TRAFFIC IMPACT STUDY FOR

DRI 3119
THORNTON BUSINESS PARK

DATE:
July 10, 2020

LOCATION:
Thornton Road and Veterans Memorial Highway
Austell, Douglas County, Georgia

PREPARED FOR:
Logistics Property Company, LLC

PREPARED BY:
NV5 Engineers and Consultants, Inc.
1255 Canton Street, Suite G Roswell, GA 30075

NV5
nv5.com

Executive Summary

The new 760,000 square foot warehouse/distribution, two-building center will be located north of Thornton Road, west of Veterans Memorial Highway and south of Causey Road in Douglas County, Georgia. The site is to be annexed into the City of Austell. The new development will have five (5) driveways, all on Causey Road. The project will be developed in a single phase by 2023.

When completed, the development is expected to generate 90 AM and 32 PM weekday peak hour (of the adjacent street) new entering vehicular trips with 27 AM and 87 PM new exiting vehicular trips. Daily, the development is expected to generate a total of 1,246 new vehicular trips, entering and exiting at all access points.

The signalized intersection of Thornton Road at Veterans Memorial Highway operates with undesirable traffic operating conditions during the existing and future traffic conditions with or without the proposed development in place. Although the majority of the site generated trips are expected to use the intersection of Thornton Road at Veterans Memorial Highway, the overall delay is only expected to increase by 1.3 seconds during the AM peak hour and 5.4 seconds during the PM peak hour.

Capacity analyses indicates that all the unsignalized site driveway intersections on Causey Road are expected to operate at acceptable Levels of Service with the roadway configurations shown on the site plan in place.

The new traffic from the development is expected to have little impact on the external roadway network.

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Introduction

A new 760,000 square foot warehouse/distribution center comprised of two buildings is planned for construction north of Thornton Road, west of Veterans Memorial Highway and south of Causey Road in Douglas County, Georgia. The site is planned for annexation into the City of Austell. The new development will have five (5) driveways, all on Causey Road. The project will be developed in a single phase by 2023.

The purpose of this study is to identify the traffic impacts associated with the development – both existing traffic, future background growth traffic, and full future traffic in the completion year to assess if any mitigation is needed. The traffic impact study analyzes the levels of service at the development access points. Figures 1 and 2 show the site location. A copy of the site plan is included in Appendix A.

This report summarizes the data collected, projected traffic at the study locations, analysis of traffic impacts including Level of Service (LOS), turn lane analysis, and conclusions from the analysis.

Figure 1: Vicinity Map

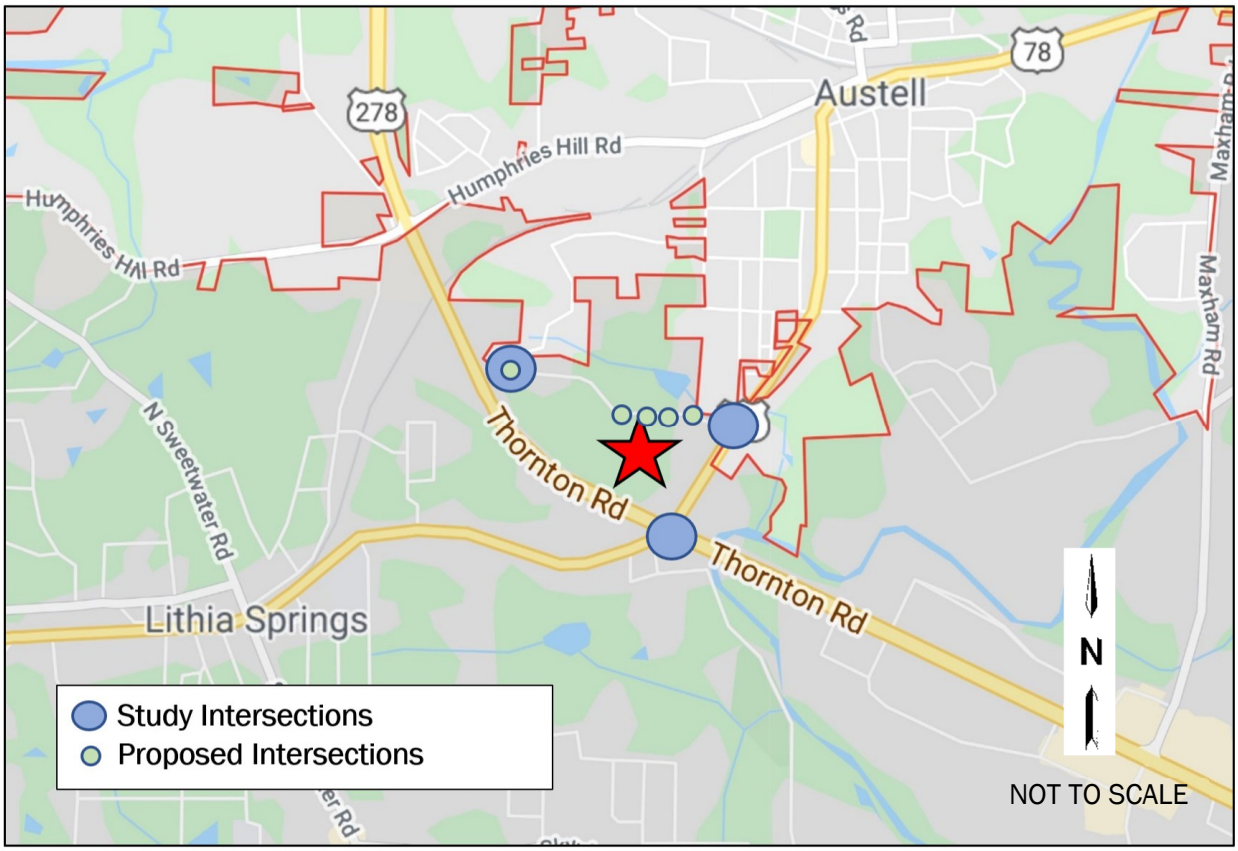
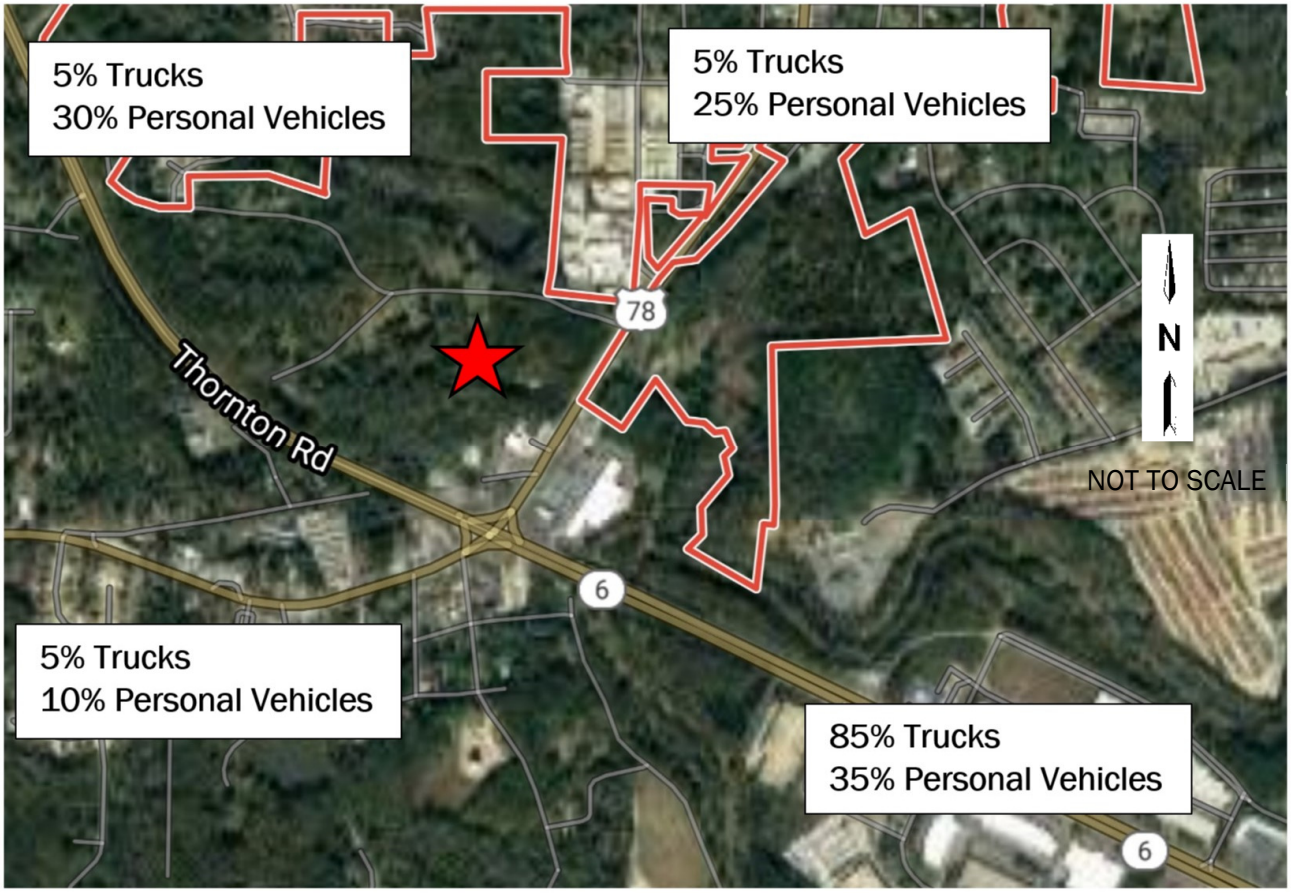


Figure 2: Site Location Aerial



B. Existing Conditions

B.1 Phasing

The development is planned to be completed in a single phase by 2023.

B.2 Transportation Facilities

SR 6 (Thornton Road) is a four-lane, divided southeast-northwest roadway running from I-20 to the Norfolk Southern Intermodal facility with a 55 miles per hour posted speed limit adjacent to the site. The adjacent land uses are primarily commercial, residential, and vacant/agricultural near the study area.

Veterans Memorial Highway is a north-south multi-lane arterial facility with left-turn lanes and a 35 miles per hour posted speed limit. Veterans Memorial Highway connects the City of Austell to the north and City of Lithia Springs to the south.

Causey Road is a narrow two-lane dead-end road that provides access for 160 single-family homes to Veterans Memorial Highway with no posted speed limit. However, the speed limit is assumed to be 35 miles per hour for the purposes of this traffic study. The adjacent land uses are residential and vacant/agricultural.

LOS D will be considered the minimum standard unless existing conditions are lower.

B.3. Transit

There are no transit facilities adjacent to the site

B.3. Pedestrian and Bicycle Facilities

There are no sidewalks along the site frontage, but there is a sidewalk on the opposite side of Veterans Memorial Highway. There are no bicycle lanes adjacent to the site.

B.4. Traffic Volumes

As discussed at the Methodology Meeting held on June 1, 2020 for DRI #3119 Thornton Business Park, it was determined that some additional traffic data would be required in order to establish the existing traffic conditions for the traffic study.

As agreed in the meeting, the study area includes the signalized intersection of Thornton Road at Veterans Memorial Parkway and the unsignalized intersection of Causey Road at Veterans Memorial Parkway. In addition, the proposed development is expected to make multiple driveway connections to Causey Road.

In order to establish the existing traffic conditions, a methodology was developed for the intersection of Causey Road at Veterans Memorial Parkway since there are no turning

movement counts available. The following methodology was utilized to determine the traffic conditions in the study area for the proposed development:

1. NV5 was provided AM and PM peak hour turning movement counts at the intersection of Thornton Road at Veterans Memorial Highway. The data was collected on February 26, 2020.

2. Two-way traffic volumes were recorded on Causey Road west of Veterans Memorial Highway and on Franklin Street west of Bowden Street in Austell on June 3, 2020.

3. The study used an ITE 10th edition trip generation estimation for 160 single-family homes that intends to simulate the traffic generated by the residences with access to Causey Road and Franklin Street. The 160-family homes are expected to generate a total of 118 trips (29 entering and 89 exiting) during the AM peak hour, and a total of 160 trips (100 entering and 60 exiting) during the PM peak hour.

4. The two-way counts were reviewed to determine what percentage of the total residential traffic used Causey Road vs. Franklin Street during the AM and PM peak hours. The review identified that approximately 60% and 65% used Causey Road in the AM and PM peak hours, respectively.

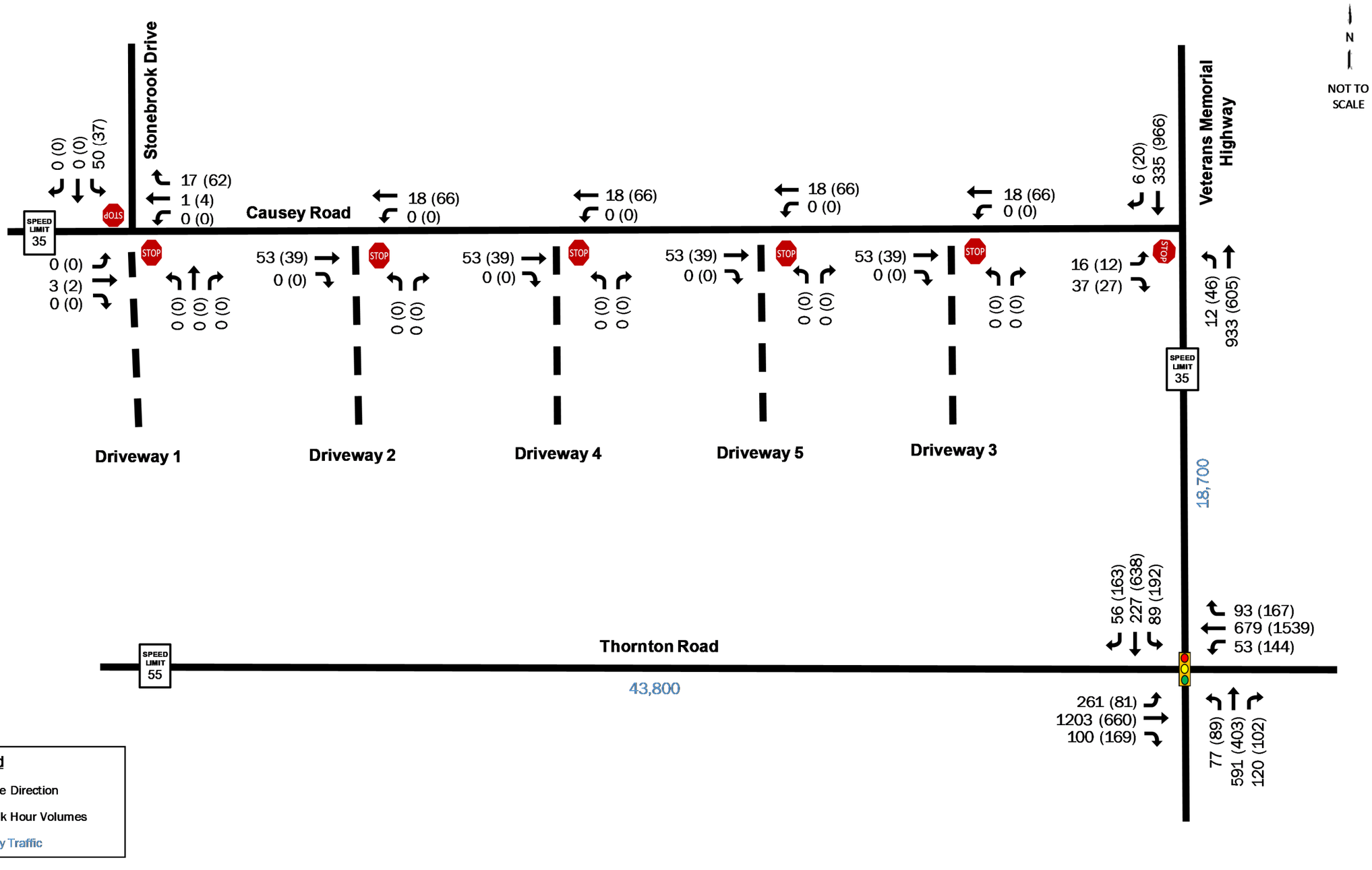
5. A turning movement count was collected at the intersection of Causey Road at Veterans Memorial Highway on June 3, 2020. This count determines the percentages of traffic turning onto and out of Causey Road during the AM and PM peak hours. It was determined that approximately 70% of the Causey Road traffic is to/from Thornton Road to the south.

6. The northbound and southbound through movements at the intersection of Causey Road at Veterans Memorial Highway were calculated using the turning movement count from the adjacent intersection of Thornton Road at Veterans Memorial Highway collected on February 26, 2020.

7. Turning movement volumes at the intersection of Causey Road at Veterans Memorial Highway were calculated by applying the Causey Road vs. Franklin Street distribution to the ITE generated trips and were assigned to the total volumes entering and exiting Causey Road during the peak hours. The turning volumes were based on the distribution observed in the turning movement count collected in June 2020.

The traffic counts are included in Appendix B. Figure 3 shows the existing turning movement counts.

Figure 3: Existing Traffic Volumes



Future Conditions

C.1. Background Data Collection

The existing volumes were increased by 2.0% annually as advised by staff for three (3) years for the No Build (background) traffic volumes as shown in Figures 4.

The study assumes existing lane configurations and existing and planned traffic control at the study intersections.

C.2. Project Trip Generation

Table 1 summarizes the project trip generation calculated using the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10th Edition, 2017.

Table 1: Project Trip Generation

Warehouse Distribution Center (150 LUC) 760 ksf		Project Trips		
		Total	Inbound	Outbound
Personal Vehicles	Daily	828	414	414
	AM Peak Hour	102	82	20
	PM Peak Hour	96	20	76
Trucks	Daily	418	209	209
	AM Peak Hour	15	8	7
	PM Peak Hour	23	12	11
Total Trips Generated	Daily	1,246	623	623
	AM Peak Hour	117	90	27
	PM Peak Hour	119	32	87

C.3. Trip Distribution and Assignment

Passenger vehicles and trucks were determined to have separate traffic patterns, therefore the distributions for each trip type were separated and the trips were assigned to the study area as follows:

Passenger Vehicles:

- 35% via Thornton Road east of the site
- 30% via Thornton Road west of the site
- 25% via Veterans Memorial Highway north of the site
- 10% via Veterans Memorial Highway south of the site

The passenger vehicle distribution is shown in Figure 5 and the passenger volumes are shown in Figure 6.

Trucks:

- 85% via Thornton Road east of the site
- 5% via Thornton Road west of the site
- 5% via Veterans Memorial Highway north of the site
- 5% via Veterans Memorial Highway south of the site

The truck distribution is shown in Figure 7 and the truck volumes are shown in Figure 8. The future site traffic (project trips) is shown in Figure 9 and the Build traffic volumes in Figures 10. The trip generation details are included in Appendix C.

Figure 4: No Build Traffic Volumes

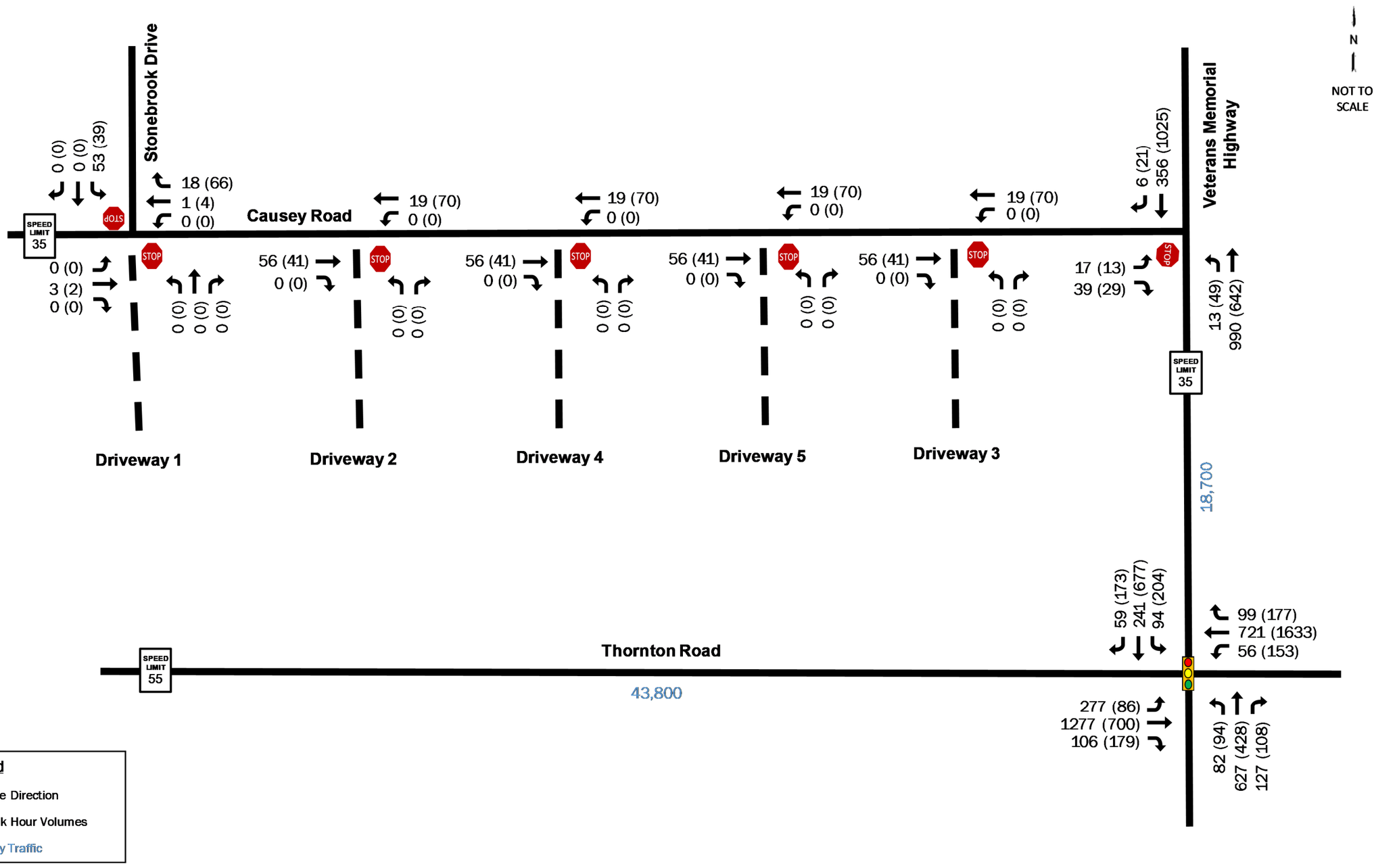


Figure 5: Passenger Vehicle Distribution

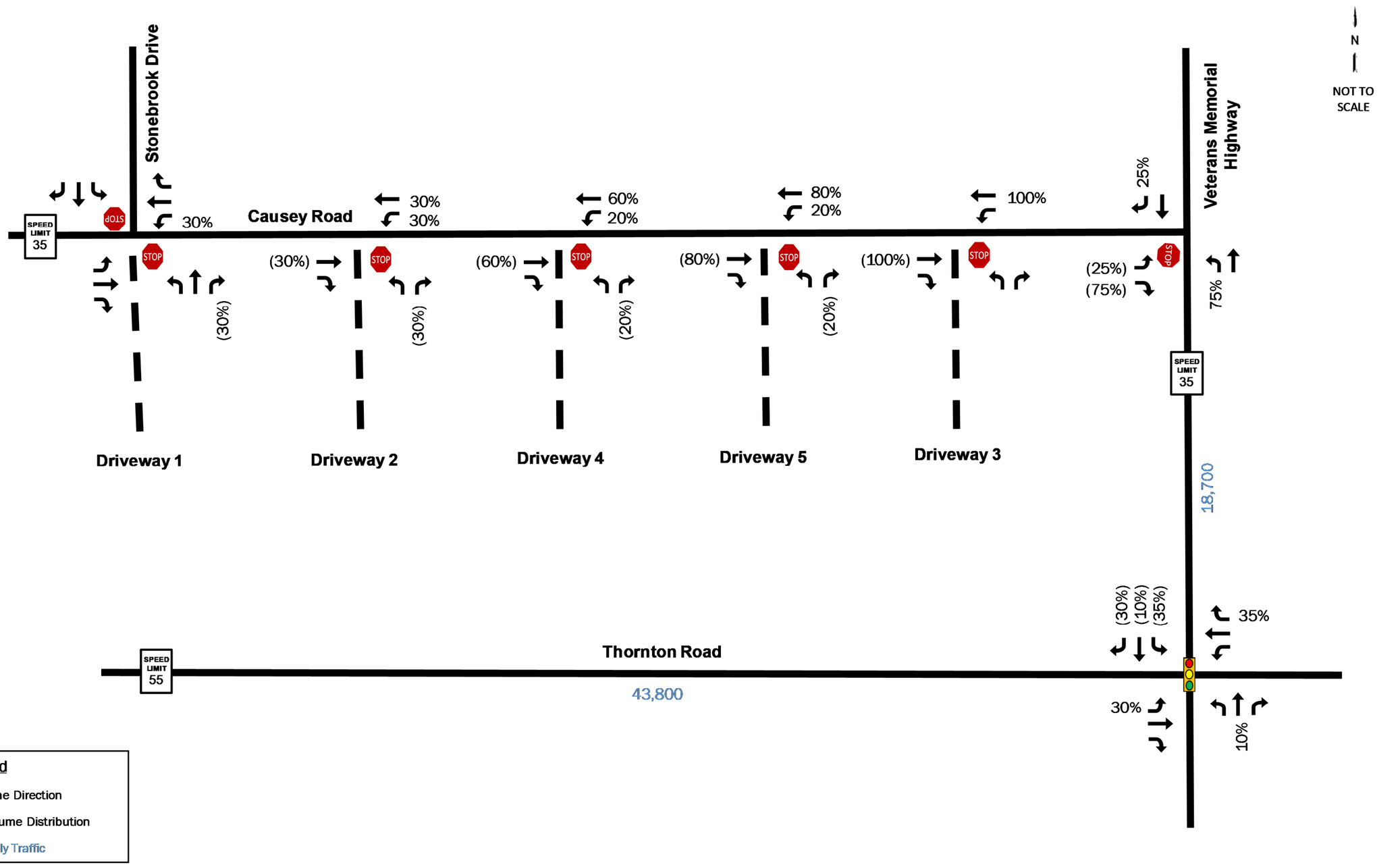


Figure 6: Passenger Vehicle Volumes

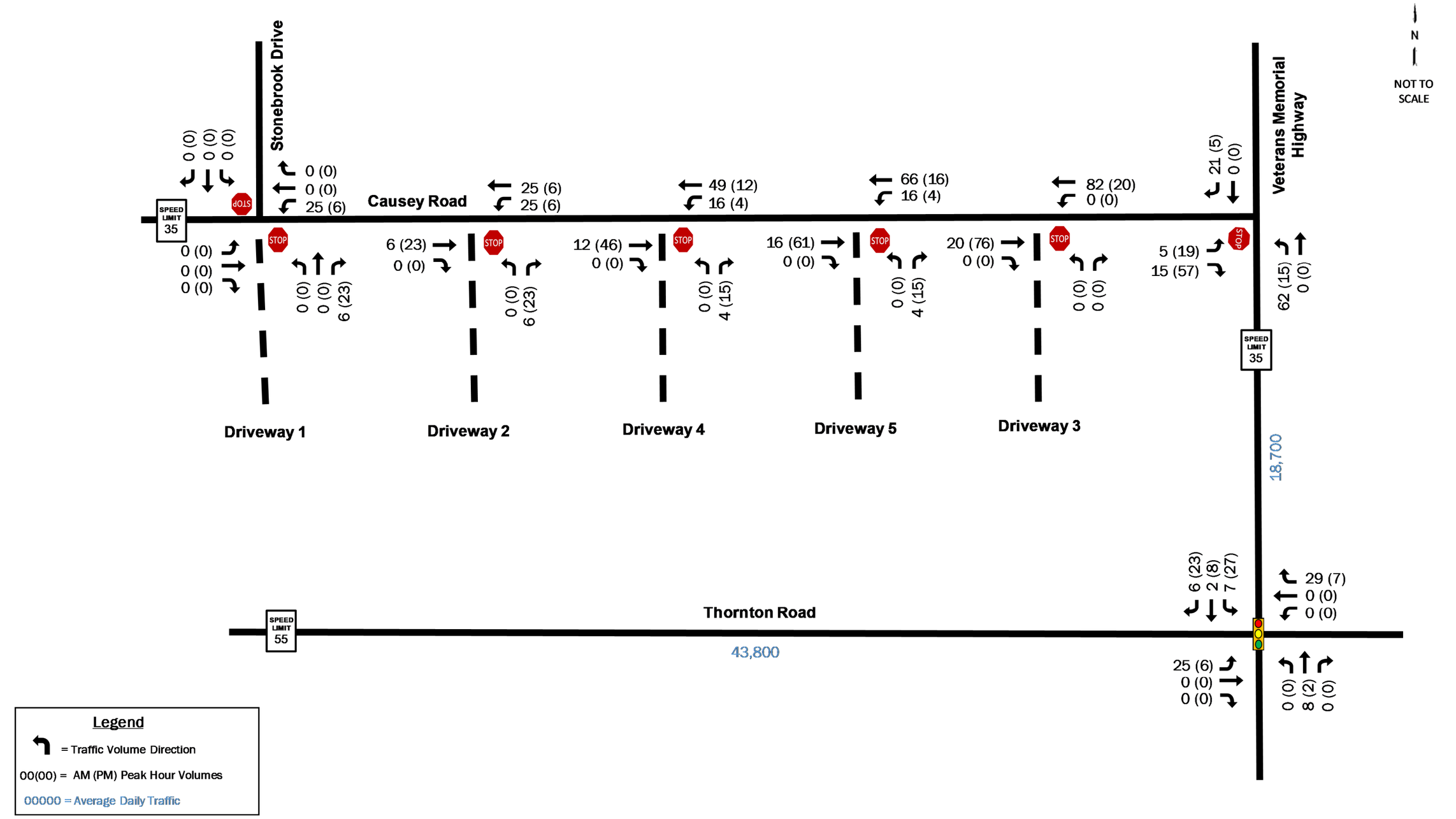


Figure 7: Truck Distribution

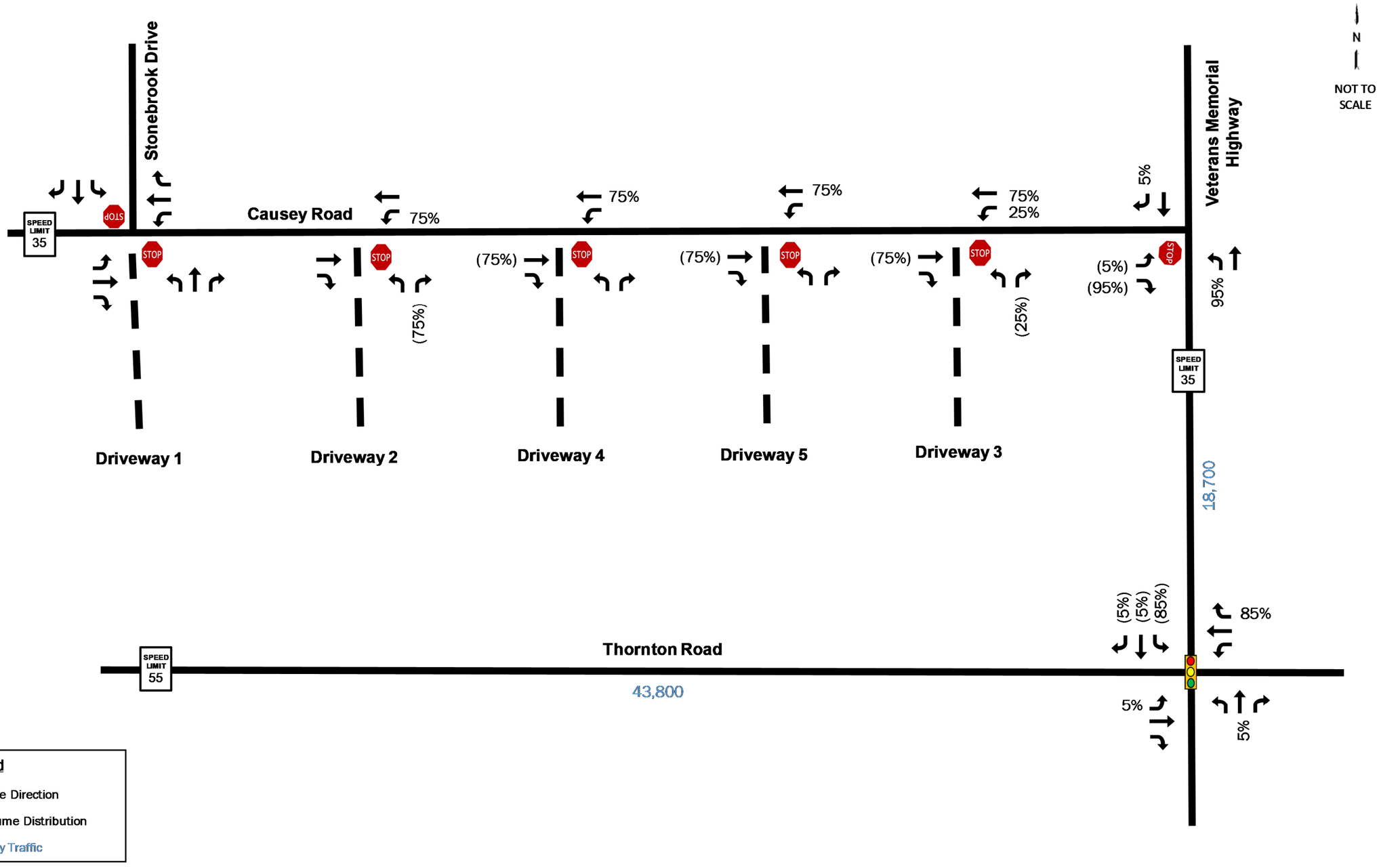


Figure 8: Truck Volumes

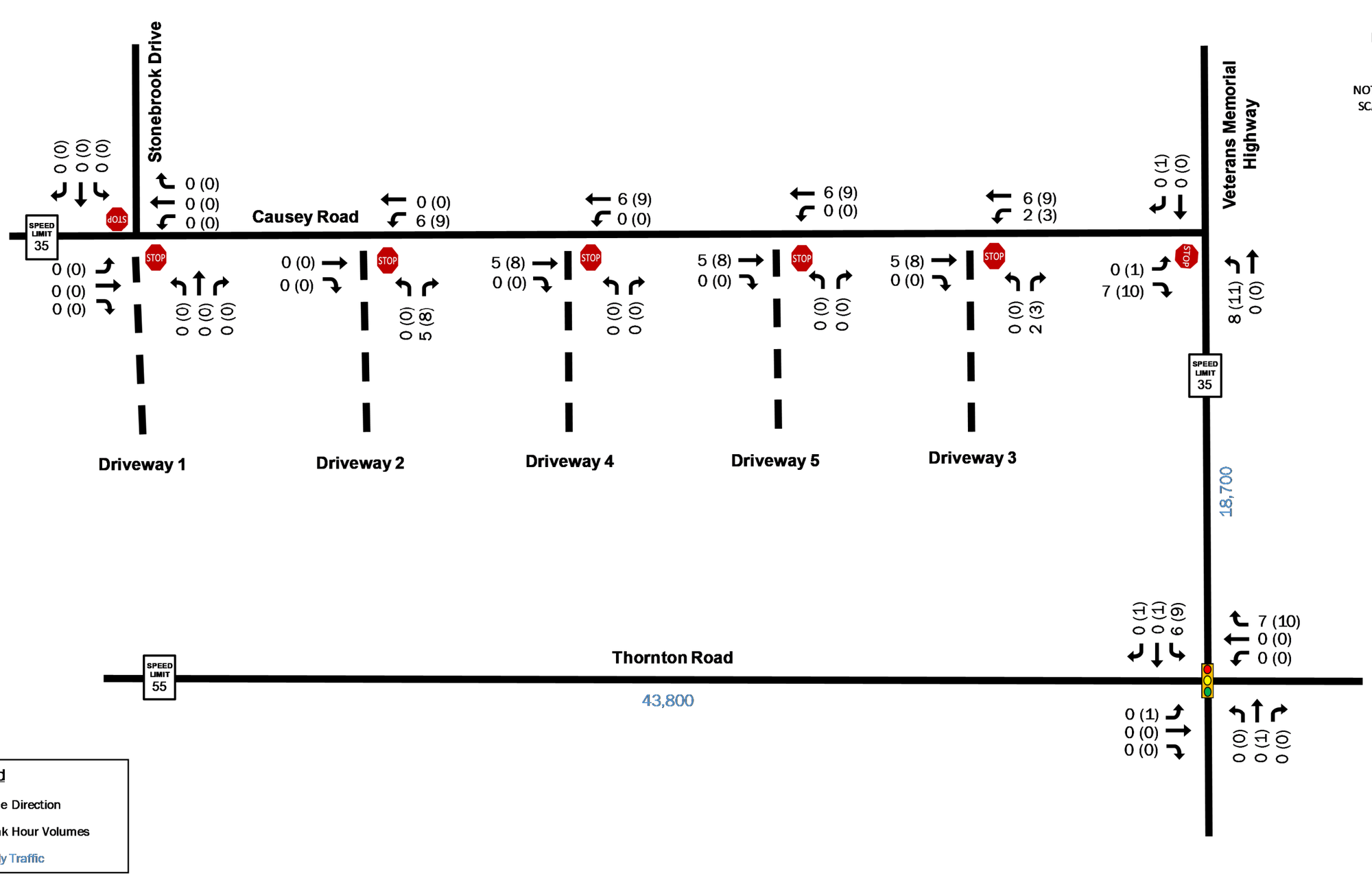


Figure 9: Project Trips

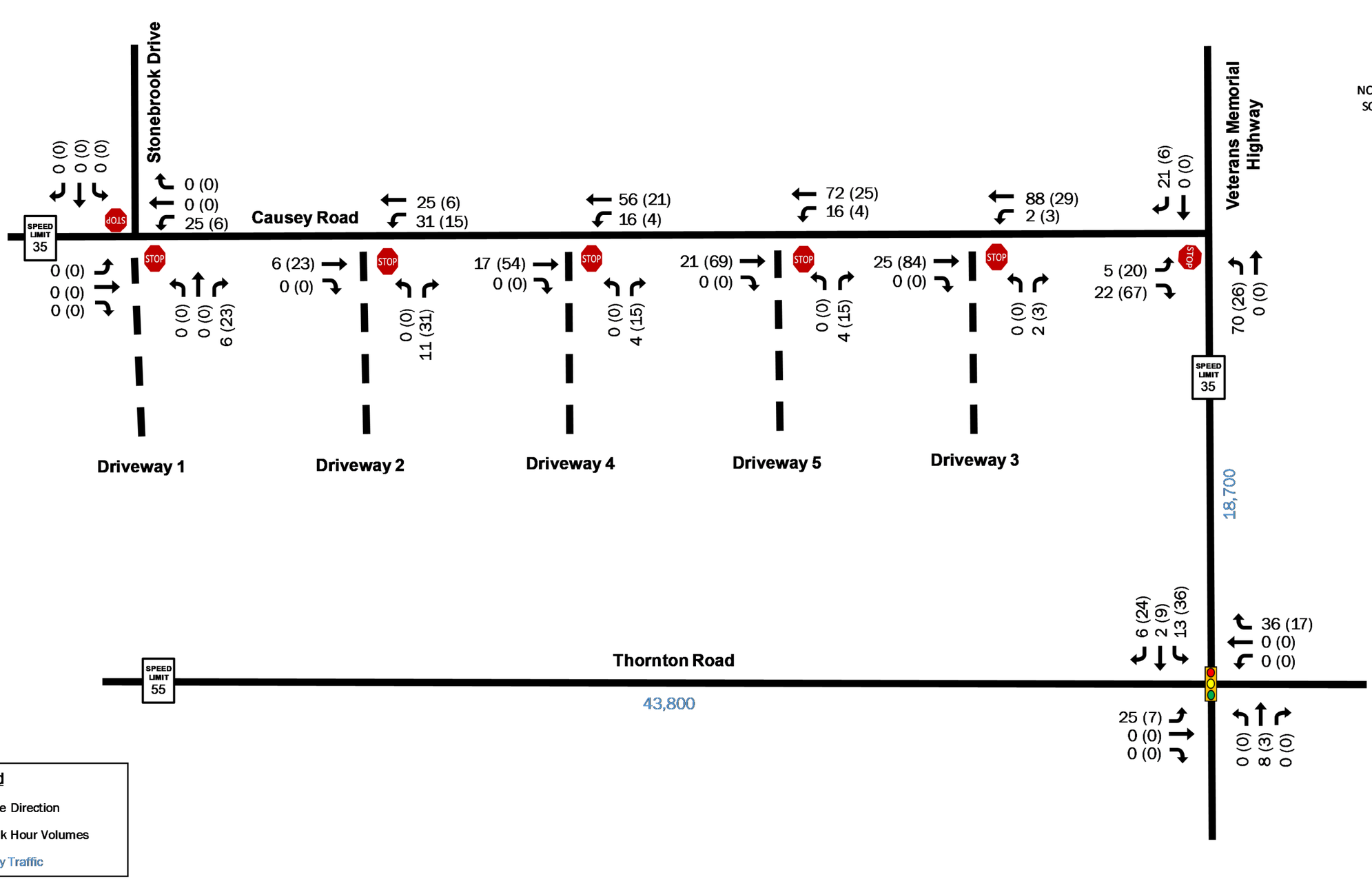
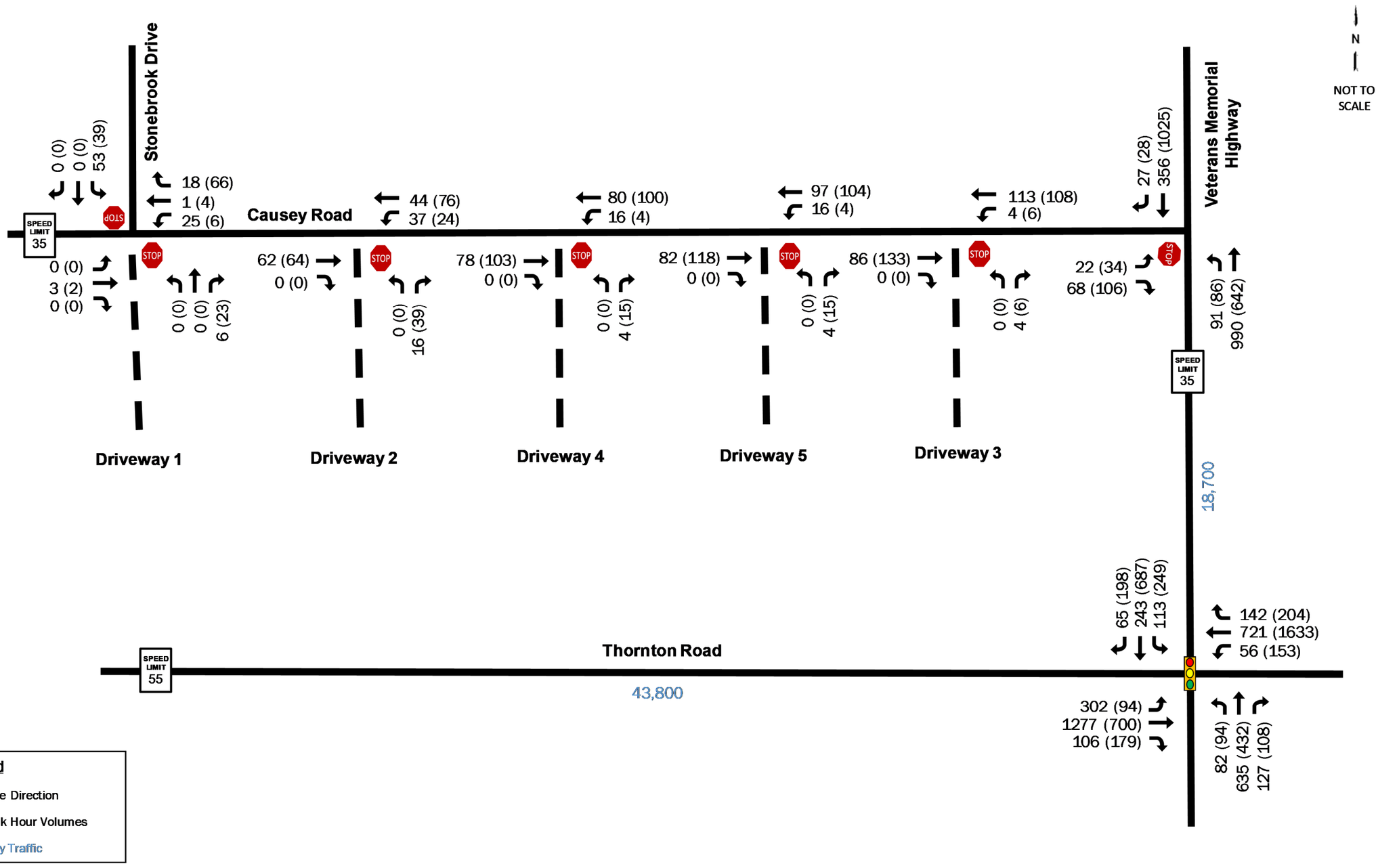


Figure 10: Build Traffic Volumes



Traffic Impact Analyses

The analysis in each of the scenarios for the study was performed using the traffic analysis software Synchro® 11. Average vehicular delays are calculated and reported as Levels of Service (LOS) as defined by the Highway Capacity Manual (HCM). Capacity analysis worksheets are included in Appendix D.

D.1. Existing Capacity Analysis

The results of the Existing Traffic Volumes' capacity analysis are shown in Table 2. The analysis uses volumes depicted in Figure 3.

Table 2: Existing Capacity Analysis

ID	Intersection	Control	Movement	AM		PM	
				Delay	LOS	Delay	LOS
1	Thornton Road & Veterans Memorial Hwy	Signal	WB	36.3	D	28.4	C
			EB	30.2	C	58.3	E
			NB	64.3	E	62.9	E
			SB	43.3	D	103.1	F
			Overall	41.8	D	62.9	E
2	Veterans Memorial Hwy & Causey Road	Stop-Control	EB	11.4	B	17.0	C
			NBL	8.1	A	11.1	B
3	Causey Road & Stonebrook Drive	Stop-Control	WB	0.0	A	0.0	A
			SBL	8.8	A	8.9	A

Capacity analysis indicates that the signalized intersection of Thornton Road and Veterans Memorial Highway currently operates at an acceptable LOS D during the AM peak hour, but operates at an unacceptable LOS E during the PM peak hour. The delays and unacceptable Levels of Service are the result of the heavy east-west through traffic volumes on Thornton Road.

Analysis also indicates that the minor street eastbound approach of Causey Road to Veterans Memorial Highway currently operates at an acceptable LOS B during the AM peak hour and LOS C during the PM peak hour. All other movements and approaches at the unsignalized intersections currently operate at LOS C or better during both peak hours.

D.2 No Build Capacity Analysis

The results of the No-Build capacity analysis are shown in Table 3 below. The analysis utilizes the volumes in Figure 4.

Table 3: No-Build Capacity Analysis

ID	Intersection	Control	Movement	AM		PM	
				Delay	LOS	Delay	LOS
1	Thornton Road & Veterans Memorial Hwy	Signal	WB	41.6	D	29.6	C
			EB	32.7	C	76.7	E
			NB	72.3	E	61.2	E
			SB	44.2	D	129.0	F
			Overall	46.6	D	76.7	E
2	Veterans Memorial Hwy & Causey Road	Stop-Control	EB	17.0	C	18.2	C
			NBL	11.1	B	11.5	B
3	Causey Road & Stonebrook Drive	Stop-Control	WB	0.0	A	0.0	A
			SBL	8.9	A	8.9	A

Capacity analysis indicates that the signalized intersection of Thornton Road and Veterans Memorial Highway is expected to continue to operate at an acceptable LOS D during the AM peak hour, and at an unacceptable LOS E during the PM peak hour. The delays and unacceptable Levels of Service are expected to increase with the increased ambient volume growth.

Analysis also indicates that the minor street eastbound approach of Causey Road to Veterans Memorial Highway is expected to operate at an acceptable LOS C during both the AM and PM peak hours. All other movements and approaches at the unsignalized intersections are expected to continue to operate at LOS C or better during both peak hours.

D.3 Build Conditions Capacity Analysis

The Build capacity analysis is shown in Table 4.

Table 4: Build Capacity Analysis

ID	Intersection	Control	Movement	AM		PM	
				Delay	LOS	Delay	LOS
1	Thornton Road & Veterans Memorial Hwy	Signal	WB	42.1	D	32.2	C
			EB	33.5	C	90.6	F
			NB	74.4	E	65.8	E
			SB	49.6	D	119.2	F
			Overall	47.9	D	82.1	F
2	Veterans Memorial Hwy & Causey Road	Stop-Control	EB	12.1	B	20.5	C
			NBL	8.7	A	13.2	B
3	Causey Road & Stonebrook Drive/Dwy 1	Stop-Control	NB	8.3	A	8.4	A
			SB	9.3	A	9.2	A
			WBL	7.2	A	7.2	A
4	Dwy 2 & Causey Road	Stop-Control	NB	9.0	A	9.0	A
			WBL	7.6	A	7.8	A
5	Dwy 3 & Causey Road	Stop-Control	NB	9.8	A	10.2	B
			WBL	8.4	A	8.6	A
6	Dwy 4 & Causey Road	Stop-Control	NB	8.7	A	8.9	A
			WBL	7.4	A	7.4	A
7	Dwy 5 & Causey Road	Stop-Control	NB	8.7	A	9.0	A
			WBL	7.4	A	7.5	A

Capacity analysis indicates that with the additional trips generated by the proposed development, the signalized intersection of Thornton Road and Veterans Memorial Highway is expected to continue to operate at an acceptable LOS D during the AM peak hour. The traffic operating condition is expected to worsen to LOS F during the PM peak hour.

Although the overall operation of the signal is expected to change from LOS E to LOS F during the PM peak hour, the site trips are only expected to increase the delay by 5.5 seconds. Analysis also indicates that the minor street eastbound approach of Causey Road to Veterans Memorial Highway is expected to operate at an acceptable LOS B during the AM peak hour and LOS C during the PM peak hour with the addition of an exclusive eastbound left-turn lane installed on Causey Road.

All other movements and approaches at the unsignalized site driveway intersections are expected to operate at LOS A during both peak hours with the proposed roadway configuration shown on the site plan in place.

Recommendations and Conclusions

The new 760,000 square foot warehouse/distribution two-building center will be located north of Thornton Road, west of Veterans Memorial Highway and south of Causey Road in Douglas County, Georgia. The site is to be annexed into the City of Austell. The new development will have five (5) driveways, all on Causey Road. The project will be developed in a single phase by 2023.

When completed, the development is expected to generate 90 AM and 32 PM weekday peak hour (of the adjacent street) new entering vehicular trips with 27 AM and 87 PM new exiting vehicular trips. Daily, the development is expected to generate a total of 1,246 new vehicular trips, entering and exiting at all access points.

The signalized intersection of Thornton Road at Veterans Memorial Highway operates with undesirable traffic operating conditions during the existing and future traffic conditions with or without the proposed development in place. Although the majority of the site generated trips are expected to use the intersection of Thornton Road at Veterans Memorial Highway, the overall delay is only expected to increase by 1.3 seconds during the AM peak hour and 5.4 seconds during the PM peak hour.

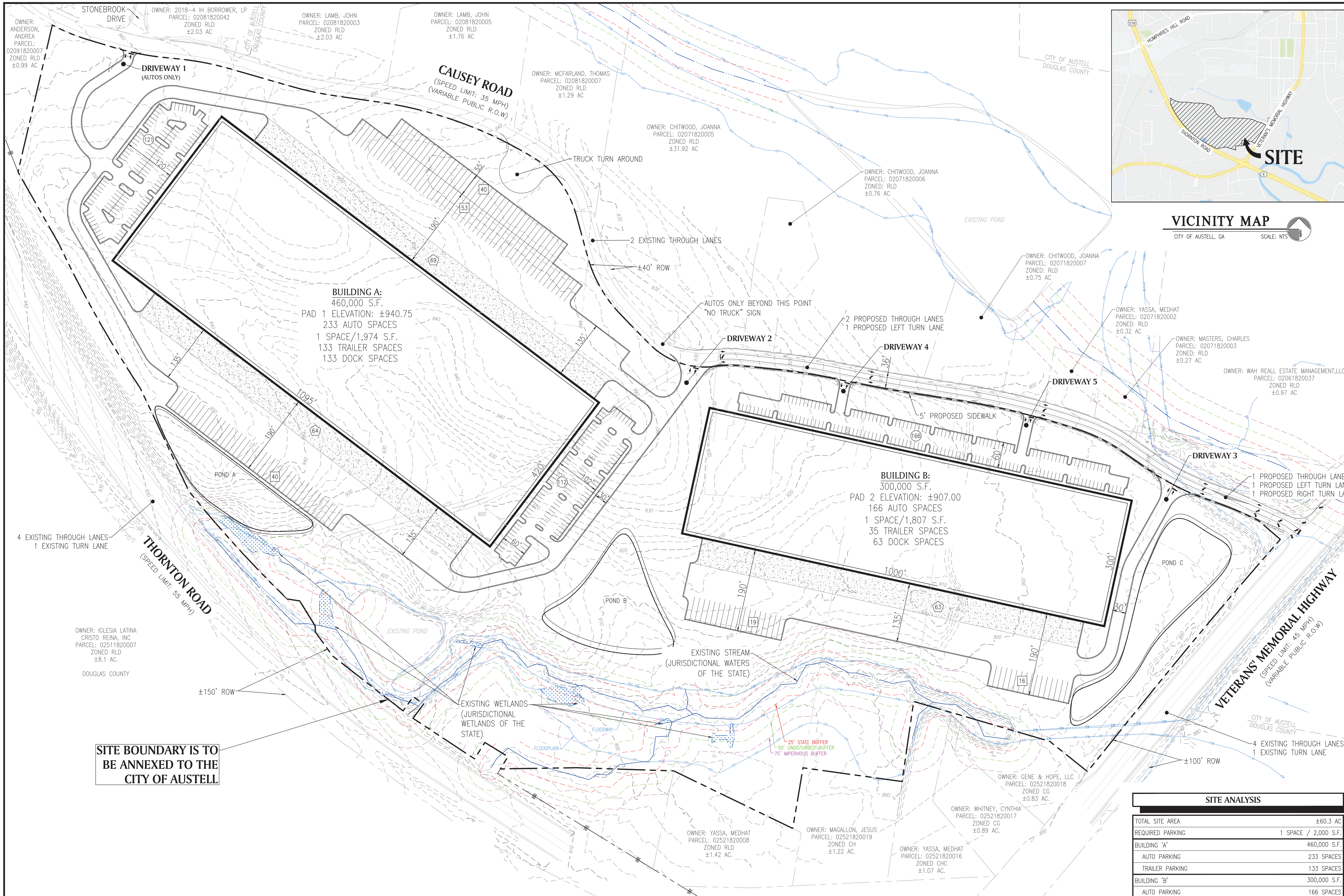
Capacity analysis indicates that all the unsignalized site driveway intersections on Causey Road are expected to operate at acceptable Levels of Service with the roadway configurations shown on the site plan in place.

The new traffic from the development is expected to have little impact on the external roadway network.

APPENDIX

APPENDIX A

SITE PLAN



SITE ANALYSIS

TOTAL SITE AREA	±60.3 AC
REQUIRED PARKING	1 SPACE / 2,000 S.F.
BUILDING "A"	460,000 S.F.
AUTO PARKING	233 SPACES
TRAILER PARKING	133 SPACES
BUILDING "B"	300,000 S.F.
AUTO PARKING	166 SPACES
TRAILER PARKING	35 SPACES

PRELIMINARY SITE PLAN DISCLAIMER:

SITE PLAN IS BASED ON CLIENT PROVIDED INFORMATION POSSIBLY INCLUDING BUT NOT LIMITED TO THE FOLLOWING: TAX MAPS, USGS MAPS, GIS INFORMATION, SCANNED/DIGITAL BOUNDARY SURVEY, SCANNED/DIGITAL TOPOGRAPHICAL SURVEY, SCANNED/DIGITAL AS-BUILT PLAN, SCANNED/DIGITAL ALTA SURVEY, AND/OR PREVIOUS CONSTRUCTION PLANS BY PMI/OTHERS. ALL ZONING INFORMATION SHOWN IN THE TITLEBLOCK TO THE RIGHT HAS BEEN RESEARCHED BUT NOT VERIFIED WITH THE JURISDICTION.

SITE PLAN BOUNDARY AND EXISTING CONDITIONS ARE ONLY AS ACCURATE AS THE INFORMATION PROVIDED.

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JAFFAR, NAVEED
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DRI SITE PLAN

PAULSON MITCHELL INCORPORATED
LAND PLANNERS
ENGINEERS • SURVEYORS
TRANSPORTATION
LANDSCAPE ARCHITECTS
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PROJECT:

THORNTON BUSINESS PARK

THORNTON ROAD AND VETERANS' MEMORIAL HIGHWAY
DOUGLAS COUNTY, GA

DRI#: 3119

FOR:

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3340 PEACHTREE ROAD NE
SUITE 1800
ATLANTA, GA 30326

REVISIONS

1 07.01.20 CLIENT COMMENTS

DRAWING RECORD
DRAWN BY: BO
2019174 – 06.29.20
PS-12- DRI.dwg
DRI SITE PLAN
SHEET DRI

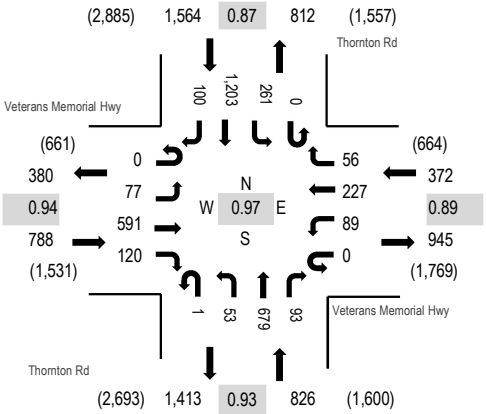
APPENDIX B

TRAFFIC
COUNT DATA

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

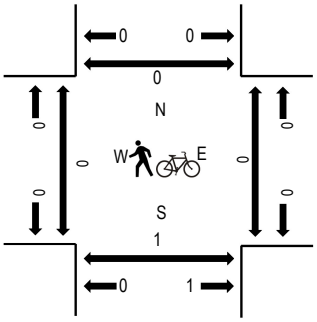
Location: #13 Thornton Rd & Veterans Memorial Hwy AM
Date: Wednesday, February 26, 2020
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Veterans Memorial Hwy Eastbound				Veterans Memorial Hwy Westbound				Thornton Rd Northbound				Thornton Rd Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	16	121	23	0	14	38	5	0	11	134	21	0	57	210	10	660	3,327	0	0	0	0
7:15 AM	0	28	160	26	0	24	41	12	0	12	167	14	0	55	314	10	863	3,504	0	0	0	0
7:30 AM	0	23	148	32	0	23	57	15	0	8	139	20	0	87	332	29	913	3,550	0	0	0	0
7:45 AM	0	20	130	32	0	12	62	23	1	19	186	24	0	55	295	32	891	3,486	0	0	0	0
8:00 AM	0	17	163	29	0	23	44	8	0	11	176	27	0	54	263	22	837	3,353	0	0	0	0
8:15 AM	0	17	150	27	0	31	64	10	0	15	178	22	0	65	313	17	909		0	0	1	0
8:30 AM	0	14	143	31	0	21	38	17	0	11	164	25	0	43	321	21	849		0	0	0	0
8:45 AM	0	20	121	40	0	22	53	7	2	18	161	34	0	30	232	18	758		0	0	0	0

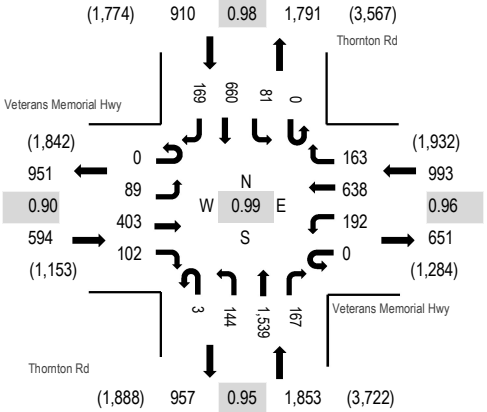
Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	8	1	4	0	1	0	2	0	3	63	4	0	14	74	5	179
Lights	0	63	574	112	0	85	216	48	1	45	524	82	0	241	1,086	88	3,165
Mediums	0	6	16	4	0	3	11	6	0	5	92	7	0	6	43	7	206
Total	0	77	591	120	0	89	227	56	1	53	679	93	0	261	1,203	100	3,550

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

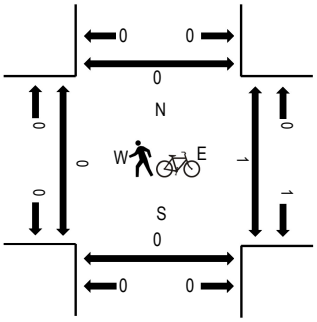
Location: #13 Thornton Rd & Veterans Memorial Hwy PM
Date: Wednesday, February 26, 2020
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:00 PM - 05:15 PM

Peak Hour - Motorized Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Veterans Memorial Hwy Eastbound				Veterans Memorial Hwy Westbound				Thornton Rd Northbound				Thornton Rd Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	19	95	26	0	39	150	38	3	42	378	43	0	22	161	27	1,043	4,232	0	0	0	0
4:15 PM	0	13	94	33	0	40	154	22	4	37	365	39	0	21	174	32	1,028	4,287	0	0	0	0
4:30 PM	0	27	98	27	0	53	160	38	1	38	381	37	0	21	174	38	1,093	4,350	0	1	0	0
4:45 PM	0	17	87	23	0	52	163	44	0	31	363	58	0	19	159	52	1,068	4,308	0	0	0	0
5:00 PM	0	22	96	32	0	41	161	47	1	36	402	37	0	18	168	37	1,098	4,349	0	0	0	0
5:15 PM	0	23	122	20	0	46	154	34	1	39	393	35	0	23	159	42	1,091		0	0	0	0
5:30 PM	0	24	98	30	0	48	156	35	1	32	384	40	0	24	146	33	1,051		0	0	0	0
5:45 PM	0	22	90	15	0	44	156	57	0	43	419	39	0	28	167	29	1,109		0	0	0	0

Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	4	3	5	0	0	2	6	0	0	60	4	0	5	46	3	138
Lights	0	81	398	91	0	189	629	148	3	138	1,428	160	0	71	561	159	4,056
Mediums	0	4	2	6	0	3	7	9	0	6	51	3	0	5	53	7	156
Total	0	89	403	102	0	192	638	163	3	144	1,539	167	0	81	660	169	4,350

Prepared by National Data & Surveying Services

US 278/US 78/SR 8/SR 5/Veterans' Memorial Hwy & Causey Rd

Peak Hour Turning Movement Count

ID: 20-09124-001
City: Austell

Day: Wednesday
Date: 06/03/2020

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NONE	NONE
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

US 278/US 78/SR 8/SR 5/Veterans' Memorial Hwy – SOUTHBOUND

	Right	Through	Left	U-Turn	Departing (⇧)
AM	2	268	0	0	586
NOON	0	0	0	0	0
PM	13	891	0	0	651
(red)	0	2	0	0	

Causey Rd – EASTBOUND

Movement	AM	NOON	PM	(red)
Departing (⇦)	5	0	32	
U-Turn	0	0	0	0
Left	7	0	6	0
Through	0	0	0	1
Right	14	0	19	0

Causey Rd – WESTBOUND

Movement	(red)	PM	NOON	AM
Right	0	0	0	0
Through	0	0	0	0
Left	0	0	0	0
U-Turn	0	0	0	0
Departing (⇨)		0	0	0

US 278/US 78/SR 8/SR 5/Veterans' Memorial Hwy – NORTHBOUND

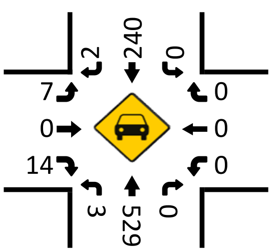
	Departing (⇩)	U-Turn	Left	Through	Right
(red)		0	0	2	0
PM	911	1	19	645	0
NOON	0	0	0	0	0
AM	282	0	3	579	0

CONTROL

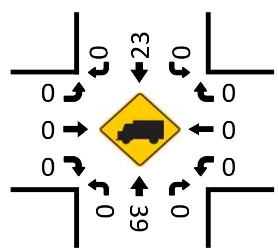
1-Way Stop(EB)

	AM	NOON	PM
TEV	873	0	1594
PHF	0.94		0.97

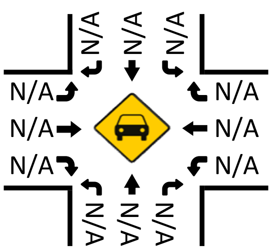
Cars (AM)



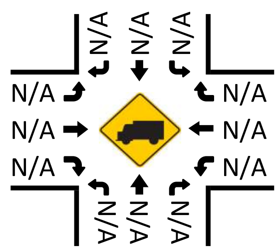
Duals (AM)



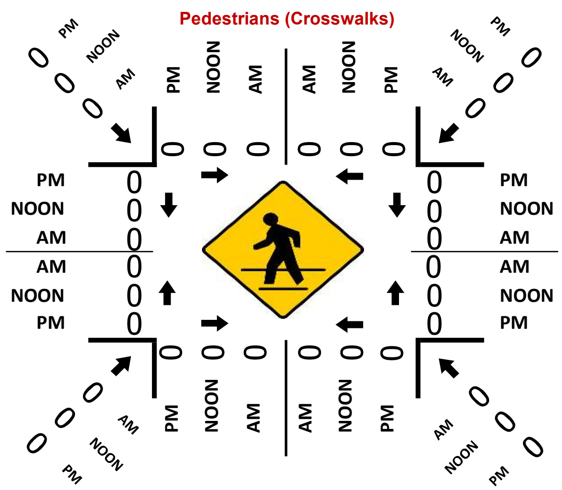
Cars (NOON)



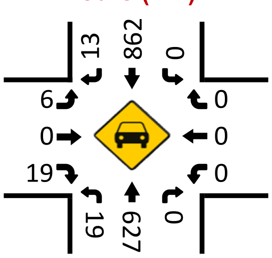
Duals (NOON)



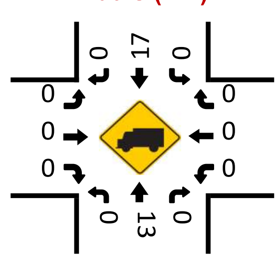
Pedestrians (Crosswalks)



Cars (PM)



Duals (PM)



Prepared by National Data & Surveying Services

VOLUME

Causey Rd W/O US 278/SR 8/SR 5/Veterans Memorial Hwy

Day: Wednesday
Date: 6/3/2020

City: Austell
Project #: GA20_9125_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	499	424	923

AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
0:00			3	2	5	12:00			10	6	16
0:15			2	3	5	12:15			8	4	12
0:30			0	1	1	12:30			6	6	12
0:45			2	1	3	12:45			6	6	12
			7	7	14				30	22	52
1:00			2	2	4	13:00			8	10	18
1:15			1	2	3	13:15			13	8	21
1:30			2	0	2	13:30			9	9	18
1:45			1	2	3	13:45			8	6	14
			6	6	12				38	33	71
2:00			2	2	4	14:00			11	4	15
2:15			0	1	1	14:15			8	9	17
2:30			1	2	3	14:30			7	6	13
2:45			1	1	2	14:45			2	2	4
			4	6	10				28	21	49
3:00			0	0	0	15:00			6	8	14
3:15			0	0	0	15:15			4	2	6
3:30			0	0	0	15:30			7	6	13
3:45			0	0	0	15:45			9	6	15
			0	0	0				26	22	48
4:00			1	2	3	16:00			5	11	16
4:15			2	2	4	16:15			9	13	22
4:30			3	1	4	16:30			9	6	15
4:45			3	1	4	16:45			6	8	14
			9	6	15				29	38	67
5:00			2	1	3	17:00			7	7	14
5:15			0	0	0	17:15			9	8	17
5:30			1	0	1	17:30			2	8	10
5:45			4	3	7	17:45			8	12	20
			7	4	11				26	35	61
6:00			4	3	7	18:00			8	10	18
6:15			7	1	8	18:15			9	8	17
6:30			7	1	8	18:30			5	6	11
6:45			3	2	5	18:45			5	9	14
			21	7	28				27	33	60
7:00			2	2	4	19:00			6	7	13
7:15			4	0	4	19:15			6	11	17
7:30			4	0	4	19:30			12	10	22
7:45			6	1	7	19:45			12	13	25
			16	3	19				36	41	77
8:00			5	2	7	20:00			9	8	17
8:15			6	2	8	20:15			5	5	10
8:30			8	2	10	20:30			7	10	17
8:45			4	0	4	20:45			5	5	10
			23	6	29				26	28	54
9:00			6	9	15	21:00			7	3	10
9:15			5	4	9	21:15			16	11	27
9:30			7	3	10	21:30			11	10	21
9:45			2	3	5	21:45			8	5	13
			20	19	39				42	29	71
10:00			9	6	15	22:00			2	5	7
10:15			11	6	17	22:15			6	5	11
10:30			7	6	13	22:30			2	2	4
10:45			9	5	14	22:45			5	2	7
			36	23	59				15	14	29
11:00			4	1	5	23:00			1	2	3
11:15			6	4	10	23:15			2	2	4
11:30			3	2	5	23:30			0	0	0
11:45			8	7	15	23:45			3	3	6
			21	14	35				6	7	13
TOTALS			170	101	**271**	**TOTALS**			329	323	**652**
SPLIT %			62.7%	37.3%	**29.4%**	**SPLIT %**			50.5%	49.5%	**70.6%**

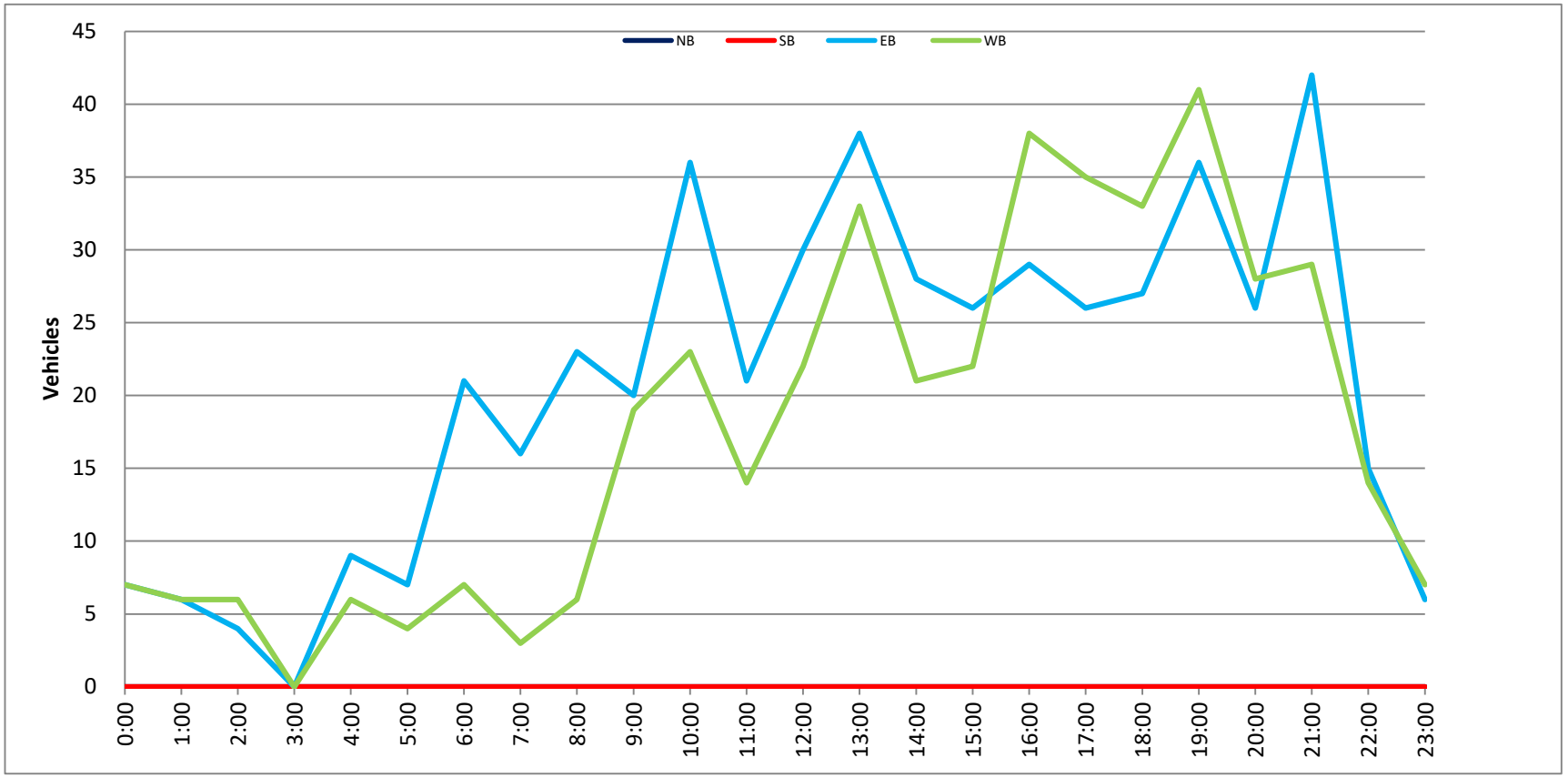
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	499	424	923

AM Peak Hour			10:00	10:00	**10:00**	**PM Peak Hour**			21:00	19:15	**19:15**
AM Pk Volume			36	23	**59**	**PM Pk Volume**			42	42	**81**
Pk Hr Factor			0.818	0.958	**0.868**	**Pk Hr Factor**			0.656	0.808	**0.810**
7 - 9 Volume	0	0	39	9	**48**	**4 - 6 Volume**	0	0	55	73	**128**
7 - 9 Peak Hour			7:45	7:45	**7:45**	**4 - 6 Peak Hour**			16:15	16:00	**16:00**
7 - 9 Pk Volume	0	0	25	7	**32**	**4 - 6 Pk Volume**	0	0	31	38	**67**
Pk Hr Factor	0.000	0.000	0.781	0.875	**0.800**	**Pk Hr Factor**	0.000	0.000	0.861	0.731	**0.761**

Prepared by National Data & Surveying Services

Project #: GA20_9125_001 **City:** Austell

Location: Causey Rd W/O US 278/SR 8/SR 5/Veterans **Date:** 6/3/2020



Prepared by National Data & Surveying Services

VOLUME

Franklin St W/O Bowden St

Day: Wednesday
Date: 6/3/2020

City: Austell
Project #: GA20_9125_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	213	203	416

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
0:00			0		0		0		12:00			5		6		11	
0:15			1		1		2		12:15			6		2		8	
0:30			0		1		1		12:30			5		2		7	
0:45			0	1	0	2	0	3	12:45			6	22	4	14	10	36
1:00			0		2		2		13:00			5		2		7	
1:15			1		0		1		13:15			1		4		5	
1:30			1		0		1		13:30			6		2		8	
1:45			0	2	0	2	0	4	13:45			3	15	2	10	5	25
2:00			0		0		0		14:00			3		5		8	
2:15			0		0		0		14:15			6		3		9	
2:30			0		1		1		14:30			1		2		3	
2:45			0		0	1	0	1	14:45			3	13	4	14	7	27
3:00			0		0		0		15:00			5		5		10	
3:15			0		0		0		15:15			3		4		7	
3:30			0		0		0		15:30			2		1		3	
3:45			1	1	0		1	1	15:45			3	13	4	14	7	27
4:00			0		1		1		16:00			3		1		4	
4:15			1		0		1		16:15			4		6		10	
4:30			2		1		3		16:30			5		5		10	
4:45			3	6	0	2	3	8	16:45			1	13	5	17	6	30
5:00			0		0		0		17:00			0		10		10	
5:15			0		0		0		17:15			2		8		10	
5:30			1		0		1		17:30			7		5		12	
5:45			2	3	0		2	3	17:45			2	11	3	26	5	37
6:00			1		1		2		18:00			5		4		9	
6:15			2		1		3		18:15			3		3		6	
6:30			1		0		1		18:30			6		2		8	
6:45			1	5	1	3	2	8	18:45			2	16	3	12	5	28
7:00			1		1		2		19:00			5		7		12	
7:15			4		2		6		19:15			4		5		9	
7:30			3		1		4		19:30			1		1		2	
7:45			1	9	2	6	3	15	19:45			2	12	2	15	4	27
8:00			7		1		8		20:00			3		3		6	
8:15			0		2		2		20:15			4		1		5	
8:30			4		0		4		20:30			3		6		9	
8:45			1	12	1	4	2	16	20:45			1	11	4	14	5	25
9:00			2		1		3		21:00			4		1		5	
9:15			2		1		3		21:15			4		6		10	
9:30			0		1		1		21:30			3		3		6	
9:45			3	7	0	3	3	10	21:45			2	13	2	12	4	25
10:00			1		4		5		22:00			3		5		8	
10:15			3		0		3		22:15			1		0		1	
10:30			2		2		4		22:30			1		4		5	
10:45			1	7	2	8	3	15	22:45			0	5	3	12	3	17
11:00			1		0		1		23:00			0		2		2	
11:15			6		1		7		23:15			1		1		2	
11:30			2		5		7		23:30			1		0		1	
11:45			5	14	3	9	8	23	23:45			0	2	0	3	0	5
TOTALS				67		40		**107**	**TOTALS**				146		163		**309**
SPLIT %				62.6%		37.4%		**25.7%**	**SPLIT %**				47.2%		52.8%		**74.3%**

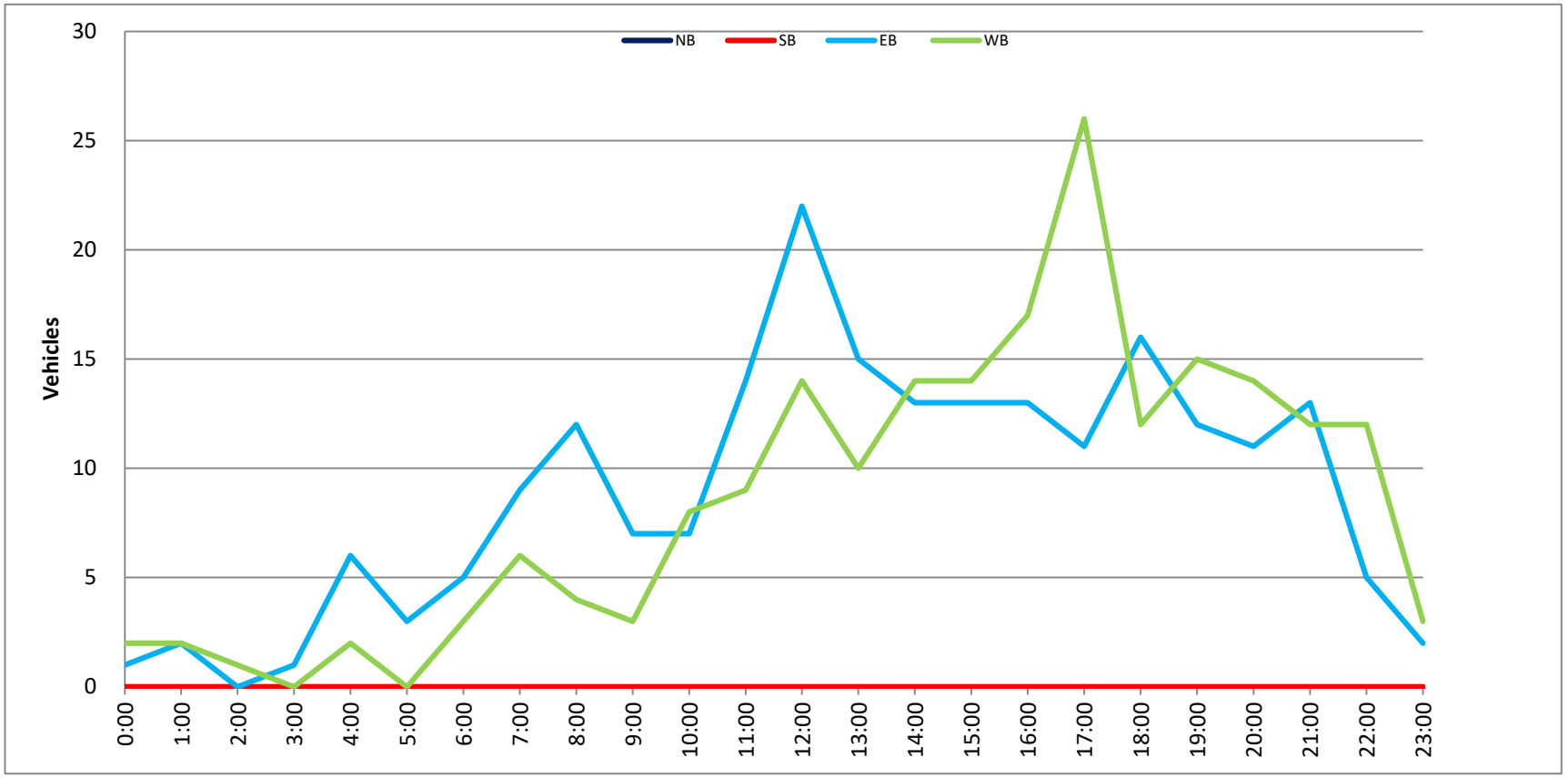
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	213	203	416

AM Peak Hour			11:45	11:30	**11:30**	**PM Peak Hour**			12:00	16:30	**16:45**
AM Pk Volume			21	16	**34**	**PM Pk Volume**			22	28	**38**
Pk Hr Factor			0.875	0.667	**0.773**	**Pk Hr Factor**			0.917	0.700	**0.792**
7 - 9 Volume	0	0	21	10	**31**	**4 - 6 Volume**	0	0	24	43	**67**
7 - 9 Peak Hour			7:15	7:00	**7:15**	**4 - 6 Peak Hour**			16:00	16:30	**16:45**
7 - 9 Pk Volume	0	0	15	6	**21**	**4 - 6 Pk Volume**	0	0	13	28	**38**
Pk Hr Factor	0.000	0.000	0.536	0.750	**0.656**	**Pk Hr Factor**	0.000	0.000	0.650	0.700	**0.792**

Prepared by National Data & Surveying Services

Project #: GA20_9125_002 **City:** Austell

Location: Franklin St W/O Bowden St **Date:** 6/3/2020



Graph Look Up

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 210

LAND USE GROUP: (200-299) Residential

LAND USE : 210 - Single-Family Detached Housing

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): Dwelling Units

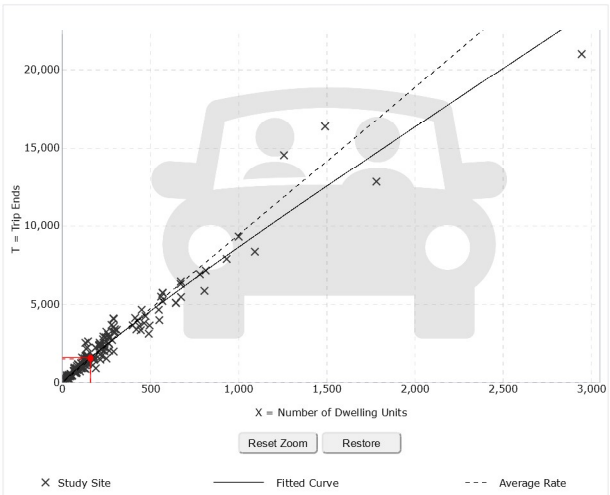
TIME PERIOD: Weekday

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 160 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use: Single-Family Detached Housing (210) Click for more details

Independent Variable: Dwelling Units

Time Period: Weekday

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 159

Avg. Num. of Dwelling Units: 264

Average Rate: 9.44

Range of Rates: 4.81 - 19.39

Standard Deviation: 2.10

Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.71

R^2: 0.95

Directional Distribution: 50% entering, 50% exiting

Calculated Trip Ends: Average Rate: 1510 (Total), 755 (Entry), 755 (Exit) Fitted Curve: 1602 (Total), 801 (Entry), 801 (Exit)

Graph Look Up

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 210

LAND USE GROUP: (200-299) Residential

LAND USE : 210 - Single-Family Detached Housing

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): Dwelling Units

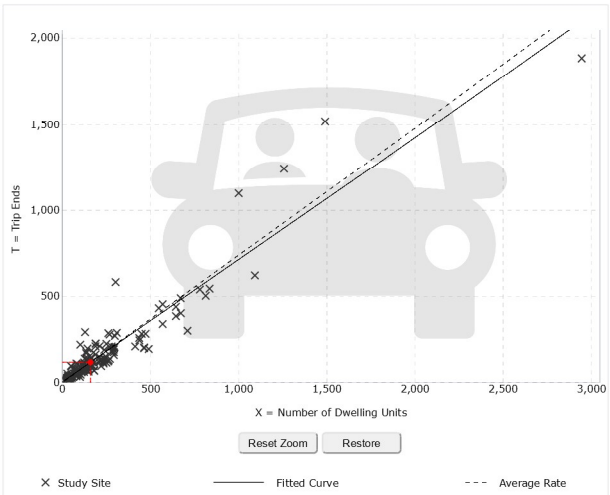
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic, Or

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 160 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Single-Family Detached Housing (210) Click for more details

Independent Variable:
Dwelling Units

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic:
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
173

Avg. Num. of Dwelling Units:
219

Average Rate:
0.74

Range of Rates:
0.33 - 2.27

Standard Deviation:
0.27

Fitted Curve Equation:
T = 0.71(X) + 4.80

R^2:
0.89

Directional Distribution:
25% entering, 75% exiting

Calculated Trip Ends:
Average Rate: 118 (Total), 29 (Entry), 89 (Exit)
Fitted Curve: 118 (Total), 29 (Entry), 89 (Exit)

ITETripGen **Web-based App** | Help | CALYX Engineers and Consultants | Sign out

Graph Look Up

ITETripGen Web-based App

- Graph Look Up
- Technical Support
- Add Users
- Comments

Query | Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 210

LAND USE GROUP: (200-299) Residential

LAND USE : 210 - Single-Family Detached Housing

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): Dwelling Units

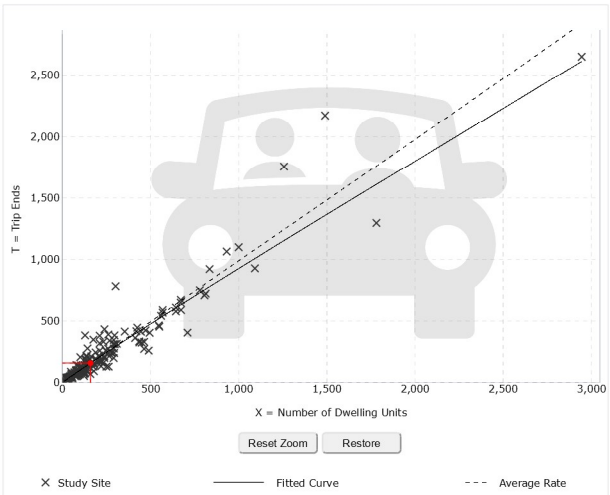
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic, Or

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 160 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use: Single-Family Detached Housing (210) Click for more details

Independent Variable: Dwelling Units

Time Period: Weekday
Peak Hour of Adjacent Street Traffic: One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 190

Avg. Num. of Dwelling Units: 242

Average Rate: 0.99

Range of Rates: 0.44 - 2.98

Standard Deviation: 0.31

Fitted Curve Equation: Ln(T) = 0.96 Ln(X) + 0.20

R^2: 0.92

Directional Distribution: 63% entering, 37% exiting

Calculated Trip Ends:
Average Rate: 158 (Total), 99 (Entry), 59 (Exit)
Fitted Curve: 160 (Total), 100 (Entry), 60 (Exit)

ADD-ONS

Try OTISS Pro

	Current Count Data Volumes		Residential Distribution		Residential Volumes		Adjusted Volumes	
	AM	PM	Enter	Exit	AM	PM	AM	PM
Thornton Road at Veterans Memorial Highway								
Node #	1							
Turning Mvmt								
SBL	89	192			0	0	89	192
SBT	227	638			0	0	227	638
SBR	56	163			0	0	56	163
SBU					0	0	0	0
NBL	77	89			0	0	77	89
NBT	591	403			0	0	591	403
NBR	120	102			0	0	120	102
NBU					0	0	0	0
EBL	261	81			0	0	261	81
EBT	1203	660			0	0	1203	660
EBR	100	169			0	0	100	169
EBU					0	0	0	0
WBL	53	144			0	0	53	144
WBT	679	1539			0	0	679	1539
WBR	93	167			0	0	93	167
WBU					0	0	0	0
Causey Road at Veterans Memorial Highway								
Node #	2							
Turning Mvmt								
SBL					0	0	0	0
SBT	372	993		-70%	-37	-27	335	966
SBR			30%		5	20	5	20
SBU					0	0	0	0
NBL			70%		12	46	12	46
NBT	945	651	-70%		-12	-46	933	605
NBR					0	0	0	0
NBU					0	0	0	0
EBL				30%	16	12	16	12
EBT					0	0	0	0
EBR				70%	37	27	37	27
EBU					0	0	0	0
WBL					0	0	0	0
WBT					0	0	0	0
WBR					0	0	0	0
WBU					0	0	0	0

	AM			PM		
	Enter	**Exit**	**Total**	**Enter**	**Exit**	**Total**
ITE Trip Generation	29	89	118	100	60	160
On Causey Road	17	53	70	65	39	104

Causey Road Utilization	
AM	**PM**
60%	65%

	AM	**PM**
SB Recievung	372	993
NB Sending	945	651
NB Receiving	945	651
SB Sending	372	993

APPENDIX C

TRIP GENERATION & VOLUME CALCULATIONS

Trip Generation Summary - 2020051.00 - Thornton Road Industrial DRI (Austell, GA)

(760,000 SF - Equation)

Warehouse Distribution Center (150 LUC)		Project Trips		
		Total	Inbound	Outbound
Personal Vehicles	Daily	828	414	414
	AM Peak Hour	102	82	20
	PM Peak Hour	96	20	76
Trucks	Daily	418	209	209
	AM Peak Hour	15	8	7
	PM Peak Hour	23	12	11
Total Trips Generated	Daily	1,246	623	623
	AM Peak Hour	117	90	27
	PM Peak Hour	119	32	87

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Graph Look Up

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- Technical Support
- Add Users
- Comments

ADD-ONS

- Try OTISS Pro

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 150

LAND USE GROUP: (100-199) Industrial

LAND USE : 150 - Warehousing

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

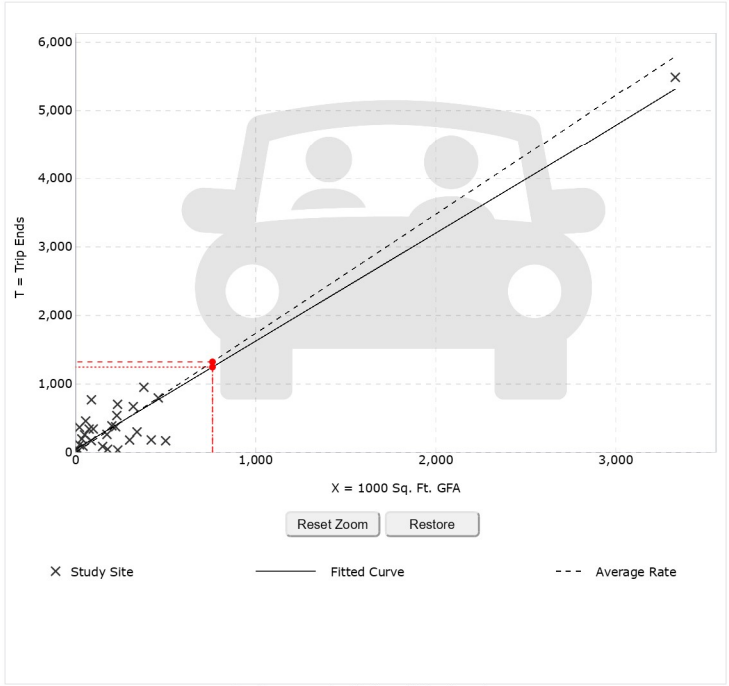
TIME PERIOD: Weekday

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 760 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for more details

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
29

Avg. 1000 Sq. Ft. GFA:
285

Average Rate:
1.74

Range of Rates:
0.15 - 16.93

Standard Deviation:
1.55

Fitted Curve Equation:
T = 1.58(X) + 45.54

R^2:
0.93

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate: 1322 (Total), 661 (Entry), 661 (Exit)
Fitted Curve: 1246 (Total), 623 (Entry), 623 (Exit)

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- Comments

ADD-ONS

- Try OTISS Pro

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 150

LAND USE GROUP: (100-199) Industrial

LAND USE : 150 - Warehousing

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

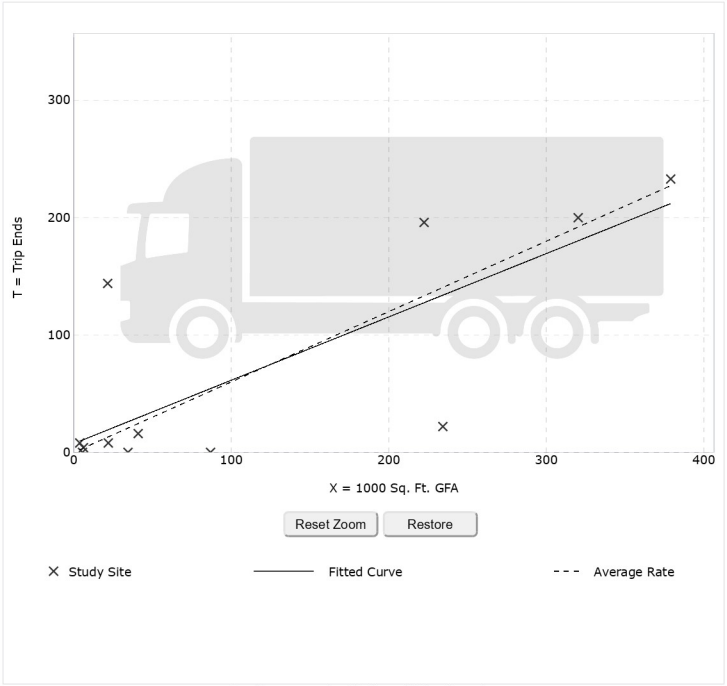
TIME PERIOD: Weekday

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Truck

ENTER IV VALUE TO CALCULATE TRIPS: 760 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for more details

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday

Setting/Location:
General Urban/Suburban

Trip Type:
Truck

Number of Studies:
12

Avg. 1000 Sq. Ft. GFA:
115

Average Rate:
0.60

Range of Rates:
0.00 - 6.66

Standard Deviation:
0.86

Fitted Curve Equation:
T = 0.54(X) + 7.47

R^2:
0.61

Directional Distribution:
50% entering, 50% exiting

Calculated Trip Ends:
Average Rate: 456 (Total), 228 (Entry), 228 (Exit)
Fitted Curve: 418 (Total), 209 (Entry), 209 (Exit)

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- Add Users
- Comments

ADD-ONS

- Try OTISS Pro

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 150

LAND USE GROUP: (100-199) Industrial

LAND USE : 150 - Warehousing

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

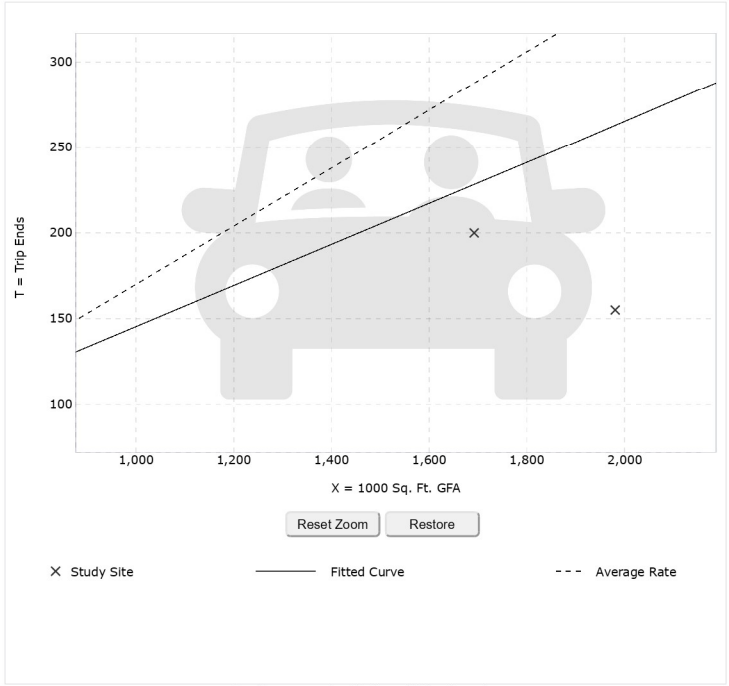
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic, Or

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 760 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for more details

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
34

Avg. 1000 Sq. Ft. GFA:
451

Average Rate:
0.17

Range of Rates:
0.02 - 1.93

Standard Deviation:
0.20

Fitted Curve Equation:
T = 0.12(X) + 25.32

R^2:
0.69

Directional Distribution:
77% entering, 23% exiting

Calculated Trip Ends:
Average Rate: 129 (Total), 99 (Entry), 30 (Exit)
Fitted Curve: 117 (Total), 90 (Entry), 27 (Exit)

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ADD-ONS

- Try OTISS Pro

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 150

LAND USE GROUP: (100-199) Industrial

LAND USE : 150 - Warehousing

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

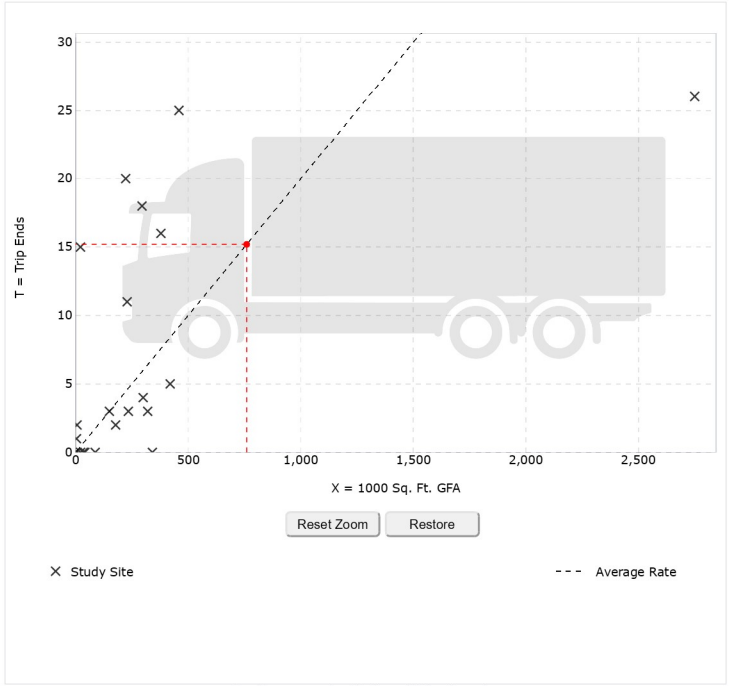
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic, Or

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Truck

ENTER IV VALUE TO CALCULATE TRIPS: 760 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for more details

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 7 and 9 a.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Truck

Number of Studies:
21

Avg. 1000 Sq. Ft. GFA:
309

Average Rate:
0.02

Range of Rates:
0.00 - 0.69

Standard Deviation:
0.05

Fitted Curve Equation:
Not Given

R^2:
****

Directional Distribution:
52% entering, 48% exiting

Calculated Trip Ends:
Average Rate: 15 (Total), 8 (Entry), 7 (Exit)

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- Technical Support
- Add Users
- Comments

ADD-ONS

- Try OTISS Pro

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 150

LAND USE GROUP: (100-199) Industrial

LAND USE : 150 - Warehousing

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

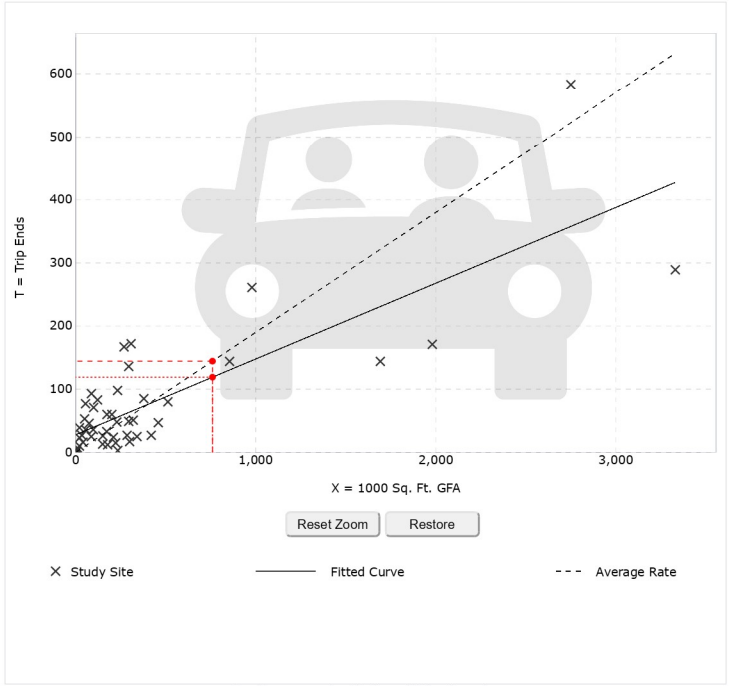
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic, Or

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 760 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for more details

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
47

Avg. 1000 Sq. Ft. GFA:
400

Average Rate:
0.19

Range of Rates:
0.01 - 1.80

Standard Deviation:
0.18

Fitted Curve Equation:
T = 0.12(X) + 27.82

R^2:
0.65

Directional Distribution:
27% entering, 73% exiting

Calculated Trip Ends:
Average Rate: 144 (Total), 39 (Entry), 105 (Exit)
Fitted Curve: 119 (Total), 32 (Entry), 87 (Exit)

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Graph Look Up

ITETripGen Web-based App

- Graph Look Up
- Technical Support
- Add Users
- Comments

Query Filter

DATA SOURCE: Trip Gen Manual, 10th Ed + Supplement

SEARCH BY LAND USE CODE: 150

LAND USE GROUP: (100-199) Industrial

LAND USE : 150 - Warehousing

LAND USE SUBCATEGORY: All Sites

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GFA

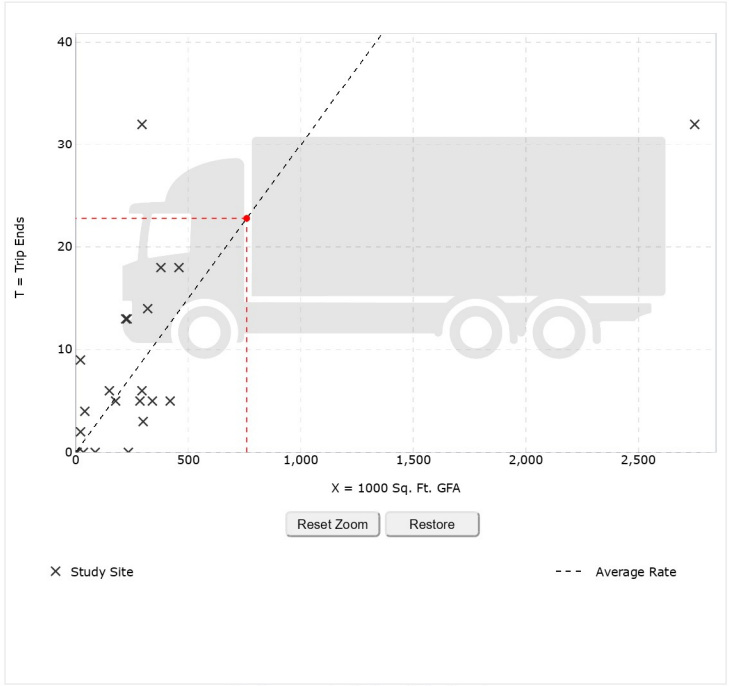
TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic, Or

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Truck

ENTER IV VALUE TO CALCULATE TRIPS: 760 Calculate

Data Plot and Equation



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA STATISTICS

Land Use:
Warehousing (150) Click for more details

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Truck

Number of Studies:
23

Avg. 1000 Sq. Ft. GFA:
308

Average Rate:
0.03

Range of Rates:
0.00 - 0.42

Standard Deviation:
0.03

Fitted Curve Equation:
Not Given

R^2:
****

Directional Distribution:
52% entering, 48% exiting

Calculated Trip Ends:
Average Rate: 23 (Total), 12 (Entry), 11 (Exit)

ADD-ONS

Try OTISS Pro

DRI 3119 - Thornton Business Park (Austell, Douglas County, GA)
Distribution Percentages Calculations

	Parking Spaces		Percentages		Percentages for DRI	
	Passenger	Truck	Passenger	Truck	Passenger	Truck
Driveway 1	121	0	30.3%	0.0%	30%	0%
Driveway 2	112	266	28.1%	73.1%	30%	75%
Driveway 3	0	98	0.0%	26.9%	0%	25%
Driveway 4	83	0	20.8%	0.0%	20%	0%
Driveway 5	83	0	20.8%	0.0%	20%	0%
Total	399	364	100.0%	100.0%	100.0%	100.0%

Building A 460,000
Building B 300,000

APPENDIX D

SYNCHRO REPORTS

EXISTING

ID	Intersection	Control	Movement	AM		PM	
				Delay	LOS	Delay	LOS
1	Thornton Road & Veterans Memorial Hwy	Signal	WB	36.3	D	28.4	C
			EB	30.2	C	58.3	E
			NB	64.3	E	62.9	E
			SB	43.3	D	103.1	F
			Overall	41.8	D	62.9	E
2	Veterans Memorial Hwy & Causey Road	Stop-Control	EB	11.4	B	17.0	C
			NBL	8.1	A	11.1	B
3	Causey Road & Stonebrook Drive	Stop-Control	WB	0.0	A	0.0	A
			SBL	8.8	A	8.9	A

NO-BUILD

ID	Intersection	Control	Movement	AM		PM	
				Delay	LOS	Delay	LOS
1	Thornton Road & Veterans Memorial Hwy	Signal	WB	41.6	D	29.6	C
			EB	32.7	C	76.7	E
			NB	72.3	E	61.2	E
			SB	44.2	D	129.0	F
			Overall	46.6	D	76.7	E
2	Veterans Memorial Hwy & Causey Road	Stop-Control	EB	17.0	C	18.2	C
			NBL	11.1	B	11.5	B
3	Causey Road & Stonebrook Drive	Stop-Control	WB	0.0	A	0.0	A
			SBL	8.9	A	8.9	A

BUILD

ID	Intersection	Control	Movement	AM		PM	
				Delay	LOS	Delay	LOS
1	Thornton Road & Veterans Memorial Hwy	Signal	WB	42.1	D	32.2	C
			EB	33.5	C	90.6	F
			NB	74.4	E	65.8	E
			SB	49.6	D	119.2	F
			Overall	47.9	D	82.1	F
2	Veterans Memorial Hwy & Causey Road	Stop-Control	EB	12.1	B	20.5	C
			NBL	8.7	A	13.2	B
3	Causey Road & Stonebrook Drive/Dwy 1	Stop-Control	NB	8.3	A	8.4	A
			SB	9.3	A	9.2	A
			WBL	7.2	A	7.2	A
4	Dwy 2 & Causey Road	Stop-Control	NB	9.0	A	9.0	A
			WBL	7.6	A	7.8	A
5	Dwy 3 & Causey Road	Stop-Control	NB	9.8	A	10.2	B
			WBL	8.4	A	8.6	A
6	Dwy 4 & Causey Road	Stop-Control	NB	8.7	A	8.9	A
			WBL	7.4	A	7.4	A
7	Dwy 5 & Causey Road	Stop-Control	NB	8.7	A	9.0	A
			WBL	7.4	A	7.5	A

EXISTING

ID	Intersection	Control	Movement	Storage Length	Queue Length (ft)	
					AM	PM
1	Thornton Road & Veterans Memorial Hwy	Signal	EBL	200	185	89
			EBT	-	743	376
			EBR	-	-	-
			WBL	700	53	98
			WBT	-	365	1020
			WBR	-	-	64
			NBL	250	95	110
			NBT	-	485	340
			NBR	-	-	-
			SBL	225	107	288
			SBT	-	162	612
			SBR	-	-	-
2	Veterans Memorial Hwy & Causey Road	Stop-Control	EBL	-	8	10
			EBT	-	-	-
			EBR	-	-	-
			NBL	-	0	8
			NBT	-	-	-
			NBR	-	-	-
			SBL	-	-	-
			SBT	-	-	-
			SBR	-	-	-
3	Causey Road & Stonebrook Drive	Stop-Control	EBL	-	0	0
			EBT	-	-	-
			EBR	-	-	-
			WBL	-	-	-
			WBT	-	-	-
			NBL	-	-	-
			NBT	-	-	-
			SBL	-	5	3
			SBT	-	-	-

NO-BUILD

ID	Intersection	Control	Movement	Storage Length	Queue Length (ft)	
					AM	PM
1	Thornton Road & Veterans Memorial Hwy	Signal	EBL	200	222	97
			EBT	-	877	407
			EBR	-	-	-
			WBL	700	58	104
			WBT	-	406	1122
			WBR	-	-	72
			NBL	250	100	116
			NBT	-	534	345
			NBR	-	-	-
			SBL	225	116	338
			SBT	-	172	667
			SBR	-	-	-
2	Veterans Memorial Hwy & Causey Road	Stop-Control	EBL	-	8	13
			EBT	-	-	-
			EBR	-	-	-
			NBL	-	0	8
			NBT	-	-	-
			NBR	-	-	-
			SBL	-	-	-
			SBT	-	-	-
			SBR	-	-	-
3	Causey Road & Stonebrook Drive	Stop-Control	EBL	-	0	0
			EBT	-	-	-
			EBR	-	-	-
			WBL	-	-	-
			WBT	-	-	-
			NBL	-	-	-
			NBT	-	-	-
			SBL	-	5	3
			SBT	-	-	-

BUILD

ID	Intersection	Control	Movement	Storage Length	Queue Length (ft)	
					AM	PM
1	Thornton Road & Veterans Memorial Hwy	Signal	EBL	200	264	118
			EBT	-	877	423
			EBR	-	-	-
			WBL	700	58	109
			WBT	-	416	1153
			WBR	-	26	63
			NBL	250	100	116
			NBT	-	544	374
			NBR	-	-	-
			SBL	225	177	422
			SBT	-	175	675
			SBR	-	-	-
2	Veterans Memorial Hwy & Causey Road	Stop-Control	EBL (1)	-	8	23
			EBL (2)	-	8	28
			EBT	-	-	-
			EBR	-	-	-
			NBL	-	8	15
			NBT	-	-	-
			NBR	-	-	-
			SBL	-	-	-
			SBT	-	-	-
			SBR	-	-	-
3	Causey Road & Stonebrook Drive/ Dwy 1	Stop-Control	EBL	-	0	0
			EBT	-	-	-
			EBR	-	-	-
			WBL	-	3	0
			WBT	-	-	-
			NBL	-	0	3
			NBT	-	-	-
			SBL	-	5	5
			SBT	-	-	-
4	Dwy 2 & Causey Road	Stop-Control	WBL	-	3	3
			NBL	-	3	3
5	Dwy 3 & Causey Road	Stop-Control	WBL	-	0	0
			NBL	-	0	0
6	Dwy 4 & Causey Road	Stop-Control	WBL	-	0	0
			NBL	-	0	3
7	Dwy 5 & Causey Road	Stop-Control	WBL	-	0	0
			NBL	-	0	3

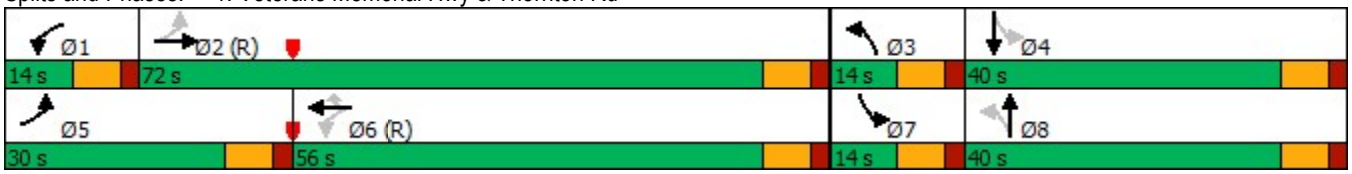
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	261	1203	100	53	679	93	77	591	120	89	227	56
Future Volume (vph)	261	1203	100	53	679	93	77	591	120	89	227	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	700		0	250		0	225		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.989				0.850		0.975			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3315	0	1736	3343	1553	1736	3384	0	1736	3367	0
Flt Permitted	0.226			0.070			0.470			0.115		
Satd. Flow (perm)	413	3315	0	128	3343	1553	859	3384	0	210	3367	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				195		16			21	
Link Speed (mph)		55			55			35			35	
Link Distance (ft)		1466			45			1219			1580	
Travel Time (s)		18.2			0.6			23.7			30.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	8%	4%	4%	8%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	290	1337	111	59	754	103	86	657	133	99	252	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	290	1448	0	59	754	103	86	790	0	99	314	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	22.5		14.0	22.5	22.5	14.0	22.5		14.0	22.5	
Total Split (s)	30.0	72.0		14.0	56.0	56.0	14.0	40.0		14.0	40.0	
Total Split (%)	21.4%	51.4%		10.0%	40.0%	40.0%	10.0%	28.6%		10.0%	28.6%	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	81.2	70.0		65.8	56.8	56.8	43.8	34.8		43.8	34.8	
Actuated g/C Ratio	0.58	0.50		0.47	0.41	0.41	0.31	0.25		0.31	0.25	
v/c Ratio	0.69	0.87		0.36	0.56	0.14	0.26	0.93		0.60	0.37	
Control Delay	23.9	38.8		25.2	34.6	0.4	33.6	67.6		47.9	41.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	23.9	38.8		25.2	34.6	0.4	33.6	67.6		47.9	41.9	
LOS	C	D		C	C	A	C	E		D	D	
Approach Delay		36.3			30.2			64.3			43.3	
Approach LOS		D			C			E			D	
Queue Length 50th (ft)	128	626		22	275	0	53	365		62	116	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	185	743		53	365	0	95	#485		107	162	
Internal Link Dist (ft)		1386			1			1139			1500	
Turn Bay Length (ft)	200			700			250			225		
Base Capacity (vph)	475	1660		163	1355	745	325	858		164	857	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.61	0.87		0.36	0.56	0.14	0.26	0.92		0.60	0.37	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 41.8 Intersection LOS: D
Intersection Capacity Utilization 84.9% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Veterans Memorial Hwy & Thornton Rd



Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	37	12	933	335	6
Future Vol, veh/h	16	37	12	933	335	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	4	4	0
Mvmt Flow	18	41	13	1037	372	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	921	190	379	0	-	0
Stage 1	376	-	-	-	-	-
Stage 2	545	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	273	826	1191	-	-	-
Stage 1	670	-	-	-	-	-
Stage 2	551	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	270	826	1191	-	-	-
Mov Cap-2 Maneuver	396	-	-	-	-	-
Stage 1	663	-	-	-	-	-
Stage 2	551	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1191	-	622	-	-
HCM Lane V/C Ratio	0.011	-	0.095	-	-
HCM Control Delay (s)	8.1	-	11.4	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	1	17	50	0
Future Vol, veh/h	0	3	1	17	50	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	3	1	19	56	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	20	0	-	0	14	11
Stage 1	-	-	-	-	11	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1609	-	-	-	1010	1076
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1025	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1609	-	-	-	1010	1076
Mov Cap-2 Maneuver	-	-	-	-	1010	-
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1025	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1609	-	-	-	1010
HCM Lane V/C Ratio	-	-	-	-	0.055
HCM Control Delay (s)	0	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	660	169	144	1539	167	89	403	102	192	638	163
Future Volume (vph)	81	660	169	144	1539	167	89	403	102	192	638	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	700		0	250		0	225		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.969				0.850		0.970			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3264	0	1736	3343	1553	1736	3367	0	1736	3364	0
Flt Permitted	0.060			0.199			0.148			0.136		
Satd. Flow (perm)	110	3264	0	364	3343	1553	270	3367	0	248	3364	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31				140		20			21	
Link Speed (mph)		55			55			35			35	
Link Distance (ft)		1466			45			1219			1580	
Travel Time (s)		18.2			0.6			23.7			30.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	8%	4%	4%	8%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	90	733	188	160	1710	186	99	448	113	213	709	181
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	921	0	160	1710	186	99	561	0	213	890	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	22.5		14.0	22.5	22.5	14.0	22.5		14.0	22.5	
Total Split (s)	14.0	71.0		17.0	74.0	74.0	14.0	32.0		20.0	38.0	
Total Split (%)	10.0%	50.7%		12.1%	52.9%	52.9%	10.0%	22.9%		14.3%	27.1%	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	75.4	66.4		80.6	69.0	69.0	36.0	27.0		47.0	33.0	
Actuated g/C Ratio	0.54	0.47		0.58	0.49	0.49	0.26	0.19		0.34	0.24	
v/c Ratio	0.55	0.59		0.50	1.04	0.22	0.61	0.84		0.88	1.10	
Control Delay	34.7	27.8		18.3	67.7	6.3	50.2	65.1		70.6	110.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	34.7	27.8		18.3	67.7	6.3	50.2	65.1		70.6	110.9	
LOS	C	C		B	E	A	D	E		E	F	
Approach Delay		28.4			58.3			62.9			103.1	
Approach LOS		C			E			E			F	
Queue Length 50th (ft)	34	307		62	~881	21	63	253		147	~475	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	89	376		98	#1020	64	#110	#340		#288	#612	
Internal Link Dist (ft)		1386			1			1139			1500	
Turn Bay Length (ft)	200			700			250			225		
Base Capacity (vph)	163	1564		328	1647	836	163	665		242	808	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.55	0.59		0.49	1.04	0.22	0.61	0.84		0.88	1.10	

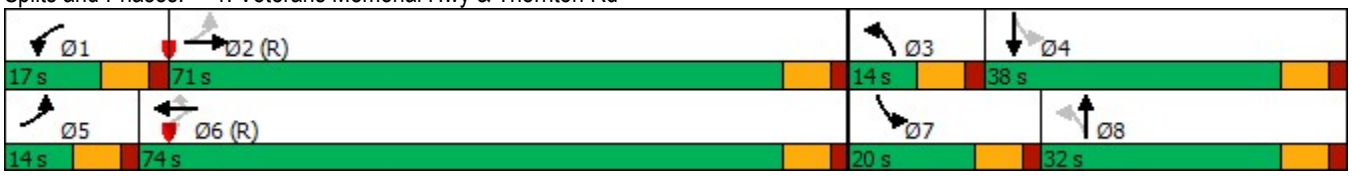
Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 170
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 62.9 Intersection LOS: E
Intersection Capacity Utilization 93.7% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Veterans Memorial Hwy & Thornton Rd



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	27	46	605	966	20
Future Vol, veh/h	12	27	46	605	966	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	4	4	0
Mvmt Flow	13	30	51	672	1073	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1522	548	1095	0	-	0
Stage 1	1084	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	111	485	645	-	-	-
Stage 1	290	-	-	-	-	-
Stage 2	624	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	102	485	645	-	-	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	267	-	-	-	-	-
Stage 2	624	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	645	-	344	-	-
HCM Lane V/C Ratio	0.079	-	0.126	-	-
HCM Control Delay (s)	11.1	-	17	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.4	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	4	62	37	0
Future Vol, veh/h	0	2	4	62	37	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	2	4	69	41	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	73	0	-	0	41	39
Stage 1	-	-	-	-	39	-
Stage 2	-	-	-	-	2	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1540	-	-	-	975	1038
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	1026	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1540	-	-	-	975	1038
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	1026	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1540	-	-	-	975
HCM Lane V/C Ratio	-	-	-	-	0.042
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

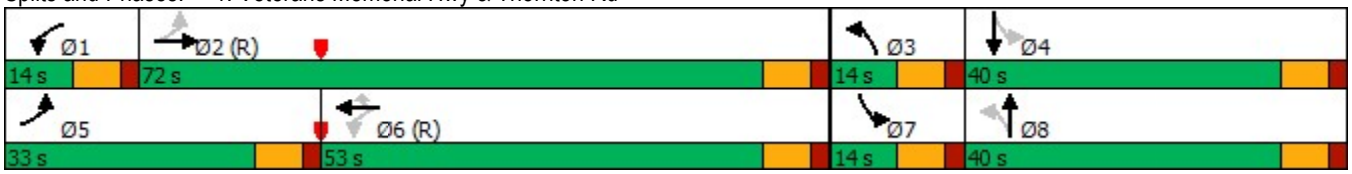
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	277	1277	106	56	721	99	82	627	127	94	241	59
Future Volume (vph)	277	1277	106	56	721	99	82	627	127	94	241	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	700		0	250		0	225		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.988				0.850		0.975			0.970	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3312	0	1736	3343	1553	1736	3384	0	1736	3367	0
Flt Permitted	0.196			0.073			0.450			0.114		
Satd. Flow (perm)	358	3312	0	133	3343	1553	822	3384	0	208	3367	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				195		16			21	
Link Speed (mph)		55			55			35			35	
Link Distance (ft)		1466			45			1219			1580	
Travel Time (s)		18.2			0.6			23.7			30.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	8%	4%	4%	8%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	308	1419	118	62	801	110	91	697	141	104	268	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	308	1537	0	62	801	110	91	838	0	104	334	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	22.5		14.0	22.5	22.5	14.0	22.5		14.0	22.5	
Total Split (s)	33.0	72.0		14.0	53.0	53.0	14.0	40.0		14.0	40.0	
Total Split (%)	23.6%	51.4%		10.0%	37.9%	37.9%	10.0%	28.6%		10.0%	28.6%	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	81.0	69.8		63.7	54.7	54.7	44.0	35.0		44.0	35.0	
Actuated g/C Ratio	0.58	0.50		0.46	0.39	0.39	0.31	0.25		0.31	0.25	
v/c Ratio	0.74	0.93		0.38	0.61	0.15	0.29	0.98		0.64	0.39	
Control Delay	28.3	44.2		27.1	37.5	0.4	34.0	76.4		50.3	42.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	28.3	44.2		27.1	37.5	0.4	34.0	76.4		50.3	42.3	
LOS	C	D		C	D	A	C	E		D	D	
Approach Delay		41.6			32.7			72.3			44.2	
Approach LOS		D			C			E			D	
Queue Length 50th (ft)	138	698		24	302	0	57	394		65	125	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	222	#877		58	406	0	100	#534		#116	172	
Internal Link Dist (ft)		1386			1			1139			1500	
Turn Bay Length (ft)	200			700			250			225		
Base Capacity (vph)	482	1655		163	1307	725	317	858		163	857	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.64	0.93		0.38	0.61	0.15	0.29	0.98		0.64	0.39	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay: 46.6 Intersection LOS: D
Intersection Capacity Utilization 88.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Veterans Memorial Hwy & Thornton Rd



Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	17	39	13	990	356	6
Future Vol, veh/h	17	39	13	990	356	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	4	4	0
Mvmt Flow	19	43	14	1100	396	7

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	978	202	403	0	-	0
Stage 1	400	-	-	-	-	-
Stage 2	578	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	251	811	1167	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	248	811	1167	-	-	-
Mov Cap-2 Maneuver	377	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	530	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1167	-	601	-	-
HCM Lane V/C Ratio	0.012	-	0.104	-	-
HCM Control Delay (s)	8.1	-	11.7	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Int Delay, s/veh	6.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	1	18	53	0
Future Vol, veh/h	0	3	1	18	53	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	3	1	20	59	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	21	0	-	0	14	11
Stage 1	-	-	-	-	11	-
Stage 2	-	-	-	-	3	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1608	-	-	-	1010	1076
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1025	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1608	-	-	-	1010	1076
Mov Cap-2 Maneuver	-	-	-	-	1010	-
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1025	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1608	-	-	-	1010
HCM Lane V/C Ratio	-	-	-	-	0.058
HCM Control Delay (s)	0	-	-	-	8.8
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	700	179	153	1633	177	94	428	108	204	677	173
Future Volume (vph)	86	700	179	153	1633	177	94	428	108	204	677	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	700		0	250		0	225		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.969				0.850		0.970			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3264	0	1736	3343	1553	1736	3367	0	1736	3364	0
Flt Permitted	0.060			0.178			0.138			0.137		
Satd. Flow (perm)	110	3264	0	325	3343	1553	252	3367	0	250	3364	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31				140		20			21	
Link Speed (mph)		55			55			35			35	
Link Distance (ft)		1466			45			1219			1580	
Travel Time (s)		18.2			0.6			23.7			30.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	8%	4%	4%	8%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	96	778	199	170	1814	197	104	476	120	227	752	192
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	977	0	170	1814	197	104	596	0	227	944	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	22.5		14.0	22.5	22.5	14.0	22.5		14.0	22.5	
Total Split (s)	14.0	71.0		17.0	74.0	74.0	14.0	34.0		18.0	38.0	
Total Split (%)	10.0%	50.7%		12.1%	52.9%	52.9%	10.0%	24.3%		12.9%	27.1%	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	75.3	66.3		80.7	69.0	69.0	38.0	29.0		46.0	33.0	
Actuated g/C Ratio	0.54	0.47		0.58	0.49	0.49	0.27	0.21		0.33	0.24	
v/c Ratio	0.59	0.63		0.56	1.10	0.24	0.64	0.84		1.03	1.17	
Control Delay	37.9	28.8		20.3	89.6	7.0	52.1	62.8		106.8	134.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	37.9	28.8		20.3	89.6	7.0	52.1	62.8		106.8	134.4	
LOS	D	C		C	F	A	D	E		F	F	
Approach Delay		29.6			76.7			61.2			129.0	
Approach LOS		C			E			E			F	
Queue Length 50th (ft)	36	334		67	~984	27	67	267		~164	~530	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	97	407		104	#1122	72	#116	#345		#338	#667	
Internal Link Dist (ft)		1386			1			1139			1500	
Turn Bay Length (ft)	200			700			250			225		
Base Capacity (vph)	163	1562		308	1647	836	163	713		220	808	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.59	0.63		0.55	1.10	0.24	0.64	0.84		1.03	1.17	

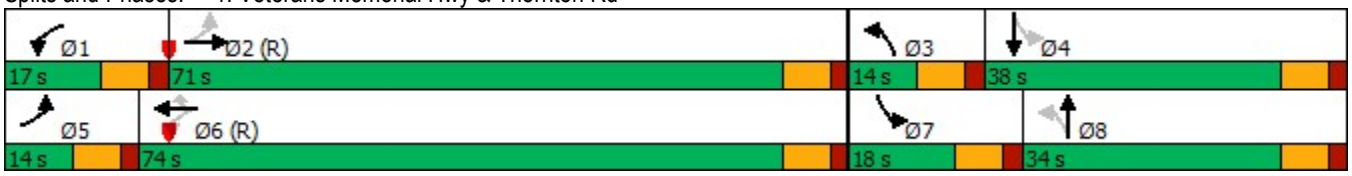
Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 180
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.17
Intersection Signal Delay: 76.7 Intersection LOS: E
Intersection Capacity Utilization 97.7% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Veterans Memorial Hwy & Thornton Rd



Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	29	49	642	1025	21
Future Vol, veh/h	13	29	49	642	1025	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	4	4	0
Mvmt Flow	14	32	54	713	1139	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1616	581	1162	0	-	0
Stage 1	1151	-	-	-	-	-
Stage 2	465	-	-	-	-	-
Critical Hdwy	6.8	6.9	4.1	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	96	462	608	-	-	-
Stage 1	268	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	87	462	608	-	-	-
Mov Cap-2 Maneuver	189	-	-	-	-	-
Stage 1	244	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.2	0.8	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	608	-	319	-	-
HCM Lane V/C Ratio	0.09	-	0.146	-	-
HCM Control Delay (s)	11.5	-	18.2	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	0.5	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	4	66	39	0
Future Vol, veh/h	0	2	4	66	39	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	2	4	73	43	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	77	0	-	0	43	41
Stage 1	-	-	-	-	41	-
Stage 2	-	-	-	-	2	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1535	-	-	-	973	1036
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	1026	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1535	-	-	-	973	1036
Mov Cap-2 Maneuver	-	-	-	-	973	-
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	1026	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1535	-	-	-	973
HCM Lane V/C Ratio	-	-	-	-	0.045
HCM Control Delay (s)	0	-	-	-	8.9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

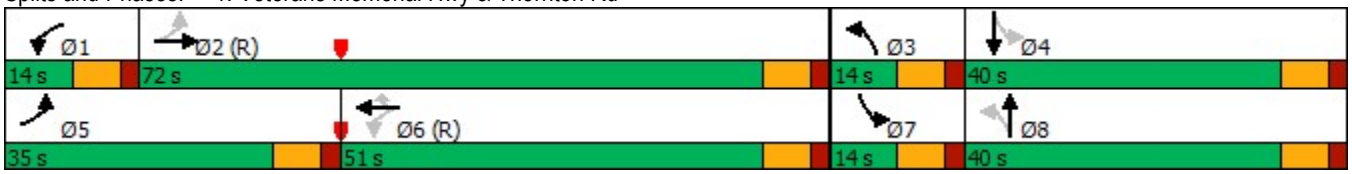
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	302	1277	106	56	721	142	82	635	127	113	243	65
Future Volume (vph)	302	1277	106	56	721	142	82	635	127	113	243	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	700		0	250		0	225		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.988				0.850		0.975			0.968	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3312	0	1736	3343	1482	1736	3384	0	1656	3353	0
Flt Permitted	0.186			0.076			0.442			0.114		
Satd. Flow (perm)	340	3312	0	139	3343	1482	807	3384	0	199	3353	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				195		16			23	
Link Speed (mph)		55			55			35			35	
Link Distance (ft)		1466			45			1219			1580	
Travel Time (s)		18.2			0.6			23.7			30.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	8%	4%	4%	8%	9%	4%	4%	4%	9%	4%	5%
Adj. Flow (vph)	336	1419	118	62	801	158	91	706	141	126	270	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	336	1537	0	62	801	158	91	847	0	126	342	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	22.5		14.0	22.5	22.5	14.0	22.5		14.0	22.5	
Total Split (s)	35.0	72.0		14.0	51.0	51.0	14.0	40.0		14.0	40.0	
Total Split (%)	25.0%	51.4%		10.0%	36.4%	36.4%	10.0%	28.6%		10.0%	28.6%	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	81.0	69.8		61.3	52.3	52.3	44.0	35.0		44.0	35.0	
Actuated g/C Ratio	0.58	0.50		0.44	0.37	0.37	0.31	0.25		0.31	0.25	
v/c Ratio	0.78	0.93		0.38	0.64	0.23	0.29	0.99		0.81	0.40	
Control Delay	32.2	44.2		27.7	40.0	2.7	34.0	78.8		69.4	42.3	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	32.2	44.2		27.7	40.0	2.7	34.0	78.8		69.4	42.3	
LOS	C	D		C	D	A	C	E		E	D	
Approach Delay		42.1			33.5			74.4			49.6	
Approach LOS		D			C			E			D	
Queue Length 50th (ft)	153	698		24	316	0	57	400		80	127	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	264	#877		58	416	26	100	#544		#177	175	
Internal Link Dist (ft)		1386			1			1139			1500	
Turn Bay Length (ft)	200			700			250			225		
Base Capacity (vph)	495	1655		163	1249	675	313	858		156	855	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.68	0.93		0.38	0.64	0.23	0.29	0.99		0.81	0.40	

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 47.9 Intersection LOS: D
Intersection Capacity Utilization 89.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Veterans Memorial Hwy & Thornton Rd



Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	68	91	990	356	27
Future Vol, veh/h	22	68	91	990	356	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	10	9	4	4	0
Mvmt Flow	24	76	101	1100	396	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1163	213	426	0	-	0
Stage 1	411	-	-	-	-	-
Stage 2	752	-	-	-	-	-
Critical Hdwy	6.8	7.1	4.28	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.4	2.29	-	-	-
Pot Cap-1 Maneuver	191	768	1082	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	173	768	1082	-	-	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	432	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1082	-	303	768	-	-
HCM Lane V/C Ratio	0.093	-	0.081	0.098	-	-
HCM Control Delay (s)	8.7	-	17.9	10.2	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.3	0.3	-	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	3	0	25	1	18	0	0	6	53	0	0
Future Vol, veh/h	0	3	0	25	1	18	0	0	6	53	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	3	0	28	1	20	0	0	7	59	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	21	0	0	3	0	0	70	80	3	74	70	11
Stage 1	-	-	-	-	-	-	3	3	-	67	67	-
Stage 2	-	-	-	-	-	-	67	77	-	7	3	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1608	-	-	1632	-	-	927	814	1087	921	824	1076
Stage 1	-	-	-	-	-	-	1025	897	-	948	843	-
Stage 2	-	-	-	-	-	-	948	835	-	1020	897	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1608	-	-	1632	-	-	915	800	1087	904	810	1076
Mov Cap-2 Maneuver	-	-	-	-	-	-	915	800	-	904	810	-
Stage 1	-	-	-	-	-	-	1025	897	-	948	829	-
Stage 2	-	-	-	-	-	-	932	821	-	1014	897	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	4.1	8.3	9.3
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1087	1608	-	-	1632	-	-	904
HCM Lane V/C Ratio	0.006	-	-	-	0.017	-	-	0.065
HCM Control Delay (s)	8.3	0	-	-	7.2	0	-	9.3
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	62	0	37	44	0	16
Future Vol, veh/h	62	0	37	44	0	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	16	0	0	31
Mvmt Flow	69	0	41	49	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	69	0	200	69
Stage 1	-	-	-	-	69	-
Stage 2	-	-	-	-	131	-
Critical Hdwy	-	-	4.26	-	6.4	6.51
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.344	-	3.5	3.579
Pot Cap-1 Maneuver	-	-	1447	-	793	919
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	900	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1447	-	771	919
Mov Cap-2 Maneuver	-	-	-	-	771	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	875	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	919	-	-	1447	-
HCM Lane V/C Ratio	0.019	-	-	0.028	-
HCM Control Delay (s)	9	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	86	0	4	113	0	4
Future Vol, veh/h	86	0	4	113	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	100	100	5	100	100
Mvmt Flow	96	0	4	126	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	96	0	230	96
Stage 1	-	-	-	-	96	-
Stage 2	-	-	-	-	134	-
Critical Hdwy	-	-	5.1	-	7.4	7.2
Critical Hdwy Stg 1	-	-	-	-	6.4	-
Critical Hdwy Stg 2	-	-	-	-	6.4	-
Follow-up Hdwy	-	-	3.1	-	4.4	4.2
Pot Cap-1 Maneuver	-	-	1056	-	585	748
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	699	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1056	-	583	748
Mov Cap-2 Maneuver	-	-	-	-	583	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	696	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	748	-	-	1056	-
HCM Lane V/C Ratio	0.006	-	-	0.004	-
HCM Control Delay (s)	9.8	-	-	8.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	78	0	16	80	0	4
Future Vol, veh/h	78	0	16	80	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	0	0	8	0	0
Mvmt Flow	87	0	18	89	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	87	0	212	87
Stage 1	-	-	-	-	87	-
Stage 2	-	-	-	-	125	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1522	-	781	977
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	906	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1522	-	772	977
Mov Cap-2 Maneuver	-	-	-	-	772	-
Stage 1	-	-	-	-	941	-
Stage 2	-	-	-	-	895	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	977	-	-	1522	-
HCM Lane V/C Ratio	0.005	-	-	0.012	-
HCM Control Delay (s)	8.7	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	82	0	16	97	0	4
Future Vol, veh/h	82	0	16	97	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	0	0	6	0	0
Mvmt Flow	91	0	18	108	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	91	0	235	91
Stage 1	-	-	-	-	91	-
Stage 2	-	-	-	-	144	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1517	-	758	972
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	888	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1517	-	749	972
Mov Cap-2 Maneuver	-	-	-	-	749	-
Stage 1	-	-	-	-	938	-
Stage 2	-	-	-	-	877	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	972	-	-	1517	-
HCM Lane V/C Ratio	0.005	-	-	0.012	-
HCM Control Delay (s)	8.7	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	700	179	153	1633	204	94	432	108	249	687	198
Future Volume (vph)	94	700	179	153	1633	204	94	432	108	249	687	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	700		0	250		0	225		0
Storage Lanes	1		0	1		1	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.969				0.850		0.970			0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1719	3264	0	1736	3343	1482	1736	3367	0	1671	3346	0
Flt Permitted	0.063			0.169			0.145			0.123		
Satd. Flow (perm)	114	3264	0	309	3343	1482	265	3367	0	216	3346	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30				195		20			26	
Link Speed (mph)		55			55			35			35	
Link Distance (ft)		1466			45			1219			1580	
Travel Time (s)		18.2			0.6			23.7			30.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	8%	4%	4%	8%	9%	4%	4%	4%	8%	4%	5%
Adj. Flow (vph)	104	778	199	170	1814	227	104	480	120	277	763	220
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	977	0	170	1814	227	104	600	0	277	983	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Detector Phase	5	2		1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Minimum Split (s)	14.0	22.5		14.0	22.5	22.5	14.0	22.5		14.0	22.5	
Total Split (s)	14.0	68.4		17.0	71.4	71.4	14.0	32.6		22.0	40.6	
Total Split (%)	10.0%	48.9%		12.1%	51.0%	51.0%	10.0%	23.3%		15.7%	29.0%	
Yellow Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)	72.7	63.7		78.1	66.4	66.4	36.6	27.6		49.6	35.6	
Actuated g/C Ratio	0.52	0.46		0.56	0.47	0.47	0.26	0.20		0.35	0.25	
v/c Ratio	0.64	0.65		0.58	1.14	0.28	0.64	0.88		1.09	1.13	
Control Delay	42.9	31.1		22.6	107.7	5.2	50.8	68.4		121.6	118.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.9	31.1		22.6	107.7	5.2	50.8	68.4		121.6	118.5	
LOS	D	C		C	F	A	D	E		F	F	
Approach Delay		32.2			90.6			65.8			119.2	
Approach LOS		C			F			E			F	
Queue Length 50th (ft)	43	348		70	~1015	15	65	273		~236	~536	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#118	423		109	#1153	63	#116	#374		#422	#675	
Internal Link Dist (ft)		1386			1			1139			1500	
Turn Bay Length (ft)	200			700			250			225		
Base Capacity (vph)	162	1501		295	1585	805	163	679		253	870	
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	
Reduced v/c Ratio	0.64	0.65		0.58	1.14	0.28	0.64	0.88		1.09	1.13	

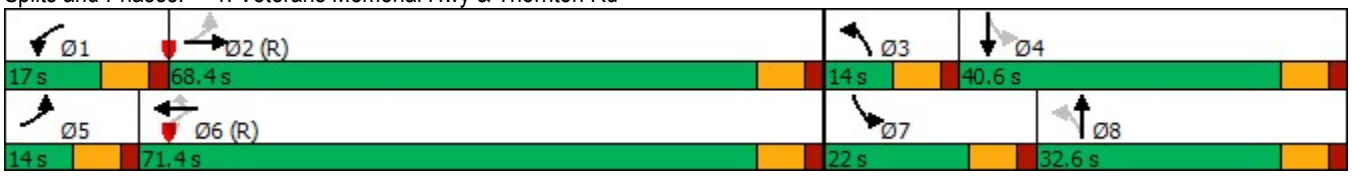
Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 170
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 82.1 Intersection LOS: F
Intersection Capacity Utilization 98.8% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Veterans Memorial Hwy & Thornton Rd



Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	106	86	642	1025	28
Future Vol, veh/h	34	106	86	642	1025	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	9	13	4	4	4
Mvmt Flow	38	118	96	713	1139	31

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1704	585	1170	0	-	0
Stage 1	1155	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Critical Hdwy	6.86	7.08	4.36	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.39	2.33	-	-	-
Pot Cap-1 Maneuver	82	437	534	-	-	-
Stage 1	260	-	-	-	-	-
Stage 2	540	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	67	437	534	-	-	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	213	-	-	-	-	-
Stage 2	540	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.5	1.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	534	-	163	437	-	-
HCM Lane V/C Ratio	0.179	-	0.232	0.27	-	-
HCM Control Delay (s)	13.2	-	33.6	16.3	-	-
HCM Lane LOS	B	-	D	C	-	-
HCM 95th %tile Q(veh)	0.6	-	0.9	1.1	-	-

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	2	0	6	4	66	0	0	23	39	0	0
Future Vol, veh/h	0	2	0	6	4	66	0	0	23	39	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	2	0	7	4	73	0	0	26	43	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	2	0	0	57	93	2	70	57	41
Stage 1	-	-	-	-	-	-	2	2	-	55	55	-
Stage 2	-	-	-	-	-	-	55	91	-	15	2	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1535	-	-	1634	-	-	945	801	1088	927	838	1036
Stage 1	-	-	-	-	-	-	1026	898	-	962	853	-
Stage 2	-	-	-	-	-	-	962	823	-	1010	898	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1535	-	-	1634	-	-	941	797	1088	902	834	1036
Mov Cap-2 Maneuver	-	-	-	-	-	-	941	797	-	902	834	-
Stage 1	-	-	-	-	-	-	1026	898	-	962	849	-
Stage 2	-	-	-	-	-	-	957	819	-	986	898	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	8.4	9.2
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1088	1535	-	-	1634	-	-	902
HCM Lane V/C Ratio	0.023	-	-	-	0.004	-	-	0.048
HCM Control Delay (s)	8.4	0	-	-	7.2	0	-	9.2
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	64	0	24	76	0	39
Future Vol, veh/h	64	0	24	76	0	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	38	0	0	21
Mvmt Flow	71	0	27	84	0	43

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	71	0	209	71
Stage 1	-	-	-	-	71	-
Stage 2	-	-	-	-	138	-
Critical Hdwy	-	-	4.48	-	6.4	6.41
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.542	-	3.5	3.489
Pot Cap-1 Maneuver	-	-	1329	-	784	941
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	894	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1329	-	768	941
Mov Cap-2 Maneuver	-	-	-	-	768	-
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	876	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.9	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	941	-	-	1329	-
HCM Lane V/C Ratio	0.046	-	-	0.02	-
HCM Control Delay (s)	9	-	-	7.8	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	133	0	6	108	0	6
Future Vol, veh/h	133	0	6	108	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	6	100	100	8	100	100
Mvmt Flow	148	0	7	120	0	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	148	0	282	148
Stage 1	-	-	-	-	148	-
Stage 2	-	-	-	-	134	-
Critical Hdwy	-	-	5.1	-	7.4	7.2
Critical Hdwy Stg 1	-	-	-	-	6.4	-
Critical Hdwy Stg 2	-	-	-	-	6.4	-
Follow-up Hdwy	-	-	3.1	-	4.4	4.2
Pot Cap-1 Maneuver	-	-	1003	-	542	694
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	699	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1003	-	538	694
Mov Cap-2 Maneuver	-	-	-	-	538	-
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	694	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	694	-	-	1003	-
HCM Lane V/C Ratio	0.01	-	-	0.007	-
HCM Control Delay (s)	10.2	-	-	8.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	103	0	4	100	0	15
Future Vol, veh/h	103	0	4	100	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	300	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	8	0	0	9	0	0
Mvmt Flow	114	0	4	111	0	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	114	0	233	114
Stage 1	-	-	-	-	114	-
Stage 2	-	-	-	-	119	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1488	-	760	944
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	911	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1488	-	758	944
Mov Cap-2 Maneuver	-	-	-	-	758	-
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	908	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	944	-	-	1488	-
HCM Lane V/C Ratio	0.018	-	-	0.003	-
HCM Control Delay (s)	8.9	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	118	0	4	104	0	15
Future Vol, veh/h	118	0	4	104	0	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	250	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	7	0	0	9	0	0
Mvmt Flow	131	0	4	116	0	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	131	0	255	131
Stage 1	-	-	-	-	131	-
Stage 2	-	-	-	-	124	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1467	-	738	924
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	907	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1467	-	736	924
Mov Cap-2 Maneuver	-	-	-	-	736	-
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	924	-	-	1467	-
HCM Lane V/C Ratio	0.018	-	-	0.003	-
HCM Control Delay (s)	9	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-