40.0%	40.0%	15.0%	35.0%	35.0%	14.2%	29.2%	29.2%	15.8%	30.8%	
Maximum Green (s)	19.0	41.0	41.0	13.0	35.0	35.0	12.0	28.0	28.0	14.0	30.0	
Yellow Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	

Lanes, Volumes, Timings

3: 10TH STREET WEST & AVENUE K

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		25.0	25.0		17.0	17.0		19.0	19.0		20.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effect Green (s)	16.6	35.9	35.9	12.2	31.4	31.4	9.5	36.2	36.2	11.7	41.2	
Actuated g/C Ratio	0.14	0.30	0.30	0.10	0.26	0.26	0.08	0.30	0.30	0.10	0.34	
v/c Ratio	0.73	0.61	0.16	0.62	0.81	0.37	0.33	0.30	0.18	0.46	0.40	
Control Delay	59.6	38.4	2.5	60.3	49.3	6.6	71.0	31.5	7.7	55.9	29.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.6	38.4	2.5	60.3	49.3	6.6	71.0	31.5	7.7	55.9	29.3	
LOS	E	D	A	E	D	A	E	C	A	E	C	
Approach Delay		41.7			44.0			32.9			34.1	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	119	206	0	77	263	0	35	48	0	54	126	
Queue Length 95th (ft)	167	255	17	118	327	55	63	128	46	86	177	
Internal Link Dist (ft)		1268			1207			2548			1102	
Turn Bay Length (ft)	200			220			200		200	150		
Base Capacity (vph)	489	1128	613	347	963	552	320	1431	587	373	1601	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.53	0.15	0.58	0.73	0.34	0.26	0.30	0.18	0.38	0.40	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 39.2

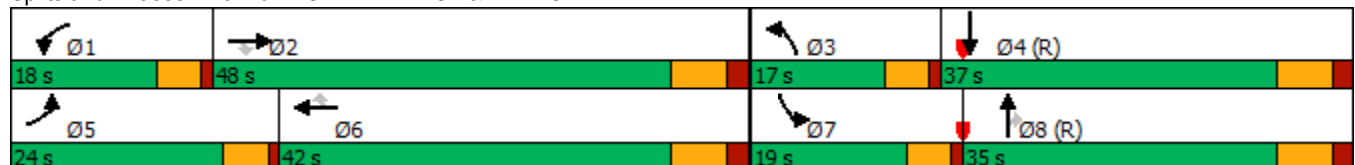
Intersection LOS: D

Intersection Capacity Utilization 77.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: 10TH STREET WEST & AVENUE K



Lanes, Volumes, Timings
6: 10TH STREET WEST & AVENUE K-8

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	15	134	45	34	10	58	628	18	9	718	152
Future Volume (vph)	120	15	134	45	34	10	58	628	18	9	718	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	12	10	11	11	12	11	13	10	11	13
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	180		180	200		300	120		0	160		160
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	120			90			90			90		
Satd. Flow (prot)	1652	1801	1583	1652	1801	1531	1770	4892	0	1652	4916	1636
Flt Permitted	0.650			0.747			0.950			0.950		
Satd. Flow (perm)	1129	1801	1554	1290	1801	1509	1761	4892	0	1645	4916	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			227			291		4				291
Link Speed (mph)		30			35			50			50	
Link Distance (ft)		1547			1329			2659			2628	
Travel Time (s)		35.2			25.9			36.3			35.8	
Confl. Peds. (#/hr)	1		5	5		1	5		4	4		5
Confl. Bikes (#/hr)						1						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	130	16	146	49	37	11	63	683	20	10	780	165
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	16	146	49	37	11	63	703	0	10	780	165
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						4
Detector Phase	5	2	2	1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	7.0	7.0	7.0	7.0	7.0	7.0	10.0		7.0	10.0	10.0
Minimum Split (s)	25.0	25.0	25.0	15.0	37.0	37.0	14.0	28.0		14.0	17.0	17.0
Total Split (s)	25.0	46.0	46.0	16.0	37.0	37.0	28.0	44.0		14.0	30.0	30.0
Total Split (%)	20.8%	38.3%	38.3%	13.3%	30.8%	30.8%	23.3%	36.7%		11.7%	25.0%	25.0%
Maximum Green (s)	18.0	39.0	39.0	9.0	31.0	31.0	21.0	37.0		7.0	23.0	23.0
Yellow Time (s)	5.0	5.0	5.0	5.0	4.0	4.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Max	Max	None	Max	Max	None	C-Max		None	C-Max	C-Max

Scenario 1 AM PEAK HOUR 12:00 am
jto

Synchro 11 Light Report
Page 3

Lanes, Volumes, Timings
6: 10TH STREET WEST & AVENUE K-8

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		20.0	20.0		24.0	24.0		14.0			15.0	15.0
Pedestrian Calls (#/hr)		0	0		0	0		0			0	0
Act Effect Green (s)	52.7	43.1	43.1	44.5	37.8	37.8	9.9	48.2		7.0	36.9	36.9
Actuated g/C Ratio	0.44	0.36	0.36	0.37	0.32	0.32	0.08	0.40		0.06	0.31	0.31
v/c Ratio	0.24	0.02	0.21	0.10	0.07	0.02	0.43	0.36		0.10	0.52	0.24
Control Delay	20.5	27.5	0.8	19.4	30.6	0.0	61.0	26.4		48.3	52.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	20.5	27.5	0.8	19.4	30.6	0.0	61.0	26.4		48.3	52.9	9.7
LOS	C	C	A	B	C	A	E	C		D	D	A
Approach Delay		11.0			21.4			29.2			45.4	
Approach LOS		B			C			C			D	
Queue Length 50th (ft)	58	8	0	21	20	0	47	130		8	221	18
Queue Length 95th (ft)	99	25	2	44	48	0	92	200		m20	272	67
Internal Link Dist (ft)		1467			1249			2579			2548	
Turn Bay Length (ft)	180		180	200		300	120			160		160
Base Capacity (vph)	595	646	703	519	567	674	309	1967		96	1513	687
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.22	0.02	0.21	0.09	0.07	0.02	0.20	0.36		0.10	0.52	0.24

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay: 33.7

Intersection LOS: C

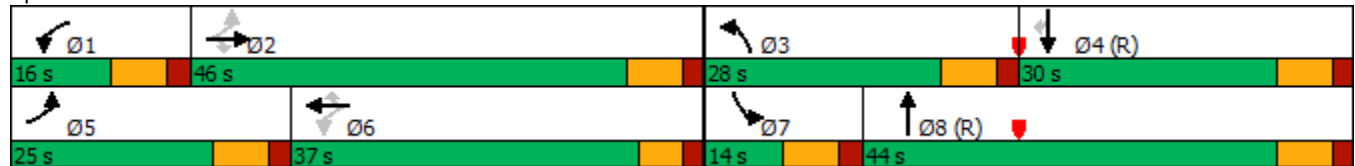
Intersection Capacity Utilization 66.7%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 6: 10TH STREET WEST & AVENUE K-8



Lanes, Volumes, Timings
9: 10TH STREET WEST & AVENUE L

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	1204	259	108	712	107	84	319	92	185	344	121
Future Volume (vph)	186	1204	259	108	712	107	84	319	92	185	344	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	16	10	11	16	10	11	12	10	11	16
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	285		0	280		0	195		220	150		0
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	100			120			90			90		
Satd. Flow (prot)	3204	4916	1794	3204	4809	0	3204	4916	1583	3204	3421	1794
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3203	4916	1767	3201	4809	0	3199	4916	1560	3199	3421	1794
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			282		32				174			186
Link Speed (mph)		55			50			50			50	
Link Distance (ft)		2045			2618			1300			2659	
Travel Time (s)		25.4			35.7			17.7			36.3	
Confl. Peds. (#/hr)	2		5	5		2	4		3	3		4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	202	1309	282	117	774	116	91	347	100	201	374	132
Shared Lane Traffic (%)												
Lane Group Flow (vph)	202	1309	282	117	890	0	91	347	100	201	374	132
Turn Type	Prot	NA	custom	Prot	NA		Prot	NA	custom	Prot	NA	Over
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases			4						2			
Detector Phase	5	2	4	1	6		3	8	2	7	4	5
Switch Phase												
Minimum Initial (s)	10.0	9.0	10.0	11.0	8.0		12.0	9.0	9.0	12.0	10.0	10.0
Minimum Split (s)	16.0	16.0	17.0	17.0	15.0		17.0	16.0	16.0	17.0	17.0	16.0
Total Split (s)	16.0	37.0	23.0	17.0	38.0		17.0	23.0	37.0	17.0	23.0	16.0
Total Split (%)	17.0%	39.4%	24.5%	18.1%	40.4%		18.1%	24.5%	39.4%	18.1%	24.5%	17.0%
Maximum Green (s)	10.0	30.0	16.0	11.0	31.0		12.0	16.0	30.0	12.0	16.0	10.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0		5.0	7.0	7.0	5.0	7.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max	C-Max	None	Max		None	C-Max	Max	None	C-Max	None

Lanes, Volumes, Timings
9: 10TH STREET WEST & AVENUE L

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		27.0	33.0		25.0			28.0	27.0		33.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	10.0	30.0	19.4	11.0	31.0		12.0	16.0	30.0	12.0	19.4	10.0
Actuated g/C Ratio	0.11	0.32	0.21	0.12	0.33		0.13	0.17	0.32	0.13	0.21	0.11
v/c Ratio	0.59	0.83	0.48	0.31	0.55		0.22	0.42	0.16	0.49	0.53	0.37
Control Delay	47.9	35.5	7.5	40.6	26.4		38.4	36.6	0.8	42.7	38.0	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	35.5	7.5	40.6	26.4		38.4	36.6	0.8	42.7	38.0	5.1
LOS	D	D	A	D	C		D	D	A	D	D	A
Approach Delay		32.5			28.1			30.2			33.2	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	60	263	0	33	152		25	68	0	58	110	0
Queue Length 95th (ft)	96	321	68	60	194		48	98	3	93	159	21
Internal Link Dist (ft)		1965			2538			1220			2579	
Turn Bay Length (ft)	285			280			195		220	150		
Base Capacity (vph)	340	1568	588	374	1607		409	836	616	409	706	357
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.83	0.48	0.31	0.55		0.22	0.42	0.16	0.49	0.53	0.37

Intersection Summary

Area Type: Other

Cycle Length: 94

Actuated Cycle Length: 94

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 31.2

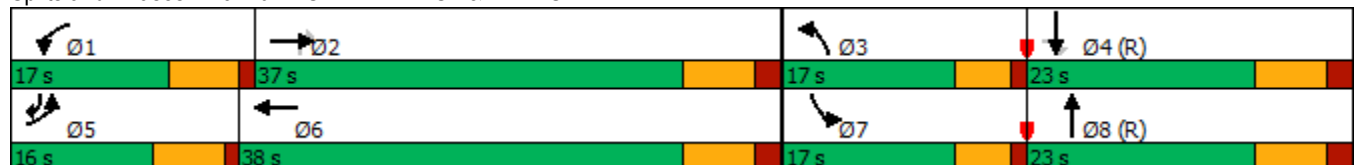
Intersection LOS: C

Intersection Capacity Utilization 101.7%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 9: 10TH STREET WEST & AVENUE L



EXISTING AM PEAK HOUR WITH PROJECT

Lanes, Volumes, Timings

3: 10TH STREET WEST & AVENUE K

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	286	555	96	209	644	173	89	446	119	131	481	157
Future Volume (vph)	286	555	96	209	644	173	89	446	119	131	481	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	12	10	10	10	10	10	12	10	10	10
Grade (%)	0%		0%		0%		0%		0%		0%	
Storage Length (ft)	200		0	220		0	200		200	150		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	100			100			90			115		
Satd. Flow (prot)	3090	3303	1583	3204	3303	1478	3204	4746	1583	3204	4535	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3074	3303	1550	3184	3303	1439	3169	4746	1548	3182	4535	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			127			188			173			66
Link Speed (mph)		40			40			50			50	
Link Distance (ft)		1348			1287			2628			1182	
Travel Time (s)		23.0			21.9			35.8			16.1	
Confl. Peds. (#/hr)	9		7	13		9	13		6	6		13
Confl. Bikes (#/hr)			2			1			2			3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	311	603	104	227	700	188	97	485	129	142	523	171
Shared Lane Traffic (%)												
Lane Group Flow (vph)	311	603	104	227	700	188	97	485	129	142	694	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	10.0	9.0	9.0	11.0	9.0	9.0	9.0	7.0	7.0	11.0	7.0	
Minimum Split (s)	19.0	39.0	39.0	16.0	16.0	16.0	17.0	16.0	16.0	19.0	34.0	
Total Split (s)	24.0	48.0	48.0	18.0	42.0	42.0	17.0	35.0	35.0	19.0	37.0	
Total Split (%)	20.0%	40.0%	40.0%	15.0%	35.0%	35.0%	14.2%	29.2%	29.2%	15.8%	30.8%	
Maximum Green (s)	19.0	41.0	41.0	13.0	35.0	35.0	12.0	28.0	28.0	14.0	30.0	
Yellow Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	

Lanes, Volumes, Timings

3: 10TH STREET WEST & AVENUE K

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		25.0	25.0		17.0	17.0		19.0	19.0		20.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effect Green (s)	16.6	35.6	35.6	12.4	31.4	31.4	9.7	36.2	36.2	11.7	38.2	
Actuated g/C Ratio	0.14	0.30	0.30	0.10	0.26	0.26	0.08	0.30	0.30	0.10	0.32	
v/c Ratio	0.73	0.61	0.19	0.68	0.81	0.37	0.37	0.34	0.22	0.46	0.47	
Control Delay	59.6	38.6	3.6	63.0	49.3	6.6	65.0	55.7	19.2	55.9	31.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.6	38.6	3.6	63.0	49.3	6.6	65.0	55.7	19.2	55.9	31.9	
LOS	E	D	A	E	D	A	E	E	B	E	C	
Approach Delay		41.4			44.9			50.3			36.0	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	119	207	0	88	263	0	41	110	26	54	144	
Queue Length 95th (ft)	167	255	26	131	327	55	m70	150	78	86	200	
Internal Link Dist (ft)		1268			1207			2548			1102	
Turn Bay Length (ft)	200			220			200		200	150		
Base Capacity (vph)	489	1128	613	347	963	552	320	1431	587	373	1489	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.53	0.17	0.65	0.73	0.34	0.30	0.34	0.22	0.38	0.47	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 43.0

Intersection LOS: D

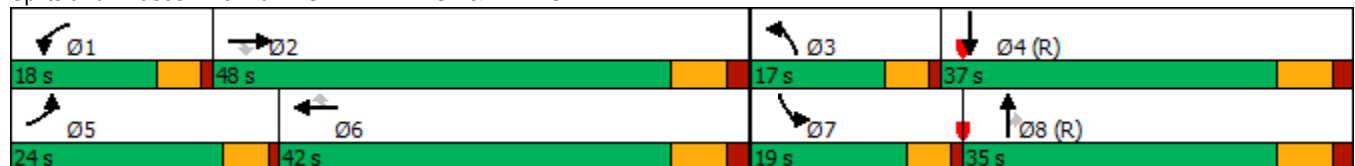
Intersection Capacity Utilization 77.7%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 3: 10TH STREET WEST & AVENUE K



Lanes, Volumes, Timings
6: 10TH STREET WEST & AVENUE K-8

03/26/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	75	134	180	34	10	116	801	18	189	718	152
Future Volume (vph)	120	75	134	180	34	10	116	801	18	189	718	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	12	10	11	11	12	11	13	10	11	13
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	180		180	200		300	300		0	160		160
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	120			90			90			90		
Satd. Flow (prot)	1652	1801	1583	1652	1801	1531	1770	4898	0	1652	4916	1636
Flt Permitted	0.708			0.704			0.950			0.950		
Satd. Flow (perm)	1230	1801	1554	1217	1801	1509	1761	4898	0	1646	4916	1579
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			164			227			2			227
Link Speed (mph)		30			35			50			50	
Link Distance (ft)		1547			1329			2659			2628	
Travel Time (s)		35.2			25.9			36.3			35.8	
Confl. Peds. (#/hr)	1		5	5		1	5		4	4		5
Confl. Bikes (#/hr)						1						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	130	82	146	196	37	11	126	871	20	205	780	165
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	82	146	196	37	11	126	891	0	205	780	165
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						4
Detector Phase	5	2	2	1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	7.0	7.0	7.0	7.0	7.0	7.0	10.0		7.0	10.0	10.0
Minimum Split (s)	25.0	25.0	25.0	15.0	37.0	37.0	14.0	28.0		14.0	17.0	17.0
Total Split (s)	25.0	45.0	45.0	17.0	37.0	37.0	23.0	32.0		26.0	35.0	35.0
Total Split (%)	20.8%	37.5%	37.5%	14.2%	30.8%	30.8%	19.2%	26.7%		21.7%	29.2%	29.2%
Maximum Green (s)	18.0	38.0	38.0	10.0	31.0	31.0	16.0	25.0		19.0	28.0	28.0
Yellow Time (s)	5.0	5.0	5.0	5.0	4.0	4.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Max	Max	None	Max	Max	None	C-Max		None	C-Max	C-Max

Lanes, Volumes, Timings
6: 10TH STREET WEST & AVENUE K-8

03/26/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		20.0	20.0		24.0	24.0		14.0			15.0	15.0
Pedestrian Calls (#/hr)		0	0		0	0		0			0	0
Act Effect Green (s)	49.3	38.1	38.1	46.7	37.8	37.8	13.2	26.3		17.7	30.8	30.8
Actuated g/C Ratio	0.41	0.32	0.32	0.39	0.32	0.32	0.11	0.22		0.15	0.26	0.26
v/c Ratio	0.24	0.14	0.24	0.39	0.07	0.02	0.65	0.83		0.84	0.62	0.29
Control Delay	20.6	30.3	4.3	23.9	30.6	0.1	66.4	52.7		78.0	57.3	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	20.6	30.3	4.3	23.9	30.6	0.1	66.4	52.7		78.0	57.3	15.0
LOS	C	C	A	C	C	A	E	D		E	E	B
Approach Delay		16.2			23.8			54.4			54.9	
Approach LOS		B			C			D			D	
Queue Length 50th (ft)	58	45	0	91	20	0	94	246		166	224	21
Queue Length 95th (ft)	99	85	36	144	48	0	157	#314		#279	273	m84
Internal Link Dist (ft)		1467			1249			2579			2548	
Turn Bay Length (ft)	180		180	200		300	300			160		160
Base Capacity (vph)	627	571	605	510	567	630	236	1074		261	1262	573
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.21	0.14	0.24	0.38	0.07	0.02	0.53	0.83		0.79	0.62	0.29

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 47.0

Intersection LOS: D

Intersection Capacity Utilization 70.5%

ICU Level of Service C

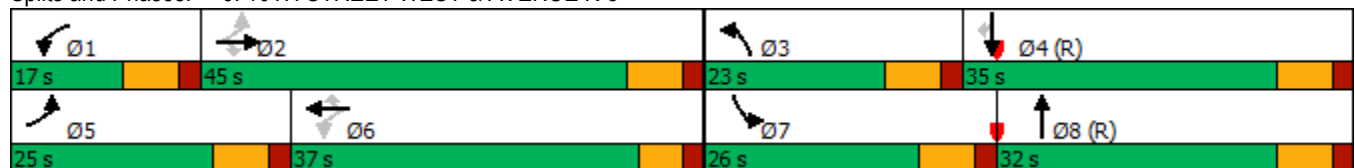
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 6: 10TH STREET WEST & AVENUE K-8



Lanes, Volumes, Timings
9: 10TH STREET WEST & AVENUE L

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	  		 	 	
Traffic Volume (vph)	206	1204	259	108	712	119	84	355	92	197	379	140
Future Volume (vph)	206	1204	259	108	712	119	84	355	92	197	379	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	16	10	11	16	10	11	12	10	11	16
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	285		0	280		0	195		220	150		0
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	100			120			90			90		
Satd. Flow (prot)	3204	4916	1794	3204	4803	0	3204	4916	1583	3204	3421	1794
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3203	4916	1767	3201	4803	0	3199	4916	1560	3200	3421	1794
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			282		36				174			186
Link Speed (mph)		55			50			50			50	
Link Distance (ft)		2045			2618			1300			2659	
Travel Time (s)		25.4			35.7			17.7			36.3	
Confl. Peds. (#/hr)	2		5	5		2	4		3	3		4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	224	1309	282	117	774	129	91	386	100	214	412	152
Shared Lane Traffic (%)												
Lane Group Flow (vph)	224	1309	282	117	903	0	91	386	100	214	412	152
Turn Type	Prot	NA	custom	Prot	NA		Prot	NA	custom	Prot	NA	Over
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases			4						2			
Detector Phase	5	2	4	1	6		3	8	2	7	4	5
Switch Phase												
Minimum Initial (s)	10.0	9.0	10.0	11.0	8.0		12.0	9.0	9.0	12.0	10.0	10.0
Minimum Split (s)	16.0	16.0	17.0	17.0	15.0		17.0	16.0	16.0	17.0	17.0	16.0
Total Split (s)	17.0	37.0	23.0	17.0	37.0		17.0	23.0	37.0	17.0	23.0	17.0
Total Split (%)	18.1%	39.4%	24.5%	18.1%	39.4%		18.1%	24.5%	39.4%	18.1%	24.5%	18.1%
Maximum Green (s)	11.0	30.0	16.0	11.0	30.0		12.0	16.0	30.0	12.0	16.0	11.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0		5.0	7.0	7.0	5.0	7.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max	C-Max	None	Max		None	C-Max	Max	None	C-Max	None

Lanes, Volumes, Timings
9: 10TH STREET WEST & AVENUE L

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		27.0	33.0		25.0			28.0	27.0		33.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	10.7	30.0	19.4	11.0	30.3		12.0	16.0	30.0	12.0	19.4	10.7
Actuated g/C Ratio	0.11	0.32	0.21	0.12	0.32		0.13	0.17	0.32	0.13	0.21	0.11
v/c Ratio	0.62	0.83	0.48	0.31	0.57		0.22	0.46	0.16	0.52	0.58	0.41
Control Delay	47.6	35.5	7.5	40.6	27.1		38.4	37.2	0.8	43.4	39.0	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	35.5	7.5	40.6	27.1		38.4	37.2	0.8	43.4	39.0	6.9
LOS	D	D	A	D	C		D	D	A	D	D	A
Approach Delay		32.6			28.7			31.1			34.0	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	66	263	0	33	156		25	76	0	62	123	0
Queue Length 95th (ft)	104	321	68	60	200		48	108	3	98	174	36
Internal Link Dist (ft)		1965			2538			1220			2579	
Turn Bay Length (ft)	285			280			195		220	150		
Base Capacity (vph)	374	1568	588	374	1573		409	836	616	409	706	374
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.83	0.48	0.31	0.57		0.22	0.46	0.16	0.52	0.58	0.41

Intersection Summary

Area Type: Other

Cycle Length: 94

Actuated Cycle Length: 94

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 31.7

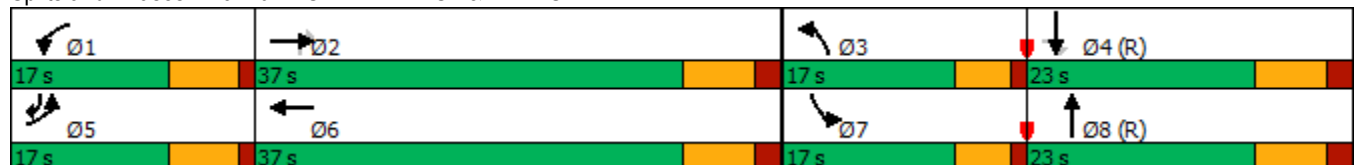
Intersection LOS: C

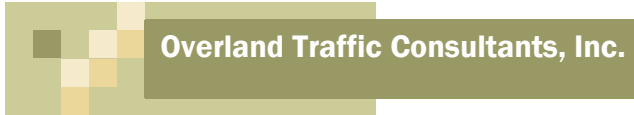
Intersection Capacity Utilization 101.7%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 9: 10TH STREET WEST & AVENUE L





EXISTING PM PEAK HOUR

Lanes, Volumes, Timings

3: 10TH STREET WEST & AVENUE K

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	320	944	187	283	723	194	186	651	202	234	709	209
Future Volume (vph)	320	944	187	283	723	194	186	651	202	234	709	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	12	10	10	10	10	10	12	10	10	10
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	200		0	220		0	200		200	150		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	100			100			90			115		
Satd. Flow (prot)	3090	3303	1583	3204	3303	1478	3204	4746	1583	3204	4552	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3076	3303	1550	3193	3303	1439	3181	4746	1548	3188	4552	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			188			211			220			59
Link Speed (mph)		40			40			50			50	
Link Distance (ft)		1348			1287			2628			1182	
Travel Time (s)		23.0			21.9			35.8			16.1	
Confl. Peds. (#/hr)	9		7	13		9	13		6	6		13
Confl. Bikes (#/hr)			2			1			2			3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	348	1026	203	308	786	211	202	708	220	254	771	227
Shared Lane Traffic (%)												
Lane Group Flow (vph)	348	1026	203	308	786	211	202	708	220	254	998	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	10.0	9.0	9.0	11.0	9.0	9.0	9.0	7.0	7.0	11.0	7.0	
Minimum Split (s)	19.0	39.0	39.0	16.0	16.0	16.0	17.0	16.0	16.0	19.0	34.0	
Total Split (s)	24.0	48.0	48.0	18.0	42.0	42.0	17.0	35.0	35.0	19.0	37.0	
Total Split (%)	20.0%	40.0%	40.0%	15.0%	35.0%	35.0%	14.2%	29.2%	29.2%	15.8%	30.8%	
Maximum Green (s)	19.0	41.0	41.0	13.0	35.0	35.0	12.0	28.0	28.0	14.0	30.0	
Yellow Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	

Lanes, Volumes, Timings

3: 10TH STREET WEST & AVENUE K

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		25.0	25.0		17.0	17.0		19.0	19.0		20.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effect Green (s)	17.4	40.4	40.4	13.0	36.0	36.0	11.3	29.4	29.4	13.2	31.3	
Actuated g/C Ratio	0.14	0.34	0.34	0.11	0.30	0.30	0.09	0.24	0.24	0.11	0.26	
v/c Ratio	0.78	0.92	0.31	0.89	0.79	0.36	0.67	0.61	0.40	0.72	0.81	
Control Delay	62.0	52.5	6.4	79.9	45.8	6.2	76.7	38.0	12.6	63.8	45.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	62.0	52.5	6.4	79.9	45.8	6.2	76.7	38.0	12.6	63.8	45.5	
LOS	E	D	A	E	D	A	E	D	B	E	D	
Approach Delay		48.7			47.4			40.0			49.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	134	396	8	123	296	0	85	91	3	98	255	
Queue Length 95th (ft)	185	#525	60	#204	376	57	125	221	124	144	312	
Internal Link Dist (ft)		1268			1207			2548			1102	
Turn Bay Length (ft)	200			220			200		200	150		
Base Capacity (vph)	489	1128	653	347	990	579	320	1162	545	373	1231	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.71	0.91	0.31	0.89	0.79	0.36	0.63	0.61	0.40	0.68	0.81	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 46.6

Intersection LOS: D

Intersection Capacity Utilization 86.2%

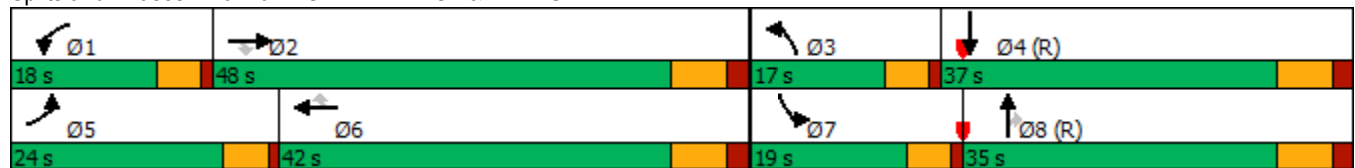
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 3: 10TH STREET WEST & AVENUE K



Lanes, Volumes, Timings
6: 10TH STREET WEST & AVENUE K-8

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	90	154	54	75	20	168	915	84	7	1009	363
Future Volume (vph)	238	90	154	54	75	20	168	915	84	7	1009	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	12	10	11	11	12	11	13	10	11	13
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	180		180	200		300	120		0	160		160
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	120			90			90			90		
Satd. Flow (prot)	1652	1801	1583	1652	1801	1531	1770	4839	0	1652	4916	1636
Flt Permitted	0.581			0.694			0.950			0.950		
Satd. Flow (perm)	1009	1801	1554	1200	1801	1509	1764	4839	0	1647	4916	1578
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			227			291			13			291
Link Speed (mph)		30			35			50			50	
Link Distance (ft)		1547			1329			2659			2628	
Travel Time (s)		35.2			25.9			36.3			35.8	
Confl. Peds. (#/hr)	1		5	5		1	5		4	4		5
Confl. Bikes (#/hr)						1						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	259	98	167	59	82	22	183	995	91	8	1097	395
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	98	167	59	82	22	183	1086	0	8	1097	395
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						4
Detector Phase	5	2	2	1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	7.0	7.0	7.0	7.0	7.0	7.0	10.0		7.0	10.0	10.0
Minimum Split (s)	25.0	25.0	25.0	15.0	37.0	37.0	14.0	28.0		14.0	17.0	17.0
Total Split (s)	25.0	46.0	46.0	16.0	37.0	37.0	28.0	44.0		14.0	30.0	30.0
Total Split (%)	20.8%	38.3%	38.3%	13.3%	30.8%	30.8%	23.3%	36.7%		11.7%	25.0%	25.0%
Maximum Green (s)	18.0	39.0	39.0	9.0	31.0	31.0	21.0	37.0		7.0	23.0	23.0
Yellow Time (s)	5.0	5.0	5.0	5.0	4.0	4.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Max	Max	None	Max	Max	None	C-Max		None	C-Max	C-Max

Lanes, Volumes, Timings
6: 10TH STREET WEST & AVENUE K-8

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		20.0	20.0		24.0	24.0		14.0			15.0	15.0
Pedestrian Calls (#/hr)		0	0		0	0		0			0	0
Act Effect Green (s)	55.0	42.9	42.9	39.9	32.9	32.9	17.0	48.2		7.0	27.0	27.0
Actuated g/C Ratio	0.46	0.36	0.36	0.33	0.27	0.27	0.14	0.40		0.06	0.22	0.22
v/c Ratio	0.47	0.15	0.24	0.14	0.17	0.04	0.73	0.56		0.08	0.99	0.68
Control Delay	24.2	28.9	1.8	20.3	35.2	0.1	66.0	29.5		42.4	85.7	38.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	24.2	28.9	1.8	20.3	35.2	0.1	66.0	29.5		42.4	85.7	38.4
LOS	C	C	A	C	D	A	E	C		D	F	D
Approach Delay		17.9			25.1			34.7			73.0	
Approach LOS		B			C			C			E	
Queue Length 50th (ft)	126	53	0	25	49	0	137	221		6	~335	170
Queue Length 95th (ft)	192	97	15	51	93	0	210	324		m11	m#473	m241
Internal Link Dist (ft)		1467			1249			2579			2548	
Turn Bay Length (ft)	180		180	200		300	120			160		160
Base Capacity (vph)	558	643	701	442	494	625	309	1951		96	1106	580
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.46	0.15	0.24	0.13	0.17	0.04	0.59	0.56		0.08	0.99	0.68

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 48.4

Intersection LOS: D

Intersection Capacity Utilization 75.3%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

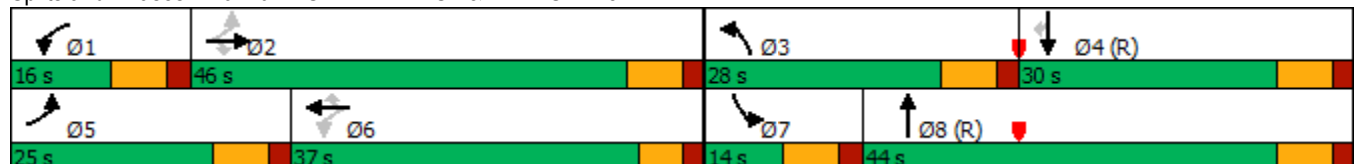
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 6: 10TH STREET WEST & AVENUE K-8



Lanes, Volumes, Timings
9: 10TH STREET WEST & AVENUE L

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑	↗	↔↔	↑↑↑		↔↔	↑↑↑	↗	↔↔	↑↑	↗
Traffic Volume (vph)	271	973	224	275	1284	177	398	717	169	262	664	380
Future Volume (vph)	271	973	224	275	1284	177	398	717	169	262	664	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	16	10	11	16	10	11	12	10	11	16
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	285		0	280		0	195		220	150		0
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	100			120			90			90		
Satd. Flow (prot)	3204	4916	1794	3204	4819	0	3204	4916	1583	3204	3421	1794
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3204	4916	1767	3199	4819	0	3201	4916	1560	3202	3421	1794
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			243		27				184			360
Link Speed (mph)		55			50			50			50	
Link Distance (ft)		2045			2618			1300			2659	
Travel Time (s)		25.4			35.7			17.7			36.3	
Confl. Peds. (#/hr)	2		5	5		2	4		3	3		4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	295	1058	243	299	1396	192	433	779	184	285	722	413
Shared Lane Traffic (%)												
Lane Group Flow (vph)	295	1058	243	299	1588	0	433	779	184	285	722	413
Turn Type	Prot	NA	custom	Prot	NA		Prot	NA	custom	Prot	NA	Over
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases			4						2			
Detector Phase	5	2	4	1	6		3	8	2	7	4	5
Switch Phase												
Minimum Initial (s)	10.0	9.0	10.0	11.0	8.0		12.0	9.0	9.0	12.0	10.0	10.0
Minimum Split (s)	16.0	16.0	17.0	17.0	15.0		17.0	16.0	16.0	17.0	17.0	16.0
Total Split (s)	16.0	34.0	26.0	17.0	35.0		17.0	26.0	34.0	17.0	26.0	16.0
Total Split (%)	17.0%	36.2%	27.7%	18.1%	37.2%		18.1%	27.7%	36.2%	18.1%	27.7%	17.0%
Maximum Green (s)	10.0	27.0	19.0	11.0	28.0		12.0	19.0	27.0	12.0	19.0	10.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0		5.0	7.0	7.0	5.0	7.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max	C-Max	None	Max		None	C-Max	Max	None	C-Max	None

Lanes, Volumes, Timings

9: 10TH STREET WEST & AVENUE L

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		27.0	33.0		25.0			28.0	27.0		33.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	10.0	27.0	19.0	11.0	28.0		12.0	19.0	27.0	12.0	19.0	10.0
Actuated g/C Ratio	0.11	0.29	0.20	0.12	0.30		0.13	0.20	0.29	0.13	0.20	0.11
v/c Ratio	0.87	0.75	0.44	0.80	1.09		1.06	0.78	0.32	0.70	1.04	0.81
Control Delay	67.1	34.4	7.2	57.6	85.0		101.8	42.1	5.7	49.2	84.3	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.1	34.4	7.2	57.6	85.0		101.8	42.1	5.7	49.2	84.3	21.0
LOS	E	C	A	E	F		F	D	A	D	F	C
Approach Delay		36.3			80.7			55.8			58.8	
Approach LOS		D			F			E			E	
Queue Length 50th (ft)	90	209	0	90	~391		~147	162	0	85	~247	30
Queue Length 95th (ft)	#162	260	61	#155	#487		#242	208	48	#129	#362	#169
Internal Link Dist (ft)		1965			2538			1220			2579	
Turn Bay Length (ft)	285			280			195		220	150		
Base Capacity (vph)	340	1412	551	374	1454		409	993	579	409	691	512
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.75	0.44	0.80	1.09		1.06	0.78	0.32	0.70	1.04	0.81

Intersection Summary

Area Type: Other

Cycle Length: 94

Actuated Cycle Length: 94

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.09

Intersection Signal Delay: 59.0

Intersection LOS: E

Intersection Capacity Utilization 103.0%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

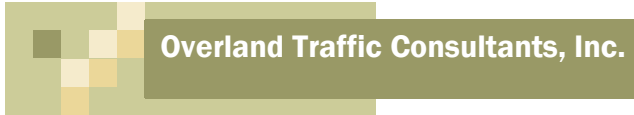
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 9: 10TH STREET WEST & AVENUE L

 Ø1	 Ø2	 Ø3	 Ø4 (R)
17 s	34 s	17 s	26 s
 Ø5	 Ø6	 Ø7	 Ø8 (R)
16 s	35 s	17 s	26 s



EXISTING PM PEAK HOUR WITH PROJECT

Lanes, Volumes, Timings

3: 10TH STREET WEST & AVENUE K

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	320	944	197	304	723	194	196	696	222	234	756	209
Future Volume (vph)	320	944	197	304	723	194	196	696	222	234	756	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	9	10	12	10	10	10	10	10	12	10	10	10
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	200		0	220		0	200		200	150		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	100			100			90			115		
Satd. Flow (prot)	3090	3303	1583	3204	3303	1478	3204	4746	1583	3204	4563	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3076	3303	1550	3193	3303	1439	3182	4746	1548	3189	4563	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			199			211			241			55
Link Speed (mph)		40			40			50			50	
Link Distance (ft)		1348			1287			2628			1182	
Travel Time (s)		23.0			21.9			35.8			16.1	
Confl. Peds. (#/hr)	9		7	13		9	13		6	6		13
Confl. Bikes (#/hr)			2			1			2			3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	348	1026	214	330	786	211	213	757	241	254	822	227
Shared Lane Traffic (%)												
Lane Group Flow (vph)	348	1026	214	330	786	211	213	757	241	254	1049	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	
Switch Phase												
Minimum Initial (s)	10.0	9.0	9.0	11.0	9.0	9.0	9.0	7.0	7.0	11.0	7.0	
Minimum Split (s)	19.0	39.0	39.0	16.0	16.0	16.0	17.0	16.0	16.0	19.0	34.0	
Total Split (s)	24.0	48.0	48.0	18.0	42.0	42.0	17.0	35.0	35.0	19.0	37.0	
Total Split (%)	20.0%	40.0%	40.0%	15.0%	35.0%	35.0%	14.2%	29.2%	29.2%	15.8%	30.8%	
Maximum Green (s)	19.0	41.0	41.0	13.0	35.0	35.0	12.0	28.0	28.0	14.0	30.0	
Yellow Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	7.0	5.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	

Lanes, Volumes, Timings

3: 10TH STREET WEST & AVENUE K

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		25.0	25.0		17.0	17.0		19.0	19.0		20.0	
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	
Act Effect Green (s)	17.4	40.4	40.4	13.0	36.0	36.0	11.4	29.4	29.4	13.2	31.2	
Actuated g/C Ratio	0.14	0.34	0.34	0.11	0.30	0.30	0.10	0.24	0.24	0.11	0.26	
v/c Ratio	0.78	0.92	0.33	0.95	0.79	0.36	0.70	0.65	0.43	0.72	0.86	
Control Delay	62.0	52.5	6.3	90.8	45.8	6.2	68.7	65.9	26.6	63.8	48.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	62.0	52.5	6.3	90.8	45.8	6.2	68.7	65.9	26.6	63.8	48.3	
LOS	E	D	A	F	D	A	E	E	C	E	D	
Approach Delay		48.4			50.7			58.6			51.4	
Approach LOS		D			D			E			D	
Queue Length 50th (ft)	134	396	8	132	296	0	89	193	82	98	274	
Queue Length 95th (ft)	185	#525	61	#225	376	57	m113	238	m116	144	#351	
Internal Link Dist (ft)		1268			1207			2548			1102	
Turn Bay Length (ft)	200			220			200		200	150		
Base Capacity (vph)	489	1128	660	347	990	579	320	1162	560	373	1226	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.71	0.91	0.32	0.95	0.79	0.36	0.67	0.65	0.43	0.68	0.86	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 51.9

Intersection LOS: D

Intersection Capacity Utilization 86.2%

ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: 10TH STREET WEST & AVENUE K

			
Ø1	Ø2	Ø3	Ø4 (R)
18 s	48 s	17 s	37 s
			
Ø5	Ø6	Ø7	Ø8 (R)
24 s	42 s	19 s	35 s

Lanes, Volumes, Timings
6: 10TH STREET WEST & AVENUE K-8

03/26/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	238	142	154	170	75	20	218	1065	84	164	1009	363
Future Volume (vph)	238	142	154	170	75	20	218	1065	84	164	1009	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	12	10	11	11	12	11	13	10	11	13
Grade (%)	0%		0%		0%		0%		0%		0%	
Storage Length (ft)	180		180	200		300	300		0	160		160
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (ft)	120			90			90			90		
Satd. Flow (prot)	1652	1801	1583	1652	1801	1531	1770	4851	0	1652	4916	1636
Flt Permitted	0.594			0.659			0.950			0.950		
Satd. Flow (perm)	1032	1801	1554	1140	1801	1509	1764	4851	0	1648	4916	1579
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			167			164		10				285
Link Speed (mph)		30			35			50			50	
Link Distance (ft)		1547			1329			2659			2628	
Travel Time (s)		35.2			25.9			36.3			35.8	
Confl. Peds. (#/hr)	1		5	5		1	5		4	4		5
Confl. Bikes (#/hr)						1						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	259	154	167	185	82	22	237	1158	91	178	1097	395
Shared Lane Traffic (%)												
Lane Group Flow (vph)	259	154	167	185	82	22	237	1249	0	178	1097	395
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6						4
Detector Phase	5	2	2	1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	7.0	7.0	7.0	7.0	7.0	7.0	10.0		7.0	10.0	10.0
Minimum Split (s)	24.0	24.0	24.0	15.0	37.0	37.0	16.0	28.0		16.0	17.0	17.0
Total Split (s)	24.0	44.0	44.0	17.0	37.0	37.0	24.0	38.0		21.0	35.0	35.0
Total Split (%)	20.0%	36.7%	36.7%	14.2%	30.8%	30.8%	20.0%	31.7%		17.5%	29.2%	29.2%
Maximum Green (s)	17.0	37.0	37.0	10.0	31.0	31.0	17.0	31.0		14.0	28.0	28.0
Yellow Time (s)	5.0	5.0	5.0	5.0	4.0	4.0	5.0	5.0		5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	7.0	7.0	7.0	7.0	6.0	6.0	7.0	7.0		7.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	Max	Max	None	Max	Max	None	C-Max		None	C-Max	C-Max

Lanes, Volumes, Timings
6: 10TH STREET WEST & AVENUE K-8

03/26/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		20.0	20.0		24.0	24.0		14.0			15.0	15.0
Pedestrian Calls (#/hr)		0	0		0	0		0			0	0
Act Effect Green (s)	52.8	37.2	37.2	41.2	32.4	32.4	17.0	31.0		14.0	28.0	28.0
Actuated g/C Ratio	0.44	0.31	0.31	0.34	0.27	0.27	0.14	0.26		0.12	0.23	0.23
v/c Ratio	0.49	0.28	0.28	0.43	0.17	0.04	0.95	0.99		0.93	0.96	0.67
Control Delay	25.1	33.0	5.8	25.7	35.4	0.1	96.5	67.5		89.7	81.1	38.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	25.1	33.0	5.8	25.7	35.4	0.1	96.5	67.5		89.7	81.1	38.3
LOS	C	C	A	C	D	A	F	E		F	F	D
Approach Delay		21.7			26.5			72.2			71.9	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	128	90	0	87	50	0	184	352		145	327	177
Queue Length 95th (ft)	195	147	50	139	93	0	#343	#459		m#207	m#401	m224
Internal Link Dist (ft)		1467			1249			2579			2548	
Turn Bay Length (ft)	180		180	200		300	300			160		160
Base Capacity (vph)	552	557	596	435	486	527	250	1260		192	1147	586
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.47	0.28	0.28	0.43	0.17	0.04	0.95	0.99		0.93	0.96	0.67

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 61.5

Intersection LOS: E

Intersection Capacity Utilization 93.1%

ICU Level of Service F

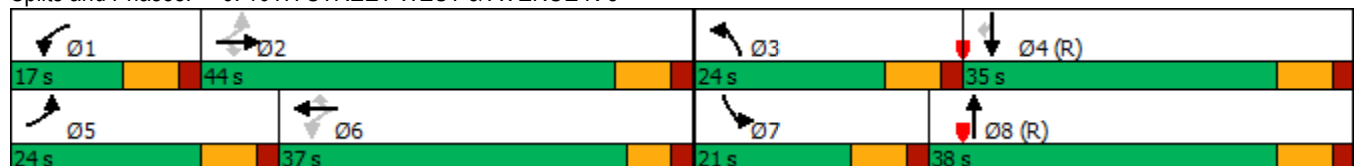
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 6: 10TH STREET WEST & AVENUE K-8



Lanes, Volumes, Timings
9: 10TH STREET WEST & AVENUE L

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  		 	  		 	 	
Traffic Volume (vph)	288	973	224	275	1284	187	398	748	169	272	694	397
Future Volume (vph)	288	973	224	275	1284	187	398	748	169	272	694	397
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	16	10	11	16	10	11	12	10	11	16
Grade (%)	0%			0%			0%			0%		
Storage Length (ft)	285		0	280		0	195		220	150		0
Storage Lanes	2		1	2		0	2		1	2		1
Taper Length (ft)	100			120			90			90		
Satd. Flow (prot)	3204	4916	1794	3204	4814	0	3204	4916	1583	3204	3421	1794
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3204	4916	1767	3199	4814	0	3201	4916	1560	3202	3421	1794
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			243		28				184			379
Link Speed (mph)		55			50			50			50	
Link Distance (ft)		2045			2618			1300			2659	
Travel Time (s)		25.4			35.7			17.7			36.3	
Confl. Peds. (#/hr)	2		5	5		2	4		3	3		4
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	313	1058	243	299	1396	203	433	813	184	296	754	432
Shared Lane Traffic (%)												
Lane Group Flow (vph)	313	1058	243	299	1599	0	433	813	184	296	754	432
Turn Type	Prot	NA	custom	Prot	NA		Prot	NA	custom	Prot	NA	Over
Protected Phases	5	2		1	6		3	8		7	4	5
Permitted Phases			4						2			
Detector Phase	5	2	4	1	6		3	8	2	7	4	5
Switch Phase												
Minimum Initial (s)	10.0	9.0	10.0	11.0	8.0		12.0	9.0	9.0	12.0	10.0	10.0
Minimum Split (s)	16.0	16.0	17.0	17.0	15.0		17.0	16.0	16.0	17.0	17.0	16.0
Total Split (s)	16.0	33.0	27.0	17.0	34.0		17.0	27.0	33.0	17.0	27.0	16.0
Total Split (%)	17.0%	35.1%	28.7%	18.1%	36.2%		18.1%	28.7%	35.1%	18.1%	28.7%	17.0%
Maximum Green (s)	10.0	26.0	20.0	11.0	27.0		12.0	20.0	26.0	12.0	20.0	10.0
Yellow Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0	1.0	2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	7.0	7.0	6.0	7.0		5.0	7.0	7.0	5.0	7.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Max	C-Max	None	Max		None	C-Max	Max	None	C-Max	None

Lanes, Volumes, Timings
9: 10TH STREET WEST & AVENUE L

03/25/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Walk Time (s)		7.0	7.0		7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		27.0	33.0		25.0			28.0	27.0		33.0	
Pedestrian Calls (#/hr)		0	0		0			0	0		0	
Act Effect Green (s)	10.0	26.0	20.0	11.0	27.0		12.0	20.0	26.0	12.0	20.0	10.0
Actuated g/C Ratio	0.11	0.28	0.21	0.12	0.29		0.13	0.21	0.28	0.13	0.21	0.11
v/c Ratio	0.92	0.78	0.43	0.80	1.14		1.06	0.78	0.33	0.72	1.04	0.82
Control Delay	75.3	36.1	6.9	57.6	104.2		101.8	40.9	5.9	50.6	80.8	21.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.3	36.1	6.9	57.6	104.2		101.8	40.9	5.9	50.6	80.8	21.1
LOS	E	D	A	E	F		F	D	A	D	F	C
Approach Delay		39.3			96.9			54.8			57.4	
Approach LOS		D			F			D			E	
Queue Length 50th (ft)	96	212	0	90	~408		~147	168	0	88	~256	30
Queue Length 95th (ft)	#176	264	60	#155	#504		#242	215	49	#141	#373	#175
Internal Link Dist (ft)		1965			2538			1220			2579	
Turn Bay Length (ft)	285			280			195		220	150		
Base Capacity (vph)	340	1359	567	374	1402		409	1045	564	409	727	529
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.78	0.43	0.80	1.14		1.06	0.78	0.33	0.72	1.04	0.82

Intersection Summary

Area Type: Other

Cycle Length: 94

Actuated Cycle Length: 94

Offset: 0 (0%), Referenced to phase 4:SBT and 8:NBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 63.9

Intersection LOS: E

Intersection Capacity Utilization 103.0%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 9: 10TH STREET WEST & AVENUE L

