Middletown Valley Center

Town of Middletown, Frederick County, Maryland
Revised October 4, 2019
April 25, 2019

Traffic Impact Analysis

Prepared for:
Middletown Valley Center, LLC

Mr. Mark Lancaster
3120 Old National Pike
Middletown, Maryland 21769.
mglancaster@comcast.net

TABLE OF CONTENTS

- **INTRODUCTION and SUMMARY OF FINDINGS 1**

- **EXISTING TRAFFIC CONDITIONS 3**

  1 Site Location Map 5
  1A Site Concept Plan 6
  2 Existing Lane Use 7
  3 Existing Peak Hour Traffic Volumes 8

- **BACKGROUND TRAFFIC CONDITIONS 9**

  4 Regional Traffic Growth 10
  5 2024 Background Peak Hour Traffic Volumes 11

- **TOTAL TRAFFIC CONDITIONS 12**

  6 Trip Generation for Subject Site 15
  7A New Trip Assignment for Site with East Site Access 16
  7B Pass-By Trip Assignment for Site with East Site Access 17
  8A New Trip Assignment for Site without East Site Access 18
  8B Pass-By Trip Assignment for Site without East Site Access 19
  9A 2024 Total Peak Hour Traffic Volumes with East Site Access 20
  9B 2024 Total Peak Hour Traffic Volumes without East Site Access 21
  10 Results of Intersection Capacity Analysis 22
  11 Recommended Future lane Use 24

- **RESULTS, RECOMMENDATIONS, AND CONCLUSIONS 25**

APPENDICES

APPENDIX –Intersection Turning Movement Counts, Photos and Capacity Worksheets

Prepared by: Joseph Caloggero, P.E., PTOE, PTP
Shulin Li, P.E. PTOE, RSP

JJC:mlj/smb
(F:\2018\2018-0710_Middletown Valley Center\DOCS\REPORTS\Revised Middletown Valley TIA.docx)

The Traffic Group, Inc. ®
Traffic Engineers & Transportation Planners

Merging Innovation and Excellence®

CORPORATE OFFICE
9900 Franklin Square Drive, Suite H
Baltimore, Maryland 21236
410-931-6600 Fax: 410-931-6601
1-800-583-8411
www.trafficgroup.com

INTRODUCTION AND SUMMARY OF FINDINGS

Study Purpose

The Traffic Group, Inc. has prepared this Traffic Impact Analysis to quantify the impact the proposed Middletown Valley Center will have on the surrounding roadway network and to address comments from the Town of Middleton. The subject site is located along the north side of Alt. US 40 across from Middletown Parkway in the Town of Middletown, Frederick County, Maryland. This site is proposed with the following uses:

- 39,600 SF of General Office;
- 9,200 SF of Retail Uses; and
- 30,000 SF of Mini-Warehouse.

We have created two different access scenarios for this proposed development. Each scenario will have access via the existing traffic signal at Alt. US 40 @ Middletown Parkway/Town Center Plaza Access and a second scenario consists of a right in/right out east of this traffic signal. It is anticipated that this development will be completed within 3 years.

Study Criteria/Methodology

As requested by the Town of Middletown, the study area consisted of the intersection of Alt. US 40 @ Middletown Parkway/Town Center Plaza Access and the proposed second site access during the morning and evening peak periods.

Scope of Services

- *Conduct a field inspection to collect physical information concerning the nearby road system, including the compilation of aerial photography.*

- *Collect intersection turning movement counts at each of the key intersections during the morning and evening peak periods.*

- *Provide an allowance for regional traffic growth throughout the corridor.*

- *Prepare trip generation and trip distribution for the subject site.*

- *Undertake intersection capacity analyses and level of service evaluations for existing, background, and total traffic conditions using CLV and HCM Methodologies.*

- *Prepare Queuing Analyses based on the HCM Methodology (from the capacity worksheets).*

- *Provide an overall assessment of traffic operations.*

Summary of Findings and Recommendations

The results of the Traffic Impact Analysis indicate that the intersection of Alt. US 40 @ Middletown Parkway/Town Center Plaza Access is operating at acceptable levels of service and will continue to operate with acceptable levels of service during each of the peak periods using the SHA CLV and HCM Methodologies.

The Right In/Right Out East Site Access is projected to have some minor delays but considered acceptable based on the HCM Unsignalized Methodology.

Therefore, it is our opinion that the proposed Middletown Valley Center meets the requirements for approval without offsite intersection mitigation.

The data and methodology used to undertake this study is detailed in the sections that follow.

EXISTING TRAFFIC CONDITIONS

Site Information

The proposed Middletown Valley Center is located along the north side of Alt. US 40 across from Middletown Parkway in the Town of Middletown, Frederick County, Maryland. A map showing the general area can be found in Exhibit 1 and a Conceptual Site Plan is included in Exhibit 1A.

Study Area

Based on discussions with the Town of Middletown, the intersection of Alt. US 40 @ Town Center Plaza Access was identified to be included as part of this analysis and the proposed secondary site access.

Exhibit 2 has been prepared to detail the existing lane use and traffic control devices at the study intersection. Aerial photography can be found in Appendix A.

Traffic Volumes

The Traffic Group, Inc. collected intersection turning movement counts from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on a weekday at the intersection of Alt. US 40 @ Middletown Parkway/Town Center Plaza Access. A summary of the existing peak hour traffic volumes can be found on Exhibit 3. Complete turning movement count worksheets are contained in the Appendix.

Analysis of Existing Traffic Conditions

Intersection Capacity Analyses were undertaken at the intersection of Alt. US 40 @ Middletown Parkway based on Existing Traffic Conditions using the SHA CLV and HCM Methodologies. The results can be found in Exhibit 10.

A review of Exhibit 10 indicates that this intersection is operating at acceptable LOS “A” based on the CLV Methodology during the morning and evening weekday peak hours.

This Exhibit also indicates that this intersection is operating at an acceptable LOS based on the HCM Signalized Methodology during the morning and evening weekday peak hours.

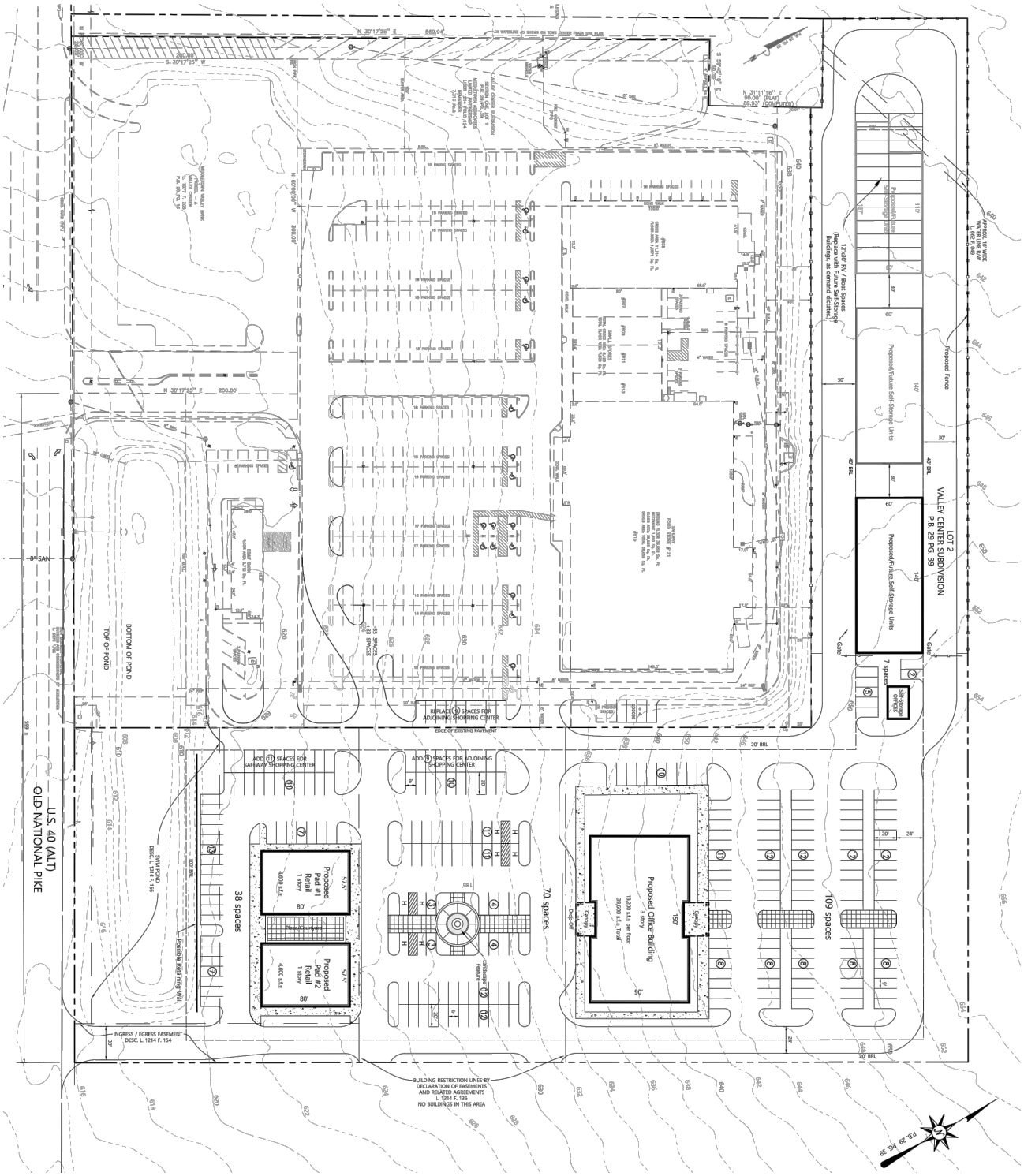
Queuing Analyses for this intersection was conducted using SYNCHRO and the results can be found on Exhibit 10. The 95th-percentile queue, which is found in Exhibit 10, is defined as the queue length that has only a 5-percent probability of being exceeded during the analysis period. It is a useful parameter for determining the appropriate length of turn pockets, but it is not typical of what an average driver would experience.

As shown, the queuing for all the movements can be contained within the existing storage areas with minimal impacts to the NB left turn on Middletown Parkway. This 95th percentile queue is projected to extend into the taper/painted median area, but not impact the right turn lane during the morning peak hour.

Complete capacity worksheets for all analyses can be found in the Appendix.

EXHIBIT 1
SITE LOCATION MAP

SLI, job\Middletown Valley Ctr 180701.dwg-LOC_ST, C04/19/19



CONCEPT PLAN - Town Plaza Revisions - 04/10/19
(Concept Sketch 12D-Rev)

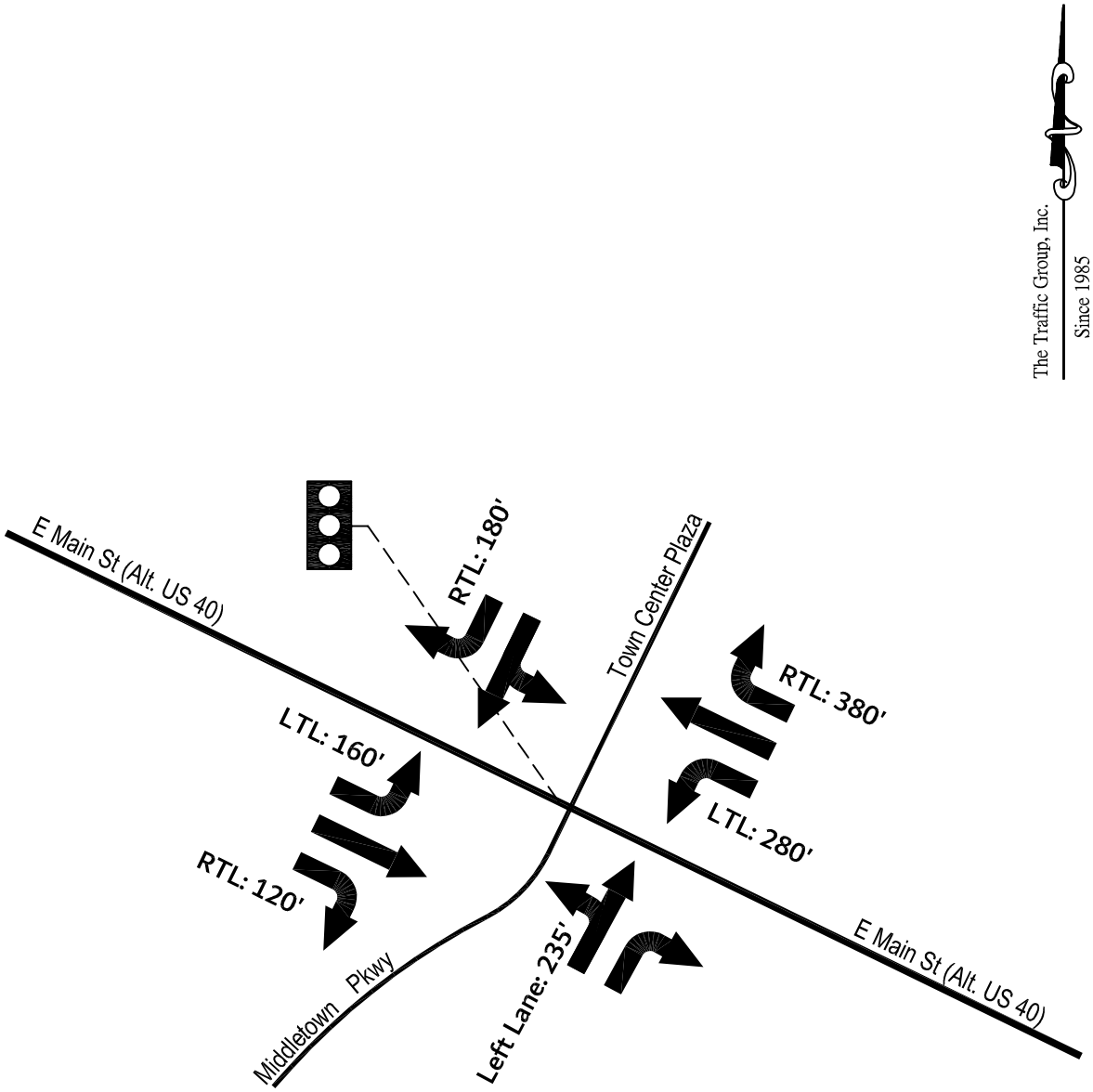
Middletown Valley Center

VALLEY CENTER SUBDIVISION, LOT 2
SITUATED ON U.S. ROUTE 40-ALTERNATE
TOWN OF MIDDLETOWN, MARYLAND

The Traffic Group®

EXHIBIT 1A
SITE CONCEPT PLAN

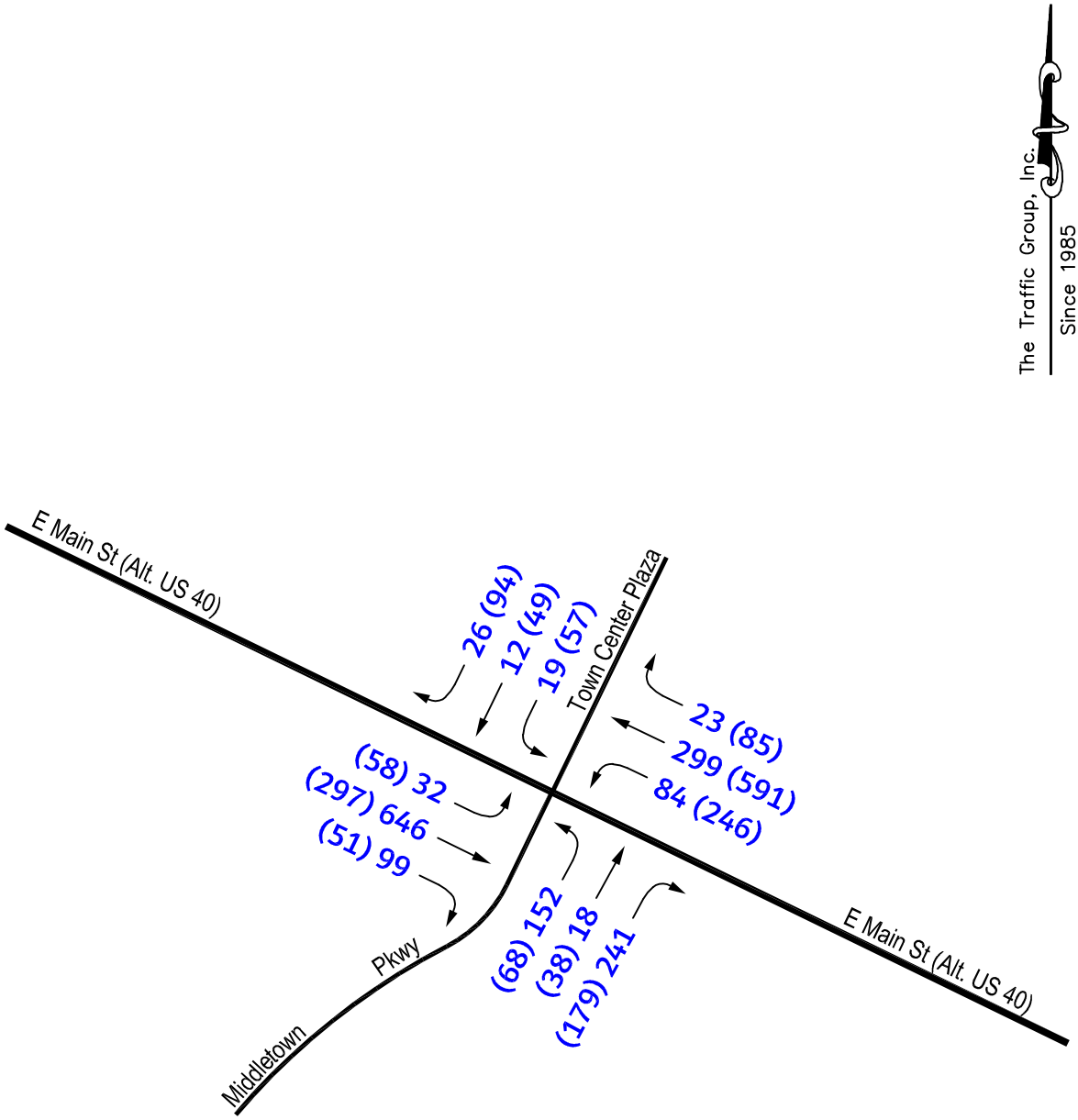
SLI, job\Middletown Valley Ctr 180701.dwg-LOC_STLAYOUT, C04/24/19



The Traffic Group®

EXHIBIT 2
EXISTING LANE USE

Rh, 180710\REV1\ex_rev.dwg-LU-EX, F10/02/19



The Traffic Group®

EXHIBIT 3
EXISTING PEAK HOUR
TRAFFIC VOLUMES

SLI, 180710\INITIAL\ex.dwg-EXIST, F4/16/2019

BACKGROUND TRAFFIC CONDITIONS

Design Year(s)/Background Traffic

Full buildout of the Middletown Valley Center is expected by 2022. Based on discussions with the Town of Middletown, there were no other approved developments in the vicinity that needed to be included in this Traffic Impact Analysis.

In order to account for regional growth, a conservative 3.0% annual growth rate was incorporated along Alt. US 40 and Middletown Parkway for 3 years. The regional growth is shown in Exhibit 4, while the resulting 2022 Background Peak Hour Traffic Volumes can be found in Exhibit 5.

Analysis of Background Traffic Conditions

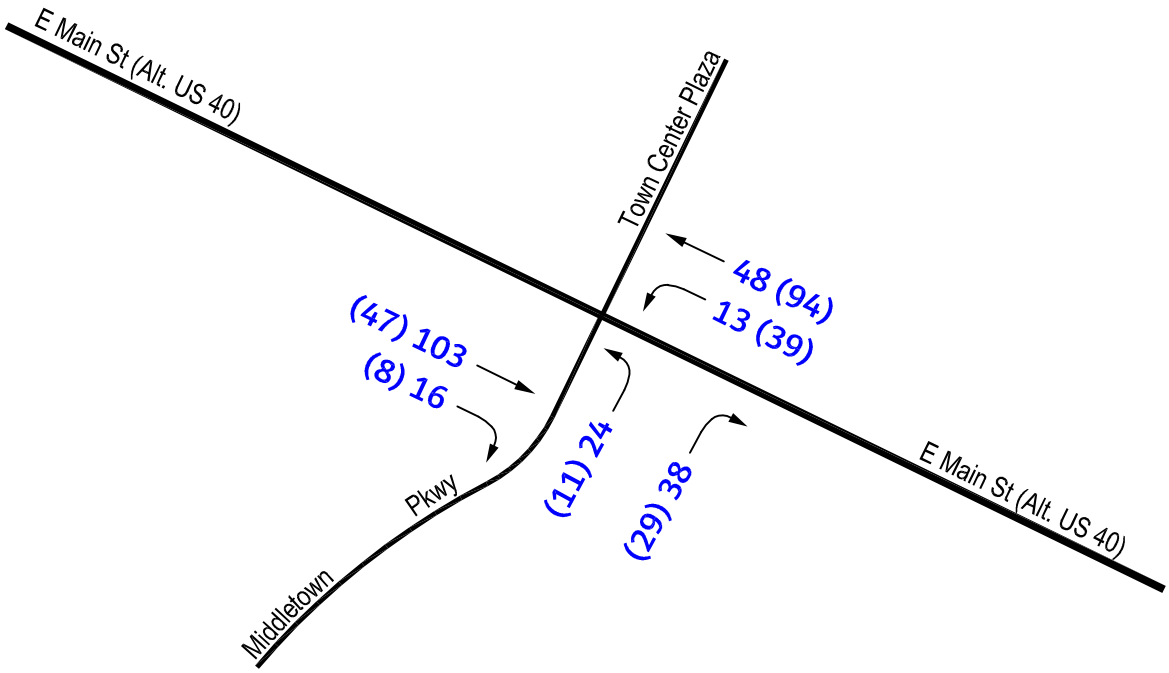
Intersection Capacity Analyses were undertaken at the intersection of Alt. US 40 @ Middletown Parkway based on Background Traffic Conditions using the SHA CLV and HCM Methodologies. The results can be found in Exhibit 10.

A review of Exhibit 10 indicates that this intersection is projected to operate at acceptable LOS "B" or better based on the CLV Methodology during the morning and evening weekday peak hours.

This Exhibit also indicates that this intersection is projected to operate at an acceptable LOS based on the HCM Signalized Methodology during the morning and evening weekday peak hours.

Queuing Analyses for this intersection was conducted using SYNCHRO and the results can be found on Exhibit 10. As shown, the 95th percentile queuing for all the movements can be contained within the existing storage areas with minimal impacts to the NB left turn on Middletown Parkway. This 95th percentile queue is projected to extend into the taper/painted median area, but not impact the right turn lane during the morning peak hour.

Complete capacity worksheets for all analyses can be found in the Appendix.



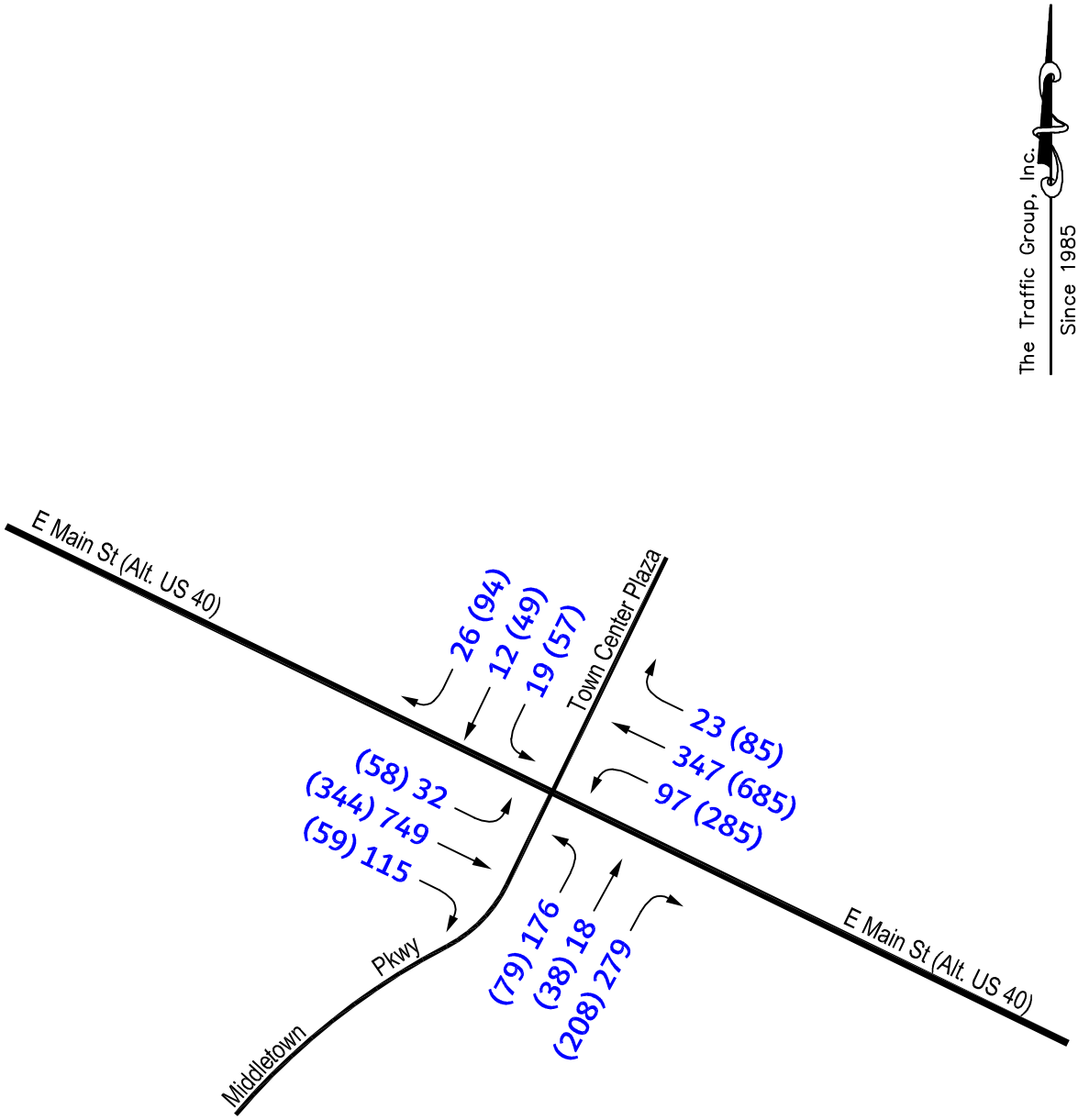
NOTE:
Regional traffic growth based on 3% annual rate, grown to year 2024.

The Traffic Group, Inc.
Since 1985

The Traffic Group®

EXHIBIT 4
REGIONAL TRAFFIC GROWTH

SLI, 180710\INITIAL\ex.dwg-GROWTH, F4/16/2019



The Traffic Group, Inc.
Since 1985

The Traffic Group®

EXHIBIT 5
2024 BACKGROUND PEAK
HOUR TRAFFIC VOLUMES

SLI, 180710\INITIAL\ex.dwg-BACK, F4/16/2019

TOTAL TRAFFIC CONDITIONS

Site Information

The Middletown Valley Center is proposed with the following uses:

- 39,600 SF of General Office;
- 9,200 SF of Retail Uses; and
- 30,000 SF of Mini-Warehouse.

We have created two different access scenarios for this proposed development. Each scenario will have access via the existing traffic signal at Alt. US 40 @ Middletown Parkway/Town Center Plaza Access and a second scenario consists of a right in/right out east of this traffic signal.

Trip Generation/Distribution

The Institute of Transportation Engineers (ITE) Trip Generation (10th Edition) was utilized to generate trips for the proposed uses on this property. The trip generation rates, pass-by trips, and trip totals can be found on Exhibit 6. Please note that ITE requests to use all their information with caution. Historically, the equation that is utilized for the General Office Building generates a higher number of trips during the morning peak hour than the evening peak hour. In this case, the morning peak hour trips when using equations would have been approximately 40% higher than the evening peak hour. Therefore, the standard practice accepted by Frederick County and other jurisdictions is to utilize the trips from the evening peak for the morning peak hour for consistency between the two time periods.

The first access scenario has a right in/right out east of the existing traffic signal. Exhibit 7A details the new trip assignment with the East Site Access while Exhibit 7B details the pass-by trips. The 2022 Total Peak Hour Traffic Volumes were obtained by adding the new and pass-by trips to the 2022 Background Peak Hour Traffic Volumes and the results are shown in Exhibit 9A.

The second access scenario has all access from Town Center Plaza Access. Exhibit 8A details the new trip assignment without the East Site Access while Exhibit 8B details the pass-by trips. The 2022 Total Peak Hour Traffic Volumes were obtained by adding the new and pass-by trips to the 2022 Background Peak Hour Traffic Volumes and the results are shown in Exhibit 9B.

Analysis of Total Traffic Conditions – Scenario 1

Intersection Capacity Analyses were undertaken at the intersection of Alt. US 40 @ Middletown Parkway and the Right In/Right Out East Site Access based on Total Traffic Conditions (Exhibit 9A) using the SHA CLV and HCM Methodologies. The results can be found in Exhibit 10.

A review of Exhibit 10 indicates that these intersections are projected to operate at acceptable LOS "B" or better based on the CLV Methodology during the morning and evening weekday peak hours.

This Exhibit also indicates that the intersection of Alt. US 40 @ Middletown Parkway/Town Center Plaza Access is projected to operate at an acceptable LOS based on the HCM Signalized Methodology during the morning and evening weekday peak hours. The East Site Access is projected to have some minor delays but considered acceptable based on the HCM Unsignalized Methodology.

Queuing Analyses for this intersection was conducted using SYNCHRO and the results can be found on Exhibit 10. As shown, the 95th percentile queuing for all the movements can be contained within the existing storage areas with minimal impacts to the NB left turn on Middletown Parkway. This queue is projected to extend into the taper/painted median area, but not impact the right turn lane during the morning peak hour. Please note that this development increases the queue by less than 1 vehicle length.

Complete capacity worksheets for all analyses can be found in the Appendix.

Analysis of Total Traffic Conditions – Scenario 2

Intersection Capacity Analyses were undertaken at the intersection of Alt. US 40 @ Middletown Parkway without the East Site Access based on Total Traffic Conditions (Exhibit 9B) using the SHA CLV and HCM Methodologies. The results can be found in Exhibit 10.

A review of Exhibit 10 indicates that this intersection is projected to operate at acceptable LOS "B" based on the CLV Methodology during the morning and evening weekday peak hours.

This Exhibit also indicates that this intersection is projected to operate at an acceptable LOS based on the HCM Signalized Methodology during the morning and evening weekday peak hours.

Queuing Analyses for this intersection was conducted using SYNCHRO and the results can be found on Exhibit 10. As shown, the 95th percentile queuing for all the movements can be contained within the existing storage areas with minimal impacts to the NB left turn on Middletown Parkway. This 95th percentile queue is projected to extend into the taper/painted median area and not impact the right turn lane during the morning peak hour. Please note that this development increases the queue by less than 1 vehicle length.

Complete capacity worksheets for all analyses can be found in the Appendix.

As shown under both scenarios, acceptable LOS is maintained for the signalized intersection of Alt. US 40 @ Middletown Parkway/Town Center Plaza Access during the morning and evening peak hours.

TRIP GENERATION FOR SUBJECT SITE

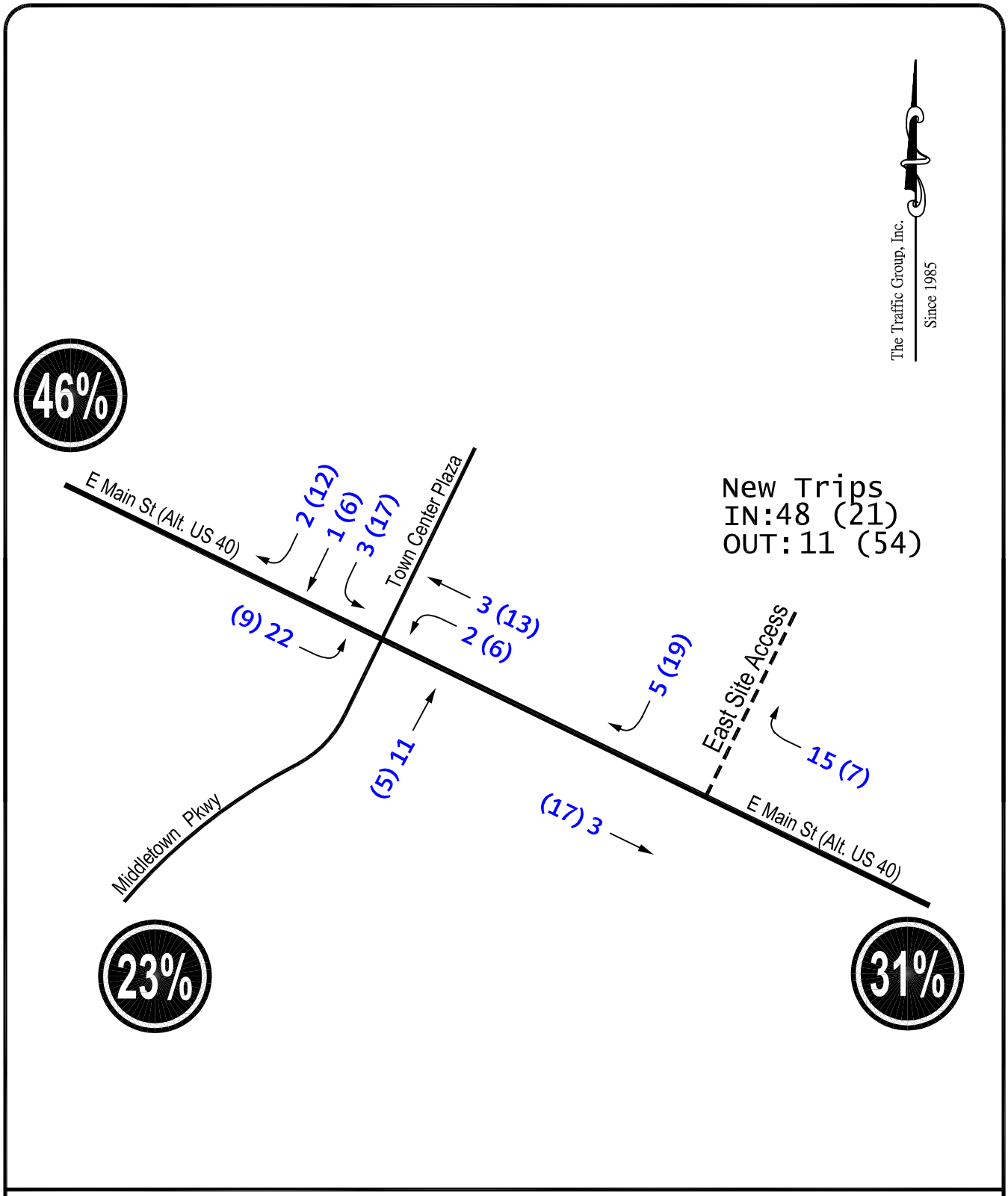
TRIP RATES / FORMULAE	IN/OUT
General Office Building (ksf, ITE-710)	
Morning Trips = 0.94 x ksf + 26.49	86/14
Ln(Evening Trips) = 0.95 x Ln(ksf) + 0.36	16/84
Retail Uses (ksf, ITE-820)	
Morning Trips = 0.94 x ksf	62/38
Evening Trips = 3.81 x ksf	48/52
Mini-Warehouse (ksf, ITE-151)	
Morning Trips = 0.10 x ksf	60/40
Evening Trips = 0.17 x ksf	47/53

TRIP TOTALS		MORNING PEAK HOUR			EVENING PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
General Office Building		(Due to the size of office building, AM trips are too high by using the equation. Therefore, PM trips were used for AM.)					
39,600 sq.ft.		40	7	47	8	39	47
Retail Uses (ksf, ITE-820)							
9,200 sq.ft.		6	3	9	17	18	35
Pass-by Trips (0, 34%)		0	0	0	-6	-6	-12
New Trips		**6**	**3**	**9**	**11**	**12**	**23**
Mini-Warehouse (ksf, ITE-151)							
30,000 sq.ft.		2	1	3	2	3	5
Total	**Pass-by Trips**	**0**	**0**	**0**	**6**	**6**	**12**
	New Trips	**48**	**11**	**59**	**21**	**54**	**75**

ITE Trip Generation, 10th Edition.

EXHIBIT 6
TRIP GENERATION
FOR SUBJECT SITE

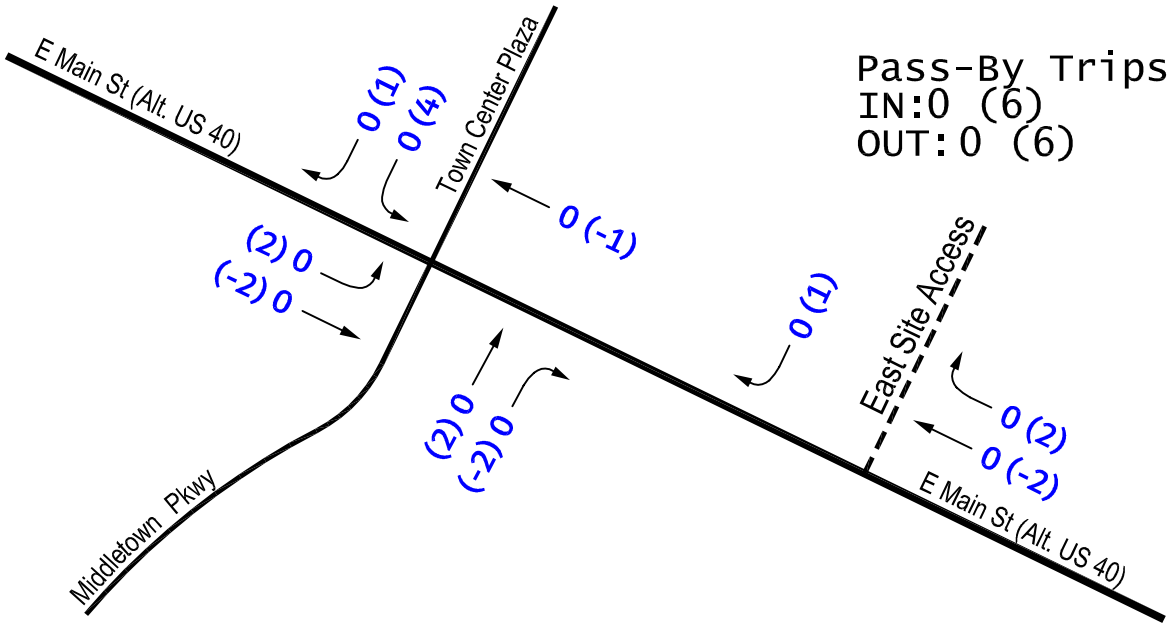
Sli, 180710\INITIAL\TRIPS.xlsx-total, F04/16/19



The Traffic Group®

EXHIBIT 7A
NEW TRIP ASSIGNMENT FOR
SITE WITH EAST SITE ACCESS

Rh, 180710\REV1\ex_rev.dwg-STN1, F10/01/19



The Traffic Group, Inc.
Since 1985

The Traffic Group®

EXHIBIT 7B
PASS-BY TRIP ASSIGNMENT FOR
SITE WITH EAST SITE ACCESS

Rh, 180710\REV1\ex_rev.dwg-STP1, F10/01/19

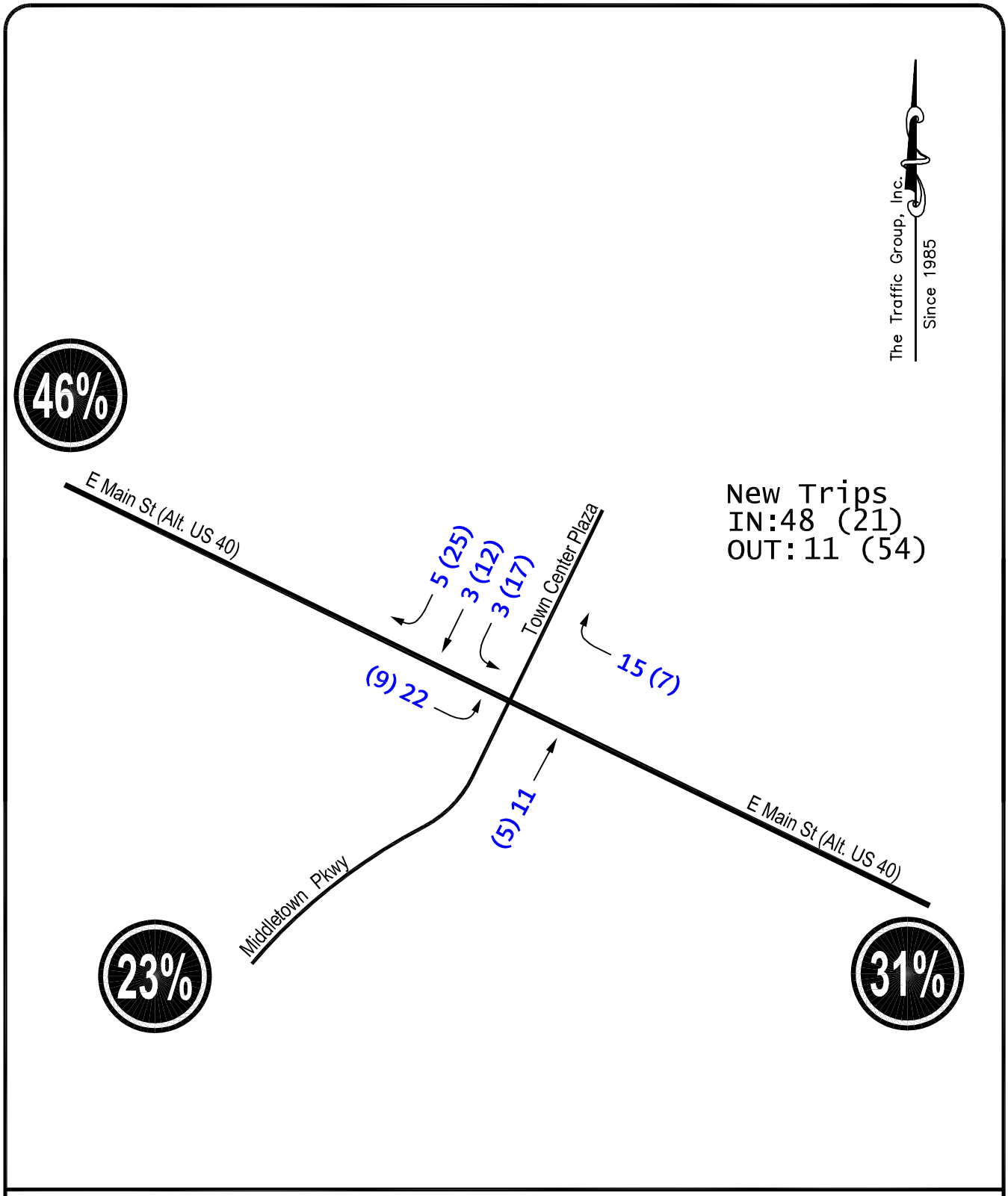


EXHIBIT 8A
NEW TRIP ASSIGNMENT FOR
SITE WITHOUT EAST SITE ACCESS

Sli, 180710\INITIAL\ex.dwg-STN2, F04/24/19

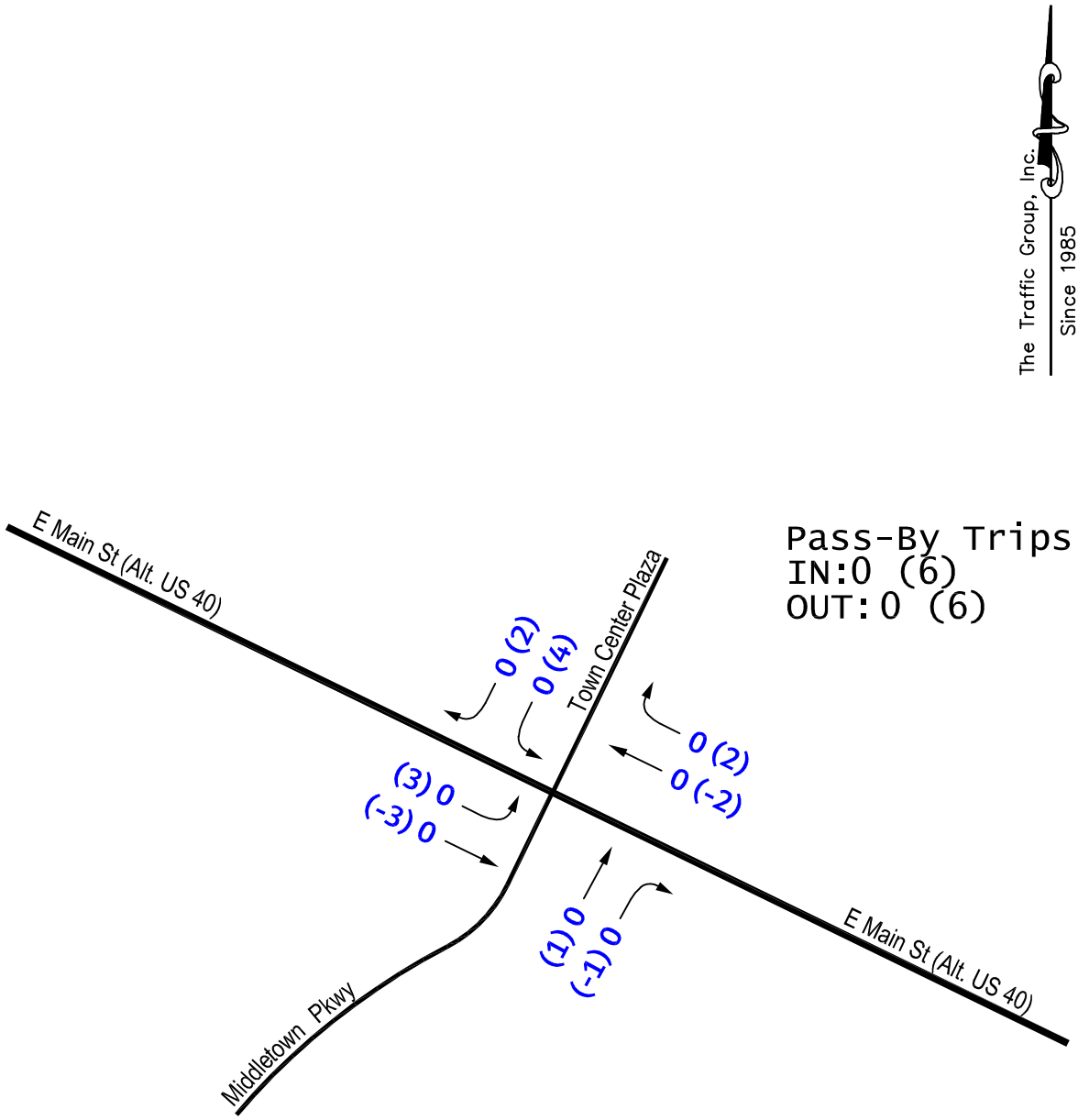


EXHIBIT 8B
PASS-BY TRIP ASSIGNMENT FOR
SITE WITHOUT EAST SITE ACCESS

SLI, 180710\INITIAL\ex.dwg-STP2, F4/17/2019

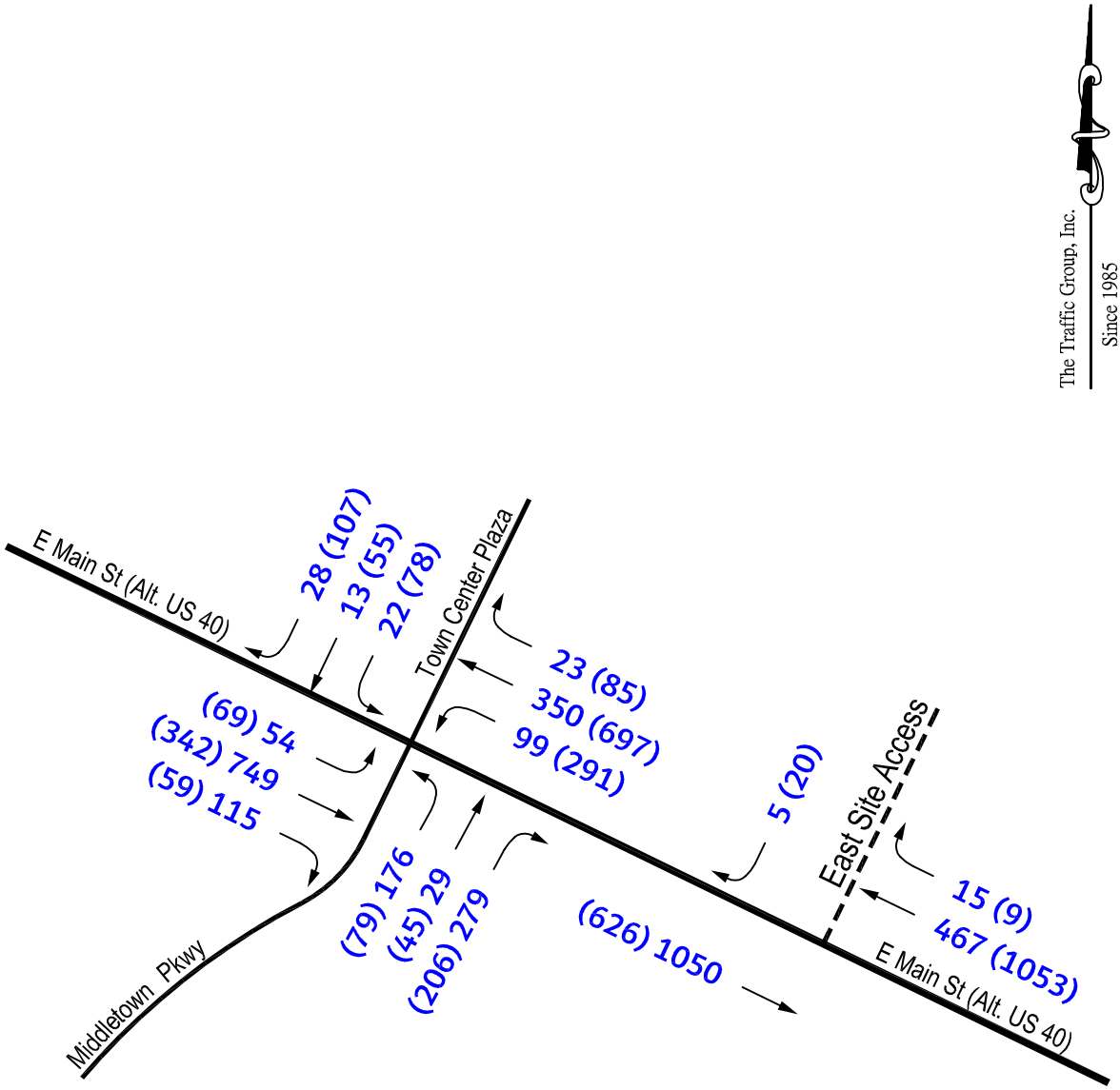


EXHIBIT 9A
2024 TOTAL PEAK HOUR TRAFFIC
VOLUMES WITH EAST SITE ACCESS

Rh, 180710\REV1\ex_rev.dwg-TOT1, F10/01/19

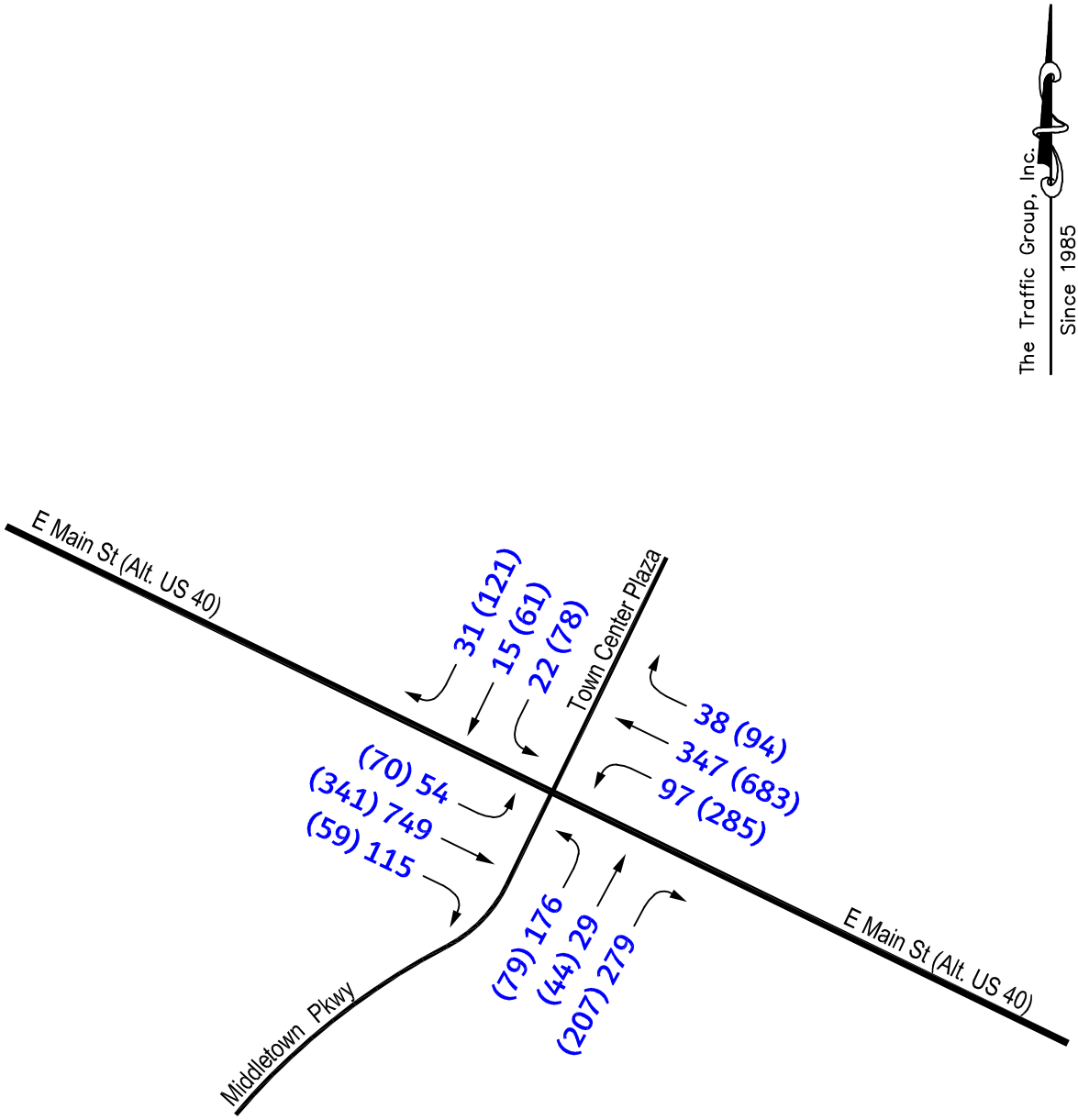


EXHIBIT 9B
2024 TOTAL PEAK HOUR TRAFFIC
VOLUMES WITHOUT EAST SITE ACCESS

SLI, 180710\INITIAL\ex.dwg-TOT2, F4/17/2019

RESULTS OF INTERSECTION CAPACITY ANALYSIS

CLV	2019 Existing	2024 Background	2024 Total With East Site Access	2024 Total No East Site Access
MORNING PEAK HOUR TRAFFIC				
1. US 40 Alt & Town Center Plaza/Middletown Parkway				
	A/931	B/1071	B/1088	B/1088
2. US 40 Alt & East Site Access	----	----	B/1055	----
EVENING PEAK HOUR TRAFFIC				
1. US 40 Alt & Town Center Plaza/Middletown Parkway				
	A/861	A/966	B/1023	B/1015
2. US 40 Alt & East Site Access	----	----	B/1082	----

HCM Delay/Synchro	2019 Existing	2024 Background	2024 Total With East Site Access	2024 Total No East Site Access
MORNING PEAK HOUR TRAFFIC				
1. US 40 Alt & Town Center Plaza/Middletown Parkway				
Overall	C/26.7	C/34.4	C/35.0	D/35.2
EB	C/26.7	D/37.5	D/37.6	D/38.1
WB	B/16.5	B/18.0	B/18.3	B/18.2
NB	D/37.8	D/46.3	D/47.7	D/48.1
SB	D/35.7	D/41.1	D/41.2	D/41.3
2. US 40 Alt at East Site Access				
SB/R	---	---	B/11.5	---
EVENING PEAK HOUR TRAFFIC				
1. US 40 Alt & Town Center Plaza/Middletown Parkway				
Overall	C/24.3	C/26.5	C/28.9	C/28.4
EB	B/18.0	B/17.9	B/19.2	B/19.2
WB	C/22.5	C/24.9	C/27.6	C/26.7
NB	D/35.8	D/39.1	D/41.4	D/40.9
SB	C/33.8	D/40.5	D/41.2	D/41.2
2. US 40 Alt at East Site Access				
SB/R	---	---	C/21.4	---

The Traffic Group®

EXHIBIT 10
RESULTS OF INTERSECTION
CAPACITY ANALYSIS

Rh, 180710\REV1\los.xlsx-delay, F10/02/19

RESULTS OF INTERSECTION 95% QUEUING ANALYSIS

Synchro Queues		2019 Existing	2024 Background	2024 Total With East Site Access	2024 Total No East Site Access
MORNING PEAK HOUR TRAFFIC	**Storage Length (ft)**				
1. US 40 Alt & Town Center Plaza/Middletown Parkway					
EB Left on US 40 Alt	160'	<25'	<25	35'	35'
EB Thru on US 40 Alt	>1000'	672'	854'	860'	856'
EB Right on US 40 Alt	120'	32'	42'	44'	42'
WB Left on US 40 Alt	280'	49'	69'	72'	67'
WB Thru on US 40 Alt	>1000'	213'	250'	256'	254'
WB Right on US 40 Alt	380'	<25	<25	<25	<25
NB Left/Thru on Middletown Pkwy	235'	191'	218'	231'	230'
NB Right on Middletown Pkwy	520'	69'	75'	76'	75'
SB Left/Thru on Middletown Pkwy	195'	54'	54'	58'	61'
SB Right on Middletown Pkwy	195'	<25	<25	<25	<25
2. US 40 Alt & East Site Access		----	----		----
SB Right on East Site Access	---	---	---	<25	---
MORNING PEAK HOUR TRAFFIC	**Storage Length (ft)**				
1. US 40 Alt & Town Center Plaza/Middletown Parkway					
EB Left on US 40 Alt	160'	40'	41'	51'	51'
EB Thru on US 40 Alt	>1000'	256'	306'	321'	320'
EB Right on US 40 Alt	120'	<25	<25	<25	<25
WB Left on US 40 Alt	280'	145'	174'	192'	189'
WB Thru on US 40 Alt	>1000'	589'	762'	839'	817'
WB Right on US 40 Alt	380'	<25	<25	<25	31'
NB Left/Thru on Middletown Pkwy	235'	129'	140'	153'	153'
NB Right on Middletown Pkwy	520'	63'	67'	68'	68'
SB Left/Thru on Middletown Pkwy	195'	130'	131'	163'	169'
SB Right on Middletown Pkwy	195'	43'	43'	51'	53'
2. US 40 Alt & East Site Access					
SB Right on East Site Access	---	---	---	<25	---

The Traffic Group®

EXHIBIT 10 (CONT'D)
RESULTS OF INTERSECTION
CAPACITY ANALYSIS

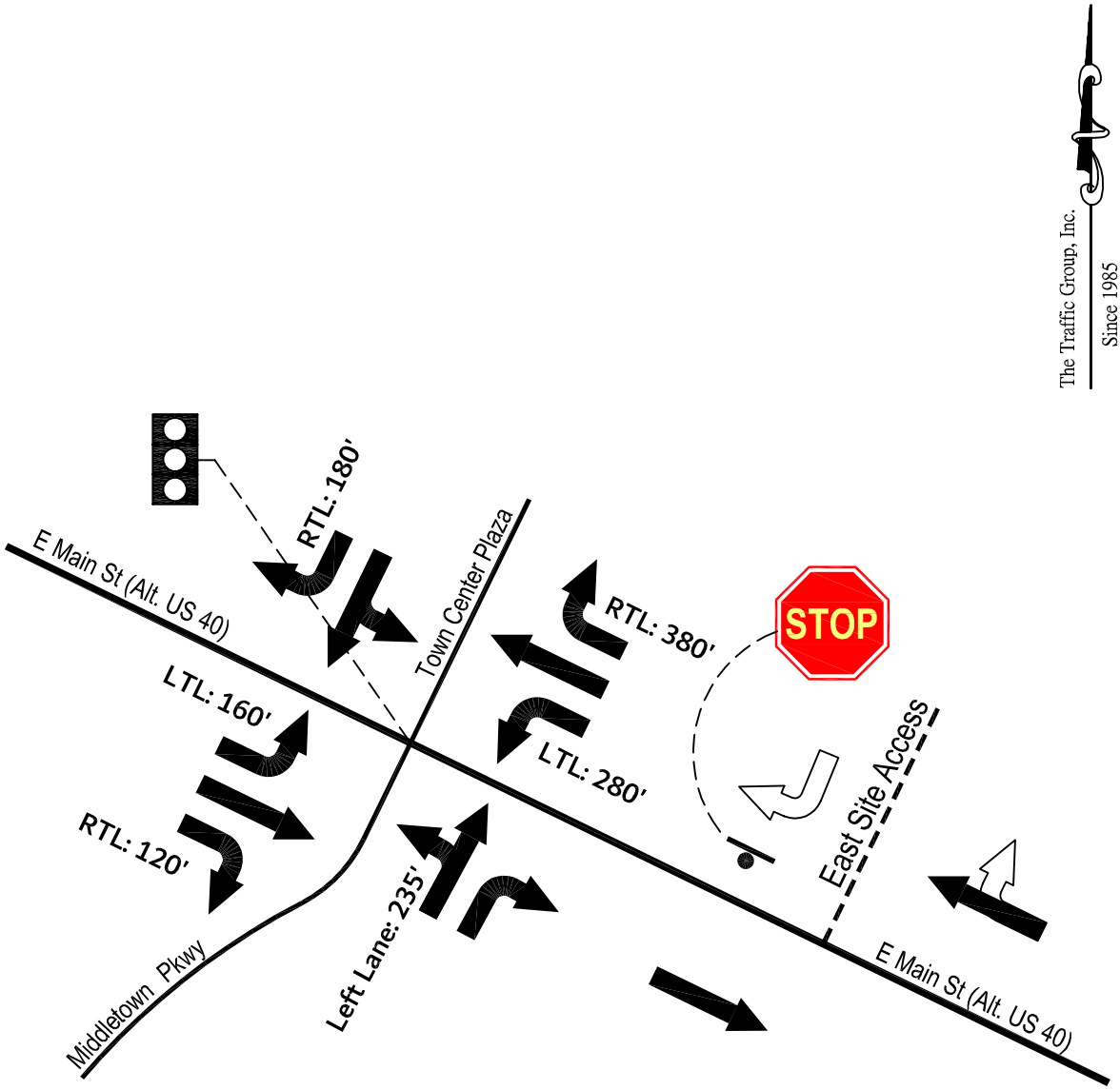


EXHIBIT 11
RECOMMENDED
FUTURE LANE USE

Rh, 180710\REV1\ex_rev.dwg-LU-FUT1, F10/02/19

RESULTS, RECOMMENDATIONS, AND CONCLUSIONS

Study Purpose

The Traffic Group, Inc. has prepared this Traffic Impact Analysis to quantify the impact the proposed Middletown Valley Center will have on the surrounding roadway network and to address comments from the Town of Middleton. The subject site is located along the north side of Alt. US 40 across from Middletown Parkway in the Town of Middletown, Frederick County, Maryland. This site is proposed with the following uses:

- 39,600 SF of General Office;
- 9,200 SF of Retail Uses; and
- 30,000 SF of Mini-Warehouse.

We have created two different access scenarios for this proposed development. Each scenario will have access via the existing traffic signal at Alt. US 40 @ Middletown Parkway/Town Center Plaza Access and a second scenario consists of a right in/right out east of this traffic signal. It is anticipated that this development will be completed within 3 years.

Study Criteria/Methodology

As requested by the Town of Middletown, the study area consisted of the intersection of Alt. US 40 @ Middletown Parkway/Town Center Plaza Access and the proposed second site access during the morning and evening peak periods.

Summary of Findings and Recommendations

The results of the Traffic Impact Analysis indicate that the intersection of Alt. US 40 @ Middletown Parkway/Town Center Plaza Access is operating at acceptable levels of service and will continue to operate with acceptable levels of service during each of the peak periods using the SHA CLV and HCM Methodologies.

The Right In/Right Out East Site Access is projected to have some minor delays but considered acceptable based on the HCM Unsignalized Methodology.

Therefore, it is our opinion that the proposed Middletown Valley Center meets the requirements for approval without offsite intersection mitigation.

APPENDIX

TOTALS TURNING MOVEMENT COUNT - SUMMARY

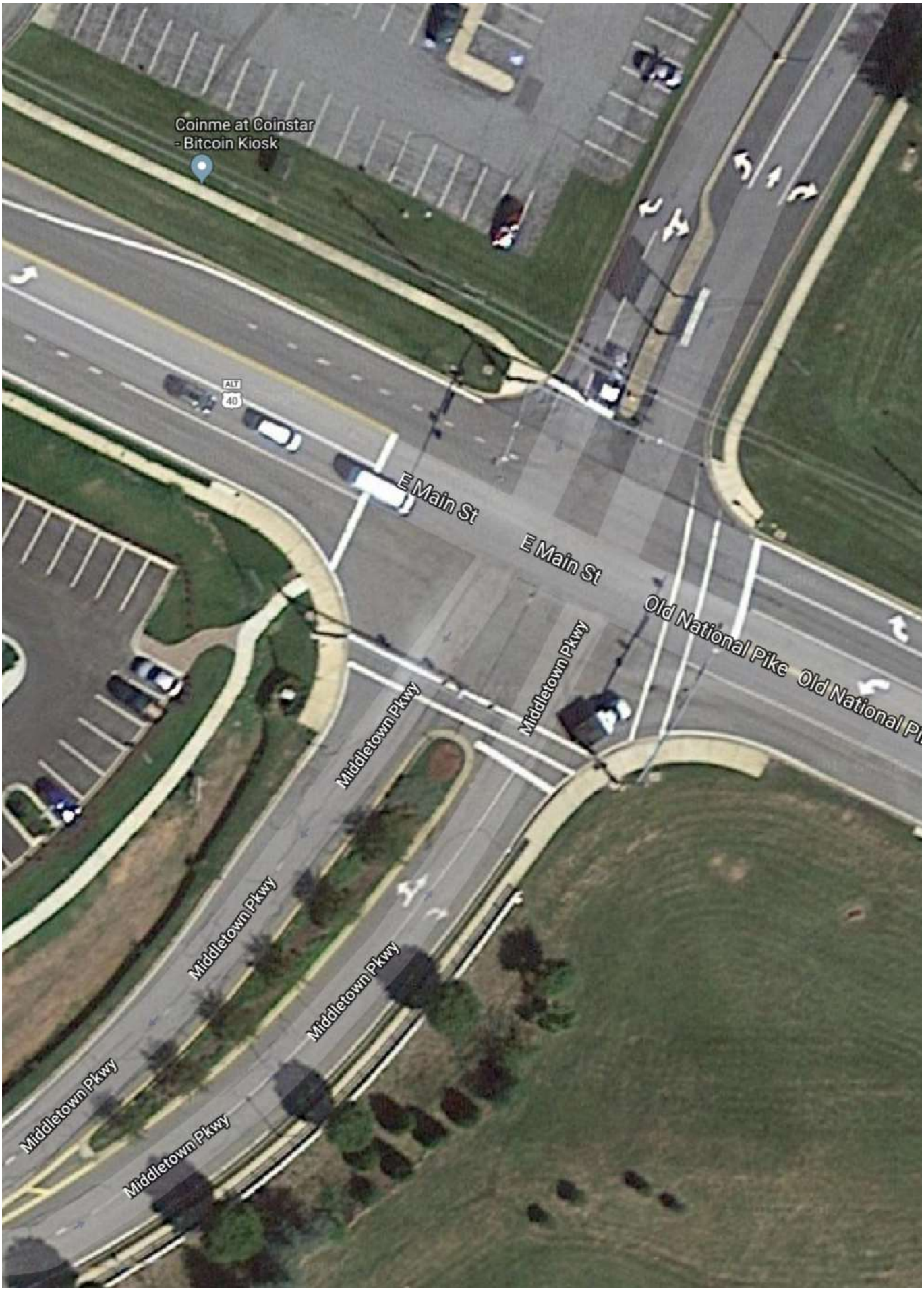
Counted by: VCU

Intersection of: US 40 ALT | Date: March 06, 2019 | Wednesday

and: Middletown Parkway | Weather: Cloudy/Cool

Location: Washington County, Maryland | Entered by: SN | Star Rating: 4

TIME	TRAFFIC FROM NORTH on: Town Center Plaza					TRAFFIC FROM SOUTH on: Middletown Parkway					TRAFFIC FROM EAST on: US 40 ALT					TRAFFIC FROM WEST on: US 40 ALT					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
AM																					
7:00 - 7:15	4	1	3	0	8	60	3	66	0	129	6	81	22	0	109	19	126	10	0	155	401
7:15 - 7:30	6	4	3	0	13	56	3	42	0	101	7	81	21	0	109	28	171	11	0	210	433
7:30 - 7:45	9	4	10	0	23	78	9	26	0	113	3	60	24	0	87	28	180	6	0	214	437
7:45 - 8:00	7	3	3	0	13	47	3	18	0	68	7	77	17	0	101	24	169	5	0	198	380
8:00 - 8:15	2	3	4	0	9	58	1	15	0	74	8	76	21	0	105	8	131	5	0	144	332
8:15 - 8:30	5	0	6	0	11	57	2	11	0	70	6	61	41	0	108	7	119	2	0	128	317
8:30 - 8:45	4	0	7	0	11	86	8	24	0	118	8	64	37	0	109	16	137	7	0	160	398
8:45 - 9:00	4	5	11	0	20	96	10	12	0	118	10	49	29	0	88	16	162	15	0	193	419
2 Hr Totals	41	20	47	0	108	538	39	214	0	791	55	549	212	0	816	146	1195	61	0	1402	3117
1 Hr Totals																					
7:00 - 8:00	26	12	19	0	57	241	18	152	0	411	23	299	84	0	406	99	646	32	0	777	1651
7:15 - 8:15	24	14	20	0	58	239	16	101	0	356	25	294	83	0	402	88	651	27	0	766	1582
7:30 - 8:30	23	10	23	0	56	240	15	70	0	325	24	274	103	0	401	67	599	18	0	684	1466
7:45 - 8:45	18	6	20	0	44	248	14	68	0	330	29	278	116	0	423	55	556	19	0	630	1427
8:00 - 9:00	15	8	28	0	51	297	21	62	0	380	32	250	128	0	410	47	549	29	0	625	1466
PEAK HOUR																					
7:00 - 8:00	26	12	19	0	57	241	18	152	0	411	23	299	84	0	406	99	646	32	0	777	1651
PM																					
4:00 - 4:15	24	7	13	0	44	47	11	12	0	70	25	141	45	0	211	6	82	8	0	96	421
4:15 - 4:30	25	15	22	0	62	47	7	23	0	77	24	141	48	0	213	6	61	12	0	79	431
4:30 - 4:45	21	10	13	0	44	34	9	10	0	53	27	128	58	0	213	16	74	17	0	107	417
4:45 - 5:00	26	12	18	0	56	51	5	14	1	71	24	149	59	0	232	8	76	14	0	98	457
5:00 - 5:15	23	13	8	0	44	42	16	22	0	80	18	160	74	0	252	12	72	15	0	99	475
5:15 - 5:30	24	14	18	0	56	52	8	21	0	81	16	154	55	0	225	15	75	12	0	102	464
5:30 - 5:45	16	9	11	0	36	28	9	16	0	53	15	144	60	0	219	11	87	10	0	108	416
5:45 - 6:00	15	14	12	0	41	42	6	17	0	65	17	118	48	0	183	10	61	8	0	79	368
2 Hr Totals	174	94	115	0	383	343	71	135	1	550	166	1135	447	0	1748	84	588	96	0	768	3449
1 Hr Totals																					
4:00 - 5:00	96	44	66	0	206	179	32	59	1	271	100	559	210	0	869	36	293	51	0	380	1726
4:15 - 5:15	95	50	61	0	206	174	37	69	1	281	93	578	239	0	910	42	283	58	0	383	1780
4:30 - 5:30	94	49	57	0	200	179	38	67	1	285	85	591	246	0	922	51	297	58	0	406	1813
4:45 - 5:45	89	48	55	0	192	173	38	73	1	285	73	607	248	0	928	46	310	51	0	407	1812
5:00 - 6:00	78	50	49	0	177	164	39	76	0	279	66	576	237	0	879	48	295	45	0	388	1723
PEAK HOUR																					
4:30 - 5:30	94	49	57	0	200	179	38	67	1	285	85	591	246	0	922	51	297	58	0	406	1813


Coinme at Coinstar
- Bitcoin Kiosk
ALT
40
E Main St
E Main St
Old National Pike
Old National Pi
Middletown Pkwy
Middletown Pkwy
Middletown Pkwy
Middletown Pkwy
Middletown Pkwy
Middletown Pkwy

CRITICAL LANE VOLUME (CLV) METHODOLOGY

Regular CLV methodology

E/W Road: US 40 Alt
N/S Road: Town Center Plaza/Middletown Parkway
Conditions: 2019 Existing Traffic

Date of Count: 3/6/2019
Day of Count: Wednesday
Analyst: Shulin Li

Peak: 7:00 -8:00
Peak: 4:30 -5:30

TOWN CENTER PLAZA

	R	T	L
PM	94	49	57
AM	26	12	19

US 40 ALT

R TL

	R	T	L
R	23	85	
T	299	591	
L	84	246	
	AM	PM	

	PM	AM
L	58	32
T	297	646
R	51	99

L —
T —
R —

LT R

US 40 ALT

	L	T	R
AM	152	18	241
PM	68	38	179

MIDDLETOWN PARKWAY

Capacity Analysis - North/South Split

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	170	1.00	170				170
SB	31	1.00	31				31
EB	646	1.00	646	84	1.00	84	730
WB	299	1.00	299	32	1.00	32	
						CLV TOTAL=	**931**
						Level of Service (LOS)=	**A**

AM V/C =0.58

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	106	1.00	106				106
SB	106	1.00	106				106
EB	297	1.00	297	246	1.00	246	649
WB	591	1.00	591	58	1.00	58	
						CLV TOTAL=	**861**
						Level of Service (LOS)=	**A**

PM V/C =0.54

Scenario ID - EXIST1

CRITICAL LANE VOLUME (CLV) METHODOLOGY

Regular CLV methodology

E/W Road: US 40 Alt **Date of Count:** 3/6/2019

N/S Road: Town Center Plaza/Middletown Parkway **Day of Count:** Wednesday

Conditions: 2024 Background Traffic **Analyst:** Shulin Li

Peak: 7:00 -8:00

Peak: 4:30 -5:30

TOWN CENTER PLAZA

	R	T	L
PM	94	49	57
AM	26	12	19

US 40 ALT

R TL

	R	T	L
R	23	85	
T	347	685	
L	97	285	
	AM	PM	

	PM	AM
L	58	32
T	344	749
R	59	115

L —

T —

R —

LT R

US 40 ALT

	L	T	R
AM	176	18	279
PM	79	38	208

MIDDLETOWN PARKWAY

Capacity Analysis - North/South Split

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	194	1.00	194				194
SB	31	1.00	31				31
EB	749	1.00	749	97	1.00	97	846
WB	347	1.00	347	32	1.00	32	
						CLV TOTAL=	**1,071**
						Level of Service (LOS)=	**B**

AM V/C =0.67

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	117	1.00	117				117
SB	106	1.00	106				106
EB	344	1.00	344	285	1.00	285	743
WB	685	1.00	685	58	1.00	58	
						CLV TOTAL=	**966**
						Level of Service (LOS)=	**A**

PM V/C =0.6

Scenario ID - BACK11

CRITICAL LANE VOLUME (CLV) METHODOLOGY

Regular CLV methodology

E/W Road: US 40 Alt **Date of Count:** 3/6/2019

N/S Road: Town Center Plaza/Middletown Parkway **Day of Count:** Wednesday

Conditions: Total Traffic **Analyst:** Richard Huang

Peak: 7:00 -8:00

Peak: 4:30 -5:30

TOWN CENTER PLAZA

107	55	78	**PM**
28	13	22	**AM**
R	**T**	**L**	

US 40 ALT

R TL

R	23	85
T	350	697
L	99	291
	AM	**PM**

PM	**AM**	
69	54	**L**
342	749	**T**
59	115	**R**

L —

T —

R —

LT R

US 40 ALT

	L	**T**	**R**
AM	176	29	279
PM	79	45	206

MIDDLETOWN PARKWAY

Capacity Analysis - North/South Split

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	205	1.00	205				205
SB	35	1.00	35				35
EB	749	1.00	749	99	1.00	99	848
WB	350	1.00	350	54	1.00	54	
						CLV TOTAL=	**1,088**
						Level of Service (LOS)=	**B**

AM V/C =0.68

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	124	1.00	124				124
SB	133	1.00	133				133
EB	342	1.00	342	291	1.00	291	766
WB	697	1.00	697	69	1.00	69	
						CLV TOTAL=	**1,023**
						Level of Service (LOS)=	**B**

PM V/C =0.64

CRITICAL LANE VOLUME (CLV) METHODOLOGY

Regular CLV methodology

E/W Road: US 40 Alt
N/S Road: Town Center Plaza/Middletown Parkway
Conditions: 2024 Total Traffic

Date of Count: 3/6/2019
Day of Count: Wednesday
Analyst: Shulin Li

Peak: 7:00 -8:00
Peak: 4:30 -5:30

TOWN CENTER PLAZA

121	61	78	**PM**
31	15	22	**AM**
R	**T**	**L**	

No east site access

US 40 ALT

R TL

R	38	94
T	347	683
L	97	285
	AM	**PM**

PM	AM	
70	54	L
341	749	T
59	115	R

L —
T —
R —

LT R

US 40 ALT

	L	T	R
AM	176	29	279
PM	79	44	207

MIDDLETOWN PARKWAY

Capacity Analysis - North/South Split

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	205	1.00	205				205
SB	37	1.00	37				37
EB	749	1.00	749	97	1.00	97	846
WB	347	1.00	347	54	1.00	54	
						CLV TOTAL=	**1,088**
						Level of Service (LOS)=	**B**

Scenario ID - TOT21
AM V/C =0.68

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	123	1.00	123				123
SB	139	1.00	139				139
EB	341	1.00	341	285	1.00	285	753
WB	683	1.00	683	70	1.00	70	
						CLV TOTAL=	**1,015**
						Level of Service (LOS)=	**B**

PM V/C =0.63

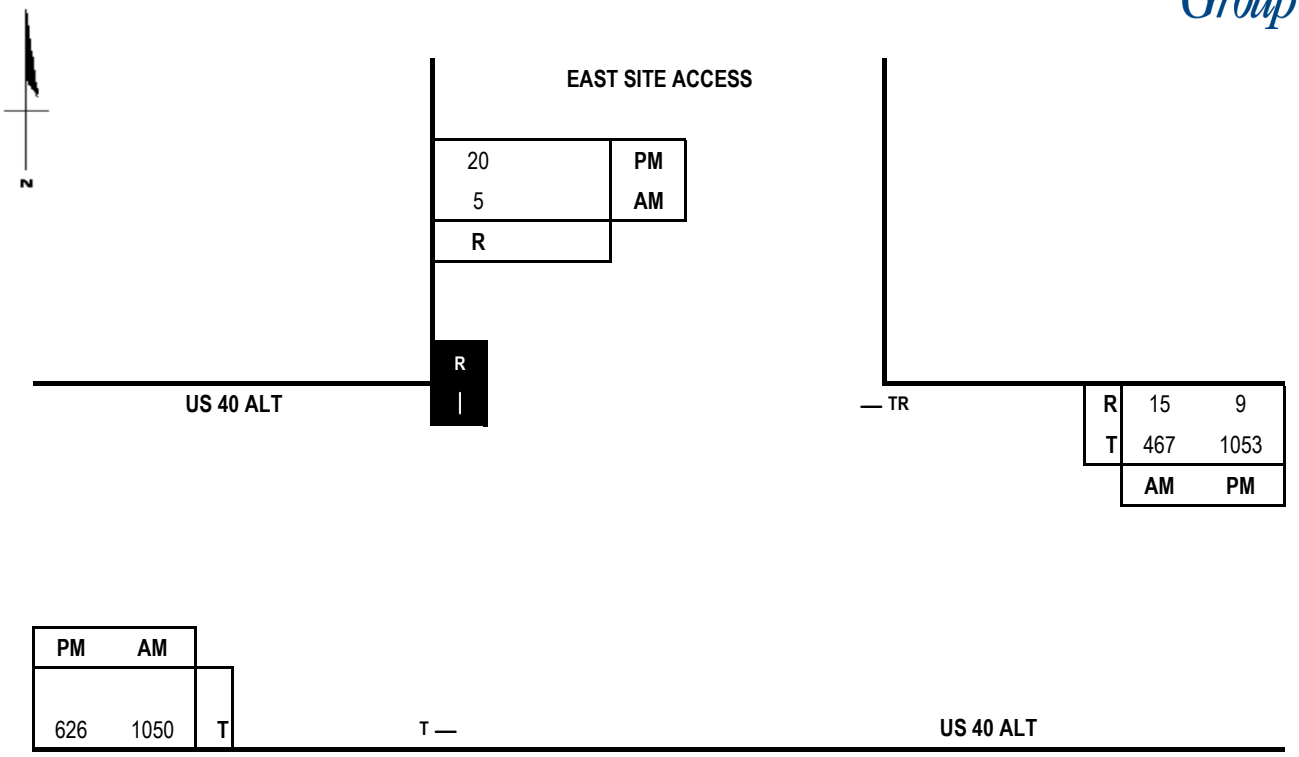
CRITICAL LANE VOLUME (CLV) METHODOLOGY

Regular CLV methodology

E/W Road: US 40 Alt **Date of Count:**

N/S Road: East Site Access/Middletown Parkway **Day of Count:**

Conditions: Total Traffic w/RIRO access **Analyst:** Richard Huang



Capacity Analysis

Morning Peak Hour							
	Thru Volumes			+ Opposing Lefts			AM
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
SB	5	1.00	5				5
EB	1050	1.00	1050				1050
WB	482	1.00	482	0	0.00	0	
						CLV TOTAL=	1,055
						Level of Service (LOS)=	B

AM V/C =0.66

Evening Peak Hour							
	Thru Volumes			+ Opposing Lefts			PM
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
SB	20	1.00	20				20
EB	626	1.00	626				1062
WB	1062	1.00	1062	9	0.00	0	
						CLV TOTAL=	1,082
						Level of Service (LOS)=	B

PM V/C =0.68

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	35	702	108	91	325	25	185	262	34	28
v/c Ratio	0.06	0.78	0.13	0.28	0.33	0.03	0.63	0.54	0.17	0.10
Control Delay	9.8	31.5	4.2	11.7	17.1	0.0	49.2	9.5	45.7	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	31.5	4.2	11.7	17.1	0.0	49.2	9.5	45.7	0.7
Queue Length 50th (ft)	9	381	0	23	129	0	112	0	20	0
Queue Length 95th (ft)	23	#672	32	49	213	0	191	69	54	0
Internal Link Dist (ft)		1291			460		803		555	
Turn Bay Length (ft)	160		120	280		380				180
Base Capacity (vph)	727	945	857	423	1026	921	402	560	407	441
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.74	0.13	0.22	0.32	0.03	0.46	0.47	0.08	0.06

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	646	99	84	299	23	152	18	241	19	12	26
Future Volume (veh/h)	32	646	99	84	299	23	152	18	241	19	12	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	702	108	91	325	25	165	20	184	21	13	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	574	796	675	314	796	675	239	29	237	96	59	135
Arrive On Green	0.10	0.43	0.43	0.10	0.43	0.43	0.15	0.15	0.15	0.09	0.09	0.09
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1597	194	1585	1121	694	1585
Grp Volume(v), veh/h	35	702	108	91	325	25	185	0	184	34	0	19
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1791	0	1585	1814	0	1585
Q Serve(g_s), s	0.8	28.5	3.5	2.1	10.0	0.8	8.1	0.0	9.2	1.4	0.0	0.9
Cycle Q Clear(g_c), s	0.8	28.5	3.5	2.1	10.0	0.8	8.1	0.0	9.2	1.4	0.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	0.89		1.00	0.62		1.00
Lane Grp Cap(c), veh/h	574	796	675	314	796	675	268	0	237	155	0	135
V/C Ratio(X)	0.06	0.88	0.16	0.29	0.41	0.04	0.69	0.00	0.78	0.22	0.00	0.14
Avail Cap(c_a), veh/h	726	1021	865	466	1021	865	434	0	384	440	0	384
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.2	21.8	14.6	15.6	16.5	13.8	33.3	0.0	33.7	35.2	0.0	34.9
Incr Delay (d2), s/veh	0.0	7.5	0.1	0.5	0.3	0.0	3.2	0.0	5.4	0.7	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.5	19.2	2.2	1.5	7.4	0.5	6.6	0.0	6.9	1.2	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	29.3	14.7	16.1	16.8	13.8	36.4	0.0	39.1	35.9	0.0	35.4
LnGrp LOS	B	C	B	B	B	B	D	A	D	D	A	D
Approach Vol, veh/h		845			441			369			53	
Approach Delay, s/veh		26.7			16.5			37.8			35.7	
Approach LOS		C			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	40.1		17.3	13.0	40.1		12.0
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	15.0	45.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	2.8	12.0		11.2	4.1	30.5		3.4
Green Ext Time (p_c), s	0.0	2.2		1.1	0.1	4.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	26.7
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	63	323	55	267	642	92	115	195	115	102
v/c Ratio	0.21	0.51	0.09	0.50	0.80	0.12	0.45	0.50	0.46	0.33
Control Delay	12.3	26.8	0.4	14.4	32.0	3.2	45.1	10.9	45.4	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	26.8	0.4	14.4	32.0	3.2	45.1	10.9	45.4	10.4
Queue Length 50th (ft)	14	136	0	70	305	0	64	0	64	0
Queue Length 95th (ft)	40	256	2	145	#589	23	129	63	130	43
Internal Link Dist (ft)		1291			460		803		555	
Turn Bay Length (ft)	160		120	280		380				180
Base Capacity (vph)	438	980	885	563	980	885	422	519	424	453
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.33	0.06	0.47	0.66	0.10	0.27	0.38	0.27	0.23

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	297	51	246	591	85	68	38	179	57	49	94
Future Volume (veh/h)	58	297	51	246	591	85	68	38	179	57	49	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	323	55	267	642	92	74	41	136	62	53	72
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	330	710	601	553	743	630	146	81	199	122	104	197
Arrive On Green	0.10	0.38	0.38	0.12	0.40	0.40	0.13	0.13	0.13	0.12	0.12	0.12
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1166	646	1585	982	839	1585
Grp Volume(v), veh/h	63	323	55	267	642	92	115	0	136	115	0	72
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1812	0	1585	1821	0	1585
Q Serve(g_s), s	1.5	10.3	1.8	7.0	25.0	2.9	4.7	0.0	6.5	4.7	0.0	3.3
Cycle Q Clear(g_c), s	1.5	10.3	1.8	7.0	25.0	2.9	4.7	0.0	6.5	4.7	0.0	3.3
Prop In Lane	1.00		1.00	1.00		1.00	0.64		1.00	0.54		1.00
Lane Grp Cap(c), veh/h	330	710	601	553	743	630	228	0	199	226	0	197
V/C Ratio(X)	0.19	0.46	0.09	0.48	0.86	0.15	0.51	0.00	0.68	0.51	0.00	0.37
Avail Cap(c_a), veh/h	487	1061	899	679	1061	899	457	0	400	459	0	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.9	18.5	15.8	12.7	21.9	15.3	32.4	0.0	33.2	32.5	0.0	31.9
Incr Delay (d2), s/veh	0.3	0.5	0.1	0.7	5.4	0.1	1.7	0.0	4.1	1.8	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	7.7	1.1	4.8	16.8	1.9	3.8	0.0	4.8	3.8	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.2	18.9	15.9	13.3	27.3	15.4	34.1	0.0	37.3	34.2	0.0	33.0
LnGrp LOS	B	B	B	B	C	B	C	A	D	C	A	C
Approach Vol, veh/h		441			1001			251			187	
Approach Delay, s/veh		18.0			22.5			35.8			33.8	
Approach LOS		B			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	36.5		15.0	14.4	35.1		14.8
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	15.0	45.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	3.5	27.0		8.5	9.0	12.3		6.7
Green Ext Time (p_c), s	0.1	4.5		0.8	0.4	2.3		0.6

Intersection Summary			
HCM 6th Ctrl Delay			24.3
HCM 6th LOS			C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	35	814	125	105	377	25	211	303	34	28
v/c Ratio	0.06	0.90	0.15	0.40	0.38	0.03	0.69	0.58	0.18	0.10
Control Delay	10.1	42.6	5.6	17.0	18.1	0.0	52.1	9.5	46.7	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	42.6	5.6	17.0	18.1	0.0	52.1	9.5	46.7	0.8
Queue Length 50th (ft)	9	~528	6	29	166	0	131	0	21	0
Queue Length 95th (ft)	23	#854	42	69	250	0	218	75	54	0
Internal Link Dist (ft)		1291			460		803		555	
Turn Bay Length (ft)	160		120	280		380				180
Base Capacity (vph)	684	901	822	350	990	892	383	578	388	426
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.90	0.15	0.30	0.38	0.03	0.55	0.52	0.09	0.07

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	749	115	97	347	23	176	18	279	19	12	26
Future Volume (veh/h)	32	749	115	97	347	23	176	18	279	19	12	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	35	814	125	105	377	25	191	20	212	21	13	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	547	861	730	255	861	730	262	27	256	89	55	126
Arrive On Green	0.09	0.46	0.46	0.09	0.46	0.46	0.16	0.16	0.16	0.08	0.08	0.08
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1620	170	1585	1121	694	1585
Grp Volume(v), veh/h	35	814	125	105	377	25	211	0	212	34	0	19
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1789	0	1585	1814	0	1585
Q Serve(g_s), s	0.9	39.0	4.3	2.7	12.8	0.8	10.5	0.0	12.2	1.7	0.0	1.0
Cycle Q Clear(g_c), s	0.9	39.0	4.3	2.7	12.8	0.8	10.5	0.0	12.2	1.7	0.0	1.0
Prop In Lane	1.00		1.00	1.00		1.00	0.91		1.00	0.62		1.00
Lane Grp Cap(c), veh/h	547	861	730	255	861	730	289	0	256	145	0	126
V/C Ratio(X)	0.06	0.95	0.17	0.41	0.44	0.03	0.73	0.00	0.83	0.23	0.00	0.15
Avail Cap(c_a), veh/h	680	896	760	388	896	760	381	0	338	386	0	338
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.8	24.2	14.8	19.7	17.1	13.9	37.4	0.0	38.1	40.5	0.0	40.2
Incr Delay (d2), s/veh	0.0	17.9	0.1	1.1	0.4	0.0	4.9	0.0	12.2	0.8	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.6	27.8	2.8	1.9	9.2	0.5	8.6	0.0	9.4	1.4	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.8	42.1	14.9	20.8	17.5	13.9	42.3	0.0	50.3	41.3	0.0	40.8
LnGrp LOS	B	D	B	C	B	B	D	A	D	D	A	D
Approach Vol, veh/h		974			507			423			53	
Approach Delay, s/veh		37.5			18.0			46.3			41.1	
Approach LOS		D			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	48.2		20.2	13.0	48.2		12.5
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	15.0	45.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	2.9	14.8		14.2	4.7	41.0		3.7
Green Ext Time (p_c), s	0.0	2.5		1.0	0.2	2.2		0.1

Intersection Summary			
HCM 6th Ctrl Delay			34.4
HCM 6th LOS			C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	63	374	64	310	745	92	127	226	115	102
v/c Ratio	0.24	0.51	0.09	0.58	0.84	0.11	0.52	0.55	0.52	0.35
Control Delay	13.1	26.3	1.3	15.7	34.6	3.1	48.3	11.0	49.6	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	26.3	1.3	15.7	34.6	3.1	48.3	11.0	49.6	10.9
Queue Length 50th (ft)	15	168	0	85	393	0	75	0	67	0
Queue Length 95th (ft)	41	306	7	174	#762	23	140	67	131	43
Internal Link Dist (ft)		1291			460		803		555	
Turn Bay Length (ft)	160		120	280		380				180
Base Capacity (vph)	386	888	812	562	888	812	381	513	384	421
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.42	0.08	0.55	0.84	0.11	0.33	0.44	0.30	0.24

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	344	59	285	685	85	79	38	208	57	49	94
Future Volume (veh/h)	58	344	59	285	685	85	79	38	208	57	49	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	63	374	64	310	745	92	86	41	159	62	53	72
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	773	655	563	831	704	160	76	207	92	79	148
Arrive On Green	0.09	0.41	0.41	0.13	0.44	0.44	0.13	0.13	0.13	0.09	0.09	0.09
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1225	584	1585	982	839	1585
Grp Volume(v), veh/h	63	374	64	310	745	92	127	0	159	115	0	72
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1809	0	1585	1821	0	1585
Q Serve(g_s), s	1.5	12.4	2.1	8.2	31.1	2.9	5.5	0.0	8.2	5.2	0.0	3.6
Cycle Q Clear(g_c), s	1.5	12.4	2.1	8.2	31.1	2.9	5.5	0.0	8.2	5.2	0.0	3.6
Prop In Lane	1.00		1.00	1.00		1.00	0.68		1.00	0.54		1.00
Lane Grp Cap(c), veh/h	304	773	655	563	831	704	236	0	207	170	0	148
V/C Ratio(X)	0.21	0.48	0.10	0.55	0.90	0.13	0.54	0.00	0.77	0.67	0.00	0.49
Avail Cap(c_a), veh/h	452	997	845	655	997	845	429	0	376	432	0	376
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.9	18.2	15.2	12.2	21.7	13.8	34.3	0.0	35.5	37.0	0.0	36.3
Incr Delay (d2), s/veh	0.3	0.5	0.1	0.8	9.4	0.1	1.9	0.0	5.9	4.6	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.1	8.9	1.3	5.6	21.1	1.8	4.5	0.0	6.2	4.5	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.2	18.6	15.2	13.1	31.1	13.9	36.2	0.0	41.4	41.6	0.0	38.8
LnGrp LOS	B	B	B	B	C	B	D	A	D	D	A	D
Approach Vol, veh/h		501			1147			286			187	
Approach Delay, s/veh		17.9			24.9			39.1			40.5	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	42.5		16.0	15.6	39.9		12.9
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	15.0	45.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	3.5	33.1		10.2	10.2	14.4		7.2
Green Ext Time (p_c), s	0.1	4.4		0.8	0.4	2.7		0.6

Intersection Summary	
HCM 6th Ctrl Delay	26.5
HCM 6th LOS	C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	59	814	125	108	380	25	223	303	38	30
v/c Ratio	0.11	0.96	0.16	0.43	0.40	0.03	0.73	0.58	0.21	0.12
Control Delay	10.6	51.2	5.9	17.9	19.6	0.0	54.7	9.4	47.6	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	51.2	5.9	17.9	19.6	0.0	54.7	9.4	47.6	0.9
Queue Length 50th (ft)	16	~551	7	31	171	0	140	0	24	0
Queue Length 95th (ft)	35	#860	44	72	256	0	231	76	58	0
Internal Link Dist (ft)		1291			460		803		555	
Turn Bay Length (ft)	160		120	280		380				180
Base Capacity (vph)	675	852	781	386	964	870	363	563	366	406
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.96	0.16	0.28	0.39	0.03	0.61	0.54	0.10	0.07

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	749	115	99	350	23	176	29	279	22	13	28
Future Volume (veh/h)	54	749	115	99	350	23	176	29	279	22	13	28
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	814	125	108	380	25	191	32	212	24	14	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	542	859	728	252	859	728	248	42	256	95	56	132
Arrive On Green	0.08	0.46	0.46	0.08	0.46	0.46	0.16	0.16	0.16	0.08	0.08	0.08
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1536	257	1585	1145	668	1585
Grp Volume(v), veh/h	59	814	125	108	380	25	223	0	212	38	0	21
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1794	0	1585	1813	0	1585
Q Serve(g_s), s	1.5	39.4	4.4	2.8	13.0	0.8	11.3	0.0	12.2	1.9	0.0	1.2
Cycle Q Clear(g_c), s	1.5	39.4	4.4	2.8	13.0	0.8	11.3	0.0	12.2	1.9	0.0	1.2
Prop In Lane	1.00		1.00	1.00		1.00	0.86		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	542	859	728	252	859	728	290	0	256	151	0	132
V/C Ratio(X)	0.11	0.95	0.17	0.43	0.44	0.03	0.77	0.00	0.83	0.25	0.00	0.16
Avail Cap(c_a), veh/h	673	890	754	440	890	754	379	0	335	383	0	335
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.1	24.5	15.0	20.0	17.4	14.1	38.0	0.0	38.4	40.6	0.0	40.3
Incr Delay (d2), s/veh	0.1	18.5	0.1	1.2	0.4	0.0	6.9	0.0	12.3	0.9	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	28.2	2.8	2.0	9.3	0.5	9.3	0.0	9.4	1.5	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.2	43.0	15.1	21.1	17.7	14.1	44.8	0.0	50.7	41.5	0.0	40.8
LnGrp LOS	B	D	B	C	B	B	D	A	D	D	A	D
Approach Vol, veh/h		998			513			435			59	
Approach Delay, s/veh		37.6			18.3			47.7			41.2	
Approach LOS		D			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	48.4		20.3	13.0	48.4		12.9
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	15.0	45.0		20.0	18.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	3.5	15.0		14.2	4.8	41.4		3.9
Green Ext Time (p_c), s	0.1	2.6		1.0	0.2	2.0		0.2

Intersection Summary		
HCM 6th Ctrl Delay		35.0
HCM 6th LOS		C

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	75	372	64	316	758	92	135	224	145	116
v/c Ratio	0.32	0.52	0.10	0.61	0.88	0.12	0.55	0.55	0.58	0.36
Control Delay	15.8	28.2	1.2	17.8	39.8	3.4	50.2	11.0	50.8	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.8	28.2	1.2	17.8	39.8	3.4	50.2	11.0	50.8	11.1
Queue Length 50th (ft)	19	177	0	93	425	0	81	0	87	0
Queue Length 95th (ft)	51	321	7	192	#839	24	153	68	163	51
Internal Link Dist (ft)		1291			460		803		555	
Turn Bay Length (ft)	160		120	280		380				180
Base Capacity (vph)	352	863	792	540	863	792	371	503	373	418
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.43	0.08	0.59	0.88	0.12	0.36	0.45	0.39	0.28

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	342	59	291	697	85	79	45	206	78	55	107
Future Volume (veh/h)	69	342	59	291	697	85	79	45	206	78	55	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	75	372	64	316	758	92	86	49	157	85	60	81
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	763	647	555	832	705	148	84	203	119	84	178
Arrive On Green	0.09	0.41	0.41	0.13	0.44	0.44	0.13	0.13	0.13	0.11	0.11	0.11
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1155	658	1585	1065	752	1585
Grp Volume(v), veh/h	75	372	64	316	758	92	135	0	157	145	0	81
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1813	0	1585	1817	0	1585
Q Serve(g_s), s	2.0	13.1	2.2	8.9	33.6	3.0	6.2	0.0	8.5	6.8	0.0	4.2
Cycle Q Clear(g_c), s	2.0	13.1	2.2	8.9	33.6	3.0	6.2	0.0	8.5	6.8	0.0	4.2
Prop In Lane	1.00		1.00	1.00		1.00	0.64		1.00	0.59		1.00
Lane Grp Cap(c), veh/h	284	763	647	555	832	705	232	0	203	204	0	178
V/C Ratio(X)	0.26	0.49	0.10	0.57	0.91	0.13	0.58	0.00	0.77	0.71	0.00	0.46
Avail Cap(c_a), veh/h	425	947	803	631	947	803	408	0	357	409	0	357
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.5	19.4	16.2	13.0	23.0	14.5	36.5	0.0	37.5	38.0	0.0	36.9
Incr Delay (d2), s/veh	0.5	0.5	0.1	0.9	11.8	0.1	2.3	0.0	6.2	4.5	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	9.4	1.4	6.1	23.2	1.9	5.2	0.0	6.5	5.9	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.0	19.9	16.3	14.0	34.8	14.6	38.8	0.0	43.7	42.6	0.0	38.7
LnGrp LOS	B	B	B	B	C	B	D	A	D	D	A	D
Approach Vol, veh/h		511			1166			292			226	
Approach Delay, s/veh		19.2			27.6			41.4			41.2	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	44.5		16.4	16.2	41.3		15.0
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	15.0	45.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	4.0	35.6		10.5	10.9	15.1		8.8
Green Ext Time (p_c), s	0.1	3.9		0.9	0.4	2.6		0.8

Intersection Summary		
HCM 6th Ctrl Delay		28.9
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↱
Traffic Vol, veh/h	0	1050	467	15	0	5
Future Vol, veh/h	0	1050	467	15	0	5
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1141	508	16	0	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	516
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	559
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	559
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	559
HCM Lane V/C Ratio	-	-	-	0.01
HCM Control Delay (s)	-	-	-	11.5
HCM Lane LOS	-	-	-	B
HCM 95th %tile Q(veh)	-	-	-	0

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑			↱
Traffic Vol, veh/h	0	626	1053	9	0	20
Future Vol, veh/h	0	626	1053	9	0	20
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	680	1145	10	0	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	-	1150
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	-	0	241
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	241
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	21.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	241
HCM Lane V/C Ratio	-	-	-	0.09
HCM Control Delay (s)	-	-	-	21.4
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	59	814	125	105	377	41	223	303	40	34
v/c Ratio	0.11	0.91	0.15	0.41	0.40	0.05	0.71	0.57	0.21	0.13
Control Delay	10.6	43.4	5.6	16.8	19.9	0.1	52.8	9.3	47.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	43.4	5.6	16.8	19.9	0.1	52.8	9.3	47.4	1.0
Queue Length 50th (ft)	16	~548	6	30	169	0	140	0	25	0
Queue Length 95th (ft)	35	#856	42	67	254	0	230	75	61	0
Internal Link Dist (ft)		1291			460		803		555	
Turn Bay Length (ft)	160		120	280		380				180
Base Capacity (vph)	657	896	818	351	932	846	382	576	386	424
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.91	0.15	0.30	0.40	0.05	0.58	0.53	0.10	0.08

Intersection Summary

~ 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.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	749	115	97	347	38	176	29	279	22	15	31
Future Volume (veh/h)	54	749	115	97	347	38	176	29	279	22	15	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	59	814	125	105	377	41	191	32	212	24	16	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	537	857	726	250	857	726	248	42	256	93	62	136
Arrive On Green	0.08	0.46	0.46	0.08	0.46	0.46	0.16	0.16	0.16	0.09	0.09	0.09
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1536	257	1585	1090	726	1585
Grp Volume(v), veh/h	59	814	125	105	377	41	223	0	212	40	0	24
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1794	0	1585	1816	0	1585
Q Serve(g_s), s	1.5	39.7	4.4	2.7	13.0	1.4	11.3	0.0	12.3	2.0	0.0	1.3
Cycle Q Clear(g_c), s	1.5	39.7	4.4	2.7	13.0	1.4	11.3	0.0	12.3	2.0	0.0	1.3
Prop In Lane	1.00		1.00	1.00		1.00	0.86		1.00	0.60		1.00
Lane Grp Cap(c), veh/h	537	857	726	250	857	726	289	0	256	156	0	136
V/C Ratio(X)	0.11	0.95	0.17	0.42	0.44	0.06	0.77	0.00	0.83	0.26	0.00	0.18
Avail Cap(c_a), veh/h	668	885	750	381	885	750	377	0	333	382	0	333
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.2	24.7	15.1	20.1	17.5	14.3	38.2	0.0	38.6	40.6	0.0	40.3
Incr Delay (d2), s/veh	0.1	18.9	0.1	1.1	0.4	0.0	7.0	0.0	12.5	0.9	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.0	28.4	2.8	2.0	9.3	0.9	9.3	0.0	9.5	1.6	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.3	43.6	15.3	21.2	17.8	14.4	45.2	0.0	51.1	41.5	0.0	40.9
LnGrp LOS	B	D	B	C	B	B	D	A	D	D	A	D
Approach Vol, veh/h		998			523			435			64	
Approach Delay, s/veh		38.1			18.2			48.1			41.3	
Approach LOS		D			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	48.6		20.3	13.0	48.6		13.2
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	15.0	45.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	3.5	15.0		14.3	4.7	41.7		4.0
Green Ext Time (p_c), s	0.1	2.6		1.0	0.2	1.9		0.2

Intersection Summary	
HCM 6th Ctrl Delay	35.2
HCM 6th LOS	D

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	76	371	64	310	742	102	134	225	151	132
v/c Ratio	0.31	0.52	0.10	0.60	0.86	0.13	0.55	0.55	0.59	0.39
Control Delay	15.5	28.2	1.2	17.7	38.4	4.1	50.4	11.1	51.1	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	28.2	1.2	17.7	38.4	4.1	50.4	11.1	51.1	10.8
Queue Length 50th (ft)	19	177	0	92	414	0	81	0	91	0
Queue Length 95th (ft)	51	320	7	189	#817	31	153	68	169	53
Internal Link Dist (ft)		1291			460		803		555	
Turn Bay Length (ft)	160		120	280		380				180
Base Capacity (vph)	362	861	790	540	861	790	370	504	372	430
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.43	0.08	0.57	0.86	0.13	0.36	0.45	0.41	0.31

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	341	59	285	683	94	79	44	207	78	61	121
Future Volume (veh/h)	70	341	59	285	683	94	79	44	207	78	61	121
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	371	64	310	742	102	86	48	158	85	66	93
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	755	640	551	821	696	150	84	204	116	90	180
Arrive On Green	0.09	0.40	0.40	0.13	0.44	0.44	0.13	0.13	0.13	0.11	0.11	0.11
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1163	649	1585	1024	795	1585
Grp Volume(v), veh/h	76	371	64	310	742	102	134	0	158	151	0	93
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1812	0	1585	1819	0	1585
Q Serve(g_s), s	2.0	13.0	2.2	8.7	32.4	3.4	6.1	0.0	8.5	7.0	0.0	4.9
Cycle Q Clear(g_c), s	2.0	13.0	2.2	8.7	32.4	3.4	6.1	0.0	8.5	7.0	0.0	4.9
Prop In Lane	1.00		1.00	1.00		1.00	0.64		1.00	0.56		1.00
Lane Grp Cap(c), veh/h	290	755	640	551	821	696	234	0	204	207	0	180
V/C Ratio(X)	0.26	0.49	0.10	0.56	0.90	0.15	0.57	0.00	0.77	0.73	0.00	0.52
Avail Cap(c_a), veh/h	432	958	812	630	958	812	413	0	361	414	0	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.3	19.5	16.3	13.1	22.9	14.8	36.0	0.0	37.0	37.6	0.0	36.7
Incr Delay (d2), s/veh	0.5	0.5	0.1	0.9	10.7	0.1	2.2	0.0	6.1	4.9	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.4	9.3	1.4	6.0	22.2	2.1	5.0	0.0	6.4	6.1	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.7	20.0	16.3	14.0	33.6	14.9	38.2	0.0	43.1	42.6	0.0	39.0
LnGrp LOS	B	B	B	B	C	B	D	A	D	D	A	D
Approach Vol, veh/h		511			1154			292			244	
Approach Delay, s/veh		19.2			26.7			40.9			41.2	
Approach LOS		B			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	43.5		16.3	16.1	40.5		15.0
Change Period (Y+Rc), s	5.0	5.0		5.0	5.0	5.0		5.0
Max Green Setting (Gmax), s	15.0	45.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	4.0	34.4		10.5	10.7	15.0		9.0
Green Ext Time (p_c), s	0.1	4.1		0.9	0.4	2.6		0.8

Intersection Summary			
HCM 6th Ctrl Delay			28.4
HCM 6th LOS			C