

ROAD DIET EVALUATION

Kara Hamley O'Donnell, AICP
Principal Planner
City of Shaker Heights
3400 Lee Road
Shaker Heights, Ohio 44120

Van Aken Boulevard – Road Diet Evaluation

Dear Ms. O'Donnell,

This road diet evaluation is being prepared at the request of the City of Shaker Heights for the Van Aken Boulevard corridor from Lee Road to Farnsleigh Road. The purpose of this evaluation is to analyze the existing vehicular operating conditions at several key intersections along Van Aken Boulevard to determine the impacts, if any, of implementing a "road diet" that would reconfigure the existing lane assignments. Such modifications would typically entail the reduction of lanes from two through lanes in each direction to one through lane, with the excess space being used to provide accommodations such as bike lanes or shared multi-use paths. This analysis will be completed to determine the minimum number of travel lanes needed to adequately serve the existing users while maintaining satisfactory traffic operations along the Van Aken Boulevard corridor.

Traffic Volumes

Existing Traffic Volumes

For this evaluation, Tri-State Traffic Data, Inc. performed turning movement traffic counts at the following four (4) intersections from 7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM on Thursday, December 8, 2022:

- Van Aken Boulevard EB / Lee Road
- Van Aken Boulevard WB / Lee Road
- Van Aken Boulevard EB / Avalon Road
- Van Aken Boulevard WB / Avalon Road
- Van Aken Boulevard EB / Lynnfield Road
- Van Aken Boulevard WB / Parkland Drive
- Van Aken Boulevard EB / Farnsleigh Road
- Van Aken Boulevard WB / Farnsleigh Road

From the count data, the AM peak hour of the corridor was determined to occur from 7:45 AM – 8:45 AM while the PM peak hour was found to occur from 3:45 PM – 4:45 PM. See **Attachment A** for printouts of the turning movement counts.

Planning Level Traffic Volumes

Planning level traffic volumes were created from the Existing Year 2022 traffic count data to represent the Design Year 2045 traffic conditions. To develop the Design Year 2045 traffic volumes, GPD utilized ODOT's Traffic Forecast Management System (TFMS) to determine an appropriate growth rate for the study area. According to information obtained from the ODOT TFMS that is shown in **Attachment B**, an annual growth rate of +1.25% per year (linearly) was deemed appropriate for this evaluation.

The Design Year 2045 planning level traffic volumes were developed by utilizing the previously identified growth rate and following the volume development process established by the Ohio Department of Transportation (ODOT). The planning level traffic volumes include the Average Daily Traffic (ADT) and

Design Hourly Volumes (DHV) for each peak hour. The Design Year 2045 ADT at several locations along Lee Road are noted below:

<u>Location</u>	<u>Design Year 2045 ADT</u>
Lee Road to Avalon Road:	12,550
Avalon Road to Lynnfield Road/Parkland Drive:	11,620
Lynnfield Road/Parkland Drive to Farnsleigh Road:	13,550

The Design Year 2045 DHVs will be utilized for all capacity analyses performed as part of this evaluation.

Traffic Analysis

HCM Intersection Capacity Analysis

Intersection Capacity Analyses were performed for the Design Year 2045 'No-Build' and 'Build' traffic conditions to determine the operating conditions that would be expected to be experienced at each study intersection. The quality of the operating conditions experienced by an intersection is measured in terms of Level-of-Service (LOS). Levels-of-Service can range from LOS A to LOS F. When a study area lies within a Metropolitan Planning Organization (MPO), Levels-of-Service A, B, C, D, and E are considered acceptable for movements and approaches while the overall intersection must operate at LOS D or better. Level-of-Service F is considered unacceptable with significant levels of delay experienced by vehicles. These guidelines apply to this evaluation as the City of Shaker Heights lies within the Northeast Ohio Areawide Coordinating Agency (NOACA) MPO area.

The thresholds related to average control delay for signalized intersections are as follows:

<i>Level-of-Service</i>	<i>Delay Threshold – Signalized (sec)</i>
A	< 10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

The capacity analyses were performed utilizing the computer program *Synchro (Version 11)*, developed by Trafficware, and is based on the Highway Capacity Manual (HCM), 6th Edition. *Synchro* can provide a macroscopic analysis of an entire roadway system and take into account the interactions and impact of traffic that travels from one intersection to the next. Due to the limitations of the HCM, 6th Edition, the capacity analysis results for all will be based on the HCM, 2000 outputs.

For clarification purposes, the details of each analysis scenario are summarized below:

'No-Build' Scenario

- Represents the existing roadway conditions as they are today.
- Utilizes the Design Year 2045 DHVs for each peak hour.

'Build' Scenario

- Utilizes the Design Year 2045 DHVs for each peak hour.
- Incorporates the following intersection modifications (beyond the removal of one thru lane) to accommodate the road diet on each side of Van Aken Boulevard:
 - Van Aken Boulevard WB / Lee Road
 - Restripe the WB shared thru-right lane as a dedicated 150' right-only lane.
 - Van Aken Boulevard EB / Lee Road
 - Restripe the EB shared thru-right lane as a dedicated 150' right-only lane.

Screenshots from the 'Build' *Synchro* traffic model of the intersections described above are provided in **Attachment C**.

Table 1 summarizes the HCM intersection capacity analysis and details the Level-of-Service and delays experienced under the Design Year 2045 'No-Build' vs. 'Build' traffic conditions for the study intersections. See **Attachment D** for the HCM analysis printouts.

Table 1: HCM Intersection Capacity Analysis Summary – Design Year 2047 'No-Build' vs. 'Build' Conditions

Intersection / Movement	'No-Build' Conditions				'Build' Conditions			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Van Aken Blvd WB / Lee Road								
Westbound Left-Thru	C	28.7	D	40.8	D	48.5	E	67.4
Westbound Right	D	41.2	F	335.8	B	10.7	F	101.1
<i>Westbound Approach</i>	C	31.3	E	78.1	D	40.8	E	71.7
Northbound Left	C	30.0	D	38.8	E	78.0	E	64.4
Northbound Thru	A	0.8	A	0.8	A	1.2	A	1.1
<i>Northbound Approach</i>	A	8.6	A	1.0	C	21.8	B	16.3
Southbound Thru-Right	D	36.6	D	41.0	E	56.6	E	64.3
<i>Southbound Approach</i>	D	36.6	D	41.0	E	56.6	E	64.3
Intersection Total	C	22.8	C	34.9	D	37.4	D	46.4
Van Aken Blvd EB / Lee Road								
Eastbound Left-Thru	D	49.5	D	49.1	E	72.9	F	84.4
Eastbound Right	D	42.5	D	44.7	D	44.7	C	34.5
<i>Eastbound Approach</i>	D	47.3	D	47.7	E	63.9	E	68.5
Northbound Thru-Right	C	20.6	C	24.2	D	45.4	D	43.3
<i>Northbound Approach</i>	C	20.6	C	24.2	D	45.4	D	43.3
Southbound Left	C	23.4	B	13.9	C	29.3	B	16.0
Southbound Thru	A	2.2	A	3.4	A	3.2	A	4.9
<i>Southbound Approach</i>	A	4.2	A	4.4	A	5.6	A	5.9
Intersection Total	C	20.2	C	22.8	D	35.3	D	35.6

**Table 1: HCM Intersection Capacity Analysis Summary –
Design Year 2047 'No-Build' vs. 'Build' Conditions**

Intersection / Movement	'No-Build' Conditions				'Build' Conditions			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Van Aken Blvd WB / Daleford Road / Avalon Road / Dorchester Road								
Westbound Left-Thru	B	18.2	B	17.7	C	26.5	C	28.0
Westbound Approach	B	18.8	B	17.7	C	26.5	C	28.0
Northbound Left-Thru	B	16.0	D	44.2	E	57.9	C	28.0
Northbound Approach	B	16.0	D	44.2	E	57.9	C	28.0
Southbound Thru-Right	D	52.5	D	52.1	F	87.2	E	79.9
Southbound Approach	D	52.5	D	52.1	F	87.2	E	79.9
Southeastbound Right	D	50.4	A	0.0	E	62.9	A	0.0
Southwestbound Right	D	42.8	D	43.7	E	56.5	D	50.7
Intersection Total	C	25.8	C	32.0	D	47.3	D	39.4
Van Aken Blvd EB / Avalon Road / Daleford Road								
Eastbound Thru-Right	C	30.9	C	21.5	E	72.2	F	96.4
Eastbound Approach	C	30.9	C	21.5	E	72.2	F	96.4
Northbound Thru-Right	D	52.1	D	51.7	F	84.9	E	78.0
Northbound Approach	D	52.1	D	51.7	F	84.9	E	78.0
Southbound Left-Thru	B	20.0	B	18.1	C	34.7	C	29.9
Southbound Approach	B	20.0	C	27.7	C	22.4	C	23.7
Northwestbound Right	C	27.6	B	18.1	C	34.7	C	29.9
Intersection Total	C	31.9	C	25.7	E	65.2	E	78.0
Van Aken Blvd WB / Lynnfield Road / Parkland Drive / Norwood Road								
Westbound Left-Thru	B	16.2	B	15.5	C	20.4	B	16.8
Westbound Right	A	4.2	A	5.5	A	5.9	A	1.1
Westbound Approach	B	14.5	B	13.9	B	18.3	B	14.2
Northbound Left-Thru	A	3.6	A	2.4	A	4.4	A	2.4
Northbound Approach	A	3.6	A	2.4	A	4.4	A	2.4
Southbound Thru-Right	D	39.8	D	46.3	D	47.9	D	50.1
Southbound Approach	D	39.8	D	46.3	D	47.9	D	50.1
Southeastbound Left-Thru-Right	D	48.9	D	53.0	E	63.0	E	55.4
Southeastbound Approach	D	48.9	D	53.0	E	63.0	E	55.4
Intersection Total	B	19.0	C	23.0	C	23.3	C	24.3

**Table 1: HCM Intersection Capacity Analysis Summary –
Design Year 2047 'No-Build' vs. 'Build' Conditions**

Intersection / Movement	'No-Build' Conditions				'Build' Conditions			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)
Van Aken Blvd EB / Lynnfield Road / Norwood Road								
Eastbound Left-Thru-Right	A	4.2	A	4.4	A	5.7	A	6.7
<i>Eastbound Approach</i>	A	4.2	A	4.4	A	5.7	A	6.7
Northbound Thru-Right	D	40.6	D	44.8	D	48.8	D	48.6
<i>Northbound Approach</i>	D	40.6	D	44.8	D	48.8	D	48.6
Southbound Left	D	40.1	C	31.5	D	49.7	D	36.4
Southbound Thru	B	16.2	B	16.9	B	17.0	B	15.7
<i>Southbound Approach</i>	C	28.8	C	24.2	C	33.5	C	26.0
Northwestbound Left-Thru-Right	D	50.5	D	52.9	E	62.9	E	55.4
<i>Northwestbound Approach</i>	D	50.5	D	52.9	E	62.9	E	55.4
Intersection Total	C	21.5	B	15.8	C	26.0	B	18.0
Van Aken Blvd WB / Farnsleigh Road								
Northbound Left-Thru	A	0.1	A	0.1	A	0.1	A	0.1
<i>Northbound Approach</i>	A	0.1	A	0.1	A	0.1	A	0.1
Southbound Thru	D	45.4	D	508	E	56.1	D	53.2
Southbound Right	D	45.2	D	47.8	E	55.7	D	50.0
<i>Southbound Approach</i>	D	45.2	D	48.6	E	55.7	D	50.8
Intersection Total	C	20.9	C	22.3	C	25.7	C	23.4
Van Aken Blvd EB / Farnsleigh Road								
Eastbound Left	A	2.7	A	1.9	A	4.3	A	4.2
Eastbound Right	A	9.8	A	7.3	A	6.8	B	15.8
<i>Eastbound Approach</i>	A	7.4	A	5.2	A	5.9	B	11.3
Northbound Thru	D	49.9	D	52.6	E	62.3	E	55.2
<i>Northbound Approach</i>	D	49.9	D	52.6	E	62.3	E	55.2
Southbound Thru	A	2.3	A	2.4	A	2.3	A	2.4
<i>Southbound Approach</i>	A	2.3	A	2.4	A	2.3	A	2.4
Intersection Total	C	20.6	B	17.2	C	23.7	C	21.7

As shown in **Table 1**, the Van Aken Boulevard WB / Lee Road intersection is operating with the westbound right turn movement at LOS F during the PM peak hour under the Design Year 2045 'No-Build' conditions. The remaining intersections are all operating at an acceptable LOS E or better.

Four (4) intersections are anticipated to have failing Levels-of-Service for certain movements under the Design Year 2045 'Build' conditions. This includes the WB right turn movement at the Van Aken WB / Lee Road intersection, the EB left-thru movement at the Van Aken EB / Lee Road intersection, the SB approach at the Van Aken WB / Avalon Road intersection and the EB and NB approaches at the Lee Road EB / Avalon Road intersection.

Summary and Conclusions

This evaluation of the Van Aken corridor has generally found that a road diet can be implemented at various intersections along the corridor to accommodate dedicated bike lanes on each side of Van Aken Boulevard, however, four (4) intersections are anticipated to have certain movements with failing Levels-of-Service if the road diet is implemented. The Van Aken Boulevard / Lee Road intersection is anticipated to operate at a LOS F during the PM peak hour for the WB right movement and the EB left-thru movement once the travel lane is eliminated as part of the road diet. Additionally, the NB, SB and EB movements at the Van Aken Boulevard / Avalon Road / Daleford Road intersection are anticipated to operate at LOS F during both peak hours. However, all intersections are anticipated to operate with acceptable overall Levels-of-Service.

If you have any questions regarding this Road Diet Evaluation, please feel free to contact me at (330) 572-2495 or via email at cdeibel@gpdgroup.com.

Respectfully Submitted,
GPD Group



Curtis J. Deibel, P.E., RSP2
Associate Project Manager / Traffic Engineer

CC: Kevin Westbrooks, P.E., PTOE (GPD Group)
File

ATTACHMENT A



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184 Baker Rd

Shaker Heights, OH
Van Aken Blvd WB & Lee Rd
Thursday, December 8, 2022
Location: 41.466776, -
81.565019

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

Count Name: Van Aken Blvd
WB & Lee Rd
Site Code:
Start Date: 12/08/2022
Page No: 1

Turning Movement Data

Start Time	Van Aken Blvd WB		Van Aken Blvd WB						Lee Rd					Lee Rd					Int. Total	
	Eastbound		Westbound				Northbound					Southbound								
	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds		App. Total
7:00 AM	1	0	4	53	7	0	0	64	39	112	0	0	151	59	3	0	0	3	62	277
7:15 AM	2	0	12	51	12	0	0	75	44	130	0	0	174	77	0	0	0	1	77	326
7:30 AM	5	0	14	65	11	0	1	90	68	183	0	0	251	111	3	0	0	1	114	455
7:45 AM	11	0	13	65	22	0	4	100	68	162	0	0	230	123	4	0	0	0	127	457
Hourly Total	19	0	43	234	52	0	5	329	219	587	0	0	806	370	10	0	0	5	380	1515
8:00 AM	9	0	15	88	35	0	3	138	60	158	0	2	218	130	6	0	0	0	136	492
8:15 AM	7	0	15	67	14	0	2	96	54	147	0	0	201	165	12	0	1	1	178	475
8:30 AM	2	0	10	67	16	0	2	93	56	142	0	0	198	134	7	0	0	1	141	432
8:45 AM	2	0	16	40	12	0	2	68	38	137	0	0	175	118	6	0	2	2	126	369
Hourly Total	20	0	56	262	77	0	9	395	208	584	0	2	792	547	31	0	3	4	581	1768
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	11	0	15	46	3	0	1	64	33	145	0	0	178	142	3	0	0	1	145	387
3:15 PM	6	0	19	47	7	0	4	73	44	122	0	0	166	144	7	0	0	1	151	390
3:30 PM	11	0	13	58	8	0	2	79	45	159	0	0	204	187	6	0	0	2	193	476
3:45 PM	3	0	27	58	17	0	0	102	51	140	0	0	191	153	7	0	0	1	160	453
Hourly Total	31	0	74	209	35	0	7	318	173	566	0	0	739	626	23	0	0	5	649	1706
4:00 PM	10	0	19	50	13	0	1	82	43	143	0	0	186	217	10	0	0	0	227	495
4:15 PM	9	0	6	53	9	0	4	68	43	125	0	0	168	159	8	0	0	11	167	403
4:30 PM	3	0	7	67	3	0	2	77	48	140	0	0	188	212	4	0	0	1	216	481
4:45 PM	5	0	14	68	15	2	3	99	50	128	0	0	178	140	5	0	0	0	145	422
Hourly Total	27	0	46	238	40	2	10	326	184	536	0	0	720	728	27	0	0	12	755	1801
5:00 PM	2	0	9	69	7	0	0	85	49	159	0	1	208	188	2	0	0	0	190	483
5:15 PM	3	0	20	64	10	1	1	95	38	140	0	2	178	155	6	0	0	0	161	434
5:30 PM	2	0	6	61	2	2	1	71	45	113	0	1	158	173	5	0	0	1	178	407
5:45 PM	1	0	17	66	19	0	0	102	51	98	0	0	149	133	9	1	0	0	143	394
Hourly Total	8	0	52	260	38	3	2	353	183	510	0	4	693	649	22	1	0	1	672	1718
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	105	0	271	1203	242	5	33	1721	967	2783	0	6	3750	2920	113	1	3	27	3037	8508
Approach %	-	-	15.7	69.9	14.1	0.3	-	-	25.8	74.2	0.0	-	-	96.1	3.7	0.0	0.1	-	-	-
Total %	-	0.0	3.2	14.1	2.8	0.1	-	20.2	11.4	32.7	0.0	-	44.1	34.3	1.3	0.0	0.0	-	35.7	-
Lights	-	0	229	1184	239	5	-	1657	941	2696	0	-	3637	2847	110	1	2	-	2960	8254
% Lights	-	-	84.5	98.4	98.8	100.0	-	96.3	97.3	96.9	-	-	97.0	97.5	97.3	100.0	66.7	-	97.5	97.0
Buses	-	0	5	14	1	0	-	20	13	28	0	-	41	29	3	0	0	-	32	93
% Buses	-	-	1.8	1.2	0.4	0.0	-	1.2	1.3	1.0	-	-	1.1	1.0	2.7	0.0	0.0	-	1.1	1.1
Trucks	-	0	37	5	2	0	-	44	13	59	0	-	72	44	0	0	1	-	45	161
% Trucks	-	-	13.7	0.4	0.8	0.0	-	2.6	1.3	2.1	-	-	1.9	1.5	0.0	0.0	33.3	-	1.5	1.9
Bicycles on Crosswalk	2	-	-	-	-	-	3	-	-	-	-	0	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	1.9	-	-	-	-	-	9.1	-	-	-	-	0.0	-	-	-	-	-	11.1	-	-
Pedestrians	103	-	-	-	-	-	30	-	-	-	-	6	-	-	-	-	-	24	-	-
% Pedestrians	98.1	-	-	-	-	-	90.9	-	-	-	-	100.0	-	-	-	-	-	88.9	-	-



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Shaker Heights, OH
Van Aken Blvd WB & Lee Rd
Thursday, December 8, 2022
Location: 41.466776, -
81.565019

Count Name: Van Aken Blvd
WB & Lee Rd
Site Code:
Start Date: 12/08/2022
Page No: 3

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Van Aken Blvd WB		Van Aken Blvd WB						Lee Rd					Lee Rd					Int. Total	
	Eastbound		Westbound				Northbound					Southbound								
	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds		App. Total
7:30 AM	5	0	14	65	11	0	1	90	68	183	0	0	251	111	3	0	0	1	114	455
7:45 AM	11	0	13	65	22	0	4	100	68	162	0	0	230	123	4	0	0	0	127	457
8:00 AM	9	0	15	88	35	0	3	138	60	158	0	2	218	130	6	0	0	0	136	492
8:15 AM	7	0	15	67	14	0	2	96	54	147	0	0	201	165	12	0	1	1	178	475
Total	32	0	57	285	82	0	10	424	250	650	0	2	900	529	25	0	1	2	555	1879
Approach %	-	-	13.4	67.2	19.3	0.0	-	-	27.8	72.2	0.0	-	-	95.3	4.5	0.0	0.2	-	-	-
Total %	-	0.0	3.0	15.2	4.4	0.0	-	22.6	13.3	34.6	0.0	-	47.9	28.2	1.3	0.0	0.1	-	29.5	-
PHF	-	0.000	0.950	0.810	0.586	0.000	-	0.768	0.919	0.888	0.000	-	0.896	0.802	0.521	0.000	0.250	-	0.779	0.955
Lights	-	0	45	277	81	0	-	403	238	610	0	-	848	505	25	0	1	-	531	1782
% Lights	-	-	78.9	97.2	98.8	-	-	95.0	95.2	93.8	-	-	94.2	95.5	100.0	-	100.0	-	95.7	94.8
Buses	-	0	2	7	0	0	-	9	5	6	0	-	11	8	0	0	0	-	8	28
% Buses	-	-	3.5	2.5	0.0	-	-	2.1	2.0	0.9	-	-	1.2	1.5	0.0	-	0.0	-	1.4	1.5
Trucks	-	0	10	1	1	0	-	12	7	34	0	-	41	16	0	0	0	-	16	69
% Trucks	-	-	17.5	0.4	1.2	-	-	2.8	2.8	5.2	-	-	4.6	3.0	0.0	-	0.0	-	2.9	3.7
Bicycles on Crosswalk	0	-	-	-	-	-	1	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	0.0	-	-	-	-	-	10.0	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	32	-	-	-	-	-	9	-	-	-	-	2	-	-	-	-	-	2	-	-
% Pedestrians	100.0	-	-	-	-	-	90.0	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



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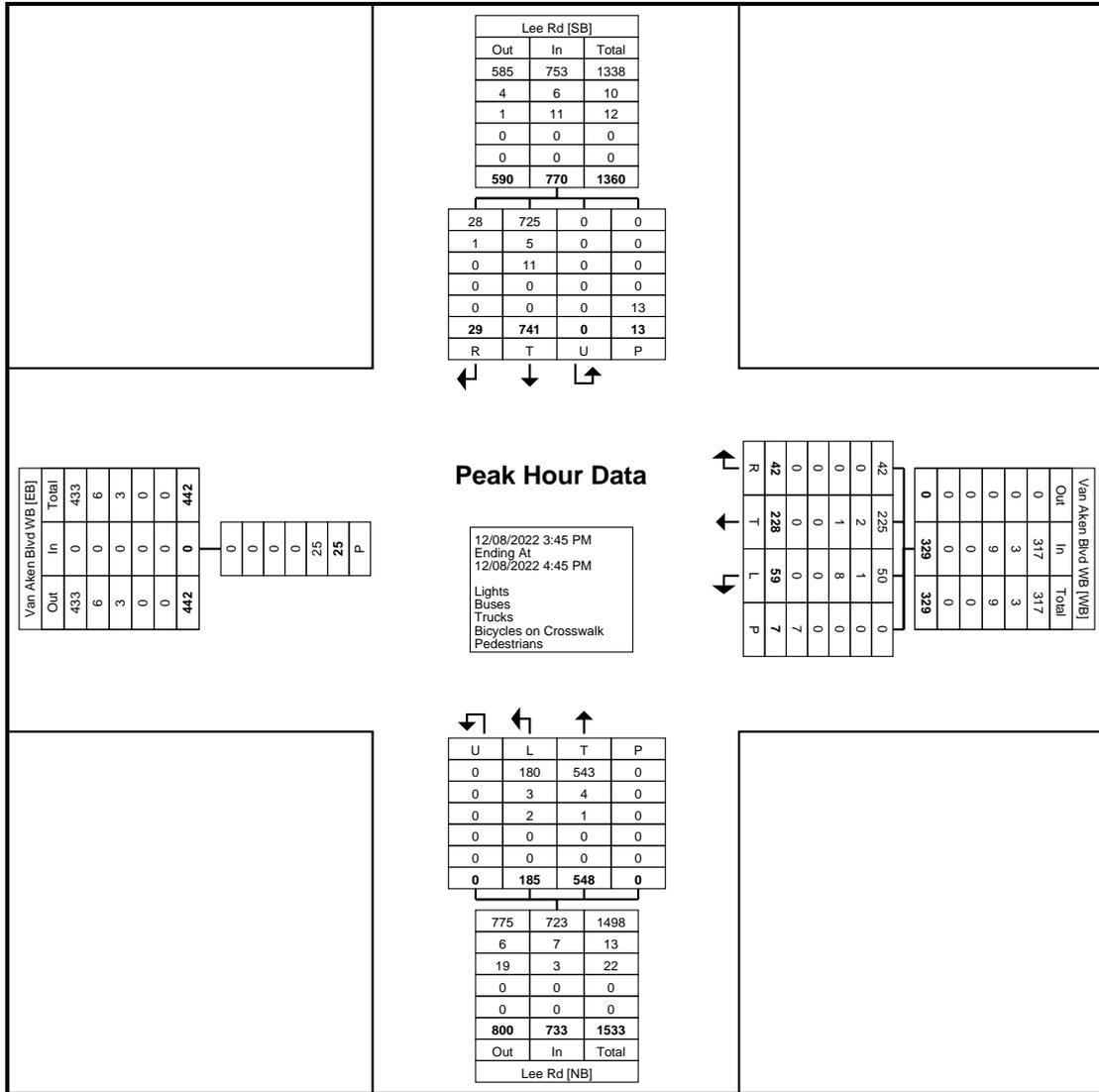
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Shaker Heights, OH
Van Aken Blvd WB & Lee Rd
Thursday, December 8, 2022
Location: 41.466776, -
81.565019

Count Name: Van Aken Blvd
WB & Lee Rd
Site Code:
Start Date: 12/08/2022
Page No: 5

Turning Movement Peak Hour Data (3:45 PM)

Start Time	Van Aken Blvd WB		Van Aken Blvd WB						Lee Rd					Lee Rd						Int. Total
	Eastbound		Westbound				Northbound					Southbound								
	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
3:45 PM	3	0	27	58	17	0	0	102	51	140	0	0	191	153	7	0	0	1	160	453
4:00 PM	10	0	19	50	13	0	1	82	43	143	0	0	186	217	10	0	0	0	227	495
4:15 PM	9	0	6	53	9	0	4	68	43	125	0	0	168	159	8	0	0	11	167	403
4:30 PM	3	0	7	67	3	0	2	77	48	140	0	0	188	212	4	0	0	1	216	481
Total	25	0	59	228	42	0	7	329	185	548	0	0	733	741	29	0	0	13	770	1832
Approach %	-	-	17.9	69.3	12.8	0.0	-	-	25.2	74.8	0.0	-	-	96.2	3.8	0.0	0.0	-	-	-
Total %	-	0.0	3.2	12.4	2.3	0.0	-	18.0	10.1	29.9	0.0	-	40.0	40.4	1.6	0.0	0.0	-	42.0	-
PHF	-	0.000	0.546	0.851	0.618	0.000	-	0.806	0.907	0.958	0.000	-	0.959	0.854	0.725	0.000	0.000	-	0.848	0.925
Lights	-	0	50	225	42	0	-	317	180	543	0	-	723	725	28	0	0	-	753	1793
% Lights	-	-	84.7	98.7	100.0	-	-	96.4	97.3	99.1	-	-	98.6	97.8	96.6	-	-	-	97.8	97.9
Buses	-	0	1	2	0	0	-	3	3	4	0	-	7	5	1	0	0	-	6	16
% Buses	-	-	1.7	0.9	0.0	-	-	0.9	1.6	0.7	-	-	1.0	0.7	3.4	-	-	-	0.8	0.9
Trucks	-	0	8	1	0	0	-	9	2	1	0	-	3	11	0	0	0	-	11	23
% Trucks	-	-	13.6	0.4	0.0	-	-	2.7	1.1	0.2	-	-	0.4	1.5	0.0	-	-	-	1.4	1.3
Bicycles on Crosswalk	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	25	-	-	-	-	-	7	-	-	-	-	0	-	-	-	-	-	13	-	-
% Pedestrians	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (3:45 PM)



www.TSTData.com
184 Baker Rd

Shaker Heights, OH
Van Aken Blvd EB & Lee Rd
Thursday, December 8, 2022
Location: 41.46643, -81.565031

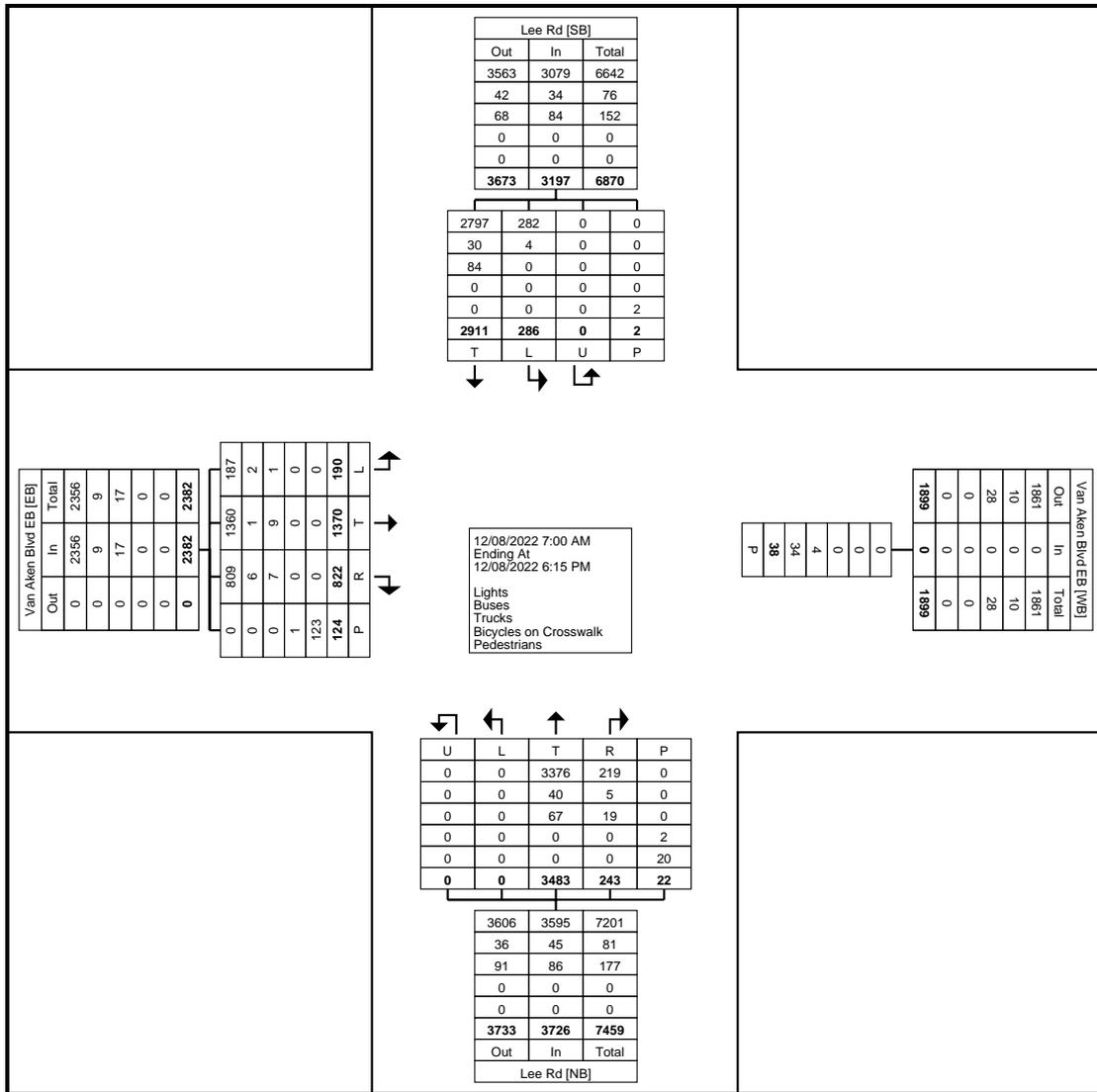
Coatesville, Pennsylvania, United States 19320
610-466-1469
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Count Name: Van Aken Blvd EB
& Lee Rd
Site Code:
Start Date: 12/08/2022
Page No: 1

Turning Movement Data

Start Time	Van Aken Blvd EB						Van Aken Blvd EB		Lee Rd						Lee Rd						Int. Total
	Eastbound						Westbound		Northbound						Southbound						
	Left	Thru	Right	Right on Red	Peds	App. Total	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
7:00 AM	6	20	16	0	1	42	0	0	0	153	8	0	0	0	161	7	53	0	0	60	263
7:15 AM	4	31	17	2	2	54	0	0	0	152	6	0	0	1	158	4	81	0	0	85	297
7:30 AM	15	59	35	1	0	110	1	0	0	218	11	0	0	0	229	7	112	0	0	119	458
7:45 AM	10	43	19	2	9	74	4	0	0	208	5	0	0	3	213	10	117	0	0	127	414
Hourly Total	35	153	87	5	12	280	5	0	0	731	30	0	0	4	761	28	363	0	0	391	1432
8:00 AM	9	66	38	0	7	113	3	0	0	214	11	0	0	0	225	9	147	0	0	156	494
8:15 AM	9	55	33	0	9	97	2	0	0	191	10	0	0	0	201	18	167	0	0	185	483
8:30 AM	12	55	31	1	5	99	2	0	0	195	16	0	0	2	211	26	123	0	0	149	459
8:45 AM	11	45	32	1	3	89	2	0	0	161	13	0	0	0	174	13	119	0	0	132	395
Hourly Total	41	221	134	2	24	398	9	0	0	761	50	0	0	2	811	66	556	0	0	622	1831
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	13	69	39	2	13	123	2	0	0	148	10	0	0	1	158	10	127	0	0	137	418
3:15 PM	5	69	60	2	12	136	3	0	0	178	18	0	0	0	196	15	166	0	0	181	513
3:30 PM	13	69	46	3	14	131	5	0	0	173	14	0	0	1	187	8	171	0	0	179	497
3:45 PM	10	95	52	3	4	160	0	0	0	201	13	0	0	0	214	25	174	0	0	199	573
Hourly Total	41	302	197	10	43	550	10	0	0	700	55	0	0	2	755	58	638	0	0	696	2001
4:00 PM	9	96	58	8	13	171	1	0	0	160	11	0	0	2	171	18	195	0	0	213	555
4:15 PM	9	88	34	2	12	133	4	0	0	168	15	0	0	3	183	15	178	0	0	193	509
4:30 PM	9	90	46	6	4	151	2	0	0	170	10	0	0	2	180	21	174	0	0	195	526
4:45 PM	11	96	39	2	8	148	3	0	0	182	15	0	0	4	197	18	157	0	0	175	520
Hourly Total	38	370	177	18	37	603	10	0	0	680	51	0	0	11	731	72	704	0	0	776	2110
5:00 PM	9	93	40	3	2	145	1	0	0	165	9	0	0	2	174	13	163	0	1	176	495
5:15 PM	8	87	49	2	4	146	2	0	0	167	23	0	0	1	190	12	186	0	0	198	534
5:30 PM	12	72	57	7	2	148	1	0	0	129	15	0	0	0	144	20	160	0	1	180	472
5:45 PM	6	72	32	2	0	112	0	0	0	150	10	0	0	0	160	17	141	0	0	158	430
Hourly Total	35	324	178	14	8	551	4	0	0	611	57	0	0	3	668	62	650	0	2	712	1931
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	190	1370	773	49	124	2382	38	0	0	3483	243	0	0	22	3726	286	2911	0	2	3197	9305
Approach %	8.0	57.5	32.5	2.1	-	-	-	-	0.0	93.5	6.5	0.0	0.0	-	-	8.9	91.1	0.0	-	-	-
Total %	2.0	14.7	8.3	0.5	-	25.6	-	0.0	0.0	37.4	2.6	0.0	0.0	-	40.0	3.1	31.3	0.0	-	34.4	-
Lights	187	1360	760	49	-	2356	-	0	0	3376	219	0	0	-	3595	282	2797	0	-	3079	9030
% Lights	98.4	99.3	98.3	100.0	-	98.9	-	-	-	96.9	90.1	-	-	-	96.5	98.6	96.1	-	-	96.3	97.0
Buses	2	1	6	0	-	9	-	0	0	40	5	0	0	-	45	4	30	0	-	34	88
% Buses	1.1	0.1	0.8	0.0	-	0.4	-	-	-	1.1	2.1	-	-	-	1.2	1.4	1.0	-	-	1.1	0.9
Trucks	1	9	7	0	-	17	-	0	0	67	19	0	0	-	86	0	84	0	-	84	187
% Trucks	0.5	0.7	0.9	0.0	-	0.7	-	-	-	1.9	7.8	-	-	-	2.3	0.0	2.9	-	-	2.6	2.0
Bicycles on Crosswalk	-	-	-	-	1	-	4	-	-	-	-	-	-	2	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.8	-	10.5	-	-	-	-	-	-	9.1	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	123	-	34	-	-	-	-	-	-	20	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	99.2	-	89.5	-	-	-	-	-	-	90.9	-	-	-	-	100.0	-	-

Shaker Heights, OH
Van Aken Blvd EB & Lee Rd
Thursday, December 8, 2022
Location: 41.46643, -81.565031



Turning Movement Data Plot



www.TSTData.com
184 Baker Rd

Coatesville, Pennsylvania, United States 19320
610-466-1469
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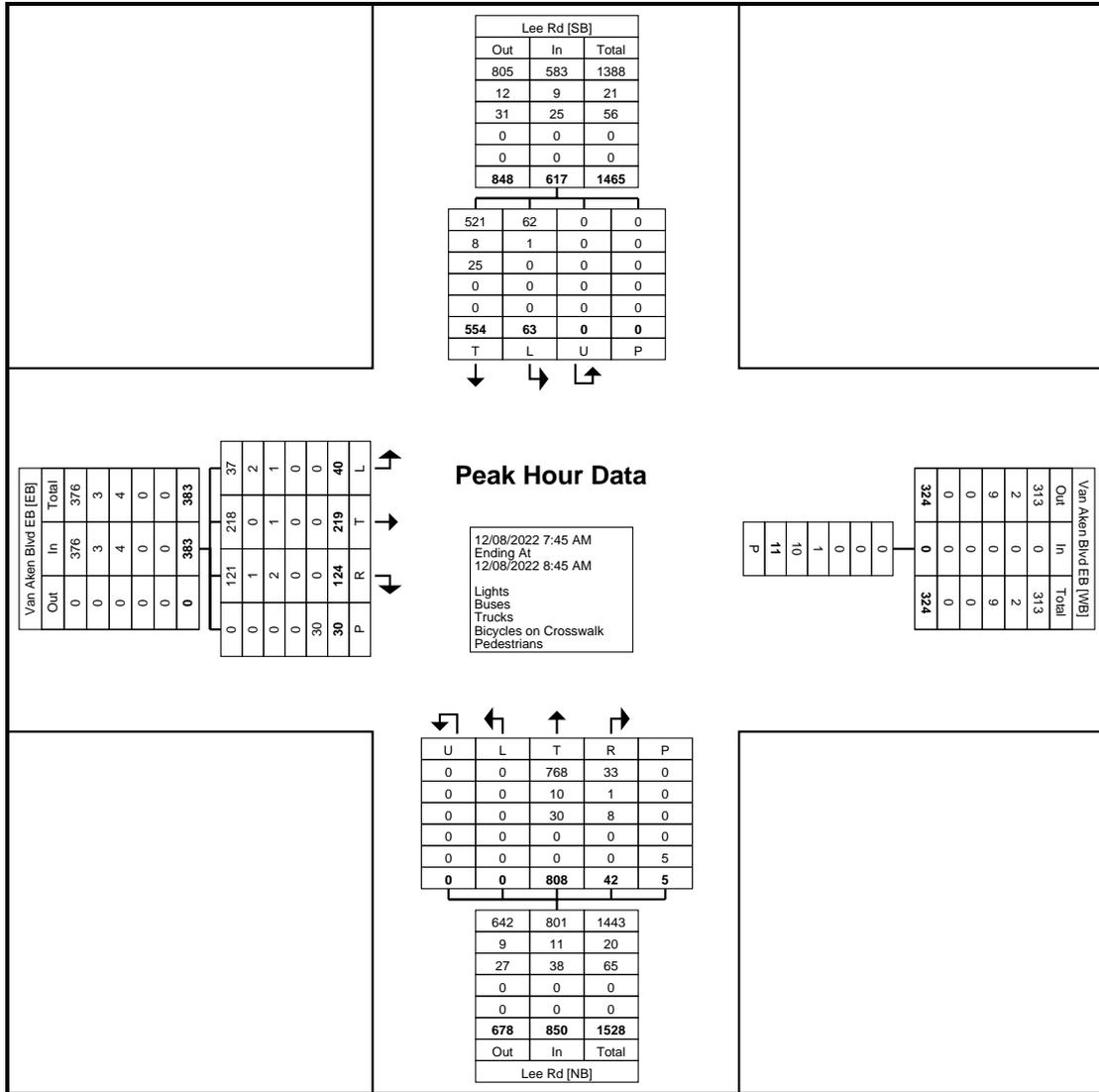
Count Name: Van Aken Blvd EB
& Lee Rd
Site Code:
Start Date: 12/08/2022
Page No: 3

Shaker Heights, OH
Van Aken Blvd EB & Lee Rd
Thursday, December 8, 2022
Location: 41.46643, -81.565031

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Van Aken Blvd EB						Van Aken Blvd EB		Lee Rd						Lee Rd						Int. Total
	Eastbound						Westbound		Northbound						Southbound						
	Left	Thru	Right	Right on Red	Peds	App. Total	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
7:45 AM	10	43	19	2	9	74	4	0	0	208	5	0	0	3	213	10	117	0	0	127	414
8:00 AM	9	66	38	0	7	113	3	0	0	214	11	0	0	0	225	9	147	0	0	156	494
8:15 AM	9	55	33	0	9	97	2	0	0	191	10	0	0	0	201	18	167	0	0	185	483
8:30 AM	12	55	31	1	5	99	2	0	0	195	16	0	0	2	211	26	123	0	0	149	459
Total	40	219	121	3	30	383	11	0	0	808	42	0	0	5	850	63	554	0	0	617	1850
Approach %	10.4	57.2	31.6	0.8	-	-	-	-	0.0	95.1	4.9	0.0	0.0	-	-	10.2	89.8	0.0	-	-	-
Total %	2.2	11.8	6.5	0.2	-	20.7	-	0.0	0.0	43.7	2.3	0.0	0.0	-	45.9	3.4	29.9	0.0	-	33.4	-
PHF	0.833	0.830	0.796	0.375	-	0.847	-	0.000	0.000	0.944	0.656	0.000	0.000	-	0.944	0.606	0.829	0.000	-	0.834	0.936
Lights	37	218	118	3	-	376	-	0	0	768	33	0	0	-	801	62	521	0	-	583	1760
% Lights	92.5	99.5	97.5	100.0	-	98.2	-	-	-	95.0	78.6	-	-	-	94.2	98.4	94.0	-	-	94.5	95.1
Buses	2	0	1	0	-	3	-	0	0	10	1	0	0	-	11	1	8	0	-	9	23
% Buses	5.0	0.0	0.8	0.0	-	0.8	-	-	-	1.2	2.4	-	-	-	1.3	1.6	1.4	-	-	1.5	1.2
Trucks	1	1	2	0	-	4	-	0	0	30	8	0	0	-	38	0	25	0	-	25	67
% Trucks	2.5	0.5	1.7	0.0	-	1.0	-	-	-	3.7	19.0	-	-	-	4.5	0.0	4.5	-	-	4.1	3.6
Bicycles on Crosswalk	-	-	-	-	0	-	1	-	-	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	9.1	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	30	-	10	-	-	-	-	-	-	5	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	90.9	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Shaker Heights, OH
Van Aken Blvd EB & Lee Rd
Thursday, December 8, 2022
Location: 41.46643, -81.565031

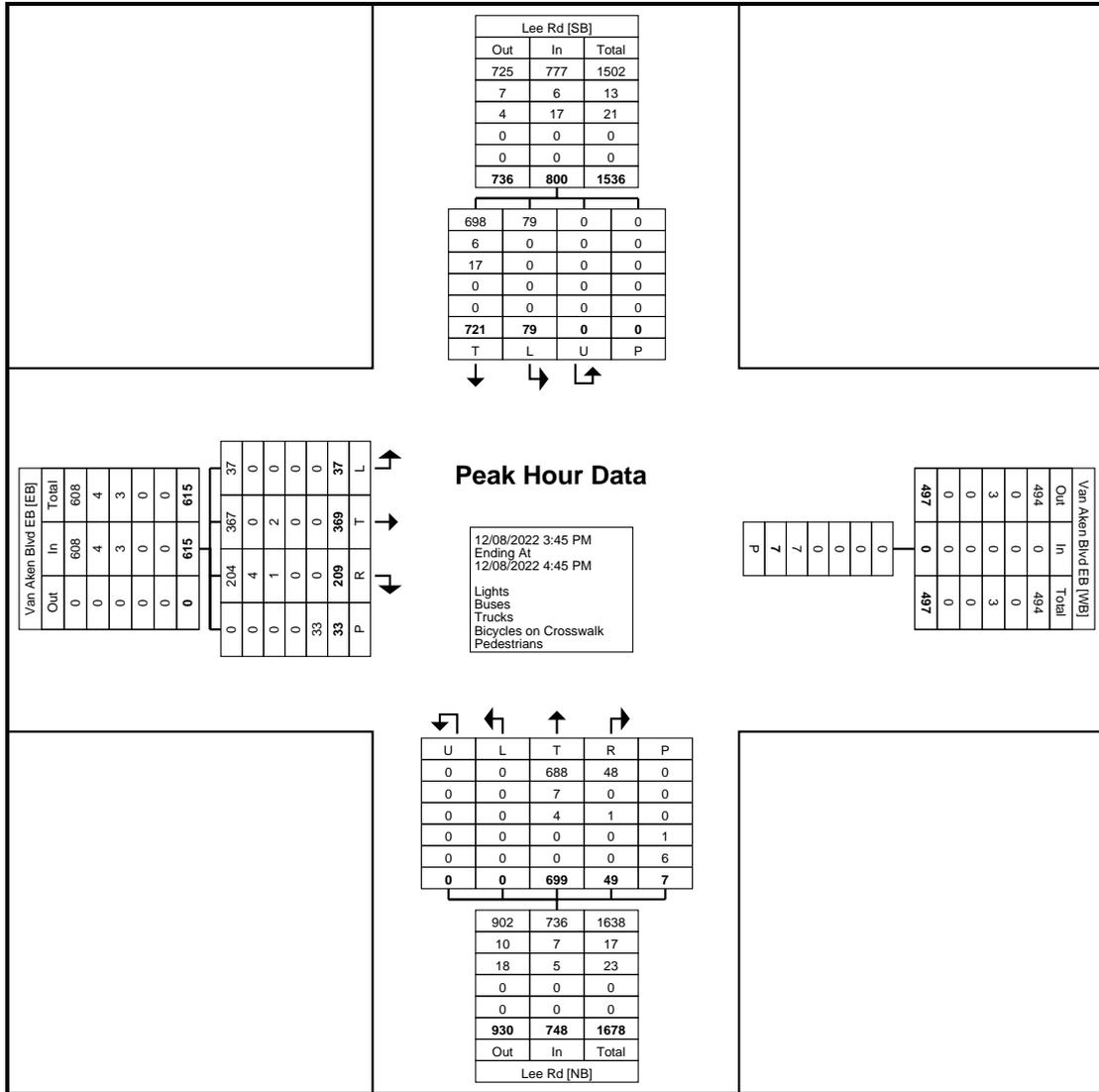


Turning Movement Peak Hour Data Plot (7:45 AM)

Turning Movement Peak Hour Data (3:45 PM)

Start Time	Van Aken Blvd EB						Van Aken Blvd EB		Lee Rd						Lee Rd						Int. Total
	Eastbound						Westbound		Northbound						Southbound						
	Left	Thru	Right	Right on Red	Peds	App. Total	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
3:45 PM	10	95	52	3	4	160	0	0	0	201	13	0	0	0	214	25	174	0	0	199	573
4:00 PM	9	96	58	8	13	171	1	0	0	160	11	0	0	2	171	18	195	0	0	213	555
4:15 PM	9	88	34	2	12	133	4	0	0	168	15	0	0	3	183	15	178	0	0	193	509
4:30 PM	9	90	46	6	4	151	2	0	0	170	10	0	0	2	180	21	174	0	0	195	526
Total	37	369	190	19	33	615	7	0	0	699	49	0	0	7	748	79	721	0	0	800	2163
Approach %	6.0	60.0	30.9	3.1	-	-	-	-	0.0	93.4	6.6	0.0	0.0	-	-	9.9	90.1	0.0	-	-	-
Total %	1.7	17.1	8.8	0.9	-	28.4	-	0.0	0.0	32.3	2.3	0.0	0.0	-	34.6	3.7	33.3	0.0	-	37.0	-
PHF	0.925	0.961	0.819	0.594	-	0.899	-	0.000	0.000	0.869	0.817	0.000	0.000	-	0.874	0.790	0.924	0.000	-	0.939	0.944
Lights	37	367	185	19	-	608	-	0	0	688	48	0	0	-	736	79	698	0	-	777	2121
% Lights	100.0	99.5	97.4	100.0	-	98.9	-	-	-	98.4	98.0	-	-	-	98.4	100.0	96.8	-	-	97.1	98.1
Buses	0	0	4	0	-	4	-	0	0	7	0	0	0	-	7	0	6	0	-	6	17
% Buses	0.0	0.0	2.1	0.0	-	0.7	-	-	-	1.0	0.0	-	-	-	0.9	0.0	0.8	-	-	0.8	0.8
Trucks	0	2	1	0	-	3	-	0	0	4	1	0	0	-	5	0	17	0	-	17	25
% Trucks	0.0	0.5	0.5	0.0	-	0.5	-	-	-	0.6	2.0	-	-	-	0.7	0.0	2.4	-	-	2.1	1.2
Bicycles on Crosswalk	-	-	-	-	0	-	0	-	-	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	0.0	-	-	-	-	-	-	14.3	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	33	-	7	-	-	-	-	-	-	6	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	100.0	-	-	-	-	-	-	85.7	-	-	-	-	-	-	-

Shaker Heights, OH
Van Aken Blvd EB & Lee Rd
Thursday, December 8, 2022
Location: 41.46643, -81.565031



Turning Movement Peak Hour Data Plot (3:45 PM)



Shaker Heights, OH
 Van Aken Blvd WB & Dorchester
 Rd
 Thursday, December 8, 2022
 Location: 41.466765, -
 81.558741

www.TSTData.com
 184 Baker Rd

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

Count Name: Van Aken Blvd
 WB & Dorchester Rd
 Site Code:
 Start Date: 12/08/2022
 Page No: 1

Turning Movement Data

Start Time	Van Aken Blvd WB Eastbound					Van Aken Blvd WB Westbound						Dorchester Rd Southbound						Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	
7:00 AM	0	0	0	0	0	55	0	0	0	0	55	0	2	0	0	0	2	57
7:15 AM	2	0	0	0	2	64	0	1	0	2	65	0	2	0	0	0	2	69
7:30 AM	0	0	0	0	0	86	0	0	0	0	86	0	3	0	0	1	3	89
7:45 AM	2	0	0	0	2	84	0	0	0	0	84	0	5	0	0	1	5	91
Hourly Total	4	0	0	0	4	289	0	1	0	2	290	0	12	0	0	2	12	306
8:00 AM	6	0	0	2	6	130	1	1	0	0	132	0	1	0	0	0	1	139
8:15 AM	4	0	0	1	4	89	0	0	0	0	89	0	3	0	0	1	3	96
8:30 AM	1	0	0	1	1	86	0	0	0	0	86	0	3	0	0	1	3	90
8:45 AM	5	0	0	0	5	70	0	0	0	0	70	0	4	0	0	0	4	79
Hourly Total	16	0	0	4	16	375	1	1	0	0	377	0	11	0	0	2	11	404
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	3	0	0	0	3	66	1	0	0	0	67	0	2	0	0	0	2	72
3:15 PM	5	0	0	2	5	68	2	0	0	0	70	0	4	0	0	0	4	79
3:30 PM	14	0	0	1	14	83	2	0	0	0	85	0	2	0	0	2	2	101
3:45 PM	9	0	0	2	9	84	1	1	0	0	86	0	12	0	0	2	12	107
Hourly Total	31	0	0	5	31	301	6	1	0	0	308	0	20	0	0	4	20	359
4:00 PM	3	0	0	0	3	79	0	0	0	2	79	0	13	0	0	0	13	95
4:15 PM	2	0	0	0	2	72	1	1	0	1	74	0	3	0	0	11	3	79
4:30 PM	2	0	0	0	2	76	1	0	0	0	77	0	9	0	0	0	9	88
4:45 PM	5	0	0	0	5	98	1	0	0	0	99	0	1	0	0	0	1	105
Hourly Total	12	0	0	0	12	325	3	1	0	3	329	0	26	0	0	11	26	367
5:00 PM	4	0	0	1	4	89	0	0	0	0	89	0	3	0	0	3	3	96
5:15 PM	4	0	0	0	4	78	2	0	0	1	80	0	2	1	0	1	3	87
5:30 PM	5	0	0	0	5	85	0	0	0	0	85	0	3	0	0	0	3	93
5:45 PM	1	0	0	0	1	84	2	0	0	0	86	0	2	0	0	0	2	89
Hourly Total	14	0	0	1	14	336	4	0	0	1	340	0	10	1	0	4	11	365
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	77	0	0	10	77	1626	14	4	0	6	1644	0	79	1	0	23	80	1801
Approach %	100.0	0.0	0.0	-	-	98.9	0.9	0.2	0.0	-	-	0.0	98.8	1.3	0.0	-	-	-
Total %	4.3	0.0	0.0	-	4.3	90.3	0.8	0.2	0.0	-	91.3	0.0	4.4	0.1	0.0	-	4.4	-
Lights	75	0	0	-	75	1570	14	4	0	-	1588	0	74	0	0	-	74	1737
% Lights	97.4	-	-	-	97.4	96.6	100.0	100.0	-	-	96.6	-	93.7	0.0	-	-	92.5	96.4
Buses	2	0	0	-	2	18	0	0	0	-	18	0	3	0	0	-	3	23
% Buses	2.6	-	-	-	2.6	1.1	0.0	0.0	-	-	1.1	-	3.8	0.0	-	-	3.8	1.3
Trucks	0	0	0	-	0	38	0	0	0	-	38	0	2	1	0	-	3	41
% Trucks	0.0	-	-	-	0.0	2.3	0.0	0.0	-	-	2.3	-	2.5	100.0	-	-	3.8	2.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	10	-	-	-	-	-	6	-	-	-	-	-	23	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Shaker Heights, OH
 Van Aken Blvd WB & Dorchester Rd
 Thursday, December 8, 2022
 Location: 41.466765, -81.558741

www.TSTData.com
 184 Baker Rd

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

Count Name: Van Aken Blvd
 WB & Dorchester Rd
 Site Code:
 Start Date: 12/08/2022
 Page No: 3

Turning Movement Peak Hour Data (7:45 AM)

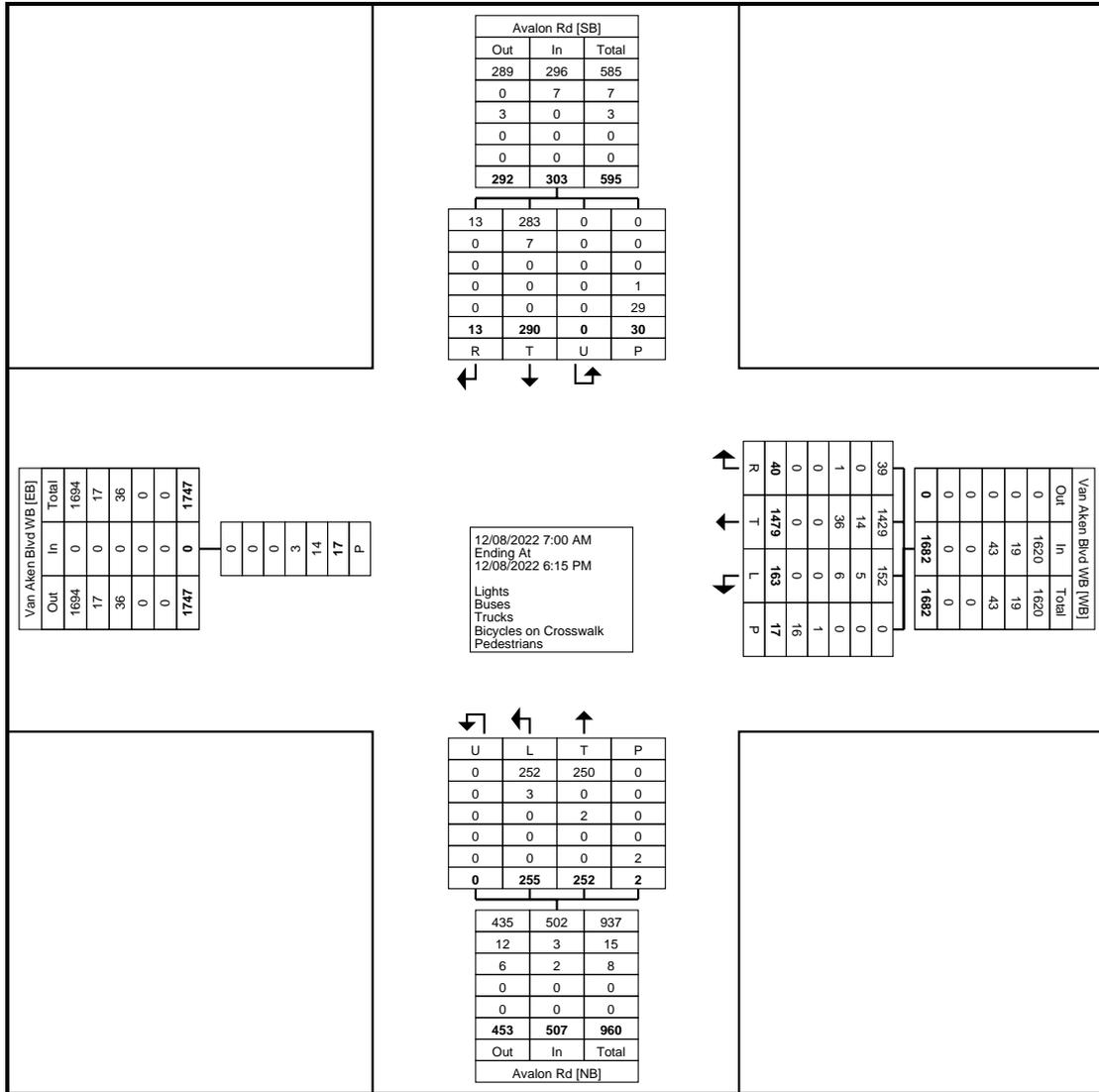
Start Time	Van Aken Blvd WB Eastbound					Van Aken Blvd WB Westbound						Dorchester Rd Southbound						Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	
7:45 AM	2	0	0	0	2	84	0	0	0	0	84	0	5	0	0	1	5	91
8:00 AM	6	0	0	2	6	130	1	1	0	0	132	0	1	0	0	0	1	139
8:15 AM	4	0	0	1	4	89	0	0	0	0	89	0	3	0	0	1	3	96
8:30 AM	1	0	0	1	1	86	0	0	0	0	86	0	3	0	0	1	3	90
Total	13	0	0	4	13	389	1	1	0	0	391	0	12	0	0	3	12	416
Approach %	100.0	0.0	0.0	-	-	99.5	0.3	0.3	0.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	3.1	0.0	0.0	-	3.1	93.5	0.2	0.2	0.0	-	94.0	0.0	2.9	0.0	0.0	-	2.9	-
PHF	0.542	0.000	0.000	-	0.542	0.748	0.250	0.250	0.000	-	0.741	0.000	0.600	0.000	0.000	-	0.600	0.748
Lights	12	0	0	-	12	371	1	1	0	-	373	0	11	0	0	-	11	396
% Lights	92.3	-	-	-	92.3	95.4	100.0	100.0	-	-	95.4	-	91.7	-	-	-	91.7	95.2
Buses	1	0	0	-	1	3	0	0	0	-	3	0	0	0	0	-	0	4
% Buses	7.7	-	-	-	7.7	0.8	0.0	0.0	-	-	0.8	-	0.0	-	-	-	0.0	1.0
Trucks	0	0	0	-	0	15	0	0	0	-	15	0	1	0	0	-	1	16
% Trucks	0.0	-	-	-	0.0	3.9	0.0	0.0	-	-	3.8	-	8.3	-	-	-	8.3	3.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Turning Movement Peak Hour Data (3:15 PM)

Start Time	Van Aken Blvd WB Eastbound					Van Aken Blvd WB Westbound						Dorchester Rd Southbound						Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Right	Right on Red	U-Turn	Peds	App. Total	
3:15 PM	5	0	0	2	5	68	2	0	0	0	70	0	4	0	0	0	4	79
3:30 PM	14	0	0	1	14	83	2	0	0	0	85	0	2	0	0	2	2	101
3:45 PM	9	0	0	2	9	84	1	1	0	0	86	0	12	0	0	2	12	107
4:00 PM	3	0	0	0	3	79	0	0	0	2	79	0	13	0	0	0	13	95
Total	31	0	0	5	31	314	5	1	0	2	320	0	31	0	0	4	31	382
Approach %	100.0	0.0	0.0	-	-	98.1	1.6	0.3	0.0	-	-	0.0	100.0	0.0	0.0	-	-	-
Total %	8.1	0.0	0.0	-	8.1	82.2	1.3	0.3	0.0	-	83.8	0.0	8.1	0.0	0.0	-	8.1	-
PHF	0.554	0.000	0.000	-	0.554	0.935	0.625	0.250	0.000	-	0.930	0.000	0.596	0.000	0.000	-	0.596	0.893
Lights	30	0	0	-	30	294	5	1	0	-	300	0	30	0	0	-	30	360
% Lights	96.8	-	-	-	96.8	93.6	100.0	100.0	-	-	93.8	-	96.8	-	-	-	96.8	94.2
Buses	1	0	0	-	1	9	0	0	0	-	9	0	1	0	0	-	1	11
% Buses	3.2	-	-	-	3.2	2.9	0.0	0.0	-	-	2.8	-	3.2	-	-	-	3.2	2.9
Trucks	0	0	0	-	0	11	0	0	0	-	11	0	0	0	0	-	0	11
% Trucks	0.0	-	-	-	0.0	3.5	0.0	0.0	-	-	3.4	-	0.0	-	-	-	0.0	2.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	5	-	-	-	-	-	2	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Turning Movement Data

Start Time	Van Aken Blvd WB		Van Aken Blvd WB						Avalon Rd					Avalon Rd					Int. Total	
	Eastbound		Westbound				Northbound					Southbound								
	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds		App. Total
7:00 AM	1	0	3	52	1	0	0	56	11	2	0	0	13	7	0	0	0	2	7	76
7:15 AM	0	0	4	60	1	0	0	65	9	8	0	0	17	3	1	0	0	0	4	86
7:30 AM	1	0	4	83	1	0	0	88	13	3	0	0	16	6	0	0	0	2	6	110
7:45 AM	0	0	6	83	2	0	1	91	14	13	0	0	27	13	0	0	0	2	13	131
Hourly Total	2	0	17	278	5	0	1	300	47	26	0	0	73	29	1	0	0	6	30	403
8:00 AM	3	0	3	114	15	0	2	132	20	33	0	0	53	17	0	0	0	4	17	202
8:15 AM	0	0	8	85	3	0	2	96	18	25	0	0	43	21	2	0	0	0	23	162
8:30 AM	1	0	7	82	1	0	1	90	7	16	0	0	23	15	0	0	0	1	15	128
8:45 AM	1	0	7	66	1	0	0	74	7	10	0	0	17	12	0	0	0	1	12	103
Hourly Total	5	0	25	347	20	0	5	392	52	84	0	0	136	65	2	0	0	6	67	595
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	1	0	10	57	1	0	0	68	14	7	0	0	21	11	1	0	0	0	12	101
3:15 PM	0	0	12	59	2	0	2	73	13	9	0	0	22	19	1	0	0	0	20	115
3:30 PM	0	0	9	75	1	0	1	85	14	5	0	0	19	18	2	0	0	1	20	124
3:45 PM	0	0	9	89	1	0	2	99	16	13	0	0	29	25	1	1	0	1	27	155
Hourly Total	1	0	40	280	5	0	5	325	57	34	0	0	91	73	5	1	0	2	79	495
4:00 PM	1	0	18	74	1	0	1	93	12	9	0	1	21	18	2	0	0	0	20	134
4:15 PM	0	0	9	65	1	0	0	75	7	17	0	1	24	24	0	0	0	9	24	123
4:30 PM	1	0	6	80	1	0	2	87	15	17	0	0	32	13	1	0	0	1	14	133
4:45 PM	3	0	9	87	3	0	1	99	14	13	0	0	27	18	0	0	0	1	18	144
Hourly Total	5	0	42	306	6	0	4	354	48	56	0	2	104	73	3	0	0	11	76	534
5:00 PM	2	0	15	75	0	0	1	90	16	22	0	0	38	18	0	0	0	0	18	146
5:15 PM	0	0	8	51	2	0	1	61	5	12	0	0	17	3	0	0	0	2	3	81
5:30 PM	2	0	9	60	1	0	0	70	10	8	0	0	18	15	0	0	0	2	15	103
5:45 PM	0	0	7	82	1	0	0	90	20	10	0	0	30	14	1	0	0	1	15	135
Hourly Total	4	0	39	268	4	0	2	311	51	52	0	0	103	50	1	0	0	5	51	465
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	17	0	163	1479	40	0	17	1682	255	252	0	2	507	290	12	1	0	30	303	2492
Approach %	-	-	9.7	87.9	2.4	0.0	-	-	50.3	49.7	0.0	-	-	95.7	4.0	0.3	0.0	-	-	-
Total %	-	0.0	6.5	59.3	1.6	0.0	-	67.5	10.2	10.1	0.0	-	20.3	11.6	0.5	0.0	0.0	-	12.2	-
Lights	-	0	152	1429	39	0	-	1620	252	250	0	-	502	283	12	1	0	-	296	2418
% Lights	-	-	93.3	96.6	97.5	-	-	96.3	98.8	99.2	-	-	99.0	97.6	100.0	100.0	-	-	97.7	97.0
Buses	-	0	5	14	0	0	-	19	3	0	0	-	3	7	0	0	0	-	7	29
% Buses	-	-	3.1	0.9	0.0	-	-	1.1	1.2	0.0	-	-	0.6	2.4	0.0	0.0	-	-	2.3	1.2
Trucks	-	0	6	36	1	0	-	43	0	2	0	-	2	0	0	0	0	-	0	45
% Trucks	-	-	3.7	2.4	2.5	-	-	2.6	0.0	0.8	-	-	0.4	0.0	0.0	0.0	-	-	0.0	1.8
Bicycles on Crosswalk	3	-	-	-	-	-	1	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	17.6	-	-	-	-	-	5.9	-	-	-	-	0.0	-	-	-	-	-	3.3	-	-
Pedestrians	14	-	-	-	-	-	16	-	-	-	-	2	-	-	-	-	-	29	-	-
% Pedestrians	82.4	-	-	-	-	-	94.1	-	-	-	-	100.0	-	-	-	-	-	96.7	-	-



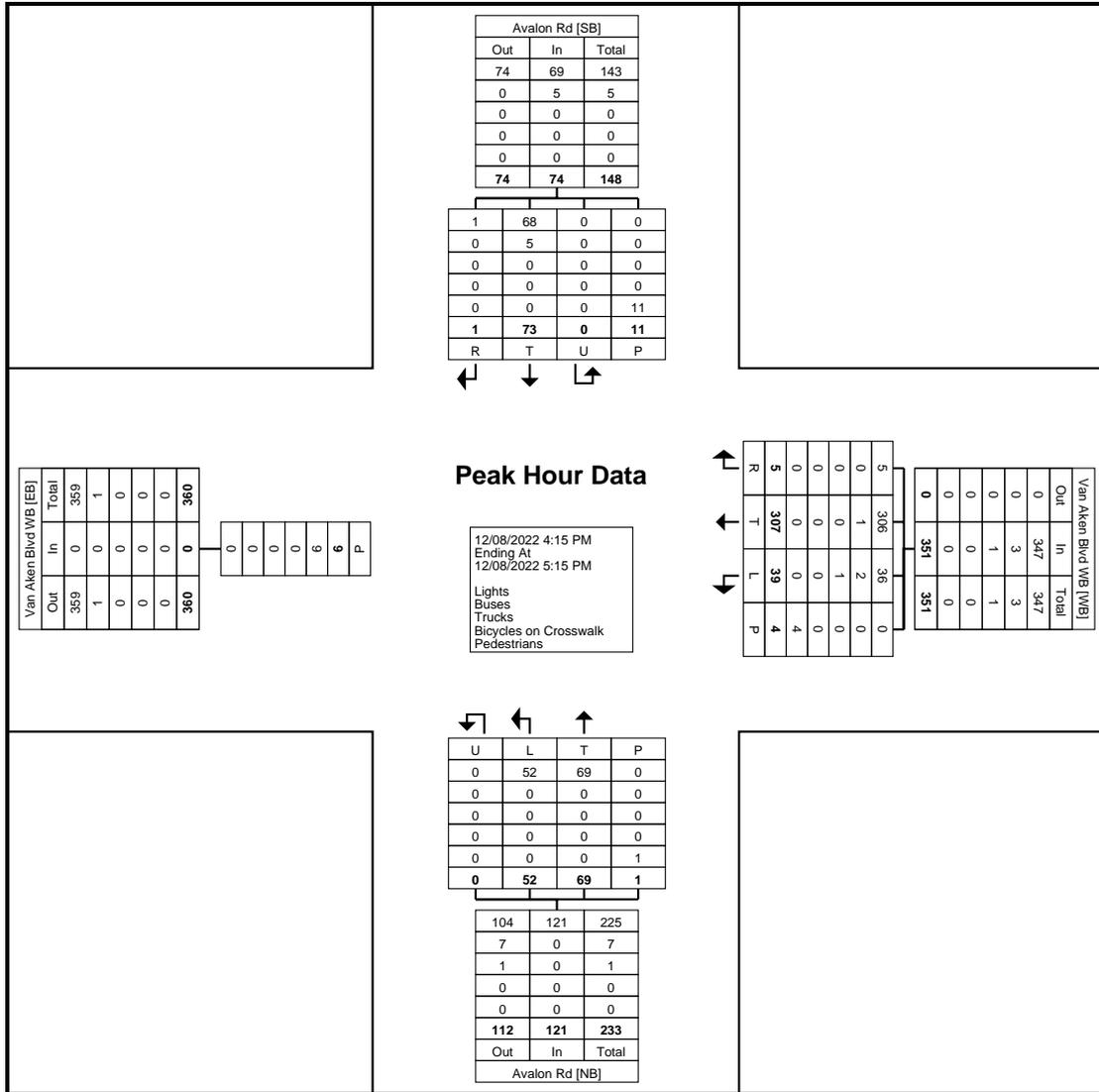
Turning Movement Data Plot

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Van Aken Blvd WB		Van Aken Blvd WB						Avalon Rd					Avalon Rd					Int. Total	
	Eastbound		Westbound						Northbound					Southbound						
	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds		App. Total
7:45 AM	0	0	6	83	2	0	1	91	14	13	0	0	27	13	0	0	0	2	13	131
8:00 AM	3	0	3	114	15	0	2	132	20	33	0	0	53	17	0	0	0	4	17	202
8:15 AM	0	0	8	85	3	0	2	96	18	25	0	0	43	21	2	0	0	0	23	162
8:30 AM	1	0	7	82	1	0	1	90	7	16	0	0	23	15	0	0	0	1	15	128
Total	4	0	24	364	21	0	6	409	59	87	0	0	146	66	2	0	0	7	68	623
Approach %	-	-	5.9	89.0	5.1	0.0	-	-	40.4	59.6	0.0	-	-	97.1	2.9	0.0	0.0	-	-	-
Total %	-	0.0	3.9	58.4	3.4	0.0	-	65.7	9.5	14.0	0.0	-	23.4	10.6	0.3	0.0	0.0	-	10.9	-
PHF	-	0.000	0.750	0.798	0.350	0.000	-	0.775	0.738	0.659	0.000	-	0.689	0.786	0.250	0.000	0.000	-	0.739	0.771
Lights	-	0	21	349	21	0	-	391	57	87	0	-	144	64	2	0	0	-	66	601
% Lights	-	-	87.5	95.9	100.0	-	-	95.6	96.6	100.0	-	-	98.6	97.0	100.0	-	-	-	97.1	96.5
Buses	-	0	0	2	0	0	-	2	2	0	0	-	2	2	0	0	0	-	2	6
% Buses	-	-	0.0	0.5	0.0	-	-	0.5	3.4	0.0	-	-	1.4	3.0	0.0	-	-	-	2.9	1.0
Trucks	-	0	3	13	0	0	-	16	0	0	0	-	0	0	0	0	0	-	0	16
% Trucks	-	-	12.5	3.6	0.0	-	-	3.9	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	2.6
Bicycles on Crosswalk	2	-	-	-	-	-	1	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	50.0	-	-	-	-	-	16.7	-	-	-	-	-	-	-	-	-	-	14.3	-	-
Pedestrians	2	-	-	-	-	-	5	-	-	-	-	0	-	-	-	-	-	6	-	-
% Pedestrians	50.0	-	-	-	-	-	83.3	-	-	-	-	-	-	-	-	-	-	85.7	-	-

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Van Aken Blvd WB		Van Aken Blvd WB						Avalon Rd					Avalon Rd					Int. Total	
	Eastbound		Westbound						Northbound					Southbound						
	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds		App. Total
4:15 PM	0	0	9	65	1	0	0	75	7	17	0	1	24	24	0	0	0	9	24	123
4:30 PM	1	0	6	80	1	0	2	87	15	17	0	0	32	13	1	0	0	1	14	133
4:45 PM	3	0	9	87	3	0	1	99	14	13	0	0	27	18	0	0	0	1	18	144
5:00 PM	2	0	15	75	0	0	1	90	16	22	0	0	38	18	0	0	0	0	18	146
Total	6	0	39	307	5	0	4	351	52	69	0	1	121	73	1	0	0	11	74	546
Approach %	-	-	11.1	87.5	1.4	0.0	-	-	43.0	57.0	0.0	-	-	98.6	1.4	0.0	0.0	-	-	-
Total %	-	0.0	7.1	56.2	0.9	0.0	-	64.3	9.5	12.6	0.0	-	22.2	13.4	0.2	0.0	0.0	-	13.6	-
PHF	-	0.000	0.650	0.882	0.417	0.000	-	0.886	0.813	0.784	0.000	-	0.796	0.760	0.250	0.000	0.000	-	0.771	0.935
Lights	-	0	36	306	5	0	-	347	52	69	0	-	121	68	1	0	0	-	69	537
% Lights	-	-	92.3	99.7	100.0	-	-	98.9	100.0	100.0	-	-	100.0	93.2	100.0	-	-	-	93.2	98.4
Buses	-	0	2	1	0	0	-	3	0	0	0	-	0	5	0	0	0	-	5	8
% Buses	-	-	5.1	0.3	0.0	-	-	0.9	0.0	0.0	-	-	0.0	6.8	0.0	-	-	-	6.8	1.5
Trucks	-	0	1	0	0	0	-	1	0	0	0	-	0	0	0	0	0	-	0	1
% Trucks	-	-	2.6	0.0	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.2
Bicycles on Crosswalk	0	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	0.0	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	6	-	-	-	-	-	4	-	-	-	-	1	-	-	-	-	-	11	-	-
% Pedestrians	100.0	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (4:15 PM)



www.TSTData.com
184 Baker Rd

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

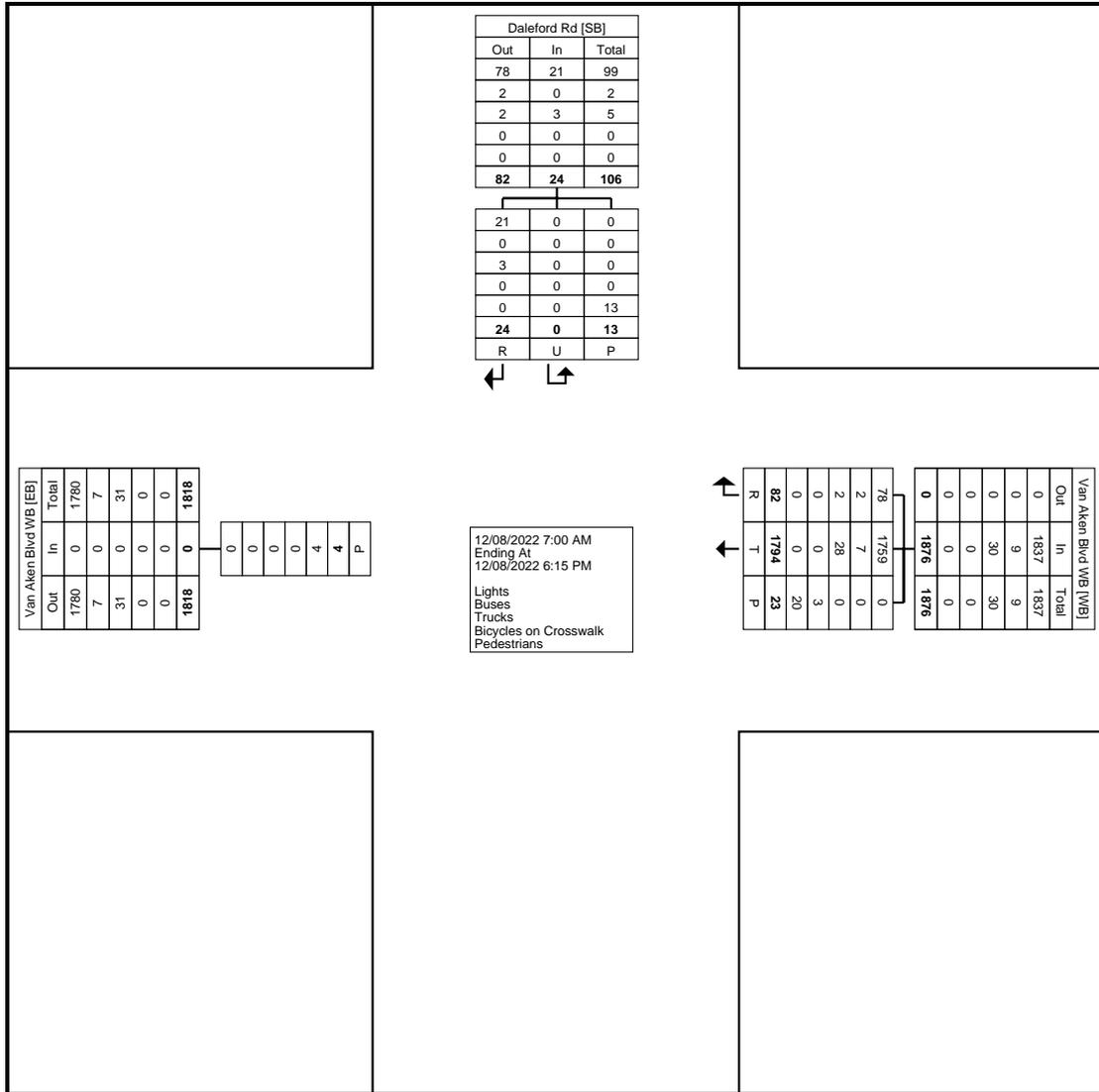
Shaker Heights, OH
Van Aken Blvd WB & Daleford Rd
Thursday, December 8, 2022
Location: 41.466764, -81.559376

Count Name: Van Aken Blvd WB & Daleford Rd
Site Code:
Start Date: 12/08/2022
Page No: 1

Turning Movement Data

Start Time	Van Aken Blvd WB Eastbound		Van Aken Blvd WB Westbound				Daleford Rd Southbound			Int. Total	
	Peds	App. Total	Thru	Right	Peds	App. Total	Right	U-Turn	Peds		App. Total
7:00 AM	0	0	37	1	0	38	1	0	0	1	39
7:15 AM	0	0	48	2	0	50	1	0	0	1	51
7:30 AM	1	0	67	0	0	67	1	0	1	1	68
7:45 AM	0	0	78	2	1	80	2	0	1	2	82
Hourly Total	1	0	230	5	1	235	5	0	2	5	240
8:00 AM	0	0	75	8	2	83	1	0	0	1	84
8:15 AM	0	0	96	3	1	99	1	0	1	1	100
8:30 AM	0	0	94	5	2	99	0	0	0	0	99
8:45 AM	0	0	66	3	0	69	1	0	1	1	70
Hourly Total	0	0	331	19	5	350	3	0	2	3	353
9:00 AM	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	87	3	0	90	0	0	0	0	90
3:15 PM	0	0	90	9	3	99	0	0	0	0	99
3:30 PM	0	0	89	3	2	92	2	0	3	2	94
3:45 PM	0	0	112	5	3	117	0	0	1	0	117
Hourly Total	0	0	378	20	8	398	2	0	4	2	400
4:00 PM	0	0	102	3	1	105	1	0	0	1	106
4:15 PM	0	0	122	6	1	128	0	0	0	0	128
4:30 PM	1	0	108	6	2	114	1	0	2	1	115
4:45 PM	1	0	120	1	1	121	4	0	0	4	125
Hourly Total	2	0	452	16	5	468	6	0	2	6	474
5:00 PM	1	0	98	6	1	104	5	0	1	5	109
5:15 PM	0	0	122	8	3	130	2	0	2	2	132
5:30 PM	0	0	82	6	0	88	1	0	0	1	89
5:45 PM	0	0	101	2	0	103	0	0	0	0	103
Hourly Total	1	0	403	22	4	425	8	0	3	8	433
6:00 PM	0	0	0	0	0	0	0	0	0	0	0
Grand Total	4	0	1794	82	23	1876	24	0	13	24	1900
Approach %	-	-	95.6	4.4	-	-	100.0	0.0	-	-	-
Total %	-	0.0	94.4	4.3	-	98.7	1.3	0.0	-	1.3	-
Lights	-	0	1759	78	-	1837	21	0	-	21	1858
% Lights	-	-	98.0	95.1	-	97.9	87.5	-	-	87.5	97.8
Buses	-	0	7	2	-	9	0	0	-	0	9
% Buses	-	-	0.4	2.4	-	0.5	0.0	-	-	0.0	0.5
Trucks	-	0	28	2	-	30	3	0	-	3	33
% Trucks	-	-	1.6	2.4	-	1.6	12.5	-	-	12.5	1.7
Bicycles on Crosswalk	0	-	-	-	3	-	-	-	0	-	-
% Bicycles on Crosswalk	0.0	-	-	-	13.0	-	-	-	0.0	-	-
Pedestrians	4	-	-	-	20	-	-	-	13	-	-
% Pedestrians	100.0	-	-	-	87.0	-	-	-	100.0	-	-

Shaker Heights, OH
Van Aken Blvd WB & Daleford
Rd
Thursday, December 8, 2022
Location: 41.466764, -
81.559376



Turning Movement Data Plot



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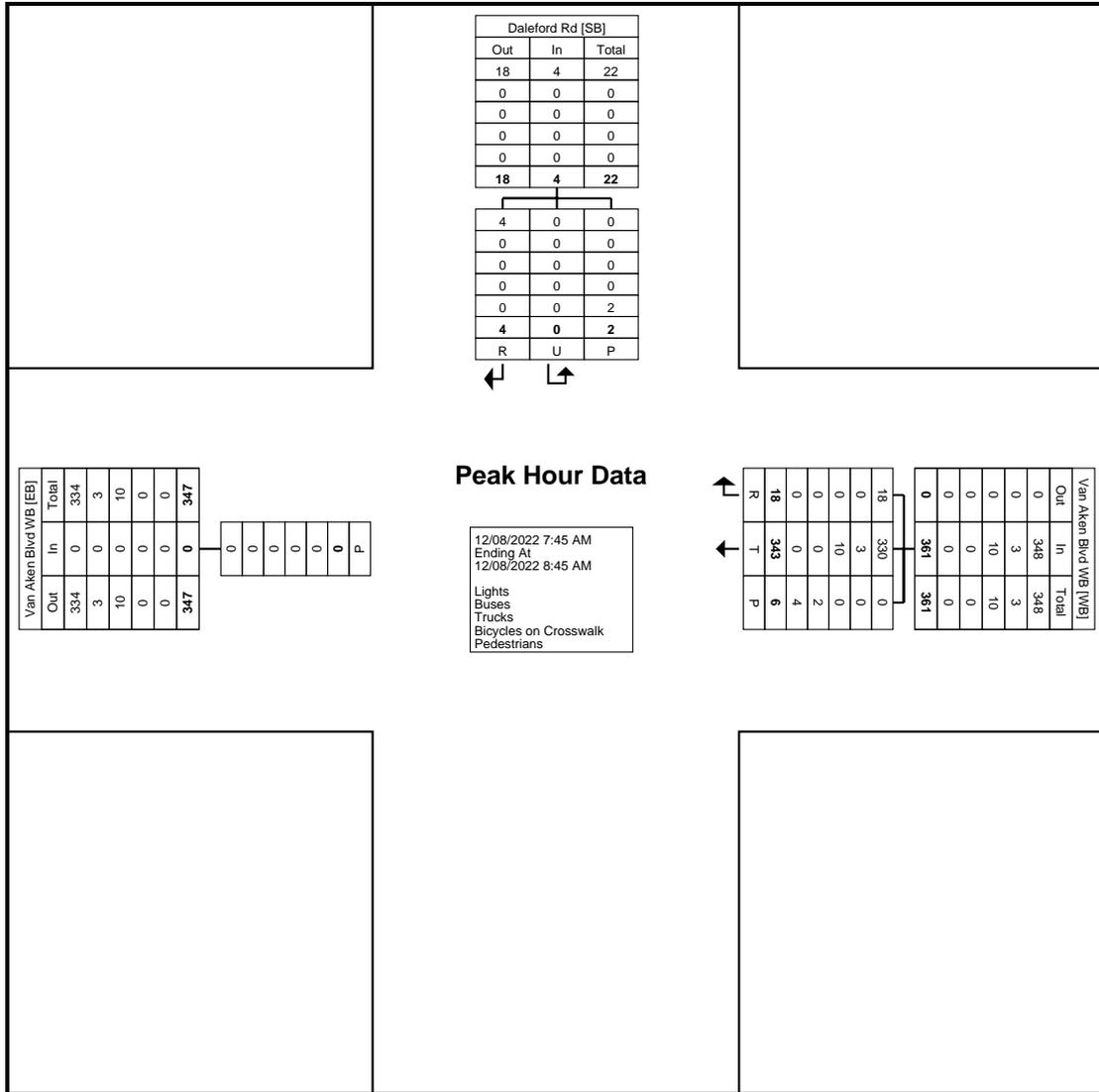
Shaker Heights, OH
Van Aken Blvd WB & Daleford Rd
Thursday, December 8, 2022
Location: 41.466764, -81.559376

Count Name: Van Aken Blvd WB & Daleford Rd
Site Code:
Start Date: 12/08/2022
Page No: 3

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Van Aken Blvd WB Eastbound		Van Aken Blvd WB Westbound				Daleford Rd Southbound				Int. Total
	Peds	App. Total	Thru	Right	Peds	App. Total	Right	U-Turn	Peds	App. Total	
7:45 AM	0	0	78	2	1	80	2	0	1	2	82
8:00 AM	0	0	75	8	2	83	1	0	0	1	84
8:15 AM	0	0	96	3	1	99	1	0	1	1	100
8:30 AM	0	0	94	5	2	99	0	0	0	0	99
Total	0	0	343	18	6	361	4	0	2	4	365
Approach %	-	-	95.0	5.0	-	-	100.0	0.0	-	-	-
Total %	-	0.0	94.0	4.9	-	98.9	1.1	0.0	-	1.1	-
PHF	-	0.000	0.893	0.563	-	0.912	0.500	0.000	-	0.500	0.913
Lights	-	0	330	18	-	348	4	0	-	4	352
% Lights	-	-	96.2	100.0	-	96.4	100.0	-	-	100.0	96.4
Buses	-	0	3	0	-	3	0	0	-	0	3
% Buses	-	-	0.9	0.0	-	0.8	0.0	-	-	0.0	0.8
Trucks	-	0	10	0	-	10	0	0	-	0	10
% Trucks	-	-	2.9	0.0	-	2.8	0.0	-	-	0.0	2.7
Bicycles on Crosswalk	0	-	-	-	2	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	0.0	-	-
Pedestrians	0	-	-	-	4	-	-	-	2	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	100.0	-	-

Shaker Heights, OH
Van Aken Blvd WB & Daleford
Rd
Thursday, December 8, 2022
Location: 41.466764, -
81.559376



Turning Movement Peak Hour Data Plot (7:45 AM)



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Shaker Heights, OH
Van Aken Blvd WB & Daleford Rd
Thursday, December 8, 2022
Location: 41.466764, -81.559376

Count Name: Van Aken Blvd WB & Daleford Rd
Site Code:
Start Date: 12/08/2022
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Van Aken Blvd WB Eastbound		Van Aken Blvd WB Westbound				Daleford Rd Southbound				Int. Total
	Peds	App. Total	Thru	Right	Peds	App. Total	Right	U-Turn	Peds	App. Total	
4:30 PM	1	0	108	6	2	114	1	0	2	1	115
4:45 PM	1	0	120	1	1	121	4	0	0	4	125
5:00 PM	1	0	98	6	1	104	5	0	1	5	109
5:15 PM	0	0	122	8	3	130	2	0	2	2	132
Total	3	0	448	21	7	469	12	0	5	12	481
Approach %	-	-	95.5	4.5	-	-	100.0	0.0	-	-	-
Total %	-	0.0	93.1	4.4	-	97.5	2.5	0.0	-	2.5	-
PHF	-	0.000	0.918	0.656	-	0.902	0.600	0.000	-	0.600	0.911
Lights	-	0	446	20	-	466	12	0	-	12	478
% Lights	-	-	99.6	95.2	-	99.4	100.0	-	-	100.0	99.4
Buses	-	0	0	1	-	1	0	0	-	0	1
% Buses	-	-	0.0	4.8	-	0.2	0.0	-	-	0.0	0.2
Trucks	-	0	2	0	-	2	0	0	-	0	2
% Trucks	-	-	0.4	0.0	-	0.4	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	0	-	-	-	1	-	-	-	0	-	-
% Bicycles on Crosswalk	0.0	-	-	-	14.3	-	-	-	0.0	-	-
Pedestrians	3	-	-	-	6	-	-	-	5	-	-
% Pedestrians	100.0	-	-	-	85.7	-	-	-	100.0	-	-



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Van Aken Blvd EB & Avalon Rd
Thursday, December 8, 2022
Location: 41.46645, -81.559032

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Count Name: Van Aken Blvd EB
& Avalon Rd
Site Code:
Start Date: 12/08/2022
Page No: 1

Turning Movement Data

Start Time	Van Aken Blvd EB						Van Aken Blvd EB		Avalon Rd						Avalon Rd						Int. Total
	Eastbound						Westbound		Northbound						Southbound						
	Left	Thru	Right	Right on Red	Peds	App. Total	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total		
7:00 AM	2	28	3	0	0	33	0	0	8	0	0	0	0	8	10	7	0	0	17	58	
7:15 AM	2	39	3	0	0	44	0	0	15	3	0	0	0	18	8	5	0	0	13	75	
7:30 AM	3	57	3	1	2	64	0	0	9	1	0	0	0	10	7	7	0	0	14	88	
7:45 AM	1	63	4	0	0	68	1	0	20	4	1	0	1	25	12	14	0	0	26	119	
Hourly Total	8	187	13	1	2	209	1	0	52	8	1	0	1	61	37	33	0	0	70	340	
8:00 AM	8	68	9	0	2	85	2	0	39	4	0	0	1	43	11	15	0	0	26	154	
8:15 AM	6	84	5	0	0	95	0	0	30	1	0	0	0	31	14	24	0	0	38	164	
8:30 AM	3	83	2	0	0	88	1	0	20	3	0	0	0	23	11	17	0	0	28	139	
8:45 AM	8	56	6	0	1	70	0	0	8	3	0	0	0	11	9	15	0	0	24	105	
Hourly Total	25	291	22	0	3	338	3	0	97	11	0	0	1	108	45	71	0	0	116	562	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3:00 PM	4	77	6	0	1	87	0	0	19	4	1	0	0	24	10	17	0	0	27	138	
3:15 PM	5	84	11	1	0	101	3	0	22	3	0	0	1	25	10	26	0	0	36	162	
3:30 PM	8	69	8	0	2	85	2	0	19	1	1	0	1	21	15	18	0	0	33	139	
3:45 PM	14	110	10	2	0	136	3	0	21	2	0	0	0	23	8	31	0	0	39	198	
Hourly Total	31	340	35	3	3	409	8	0	81	10	2	0	2	93	43	92	0	0	135	637	
4:00 PM	11	86	18	0	2	115	1	0	10	2	0	0	0	12	16	28	0	0	44	171	
4:15 PM	2	114	13	1	1	130	1	0	19	6	2	0	0	27	7	27	0	1	34	191	
4:30 PM	6	96	11	1	1	114	2	0	23	5	1	0	2	29	9	13	0	0	22	165	
4:45 PM	7	111	13	0	3	131	1	0	18	6	0	0	0	24	6	24	0	0	30	185	
Hourly Total	26	407	55	2	7	490	5	0	70	19	3	0	2	92	38	92	0	1	130	712	
5:00 PM	6	86	11	0	3	103	0	0	34	4	2	0	0	40	8	30	1	1	39	182	
5:15 PM	11	110	15	0	1	136	2	0	22	9	2	0	1	33	12	14	0	0	26	195	
5:30 PM	9	74	9	0	1	92	0	0	20	4	0	0	1	24	8	21	0	1	29	145	
5:45 PM	10	87	13	0	0	110	0	0	20	6	0	0	0	26	8	17	0	0	25	161	
Hourly Total	36	357	48	0	5	441	2	0	96	23	4	0	2	123	36	82	1	2	119	683	
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Grand Total	126	1582	173	6	20	1887	19	0	396	71	10	0	8	477	199	370	1	3	570	2934	
Approach %	6.7	83.8	9.2	0.3	-	-	-	-	83.0	14.9	2.1	0.0	-	-	34.9	64.9	0.2	-	-	-	
Total %	4.3	53.9	5.9	0.2	-	64.3	-	0.0	13.5	2.4	0.3	0.0	-	16.3	6.8	12.6	0.0	-	19.4	-	
Lights	122	1548	171	6	-	1847	-	0	392	67	10	0	-	469	196	356	1	-	553	2869	
% Lights	96.8	97.9	98.8	100.0	-	97.9	-	-	99.0	94.4	100.0	-	-	98.3	98.5	96.2	100.0	-	97.0	97.8	
Buses	4	11	2	0	-	17	-	0	2	2	0	0	-	4	2	11	0	-	13	34	
% Buses	3.2	0.7	1.2	0.0	-	0.9	-	-	0.5	2.8	0.0	-	-	0.8	1.0	3.0	0.0	-	2.3	1.2	
Trucks	0	23	0	0	-	23	-	0	2	2	0	0	-	4	1	3	0	-	4	31	
% Trucks	0.0	1.5	0.0	0.0	-	1.2	-	-	0.5	2.8	0.0	-	-	0.8	0.5	0.8	0.0	-	0.7	1.1	
Bicycles on Crosswalk	-	-	-	-	2	-	2	-	-	-	-	-	1	-	-	-	-	0	-	-	
% Bicycles on Crosswalk	-	-	-	-	10.0	-	10.5	-	-	-	-	-	12.5	-	-	-	-	0.0	-	-	
Pedestrians	-	-	-	-	18	-	17	-	-	-	-	-	7	-	-	-	-	3	-	-	
% Pedestrians	-	-	-	-	90.0	-	89.5	-	-	-	-	-	87.5	-	-	-	-	100.0	-	-	



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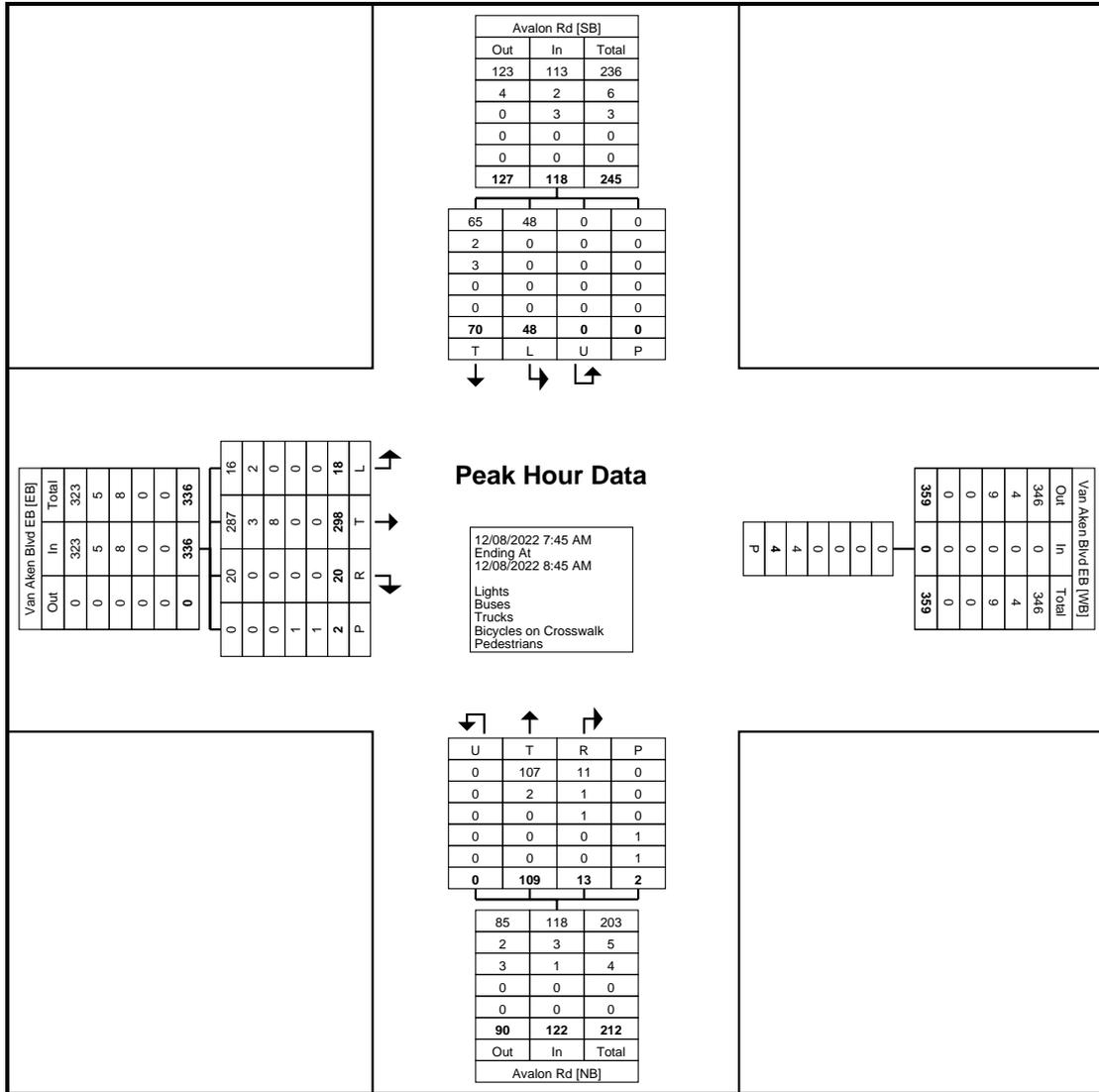
Shaker Heights, OH
Van Aken Blvd EB & Avalon Rd
Thursday, December 8, 2022
Location: 41.46645, -81.559032

Count Name: Van Aken Blvd EB
& Avalon Rd
Site Code:
Start Date: 12/08/2022
Page No: 3

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Van Aken Blvd EB						Van Aken Blvd EB		Avalon Rd						Avalon Rd					Int. Total
	Eastbound						Westbound		Northbound						Southbound					
	Left	Thru	Right	Right on Red	Peds	App. Total	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
7:45 AM	1	63	4	0	0	68	1	0	20	4	1	0	1	25	12	14	0	0	26	119
8:00 AM	8	68	9	0	2	85	2	0	39	4	0	0	1	43	11	15	0	0	26	154
8:15 AM	6	84	5	0	0	95	0	0	30	1	0	0	0	31	14	24	0	0	38	164
8:30 AM	3	83	2	0	0	88	1	0	20	3	0	0	0	23	11	17	0	0	28	139
Total	18	298	20	0	2	336	4	0	109	12	1	0	2	122	48	70	0	0	118	576
Approach %	5.4	88.7	6.0	0.0	-	-	-	-	89.3	9.8	0.8	0.0	-	-	40.7	59.3	0.0	-	-	-
Total %	3.1	51.7	3.5	0.0	-	58.3	-	0.0	18.9	2.1	0.2	0.0	-	21.2	8.3	12.2	0.0	-	20.5	-
PHF	0.563	0.887	0.556	0.000	-	0.884	-	0.000	0.699	0.750	0.250	0.000	-	0.709	0.857	0.729	0.000	-	0.776	0.878
Lights	16	287	20	0	-	323	-	0	107	10	1	0	-	118	48	65	0	-	113	554
% Lights	88.9	96.3	100.0	-	-	96.1	-	-	98.2	83.3	100.0	-	-	96.7	100.0	92.9	-	-	95.8	96.2
Buses	2	3	0	0	-	5	-	0	2	1	0	0	-	3	0	2	0	-	2	10
% Buses	11.1	1.0	0.0	-	-	1.5	-	-	1.8	8.3	0.0	-	-	2.5	0.0	2.9	-	-	1.7	1.7
Trucks	0	8	0	0	-	8	-	0	0	1	0	0	-	1	0	3	0	-	3	12
% Trucks	0.0	2.7	0.0	-	-	2.4	-	-	0.0	8.3	0.0	-	-	0.8	0.0	4.3	-	-	2.5	2.1
Bicycles on Crosswalk	-	-	-	-	1	-	0	-	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	50.0	-	0.0	-	-	-	-	-	50.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	4	-	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	50.0	-	100.0	-	-	-	-	-	50.0	-	-	-	-	-	-	-

Shaker Heights, OH
Van Aken Blvd EB & Avalon Rd
Thursday, December 8, 2022
Location: 41.46645, -81.559032



Turning Movement Peak Hour Data Plot (7:45 AM)



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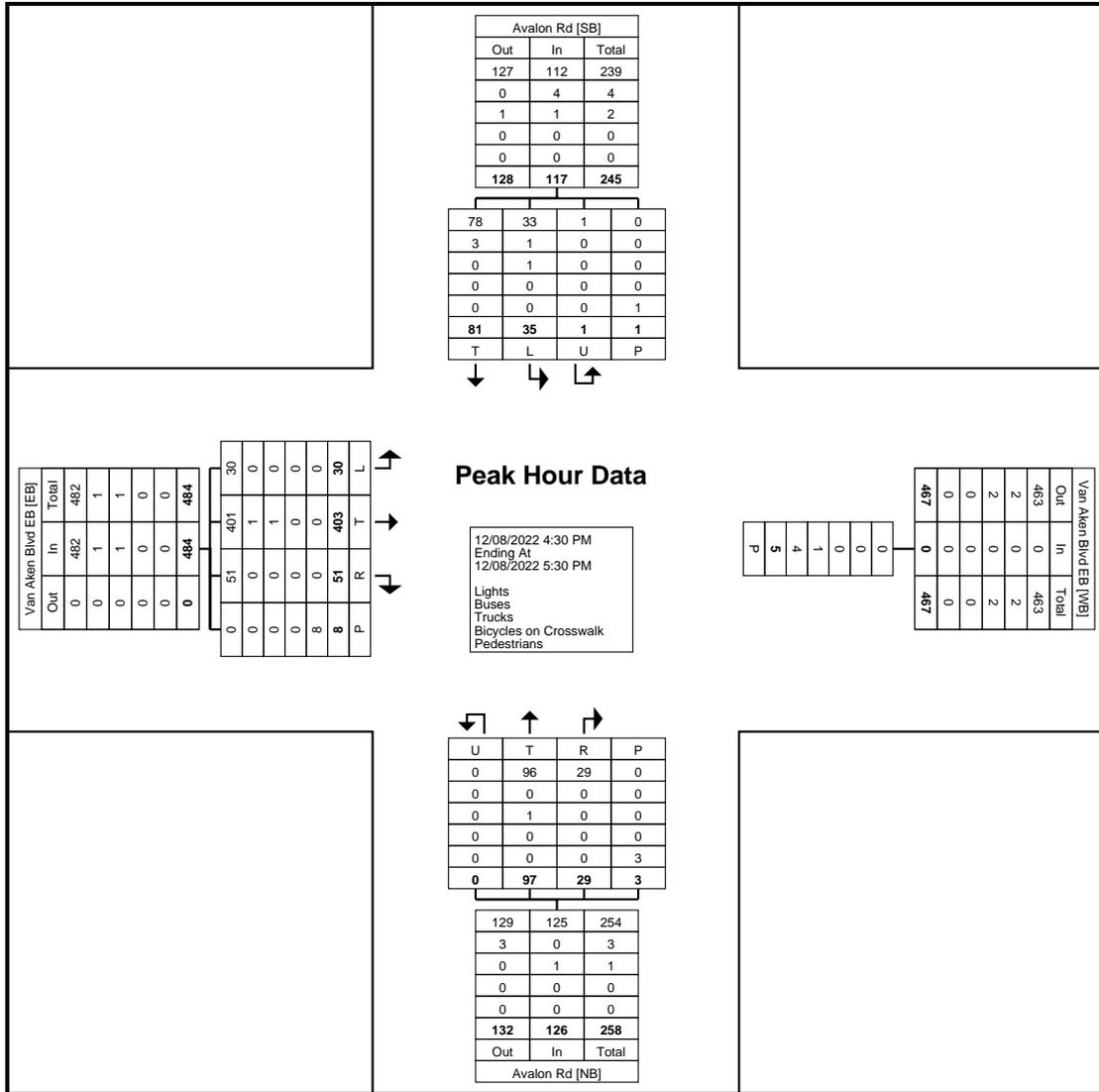
Shaker Heights, OH
Van Aken Blvd EB & Avalon Rd
Thursday, December 8, 2022
Location: 41.46645, -81.559032

Count Name: Van Aken Blvd EB
& Avalon Rd
Site Code:
Start Date: 12/08/2022
Page No: 5

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Van Aken Blvd EB						Van Aken Blvd EB		Avalon Rd						Avalon Rd					Int. Total
	Eastbound						Westbound		Northbound						Southbound					
	Left	Thru	Right	Right on Red	Peds	App. Total	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
4:30 PM	6	96	11	1	1	114	2	0	23	5	1	0	2	29	9	13	0	0	22	165
4:45 PM	7	111	13	0	3	131	1	0	18	6	0	0	0	24	6	24	0	0	30	185
5:00 PM	6	86	11	0	3	103	0	0	34	4	2	0	0	40	8	30	1	1	39	182
5:15 PM	11	110	15	0	1	136	2	0	22	9	2	0	1	33	12	14	0	0	26	195
Total	30	403	50	1	8	484	5	0	97	24	5	0	3	126	35	81	1	1	117	727
Approach %	6.2	83.3	10.3	0.2	-	-	-	-	77.0	19.0	4.0	0.0	-	-	29.9	69.2	0.9	-	-	-
Total %	4.1	55.4	6.9	0.1	-	66.6	-	0.0	13.3	3.3	0.7	0.0	-	17.3	4.8	11.1	0.1	-	16.1	-
PHF	0.682	0.908	0.833	0.250	-	0.890	-	0.000	0.713	0.667	0.625	0.000	-	0.788	0.729	0.675	0.250	-	0.750	0.932
Lights	30	401	50	1	-	482	-	0	96	24	5	0	-	125	33	78	1	-	112	719
% Lights	100.0	99.5	100.0	100.0	-	99.6	-	-	99.0	100.0	100.0	-	-	99.2	94.3	96.3	100.0	-	95.7	98.9
Buses	0	1	0	0	-	1	-	0	0	0	0	0	-	0	1	3	0	-	4	5
% Buses	0.0	0.2	0.0	0.0	-	0.2	-	-	0.0	0.0	0.0	-	-	0.0	2.9	3.7	0.0	-	3.4	0.7
Trucks	0	1	0	0	-	1	-	0	1	0	0	0	-	1	1	0	0	-	1	3
% Trucks	0.0	0.2	0.0	0.0	-	0.2	-	-	1.0	0.0	0.0	-	-	0.8	2.9	0.0	0.0	-	0.9	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	1	-	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	20.0	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	8	-	4	-	-	-	-	-	3	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	80.0	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Shaker Heights, OH
Van Aken Blvd EB & Avalon Rd
Thursday, December 8, 2022
Location: 41.46645, -81.559032



Turning Movement Peak Hour Data Plot (4:30 PM)



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Van Aken Blvd EB & Daleford Rd
Thursday, December 8, 2022
Location: 41.46643, -81.558721

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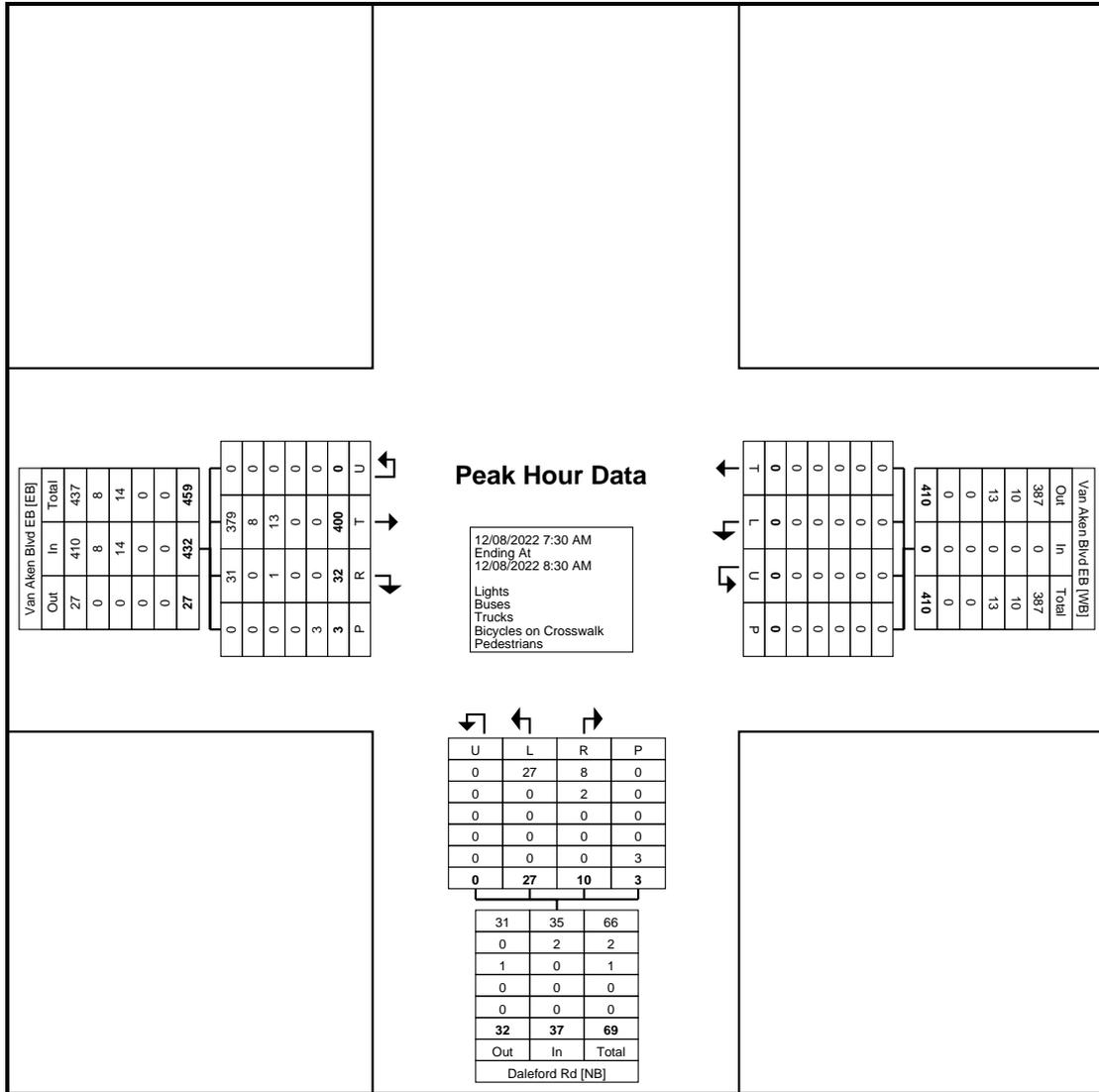
Count Name: Van Aken Blvd EB & Daleford Rd
Site Code:
Start Date: 12/08/2022
Page No: 1

Turning Movement Data

Start Time	Van Aken Blvd EB Eastbound					Van Aken Blvd EB Westbound					Daleford Rd Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	58	2	0	1	60	0	0	0	0	0	7	0	0	0	7	67
7:15 AM	66	2	0	0	68	0	0	0	0	0	6	4	0	0	10	78
7:30 AM	88	8	0	1	96	0	0	0	0	0	4	3	0	0	7	103
7:45 AM	89	8	0	0	97	0	0	0	0	0	7	1	0	0	8	105
Hourly Total	301	20	0	2	321	0	0	0	0	0	24	8	0	0	32	353
8:00 AM	125	8	0	2	133	0	0	0	0	0	8	2	0	3	10	143
8:15 AM	98	8	0	0	106	0	0	0	0	0	8	4	0	0	12	118
8:30 AM	80	9	0	0	89	0	0	0	0	0	7	3	0	1	10	99
8:45 AM	68	7	0	1	75	0	0	0	0	0	6	2	0	2	8	83
Hourly Total	371	32	0	3	403	0	0	0	0	0	29	11	0	6	40	443
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	63	2	0	1	65	0	0	0	0	0	10	4	0	1	14	79
3:15 PM	74	0	0	0	74	0	0	0	0	0	6	1	0	0	7	81
3:30 PM	80	7	0	0	87	0	0	0	0	0	12	2	0	0	14	101
3:45 PM	92	8	0	0	100	0	0	0	0	0	6	1	0	1	7	107
Hourly Total	309	17	0	1	326	0	0	0	0	0	34	8	0	2	42	368
4:00 PM	81	7	0	1	88	0	0	0	0	0	9	1	0	0	10	98
4:15 PM	63	8	0	0	71	0	0	0	0	0	4	1	0	4	5	76
4:30 PM	86	12	0	1	98	0	0	0	0	0	2	1	0	1	3	101
4:45 PM	90	9	0	0	99	0	0	0	0	0	5	3	0	0	8	107
Hourly Total	320	36	0	2	356	0	0	0	0	0	20	6	0	5	26	382
5:00 PM	88	7	0	1	95	0	0	0	0	0	5	2	0	0	7	102
5:15 PM	80	8	0	0	88	0	0	0	0	0	10	2	0	1	12	100
5:30 PM	87	15	0	2	102	0	0	0	0	0	2	1	0	0	3	105
5:45 PM	93	11	0	0	104	0	0	0	0	0	5	2	0	0	7	111
Hourly Total	348	41	0	3	389	0	0	0	0	0	22	7	0	1	29	418
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1649	146	0	11	1795	0	0	0	0	0	129	40	0	14	169	1964
Approach %	91.9	8.1	0.0	-	-	0.0	0.0	0.0	-	-	76.3	23.7	0.0	-	-	-
Total %	84.0	7.4	0.0	-	91.4	0.0	0.0	0.0	-	0.0	6.6	2.0	0.0	-	8.6	-
Lights	1596	143	0	-	1739	0	0	0	-	0	127	34	0	-	161	1900
% Lights	96.8	97.9	-	-	96.9	-	-	-	-	-	98.4	85.0	-	-	95.3	96.7
Buses	16	2	0	-	18	0	0	0	-	0	1	3	0	-	4	22
% Buses	1.0	1.4	-	-	1.0	-	-	-	-	-	0.8	7.5	-	-	2.4	1.1
Trucks	37	1	0	-	38	0	0	0	-	0	1	3	0	-	4	42
% Trucks	2.2	0.7	-	-	2.1	-	-	-	-	-	0.8	7.5	-	-	2.4	2.1
Bicycles on Crosswalk	-	-	-	2	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	18.2	-	-	-	-	-	-	-	-	-	14.3	-	-
Pedestrians	-	-	-	9	-	-	-	-	0	-	-	-	-	12	-	-
% Pedestrians	-	-	-	81.8	-	-	-	-	-	-	-	-	-	85.7	-	-

Turning Movement Peak Hour Data (7:30 AM)

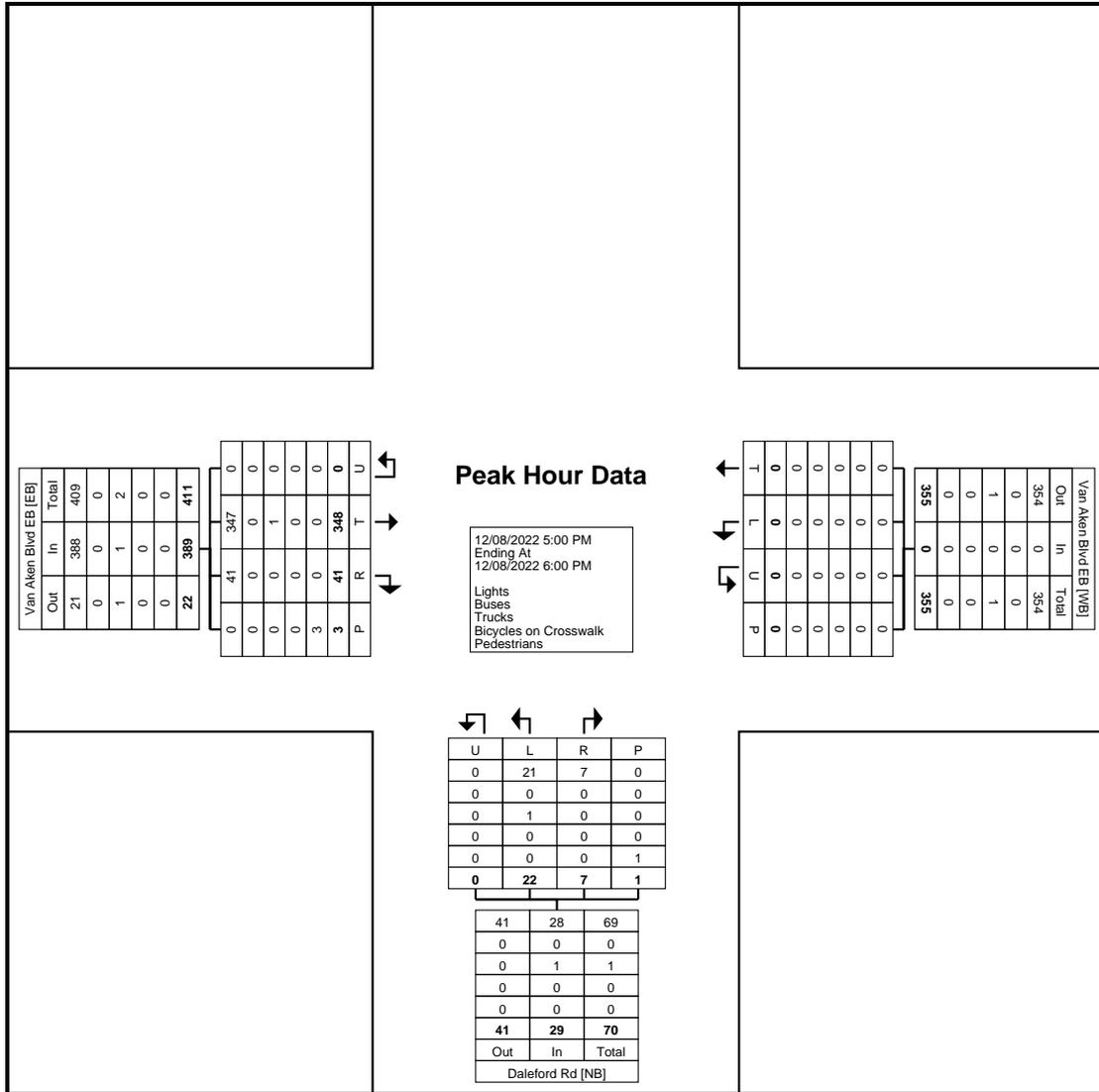
Start Time	Van Aken Blvd EB Eastbound					Van Aken Blvd EB Westbound					Daleford Rd Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:30 AM	88	8	0	1	96	0	0	0	0	0	4	3	0	0	7	103
7:45 AM	89	8	0	0	97	0	0	0	0	0	7	1	0	0	8	105
8:00 AM	125	8	0	2	133	0	0	0	0	0	8	2	0	3	10	143
8:15 AM	98	8	0	0	106	0	0	0	0	0	8	4	0	0	12	118
Total	400	32	0	3	432	0	0	0	0	0	27	10	0	3	37	469
Approach %	92.6	7.4	0.0	-	-	0.0	0.0	0.0	-	-	73.0	27.0	0.0	-	-	-
Total %	85.3	6.8	0.0	-	92.1	0.0	0.0	0.0	-	0.0	5.8	2.1	0.0	-	7.9	-
PHF	0.800	1.000	0.000	-	0.812	0.000	0.000	0.000	-	0.000	0.844	0.625	0.000	-	0.771	0.820
Lights	379	31	0	-	410	0	0	0	-	0	27	8	0	-	35	445
% Lights	94.8	96.9	-	-	94.9	-	-	-	-	-	100.0	80.0	-	-	94.6	94.9
Buses	8	0	0	-	8	0	0	0	-	0	0	2	0	-	2	10
% Buses	2.0	0.0	-	-	1.9	-	-	-	-	-	0.0	20.0	-	-	5.4	2.1
Trucks	13	1	0	-	14	0	0	0	-	0	0	0	0	-	0	14
% Trucks	3.3	3.1	-	-	3.2	-	-	-	-	-	0.0	0.0	-	-	0.0	3.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	3	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (7:30 AM)

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Van Aken Blvd EB Eastbound					Van Aken Blvd EB Westbound					Daleford Rd Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
5:00 PM	88	7	0	1	95	0	0	0	0	0	5	2	0	0	7	102
5:15 PM	80	8	0	0	88	0	0	0	0	0	10	2	0	1	12	100
5:30 PM	87	15	0	2	102	0	0	0	0	0	2	1	0	0	3	105
5:45 PM	93	11	0	0	104	0	0	0	0	0	5	2	0	0	7	111
Total	348	41	0	3	389	0	0	0	0	0	22	7	0	1	29	418
Approach %	89.5	10.5	0.0	-	-	0.0	0.0	0.0	-	-	75.9	24.1	0.0	-	-	-
Total %	83.3	9.8	0.0	-	93.1	0.0	0.0	0.0	-	0.0	5.3	1.7	0.0	-	6.9	-
PHF	0.935	0.683	0.000	-	0.935	0.000	0.000	0.000	-	0.000	0.550	0.875	0.000	-	0.604	0.941
Lights	347	41	0	-	388	0	0	0	-	0	21	7	0	-	28	416
% Lights	99.7	100.0	-	-	99.7	-	-	-	-	-	95.5	100.0	-	-	96.6	99.5
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	0.0
Trucks	1	0	0	-	1	0	0	0	-	0	1	0	0	-	1	2
% Trucks	0.3	0.0	-	-	0.3	-	-	-	-	-	4.5	0.0	-	-	3.4	0.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	3	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (5:00 PM)



Shaker Heights, OH
 Van Aken Blvd WB & Lynnfield Rd
 Thursday, December 8, 2022
 Location: 41.466778, -81.546993

www.TSTData.com
 184 Baker Rd

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

Count Name: Van Aken Blvd WB & Lynnfield Rd
 Site Code:
 Start Date: 12/08/2022
 Page No: 1

Turning Movement Data

Start Time	Van Aken Blvd WB		Van Aken Blvd WB					Lynnfield Rd					Parkland Dr					Int. Total		
	Eastbound		Westbound				Northbound					Southbound								
	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn		Peds	App. Total
7:00 AM	0	0	9	39	5	1	2	54	9	5	0	0	14	11	0	0	0	2	11	79
7:15 AM	1	0	17	58	10	3	1	88	5	15	0	0	20	15	1	0	0	1	16	124
7:30 AM	1	0	15	62	11	6	2	94	15	20	0	0	35	22	1	0	0	1	23	152
7:45 AM	3	0	13	76	12	15	0	116	11	28	0	0	39	28	1	0	0	0	29	184
Hourly Total	5	0	54	235	38	25	5	352	40	68	0	0	108	76	3	0	0	4	79	539
8:00 AM	0	0	13	89	27	2	0	131	28	38	0	0	66	30	1	0	0	0	31	228
8:15 AM	0	0	21	83	16	1	1	121	10	25	0	0	35	47	0	0	0	3	47	203
8:30 AM	0	0	25	72	10	0	1	107	19	23	0	0	42	27	3	0	0	1	30	179
8:45 AM	0	0	25	56	3	0	2	84	7	12	0	0	19	27	2	0	0	0	29	132
Hourly Total	0	0	84	300	56	3	4	443	64	98	0	0	162	131	6	0	0	4	137	742
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	0	0	12	62	9	1	0	84	9	7	0	0	16	25	0	0	0	0	25	125
3:15 PM	0	0	13	61	16	0	0	90	12	8	0	0	20	36	2	0	4	0	42	152
3:30 PM	2	0	18	73	9	0	1	100	8	7	0	0	15	27	0	0	0	3	27	142
3:45 PM	0	0	18	78	14	2	1	112	9	8	0	0	17	33	2	0	0	0	35	164
Hourly Total	2	0	61	274	48	3	2	386	38	30	0	0	68	121	4	0	4	3	129	583
4:00 PM	0	0	14	65	16	6	1	101	9	12	0	0	21	50	0	0	1	2	51	173
4:15 PM	0	0	15	64	5	7	2	91	4	13	0	0	17	35	0	0	0	1	35	143
4:30 PM	0	0	12	86	12	7	1	117	8	9	0	0	17	31	1	0	0	8	32	166
4:45 PM	0	0	22	83	15	5	2	125	11	15	0	0	26	23	2	0	0	4	25	176
Hourly Total	0	0	63	298	48	25	6	434	32	49	0	0	81	139	3	0	1	15	143	658
5:00 PM	0	0	10	91	11	2	1	114	11	8	0	0	19	36	0	0	0	0	36	169
5:15 PM	1	0	14	80	13	9	0	116	6	8	0	0	14	39	1	0	0	1	40	170
5:30 PM	1	0	23	76	7	7	4	113	10	16	0	0	26	28	0	0	0	0	28	167
5:45 PM	1	0	11	78	8	6	0	103	9	10	0	0	19	24	0	0	0	1	24	146
Hourly Total	3	0	58	325	39	24	5	446	36	42	0	0	78	127	1	0	0	2	128	652
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	10	0	320	1432	229	80	22	2061	210	287	0	0	497	594	17	0	5	28	616	3174
Approach %	-	-	15.5	69.5	11.1	3.9	-	-	42.3	57.7	0.0	-	-	96.4	2.8	0.0	0.8	-	-	-
Total %	-	0.0	10.1	45.1	7.2	2.5	-	64.9	6.6	9.0	0.0	-	15.7	18.7	0.5	0.0	0.2	-	19.4	-
Lights	-	0	284	1379	228	80	-	1971	205	287	0	-	492	586	17	0	5	-	608	3071
% Lights	-	-	88.8	96.3	99.6	100.0	-	95.6	97.6	100.0	-	-	99.0	98.7	100.0	-	100.0	-	98.7	96.8
Buses	-	0	5	16	1	0	-	22	1	0	0	-	1	4	0	0	0	-	4	27
% Buses	-	-	1.6	1.1	0.4	0.0	-	1.1	0.5	0.0	-	-	0.2	0.7	0.0	-	0.0	-	0.6	0.9
Trucks	-	0	31	37	0	0	-	68	4	0	0	-	4	4	0	0	0	-	4	76
% Trucks	-	-	9.7	2.6	0.0	0.0	-	3.3	1.9	0.0	-	-	0.8	0.7	0.0	-	0.0	-	0.6	2.4
Bicycles on Crosswalk	4	-	-	-	-	-	3	-	-	-	-	0	-	-	-	-	-	3	-	-
% Bicycles on Crosswalk	40.0	-	-	-	-	-	13.6	-	-	-	-	-	-	-	-	-	-	10.7	-	-
Pedestrians	6	-	-	-	-	-	19	-	-	-	-	0	-	-	-	-	-	25	-	-
% Pedestrians	60.0	-	-	-	-	-	86.4	-	-	-	-	-	-	-	-	-	-	89.3	-	-



Shaker Heights, OH
 Van Aken Blvd WB & Lynnfield Rd
 Thursday, December 8, 2022
 Location: 41.466778, -81.546993

www.TSTData.com
 184 Baker Rd

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

Count Name: Van Aken Blvd WB & Lynnfield Rd
 Site Code:
 Start Date: 12/08/2022
 Page No: 3

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Van Aken Blvd WB		Van Aken Blvd WB						Lynnfield Rd					Parkland Dr						Int. Total
	Eastbound		Westbound				Northbound					Southbound								
	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:45 AM	3	0	13	76	12	15	0	116	11	28	0	0	39	28	1	0	0	0	29	184
8:00 AM	0	0	13	89	27	2	0	131	28	38	0	0	66	30	1	0	0	0	31	228
8:15 AM	0	0	21	83	16	1	1	121	10	25	0	0	35	47	0	0	0	3	47	203
8:30 AM	0	0	25	72	10	0	1	107	19	23	0	0	42	27	3	0	0	1	30	179
Total	3	0	72	320	65	18	2	475	68	114	0	0	182	132	5	0	0	4	137	794
Approach %	-	-	15.2	67.4	13.7	3.8	-	-	37.4	62.6	0.0	-	-	96.4	3.6	0.0	0.0	-	-	-
Total %	-	0.0	9.1	40.3	8.2	2.3	-	59.8	8.6	14.4	0.0	-	22.9	16.6	0.6	0.0	0.0	-	17.3	-
PHF	-	0.000	0.720	0.899	0.602	0.300	-	0.906	0.607	0.750	0.000	-	0.689	0.702	0.417	0.000	0.000	-	0.729	0.871
Lights	-	0	57	302	65	18	-	442	66	114	0	-	180	131	5	0	0	-	136	758
% Lights	-	-	79.2	94.4	100.0	100.0	-	93.1	97.1	100.0	-	-	98.9	99.2	100.0	-	-	-	99.3	95.5
Buses	-	0	1	3	0	0	-	4	0	0	0	-	0	0	0	0	0	-	0	4
% Buses	-	-	1.4	0.9	0.0	0.0	-	0.8	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.5
Trucks	-	0	14	15	0	0	-	29	2	0	0	-	2	1	0	0	0	-	1	32
% Trucks	-	-	19.4	4.7	0.0	0.0	-	6.1	2.9	0.0	-	-	1.1	0.8	0.0	-	-	-	0.7	4.0
Bicycles on Crosswalk	1	-	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	33.3	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	2	-	-	-	-	-	2	-	-	-	-	0	-	-	-	-	-	4	-	-
% Pedestrians	66.7	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Shaker Heights, OH
 Van Aken Blvd WB & Lynnfield Rd
 Thursday, December 8, 2022
 Location: 41.466778, -81.546993

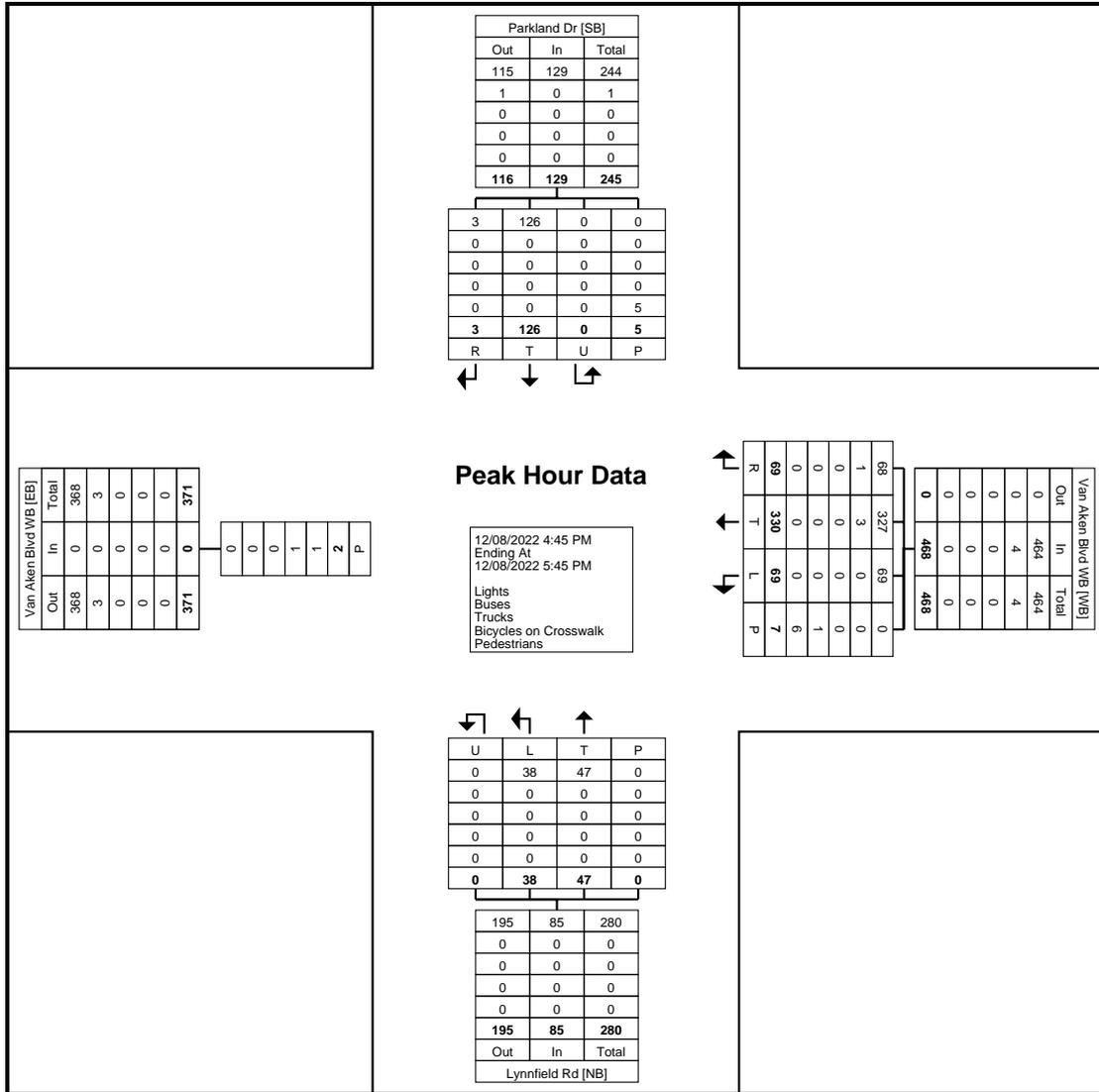
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Count Name: Van Aken Blvd WB & Lynnfield Rd
 Site Code:
 Start Date: 12/08/2022
 Page No: 5

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Van Aken Blvd WB		Van Aken Blvd WB						Lynnfield Rd					Parkland Dr						Int. Total
	Eastbound		Westbound				Northbound					Southbound								
	Peds	App. Total	Left	Thru	Right	Right on Red	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
4:45 PM	0	0	22	83	15	5	2	125	11	15	0	0	26	23	2	0	0	4	25	176
5:00 PM	0	0	10	91	11	2	1	114	11	8	0	0	19	36	0	0	0	0	36	169
5:15 PM	1	0	14	80	13	9	0	116	6	8	0	0	14	39	1	0	0	1	40	170
5:30 PM	1	0	23	76	7	7	4	113	10	16	0	0	26	28	0	0	0	0	28	167
Total	2	0	69	330	46	23	7	468	38	47	0	0	85	126	3	0	0	5	129	682
Approach %	-	-	14.7	70.5	9.8	4.9	-	-	44.7	55.3	0.0	-	-	97.7	2.3	0.0	0.0	-	-	-
Total %	-	0.0	10.1	48.4	6.7	3.4	-	68.6	5.6	6.9	0.0	-	12.5	18.5	0.4	0.0	0.0	-	18.9	-
PHF	-	0.000	0.750	0.907	0.767	0.639	-	0.936	0.864	0.734	0.000	-	0.817	0.808	0.375	0.000	0.000	-	0.806	0.969
Lights	-	0	69	327	45	23	-	464	38	47	0	-	85	126	3	0	0	-	129	678
% Lights	-	-	100.0	99.1	97.8	100.0	-	99.1	100.0	100.0	-	-	100.0	100.0	100.0	-	-	-	100.0	99.4
Buses	-	0	0	3	1	0	-	4	0	0	0	-	0	0	0	0	0	-	0	4
% Buses	-	-	0.0	0.9	2.2	0.0	-	0.9	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.6
Trucks	-	0	0	0	0	0	-	0	0	0	0	-	0	0	0	0	0	-	0	0
% Trucks	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	1	-	-	-	-	-	1	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	50.0	-	-	-	-	-	14.3	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	1	-	-	-	-	-	6	-	-	-	-	0	-	-	-	-	-	5	-	-
% Pedestrians	50.0	-	-	-	-	-	85.7	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Turning Movement Peak Hour Data Plot (4:45 PM)



www.TSTData.com
184 Baker Rd

Shaker Heights, OH
Van Aken Blvd EB & Lynnfield Rd
Thursday, December 8, 2022
Location: 41.46645, -81.546975

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

Count Name: Van Aken Blvd EB & Lynnfield Rd
Site Code:
Start Date: 12/08/2022
Page No: 1

Turning Movement Data

Start Time	Van Aken Blvd EB						Van Aken Blvd EB		Lynnfield Rd						Parkland Dr						Int. Total
	Eastbound						Westbound		Northbound						Southbound						
	Left	Thru	Right	Right on Red	Peds	App. Total	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total		
7:00 AM	2	33	1	0	0	36	1	0	8	0	0	0	0	8	16	4	0	0	20	64	
7:15 AM	2	50	3	0	1	55	0	0	10	4	0	0	1	14	25	10	0	0	35	104	
7:30 AM	0	72	3	0	1	75	0	0	20	1	0	0	0	21	33	7	0	0	40	136	
7:45 AM	1	79	2	0	3	82	0	0	18	1	0	1	2	20	38	12	0	0	50	152	
Hourly Total	5	234	9	0	5	248	1	0	56	6	0	1	3	63	112	33	0	0	145	456	
8:00 AM	2	71	0	1	0	74	0	0	34	2	0	0	0	36	32	13	0	0	45	155	
8:15 AM	1	82	6	0	0	89	3	0	20	3	0	0	0	23	44	25	0	0	69	181	
8:30 AM	4	87	3	2	0	96	0	0	26	1	0	0	2	27	32	21	0	0	53	176	
8:45 AM	0	60	10	0	0	70	1	0	8	0	0	0	0	8	38	19	0	0	57	135	
Hourly Total	7	300	19	3	0	329	4	0	88	6	0	0	2	94	146	78	0	0	224	647	
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3:00 PM	0	73	9	0	0	82	0	0	5	2	1	0	0	8	30	12	0	0	42	132	
3:15 PM	1	77	5	1	0	84	0	0	8	2	0	0	0	10	34	20	0	0	54	148	
3:30 PM	2	71	3	1	1	77	0	0	7	2	0	0	0	9	35	13	0	0	48	134	
3:45 PM	1	93	2	2	0	98	1	0	10	3	1	0	0	14	42	15	0	0	57	169	
Hourly Total	4	314	19	4	1	341	1	0	30	9	2	0	0	41	141	60	0	0	201	583	
4:00 PM	0	98	5	0	0	103	1	0	10	5	0	0	0	15	39	26	0	0	65	183	
4:15 PM	0	112	5	1	0	118	2	0	11	3	0	0	0	14	29	20	0	0	49	181	
4:30 PM	0	100	7	2	0	109	0	0	7	4	0	0	0	11	27	17	0	0	44	164	
4:45 PM	1	112	3	2	0	118	2	0	15	4	0	0	1	19	33	15	0	0	48	185	
Hourly Total	1	422	20	5	0	448	5	0	43	16	0	0	1	59	128	78	0	0	206	713	
5:00 PM	2	86	8	0	0	96	2	0	8	3	0	0	0	11	32	17	0	0	49	156	
5:15 PM	2	104	3	0	0	109	1	0	7	1	0	0	0	8	31	19	0	0	50	167	
5:30 PM	2	77	3	0	1	82	2	0	7	1	1	0	1	9	39	20	0	0	59	150	
5:45 PM	1	80	6	2	1	89	0	0	10	5	0	0	0	15	26	15	0	0	41	145	
Hourly Total	7	347	20	2	2	376	5	0	32	10	1	0	1	43	128	71	0	0	199	618	
6:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Grand Total	24	1617	88	14	8	1743	16	0	249	47	3	1	7	300	655	320	0	0	975	3018	
Approach %	1.4	92.8	5.0	0.8	-	-	-	-	83.0	15.7	1.0	0.3	-	-	67.2	32.8	0.0	-	-	-	
Total %	0.8	53.6	2.9	0.5	-	57.8	-	0.0	8.3	1.6	0.1	0.0	-	9.9	21.7	10.6	0.0	-	32.3	-	
Lights	24	1583	88	14	-	1709	-	0	245	45	3	1	-	294	628	305	0	-	933	2936	
% Lights	100.0	97.9	100.0	100.0	-	98.0	-	-	98.4	95.7	100.0	100.0	-	98.0	95.9	95.3	-	-	95.7	97.3	
Buses	0	6	0	0	-	6	-	0	0	2	0	0	-	2	7	3	0	-	10	18	
% Buses	0.0	0.4	0.0	0.0	-	0.3	-	-	0.0	4.3	0.0	0.0	-	0.7	1.1	0.9	-	-	1.0	0.6	
Trucks	0	28	0	0	-	28	-	0	4	0	0	0	-	4	20	12	0	-	32	64	
% Trucks	0.0	1.7	0.0	0.0	-	1.6	-	-	1.6	0.0	0.0	0.0	-	1.3	3.1	3.8	-	-	3.3	2.1	
Bicycles on Crosswalk	-	-	-	-	2	-	2	-	-	-	-	-	1	-	-	-	-	0	-	-	
% Bicycles on Crosswalk	-	-	-	-	25.0	-	12.5	-	-	-	-	-	14.3	-	-	-	-	-	-	-	
Pedestrians	-	-	-	-	6	-	14	-	-	-	-	-	6	-	-	-	-	0	-	-	
% Pedestrians	-	-	-	-	75.0	-	87.5	-	-	-	-	-	85.7	-	-	-	-	-	-	-	



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184 Baker Rd

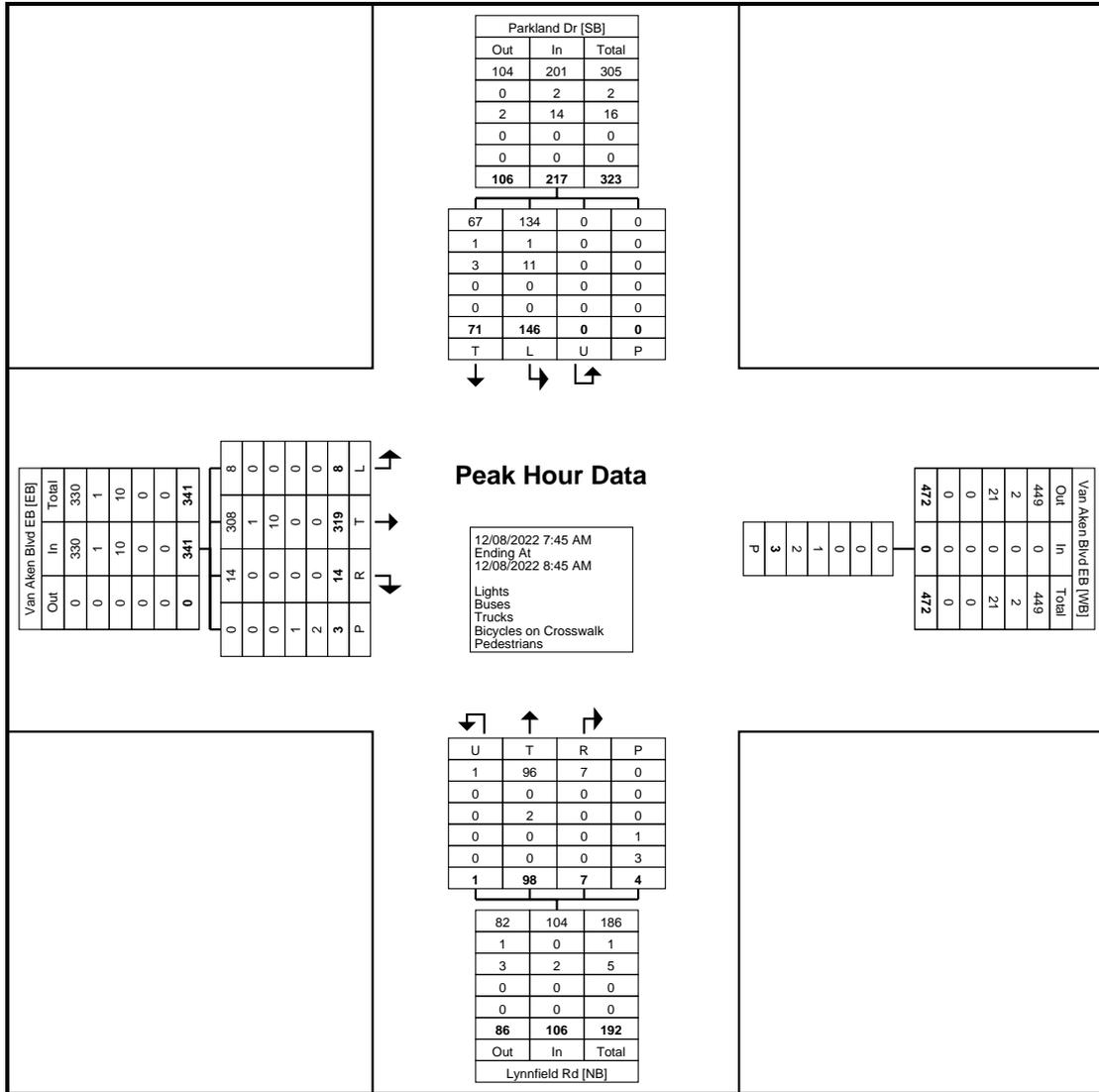
Coatesville, Pennsylvania, United States 19320
610-466-1469
Serving Transportation Professionals Since 1995

Shaker Heights, OH
Van Aken Blvd EB & Lynnfield Rd
Thursday, December 8, 2022
Location: 41.46645, -81.546975

Count Name: Van Aken Blvd EB & Lynnfield Rd
Site Code:
Start Date: 12/08/2022
Page No: 3

Turning Movement Peak Hour Data (7:45 AM)

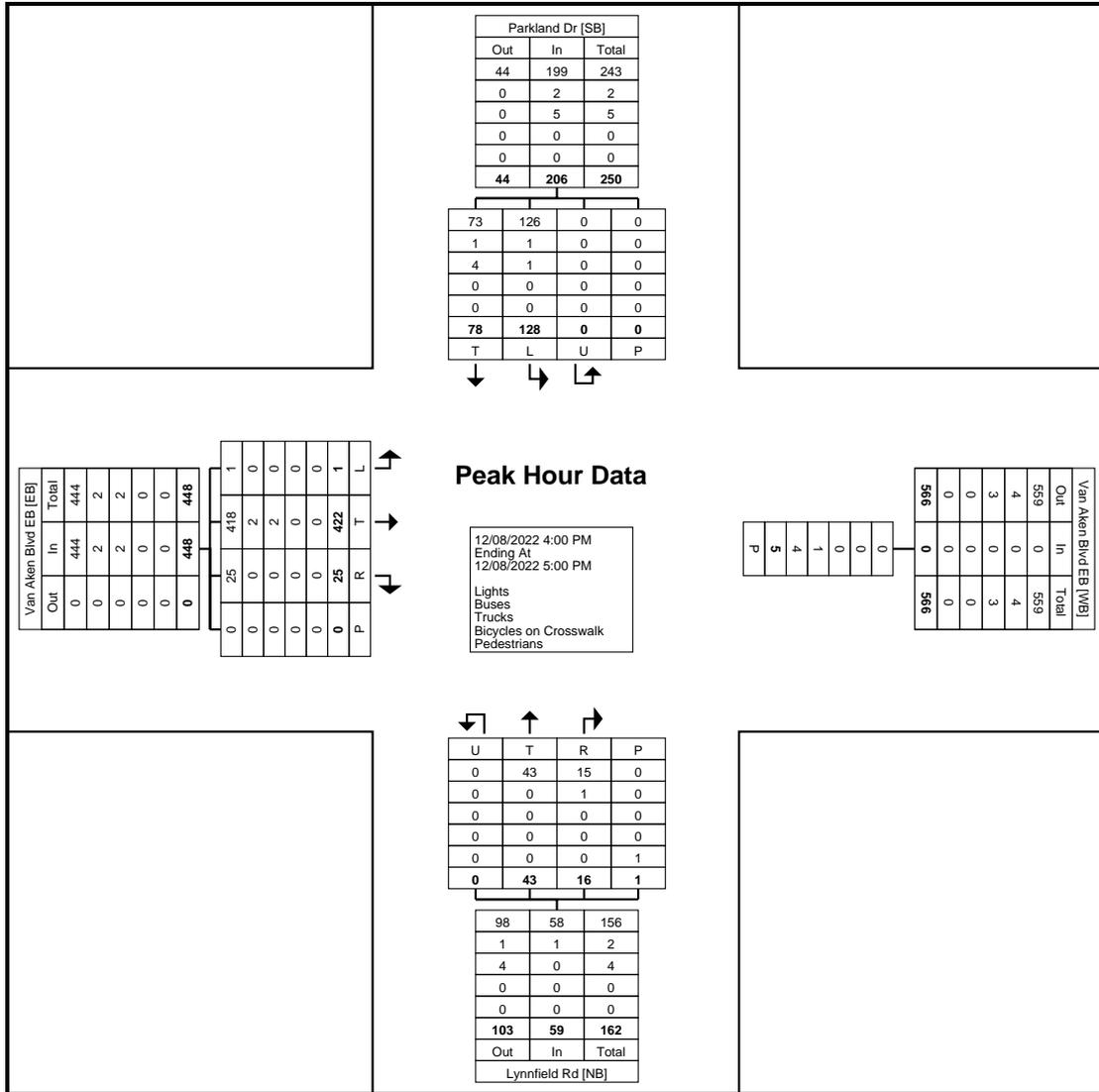
Start Time	Van Aken Blvd EB						Van Aken Blvd EB		Lynnfield Rd						Parkland Dr					Int. Total
	Eastbound						Westbound		Northbound						Southbound					
	Left	Thru	Right	Right on Red	Peds	App. Total	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
7:45 AM	1	79	2	0	3	82	0	0	18	1	0	1	2	20	38	12	0	0	50	152
8:00 AM	2	71	0	1	0	74	0	0	34	2	0	0	0	36	32	13	0	0	45	155
8:15 AM	1	82	6	0	0	89	3	0	20	3	0	0	0	23	44	25	0	0	69	181
8:30 AM	4	87	3	2	0	96	0	0	26	1	0	0	2	27	32	21	0	0	53	176
Total	8	319	11	3	3	341	3	0	98	7	0	1	4	106	146	71	0	0	217	664
Approach %	2.3	93.5	3.2	0.9	-	-	-	-	92.5	6.6	0.0	0.9	-	-	67.3	32.7	0.0	-	-	-
Total %	1.2	48.0	1.7	0.5	-	51.4	-	0.0	14.8	1.1	0.0	0.2	-	16.0	22.0	10.7	0.0	-	32.7	-
PHF	0.500	0.917	0.458	0.375	-	0.888	-	0.000	0.721	0.583	0.000	0.250	-	0.736	0.830	0.710	0.000	-	0.786	0.917
Lights	8	308	11	3	-	330	-	0	96	7	0	1	-	104	134	67	0	-	201	635
% Lights	100.0	96.6	100.0	100.0	-	96.8	-	-	98.0	100.0	-	100.0	-	98.1	91.8	94.4	-	-	92.6	95.6
Buses	0	1	0	0	-	1	-	0	0	0	0	0	-	0	1	1	0	-	2	3
% Buses	0.0	0.3	0.0	0.0	-	0.3	-	-	0.0	0.0	-	0.0	-	0.0	0.7	1.4	-	-	0.9	0.5
Trucks	0	10	0	0	-	10	-	0	2	0	0	0	-	2	11	3	0	-	14	26
% Trucks	0.0	3.1	0.0	0.0	-	2.9	-	-	2.0	0.0	-	0.0	-	1.9	7.5	4.2	-	-	6.5	3.9
Bicycles on Crosswalk	-	-	-	-	1	-	1	-	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	33.3	-	-	-	-	-	25.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	2	-	-	-	-	-	3	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	66.7	-	66.7	-	-	-	-	-	75.0	-	-	-	-	-	-	-



Turning Movement Peak Hour Data Plot (7:45 AM)

Turning Movement Peak Hour Data (4:00 PM)

Start Time	Van Aken Blvd EB						Van Aken Blvd EB		Lynnfield Rd						Parkland Dr					Int. Total
	Eastbound						Westbound		Northbound						Southbound					
	Left	Thru	Right	Right on Red	Peds	App. Total	Peds	App. Total	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
4:00 PM	0	98	5	0	0	103	1	0	10	5	0	0	0	15	39	26	0	0	65	183
4:15 PM	0	112	5	1	0	118	2	0	11	3	0	0	0	14	29	20	0	0	49	181
4:30 PM	0	100	7	2	0	109	0	0	7	4	0	0	0	11	27	17	0	0	44	164
4:45 PM	1	112	3	2	0	118	2	0	15	4	0	0	1	19	33	15	0	0	48	185
Total	1	422	20	5	0	448	5	0	43	16	0	0	1	59	128	78	0	0	206	713
Approach %	0.2	94.2	4.5	1.1	-	-	-	-	72.9	27.1	0.0	0.0	-	-	62.1	37.9	0.0	-	-	-
Total %	0.1	59.2	2.8	0.7	-	62.8	-	0.0	6.0	2.2	0.0	0.0	-	8.3	18.0	10.9	0.0	-	28.9	-
PHF	0.250	0.942	0.714	0.625	-	0.949	-	0.000	0.717	0.800	0.000	0.000	-	0.776	0.821	0.750	0.000	-	0.792	0.964
Lights	1	418	20	5	-	444	-	0	43	15	0	0	-	58	126	73	0	-	199	701
% Lights	100.0	99.1	100.0	100.0	-	99.1	-	-	100.0	93.8	-	-	-	98.3	98.4	93.6	-	-	96.6	98.3
Buses	0	2	0	0	-	2	-	0	0	1	0	0	-	1	1	1	0	-	2	5
% Buses	0.0	0.5	0.0	0.0	-	0.4	-	-	0.0	6.3	-	-	-	1.7	0.8	1.3	-	-	1.0	0.7
Trucks	0	2	0	0	-	2	-	0	0	0	0	0	-	0	1	4	0	-	5	7
% Trucks	0.0	0.5	0.0	0.0	-	0.4	-	-	0.0	0.0	-	-	-	0.0	0.8	5.1	-	-	2.4	1.0
Bicycles on Crosswalk	-	-	-	-	0	-	1	-	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	20.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	4	-	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	80.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-



Turning Movement Peak Hour Data Plot (4:00 PM)



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184 Baker Rd

Shaker Heights, OH
Van Aken Blvd & Farnsleigh Rd
Thursday, December 8, 2022
Location: 41.466413, -
81.539138

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

Count Name: Van Aken Blvd &
Farnsleigh Rd
Site Code:
Start Date: 12/08/2022
Page No: 1

Turning Movement Data

Start Time	Van Aken Blvd Eastbound							Van Aken Blvd Westbound							Farnsleigh Rd Northbound							Farnsleigh Rd Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:00 AM	12	1	22	10	0	2	45	2	0	1	0	0	2	3	0	3	0	0	0	1	3	0	3	33	3	0	0	39	90
7:15 AM	24	0	46	8	0	1	78	2	1	1	0	0	2	4	0	10	0	0	0	4	10	0	6	51	0	0	1	57	149
7:30 AM	41	1	53	15	0	0	110	2	0	0	0	0	1	2	0	12	0	0	0	1	12	0	9	53	4	0	1	66	190
7:45 AM	47	0	63	21	0	2	131	1	1	0	0	0	1	2	0	8	0	0	0	0	8	0	22	57	6	0	2	85	226
Hourly Total	124	2	184	54	0	5	364	7	2	2	0	0	6	11	0	33	0	0	0	6	33	0	40	194	13	0	4	247	655
8:00 AM	39	0	30	29	0	1	98	2	0	0	0	0	0	2	0	11	0	0	0	1	11	0	10	62	5	0	1	77	188
8:15 AM	27	1	16	53	0	1	97	1	0	0	0	0	1	1	0	7	0	0	0	2	7	0	11	70	8	0	4	89	194
8:30 AM	33	1	34	37	0	1	105	3	0	0	0	0	1	3	0	8	0	0	0	3	8	0	10	49	7	0	0	66	182
8:45 AM	39	0	28	25	0	1	92	2	0	0	0	0	1	2	0	13	0	0	0	1	13	0	9	37	1	0	3	47	154
Hourly Total	138	2	108	144	0	4	392	8	0	0	0	0	3	8	0	39	0	0	0	7	39	0	40	218	21	0	8	279	718
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	29	1	54	12	0	0	96	2	0	0	1	0	0	3	0	9	0	0	0	0	9	0	13	42	4	0	0	59	167
3:15 PM	49	0	50	14	0	0	113	2	1	0	0	0	0	3	0	17	0	0	0	2	17	0	14	47	5	0	1	66	199
3:30 PM	46	1	52	13	0	0	112	4	0	1	0	0	0	5	0	9	0	0	0	0	9	0	16	63	4	0	0	83	209
3:45 PM	54	0	71	13	0	0	138	3	1	0	1	0	0	5	0	12	0	0	0	0	12	0	30	63	5	0	5	98	253
Hourly Total	178	2	227	52	0	0	459	11	2	1	2	0	0	16	0	47	0	0	0	2	47	0	73	215	18	0	6	306	828
4:00 PM	45	0	52	38	0	0	135	1	0	0	0	0	1	1	0	17	0	0	0	0	17	0	24	58	1	0	1	83	236
4:15 PM	61	1	50	13	0	3	125	3	1	0	0	0	0	4	0	11	0	0	0	4	11	0	18	52	4	0	3	74	214
4:30 PM	43	0	58	21	0	5	122	1	0	0	0	0	0	1	0	15	0	0	0	5	15	0	19	71	7	0	8	97	235
4:45 PM	56	1	59	29	0	2	145	1	1	0	0	0	0	2	0	12	0	0	0	1	12	0	25	73	11	0	1	109	268
Hourly Total	205	2	219	101	0	10	527	6	2	0	0	0	1	8	0	55	0	0	0	10	55	0	86	254	23	0	13	363	953
5:00 PM	55	1	49	14	0	0	119	2	0	0	0	0	2	2	0	13	0	0	0	1	13	0	13	68	11	0	6	92	226
5:15 PM	55	0	45	24	0	0	124	4	0	0	0	0	0	4	0	27	0	0	0	1	27	0	26	75	9	0	3	110	265
5:30 PM	47	1	52	20	0	0	120	3	0	0	0	0	0	3	0	18	0	0	0	0	18	0	23	67	9	0	0	99	240
5:45 PM	45	0	34	20	0	0	99	4	1	1	0	0	1	6	0	26	0	0	0	0	26	0	18	64	12	0	0	94	225
Hourly Total	202	2	180	78	0	0	462	13	1	1	0	0	3	15	0	84	0	0	0	2	84	0	80	274	41	0	9	395	956
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	847	10	918	429	0	19	2204	45	7	4	2	0	13	58	0	258	0	0	0	27	258	0	319	1155	116	0	40	1590	4110
Approach %	38.4	0.5	41.7	19.5	0.0	-	-	77.6	12.1	6.9	3.4	0.0	-	-	0.0	100.0	0.0	0.0	0.0	-	-	0.0	20.1	72.6	7.3	0.0	-	-	-
Total %	20.6	0.2	22.3	10.4	0.0	-	53.6	1.1	0.2	0.1	0.0	0.0	-	1.4	0.0	6.3	0.0	0.0	0.0	-	6.3	0.0	7.8	28.1	2.8	0.0	-	38.7	-
Lights	833	0	902	426	0	-	2161	6	0	1	0	0	-	7	0	253	0	0	0	-	253	0	309	1126	110	0	-	1545	3966
% Lights	98.3	0.0	98.3	99.3	-	-	98.0	13.3	0.0	25.0	0.0	-	-	12.1	-	98.1	-	-	-	-	98.1	-	96.9	97.5	94.8	-	-	97.2	96.5
Buses	10	10	4	0	0	-	24	39	7	3	2	0	-	51	0	1	0	0	0	-	1	0	8	14	0	0	-	22	98
% Buses	1.2	100.0	0.4	0.0	-	-	1.1	86.7	100.0	75.0	100.0	-	-	87.9	-	0.4	-	-	-	-	0.4	-	2.5	1.2	0.0	-	-	1.4	2.4
Trucks	4	0	12	3	0	-	19	0	0	0	0	0	-	0	0	4	0	0	0	-	4	0	2	15	6	0	-	23	46
% Trucks	0.5	0.0	1.3	0.7	-	-	0.9	0.0	0.0	0.0	0.0	-	-	0.0	-	1.6	-	-	-	-	1.6	-	0.6	1.3	5.2	-	-	1.4	1.1
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	19	-	-	-	-	-	-	13	-	-	-	-	-	-	27	-	-	-	-	-	-	40	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

Turning Movement Peak Hour Data (7:30 AM)

Start Time	Van Aken Blvd Eastbound							Van Aken Blvd Westbound							Farnsleigh Rd Northbound							Farnsleigh Rd Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	Left	Thru	Right	Right on Red	U-Turn	Peds	App. Total	
7:30 AM	41	1	53	15	0	0	110	2	0	0	0	0	1	2	0	12	0	0	0	1	12	0	9	53	4	0	1	66	190
7:45 AM	47	0	63	21	0	2	131	1	1	0	0	0	1	2	0	8	0	0	0	0	8	0	22	57	6	0	2	85	226
8:00 AM	39	0	30	29	0	1	98	2	0	0	0	0	0	2	0	11	0	0	0	1	11	0	10	62	5	0	1	77	188
8:15 AM	27	1	16	53	0	1	97	1	0	0	0	0	1	1	0	7	0	0	0	2	7	0	11	70	8	0	4	89	194
Total	154	2	162	118	0	4	436	6	1	0	0	0	3	7	0	38	0	0	0	4	38	0	52	242	23	0	8	317	798
Approach %	35.3	0.5	37.2	27.1	0.0	-	-	85.7	14.3	0.0	0.0	0.0	-	-	0.0	100.0	0.0	0.0	0.0	-	-	0.0	16.4	76.3	7.3	0.0	-	-	-
Total %	19.3	0.3	20.3	14.8	0.0	-	54.6	0.8	0.1	0.0	0.0	0.0	-	0.9	0.0	4.8	0.0	0.0	0.0	-	4.8	0.0	6.5	30.3	2.9	0.0	-	39.7	-
PHF	0.819	0.500	0.643	0.557	0.000	-	0.832	0.750	0.250	0.000	0.000	0.000	-	0.875	0.000	0.792	0.000	0.000	0.000	-	0.792	0.000	0.591	0.864	0.719	0.000	-	0.890	0.883
Lights	148	0	158	117	0	-	423	0	0	0	0	0	-	0	0	37	0	0	0	-	37	0	47	230	21	0	-	298	758
% Lights	96.1	0.0	97.5	99.2	-	-	97.0	0.0	0.0	-	-	-	-	0.0	-	97.4	-	-	-	-	97.4	-	90.4	95.0	91.3	-	-	94.0	95.0
Buses	4	2	0	0	0	-	6	6	1	0	0	0	-	7	0	1	0	0	0	-	1	0	5	6	0	0	-	11	25
% Buses	2.6	100.0	0.0	0.0	-	-	1.4	100.0	100.0	-	-	-	-	100.0	-	2.6	-	-	-	-	2.6	-	9.6	2.5	0.0	-	-	3.5	3.1
Trucks	2	0	4	1	0	-	7	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	6	2	0	-	8	15
% Trucks	1.3	0.0	2.5	0.8	-	-	1.6	0.0	0.0	-	-	-	-	0.0	-	0.0	-	-	-	-	0.0	-	0.0	2.5	8.7	-	-	2.5	1.9
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	4	-	-	-	-	-	-	3	-	-	-	-	-	-	4	-	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-



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Shaker Heights, OH
Van Aken Blvd & Farnsleigh Rd
Thursday, December 8, 2022
Location: 41.466413, -
81.539138

Count Name: Van Aken Blvd &
Farnsleigh Rd
Site Code:
Start Date: 12/08/2022
Page No: 5

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Van Aken Blvd Eastbound							Van Aken Blvd Westbound							Farnsleigh Rd Northbound							Farnsleigh Rd Southbound							Int. Total
	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	Left	Thru	Right	Right on Red	U-Turn	Ped	App. Total	
4:45 PM	56	1	59	29	0	2	145	1	1	0	0	0	0	2	0	12	0	0	0	1	12	0	25	73	11	0	1	109	268
5:00 PM	55	1	49	14	0	0	119	2	0	0	0	0	2	2	0	13	0	0	0	1	13	0	13	68	11	0	6	92	226
5:15 PM	55	0	45	24	0	0	124	4	0	0	0	0	4	4	0	27	0	0	0	1	27	0	26	75	9	0	3	110	265
5:30 PM	47	1	52	20	0	0	120	3	0	0	0	0	3	3	0	18	0	0	0	0	18	0	23	67	9	0	0	99	240
Total	213	3	205	87	0	2	508	10	1	0	0	0	2	11	0	70	0	0	0	3	70	0	87	283	40	0	10	410	999
Approach %	41.9	0.6	40.4	17.1	0.0	-	-	90.9	9.1	0.0	0.0	0.0	-	-	0.0	100.0	0.0	0.0	0.0	-	-	0.0	21.2	69.0	9.8	0.0	-	-	-
Total %	21.3	0.3	20.5	8.7	0.0	-	50.9	1.0	0.1	0.0	0.0	0.0	-	1.1	0.0	7.0	0.0	0.0	0.0	-	7.0	0.0	8.7	28.3	4.0	0.0	-	41.0	-
PHF	0.951	0.750	0.869	0.750	0.000	-	0.876	0.625	0.250	0.000	0.000	0.000	-	0.688	0.000	0.648	0.000	0.000	0.000	-	0.648	0.000	0.837	0.943	0.909	0.000	-	0.932	0.932
Lights	213	0	205	87	0	-	505	2	0	0	0	0	-	2	0	69	0	0	0	-	69	0	87	278	40	0	-	405	981
% Lights	100.0	0.0	100.0	100.0	-	-	99.4	20.0	0.0	-	-	-	-	18.2	-	98.6	-	-	-	-	98.6	-	100.0	98.2	100.0	-	-	98.8	98.2
Buses	0	3	0	0	0	-	3	8	1	0	0	0	-	9	0	0	0	0	0	-	0	0	0	4	0	0	-	4	16
% Buses	0.0	100.0	0.0	0.0	-	-	0.6	80.0	100.0	-	-	-	-	81.8	-	0.0	-	-	-	-	0.0	-	0.0	1.4	0.0	-	-	1.0	1.6
Trucks	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	1	0	0	0	-	1	0	0	1	0	0	-	1	2
% Trucks	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	-	0.0	-	1.4	-	-	-	-	1.4	-	0.0	0.4	0.0	-	-	0.2	0.2
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-	3	-	-	-	-	-	-	10	-	-
% Pedestrians	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-	-	-	-	-	100.0	-	-

ATTACHMENT B



TFMS - Segment Forecast Report

Username	Email	Script Import Date	Script Version	Model Version
Curtis.Deibel	cdeibel@gpdgroup.com	4/14/2020 5:30:19 PM	2020.001	2022.1900

Forecast Summary

Project ID	Project Name	Opening Year	Design Year
		2027	2047

Project Description

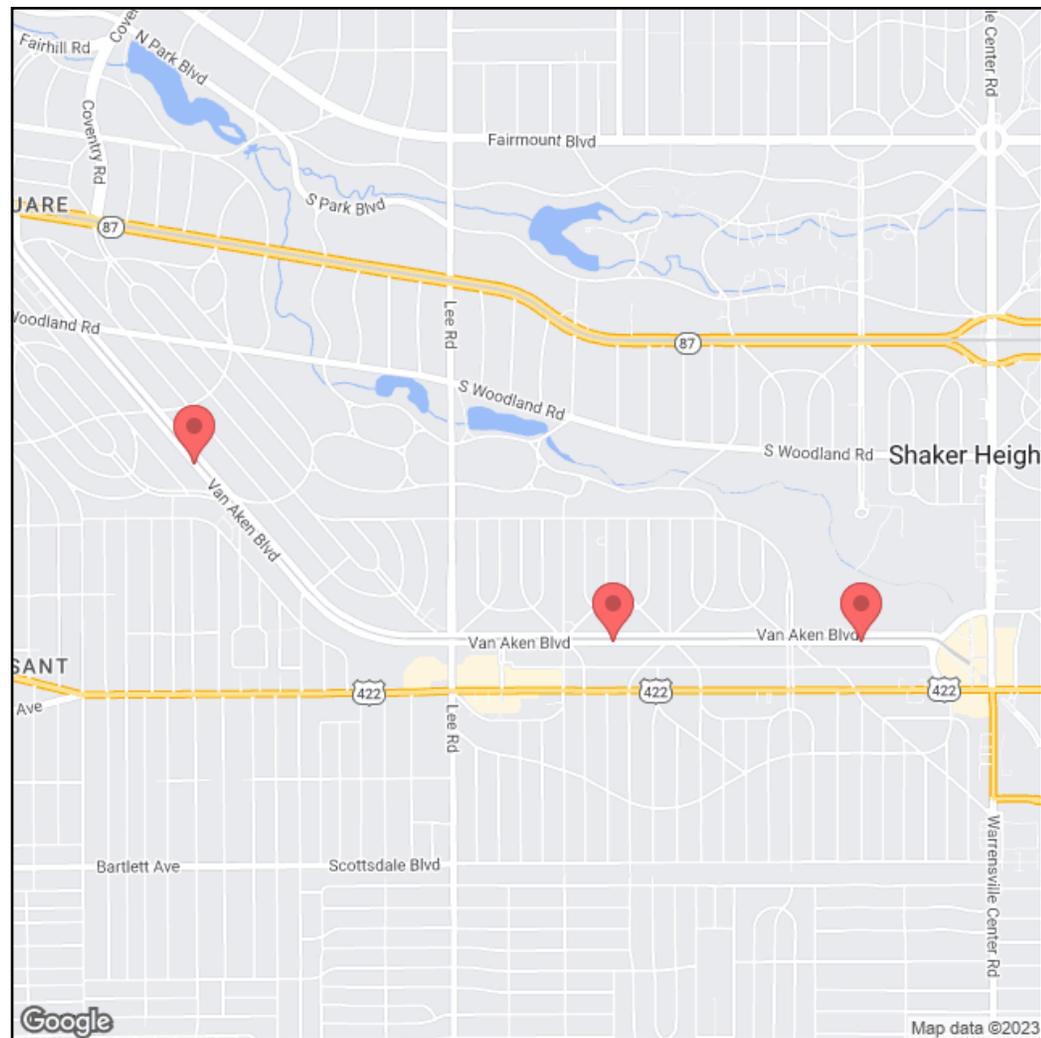
*Users of this data need to be aware that there are limitations to the forecasts generated by this product that make it suitable only for roadway design projects which are low risk.

Segment Information

Segment ID	LRS ID	BMP	EMP	Length	Latitude	Longitude
1691394	CCUYCR00776**C	0.000	1.768	1.768	-81.5786920325364	41.4735628025954
1691396	CCUYCR00776**C	1.773	2.720	0.947	-81.5563675175182	41.4664395337769
1691397	CCUYCR00776**C	2.720	3.141	0.421	-81.5431886470807	41.4664417903572

Forecast Information

Segment ID	2027 AADT	2047 AADT	DHV-30	K%	D%	T24%	TD%
1691394	13,000	13,000	1,600	12.4	58.0	1	1
1691396	10,500	10,500	1,400	13.4	51.4	1	0
1691397	10,500	10,500	1,400	13.4	51.4	1	0



Definitions:

- o AADT – Annual Average Daily Traffic
- o DHV30 – Design Hour Volume for 30th highest hour of the year
- o $DHV30 = K * AADT$
- o K % – Design Hour Factor
- o D % – Peak Direction Factor
- o T24 % – Percent Daily Trucks
- o TD % – Percent Design Hour Trucks

Forecast Segment ID	Route	BMP	EMP
1691394	CCUYCR00776**C	0.000	1.768

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 12.4	1	13,000	Average	● -1.200	0.000
AADT	D%	TD % (Existing)	BC AADT	BC Method	BC Growth Rate %	BC Calculated Rate %
13,090	◆ 58.0	1	90	Average	● -10.300	0.000

● Warning: The growth rate was negative and was capped.

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
1	5,711	-465	5,246

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-16308	18345	-2848	1230	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-1.93	-21.07	0	0	6,481	-388	5,711	-465
2	-2.35	-27.62	3	3	4,285	-630	4,142	-638
3	-3.27	-35.13	0	0	1,147	-782	688	-836
4	-999999.00	-999999.00	0	0				
5	-999999.00	-999999.00	0	0				
6	-999999.00	-999999.00	0	0				

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-21,583	8,946	-711	142	-1.11	1.93
2	RAT	0.38	11,523	0.11	97	-0.42	0.23
3	MRAT	0.88	11,523	1.06	100	-0.42	0.34
4	RAF		10,234		121	-0.76	1.14

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Ratio	Model Ratio	-0.400	0.300

Method 1 - 4 Volume

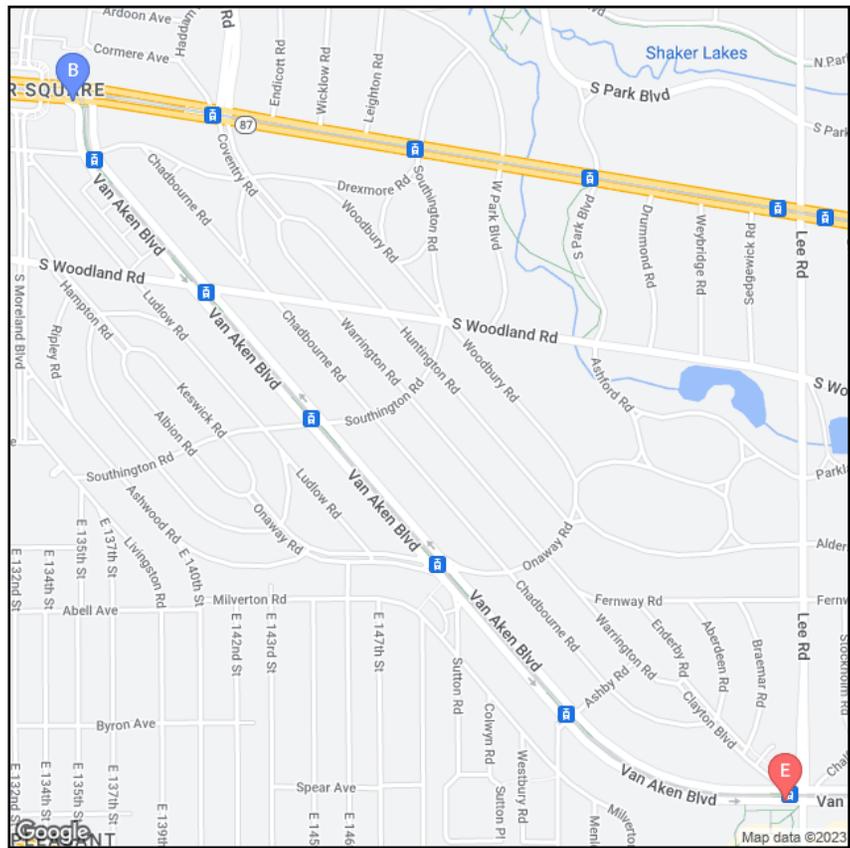
PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
8804	11426	97	142	8901	11568

Process Flag:	Adjusted model to counts with process per ODOT 255 spreadsheet
Comment:	No Comment

Historical Count

Year	All	Cars	Trucks
2013	15,427	15,150	276
2015	15,824	15,540	283
2018	15,993	15,643	350
* 2021	13,085	12,994	91

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2027 AADT	Yr 2047 AADT	DHV30	K %	D %	T24 %	TD %
1691394	CCUYCR00776**C	0.000	1.768	1.768	13,000	13,000	1600	12.4	58.0	1	1

Forecast Segment ID	Route	BMP	EMP
1691396	CCUYCR00776**C	1.773	2.720

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 13.4	1	11,000	Average	● -3.400	0.000
AADT	D%	TD % (Existing)	BC AADT	BC Method	BC Growth Rate %	BC Calculated Rate %
11,070	◆ 51.4	0	70	Average	● -19.000	0.000

● Warning: The growth rate was negative and was capped.

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
1	-9,953	-717	-10,670

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-66827	25251	-2693	522	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-6.67	-40.35	0	0	-8,017	-650	-9,953	-717
2	-8.00	-47.66	3	3	-13,727	-849	-14,032	-859
3	-10.38	-60.42	0	0	-20,175	-1,064	-21,401	-1,107
4	-999999.00	-999999.00	0	0				
5	-999999.00	-999999.00	0	0				
6	-999999.00	-999999.00	0	0				

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-9,154	9,890	-512	220	-0.31	7.87
2	RAT	0.54	10,266	0.12	85	-0.15	0.93
3	MRAT	0.96	10,266	1.26	113	-0.16	2.37
4	RAF		10,078		166	-0.24	5.10

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Ratio	Model Ratio	-0.200	2.400

Method 1 - 4 Volume

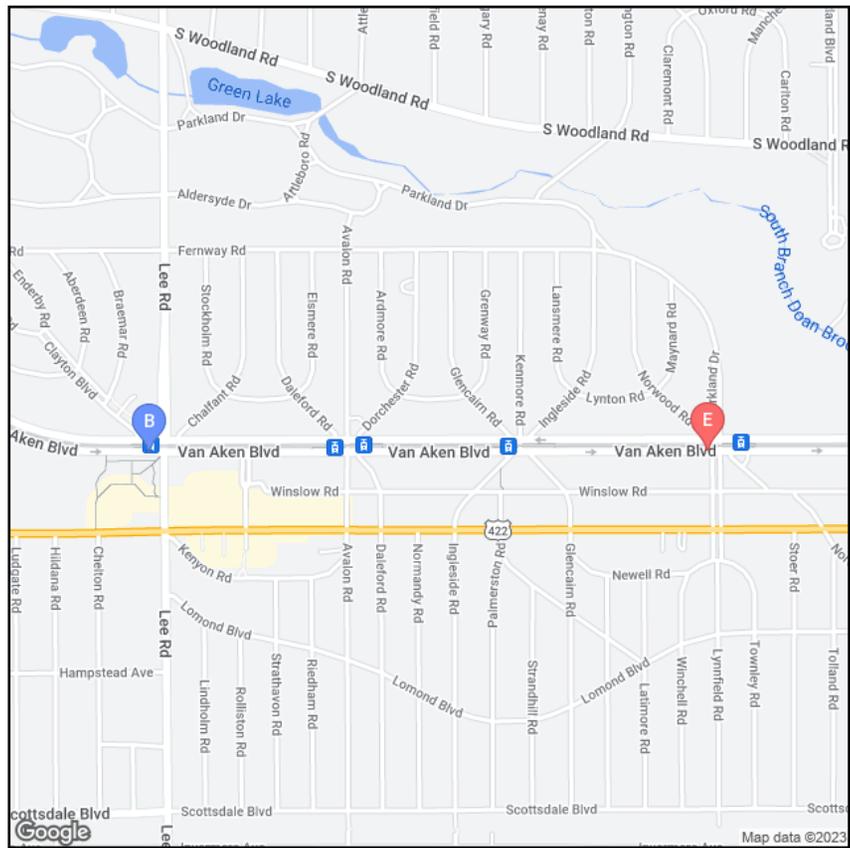
PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
9670	10181	85	220	9755	10401

Process Flag:	Adjusted model to counts with process per ODOT 255 spreadsheet
Comment:	No Comment

Historical Count

Year	All	Cars	Trucks
2013	17,138	16,835	302
2015	17,579	17,268	310
2018	17,948	17,631	317
* 2021	10,706	10,639	67

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2027 AADT	Yr 2047 AADT	DHV30	K %	D %	T24 %	TD %
1691396	CCUYCR00776**C	1.773	2.720	0.947	10,500	10,500	1400	13.4	51.4	1	0

Forecast Segment ID	Route	BMP	EMP
1691397	CCUYCR00776**C	2.720	3.141

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 13.4	1	11,000	Average	● -3.400	0.000
AADT	D%	TD % (Existing)	BC AADT	BC Method	BC Growth Rate %	BC Calculated Rate %
11,070	◆ 51.4	0	70	Average	● -19.000	0.000

● Warning: The growth rate was negative and was capped.

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
1	-9,953	-717	-10,670

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-66827	25251	-2693	522	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-6.67	-40.35	0	0	-8,017	-650	-9,953	-717
2	-8.00	-47.66	3	3	-13,727	-849	-14,032	-859
3	-10.38	-60.42	0	0	-20,175	-1,064	-21,401	-1,107
4	-999999.00	-999999.00	0	0				
5	-999999.00	-999999.00	0	0				
6	-999999.00	-999999.00	0	0				

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-10,542	9,560	-520	222	-0.42	7.98
2	RAT	0.50	10,129	0.11	85	-0.19	0.93
3	MRAT	0.95	10,129	1.26	113	-0.20	2.37
4	RAF		9,845		167	-0.31	5.15

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Ratio	Model Ratio	-0.200	2.400

Method 1 - 4 Volume

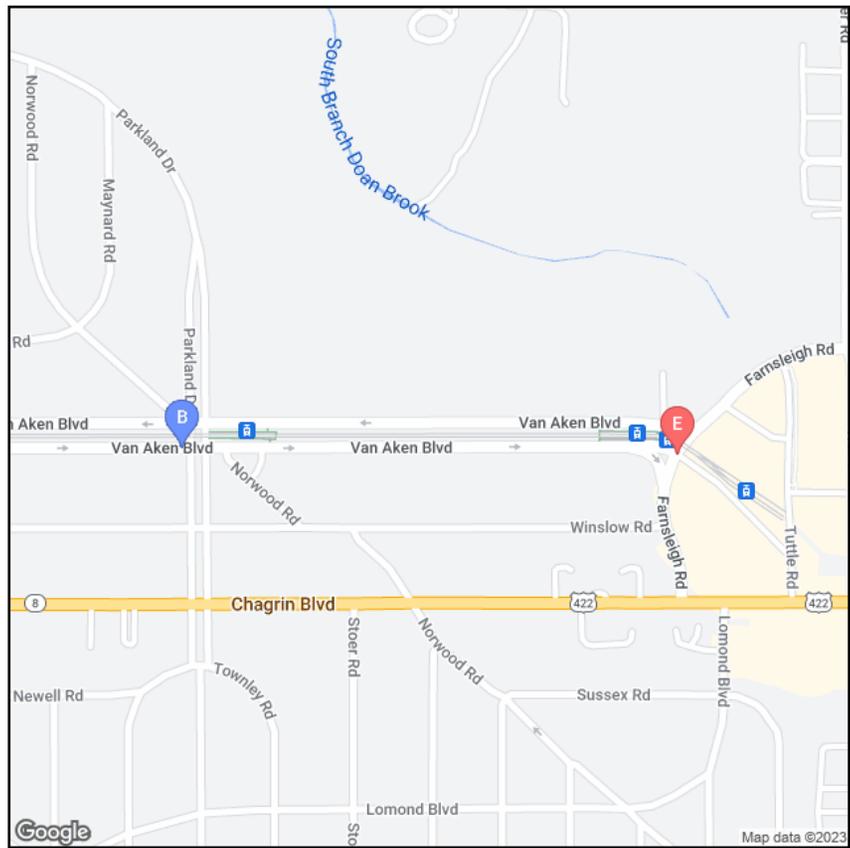
PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
9338	10044	85	222	9423	10266

Process Flag:	Adjusted model to counts with process per ODOT 255 spreadsheet
Comment:	No Comment

Historical Count

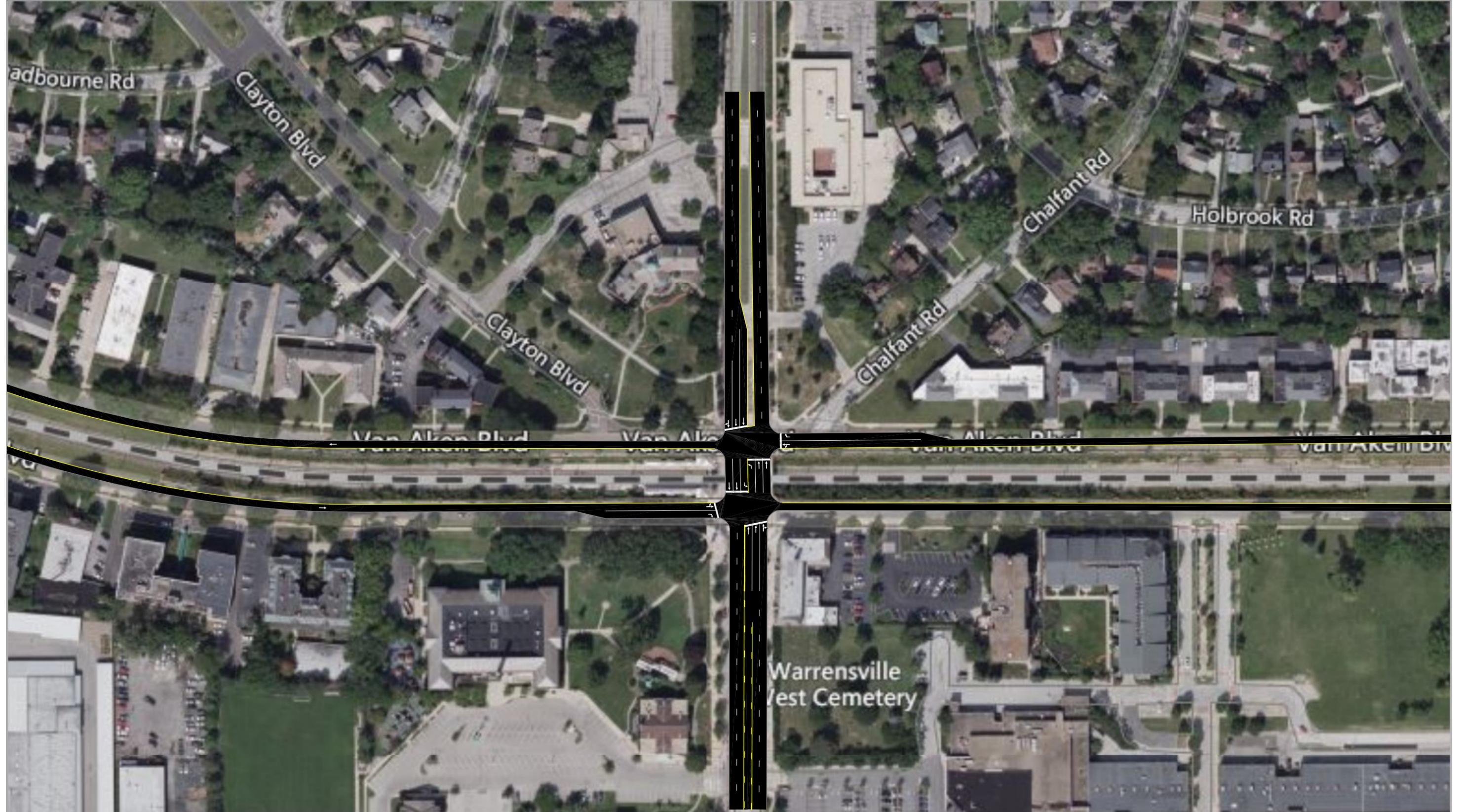
Year	All	Cars	Trucks
2013	17,138	16,835	302
2015	17,579	17,268	310
2018	17,948	17,631	317
* 2021	10,706	10,639	67

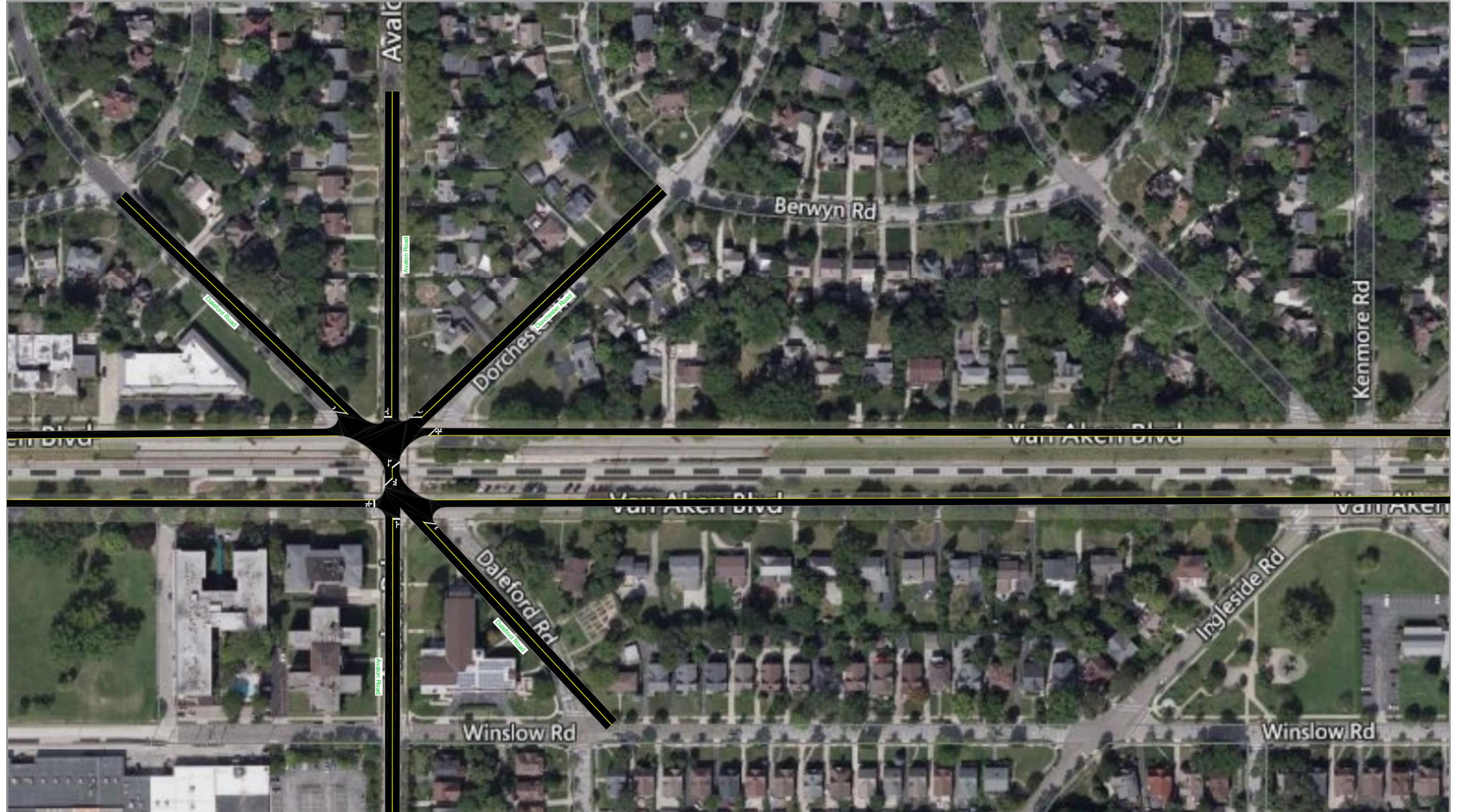
* Pivot Point



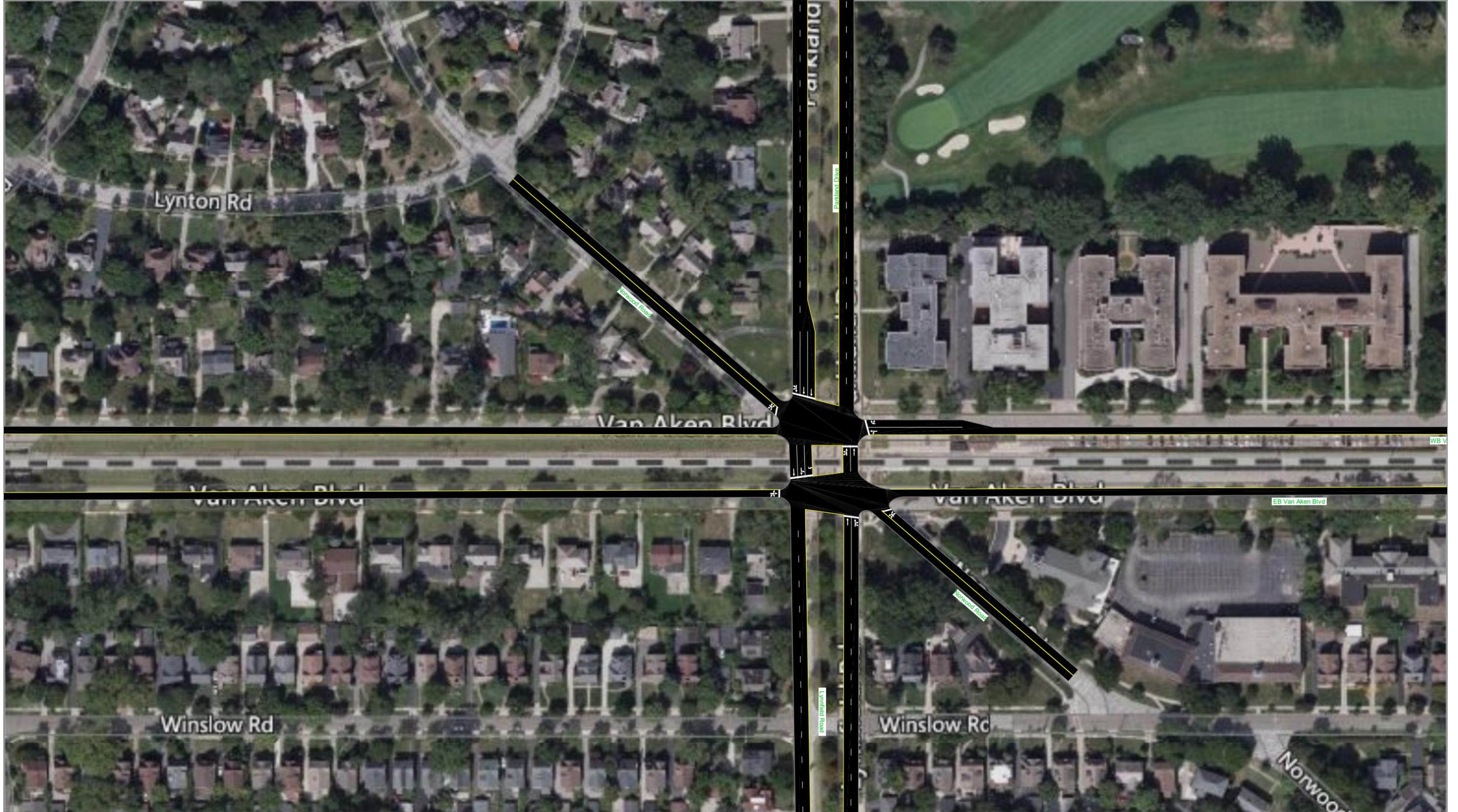
Segment ID	LRS ID	BMP	EMP	Length	Yr 2027 AADT	Yr 2047 AADT	DHV30	K %	D %	T24 %	TD %
1691397	CCUYCR00776**C	2.720	3.141	0.421	10,500	10,500	1400	13.4	51.4	1	0

ATTACHMENT C





PM Peak Van Aken Traffic Operations Study Design Year 2045 'Build' - PM Peak Hour
GPD Group - Tyler Stratton





PM Peak Van Aken Traffic Operations Study Design Year 2045 'Build' - PM Peak Hour
GPD Group - Tyler Stratton

ATTACHMENT D

Design Year 2045 'No-Build'



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕↕	↗	↖	↕↕			↕↕↕	
Traffic Volume (vph)	0	0	0	75	405	123	336	916	0	0	869	41
Future Volume (vph)	0	0	0	75	405	123	336	916	0	0	869	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	5.0	5.0	5.0			5.0	
Lane Util. Factor					0.95	1.00	1.00	0.95			0.91	
Frt					1.00	0.85	1.00	1.00			0.99	
Flt Protected					0.99	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					3512	1583	1770	3539			5051	
Flt Permitted					0.99	1.00	0.18	1.00			1.00	
Satd. Flow (perm)					3512	1583	328	3539			5051	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	82	440	134	365	996	0	0	945	45
RTOR Reduction (vph)	0	0	0	0	0	108	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	522	26	365	996	0	0	986	0
Turn Type				Split	NA	Perm	pm+pt	NA			NA	
Protected Phases				4	4		1 8	6 8			2	
Permitted Phases						4	6 8					
Actuated Green, G (s)					23.7	23.7	81.3	86.3			38.0	
Effective Green, g (s)					23.7	23.7	81.3	86.3			38.0	
Actuated g/C Ratio					0.20	0.20	0.68	0.72			0.32	
Clearance Time (s)					5.0	5.0					5.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					693	312	682	2545			1599	
v/s Ratio Prot					c0.15		c0.17	0.28			c0.20	
v/s Ratio Perm						0.02	0.19					
v/c Ratio					0.75	0.08	0.54	0.39			0.62	
Uniform Delay, d1					45.4	39.3	13.0	6.6			34.8	
Progression Factor					0.54	1.04	2.26	0.11			1.00	
Incremental Delay, d2					4.3	0.1	0.7	0.1			1.8	
Delay (s)					28.7	41.2	30.0	0.8			36.6	
Level of Service					C	D	C	A			D	
Approach Delay (s)		0.0			31.3			8.6			36.6	
Approach LOS		A			C			A			D	

Intersection Summary

HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Van Aken Traffic Operations Study
2: Lee Road & EB Van Aken Blvd

Design Year 2045 'No-Build' - AM Peak Hour

02/08/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↑	↔					↑↑↑		↔	↑↑	
Traffic Volume (vph)	56	309	171	0	0	0	0	1196	59	89	855	0
Future Volume (vph)	56	309	171	0	0	0	0	1196	59	89	855	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0					5.0		5.0	5.0	
Lane Util. Factor		0.95	1.00					0.91		1.00	0.95	
Frt		1.00	0.85					0.99		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		3512	1583					5050		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.13	1.00	
Satd. Flow (perm)		3512	1583					5050		248	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	336	186	0	0	0	0	1300	64	97	929	0
RTOR Reduction (vph)	0	0	155	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	397	31	0	0	0	0	1360	0	97	929	0
Turn Type	Split	NA	Perm					NA		custom	NA	
Protected Phases	8	8						6		4	2 1 4	
Permitted Phases			8							2 1		
Actuated Green, G (s)		20.3	20.3					61.0		84.7	89.7	
Effective Green, g (s)		20.3	20.3					61.0		84.7	89.7	
Actuated g/C Ratio		0.17	0.17					0.51		0.71	0.75	
Clearance Time (s)		5.0	5.0					5.0		5.0		
Vehicle Extension (s)		3.0	3.0					3.0		3.0		
Lane Grp Cap (vph)		594	267					2567		475	2645	
v/s Ratio Prot		c0.11						c0.27		0.04	c0.26	
v/s Ratio Perm			0.02							0.10		
v/c Ratio		0.67	0.12					0.53		0.20	0.35	
Uniform Delay, d1		46.7	42.3					19.8		16.2	5.2	
Progression Factor		1.00	1.00					1.00		1.44	0.41	
Incremental Delay, d2		2.9	0.2					0.8		0.2	0.1	
Delay (s)		49.5	42.5					20.6		23.4	2.2	
Level of Service		D	D					C		C	A	
Approach Delay (s)		47.3			0.0			20.6			4.2	
Approach LOS		D			A			C			A	

Intersection Summary

HCM 2000 Control Delay	20.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBT	WBR	WBR2	NBL	NBT	SBT	SBR	SER2	SWR
Lane Configurations		↔↑				↑	↔		↔	↔
Traffic Volume (vph)	59	439	29	14	71	172	196	8	3	53
Future Volume (vph)	59	439	29	14	71	172	196	8	3	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0				6.0	6.0		6.0	6.0
Lane Util. Factor		0.95				1.00	1.00		1.00	1.00
Frt		0.99				1.00	0.99		0.86	0.86
Flt Protected		0.99				0.99	1.00		1.00	1.00
Satd. Flow (prot)		3478				1836	1853		1611	1611
Flt Permitted		0.99				0.69	1.00		1.00	1.00
Satd. Flow (perm)		3478				1293	1853		1611	1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	477	32	15	77	187	213	9	3	58
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	588	0	0	0	264	222	0	0	58
Turn Type	Perm	NA			Perm	NA	NA		Perm	Perm
Protected Phases		6				8 !	4!			
Permitted Phases	6				8 1				3	4!
Actuated Green, G (s)		39.1				36.9	20.9		10.0	20.9
Effective Green, g (s)		39.1				36.9	20.9		10.0	20.9
Actuated g/C Ratio		0.33				0.31	0.17		0.08	0.17
Clearance Time (s)		6.0					6.0		6.0	6.0
Vehicle Extension (s)		3.0					3.0		3.0	3.0
Lane Grp Cap (vph)		1133				397	322		134	280
v/s Ratio Prot							0.12			
v/s Ratio Perm		0.17				c0.20			c0.00	0.04
v/c Ratio		0.52				0.66	0.69		0.00	0.21
Uniform Delay, d1		32.8				36.2	46.5		50.4	42.5
Progression Factor		0.51				0.36	1.00		1.00	1.00
Incremental Delay, d2		1.6				3.1	6.0		0.0	0.4
Delay (s)		18.2				16.0	52.5		50.4	42.8
Level of Service		B				B	D		D	D
Approach Delay (s)		18.2				16.0	52.5			
Approach LOS		B				B	D			

Intersection Summary

HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	EBL	EBT	EBR	EBR2	NBT	NBR	SBL	SBT	NWR2
Lane Configurations		↕↕			↕			↕	↕
Traffic Volume (vph)	69	574	50	79	174	25	56	199	35
Future Volume (vph)	69	574	50	79	174	25	56	199	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0	6.0
Lane Util. Factor		0.95			1.00			1.00	1.00
Frt		0.97			0.98			1.00	0.86
Flt Protected		1.00			1.00			0.99	1.00
Satd. Flow (prot)		3435			1831			1842	1611
Flt Permitted		1.00			1.00			0.86	1.00
Satd. Flow (perm)		3435			1831			1596	1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	624	54	86	189	27	61	216	38
RTOR Reduction (vph)	0	7	0	0	0	0	0	0	26
Lane Group Flow (vph)	0	832	0	0	216	0	0	277	12
Turn Type	Perm	NA			NA		Perm	NA	Perm
Protected Phases		2			8			4 3 9	
Permitted Phases	2						4 3 9		6
Actuated Green, G (s)		39.1			20.9			46.9	39.1
Effective Green, g (s)		39.1			20.9			46.9	39.1
Actuated g/C Ratio		0.33			0.17			0.39	0.33
Clearance Time (s)		6.0			6.0				6.0
Vehicle Extension (s)		3.0			3.0				3.0
Lane Grp Cap (vph)		1119			318			623	524
v/s Ratio Prot					c0.12				
v/s Ratio Perm		0.24						c0.17	0.01
v/c Ratio		0.74			0.68			0.44	0.02
Uniform Delay, d1		36.0			46.4			26.9	27.5
Progression Factor		0.74			1.00			0.73	1.00
Incremental Delay, d2		4.3			5.7			0.4	0.1
Delay (s)		30.9			52.1			20.0	27.6
Level of Service		C			D			B	C
Approach Delay (s)		30.9			52.1			20.0	
Approach LOS		C			D			B	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

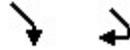


Movement	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	SBT	SBR	SBR2	SEL2	SEL
Lane Configurations		↕↑	↕				↑↑	↑↑↕				↕
Traffic Volume (vph)	101	453	2	91	96	3	172	308	8	2	8	2
Future Volume (vph)	101	453	2	91	96	3	172	308	8	2	8	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0				6.0	6.0				4.5
Lane Util. Factor		0.95	1.00				0.95	0.91				1.00
Frt		1.00	0.85				1.00	1.00				0.96
Flt Protected		0.99	1.00				0.98	1.00				0.96
Satd. Flow (prot)		3507	1583				3476	5061				1732
Flt Permitted		0.99	1.00				0.69	1.00				0.83
Satd. Flow (perm)		3507	1583				2457	5061				1485
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	492	2	99	104	3	187	335	9	2	9	2
RTOR Reduction (vph)	0	0	59	0	0	0	0	1	0	0	0	14
Lane Group Flow (vph)	0	602	42	0	0	0	294	345	0	0	0	1
Turn Type	Perm	NA	Perm		Perm	Perm	NA	NA			Perm	Prot
Protected Phases		6					8 3	4				7
Permitted Phases	6		6		8 3	8 3					7	
Actuated Green, G (s)		50.0	50.0				41.8	25.8				11.7
Effective Green, g (s)		50.0	50.0				41.8	25.8				11.7
Actuated g/C Ratio		0.42	0.42				0.35	0.22				0.10
Clearance Time (s)		6.0	6.0					6.0				4.5
Vehicle Extension (s)		3.0	3.0					3.0				3.0
Lane Grp Cap (vph)		1461	659				855	1088				144
v/s Ratio Prot								0.07				
v/s Ratio Perm		0.17	0.03				c0.12					c0.00
v/c Ratio		0.41	0.06				0.34	0.32				0.01
Uniform Delay, d1		24.6	21.0				28.9	39.7				48.9
Progression Factor		0.65	0.20				0.12	1.00				1.00
Incremental Delay, d2		0.2	0.0				0.2	0.2				0.0
Delay (s)		16.2	4.2				3.6	39.8				48.9
Level of Service		B	A				A	D				D
Approach Delay (s)		14.5					3.6	39.8				48.9
Approach LOS		B					A	D				D

Intersection Summary

HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	SER	SER2
Lane Configurations		
Traffic Volume (vph)	1	3
Future Volume (vph)	1	3
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	1	3
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		
Intersection Summary		

Van Aken Traffic Operations Study
 3: Lynnfield Road & Norwood Road & EB Van Aken Blvd

Design Year 2045 'No-Build' - AM Peak Hour

02/08/2023



Movement	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SBL2	SBL	SBT	NWL2	NWL
Lane Configurations		↔↔			↔↔			↔		↔↔		↔↔
Traffic Volume (vph)	11	450	2	15	256	10	2	206	3	201	6	2
Future Volume (vph)	11	450	2	15	256	10	2	206	3	201	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0		6.0		6.0
Lane Util. Factor		0.95			0.95			1.00		0.95		1.00
Frt		0.99			0.99			1.00		1.00		0.95
Flt Protected		1.00			1.00			0.95		1.00		0.97
Satd. Flow (prot)		3517			3515			1770		3537		1718
Flt Permitted		1.00			1.00			0.53		0.95		0.97
Satd. Flow (perm)		3517			3515			990		3366		1718
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	489	2	16	278	11	2	224	3	218	7	2
RTOR Reduction (vph)	0	2	0	0	1	0	0	0	0	0	0	13
Lane Group Flow (vph)	0	517	0	0	290	0	0	224	0	221	0	1
Turn Type	Perm	NA			NA			Perm	Perm	NA	Perm	Prot
Protected Phases		2			8					4 7		3
Permitted Phases	2							4 7	4 7			3
Actuated Green, G (s)		50.0			25.8			37.5		37.5		10.0
Effective Green, g (s)		50.0			25.8			37.5		37.5		10.0
Actuated g/C Ratio		0.42			0.22			0.31		0.31		0.08
Clearance Time (s)		6.0			6.0							6.0
Vehicle Extension (s)		3.0			3.0							3.0
Lane Grp Cap (vph)		1465			755			309		1051		143
v/s Ratio Prot					0.08							
v/s Ratio Perm		0.15						c0.23		0.07		0.00
v/c Ratio		0.35			0.38			0.72		0.21		0.01
Uniform Delay, d1		23.9			40.3			36.7		30.4		50.5
Progression Factor		0.16			1.00			0.87		0.53		1.00
Incremental Delay, d2		0.5			0.3			8.0		0.1		0.0
Delay (s)		4.2			40.6			40.1		16.2		50.5
Level of Service		A			D			D		B		D
Approach Delay (s)		4.2			40.6					28.2		50.5
Approach LOS		A			D					C		D

Intersection Summary		
HCM 2000 Control Delay	21.5	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.46	
Actuated Cycle Length (s)	120.0	Sum of lost time (s) 22.5
Intersection Capacity Utilization	61.4%	ICU Level of Service B
Analysis Period (min)	15	

c Critical Lane Group



Movement	NWR	NWR2
Lane Configurations		
Traffic Volume (vph)	4	1
Future Volume (vph)	4	1
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	4	1
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		
Intersection Summary		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↕↕	↕	↗
Traffic Volume (vph)	0	0	271	254	75	373
Future Volume (vph)	0	0	271	254	75	373
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	6.0
Lane Util. Factor				0.95	1.00	1.00
Frt				1.00	1.00	0.85
Flt Protected				0.97	1.00	1.00
Satd. Flow (prot)				3450	1863	1583
Flt Permitted				0.49	1.00	1.00
Satd. Flow (perm)				1751	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	295	276	82	405
RTOR Reduction (vph)	0	0	0	0	0	342
Lane Group Flow (vph)	0	0	0	571	82	63
Turn Type			Perm	NA	NA	Perm
Protected Phases				2 4	8	
Permitted Phases			2 4			8
Actuated Green, G (s)				120.0	18.6	18.6
Effective Green, g (s)				120.0	18.6	18.6
Actuated g/C Ratio				1.00	0.16	0.16
Clearance Time (s)					6.0	6.0
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)				1751	288	245
v/s Ratio Prot					0.04	
v/s Ratio Perm				c0.33		0.04
v/c Ratio				1.22dl	0.28	0.26
Uniform Delay, d1				0.0	44.8	44.6
Progression Factor				1.00	1.00	1.00
Incremental Delay, d2				0.1	0.5	0.6
Delay (s)				0.1	45.4	45.2
Level of Service				A	D	D
Approach Delay (s)	0.0			0.1	45.2	
Approach LOS	A			A	D	

Intersection Summary

HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	206	400	0	319	75	0
Future Volume (vph)	206	400	0	319	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	224	435	0	347	82	0
RTOR Reduction (vph)	0	111	0	0	0	0
Lane Group Flow (vph)	224	324	0	347	82	0
Turn Type	Prot	Perm		NA	NA	
Protected Phases	2			4	8	
Permitted Phases		2				
Actuated Green, G (s)	89.4	89.4		18.6	18.6	
Effective Green, g (s)	89.4	89.4		18.6	18.6	
Actuated g/C Ratio	0.75	0.75		0.16	0.16	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	2557	1179		548	548	
v/s Ratio Prot	0.07			c0.10	0.02	
v/s Ratio Perm		c0.20				
v/c Ratio	0.09	0.27		0.63	0.15	
Uniform Delay, d1	4.2	4.9		47.5	43.9	
Progression Factor	0.64	1.90		1.00	0.05	
Incremental Delay, d2	0.1	0.5		2.4	0.1	
Delay (s)	2.7	9.8		49.9	2.3	
Level of Service	A	A		D	A	
Approach Delay (s)	7.4			49.9	2.3	
Approach LOS	A			D	A	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					 		 	 			  		
Traffic Volume (vph)	0	0	0	84	323	59	261	827	0	0	1130	41	
Future Volume (vph)	0	0	0	84	323	59	261	827	0	0	1130	41	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					5.0	5.0	5.0	5.0			5.0		
Lane Util. Factor					0.95	1.00	1.00	0.95			0.91		
Frt					1.00	0.85	1.00	1.00			0.99		
Flt Protected					0.99	1.00	0.95	1.00			1.00		
Satd. Flow (prot)					3503	1583	1770	3539			5058		
Flt Permitted					0.99	1.00	0.09	1.00			1.00		
Satd. Flow (perm)					3503	1583	162	3539			5058		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	0	91	351	64	284	899	0	0	1228	45	
RTOR Reduction (vph)	0	0	0	0	0	52	0	0	0	0	3	0	
Lane Group Flow (vph)	0	0	0	0	442	12	284	899	0	0	1270	0	
Turn Type				Split	NA	Perm	pm+pt	NA			NA		
Protected Phases				4	4		1 8	6 8			2		
Permitted Phases						4	6 8						
Actuated Green, G (s)					22.8	22.8	92.2	92.2			41.1		
Effective Green, g (s)					22.8	22.8	92.2	92.2			41.1		
Actuated g/C Ratio					0.18	0.18	0.74	0.74			0.33		
Clearance Time (s)					5.0	5.0					5.0		
Vehicle Extension (s)					3.0	3.0					3.0		
Lane Grp Cap (vph)					638	288	712	2610			1663		
v/s Ratio Prot					c0.13		c0.15	0.25			c0.25		
v/s Ratio Perm						0.01	0.15						
v/c Ratio					0.69	0.04	0.40	0.34			0.76		
Uniform Delay, d1					47.8	42.1	18.4	5.8			37.6		
Progression Factor					0.79	7.98	2.10	0.13			1.00		
Incremental Delay, d2					2.9	0.1	0.3	0.1			3.4		
Delay (s)					40.8	335.8	38.8	0.8			41.0		
Level of Service					D	F	D	A			D		
Approach Delay (s)		0.0			78.1			10.0			41.0		
Approach LOS		A			E			A			D		
Intersection Summary													
HCM 2000 Control Delay			34.9		HCM 2000 Level of Service						C		
HCM 2000 Volume to Capacity ratio			0.62										
Actuated Cycle Length (s)			125.0		Sum of lost time (s)					20.0			
Intersection Capacity Utilization			85.0%		ICU Level of Service					E			
Analysis Period (min)			15										

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔	↔					↔↔↔		↔	↔↔	
Traffic Volume (vph)	53	521	269	0	0	0	0	1035	69	111	1103	0
Future Volume (vph)	53	521	269	0	0	0	0	1035	69	111	1103	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0					5.0		5.0	5.0	
Lane Util. Factor		0.95	1.00					0.91		1.00	0.95	
Frt		1.00	0.85					0.99		1.00	1.00	
Flt Protected		1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		3523	1583					5038		1770	3539	
Flt Permitted		1.00	1.00					1.00		0.16	1.00	
Satd. Flow (perm)		3523	1583					5038		296	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	566	292	0	0	0	0	1125	75	121	1199	0
RTOR Reduction (vph)	0	0	81	0	0	0	0	6	0	0	0	0
Lane Group Flow (vph)	0	624	211	0	0	0	0	1194	0	121	1199	0
Turn Type	Split	NA	Perm					NA		custom	NA	
Protected Phases	8	8						6		4	2 1 4	
Permitted Phases			8							2 1		
Actuated Green, G (s)		29.0	29.0					58.2		81.0	86.0	
Effective Green, g (s)		29.0	29.0					58.2		81.0	86.0	
Actuated g/C Ratio		0.23	0.23					0.47		0.65	0.69	
Clearance Time (s)		5.0	5.0					5.0		5.0		
Vehicle Extension (s)		3.0	3.0					3.0		3.0		
Lane Grp Cap (vph)		817	367					2345		460	2434	
v/s Ratio Prot		c0.18						c0.24		0.05	c0.34	
v/s Ratio Perm			0.13							0.12		
v/c Ratio		0.76	0.58					0.51		0.26	0.49	
Uniform Delay, d1		44.8	42.5					23.4		20.7	9.2	
Progression Factor		1.00	1.00					1.00		0.66	0.36	
Incremental Delay, d2		4.3	2.2					0.8		0.2	0.1	
Delay (s)		49.1	44.7					24.2		13.9	3.4	
Level of Service		D	D					C		B	A	
Approach Delay (s)		47.7			0.0			24.2			4.4	
Approach LOS		D			A			C			A	

Intersection Summary		
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.62	
Actuated Cycle Length (s)	125.0	Sum of lost time (s) 20.0
Intersection Capacity Utilization	85.0%	ICU Level of Service E
Analysis Period (min)	15	

c Critical Lane Group



Movement	WBL	WBT	WBR	WBR2	NBL2	NBT	SBT	SBR	SER2	SWR
Lane Configurations		↔↑				↑	↔		↔	↔
Traffic Volume (vph)	59	439	29	14	71	172	196	8	0	53
Future Volume (vph)	59	439	29	14	71	172	196	8	0	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0				6.0	6.0			6.0
Lane Util. Factor		0.95				1.00	1.00			1.00
Frt		0.99				1.00	0.99			0.86
Flt Protected		0.99				0.99	1.00			1.00
Satd. Flow (prot)		3478				1836	1853			1611
Flt Permitted		0.99				0.63	1.00			1.00
Satd. Flow (perm)		3478				1178	1853			1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	477	32	15	77	187	213	9	0	58
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	588	0	0	0	264	222	0	0	58
Turn Type	Perm	NA			Perm	NA	NA		Perm	Perm
Protected Phases		6				8 !	4!			
Permitted Phases	6				8 1				3	4!
Actuated Green, G (s)		42.2				32.8	22.8			22.8
Effective Green, g (s)		42.2				32.8	22.8			22.8
Actuated g/C Ratio		0.34				0.26	0.18			0.18
Clearance Time (s)		6.0					6.0			6.0
Vehicle Extension (s)		3.0					3.0			3.0
Lane Grp Cap (vph)		1174				309	337			293
v/s Ratio Prot							0.12			
v/s Ratio Perm		0.17				0.22				0.04
v/c Ratio		0.50				0.85	0.66			0.20
Uniform Delay, d1		33.0				43.8	47.5			43.3
Progression Factor		0.49				0.63	1.00			1.00
Incremental Delay, d2		1.5				16.7	4.6			0.3
Delay (s)		17.7				44.2	52.1			43.7
Level of Service		B				D	D			D
Approach Delay (s)		17.7				44.2	52.1			
Approach LOS		B				D	D			

Intersection Summary

HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	EBL	EBT	EBR	EBR2	NBT	NBR	SBL2	SBT	NWR2
Lane Configurations		↔↑			↑			↔↑	↔↑
Traffic Volume (vph)	69	574	79	50	174	25	56	199	35
Future Volume (vph)	69	574	79	50	174	25	56	199	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0	6.0
Lane Util. Factor		0.95			1.00			1.00	1.00
Frt		0.97			0.98			1.00	0.86
Flt Protected		1.00			1.00			0.99	1.00
Satd. Flow (prot)		3435			1831			1842	1611
Flt Permitted		1.00			1.00			0.85	1.00
Satd. Flow (perm)		3435			1831			1585	1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	624	86	54	189	27	61	216	38
RTOR Reduction (vph)	0	4	0	0	0	0	0	0	25
Lane Group Flow (vph)	0	835	0	0	216	0	0	277	13
Turn Type	Perm	NA			NA		Perm	NA	Perm
Protected Phases		2			8			4 3 9	
Permitted Phases	2						4 3 9		6
Actuated Green, G (s)		42.2			22.8			48.8	42.2
Effective Green, g (s)		42.2			22.8			48.8	42.2
Actuated g/C Ratio		0.34			0.18			0.39	0.34
Clearance Time (s)		6.0			6.0				6.0
Vehicle Extension (s)		3.0			3.0				3.0
Lane Grp Cap (vph)		1159			333			618	543
v/s Ratio Prot					c0.12				
v/s Ratio Perm		0.24						c0.17	0.01
v/c Ratio		0.72			0.65			0.45	0.02
Uniform Delay, d1		36.2			47.4			28.2	27.6
Progression Factor		0.50			1.00			0.63	1.00
Incremental Delay, d2		3.2			4.3			0.4	0.1
Delay (s)		21.5			51.7			18.1	27.7
Level of Service		C			D			B	C
Approach Delay (s)		21.5			51.7			18.1	
Approach LOS		C			D			B	

Intersection Summary

HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

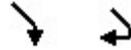
c Critical Lane Group



Movement	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	SBT	SBR	SBR2	SEL2	SEL
Lane Configurations		↕↕	↕				↕↕	↕↕↕				↕↕
Traffic Volume (vph)	84	414	2	98	43	2	60	305	4	2	2	3
Future Volume (vph)	84	414	2	98	43	2	60	305	4	2	2	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0				6.0	6.0				6.0
Lane Util. Factor		0.95	1.00				0.95	0.91				1.00
Frt		1.00	0.85				1.00	1.00				0.92
Flt Protected		0.99	1.00				0.98	1.00				0.98
Satd. Flow (prot)		3510	1583				3465	5072				1681
Flt Permitted		0.99	1.00				0.72	1.00				0.94
Satd. Flow (perm)		3510	1583				2559	5072				1609
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	450	2	107	47	2	65	332	4	2	2	3
RTOR Reduction (vph)	0	0	57	0	0	0	0	1	0	0	0	11
Lane Group Flow (vph)	0	541	52	0	0	0	114	337	0	0	0	1
Turn Type	Perm	NA	Perm		Perm	Perm	NA	NA			Perm	Prot
Protected Phases		6					8 3	4				7
Permitted Phases	6		6		8 3	8 3					7	
Actuated Green, G (s)		59.6	59.6				37.4	21.4				10.0
Effective Green, g (s)		59.6	59.6				37.4	21.4				10.0
Actuated g/C Ratio		0.48	0.48				0.30	0.17				0.08
Clearance Time (s)		6.0	6.0					6.0				6.0
Vehicle Extension (s)		3.0	3.0					3.0				3.0
Lane Grp Cap (vph)		1673	754				765	868				128
v/s Ratio Prot								c0.07				
v/s Ratio Perm		0.15	0.03				c0.04					c0.00
v/c Ratio		0.32	0.07				0.15	0.39				0.01
Uniform Delay, d1		20.2	17.7				32.1	46.0				52.9
Progression Factor		0.75	0.30				0.07	1.00				1.00
Incremental Delay, d2		0.5	0.2				0.1	0.3				0.0
Delay (s)		15.5	5.5				2.4	46.3				53.0
Level of Service		B	A				A	D				D
Approach Delay (s)		13.9					2.4	46.3				53.0
Approach LOS		B					A	D				D

Intersection Summary		
HCM 2000 Control Delay	23.0	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.29	
Actuated Cycle Length (s)	125.0	Sum of lost time (s) 24.0
Intersection Capacity Utilization	58.9%	ICU Level of Service B
Analysis Period (min)	15	

c Critical Lane Group



Movement	SER	SER2
Lane Configurations		
Traffic Volume (vph)	2	5
Future Volume (vph)	2	5
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	2	5
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		
Intersection Summary		

Van Aken Traffic Operations Study
 3: Lynnfield Road & Norwood Road & EB Van Aken Blvd

Design Year 2045 'No-Build' - PM Peak Hour

02/08/2023



Movement	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SBL2	SBL	SBT	NWL2	NWL
Lane Configurations		↕↕			↕↕			↕		↕↕		↕↕
Traffic Volume (vph)	1	569	2	61	99	21	3	194	3	194	1	2
Future Volume (vph)	1	569	2	61	99	21	3	194	3	194	1	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0		6.0		6.0
Lane Util. Factor		0.95			0.95			1.00		0.95		1.00
Frt		0.99			0.97			1.00		1.00		0.91
Flt Protected		1.00			1.00			0.95		1.00		0.98
Satd. Flow (prot)		3486			3436			1770		3537		1667
Flt Permitted		1.00			1.00			0.67		0.95		0.98
Satd. Flow (perm)		3486			3436			1242		3370		1667
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	618	2	66	108	23	3	211	3	211	1	2
RTOR Reduction (vph)	0	5	0	0	2	0	0	0	0	0	0	8
Lane Group Flow (vph)	0	682	0	0	132	0	0	211	0	214	0	1
Turn Type	Perm	NA			NA			Perm	Perm	NA	Perm	Prot
Protected Phases		2			8					4 7		3
Permitted Phases	2							4 7	4 7			3
Actuated Green, G (s)		59.6			21.4			31.4		31.4		10.0
Effective Green, g (s)		59.6			21.4			31.4		31.4		10.0
Actuated g/C Ratio		0.48			0.17			0.25		0.25		0.08
Clearance Time (s)		6.0			6.0							6.0
Vehicle Extension (s)		3.0			3.0							3.0
Lane Grp Cap (vph)		1662			588			311		846		133
v/s Ratio Prot					0.04							
v/s Ratio Perm		0.20						c0.17		0.06		0.00
v/c Ratio		0.41			0.23			0.68		0.25		0.01
Uniform Delay, d1		21.3			44.7			42.2		37.4		52.9
Progression Factor		0.18			1.00			0.61		0.45		1.00
Incremental Delay, d2		0.6			0.2			5.7		0.2		0.0
Delay (s)		4.4			44.8			31.5		16.9		52.9
Level of Service		A			D			C		B		D
Approach Delay (s)		4.4			44.8					24.2		52.9
Approach LOS		A			D					C		D

Intersection Summary

HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	NWR	NWR2
Lane Configurations		
Traffic Volume (vph)	5	1
Future Volume (vph)	5	1
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	5	1
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		
Intersection Summary		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↕↕	↕	↗
Traffic Volume (vph)	0	0	224	364	129	369
Future Volume (vph)	0	0	224	364	129	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	6.0
Lane Util. Factor				0.95	1.00	1.00
Frt				1.00	1.00	0.85
Flt Protected				0.98	1.00	1.00
Satd. Flow (prot)				3473	1863	1583
Flt Permitted				0.49	1.00	1.00
Satd. Flow (perm)				1733	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	243	396	140	401
RTOR Reduction (vph)	0	0	0	0	0	342
Lane Group Flow (vph)	0	0	0	639	140	59
Turn Type			Perm	NA	NA	Perm
Protected Phases				2 4	8	
Permitted Phases			2 4			8
Actuated Green, G (s)				125.0	18.4	18.4
Effective Green, g (s)				125.0	18.4	18.4
Actuated g/C Ratio				1.00	0.15	0.15
Clearance Time (s)					6.0	6.0
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)				1733	274	233
v/s Ratio Prot					c0.08	
v/s Ratio Perm				c0.37		0.04
v/c Ratio				1.29dl	0.51	0.25
Uniform Delay, d1				0.0	49.2	47.2
Progression Factor				1.00	1.00	1.00
Incremental Delay, d2				0.1	1.6	0.6
Delay (s)				0.1	50.8	47.8
Level of Service				A	D	D
Approach Delay (s)	0.0			0.1	48.6	
Approach LOS	A			A	D	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	286	446	0	302	129	0
Future Volume (vph)	286	446	0	302	129	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	311	485	0	328	140	0
RTOR Reduction (vph)	0	118	0	0	0	0
Lane Group Flow (vph)	311	367	0	328	140	0
Turn Type	Prot	Perm		NA	NA	
Protected Phases	2			4	8	
Permitted Phases		2				
Actuated Green, G (s)	94.6	94.6		18.4	18.4	
Effective Green, g (s)	94.6	94.6		18.4	18.4	
Actuated g/C Ratio	0.76	0.76		0.15	0.15	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	2598	1198		520	520	
v/s Ratio Prot	0.09			c0.09	0.04	
v/s Ratio Perm		c0.23				
v/c Ratio	0.12	0.31		0.63	0.27	
Uniform Delay, d1	4.1	4.8		50.1	47.3	
Progression Factor	0.44	1.40		1.00	0.05	
Incremental Delay, d2	0.1	0.6		2.5	0.3	
Delay (s)	1.9	7.3		52.6	2.4	
Level of Service	A	A		D	A	
Approach Delay (s)	5.2			52.6	2.4	
Approach LOS	A			D	A	

Intersection Summary

HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	125.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Design Year 2045 'Build'



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↑↑			↑↑↑	
Traffic Volume (vph)	0	0	0	75	405	123	336	916	0	0	869	41
Future Volume (vph)	0	0	0	75	405	123	336	916	0	0	869	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	5.0	5.0	5.0			5.0	
Lane Util. Factor					1.00	1.00	1.00	0.95			0.91	
Frt					1.00	0.85	1.00	1.00			0.99	
Flt Protected					0.99	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1848	1583	1770	3539			5051	
Flt Permitted					0.99	1.00	0.12	1.00			1.00	
Satd. Flow (perm)					1848	1583	229	3539			5051	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	82	440	134	365	996	0	0	945	45
RTOR Reduction (vph)	0	0	0	0	0	64	0	0	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	522	70	365	996	0	0	986	0
Turn Type				Split	NA	Perm	pm+pt	NA			NA	
Protected Phases				4	4		1 8	6 8			2	
Permitted Phases						4	6 8					
Actuated Green, G (s)					44.5	44.5	85.5	90.5			35.6	
Effective Green, g (s)					44.5	44.5	85.5	90.5			35.6	
Actuated g/C Ratio					0.31	0.31	0.59	0.62			0.25	
Clearance Time (s)					5.0	5.0					5.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					567	485	612	2208			1240	
v/s Ratio Prot					c0.28		c0.18	0.28			c0.20	
v/s Ratio Perm						0.04	0.17					
v/c Ratio					0.92	0.14	0.60	0.45			0.80	
Uniform Delay, d1					48.5	36.4	27.5	14.3			51.3	
Progression Factor					0.63	0.29	2.80	0.08			1.00	
Incremental Delay, d2					17.9	0.1	1.0	0.1			5.3	
Delay (s)					48.5	10.7	78.0	1.2			56.6	
Level of Service					D	B	E	A			E	
Approach Delay (s)		0.0			40.8			21.8			56.6	
Approach LOS		A			D			C			E	

Intersection Summary

HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↑↑↑		↘	↑↑	
Traffic Volume (vph)	56	309	171	0	0	0	0	1196	59	89	855	0
Future Volume (vph)	56	309	171	0	0	0	0	1196	59	89	855	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0					5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00					0.91		1.00	0.95	
Frt		1.00	0.85					0.99		1.00	1.00	
Flt Protected		0.99	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		1849	1583					5050		1770	3539	
Flt Permitted		0.99	1.00					1.00		0.08	1.00	
Satd. Flow (perm)		1849	1583					5050		147	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	336	186	0	0	0	0	1300	64	97	929	0
RTOR Reduction (vph)	0	0	94	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	0	397	92	0	0	0	0	1361	0	97	929	0
Turn Type	Split	NA	Perm					NA		custom	NA	
Protected Phases	8	8						6		4	2 1 4	
Permitted Phases			8							2 1		
Actuated Green, G (s)		34.9	34.9					50.6		95.1	100.1	
Effective Green, g (s)		34.9	34.9					50.6		95.1	100.1	
Actuated g/C Ratio		0.24	0.24					0.35		0.66	0.69	
Clearance Time (s)		5.0	5.0					5.0		5.0		
Vehicle Extension (s)		3.0	3.0					3.0		3.0		
Lane Grp Cap (vph)		445	381					1762		594	2443	
v/s Ratio Prot		c0.21						c0.27		0.05	c0.26	
v/s Ratio Perm			0.06							0.06		
v/c Ratio		0.89	0.24					0.77		0.16	0.38	
Uniform Delay, d1		53.2	44.4					42.1		28.3	9.4	
Progression Factor		1.00	1.00					1.00		1.03	0.33	
Incremental Delay, d2		19.6	0.3					3.4		0.1	0.1	
Delay (s)		72.9	44.7					45.4		29.3	3.2	
Level of Service		E	D					D		C	A	
Approach Delay (s)		63.9			0.0			45.4			5.6	
Approach LOS		E			A			D			A	

Intersection Summary		
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.70	D
Actuated Cycle Length (s)	145.0	Sum of lost time (s)
Intersection Capacity Utilization	99.6%	20.0
Analysis Period (min)	15	ICU Level of Service
		F

c Critical Lane Group



Movement	WBL	WBT	WBR	WBR2	NBL	NBT	SBT	SBR	SER2	SWR
Lane Configurations		↕↕				↑	↗		↖	↖
Traffic Volume (vph)	59	439	29	14	71	172	196	8	3	53
Future Volume (vph)	59	439	29	14	71	172	196	8	3	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0				6.0	6.0		6.0	6.0
Lane Util. Factor		1.00				1.00	1.00		1.00	1.00
Frt		0.99				1.00	0.99		0.86	0.86
Flt Protected		0.99				0.99	1.00		1.00	1.00
Satd. Flow (prot)		1833				1836	1853		1611	1611
Flt Permitted		0.99				0.56	1.00		1.00	1.00
Satd. Flow (perm)		1833				1052	1853		1611	1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	477	32	15	77	187	213	9	3	58
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	588	0	0	0	264	222	0	0	58
Turn Type	Perm	NA			Perm	NA	NA		Perm	Perm
Protected Phases		6				8 !	4!			
Permitted Phases	6				8 1				3	4!
Actuated Green, G (s)		65.0				36.0	20.0		10.0	20.0
Effective Green, g (s)		65.0				36.0	20.0		10.0	20.0
Actuated g/C Ratio		0.45				0.25	0.14		0.07	0.14
Clearance Time (s)		6.0					6.0		6.0	6.0
Vehicle Extension (s)		3.0					3.0		3.0	3.0
Lane Grp Cap (vph)		821				261	255		111	222
v/s Ratio Prot							0.12			
v/s Ratio Perm		0.32				c0.25			c0.00	0.04
v/c Ratio		0.72				1.01	0.87		0.00	0.26
Uniform Delay, d1		32.5				54.5	61.2		62.9	55.9
Progression Factor		0.68				0.36	1.00		1.00	1.00
Incremental Delay, d2		4.3				38.5	26.0		0.0	0.6
Delay (s)		26.5				57.9	87.2		62.9	56.5
Level of Service		C				E	F		E	E
Approach Delay (s)		26.5				57.9	87.2			
Approach LOS		C				E	F			

Intersection Summary

HCM 2000 Control Delay	47.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	EBL	EBT	EBR	EBR2	NBT	NBR	SBL	SBT	NWR2
Lane Configurations		↔			↑			↑	↑
Traffic Volume (vph)	69	574	50	79	174	25	56	199	35
Future Volume (vph)	69	574	50	79	174	25	56	199	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0	6.0
Lane Util. Factor		1.00			1.00			1.00	1.00
Frt		0.98			0.98			1.00	0.86
Flt Protected		1.00			1.00			0.99	1.00
Satd. Flow (prot)		1813			1831			1842	1611
Flt Permitted		1.00			1.00			0.74	1.00
Satd. Flow (perm)		1813			1831			1387	1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	624	54	86	189	27	61	216	38
RTOR Reduction (vph)	0	3	0	0	0	0	0	0	21
Lane Group Flow (vph)	0	836	0	0	216	0	0	277	17
Turn Type	Perm	NA			NA		Perm	NA	Perm
Protected Phases		2			8			4 3 9	
Permitted Phases	2						4 3 9		6
Actuated Green, G (s)		65.0			20.0			46.0	65.0
Effective Green, g (s)		65.0			20.0			46.0	65.0
Actuated g/C Ratio		0.45			0.14			0.32	0.45
Clearance Time (s)		6.0			6.0				6.0
Vehicle Extension (s)		3.0			3.0				3.0
Lane Grp Cap (vph)		812			252			440	722
v/s Ratio Prot					c0.12				
v/s Ratio Perm		0.46						c0.20	0.01
v/c Ratio		1.03			0.86			0.63	0.02
Uniform Delay, d1		40.0			61.1			42.2	22.3
Progression Factor		0.85			1.00			0.79	1.00
Incremental Delay, d2		38.2			23.8			1.5	0.1
Delay (s)		72.2			84.9			34.7	22.4
Level of Service		E			F			C	C
Approach Delay (s)		72.2			84.9			34.7	
Approach LOS		E			F			C	

Intersection Summary

HCM 2000 Control Delay	65.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

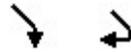
c Critical Lane Group



Movement	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	SBT	SBR	SBR2	SEL2	SEL
Lane Configurations		↕	↕				↑↑	↑↑↑				↕
Traffic Volume (vph)	101	453	2	91	96	3	172	308	8	2	8	2
Future Volume (vph)	101	453	2	91	96	3	172	308	8	2	8	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0				6.0	6.0				4.5
Lane Util. Factor		1.00	1.00				0.95	0.91				1.00
Frt		1.00	0.85				1.00	1.00				0.96
Flt Protected		0.99	1.00				0.98	1.00				0.96
Satd. Flow (prot)		1846	1583				3476	5061				1732
Flt Permitted		0.99	1.00				0.68	1.00				0.80
Satd. Flow (perm)		1846	1583				2421	5061				1440
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	492	2	99	104	3	187	335	9	2	9	2
RTOR Reduction (vph)	0	0	51	0	0	0	0	1	0	0	0	14
Lane Group Flow (vph)	0	602	50	0	0	0	294	345	0	0	0	1
Turn Type	Perm	NA	Perm		Perm	Perm	NA	NA			Perm	Prot
Protected Phases		6					8 3	4				7
Permitted Phases	6		6		8 3	8 3					7	
Actuated Green, G (s)		71.2	71.2				47.4	31.4				9.9
Effective Green, g (s)		71.2	71.2				47.4	31.4				9.9
Actuated g/C Ratio		0.49	0.49				0.33	0.22				0.07
Clearance Time (s)		6.0	6.0					6.0				4.5
Vehicle Extension (s)		3.0	3.0					3.0				3.0
Lane Grp Cap (vph)		906	777				791	1095				98
v/s Ratio Prot								0.07				
v/s Ratio Perm		0.33	0.03				c0.12					c0.00
v/c Ratio		0.66	0.06				0.37	0.32				0.01
Uniform Delay, d1		27.9	19.4				37.4	47.8				63.0
Progression Factor		0.67	0.30				0.11	1.00				1.00
Incremental Delay, d2		1.7	0.0				0.3	0.2				0.0
Delay (s)		20.4	5.9				4.4	47.9				63.0
Level of Service		C	A				A	D				E
Approach Delay (s)		18.3					4.4	47.9				63.0
Approach LOS		B					A	D				E

Intersection Summary		
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.53	
Actuated Cycle Length (s)	145.0	Sum of lost time (s) 22.5
Intersection Capacity Utilization	69.0%	ICU Level of Service C
Analysis Period (min)	15	

c Critical Lane Group



Movement	SER	SER2
Lane Configurations		
Traffic Volume (vph)	1	3
Future Volume (vph)	1	3
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	1	3
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		
Intersection Summary		



Movement	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SBL2	SBL	SBT	NWL2	NWL
Lane Configurations		↔			↕			↙		↕		↘
Traffic Volume (vph)	11	450	2	15	256	10	2	206	3	201	6	2
Future Volume (vph)	11	450	2	15	256	10	2	206	3	201	6	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0		6.0		6.0
Lane Util. Factor		1.00			0.95			1.00		0.95		1.00
Frt		1.00			0.99			1.00		1.00		0.95
Flt Protected		1.00			1.00			0.95		1.00		0.97
Satd. Flow (prot)		1852			3515			1770		3537		1718
Flt Permitted		1.00			1.00			0.51		0.95		0.97
Satd. Flow (perm)		1852			3515			951		3366		1718
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	489	2	16	278	11	2	224	3	218	7	2
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	0	13
Lane Group Flow (vph)	0	518	0	0	291	0	0	224	0	221	0	1
Turn Type	Perm	NA			NA			Perm	Perm	NA	Perm	Prot
Protected Phases		2			8					4 7		3
Permitted Phases	2							4 7	4 7			3
Actuated Green, G (s)		71.2			31.4			41.3		41.3		10.0
Effective Green, g (s)		71.2			31.4			41.3		41.3		10.0
Actuated g/C Ratio		0.49			0.22			0.28		0.28		0.07
Clearance Time (s)		6.0			6.0							6.0
Vehicle Extension (s)		3.0			3.0							3.0
Lane Grp Cap (vph)		909			761			270		958		118
v/s Ratio Prot					0.08							
v/s Ratio Perm		0.28						c0.24		0.07		0.00
v/c Ratio		0.57			0.38			0.83		0.23		0.01
Uniform Delay, d1		26.1			48.5			48.6		39.7		62.9
Progression Factor		0.19			1.00			0.65		0.43		1.00
Incremental Delay, d2		0.8			0.3			18.0		0.1		0.0
Delay (s)		5.7			48.8			49.7		17.0		62.9
Level of Service		A			D			D		B		E
Approach Delay (s)		5.7			48.8					33.5		62.9
Approach LOS		A			D					C		E

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	22.5
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	NWR	NWR2
Lane Configurations		
Traffic Volume (vph)	4	1
Future Volume (vph)	4	1
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	4	1
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		
Intersection Summary		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↕↕	↕	↗
Traffic Volume (vph)	0	0	271	254	75	373
Future Volume (vph)	0	0	271	254	75	373
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	6.0
Lane Util. Factor				0.95	1.00	1.00
Frt				1.00	1.00	0.85
Flt Protected				0.97	1.00	1.00
Satd. Flow (prot)				3450	1863	1583
Flt Permitted				0.49	1.00	1.00
Satd. Flow (perm)				1736	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	295	276	82	405
RTOR Reduction (vph)	0	0	0	0	0	346
Lane Group Flow (vph)	0	0	0	571	82	59
Turn Type			Perm	NA	NA	Perm
Protected Phases				2 4	8	
Permitted Phases			2 4			8
Actuated Green, G (s)				145.0	21.0	21.0
Effective Green, g (s)				145.0	21.0	21.0
Actuated g/C Ratio				1.00	0.14	0.14
Clearance Time (s)					6.0	6.0
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)				1736	269	229
v/s Ratio Prot					0.04	
v/s Ratio Perm				c0.33		0.04
v/c Ratio				1.33dl	0.30	0.26
Uniform Delay, d1				0.0	55.5	55.1
Progression Factor				1.00	1.00	1.00
Incremental Delay, d2				0.1	0.6	0.6
Delay (s)				0.1	56.1	55.7
Level of Service				A	E	E
Approach Delay (s)	0.0			0.1	55.7	
Approach LOS	A			A	E	

Intersection Summary

HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	206	400	0	319	75	0
Future Volume (vph)	206	400	0	319	75	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		3539	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	224	435	0	347	82	0
RTOR Reduction (vph)	0	99	0	0	0	0
Lane Group Flow (vph)	224	336	0	347	82	0
Turn Type	Prot	Perm		NA	NA	
Protected Phases	2			4	8	
Permitted Phases		2				
Actuated Green, G (s)	112.0	112.0		21.0	21.0	
Effective Green, g (s)	112.0	112.0		21.0	21.0	
Actuated g/C Ratio	0.77	0.77		0.14	0.14	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1367	1222		512	512	
v/s Ratio Prot	0.13			c0.10	0.02	
v/s Ratio Perm		c0.21				
v/c Ratio	0.16	0.27		0.68	0.16	
Uniform Delay, d1	4.3	4.8		58.8	54.3	
Progression Factor	0.96	1.33		1.00	0.04	
Incremental Delay, d2	0.2	0.5		3.6	0.1	
Delay (s)	4.3	6.8		62.3	2.3	
Level of Service	A	A		E	A	
Approach Delay (s)	5.9			62.3	2.3	
Approach LOS	A			E	A	

Intersection Summary

HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	145.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

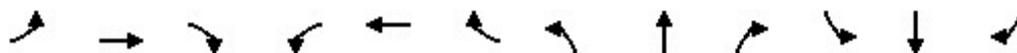
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕	↗	↖	↕			↕	↗
Traffic Volume (vph)	0	0	0	84	323	59	261	827	0	0	1130	41
Future Volume (vph)	0	0	0	84	323	59	261	827	0	0	1130	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0	5.0	5.0	5.0			5.0	
Lane Util. Factor					1.00	1.00	1.00	0.95			0.91	
Frt					1.00	0.85	1.00	1.00			0.99	
Flt Protected					0.99	1.00	0.95	1.00			1.00	
Satd. Flow (prot)					1844	1583	1770	3539			5058	
Flt Permitted					0.99	1.00	0.10	1.00			1.00	
Satd. Flow (perm)					1844	1583	191	3539			5058	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	91	351	64	284	899	0	0	1228	45
RTOR Reduction (vph)	0	0	0	0	0	49	0	0	0	0	3	0
Lane Group Flow (vph)	0	0	0	0	442	15	284	899	0	0	1270	0
Turn Type				Split	NA	Perm	pm+pt	NA			NA	
Protected Phases				4	4		1 8	6 8			2	
Permitted Phases						4	6 8					
Actuated Green, G (s)					31.0	31.0	89.0	89.0			34.0	
Effective Green, g (s)					31.0	31.0	89.0	89.0			34.0	
Actuated g/C Ratio					0.24	0.24	0.68	0.68			0.26	
Clearance Time (s)					5.0	5.0					5.0	
Vehicle Extension (s)					3.0	3.0					3.0	
Lane Grp Cap (vph)					439	377	738	2422			1322	
v/s Ratio Prot					c0.24		c0.15	c0.25			c0.25	
v/s Ratio Perm						0.01	0.12					
v/c Ratio					1.01	0.04	0.38	0.37			0.96	
Uniform Delay, d1					49.5	38.1	17.9	8.7			47.3	
Progression Factor					0.64	2.66	3.59	0.12			1.00	
Incremental Delay, d2					35.6	0.0	0.2	0.1			17.0	
Delay (s)					67.4	101.1	64.4	1.1			64.3	
Level of Service					E	F	E	A			E	
Approach Delay (s)		0.0			71.7			16.3			64.3	
Approach LOS		A			E			B			E	

Intersection Summary			
HCM 2000 Control Delay	46.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗					↑↑↑		↘	↑↑	
Traffic Volume (vph)	53	521	269	0	0	0	0	1035	69	111	1103	0
Future Volume (vph)	53	521	269	0	0	0	0	1035	69	111	1103	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0					5.0		5.0	5.0	
Lane Util. Factor		1.00	1.00					0.91		1.00	0.95	
Frt		1.00	0.85					0.99		1.00	1.00	
Flt Protected		1.00	1.00					1.00		0.95	1.00	
Satd. Flow (prot)		1854	1583					5038		1770	3539	
Flt Permitted		1.00	1.00					1.00		0.10	1.00	
Satd. Flow (perm)		1854	1583					5038		182	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	58	566	292	0	0	0	0	1125	75	121	1199	0
RTOR Reduction (vph)	0	0	68	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	624	224	0	0	0	0	1195	0	121	1199	0
Turn Type	Split	NA	Perm					NA		custom	NA	
Protected Phases	8	8						6		4	2 1 4	
Permitted Phases			8							2 1		
Actuated Green, G (s)		43.0	43.0					41.0		72.0	77.0	
Effective Green, g (s)		43.0	43.0					41.0		72.0	77.0	
Actuated g/C Ratio		0.33	0.33					0.32		0.55	0.59	
Clearance Time (s)		5.0	5.0					5.0		5.0		
Vehicle Extension (s)		3.0	3.0					3.0		3.0		
Lane Grp Cap (vph)		613	523					1588		479	2096	
v/s Ratio Prot		c0.34						c0.24		0.06	c0.34	
v/s Ratio Perm			0.14							0.08		
v/c Ratio		1.02	0.43					0.75		0.25	0.57	
Uniform Delay, d1		43.5	33.9					39.9		31.6	16.3	
Progression Factor		1.00	1.00					1.00		0.50	0.29	
Incremental Delay, d2		40.9	0.6					3.3		0.1	0.1	
Delay (s)		84.4	34.5					43.3		16.0	4.9	
Level of Service		F	C					D		B	A	
Approach Delay (s)		68.5			0.0			43.3			5.9	
Approach LOS		E			A			D			A	

Intersection Summary

HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	108.9%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBT	WBR	WBR2	NBL2	NBT	SBT	SBR	SER2	SWR
Lane Configurations		↕				↑	↗		↖	↖
Traffic Volume (vph)	59	439	29	14	71	172	196	8	0	53
Future Volume (vph)	59	439	29	14	71	172	196	8	0	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0				6.0	6.0			6.0
Lane Util. Factor		1.00				1.00	1.00			1.00
Frt		0.99				1.00	0.99			0.86
Flt Protected		0.99				0.99	1.00			1.00
Satd. Flow (prot)		1833				1836	1853			1611
Flt Permitted		0.99				0.61	1.00			1.00
Satd. Flow (perm)		1833				1127	1853			1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	477	32	15	77	187	213	9	0	58
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	588	0	0	0	264	222	0	0	58
Turn Type	Perm	NA			Perm	NA	NA		Perm	Perm
Protected Phases		6				8 !	4!			
Permitted Phases	6				8 1				3	4!
Actuated Green, G (s)		52.0				34.0	18.0			18.0
Effective Green, g (s)		52.0				34.0	18.0			18.0
Actuated g/C Ratio		0.40				0.26	0.14			0.14
Clearance Time (s)		6.0					6.0			6.0
Vehicle Extension (s)		3.0					3.0			3.0
Lane Grp Cap (vph)		733				294	256			223
v/s Ratio Prot							0.12			
v/s Ratio Perm		0.32				c0.23				0.04
v/c Ratio		0.80				0.90	0.87			0.26
Uniform Delay, d1		34.5				46.3	54.8			50.0
Progression Factor		0.57				0.34	1.00			1.00
Incremental Delay, d2		8.3				12.2	25.1			0.6
Delay (s)		28.0				28.0	79.9			50.7
Level of Service		C				C	E			D
Approach Delay (s)		28.0				28.0	79.9			
Approach LOS		C				C	E			

Intersection Summary

HCM 2000 Control Delay	39.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group



Movement	EBL	EBT	EBR	EBR2	NBT	NBR	SBL2	SBT	NWR2
Lane Configurations		↔			↔			↔	↔
Traffic Volume (vph)	69	574	79	50	174	25	56	199	35
Future Volume (vph)	69	574	79	50	174	25	56	199	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0	6.0
Lane Util. Factor		1.00			1.00			1.00	1.00
Frt		0.98			0.98			1.00	0.86
Flt Protected		1.00			1.00			0.99	1.00
Satd. Flow (prot)		1813			1831			1842	1611
Flt Permitted		1.00			1.00			0.79	1.00
Satd. Flow (perm)		1813			1831			1467	1611
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	75	624	86	54	189	27	61	216	38
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	23
Lane Group Flow (vph)	0	837	0	0	216	0	0	277	15
Turn Type	Perm	NA			NA		Perm	NA	Perm
Protected Phases		2			8			4 3 9	
Permitted Phases	2						4 3 9		6
Actuated Green, G (s)		52.0			18.0			44.0	52.0
Effective Green, g (s)		52.0			18.0			44.0	52.0
Actuated g/C Ratio		0.40			0.14			0.34	0.40
Clearance Time (s)		6.0			6.0				6.0
Vehicle Extension (s)		3.0			3.0				3.0
Lane Grp Cap (vph)		725			253			496	644
v/s Ratio Prot					c0.12				
v/s Ratio Perm		0.46						c0.19	0.01
v/c Ratio		1.15			0.85			0.56	0.02
Uniform Delay, d1		39.0			54.7			35.1	23.6
Progression Factor		0.44			1.00			0.83	1.00
Incremental Delay, d2		79.2			23.3			0.7	0.1
Delay (s)		96.4			78.0			29.9	23.7
Level of Service		F			E			C	C
Approach Delay (s)		96.4			78.0			29.9	
Approach LOS		F			E			C	

Intersection Summary

HCM 2000 Control Delay	78.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	30.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

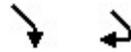


Movement	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT	SBT	SBR	SBR2	SEL2	SEL
Lane Configurations		↕	↕				↑↑	↑↑↑				↕
Traffic Volume (vph)	84	414	2	98	43	2	60	305	4	2	2	3
Future Volume (vph)	84	414	2	98	43	2	60	305	4	2	2	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0				6.0	6.0				6.0
Lane Util. Factor		1.00	1.00				0.95	0.91				1.00
Frt		1.00	0.85				1.00	1.00				0.92
Flt Protected		0.99	1.00				0.98	1.00				0.98
Satd. Flow (prot)		1847	1583				3465	5072				1681
Flt Permitted		0.99	1.00				0.72	1.00				0.94
Satd. Flow (perm)		1847	1583				2543	5072				1609
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	91	450	2	107	47	2	65	332	4	2	2	3
RTOR Reduction (vph)	0	0	54	0	0	0	0	1	0	0	0	11
Lane Group Flow (vph)	0	541	55	0	0	0	114	337	0	0	0	1
Turn Type	Perm	NA	Perm		Perm	Perm	NA	NA			Perm	Prot
Protected Phases		6					8 3	4				7
Permitted Phases	6		6		8 3	8 3					7	
Actuated Green, G (s)		65.9	65.9				36.1	20.1				10.0
Effective Green, g (s)		65.9	65.9				36.1	20.1				10.0
Actuated g/C Ratio		0.51	0.51				0.28	0.15				0.08
Clearance Time (s)		6.0	6.0					6.0				6.0
Vehicle Extension (s)		3.0	3.0					3.0				3.0
Lane Grp Cap (vph)		936	802				706	784				123
v/s Ratio Prot								c0.07				
v/s Ratio Perm		0.29	0.03				c0.04					c0.00
v/c Ratio		0.58	0.07				0.16	0.43				0.01
Uniform Delay, d1		22.4	16.4				35.5	49.8				55.4
Progression Factor		0.64	0.06				0.07	1.00				1.00
Incremental Delay, d2		2.4	0.2				0.1	0.4				0.0
Delay (s)		16.8	1.1				2.4	50.1				55.4
Level of Service		B	A				A	D				E
Approach Delay (s)		14.2					2.4	50.1				55.4
Approach LOS		B					A	D				E

Intersection Summary

HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	SER	SER2
Lane Configurations		
Traffic Volume (vph)	2	5
Future Volume (vph)	2	5
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	2	5
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		
Intersection Summary		



Movement	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SBL2	SBL	SBT	NWL2	NWL
Lane Configurations		↔			↕			↖		↕		↗
Traffic Volume (vph)	1	569	2	61	99	21	3	194	3	194	1	2
Future Volume (vph)	1	569	2	61	99	21	3	194	3	194	1	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0			6.0			6.0		6.0		6.0
Lane Util. Factor		1.00			0.95			1.00		0.95		1.00
Frt		0.99			0.97			1.00		1.00		0.91
Flt Protected		1.00			1.00			0.95		1.00		0.98
Satd. Flow (prot)		1838			3436			1770		3537		1667
Flt Permitted		1.00			1.00			0.67		0.95		0.98
Satd. Flow (perm)		1838			3436			1242		3369		1667
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	618	2	66	108	23	3	211	3	211	1	2
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	0	0	0	8
Lane Group Flow (vph)	0	684	0	0	133	0	0	211	0	214	0	1
Turn Type	Perm	NA			NA			Perm	Perm	NA	Perm	Prot
Protected Phases		2			8					4 7		3
Permitted Phases	2							4 7	4 7			3
Actuated Green, G (s)		65.9			20.1			30.1		30.1		10.0
Effective Green, g (s)		65.9			20.1			30.1		30.1		10.0
Actuated g/C Ratio		0.51			0.15			0.23		0.23		0.08
Clearance Time (s)		6.0			6.0							6.0
Vehicle Extension (s)		3.0			3.0							3.0
Lane Grp Cap (vph)		931			531			287		780		128
v/s Ratio Prot					0.04							
v/s Ratio Perm		0.37						c0.17		0.06		0.00
v/c Ratio		0.73			0.25			0.74		0.27		0.01
Uniform Delay, d1		25.2			48.3			46.3		41.0		55.4
Progression Factor		0.25			1.00			0.60		0.38		1.00
Incremental Delay, d2		0.5			0.2			8.7		0.2		0.0
Delay (s)		6.7			48.6			36.4		15.7		55.4
Level of Service		A			D			D		B		E
Approach Delay (s)		6.7			48.6					26.0		55.4
Approach LOS		A			D					C		E

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	NWR	NWR2
Lane Configurations		
Traffic Volume (vph)	5	1
Future Volume (vph)	5	1
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Peak-hour factor, PHF	0.92	0.92
Adj. Flow (vph)	5	1
RTOR Reduction (vph)	0	0
Lane Group Flow (vph)	0	0
Turn Type		
Protected Phases		
Permitted Phases		
Actuated Green, G (s)		
Effective Green, g (s)		
Actuated g/C Ratio		
Clearance Time (s)		
Vehicle Extension (s)		
Lane Grp Cap (vph)		
v/s Ratio Prot		
v/s Ratio Perm		
v/c Ratio		
Uniform Delay, d1		
Progression Factor		
Incremental Delay, d2		
Delay (s)		
Level of Service		
Approach Delay (s)		
Approach LOS		
Intersection Summary		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations				↕↕	↕	↗
Traffic Volume (vph)	0	0	224	364	129	369
Future Volume (vph)	0	0	224	364	129	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0	6.0	6.0
Lane Util. Factor				0.95	1.00	1.00
Frt				1.00	1.00	0.85
Flt Protected				0.98	1.00	1.00
Satd. Flow (prot)				3473	1863	1583
Flt Permitted				0.49	1.00	1.00
Satd. Flow (perm)				1732	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	243	396	140	401
RTOR Reduction (vph)	0	0	0	0	0	343
Lane Group Flow (vph)	0	0	0	639	140	58
Turn Type			Perm	NA	NA	Perm
Protected Phases				2 4	8	
Permitted Phases			2 4			8
Actuated Green, G (s)				130.0	18.8	18.8
Effective Green, g (s)				130.0	18.8	18.8
Actuated g/C Ratio				1.00	0.14	0.14
Clearance Time (s)					6.0	6.0
Vehicle Extension (s)					3.0	3.0
Lane Grp Cap (vph)				1732	269	228
v/s Ratio Prot					c0.08	
v/s Ratio Perm				c0.37		0.04
v/c Ratio				1.34dl	0.52	0.25
Uniform Delay, d1				0.0	51.4	49.4
Progression Factor				1.00	1.00	1.00
Incremental Delay, d2				0.1	1.8	0.6
Delay (s)				0.1	53.2	50.0
Level of Service				A	D	D
Approach Delay (s)	0.0			0.1	50.8	
Approach LOS	A			A	D	

Intersection Summary

HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	286	446	0	302	129	0
Future Volume (vph)	286	446	0	302	129	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1770	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1770	1583		3539	3539	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	311	485	0	328	140	0
RTOR Reduction (vph)	0	115	0	0	0	0
Lane Group Flow (vph)	311	370	0	328	140	0
Turn Type	Prot	Perm		NA	NA	
Protected Phases	2			4	8	
Permitted Phases		2				
Actuated Green, G (s)	99.2	99.2		18.8	18.8	
Effective Green, g (s)	99.2	99.2		18.8	18.8	
Actuated g/C Ratio	0.76	0.76		0.14	0.14	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1350	1207		511	511	
v/s Ratio Prot	0.18			0.09	0.04	
v/s Ratio Perm		0.23				
v/c Ratio	0.23	0.31		0.64	0.27	
Uniform Delay, d1	4.4	4.8		52.4	49.5	
Progression Factor	0.89	3.23		1.00	0.04	
Incremental Delay, d2	0.3	0.5		2.8	0.3	
Delay (s)	4.2	15.8		55.2	2.4	
Level of Service	A	B		E	A	
Approach Delay (s)	11.3			55.2	2.4	
Approach LOS	B			E	A	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group