England Woods

Town of New Market, Maryland
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Traffic Impact Analysis

Prepared for:
The Verdant Companies
Mr. T. Wesley Poss
5310 Spectrum Drive, Suite C
Frederick, MD 21703
twposs@theverdantccompanies.com

The Traffic Group®

TABLE OF CONTENTS

APPENDICES

APPENDIX A – Scoping Agreement, Intersection Turning Movement Counts, and Aerial Photos

APPENDIX B – Intersection Capacity Analysis Worksheets

APPENDIX C – Trip Assignment for Approved Developments

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am duly licensed professional engineer under the laws of the State of Maryland, License No. 25547 Expiration Date: 09/25/2022.

Prepared by: Joseph Caloggero, P.E., PTOE, PTP
Qiang Tian, P.E., PTOE

JJC:amr
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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 determine the impact the proposed annexation of England Woods into the Town of New Market would have on the adjacent road system in the Town of New Market, Frederick County, Maryland. This development is located along the north side of Old National Pike generally between The Meadow at New Market Development (Morning Gate Lane)/Food Lion and Detrick Road and is proposed with 50 Detached and 500 Attached Senior Adult Housing Units.

Two full-movement access points are proposed along Old National Pike, and a connection is also proposed to the west to The Meadow at New Market Development via Welspring Way. However, for purposes of this Traffic Impact Analysis, all traffic from England Woods is proposed to use the access along Old National Pike. England Woods is expected to be built out within 7 years (2028).

Study Criteria/Methodology

The Scope of Work for this Traffic Impact Analysis was determined by Town of New Market and Frederick County and can be found in Appendix A. This Traffic Impact Analysis was prepared in accordance with Frederick County's Adequate Public Facilities Ordinance (APFO).

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 weekday morning and evening peak periods.*
- *Provide an allowance for regional traffic growth throughout the corridor.*
- *Obtain background development information from the Town of New Market and Frederick County.*
- *Prepare trip generation and trip distribution for each background development and the subject site.*
- *Undertake Intersection Capacity Analyses and Level of Service (LOS) evaluations for existing, background, and total traffic conditions using Critical Lane Volume (CLV) and Highway Capacity Manual (HCM) Methodologies.*

- *Prepare Queuing Analyses using the Maryland Department of Transportation State Highway Administration (MDOT SHA) 95th Percentile Methodology.*
- *Provide an overall assessment of traffic operations.*

Summary of Findings and Recommendations

The results of the Traffic Impact Analysis indicate that all study intersections are operating at acceptable levels of service and will continue to operate with acceptable levels of service during each of the peak periods using the CLV and HCM Methodologies based on future traffic conditions.

Additionally, all queues can be accommodated within the existing storage areas at all intersections during the morning and evening peak hours except for a few movements. Please note that the proposed subject site has little to no impact to these movements under total traffic conditions.

When adding the Casey Property and all of their road improvements as part of their conditions of approval, the road network will continue to operate at acceptable levels of service, and it would be our understanding that any queuing deficiencies will be mitigated by these improvements as well.

Please note that if this Traffic Impact Analysis was prepared for APFO approval in Frederick County, this development would be considered a Limited Impact Development and only contributions would be required of this developer in lieu of physical road improvements. A Limited Impact Development is a development that is projected (by the approved Traffic Impact Analysis) to lower the level of service of a roadway by no more than 50% on one level of service or 75 CLV Units (the maximum change in CLV by this development in the MD 75 Corridor is 59 at the intersection of MD 75 @ Old National Pike. However, for a limited impact development which will impact a roadway by between 25% and 50% of one level of service, the Planning Commission may disapprove the escrow account contribution request, if the Planning Commission determines that 50% or more of the escrow account funds, including the limited impact development applicant's proportionate share, have been accumulated in an escrow account for that road improvement. It is our understanding that the 50% escrow account funds have not been collected in the MD 75 Corridor.

Therefore, it is our opinion that England Woods meets the requirements of the Town of New Market for approval with the necessary pro rata contributions that will be proffered.

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

EXISTING TRAFFIC CONDITIONS

Site Information

England Woods is located along Old National Pike generally between The Meadow at New Market Development (Morning Gate Lane)/Food Lion and Detrick Road. A map showing the general area can be found on Figure 1 along with the study intersections, and a Site Concept Plan can be found on Figure 1A.

Figure 1. Location Map and Study Intersections

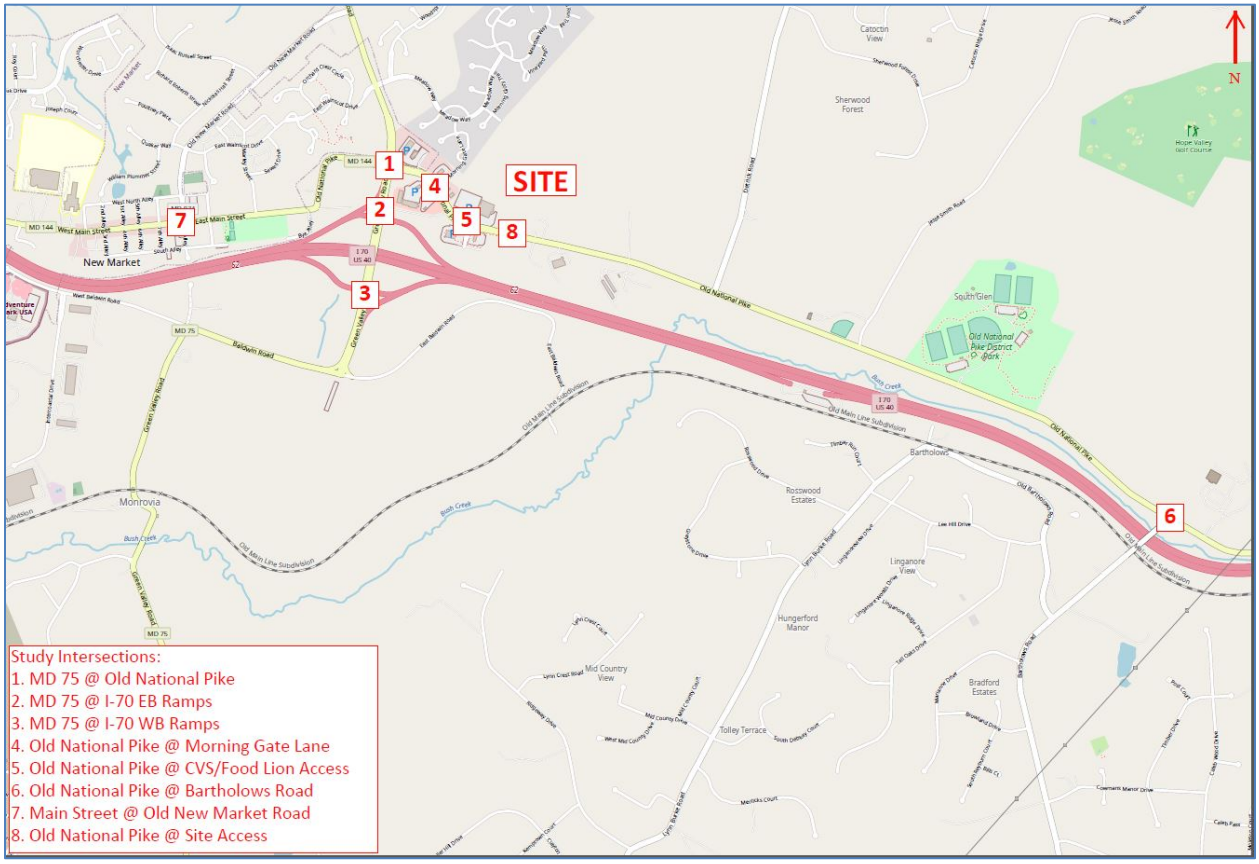
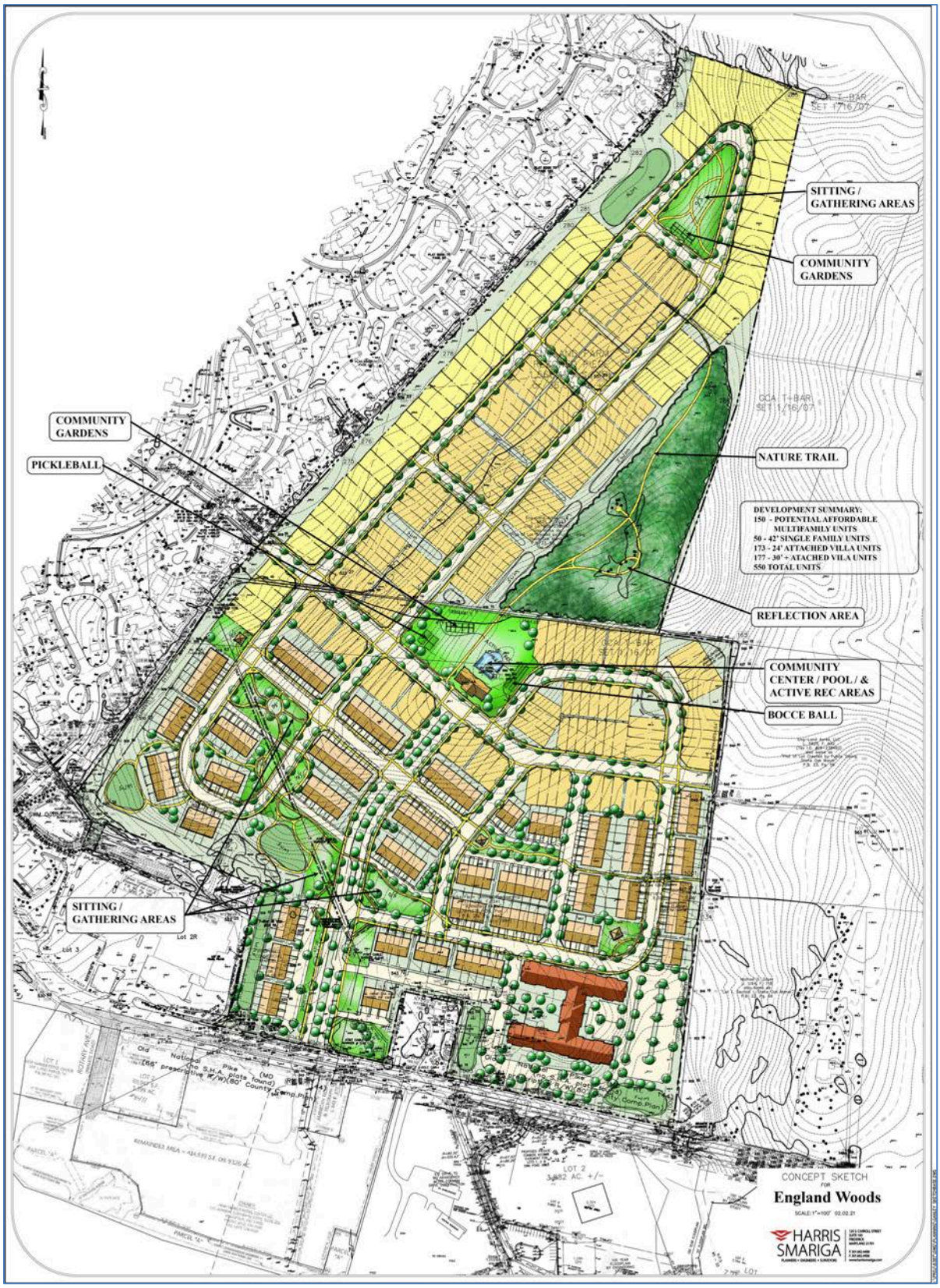


Figure 1A. Site Concept Plan



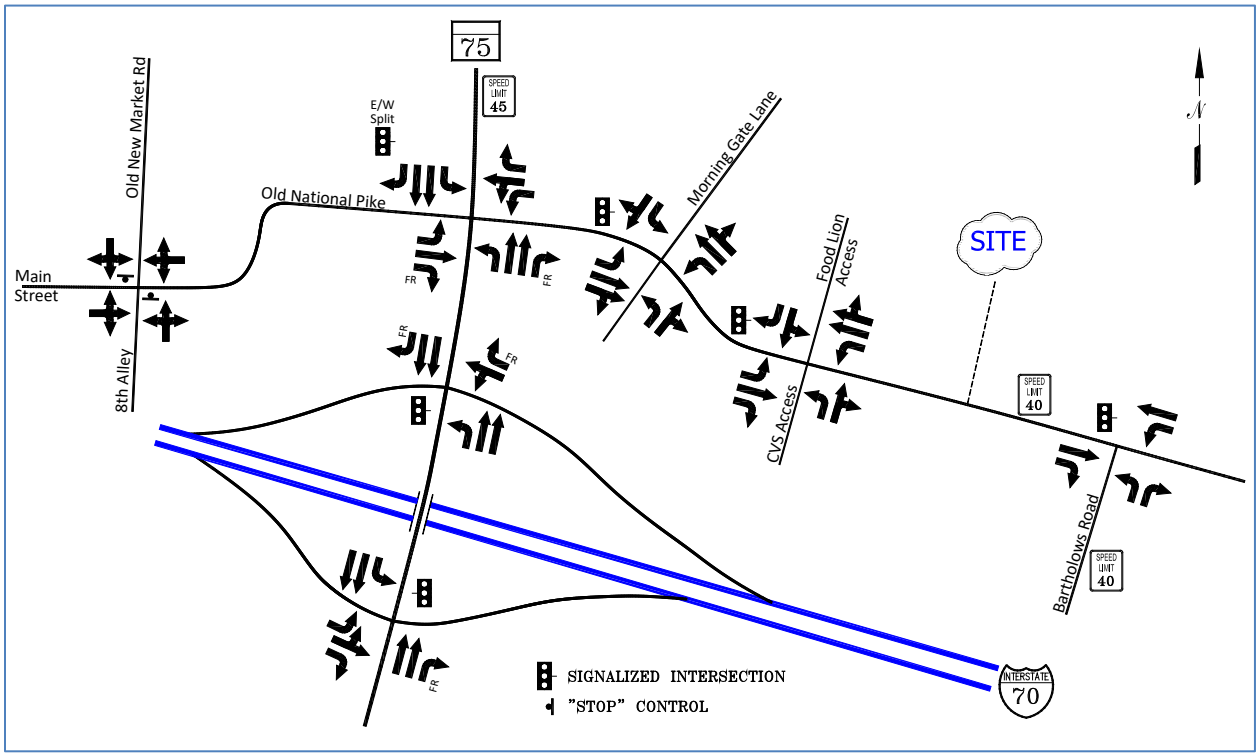
Study Area

Based on the Scoping Agreement, the following intersections were identified to be included as part of this analysis:

1. MD 75 @ Old National Pike (Traffic Signal);
2. MD 75 @ I-70 EB Ramps (Traffic Signal);
3. MD 75 @ I-70 WB Ramps (Traffic Signal);
4. Old National Pike @ Morning Gate Lane (Traffic Signal);
5. Old National Pike @ CVS/Food Lion Access (Traffic Signal);
6. Old National Pike @ Bartholows Road (Traffic Signal); and
7. Main Street @ Old New Market Road (Stop Controlled).

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

Figure 2. Existing Lane Use

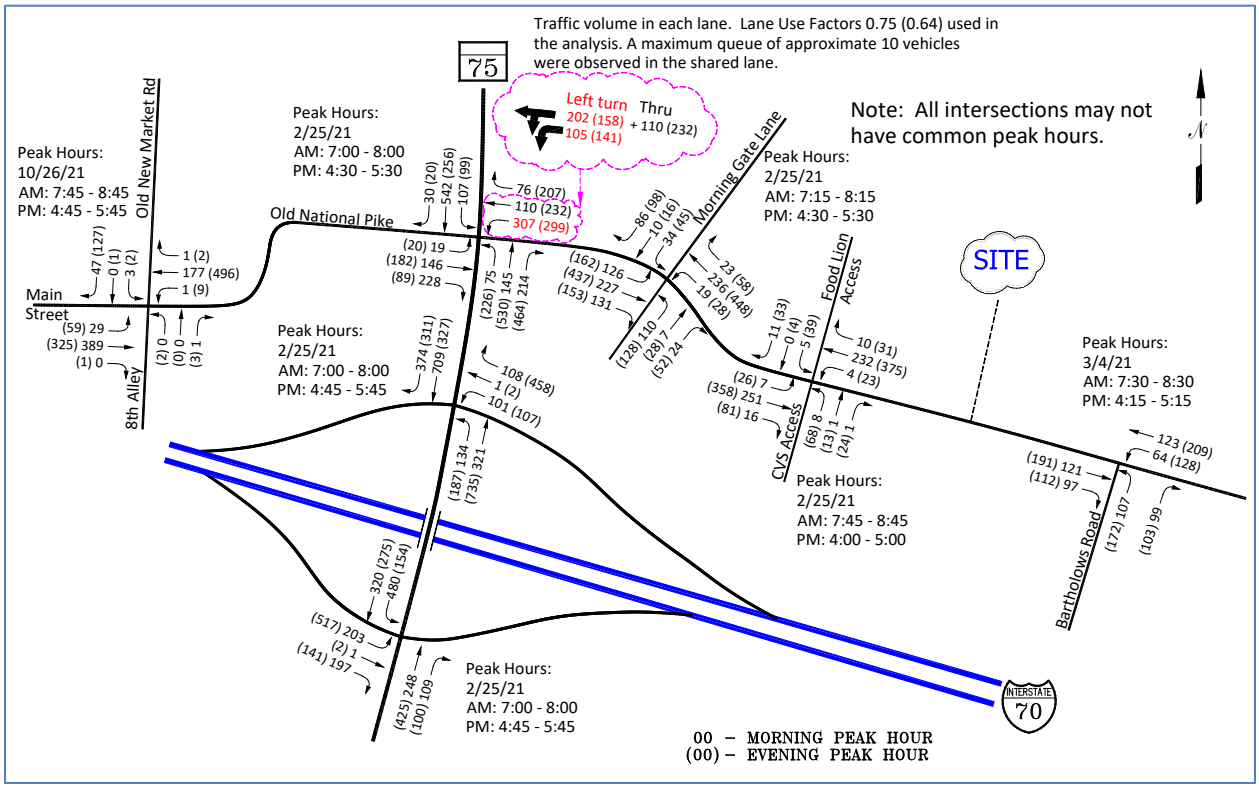


Traffic Volumes

The Traffic Group, Inc. collected intersection turning movement counts from 7–9 AM and 4–6 PM on a weekday at each of the key intersections in the study area on February 25, 2021, March 4, 2021, and October 26, 2021. Please note that the counts in February and March were conducted when Frederick County Students returned to the classrooms (February 16, 2021) as part of a hybrid plan. Some of these intersections were requested to be updated by the Town of New Market with an additional hour to check if the peak hours were captured. These intersections were updated using the video from February of 2021 and there were no changes in the peak hours. A summary of the existing peak hour traffic volumes can be found on Figure 3. Complete turning movement count worksheets are contained in Appendix A.

Please note that specific observations were made for the westbound Old National Pike to southbound MD 75 to determine how vehicles are stacking in each of the lanes to provide better results using CLV. As shown in Figure 3, most of the left turning traffic stacks within the left/through lane in the morning peak hour (66% of the left turns) and evening peak hour (53%) with a maximum observed queue of about 10 vehicles in the left/through lane.

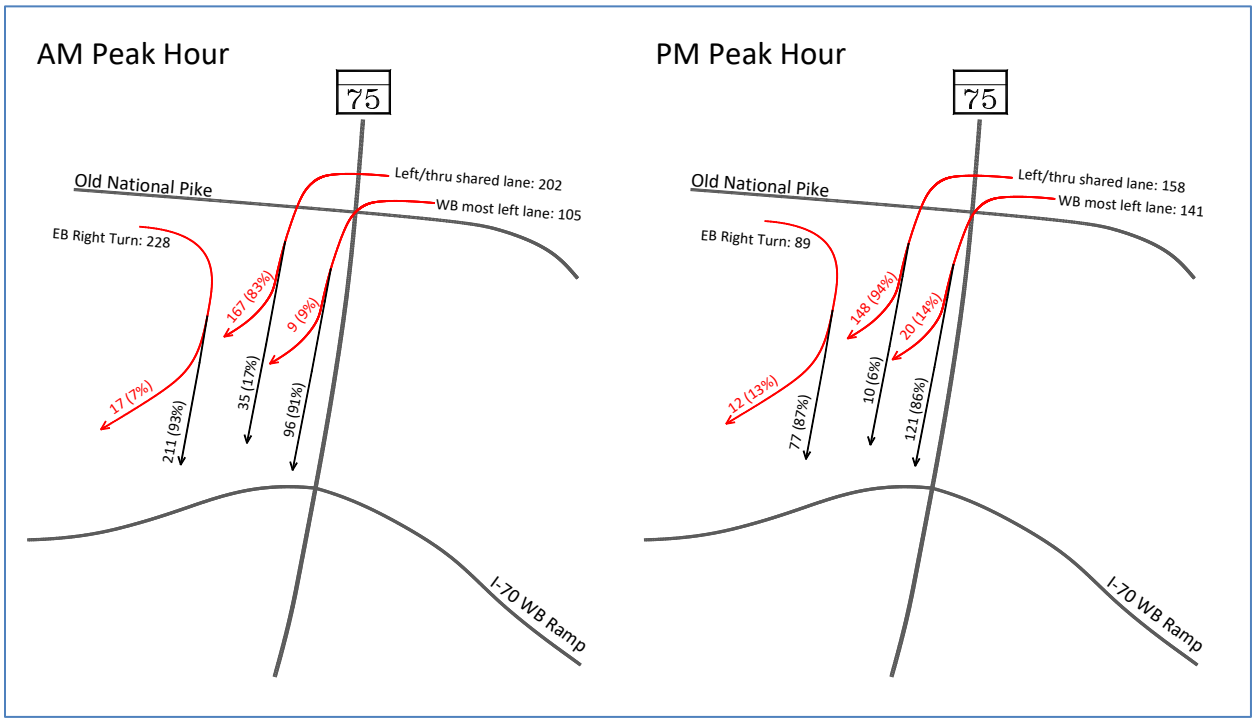
Figure 3. Existing Peak Hour Traffic Volumes



After these left turning vehicles made their turn, 9% of the left turn only lane and 83% of the left/through lane left turns turned right onto the I-70 WB ramp in the AM peak hour. These percentages increased in the PM peak hour to 14% and 94%, respectively.

Observations were also made for eastbound Old National Pike right turns to southbound MD 75. It is noted that 7% and 13% of these right turns continued onto the I-70 WB ramp. These volumes may have decreased due to the new Meadow Road interchange ramp to WB I-70. All of these observations are also shown on Figure 3A.

Figure 3A. Existing Traffic Patterns



Analysis of Existing Traffic Conditions

Intersection Capacity Analyses were undertaken at each of the study intersections based on existing traffic conditions using the MDOT SHA CLV and HCM Methodology. The results can be found in Table 3.

A review of Table 3 indicates that each intersection currently exhibits an acceptable LOS "A" based on CLV during the weekday morning and evening peak hours. A review of HCM Unsignalized Intersection Methodology results on Table 4 indicates that the intersection of Main Street @ Old New Market Road is presently operating with minor acceptable delays.

Queuing Analyses for all intersections were conducted based on the MDOT SHA's 95th Percentile Methodology, and the results can be found on Table 5. As shown, most all queues can be accommodated within the existing storage areas at all intersections during the morning and evening peak hours.

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

BACKGROUND TRAFFIC CONDITIONS

Design Year(s)

Full buildout of England Woods is expected by the year 2028 (7 years). To account for regional growth and COVID impacts, the following yearly growth rates were utilized:

Year 1. 4%
Year 2. 3%
Year 3. 1%
Year 4. 1%
Year 5. 1%
Year 6. 1%
Year 7. 1%

As per Frederick County, it was suggested to use a higher growth rate in the first 2 years for COVID impacts and then use a 1% per year growth factor since there is a lot of trips from background developments which is most of the growth in this region. The regional growth is shown on Figure 4, and the resulting 2028 base peak hour traffic volumes can be found on Figure 5.

Figure 4. Regional Traffic Growth

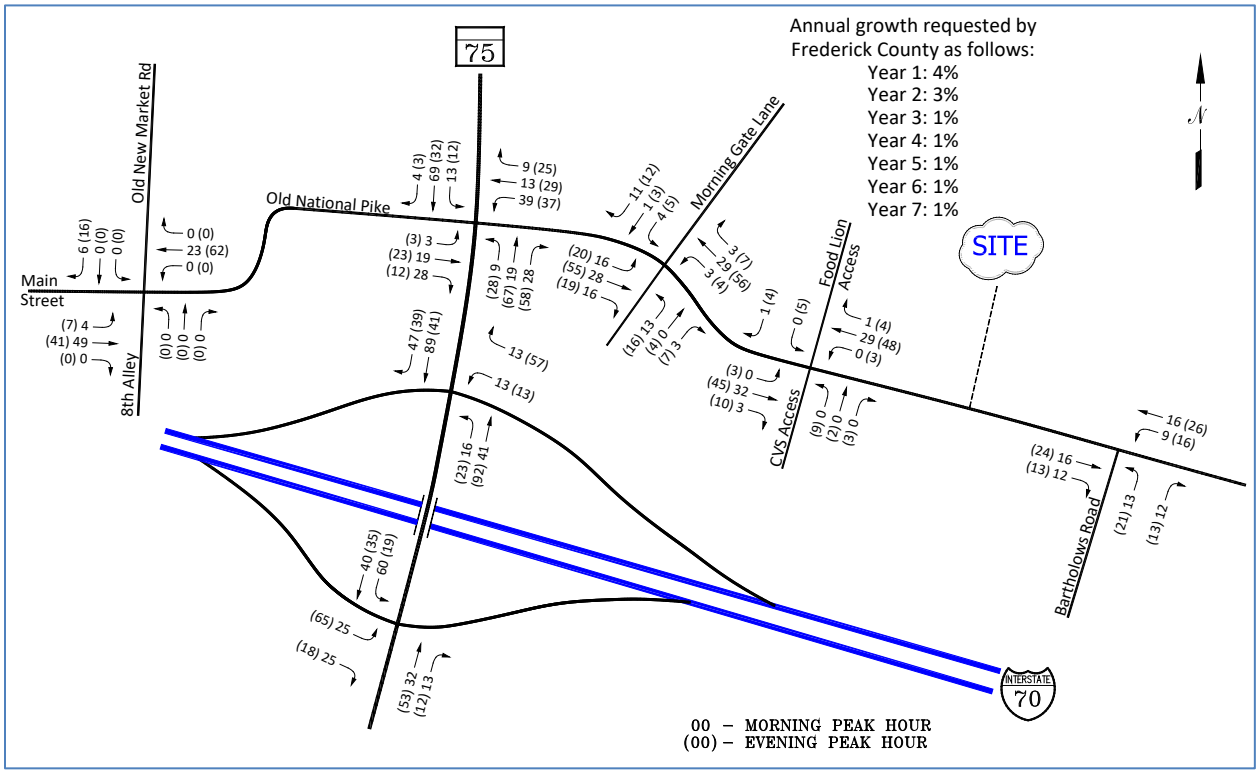
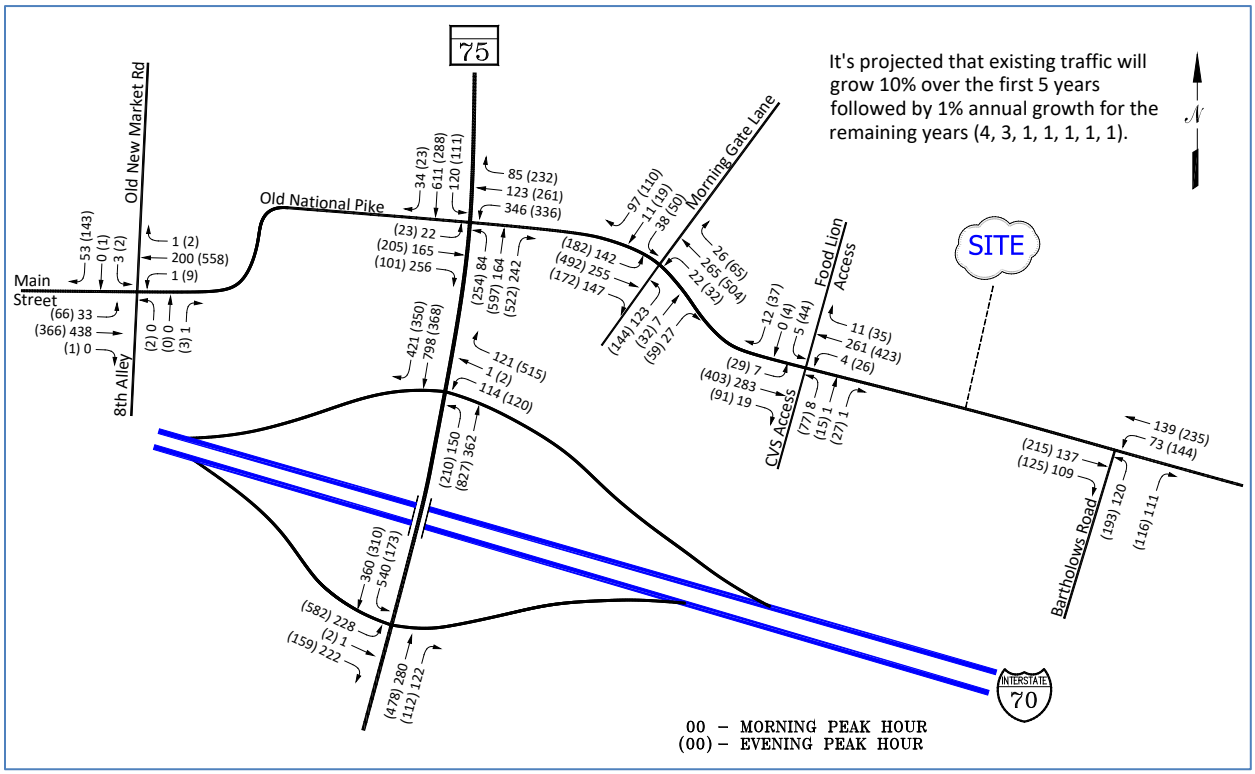


Figure 5. 2028 Base Peak Hour Traffic Volumes



Background Traffic

In addition to regional traffic growth, traffic projected to be generated by other approved developments in the vicinity of the subject site must also be taken into consideration. The Town of New Market and Frederick County provided four approved background developments to be included in the study. Previously approved Traffic Impact Studies were utilized to determine the number of trips projected to be generated. Table 1 details the trip generation for the background developments.

Table 1. Trip Generation Rates and Totals for Background Developments

TRIP GENERATION (USE ITE BY REGION)

1. Eaglehead on the Lakes

Traffic Impact Study Approved Units	Proposed Units		MORNING PEAK HOUR IN	MORNING PEAK HOUR OUT	MORNING PEAK HOUR TOTAL	EVENING PEAK HOUR IN	EVENING PEAK HOUR OUT	EVENING PEAK HOUR TOTAL
	Alpine	Trips/SFD (Region 4)	***0.18***	***0.53***	***0.71***	***0.53***	***0.31***	***0.84***
100	100	Single-Family Detached Units	18	53	71	53	31	84
	Hamptons West	Trips/SFD (Region 1&2)	***0.18***	***0.53***	***0.71***	***0.46***	***0.27***	***0.73***
300	217	Single-Family Detached Units	39	115	154	100	59	159
		Trips/Townhouse (Region 1&2)	***0.06***	***0.27***	***0.33***	***0.27***	***0.13***	***0.40***
150	189	Townhouse Units	11	51	62	51	25	76
		Total trips for Hamtons West	***50***	***166***	***216***	***151***	***84***	***235***
	Hamptons East	Trips/SFD (Region 1&2)	***0.18***	***0.53***	***0.71***	***0.46***	***0.27***	***0.73***
300	300	Single-Family Detached Units	54	159	213	138	81	219
		Trips/Townhouse (Region 1&2)	***0.06***	***0.27***	***0.33***	***0.27***	***0.13***	***0.40***
135	135	Townhouse Units	8	36	44	36	18	54
		Total trips for Hamtons East	***62***	***195***	***257***	***174***	***99***	***273***
	Town Center (11 SFH, 52 TH built)	Trips/SFD (Region 5)	***0.18***	***0.54***	***0.72***	***0.55***	***0.32***	***0.87***
300	136 (125 units remaining)							
		Single-Family Detached Units (11 units built)	23	68	91	69	40	109
		Trips/Townhouse (Region 5)	***0.05***	***0.27***	***0.32***	***0.26***	***0.13***	***0.39***
900	631 (579 units remaining)							
		Townhouse Units (52 units built)	29	156	185	151	75	226
400	418	Apartment Units	42	167	209	161	87	248
200,000	200,000	sq.ft. Shopping Center	142	90	232	496	516	1012
		Pass-by trips (PM-32%)				-159	-165	-324
		Net Shopping Center trips	142	90	232	337	351	688
	100,000 sf commercial will remain on the north side of MD 144; 100,000 sf commercial will be replaced by South Commercial							
		Total trips for Town Center	***236***	***481***	***717***	***718***	***553***	***1271***

Table 1. Trip Generation Rates and Totals for Background Developments, Continued

1. Eaglehead on the Lakes

Traffic Impact Study Approved Units	Proposed Units		MORNING PEAK HOUR IN	MORNING PEAK HOUR OUT	MORNING PEAK HOUR TOTAL	EVENING PEAK HOUR IN	EVENING PEAK HOUR OUT	EVENING PEAK HOUR TOTAL
	Westridge	Trips/SFD (Region 1&2)	*0.18*	*0.53*	*0.71*	*0.46*	*0.27*	*0.73*
300	300	Single-Family Detached Units	54	159	213	138	81	219
		Trips/Townhouse (Region 1&2)	*0.06*	*0.27*	*0.33*	*0.27*	*0.13*	*0.40*
100	100	Townhouse Units	6	27	33	27	13	40
		Total trips for Westridge	***60***	***186***	***246***	***165***	***94***	***259***
	Woodridge (12 SFH bı	Trips/SFD (Region 1&2)	*0.18*	*0.53*	*0.71*	*0.46*	*0.27*	*0.73*
100	150 (138 units remaining)							
		Single-Family Detached Units (12 units built)	25	73	98	63	37	100
		Trips/Townhouse (Region 1&2)	*0.06*	*0.27*	*0.33*	*0.27*	*0.13*	*0.40*
50	0	Townhouse Units	0	0	0	0	0	0
		Total trips for Woodridge	***25***	***73***	***98***	***63***	***37***	***100***
	Eaglestream	Trips/Townhouse (Region 1&2)	*0.06*	*0.27*	*0.33*	*0.27*	*0.13*	*0.40*
50	50	Townhouse Units	3	14	17	14	7	21
	Nightingale	Trips/SFD (Region 3)	*0.18*	*0.55*	*0.73*	*0.59*	*0.34*	*0.93*
50	50	Single-Family Detached Units	9	28	37	30	17	47
	Aspen	Trips/Townhouse (Region 1&2)	*0.06*	*0.27*	*0.33*	*0.27*	*0.13*	*0.40*
100	100	Townhouse Units	6	27	33	27	13	40
	Day Care - Finn Drive							
	11,000	SF Day Care Center	Built					

Table 1. Trip Generation Rates and Totals for Background Developments, Continued

Linganore Town Center - South Commercial

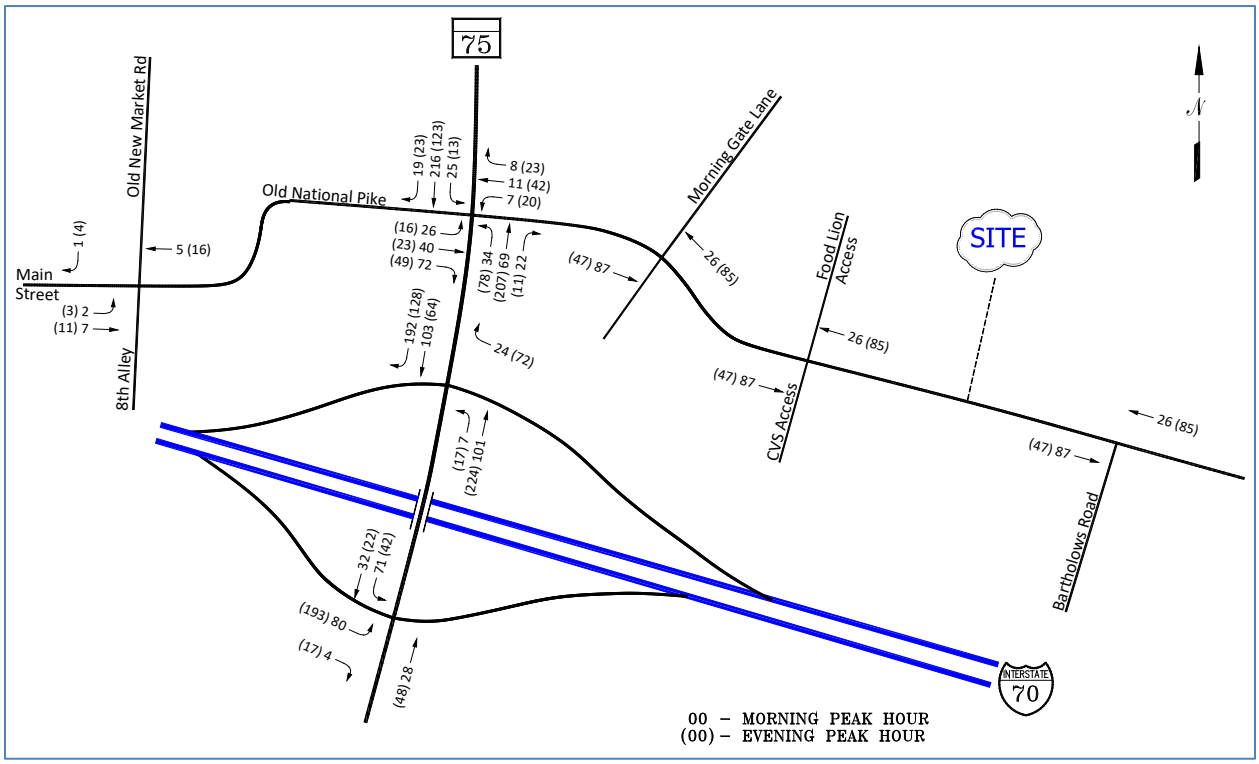
TRIP TOTALS	MORNING PEAK HOUR			EVENING PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Fast Food Rest. w/Drive-Thru (ksf, ITE-934)						
10,000 sq.ft.	205	197	402	170	157	327
Less Internal Trips	-8	-6	-14	-28	-55	-83
Pass-by Trips (49%, 50%, 50%)	-97	-94	-191	-71	-51	-122
New Trips	**100**	**97**	**197**	**71**	**51**	**122**
High Turnover (Sit-Down) Rest. (ksf, ITE-932)						
19,500 sq.ft.	107	87	194	118	73	191
Less Internal Trips	-4	-3	-7	-19	-26	-45
Pass-by Trips (0, 43%, 43%)	0	0	0	-43	-20	-63
New Trips	**103**	**84**	**187**	**56**	**27**	**83**
Convenience Market w/Gasoline Pumps (ksf, ITE-853)						
3,000 sq.ft.	61	61	122	74	74	148
Less Internal Trips	-5	-8	-13	-37	-22	-59
Pass-by Trips (63%)	-35	-33	-68	-23	-33	-56
New Trips	**21**	**20**	**41**	**14**	**19**	**33**
Drive-in Bank (ksf, ITE-912)						
8,500 sq.ft.	47	34	81	87	87	174
Less Internal Trips	-4	-4	-8	-44	-25	-69
Pass-by Trips (29%, 35%, 38%)	-12	-9	-21	-15	-22	-37
New Trips	**31**	**21**	**52**	**28**	**40**	**68**
Day Care Center (ksf, ITE-565)						
11,000 sq.ft.	64	57	121	57	65	122
Total **Pass-by Trips**	**144**	**136**	**280**	**152**	**126**	**278**
New Trips	**319**	**279**	**598**	**226**	**202**	**428**

Table 1. Trip Generation Rates and Totals for Background Developments, Continued

		MORNING PEAK HOUR			EVENING PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
2. Marley Commons							
8	Single-Family Detached Un	1	5	6	5	3	8
3. Royal Oaks							
31	Single-Family Detached Un	8	23	31	23	14	37
4. 105/113 W. Main Street	(Trips obtained from 105/113 W. Main Street TIS dated 12/21/2020, prepared by Wells + Associates)						
Existing/Approved Uses							
1	Single-Family Detached Un	0	1	1	1	0	1
3,712	sq. ft. Arts and Crafts Store	9	9	18	11	13	24
7,520	sq. ft. Tractor Supply Store	7	3	10	5	6	11
8	Mobile Home Units	1	2	3	2	2	4
	Total Trips	**17**	**15**	**32**	**19**	**21**	**40**
Proposed Uses							
1,540	sq. ft. Small Office Building	2	1	3	1	3	4
4,105	sq. ft. Restaurant	23	18	41	25	16	41
3,270	sq. ft. Restaurant	2	2	4	21	23	44
27	Townhouse Units	3	11	14	12	7	19
	Total Trips	**30**	**32**	**62**	**59**	**49**	**108**
	Net Difference	**13**	**17**	**30**	**40**	**28**	**68**

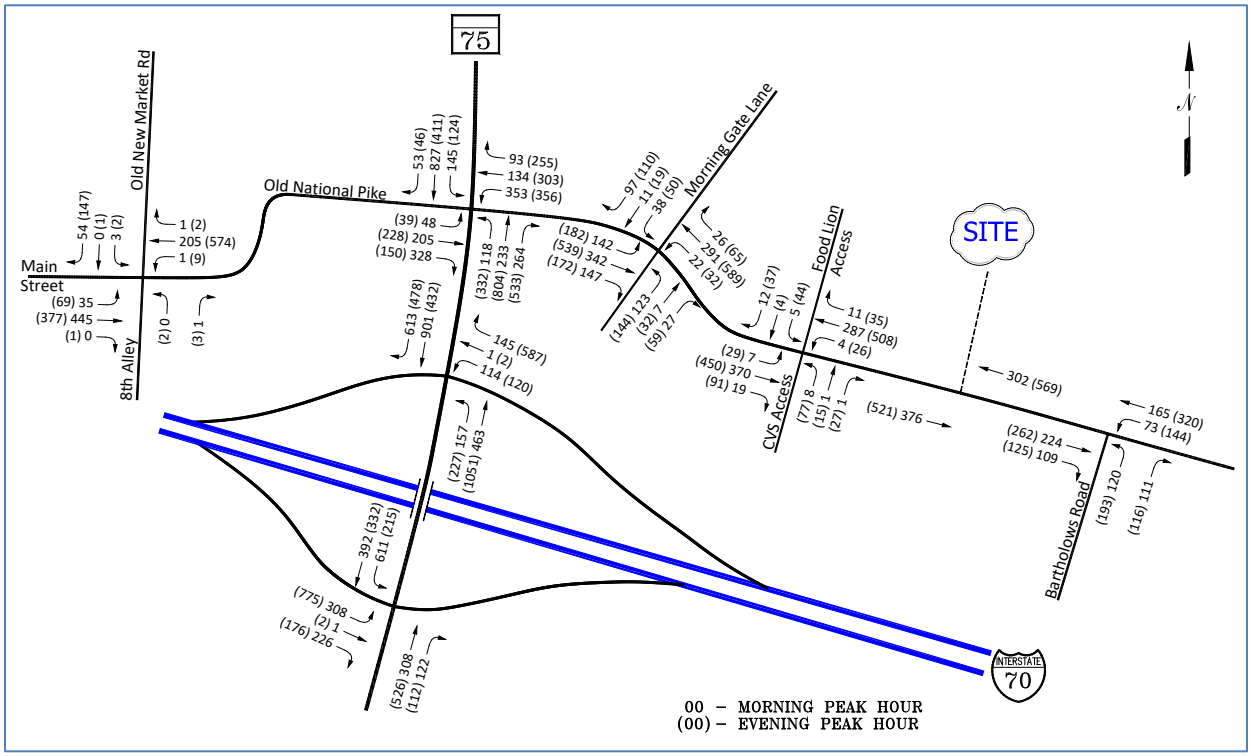
Trips from these background developments were assigned throughout the roadway network based on the previously approved Traffic Impact Studies. The trip assignment for all these developments is found on Figure 6 while the individual background development trip distribution can be found in Appendix C.

Figure 6. Trips Generated by Background Development



Combining the background trips from the approved developments and the 2028 base peak hour traffic volumes results in the 2028 background peak hour traffic volumes found on Figure 7.

Figure 7. 2028 Background Peak Hour Traffic Volumes



Analysis of Background Traffic Conditions

Intersection Capacity Analyses were undertaken at each of the study intersections based on background traffic conditions using the MDOT SHA CLV Methodology. The results can be found in Table 3.

A review of Table 3 indicates that each intersection is projected to exhibit acceptable LOS "C" or better based on CLV during the weekday morning and evening peak hours. A review of HCM Unsignalized Intersection Methodology results on Table 4 indicates that the intersection of Main Street @ Old New Market Road is projected to operate with minor acceptable delays.

Queuing Analyses for all intersections were conducted based on the MDOT SHA's 95th Percentile Methodology, and the results can be found in Table 5. As shown, the queuing for most of the movements can be maintained in the existing storage areas.

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

TOTAL TRAFFIC CONDITIONS

Site Information

England Woods is proposed with 50 Detached and 500 Attached Senior Adult Housing Units. Two full-movement access points are proposed along Old National Pike, and a connection is also proposed to the west to The Meadow at New Market Development via Welspring Way. However, for purposes of this Traffic Impact Analysis, all traffic from England Woods is proposed to use the access along Old National Pike.

Trip Generation/Distribution

ITE's Trip Generation Manual (10th Edition) was utilized to determine the number of trips projected to be generated by England Woods. The rates and equations used can be found in Table 2. Figure 8 details the trip distribution and trip assignment based on information provided by Frederick County. Adding the trips projected to be generated by the subject site to the 2028 background peak hour traffic volumes, results in the 2028 total peak hour traffic volumes as shown on Figure 9.

Table 2. Trip Generation Rates and Totals for Subject Site

TRIP GENERATION RATES

LAND USE	FORMULA	IN/OUT
Senior Adult Housing - Detached (ITE-251, Units)		
	Ln(Morning Trips) = 0.76 x Ln(Units) + 0.21	33/67
	Ln(Evening Trips) = 0.78 x Ln(Units) + 0.28	61/39
Senior Adult Housing - Attached (ITE-252, Units)		
	Morning Trips = 0.20 x Units - 0.13	35/65
	Evening Trips = 0.24 x Units + 2.26	55/45

TRIP GENERATION TOTALS

		Morning Peak Hour			Evening Peak Hour		
		In	Out	Total	In	Out	Total
England Woods							
50	Senior Adult Housing - Detached Units	8	16	24	17	11	28
500	Senior Adult Housing - Attached Units	35	65	100	67	55	122
	Total Trips	**43**	**81**	**124**	**84**	**66**	**150**

Note: Trip generation rates derived from ITE Trip Generation Manual, 10th Edition, 2017.

Figure 8. Trip Assignment for Subject Site

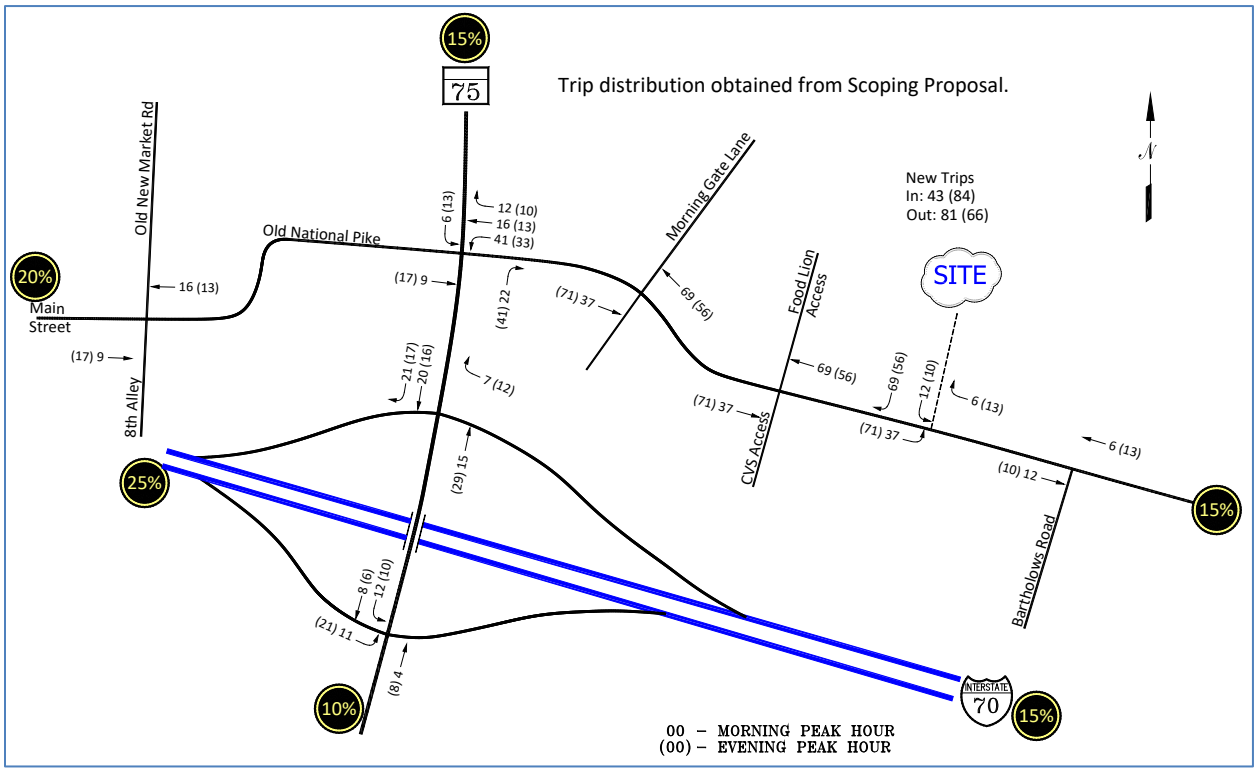
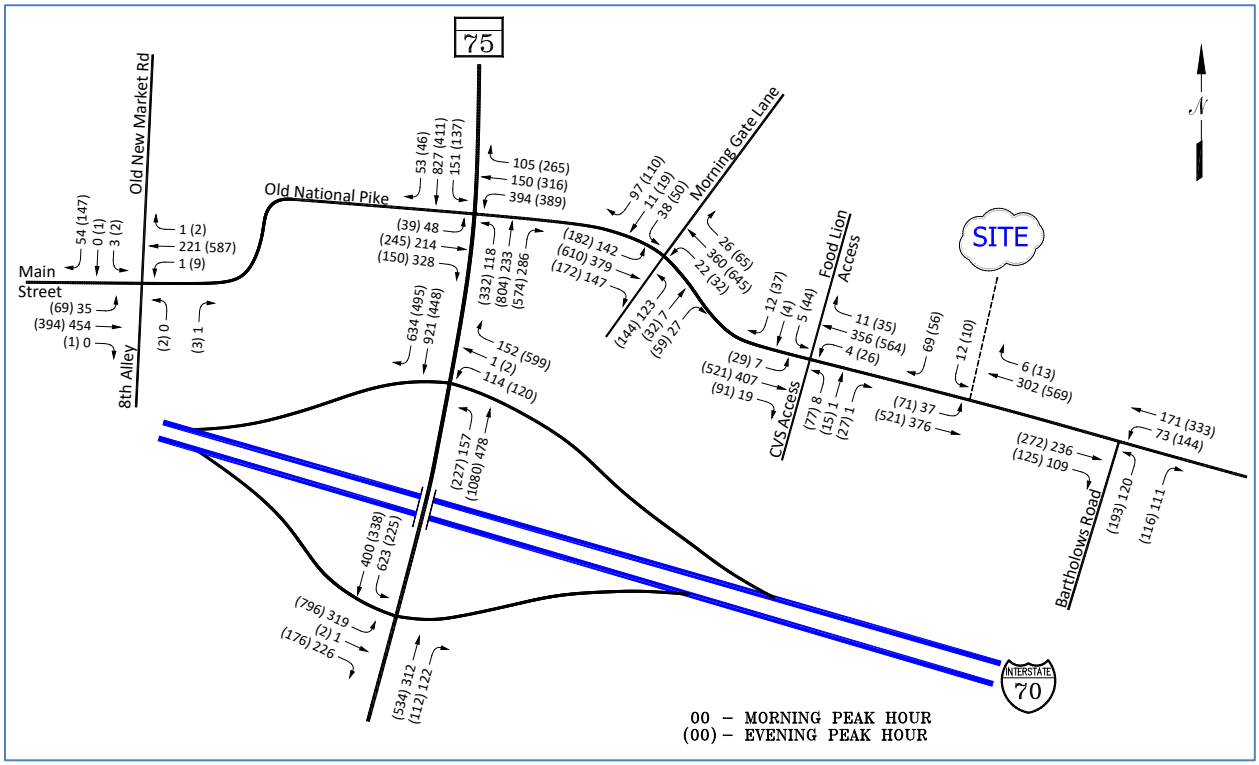


Figure 9. 2028 Total Peak Hour Traffic Volumes



Analysis of Total Traffic Conditions

Intersection Capacity Analyses were undertaken at each of the study intersections based on Total Traffic Conditions using the MDOT SHA CLV and HCM Methodologies. The results can be found in Tables 3 and 4, respectively.

A review of Table 3 indicates that each intersection is projected to continue to operate at acceptable LOS "C" or better based on CLV during the weekday morning and evening peak hours.

As shown in Table 4, the HCM Unsignalized Intersection methodology results indicate that the minor approaches at Main Street @ Old New Market Road and the site access @ Old National Pike is projected to operate with an acceptable delay. Please note that there is a second site access, but we created a worst case scenario showing just a single access.

Queuing Analyses for all intersections were conducted based on the MDOT SHA's 95th Percentile Methodology and the results can be found in Table 5. As shown, the queuing for most of the movements can be maintained in the existing storage areas. Also, the proposed subject site has a little to no impact on the queuing that exceeds the storage length. Therefore, no mitigation is suggested.

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

Table 3. Results of Intersection Capacity Analyses (CLV)

CLV Methodology	Existing Traffic	2028	
		Background Traffic	Total Traffic
Morning Peak Hour Traffic	**LOS / CLV**	**LOS / CLV**	**LOS / CLV**
1. MD 75 @ Old National Pike	A / 832	B / 1143	C / 1195
2. MD 75 @ I-70 WB Ramps	A / 626	A / 768	A / 779
3. MD 75 @ I-70 EB Ramps	A / 738	A / 965	A / 987
4. Old National Pike @ Morning Gate Lane	A / 474	A / 547	A / 585
5. Old National Pike @ CVS/Food Lion Access	A / 268	A / 387	A / 424
6. Old National Pike @ Bartholows Road	A / 292	A / 417	A / 429
7. Main Street @ Old New Market Rd	A / 469	A / 538	A / 547
Evening Peak Hour Traffic			
1. MD 75 @ Old National Pike	A / 913	C / 1216	C / 1275
2. MD 75 @ I-70 WB Ramps	A / 513	A / 700	A / 716
3. MD 75 @ I-70 EB Ramps	A / 699	A / 970	A / 998
4. Old National Pike @ Morning Gate Lane	A / 682	A / 815	A / 846
5. Old National Pike @ CVS/Food Lion Access	A / 492	A / 601	A / 672
6. Old National Pike @ Bartholows Road	A / 491	A / 599	A / 609
7. Main Street @ Old New Market Rd	A / 698	A / 806	A / 819

Table 4. Results of Intersection Capacity Analyses (HCM)

HCM Unsignalized Intersection Methodology	Existing Traffic	2028	
		Background Traffic	Total Traffic
Morning Peak Hour Traffic	**LOS / DELAY (sec.)**		
7. Main Street @ Old New Market Rd			
Eastbound Main Street left turn:	A / 7.7	A / 7.8	A / 7.9
Westbound Main Street left turn:	A / 8.3	A / 8.5	A / 8.6
Northbound 8th Alley approach:	B / 11.2	B / 11.7	B / 11.8
Southbound Old New Market Rd approach:	B / 10.3	B / 10.7	B / 10.8
8. Old National Pike & Site Access			
Eastbound Old National Pike left turn:			A / 8.0
Southbound Site Access left turn:	---	---	C / 16.3
Southbound Site Access right turn:	---	---	B / 10.7
Evening Peak Hour Traffic			
7. Main Street @ Old New Market Rd			
Eastbound Main Street left turn:	A / 8.6	A / 9.0	A / 9.0
Westbound Main Street left turn:	A / 8.0	A / 8.1	A / 8.2
Northbound 8th Alley approach:	C / 18.2	C / 23.0	C / 24.0
Southbound Old New Market Rd approach:	B / 13.8	C / 15.8	C / 16.1
8. Old National Pike & Site Access			
Eastbound Old National Pike left turn:			A / 9.1
Southbound Site Access left turn:	---	---	D / 30.3
Southbound Site Access right turn:	---	---	B / 13.5

Table 5. Results of Intersection Queuing Analysis

SHA Methodology	*Available storage length (ft.)*	Existing Traffic	2028	
			Background Traffic	Total Traffic
Morning Peak Hour Traffic		95th percentile queue length (ft)		
1. MD 75 @ Old National Pike				
EB (Old National Pike) left turn	*200*	50	100	100
EB (Old National Pike) thru	*1000+*	225	275	300
WB (Old National Pike) most left lane	*400*	175	200	200
WB (Old National Pike) left/thru shared lane	*680*	400	450	500
WB (Old National Pike) right turn	*680*	125	150	175
NB (MD 75) left turn	*275*	125	175	175
NB (Old National Pike) thru	*700*	125	200	200
SB (MD 75) left turn	*425*	175	225	225
SB (MD 75) thru	*1000+*	375	550	550
SB (MD 75) right turn	*300*	75	100	100
2. MD 75 @ I-70 WB Ramps				
WB (I-70 WB off Ramps) left/thru	*500+*	175	175	175
NB (MD 75) left turn	*225*	200	225	225
NB (MD 75) thru	*900*	250	325	350
SB (MD 75) thru	*700*	475	575	600
3. MD 75 @ I-70 EB Ramps				
EB (I-70 EB off Ramps) left/thru	*800+*	200	250	275
NB (MD 75) thru	*1000+*	200	250	250
SB (MD 75) left turn	*225*	575	713	727 [1/]
SB (MD 75) thru	*900*	250	300	300
4. Old National Pike @ Morning Gate Lane				
EB (Old National Pike) left turn	*150*	150	175	175 [1/]
EB (Old National Pike) thru/right	*680*	175	275	300
WB (Old National Pike) left turn	*125*	50	50	50
WB (Old National Pike) thru/right	*650*	175	200	225
NB (Shopping Ctr Acc) left turn	*200*	150	150	150
NB (Shopping Ctr Acc) thru/right	*200*	50	50	50
SB (Morning Gate Lane) left turn	*300*	50	75	75
SB (Morning Gate Lane) thru/right	*300*	125	150	150

Table 5. Results of Intersection Queuing Analyses, Continued

SHA Methodology	*Available storage length (ft.)*	Existing Traffic	2028	
			Background Traffic	Total Traffic
Morning Peak Hour Traffic		95th percentile queue length (ft)		
5. Old National Pike @ CVS/Food Lion Access				
EB (Old National Pike) left turn	*150*	25	25	25
EB (Old National Pike) thru	*650*	325	450	500
EB (Old National Pike) right turn	*650*	50	50	50
WB (Old National Pike) left turn	*150*	25	25	25
WB (Old National Pike) thru/right	*1000+*	200	225	275
NB (CVS Acc) left turn	*250*	25	25	25
NB (CVS Acc) thru/right	*250*	<25	<25	<25
SB (Food Lion Acc) left/thru	*150*	25	25	25
SB (Food Lion Acc) right turn	*150*	25	50	50
6. Old National Pike @ Bartholows Road				
EB (Old National Pike) thru	*1000+*	125	175	175
EB (Old National Pike) right turn	*400*	100	100	100
WB (Old National Pike) left turn	*225*	75	75	75
WB (Old National Pike) thru/right	*1000+*	125	150	150
NB (Bartholows Road) left turn	*1000+*	100	125	125
NB (Bartholows Road) right turn	*275*	100	100	100
7. Main Street & Old New Market Rd				
EB (Main Street) left turn	*500+*	50	50	50
WB (Main Street) left turn	*500+*	<25	<25	<25
NB (8th Alley) approach	*500+*	<25	<25	<25
SB (Old New Market Rd) approach	*500+*	75	100	100
8. Old National Pike & Site Access				
EB (Old National Pike) left turn	*new*			75
SB (Site Access) left turn	*new*			25
SB (Site Access) right turn	*new*			100

1. Subject site has negligible impact.

Table 5. Results of Intersection Queuing Analyses, Continued

SHA Methodology	*Available storage length (ft.)*	Existing Traffic	2028	
			Background Traffic	Total Traffic
Evening Peak Hour Traffic		95th percentile queue length (ft)		
1. MD 75 @ Old National Pike				
EB (Old National Pike) left turn	*200*	50	75	75
EB (Old National Pike) thru	*1000+*	250	300	325
WB (Old National Pike) most left lane	*400*	275	325	325
WB (Old National Pike) left/thru shared lane	*680*	425	500	550
WB (Old National Pike) right turn	*680*	275	350	350
NB (MD 75) left turn	*275*	300	425	425 [1/]
NB (Old National Pike) thru	*700*	375	525	525
SB (MD 75) left turn	*425*	175	200	200
SB (MD 75) thru	*1000+*	200	300	300
SB (MD 75) right turn	*300*	50	100	100
2. MD 75 @ I-70 WB Ramps				
WB (I-70 WB off Ramps) left/thru	*500+*	175	200	200
NB (MD 75) left turn	*225*	275	300	300 [1/]
NB (MD 75) thru	*900*	500	675	675
SB (MD 75) thru	*700*	250	325	325
3. MD 75 @ I-70 EB Ramps				
EB (I-70 EB off Ramps) left/thru	*800+*	400	550	575
NB (MD 75) thru	*1000+*	300	375	375
SB (MD 75) left turn	*225*	225	300	300 [1/]
SB (MD 75) thru	*900*	225	250	250
4. Old National Pike @ Morning Gate Lane				
EB (Old National Pike) left turn	*150*	200	200	200 [1/]
EB (Old National Pike) thru/right	*680*	325	375	400
WB (Old National Pike) left turn	*125*	50	50	50
WB (Old National Pike) thru/right	*650*	275	350	375
NB (Shopping Ctr Acc) left turn	*200*	150	175	175
NB (Shopping Ctr Acc) thru/right	*200*	125	125	125
SB (Morning Gate Lane) left turn	*300*	75	75	75
SB (Morning Gate Lane) thru/right	*300*	150	150	150

Table 5. Results of Intersection Queuing Analyses, Continued

SHA Methodology	*Available storage length (ft.)*	Existing Traffic	2028	
			Background Traffic	Total Traffic
Evening Peak Hour Traffic		95th percentile queue length (ft)		
5. Old National Pike @ CVS/Food Lion Access				
EB (Old National Pike) left turn	*150*	50	75	75
EB (Old National Pike) thru	*650*	450	550	600
EB (Old National Pike) right turn	*650*	150	150	150
WB (Old National Pike) left turn	*150*	50	50	50
WB (Old National Pike) thru/right	*1000+*	300	375	425
NB (CVS Acc) left turn	*250*	125	125	125
NB (CVS Acc) thru/right	*250*	75	100	100
SB (Food Lion Acc) left/thru	*150*	100	100	100
SB (Food Lion Acc) right turn	*150*	75	75	75
6. Old National Pike @ Bartholows Road				
EB (Old National Pike) thru	*1000+*	150	200	200
EB (Old National Pike) right turn	*400*	100	125	125
WB (Old National Pike) left turn	*225*	125	125	125
WB (Old National Pike) thru/right	*1000+*	175	225	250
NB (Bartholows Road) left turn	*1000+*	150	150	150
NB (Bartholows Road) right turn	*275*	100	100	100
7. Main Street & Old New Market Rd				
EB (Main Street) left turn	*500+*	100	100	100
WB (Main Street) left turn	*500+*	25	25	25
NB (8th Alley) approach	*500+*	25	25	25
SB (Old New Market Rd) approach	*500+*	150	175	175
8. Old National Pike & Site Access				
EB (Old National Pike) left turn	*new*			100
SB (Site Access) left turn	*new*			25
SB (Site Access) right turn	*new*			100

1. Subject site has negligible impact.

TOTAL TRAFFIC CONDITIONS WITH CASEY PROPERTY

Site Information

The Casey Property was reviewed and discussed with Frederick County to determine if this development should be included as an approved background development. However, due to some of the infrastructure conditions within the Letter of Understanding (see Appendix C), The Casey Property was assumed to be constructed after the development of England Woods. However, it was determined to provide further analysis to include this development to obtain a better understanding of the future road network.

The Casey Property Traffic Impact Analysis was approved with 680 Single Family Detached Units, 337 Condominium and Townhouse Units, and a 10,000 SF Shopping Center. A full-movement access is proposed along MD 75 North of Old National Pike. This development was broken down into 3 separate phases to include the following road improvements in this analysis:

Phase 1 – 500 Residential Units – Construct an additional lane on southbound MD 75 to westbound I-70 slip ramp prior to the 100th Building Permit.

Phase 2 – 501 to 800 Residential Units – Construct an additional westbound left turn lane (dual lefts) along MD 144 (Old National Pike) approaching MD 75 prior to the 600th Building Permit.

Phase 3 – 801 to 1,010 Residential Units plus all Commercial – Construct an additional eastbound through lane along MD 144 (Old National Pike) approaching MD 75 prior to the 900th Building Permit. Please note that there is also a condition to provide a Divergent Diamond Interchange to further assist with operations.

Trip Generation/Distribution

The Traffic Impact Analysis for the Casey Property dated March 28, 2014, was utilized to determine the number of trips projected to be generated by England Woods. The trips can be found in Table 6. Figure 10 details the trip distribution and trip assignment based on the Traffic Impact Analysis. Information from the Casey Property Traffic Impact Analysis can be found in Appendix C. Adding the trips projected to be generated by the Casey Property to the 2028 total peak hour traffic volumes, results in the 2028 total peak hour traffic volumes with the Casey Property as shown on Figure 11.

Table 6. Trip Generation for Casey Property

		MORNING PEAK HOUR			EVENING PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Casey Property							
680	Single-Family Detached Units	122	364	486	372	218	590
337	Condominium/Townhouse Units	23	113	136	109	54	163
10,000	sq. ft. Shopping Center	24	14	38	61	67	128
	Less 25% Pass-by Trips	-6	-4	-10	-15	-17	-32
		18	11	28	46	50	96
	Total Trips	**163**	**488**	**650**	**527**	**322**	**849**

Note: Trips obtained from TIA for Casey Property dated 7/17/13, prepared by Wells + Associates, Inc.

Figure 10. Trip Assignment for Casey Property

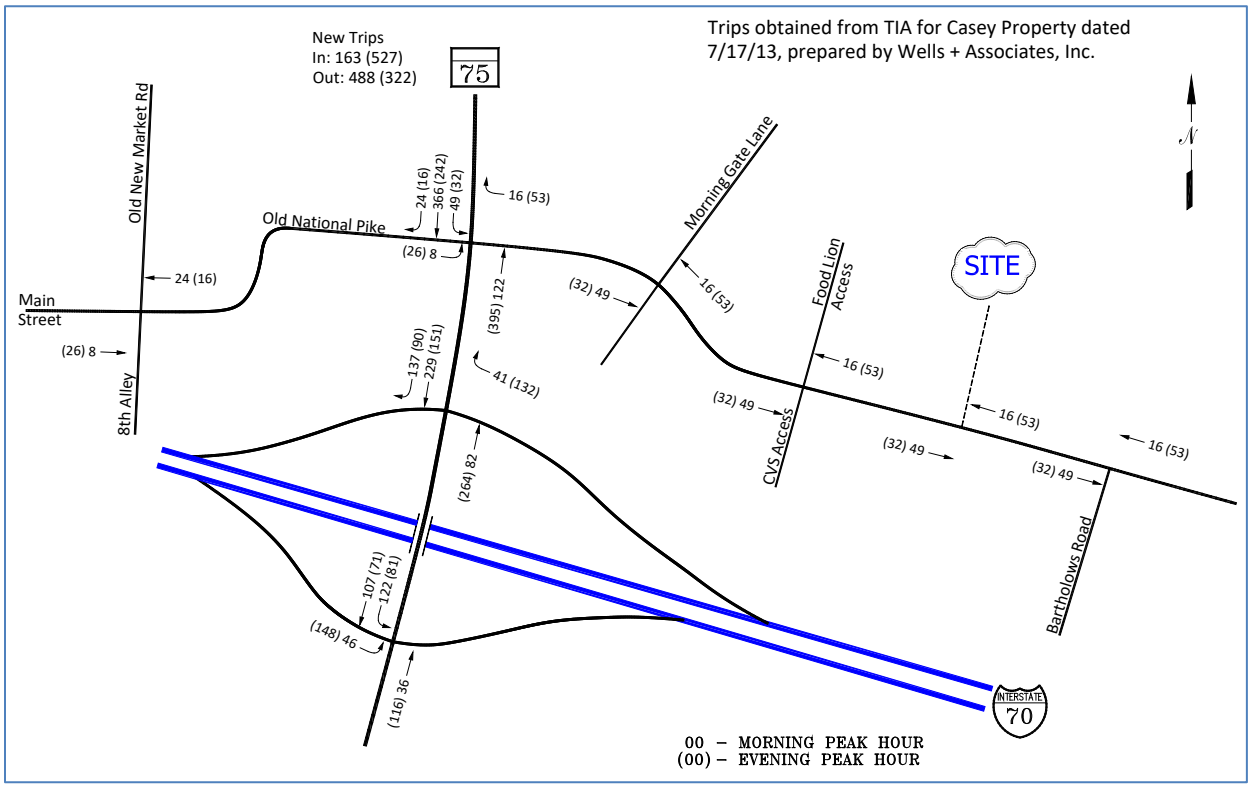
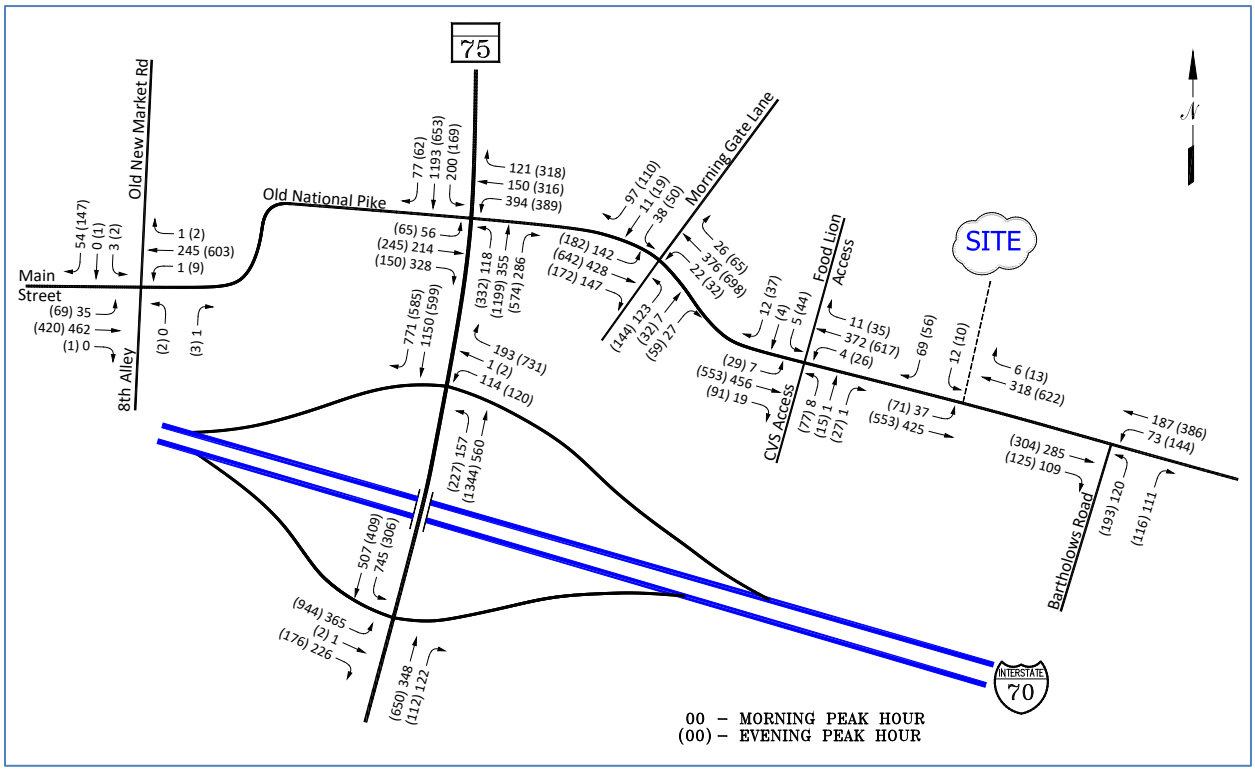


Figure 11. 2028 Total Peak Hour Traffic Volumes with Casey Property



Analysis of Total Traffic Conditions with the Casey Property

Intersection Capacity Analyses were undertaken at each of the study intersections based on total traffic conditions with the Casey Property based on the Phased Improvements (see Figure 12) as previously discussed using the MDOT SHA CLV and HCM Methodologies. The results can be found in Table 7.

A review of Table 7 indicates that each intersection is projected to continue to operate at acceptable LOS "C" or better based on CLV during the weekday morning and evening peak hours except for MD 75 @ Old National Pike. This intersection is projected to operate at LOS "E" with just the Phase 1 improvement of an additional lane on southbound MD 75 to westbound I-70 slip ramp during the PM Peak Hour. With the Phase 2 improvement of an additional westbound left turn lane (dual lefts) along MD 144 (Old National Pike) approaching MD 75, this intersection is improved to acceptable LOS "E." With the Phase 3 improvement of an additional eastbound through lane along MD 144 (Old National Pike) approaching MD 75, this intersection is improved to a better LOS "C."

Please note that since the level of service is acceptable for the MD 75 @ I-70 Interchange Ramps, further analysis was not provided for the Divergent Diamond Interchange which would create better levels of service.

As shown in Table 7, the HCM Unsignalized Intersection methodology results indicate that the minor approaches at the site access @ Old National Pike is projected to operate with an acceptable delay. Please note that there is a second site access, but we created a worse-case scenario showing just a single access.

Queuing Analyses for all intersections were conducted based on the MDOT SHA's 95th Percentile Methodology and the results can be found in Table 8. As shown, the queuing for most of the movements can be maintained in the existing storage areas. Future improvements as previously discussed, will assist with queuing at most of these locations.

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

Figure 12. Future Lane Use

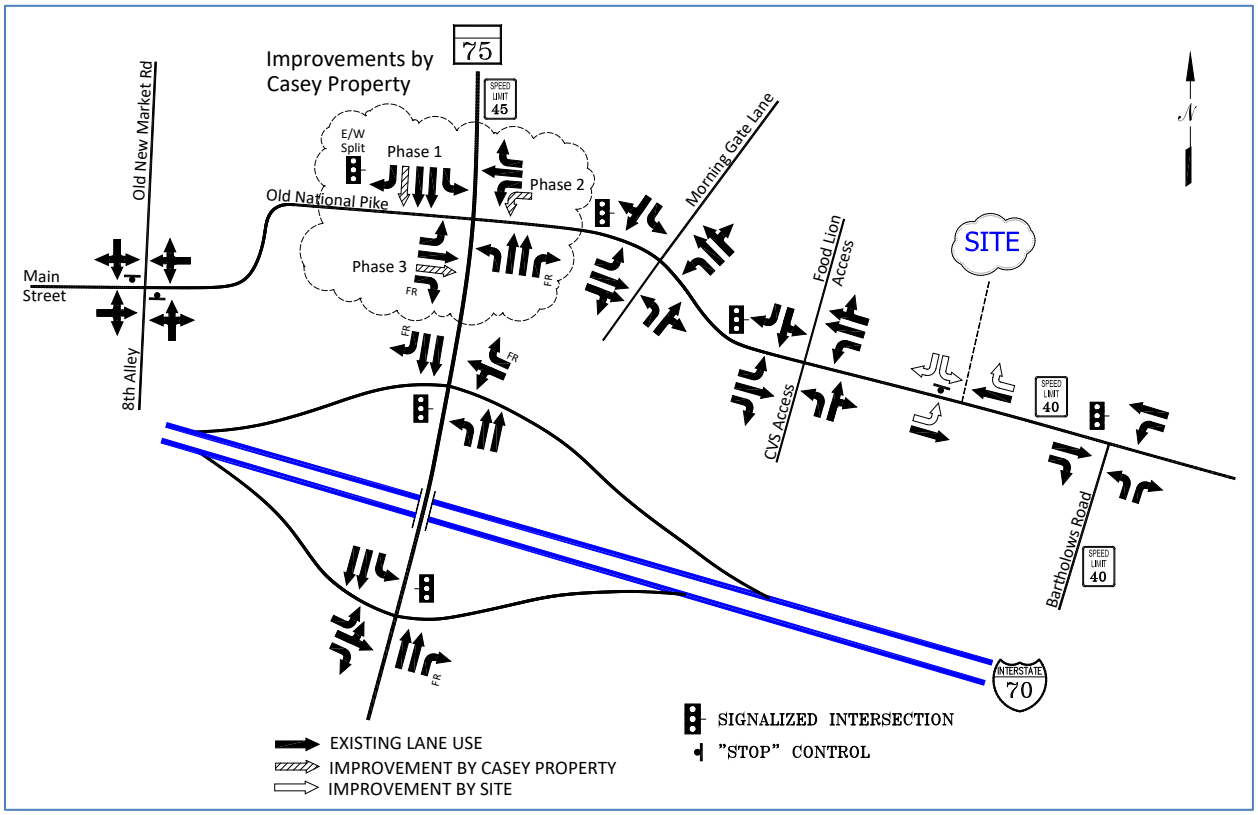


Table 7. Results of Intersection Capacity Analyses (with Casey Property)

CLV Methodology	2028	
	Morning Peak Hour Traffic	Evening Peak Hour Traffic
Total Traffic w. Casey Property	**LOS / CLV**	**LOS / CLV**
1. MD 75 @ Old National Pike		
w. Phase 1 Improvement	C / 1217	E / 1524
w. Phases 1 & 2 Improvement	B / 1105	C / 1275
w. Phases 1, 2, & 3 Improvement	B / 1009	C / 1165
2. MD 75 @ I-70 WB Ramps	A / 905	A / 861
3. MD 75 @ I-70 EB Ramps	C / 1156	C / 1232
4. Old National Pike @ Morning Gate Lane	A / 594	A / 875
5. Old National Pike @ CVS/Food Lion Access	A / 473	A / 704
6. Old National Pike @ Bartholows Road	A / 478	A / 641
7. Main Street @ Old New Market Rd	A / 555	A / 835

HCM Unsignalized Intersection Methodology	2028	
	Morning Peak Hour Traffic	Evening Peak Hour Traffic
Total Traffic w. Casey Property	**LOS / DELAY (sec.)**	**LOS / DELAY (sec.)**
7. Main Street @ Old New Market Rd		
Eastbound Main Street left turn:	A / 8.0	A / 9.1
Westbound Main Street left turn:	A / 8.6	A / 8.2
Northbound 8th Alley approach:	B / 11.9	D / 25.5
Southbound Old New Market Rd approach:	B / 11.1	C / 16.5
8. Old National Pike & Site Access		
Eastbound Old National Pike left turn:	A / 8.1	A / 9.4
Southbound Site Access left turn:	C / 17.4	D / 34.2
Southbound Site Access right turn:	B / 10.8	B / 14.3

Table 8. Results of Intersection Queuing Analysis (with Casey Property)

SHA Methodology	*Available storage length (ft.)*	Morning Peak Hour Traffic	Evening Peak Hour Traffic
2028 Total Traffic w. Casey Property		**95th percentile queue length (ft)**	
1. MD 75 @ Old National Pike		w. Casey Property Improvements	
EB (Old National Pike) left turn	*200*	100	125
EB (Old National Pike) thru	*1000+*	175	200
WB (Old National Pike) left turn	*400*	375	325
WB (Old National Pike) thru	*680*	225	400
WB (Old National Pike) right turn	*680*	200	400
NB (MD 75) left turn	*275*	175	425 1/
NB (Old National Pike) thru	*700*	275	769 1/
SB (MD 75) left turn	*425*	275	250
SB (MD 75) thru	*1000+*	575	350
SB (MD 75) right turn	*300*	125	125
2. MD 75 @ I-70 WB Ramps			
WB (I-70 WB off Ramps) left/thru	*500+*	175	200
NB (MD 75) left turn	*225*	225	300 1/
NB (MD 75) thru	*900*	400	862
SB (MD 75) thru	*700*	738 1/	425
3. MD 75 @ I-70 EB Ramps			
EB (I-70 EB off Ramps) left/thru	*800+*	300	650
NB (MD 75) thru	*1000+*	275	450
SB (MD 75) left turn	*225*	869 1/	400 1/
SB (MD 75) thru	*900*	350	300
4. Old National Pike @ Morning Gate Lane			
EB (Old National Pike) left turn	*150*	175 1/	200 1/
EB (Old National Pike) thru/right	*680*	325	425
WB (Old National Pike) left turn	*125*	50	50
WB (Old National Pike) thru/right	*650*	250	400
NB (Shopping Ctr Acc) left turn	*200*	150	175
NB (Shopping Ctr Acc) thru/right	*200*	50	125
SB (Morning Gate Lane) left turn	*300*	75	75
SB (Morning Gate Lane) thru/right	*300*	150	150

Table 8. Results of Intersection Queuing Analysis (with Casey Property), Continued

SHA Methodology	*Available storage length (ft.)*	Morning Peak Hour Traffic	Evening Peak Hour Traffic
2028 Total Traffic w. Casey Property		**95th percentile queue length (ft)**	
5. Old National Pike @ CVS/Food Lion Access			
EB (Old National Pike) left turn	*150*	25	75
EB (Old National Pike) thru	*650*	550	650
EB (Old National Pike) right turn	*650*	50	150
WB (Old National Pike) left turn	*150*	25	50
WB (Old National Pike) thru/right	*1000+*	300	450
NB (CVS Acc) left turn	*250*	25	125
NB (CVS Acc) thru/right	*250*	<25	100
SB (Food Lion Acc) left/thru	*150*	25	100
SB (Food Lion Acc) right turn	*150*	50	75
6. Old National Pike @ Bartholows Road			
EB (Old National Pike) thru	*1000+*	200	225
EB (Old National Pike) right turn	*400*	100	125
WB (Old National Pike) left turn	*225*	75	125
WB (Old National Pike) thru/right	*1000+*	150	275
NB (Bartholows Road) left turn	*1000+*	125	150
NB (Bartholows Road) right turn	*275*	100	100
7. Main Street & Old New Market Rd			
EB (Main Street) left turn	*500+*	50	100
WB (Main Street) left turn	*500+*	<25	25
NB (8th Alley) approach	*500+*	<25	25
SB (Old New Market Rd) approach	*500+*	100	175
8. Old National Pike & Site Access			
EB (Old National Pike) left turn	*new*	75	100
SB (Site Access) left turn	*new*	25	25
SB (Site Access) right turn	*new*	100	100

1. Subject site has negligible impact.

RESULTS, RECOMMENDATIONS, AND CONCLUSIONS

Study Purpose

The Traffic Group, Inc. has prepared this Traffic Impact Analysis to determine the impact the proposed annexation of England Woods into the Town of New Market would have on the adjacent road system in the Town of New Market, Frederick County, Maryland. This development is located along the north side of Old National Pike generally between The Meadow at New Market Development (Morning Gate Lane)/Food Lion and Detrick Road and is proposed with 50 Detached and 500 Attached Senior Adult Housing Units.

Two full-movement access points are proposed along Old National Pike, and a connection is also proposed to the west to The Meadow at New Market Development via Welspring Way. However, for purposes of this Traffic Impact Analysis, all traffic from England Woods is proposed to use the access along Old National Pike. England Woods is expected to be built out within 7 years (2028).

Study Criteria/Methodology

The Scope of Work for this Traffic Impact Analysis was determined by Town of New Market and Frederick County and can be found in Appendix A. This Traffic Impact Analysis was prepared in accordance with Frederick County's APFO.

Summary of Findings and Recommendations

The results of the Traffic Impact Analysis indicate that all study intersections are operating at acceptable levels of service and will continue to operate with acceptable levels of service during each of the peak periods using the CLV and HCM Methodologies based on future traffic conditions.

Additionally, all queues can be accommodated within the existing storage areas at all intersections during the morning and evening peak hours except for a few movements. Please note that the proposed subject site has little to no impact to these movements under total traffic conditions.

When adding the Casey Property and all of their road improvements as part of their conditions of approval, the road network will continue to operate at acceptable levels of service, and it would be our understanding that any queuing deficiencies will be mitigated by these improvements as well.

Please note that if this Traffic Impact Analysis was prepared for APFO approval in Frederick County, this development would be considered a Limited Impact Development and only contributions would be required of this developer in lieu of physical road improvements. A Limited Impact Development is a development that is projected (by the approved Traffic Impact Analysis) to lower the level of service of a roadway by no more than 50% on one level of service or 75 CLV Units (the maximum change in CLV by this development in the MD 75 Corridor is 59 at the intersection of MD 75 @ Old National Pike. However, for a limited impact development which will impact a roadway by between 25% and 50% of one level of service, the Planning Commission may disapprove the escrow account contribution request, if the Planning Commission determines that 50% or more of the escrow account funds, including the limited impact development applicant's proportionate share, have been accumulated in an escrow account for that road improvement. It is our understanding that the 50% escrow account funds have not been collected in the MD 75 Corridor.

Therefore, it is our opinion that England Woods meets the requirements of the Town of New Market for approval with the necessary pro rata contributions that will be proffered.

APPENDIX A

Scoping Agreement,

Intersection Turning Movement Counts

and Aerial Photos

Frederick County
Planning & Permitting Division

DRAFT TIA Scoping Proposal
Turnpike Farm & Stone Oak Manor
Updated for Town of New Market

1. LOCATION: North Side of Old National Pike east of MD 75

2. EXISTING USE: Unimproved

3. PROPOSED USE: 525+ age restricted DU's (Mix TBD) Confirm DU mix

4. CIP/CTP ASSUMED IMPROVEMENTS: TBD County None

5. OTHER IMPROVEMENTS: TBD County At escrow locations as needed

6. BACKGROUND GROWTH & DEVELOPMENT: Assume 1% growth in through traffic for seven (7) years. Pipeline development would include:
   a. Eaglehead on the Lakes (south of Lake Linganore)
   b. Marley Commons
   c. Royal Oaks
   d. 105/113 West Main Street Development

7. EXISTING TRAFFIC: Traffic counts less than two years old may be used or older counts can be factored with 3% annual growth. New counts may be collected and adjusted accordingly based on the availability of existing pre-pandemic counts for comparison. It is anticipated new counts will show 10% total growth over the first 5 years followed by 1% annual growth for the remaining years (4,3,1,1,1).

8. TRIP GENERATION: ITE Rates for Senior Active Adult Housing by type – NOTE: 129 AM and 157 PM Trips for 525 Detached Units (Land Use Code 251) for Scoping Purposes Use latest DU mix

9. TRIP DISTRIBUTION: Base Assumption: Lake Linganore Blvd not built to Meadow Rd
   a. 80% west on Old National Pike to MD 75
      i. ~~10%~~ 15% North on MD 75
      ii. 20% West on Old National Pike
      iii. ~~20%~~ 15% East on I-70
      iv. ~~30%~~ 25% West on I-70
   b. ~~20%~~ 15% east on Old National Pike
      c. vi. 10% South on MD 75

10. ANALYSIS:
    a. CLV (SHA Method) & 95% Queues (HCM if mitigation is proposed):
       i. MD 75 @ Old National Pike
       ii. MD 75 @ I-70 EB Ramps
       iii. MD 75 @ I-70 WB Ramps
       iv. Old National Pike @ Morning Gate Lane
       v. Old National Pike @ CVS/Food Lion Access
       vi. Old National Pike @ Bartholows Road
       vii. Main Street @ Old New Market Road

b. HCM Un-signalized Analysis (if > 30 site trips on non-free flowing approaches):
    i. Old National Pike @ Site Access
    ii. Main Street @ Old New Market Road

Mark Mishler
Transportation Engineering Supervisor
Frederick County Government
Division of Permitting and Development Review (DPDR)
30 North Market Street
Frederick, MD 21701
717-387-3235 phone
301-600-1645 facsimile

MMishler@FrederickCountyMD.gov

TOTALS TURNING MOVEMENT COUNT - SUMMARY

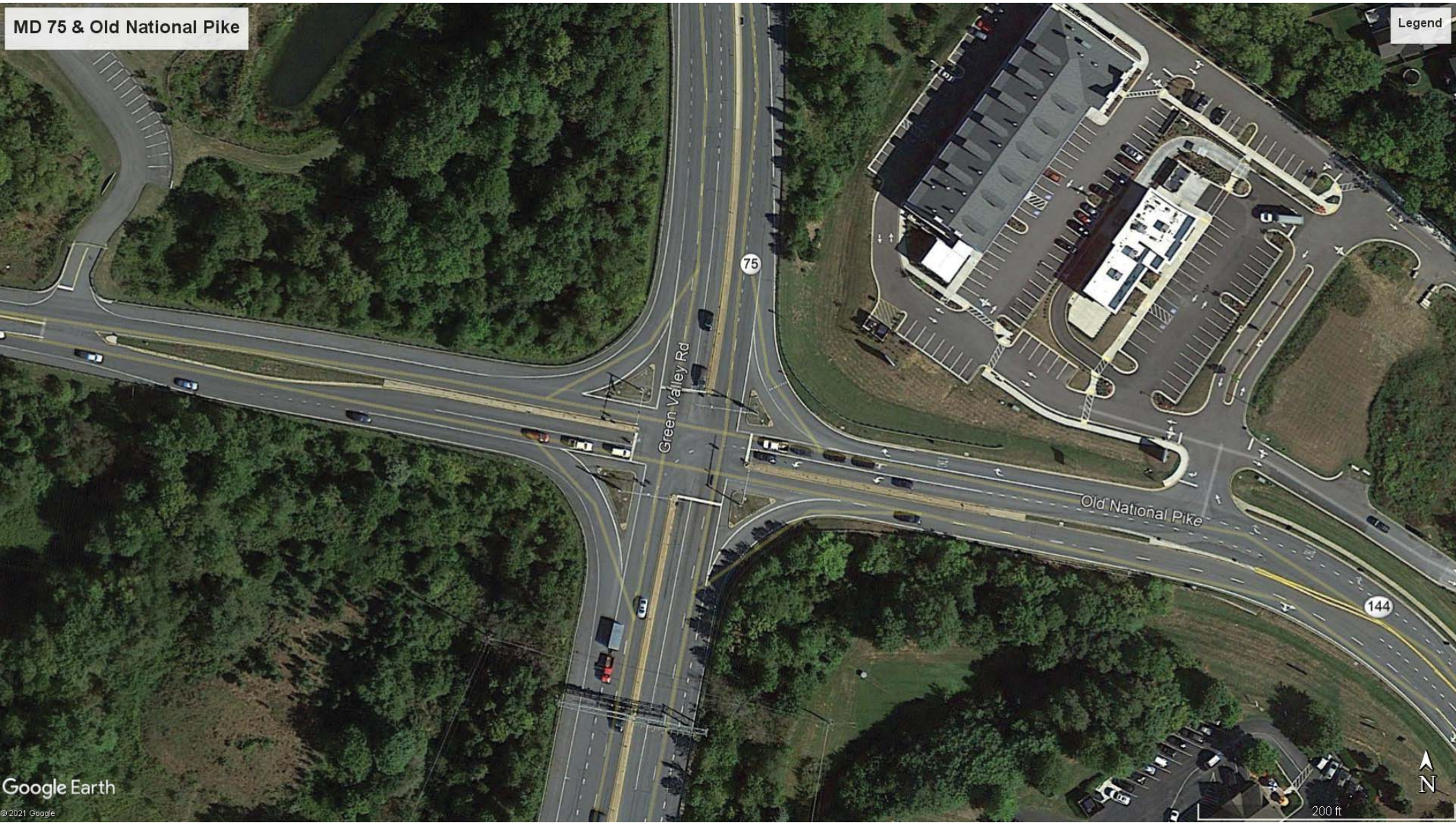
Counted by: VCU

Intersection of: MD 75 | Date: February 25, 2021 | Thursday

and: Old National Pike | Weather: Sunny/Cool

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

TIME	TRAFFIC FROM NORTH on: MD 75					TRAFFIC FROM SOUTH on: MD 75					TRAFFIC FROM EAST on: Old National Pike					TRAFFIC FROM WEST on: Old National Pike					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																					
6:00 - 6:15	1	79	4	0	84	23	10	5	0	38	3	4	41	0	48	37	13	0	0	50	220
6:15 - 6:30	2	79	22	0	103	28	35	6	0	69	5	6	42	0	53	42	10	0	0	52	277
6:30 - 6:45	0	126	9	0	135	21	47	6	0	74	13	11	66	0	90	47	22	2	0	71	370
6:45 - 7:00	0	124	24	0	148	44	48	19	0	111	23	7	44	0	74	61	26	3	0	90	423
7:00 - 7:15	4	120	28	0	152	41	33	15	0	89	29	18	72	0	119	50	34	5	0	89	449
7:15 - 7:30	8	146	30	0	184	53	36	21	0	110	21	30	83	0	134	69	36	5	0	110	538
7:30 - 7:45	9	151	27	0	187	49	40	17	0	106	15	37	79	0	131	56	29	3	0	88	512
7:45 - 8:00	9	125	22	0	156	71	36	22	0	129	11	25	73	0	109	53	47	6	0	106	500
8:00 - 8:15	3	69	20	0	92	62	40	17	0	119	12	30	79	0	121	45	44	3	0	92	424
8:15 - 8:30	5	113	26	0	144	71	36	31	0	138	15	29	72	0	116	36	25	4	0	65	463
8:30 - 8:45	7	84	17	0	108	57	53	23	0	133	8	28	75	0	111	39	42	3	0	84	436
8:45 - 9:00	3	79	13	0	95	62	51	24	0	137	13	30	72	0	115	46	46	7	0	99	446
3 Hr Totals	51	1295	242	0	1588	582	465	206	0	1253	168	255	798	0	1221	581	374	41	0	996	5058
1 Hr Totals																					
6:00 - 7:00	3	408	59	0	470	116	140	36	0	292	44	28	193	0	265	187	71	5	0	263	1290
6:15 - 7:15	6	449	83	0	538	134	163	46	0	343	70	42	224	0	336	200	92	10	0	302	1519
6:30 - 7:30	12	516	91	0	619	159	164	61	0	384	86	66	265	0	417	227	118	15	0	360	1780
6:45 - 7:45	21	541	109	0	671	187	157	72	0	416	88	92	278	0	458	236	125	16	0	377	1922
7:00 - 8:00	30	542	107	0	679	214	145	75	0	434	76	110	307	0	493	228	146	19	0	393	1999
7:15 - 8:15	29	491	99	0	619	235	152	77	0	464	59	122	314	0	495	223	156	17	0	396	1974
7:30 - 8:30	26	458	95	0	579	253	152	87	0	492	53	121	303	0	477	190	145	16	0	351	1899
7:45 - 8:45	24	391	85	0	500	261	165	93	0	519	46	112	299	0	457	173	158	16	0	347	1823
8:00 - 9:00	18	345	76	0	439	252	180	95	0	527	48	117	298	0	463	166	157	17	0	340	1769
PEAK HOUR																					
7:00 - 8:00	30	542	107	0	679	214	145	75	0	434	76	110	307	0	493	228	146	19	0	393	1999
PM																					
4:00 - 4:15	3	66	30	0	99	130	134	46	0	310	43	50	65	0	158	38	51	5	0	94	661
4:15 - 4:30	5	71	20	0	96	121	149	54	0	324	53	59	55	0	167	36	34	6	0	76	663
4:30 - 4:45	5	66	28	0	99	100	110	48	0	258	53	59	80	0	192	33	58	4	0	95	644
4:45 - 5:00	3	61	26	0	90	129	143	67	0	339	44	60	62	0	166	13	28	4	0	45	640
5:00 - 5:15	3	60	16	0	79	126	137	56	0	319	62	50	81	0	193	14	51	7	0	72	663
5:15 - 5:30	9	69	29	0	107	109	140	55	0	304	48	63	76	0	187	29	45	5	0	79	677
5:30 - 5:45	3	76	12	0	91	95	117	51	0	263	55	53	85	0	193	16	49	3	0	68	615
5:45 - 6:00	3	63	33	0	99	112	87	53	0	252	49	64	75	0	188	31	29	1	0	61	600
2 Hr Totals	34	532	194	0	760	922	1017	430	0	2369	407	458	579	0	1444	210	345	35	0	590	5163
1 Hr Totals																					
4:00 - 5:00	16	264	104	0	384	480	536	215	0	1231	193	228	262	0	683	120	171	19	0	310	2608
4:15 - 5:15	16	258	90	0	364	476	539	225	0	1240	212	228	278	0	718	96	171	21	0	288	2610
4:30 - 5:30	20	256	99	0	375	464	530	226	0	1220	207	232	299	0	738	89	182	20	0	291	2624
4:45 - 5:45	18	266	83	0	367	459	537	229	0	1225	209	226	304	0	739	72	173	19	0	264	2595
5:00 - 6:00	18	268	90	0	376	442	481	215	0	1138	214	230	317	0	761	90	174	16	0	280	2555
PEAK HOUR																					
4:30 - 5:30	20	256	99	0	375	464	530	226	0	1220	207	232	299	0	738	89	182	20	0	291	2624


MD 75 & Old National Pike
Legend
75
Green Valley Rd
Old National Pike
144
Google Earth
© 2021 Google
200 ft
N

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: MD 75 | Date: February 25, 2021 | Thursday

and: I-70 WB Ramps | Weather: Sunny/Cool

Location: Frederick County, Maryland | Entered by: SN | Star Rating: 5

TIME	TRAFFIC FROM NORTH on: MD 75					TRAFFIC FROM SOUTH on: MD 75					TRAFFIC FROM EAST on: I-70 WB Off Ramp					TRAFFIC FROM WEST on: I-70 WB On Ramp					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	0	121	0	0	121	0	26	11	0	37	16	1	33	0	50	0	0	0	0	0	208
7:15 - 7:30	0	110	0	0	110	0	48	15	0	63	17	0	29	0	46	0	0	0	0	0	219
7:30 - 7:45	0	160	0	0	160	0	57	21	0	78	25	0	21	0	46	0	0	0	0	0	284
7:45 - 8:00	0	162	0	0	162	0	79	18	1	98	30	0	22	0	52	0	0	0	0	0	312
7:00 - 7:15	65	169	0	0	234	0	72	25	0	97	16	0	23	0	39	0	0	0	0	0	370
7:15 - 7:30	107	197	0	0	304	0	76	29	0	105	30	0	26	0	56	0	0	0	0	0	465
7:30 - 7:45	103	181	0	0	284	0	83	38	1	122	28	1	33	0	62	0	0	0	0	0	468
7:45 - 8:00	99	162	0	0	261	0	90	41	0	131	34	0	19	0	53	0	0	0	0	0	445
8:00 - 8:15	80	116	0	0	196	0	80	35	0	115	37	0	16	0	53	0	0	0	0	0	364
8:15 - 8:30	93	145	0	0	238	0	95	42	0	137	46	0	13	0	59	0	0	0	0	0	434
8:30 - 8:45	101	105	0	0	206	0	92	43	0	135	38	0	11	0	49	0	0	0	0	0	390
8:45 - 9:00	89	102	0	0	191	0	99	28	0	127	37	0	14	0	51	0	0	0	0	0	369
3 Hr Totals	737	1730	0	0	2467	0	897	346	2	1245	354	2	260	0	616	0	0	0	0	0	4328
1 Hr Totals																					
6:00 - 7:00	0	553	0	0	553	0	210	65	1	276	88	1	105	0	194	0	0	0	0	0	1023
6:15 - 7:15	65	601	0	0	666	0	256	79	1	336	88	0	95	0	183	0	0	0	0	0	1185
6:30 - 7:30	172	688	0	0	860	0	284	93	1	378	101	0	92	0	193	0	0	0	0	0	1431
6:45 - 7:45	275	709	0	0	984	0	310	110	2	422	104	1	104	0	209	0	0	0	0	0	1615
7:00 - 8:00	374	709	0	0	1083	0	321	133	1	455	108	1	101	0	210	0	0	0	0	0	1748
7:15 - 8:15	389	656	0	0	1045	0	329	143	1	473	129	1	94	0	224	0	0	0	0	0	1742
7:30 - 8:30	375	604	0	0	979	0	348	156	1	505	145	1	81	0	227	0	0	0	0	0	1711
7:45 - 8:45	373	528	0	0	901	0	357	161	0	518	155	0	59	0	214	0	0	0	0	0	1633
8:00 - 9:00	363	468	0	0	831	0	366	148	0	514	158	0	54	0	212	0	0	0	0	0	1557
PEAK HOUR																					
7:00 - 8:00	374	709	0	0	1083	0	321	133	1	455	108	1	101	0	210	0	0	0	0	0	1748
PM																					
4:00 - 4:15	86	73	0	0	159	0	171	38	1	210	141	1	29	0	171	0	0	0	0	0	540
4:15 - 4:30	96	78	0	0	174	0	168	48	0	216	133	0	15	0	148	0	0	0	0	0	538
4:30 - 4:45	88	84	0	0	172	0	141	25	0	166	109	0	30	0	139	0	0	0	0	0	477
4:45 - 5:00	67	73	0	0	140	0	185	46	0	231	119	0	34	0	153	0	0	0	0	0	524
5:00 - 5:15	84	68	0	0	152	0	182	65	0	247	133	2	24	0	159	0	0	0	0	0	558
5:15 - 5:30	74	101	0	0	175	0	204	41	0	245	103	0	28	0	131	0	0	0	0	0	551
5:30 - 5:45	86	85	0	0	171	0	164	35	0	199	103	0	21	0	124	0	0	0	0	0	494
5:45 - 6:00	85	86	0	0	171	0	167	32	0	199	95	0	23	0	118	0	0	0	0	0	488
2 Hr Totals	666	648	0	0	1314	0	1382	330	1	1713	936	3	204	0	1143	0	0	0	0	0	4170
1 Hr Totals																					
4:00 - 5:00	337	308	0	0	645	0	665	157	1	823	502	1	108	0	611	0	0	0	0	0	2079
4:15 - 5:15	335	303	0	0	638	0	676	184	0	860	494	2	103	0	599	0	0	0	0	0	2097
4:30 - 5:30	313	326	0	0	639	0	712	177	0	889	464	2	116	0	582	0	0	0	0	0	2110
4:45 - 5:45	311	327	0	0	638	0	735	187	0	922	458	2	107	0	567	0	0	0	0	0	2127
5:00 - 6:00	329	340	0	0	669	0	717	173	0	890	434	2	96	0	532	0	0	0	0	0	2091
PEAK HOUR																					
4:45 - 5:45	311	327	0	0	638	0	735	187	0	922	458	2	107	0	567	0	0	0	0	0	2127


MD 75 @ I-70 WB Ramps
Legend
d National Pike
Green Valley Rd
75
Google Earth
© 2021 Google
N
200 ft

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: MD 75 | Date: February 25, 2021 | Thursday

and: I-70 EB Ramps | Weather: Sunny/Cool

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

TIME	TRAFFIC FROM NORTH on: MD 75					TRAFFIC FROM SOUTH on: MD 75					TRAFFIC FROM EAST on: I-70 EB On Ramp					TRAFFIC FROM WEST on: I-70 EB Off Ramp					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																					
6:00 - 6:15	0	71	81	0	152	19	19	0	0	38	0	0	0	0	0	34	0	20	0	54	244
6:15 - 6:30	0	60	88	0	148	15	28	0	0	43	0	0	0	0	0	28	0	34	0	62	253
6:30 - 6:45	0	68	114	0	182	22	43	0	0	65	0	0	0	0	0	30	0	40	0	70	317
6:45 - 7:00	0	73	106	0	179	21	35	0	0	56	0	0	0	0	0	34	0	57	0	91	326
7:00 - 7:15	0	71	126	0	197	22	54	0	0	76	0	0	0	0	0	41	0	44	0	85	358
7:15 - 7:30	0	87	133	0	220	35	50	0	0	85	0	0	0	0	0	42	0	55	0	97	402
7:30 - 7:45	0	95	110	0	205	22	75	0	0	97	0	0	0	0	0	47	0	50	0	97	399
7:45 - 8:00	0	67	111	0	178	30	69	0	0	99	0	0	0	0	0	67	1	54	0	122	399
8:00 - 8:15	0	56	90	0	146	38	65	0	0	103	0	0	0	0	0	44	0	59	0	103	352
8:15 - 8:30	0	65	81	0	146	30	64	0	0	94	0	0	0	0	0	45	0	66	0	111	351
8:30 - 8:45	0	39	85	0	124	21	73	0	0	94	0	0	0	0	0	31	0	62	0	93	311
8:45 - 9:00	0	54	66	0	120	20	65	0	0	85	0	0	0	0	0	25	0	64	0	89	294
3 Hr Totals	0	806	1191	0	1997	295	640	0	0	935	0	0	0	0	0	468	1	605	0	1074	4006
1 Hr Totals																					
6:00 - 7:00	0	272	389	0	661	77	125	0	0	202	0	0	0	0	0	126	0	151	0	277	1140
6:15 - 7:15	0	272	434	0	706	80	160	0	0	240	0	0	0	0	0	133	0	175	0	308	1254
6:30 - 7:30	0	299	479	0	778	100	182	0	0	282	0	0	0	0	0	147	0	196	0	343	1403
6:45 - 7:45	0	326	475	0	801	100	214	0	0	314	0	0	0	0	0	164	0	206	0	370	1485
7:00 - 8:00	0	320	480	0	800	109	248	0	0	357	0	0	0	0	0	197	1	203	0	401	1558
7:15 - 8:15	0	305	444	0	749	125	259	0	0	384	0	0	0	0	0	200	1	218	0	419	1552
7:30 - 8:30	0	283	392	0	675	120	273	0	0	393	0	0	0	0	0	203	1	229	0	433	1501
7:45 - 8:45	0	227	367	0	594	119	271	0	0	390	0	0	0	0	0	187	1	241	0	429	1413
8:00 - 9:00	0	214	322	0	536	109	267	0	0	376	0	0	0	0	0	145	0	251	0	396	1308
PEAK HOUR																					
7:00 - 8:00	0	320	480	0	800	109	248	0	0	357	0	0	0	0	0	197	1	203	0	401	1558
PM																					
4:00 - 4:15	0	63	38	0	101	16	106	0	0	122	0	0	0	0	0	32	0	128	0	160	383
4:15 - 4:30	0	46	47	0	93	34	100	0	0	134	0	0	0	0	0	40	0	111	0	151	378
4:30 - 4:45	0	60	54	0	114	27	79	0	0	106	0	0	0	0	0	48	0	104	0	152	372
4:45 - 5:00	0	68	40	0	108	25	117	0	0	142	0	0	0	0	0	32	0	116	0	148	398
5:00 - 5:15	0	61	28	0	89	26	134	0	0	160	0	0	0	0	0	29	2	137	0	168	417
5:15 - 5:30	0	84	47	0	131	23	89	0	0	112	0	0	0	0	0	43	0	138	0	181	424
5:30 - 5:45	0	62	39	0	101	26	85	0	0	111	0	0	0	0	0	37	0	126	0	163	375
5:45 - 6:00	0	62	46	0	108	16	85	0	0	101	0	0	0	0	0	34	0	103	0	137	346
2 Hr Totals	0	506	339	0	845	193	795	0	0	988	0	0	0	0	0	295	2	963	0	1260	3093
1 Hr Totals																					
4:00 - 5:00	0	237	179	0	416	102	402	0	0	504	0	0	0	0	0	152	0	459	0	611	1531
4:15 - 5:15	0	235	169	0	404	112	430	0	0	542	0	0	0	0	0	149	2	468	0	619	1565
4:30 - 5:30	0	273	169	0	442	101	419	0	0	520	0	0	0	0	0	152	2	495	0	649	1611
4:45 - 5:45	0	275	154	0	429	100	425	0	0	525	0	0	0	0	0	141	2	517	0	660	1614
5:00 - 6:00	0	269	160	0	429	91	393	0	0	484	0	0	0	0	0	143	2	504	0	649	1562
PEAK HOUR																					
4:45 - 5:45	0	275	154	0	429	100	425	0	0	525	0	0	0	0	0	141	2	517	0	660	1614


MD 75 @ I-70 EB Ramps
Legend
75
Green Valley Rd
Google Earth
© 2021 Google
N
200 ft

TOTALS TURNING MOVEMENT COUNT - SUMMARY

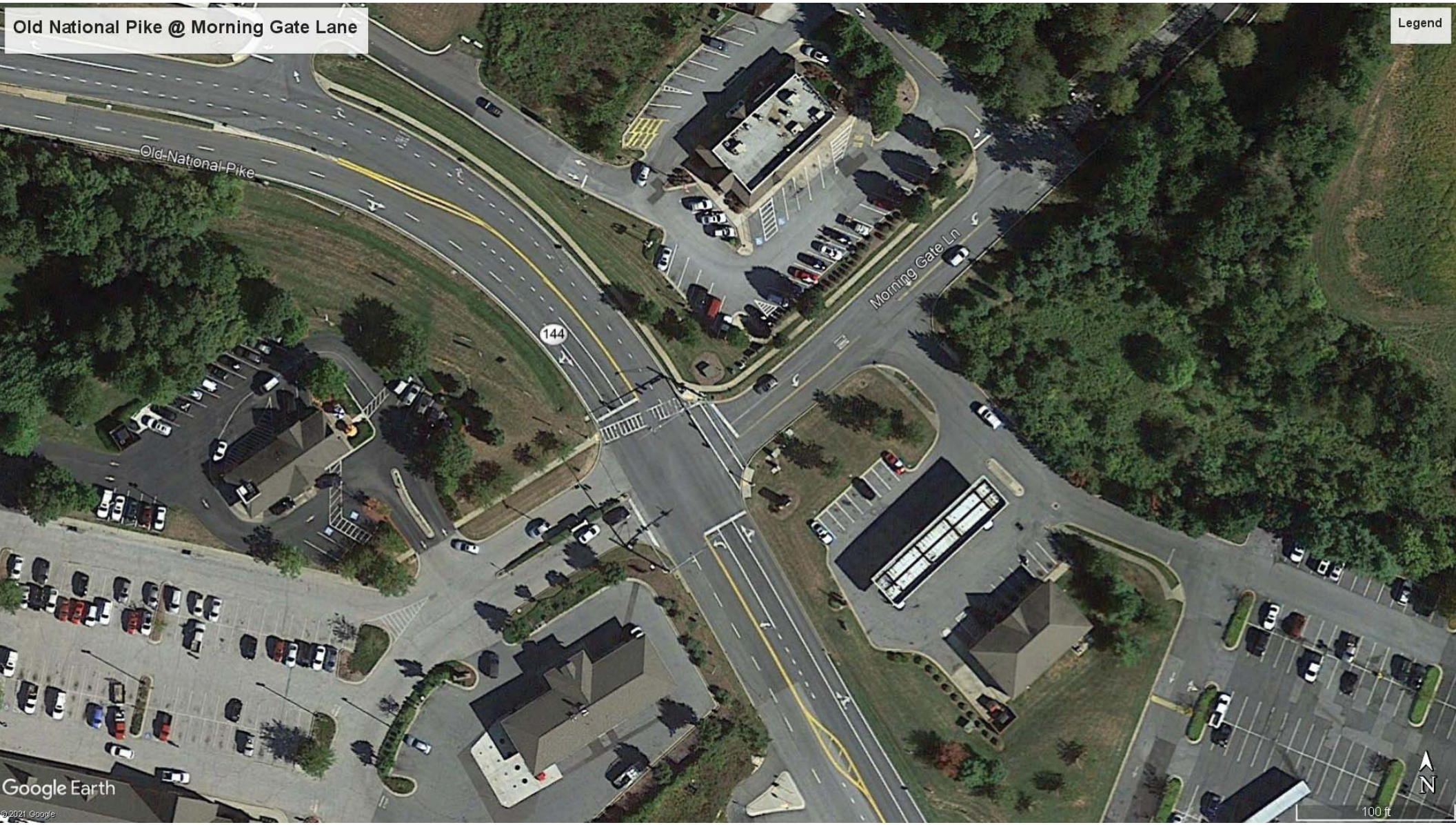
Counted by: VCU

Intersection of: Old National Pike | Date: February 25, 2021 | Thursday

and: Morning Gate Lane | Weather: Sunny/Cool

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

TIME	TRAFFIC FROM NORTH on: Morning Gate Lane					TRAFFIC FROM SOUTH on: Shopping Center Access					TRAFFIC FROM EAST on: Old National Pike					TRAFFIC FROM WEST on: Old National Pike					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	11	2	10	0	23	4	1	30	0	35	3	57	3	0	63	33	43	27	0	103	224
7:15 - 7:30	25	2	6	0	33	3	1	32	0	36	6	72	6	0	84	40	49	22	0	111	264
7:30 - 7:45	22	3	13	0	38	10	1	30	0	41	5	59	4	0	68	22	39	38	0	99	246
7:45 - 8:00	24	5	5	0	34	7	1	18	0	26	7	50	6	0	63	29	88	33	0	150	273
8:00 - 8:15	15	0	10	0	25	4	4	30	0	38	5	55	3	0	63	40	51	33	0	124	250
8:15 - 8:30	18	5	4	0	27	5	7	28	0	40	8	52	3	0	63	35	55	23	0	113	243
8:30 - 8:45	20	5	9	0	34	5	4	23	0	32	8	60	9	0	77	40	48	35	0	123	266
8:45 - 9:00	10	3	8	0	21	8	4	19	0	31	9	59	7	0	75	29	57	30	0	116	243
2 Hr Totals	145	25	65	0	235	46	23	210	0	279	51	464	41	0	556	268	430	241	0	939	2009
1 Hr Totals																					
7:00 - 8:00	82	12	34	0	128	24	4	110	0	138	21	238	19	0	278	124	219	120	0	463	1007
7:15 - 8:15	86	10	34	0	130	24	7	110	0	141	23	236	19	0	278	131	227	126	0	484	1033
7:30 - 8:30	79	13	32	0	124	26	13	106	0	145	25	216	16	0	257	126	233	127	0	486	1012
7:45 - 8:45	77	15	28	0	120	21	16	99	0	136	28	217	21	0	266	144	242	124	0	510	1032
8:00 - 9:00	63	13	31	0	107	22	19	100	0	141	30	226	22	0	278	144	211	121	0	476	1002
PEAK HOUR																					
7:15 - 8:15	86	10	34	0	130	24	7	110	0	141	23	236	19	0	278	131	227	126	0	484	1033
PM																					
4:00 - 4:15	19	4	8	0	31	16	10	21	0	47	16	98	13	0	127	38	124	51	0	213	418
4:15 - 4:30	29	1	12	0	42	12	5	24	0	41	10	97	15	0	122	36	96	33	0	165	370
4:30 - 4:45	24	6	9	0	39	14	9	26	0	49	11	139	4	0	154	38	123	35	0	196	438
4:45 - 5:00	25	6	12	0	43	18	6	31	0	55	14	88	9	0	111	42	84	40	0	166	375
5:00 - 5:15	26	1	10	0	37	9	10	39	0	58	18	109	6	0	133	36	118	54	0	208	436
5:15 - 5:30	23	3	14	0	40	11	3	32	0	46	15	112	9	0	136	37	112	33	0	182	404
5:30 - 5:45	20	1	9	0	30	12	5	55	0	72	17	100	11	0	128	36	82	33	0	151	381
5:45 - 6:00	18	4	10	0	32	8	8	42	0	58	19	106	8	0	133	32	85	40	0	157	380
2 Hr Totals	184	26	84	0	294	100	56	270	0	426	120	849	75	0	1044	295	824	319	0	1438	3202
1 Hr Totals																					
4:00 - 5:00	97	17	41	0	155	60	30	102	0	192	51	422	41	0	514	154	427	159	0	740	1601
4:15 - 5:15	104	14	43	0	161	53	30	120	0	203	53	433	34	0	520	152	421	162	0	735	1619
4:30 - 5:30	98	16	45	0	159	52	28	128	0	208	58	448	28	0	534	153	437	162	0	752	1653
4:45 - 5:45	94	11	45	0	150	50	24	157	0	231	64	409	35	0	508	151	396	160	0	707	1596
5:00 - 6:00	87	9	43	0	139	40	26	168	0	234	69	427	34	0	530	141	397	160	0	698	1601
PEAK HOUR																					
4:30 - 5:30	98	16	45	0	159	52	28	128	0	208	58	448	28	0	534	153	437	162	0	752	1653


Old National Pike @ Morning Gate Lane
Legend
Old National Pike
144
Morning Gate Ln
Google Earth
© 2021 Google
N
100 ft

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Old National Pike — Date: February 25, 2021 — Thursday

and: Food Lion Access - CVS Access — Weather: Sunny/Cool

Location: Frederick County, Maryland — Entered by: SN — Star Rating: 4

TIME	TRAFFIC FROM NORTH on: Food Lion Access					TRAFFIC FROM SOUTH on: CVS Access					TRAFFIC FROM EAST on: Old National Pike					TRAFFIC FROM WEST on: Old National Pike					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	0	0	2	0	2	0	0	0	0	0	1	65	0	0	66	1	48	2	0	51	119
7:15 - 7:30	3	0	1	0	4	0	0	0	0	0	0	71	0	0	71	1	53	0	0	54	129
7:30 - 7:45	1	0	2	0	3	1	0	0	0	1	1	66	1	0	68	1	64	2	0	67	139
7:45 - 8:00	1	0	4	0	5	0	0	0	0	0	3	59	2	0	64	4	82	2	0	88	157
8:00 - 8:15	5	0	1	0	6	0	0	5	0	5	3	47	0	0	50	3	52	3	0	58	119
8:15 - 8:30	2	0	0	0	2	0	0	2	0	2	1	56	0	0	57	6	58	1	0	65	126
8:30 - 8:45	3	0	0	0	3	1	1	1	0	3	3	70	2	0	75	3	59	1	0	63	144
8:45 - 9:00	2	0	3	0	5	1	0	4	0	5	3	65	0	0	68	7	58	2	0	67	145
2 Hr Totals	17	0	13	0	30	3	1	12	0	16	15	499	5	0	519	26	474	13	0	513	1078
1 Hr Totals																					
7:00 - 8:00	5	0	9	0	14	1	0	0	0	1	5	261	3	0	269	7	247	6	0	260	544
7:15 - 8:15	10	0	8	0	18	1	0	5	0	6	7	243	3	0	253	9	251	7	0	267	544
7:30 - 8:30	9	0	7	0	16	1	0	7	0	8	8	228	3	0	239	14	256	8	0	278	541
7:45 - 8:45	11	0	5	0	16	1	1	8	0	10	10	232	4	0	246	16	251	7	0	274	546
8:00 - 9:00	12	0	4	0	16	2	1	12	0	15	10	238	2	0	250	19	227	7	0	253	534
PEAK HOUR																					
7:45 - 8:45	11	0	5	0	16	1	1	8	0	10	10	232	4	0	246	16	251	7	0	274	546
PM																					
4:00 - 4:15	5	1	13	0	19	5	3	12	0	20	6	104	5	0	115	32	88	8	0	128	282
4:15 - 4:30	7	1	7	0	15	8	6	22	0	36	13	86	8	0	107	15	94	7	0	116	274
4:30 - 4:45	12	1	10	0	23	9	3	20	0	32	3	99	6	0	108	20	93	8	0	121	284
4:45 - 5:00	9	1	9	0	19	2	1	14	0	17	9	86	4	0	99	14	83	3	0	100	235
5:00 - 5:15	4	0	4	0	8	13	1	15	0	29	10	91	4	0	105	27	83	2	0	112	254
5:15 - 5:30	7	1	8	0	16	7	1	23	0	31	8	89	5	0	102	26	100	3	0	129	278
5:30 - 5:45	11	3	5	0	19	6	2	20	0	28	11	82	9	0	102	18	72	3	0	93	242
5:45 - 6:00	9	0	10	0	19	10	4	21	0	35	8	88	2	0	98	29	62	10	0	101	253
6:00 - 6:15	7	2	12	0	21	9	1	21	0	31	4	63	9	0	76	21	70	2	0	93	221
6:15 - 6:30	4	1	7	0	12	9	1	18	0	28	5	55	2	0	62	18	56	4	0	78	180
6:30 - 6:45	9	0	3	0	12	3	2	24	0	29	1	44	5	0	50	18	52	6	0	76	167
6:45 - 7:00	3	2	1	0	6	10	0	14	0	24	5	34	2	0	41	12	49	2	1	64	135
3 Hr Totals	87	13	89	0	189	91	25	224	0	340	83	921	61	0	1065	250	902	58	1	1211	2805
1 Hr Totals																					
4:00 - 5:00	33	4	39	0	76	24	13	68	0	105	31	375	23	0	429	81	358	26	0	465	1075
4:15 - 5:15	32	3	30	0	65	32	11	71	0	114	35	362	22	0	419	76	353	20	0	449	1047
4:30 - 5:30	32	3	31	0	66	31	6	72	0	109	30	365	19	0	414	87	359	16	0	462	1051
4:45 - 5:45	31	5	26	0	62	28	5	72	0	105	38	348	22	0	408	85	338	11	0	434	1009
5:00 - 6:00	31	4	27	0	62	36	8	79	0	123	37	350	20	0	407	100	317	18	0	435	1027
5:15 - 6:15	34	6	35	0	75	32	8	85	0	125	31	322	25	0	378	94	304	18	0	416	994
5:30 - 6:30	31	6	34	0	71	34	8	80	0	122	28	288	22	0	338	86	260	19	0	365	896
5:45 - 6:45	29	3	32	0	64	31	8	84	0	123	18	250	18	0	286	86	240	22	0	348	821
6:00 - 7:00	23	5	23	0	51	31	4	77	0	112	15	196	18	0	229	69	227	14	1	311	703
PEAK HOUR																					
4:00 - 5:00	33	4	39	0	76	24	13	68	0	105	31	375	23	0	429	81	358	26	0	465	1075


Old National Pike @ CVS/Food Lion Acces
Legend
144
Old National Pike
Google Earth
© 2021 Google
N
100 ft

TOTALS TURNING MOVEMENT COUNT - SUMMARY

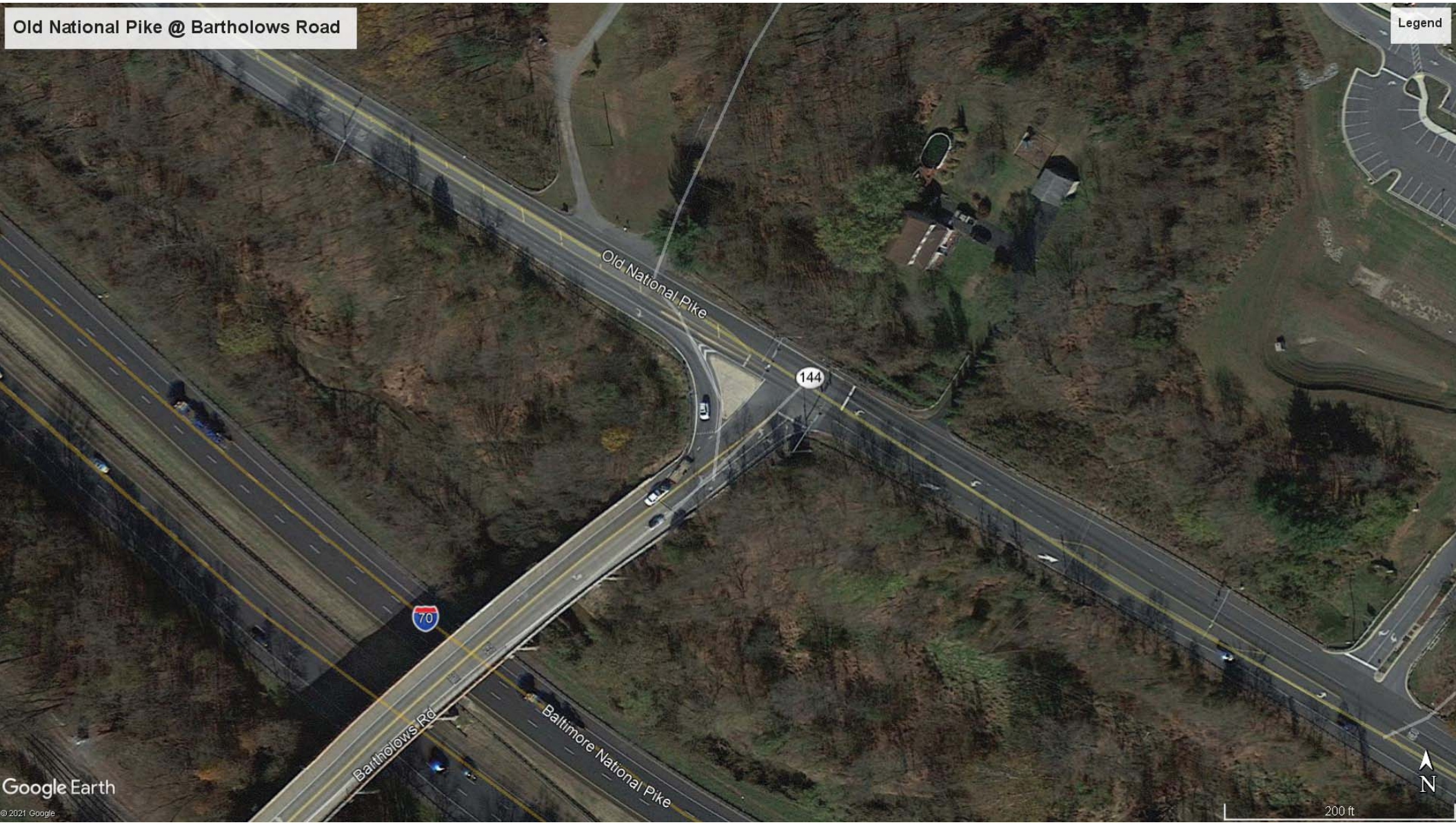
Counted by: VCU

Intersection of: Old National Pike — Date: March 04, 2021 — Thursday

and: Bartholows Road — Weather: Sunny/Cool

Location: Frederick County, Maryland — Entered by: SN — Star Rating: 4

TIME	TRAFFIC FROM NORTH on:					TRAFFIC FROM SOUTH on: Bartholows Road					TRAFFIC FROM EAST on: Old National Pike					TRAFFIC FROM WEST on: Old National Pike					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	0	0	0	0	0	24	0	26	0	50	0	21	12	0	33	21	28	0	0	49	132
7:15 - 7:30	0	0	0	0	0	20	0	24	0	44	0	25	11	0	36	26	22	0	0	48	128
7:30 - 7:45	0	0	0	0	0	23	0	26	0	49	0	34	24	0	58	21	34	0	0	55	162
7:45 - 8:00	0	0	0	0	0	29	0	24	0	53	0	24	12	0	36	26	30	0	0	56	145
8:00 - 8:15	0	0	0	0	0	25	0	35	0	60	0	33	15	0	48	29	31	0	0	60	168
8:15 - 8:30	0	0	0	0	0	22	0	22	0	44	0	32	13	0	45	21	26	0	0	47	136
8:30 - 8:45	0	0	0	0	0	29	0	24	0	53	0	30	14	0	44	14	20	0	0	34	131
8:45 - 9:00	0	0	0	0	0	19	0	22	0	41	0	23	20	0	43	19	35	0	0	54	138
2 Hr Totals	0	0	0	0	0	191	0	203	0	394	0	222	121	0	343	177	226	0	0	403	1140
1 Hr Totals																					
7:00 - 8:00	0	0	0	0	0	96	0	100	0	196	0	104	59	0	163	94	114	0	0	208	567
7:15 - 8:15	0	0	0	0	0	97	0	109	0	206	0	116	62	0	178	102	117	0	0	219	603
7:30 - 8:30	0	0	0	0	0	99	0	107	0	206	0	123	64	0	187	97	121	0	0	218	611
7:45 - 8:45	0	0	0	0	0	105	0	105	0	210	0	119	54	0	173	90	107	0	0	197	580
8:00 - 9:00	0	0	0	0	0	95	0	103	0	198	0	118	62	0	180	83	112	0	0	195	573
PEAK HOUR																					
7:30 - 8:30	0	0	0	0	0	99	0	107	0	206	0	123	64	0	187	97	121	0	0	218	611
PM																					
4:00 - 4:15	0	0	0	0	0	20	0	36	0	56	0	43	29	0	72	33	38	0	0	71	199
4:15 - 4:30	0	0	0	0	0	24	0	52	0	76	0	62	37	0	99	29	60	0	0	89	264
4:30 - 4:45	0	0	0	0	0	20	0	45	0	65	0	51	28	0	79	16	53	0	0	69	213
4:45 - 5:00	0	0	0	0	0	34	0	29	0	63	0	57	34	0	91	38	38	0	0	76	230
5:00 - 5:15	0	0	0	0	0	25	0	46	0	71	0	39	29	0	68	29	40	0	0	69	208
5:15 - 5:30	0	0	0	0	0	20	0	33	0	53	0	48	27	0	75	37	56	0	0	93	221
5:30 - 5:45	0	0	0	0	0	28	0	22	1	51	0	60	36	0	96	35	48	0	0	83	230
5:45 - 6:00	0	0	0	0	0	21	0	28	0	49	0	39	18	0	57	44	35	0	0	79	185
2 Hr Totals	0	0	0	0	0	192	0	291	1	484	0	399	238	0	637	261	368	0	0	629	1750
1 Hr Totals																					
4:00 - 5:00	0	0	0	0	0	98	0	162	0	260	0	213	128	0	341	116	189	0	0	305	906
4:15 - 5:15	0	0	0	0	0	103	0	172	0	275	0	209	128	0	337	112	191	0	0	303	915
4:30 - 5:30	0	0	0	0	0	99	0	153	0	252	0	195	118	0	313	120	187	0	0	307	872
4:45 - 5:45	0	0	0	0	0	107	0	130	1	238	0	204	126	0	330	139	182	0	0	321	889
5:00 - 6:00	0	0	0	0	0	94	0	129	1	224	0	186	110	0	296	145	179	0	0	324	844
PEAK HOUR																					
4:15 - 5:15	0	0	0	0	0	103	0	172	0	275	0	209	128	0	337	112	191	0	0	303	915


Old National Pike @ Bartholows Road
Legend
Old National Pike
144
70
Bartholows Rd
Baltimore National Pike
Google Earth
© 2021 Google
N
200 ft

TOTALS TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Intersection of: Main Street | **Date: October 26, 2021** | **Tuesday**

and: Old New Market Road | **Weather: Cloudy/Warm**

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

TIME	TRAFFIC FROM NORTH on: Old New Market Road					TRAFFIC FROM SOUTH on: 8th Alley					TRAFFIC FROM EAST on: Main Street					TRAFFIC FROM WEST on: Main Street					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																					
6:00 - 6:15	2	1	0	0	3	0	0	0	0	0	0	9	0	0	9	0	54	1	0	55	67
6:15 - 6:30	3	0	0	0	3	0	0	0	0	0	0	9	0	0	9	0	71	4	0	75	87
6:30 - 6:45	5	0	2	0	7	0	0	0	0	0	0	12	0	0	12	0	78	2	0	80	99
6:45 - 7:00	4	0	2	0	6	0	0	0	0	0	0	20	0	0	20	0	106	6	0	112	138
7:00 - 7:15	6	0	1	0	7	0	0	0	0	0	0	19	0	0	19	0	102	3	0	105	131
7:15 - 7:30	9	0	0	0	9	0	0	0	0	0	2	33	0	0	35	1	96	3	0	100	144
7:30 - 7:45	8	0	0	DS	8	1	0	0	0	1	0	36	0	0	36	1	84	10	0	95	140
7:45 - 8:00	12	0	1	0	13	1	0	0	0	1	0	53	0	0	53	0	130	3	0	133	200
8:00 - 8:15	9	0	0	0	9	0	0	0	0	0	0	37	1	0	38	0	90	13	0	103	150
8:15 - 8:30	13	0	1	0	14	0	0	0	0	0	0	44	0	0	44	0	88	4	0	92	150
8:30 - 8:45	13	0	1	0	14	0	0	0	0	0	1	43	0	0	44	0	81	9	0	90	148
8:45 - 9:00	21	0	1	0	22	0	0	0	0	0	2	32	0	0	34	0	84	6	0	90	146
3 Hr Totals	105	1	9	0	115	2	0	0	0	2	5	347	1	0	353	2	1064	64	0	1130	1600
1 Hr Totals																					
6:00 - 7:00	14	1	4	0	19	0	0	0	0	0	0	50	0	0	50	0	309	13	0	322	391
6:15 - 7:15	18	0	5	0	23	0	0	0	0	0	0	60	0	0	60	0	357	15	0	372	455
6:30 - 7:30	24	0	5	0	29	0	0	0	0	0	2	84	0	0	86	1	382	14	0	397	512
6:45 - 7:45	27	0	3	0	30	1	0	0	0	1	2	108	0	0	110	2	388	22	0	412	553
7:00 - 8:00	35	0	2	0	37	2	0	0	0	2	2	141	0	0	143	2	412	19	0	433	615
7:15 - 8:15	38	0	1	0	39	2	0	0	0	2	2	159	1	0	162	2	400	29	0	431	634
7:30 - 8:30	42	0	2	0	44	2	0	0	0	2	0	170	1	0	171	1	392	30	0	423	640
7:45 - 8:45	47	0	3	0	50	1	0	0	0	1	1	177	1	0	179	0	389	29	0	418	648
8:00 - 9:00	56	0	3	0	59	0	0	0	0	0	3	156	1	0	160	0	343	32	0	375	594
PEAK HOUR																					
7:45 - 8:45	47	0	3	0	50	1	0	0	0	1	1	177	1	0	179	0	389	29	0	418	648
PM																					
4:00 - 4:15	13	0	0	0	13	2	0	1	0	3	4	98	1	0	103	0	66	13	0	79	198
4:15 - 4:30	16	0	1	0	17	1	0	0	0	1	0	116	1	0	117	2	59	11	0	72	207
4:30 - 4:45	17	0	0	0	17	1	0	0	0	1	1	123	0	0	124	1	91	16	0	108	250
4:45 - 5:00	29	0	0	0	29	0	0	0	0	0	0	123	2	0	125	0	85	12	0	97	251
5:00 - 5:15	29	1	0	0	30	2	0	0	0	2	0	115	4	0	119	1	74	20	0	95	246
5:15 - 5:30	34	0	1	0	35	1	0	2	0	3	2	131	0	0	133	0	83	11	0	94	265
5:30 - 5:45	35	0	1	0	36	0	0	0	0	0	0	127	3	0	130	0	83	16	0	99	265
5:45 - 6:00	10	0	0	0	10	0	0	0	0	0	1	124	0	0	125	1	90	12	0	103	238
6:00 - 6:15	11	0	1	0	12	1	0	0	0	1	4	105	3	0	112	0	69	7	0	76	201
6:15 - 6:30	11	0	0	0	11	1	0	3	0	4	1	122	1	0	124	0	62	8	0	70	209
6:30 - 6:45	15	1	0	0	16	0	0	0	0	0	1	98	0	0	99	1	49	4	0	54	169
6:45 - 7:00	12	0	0	0	12	0	0	0	0	0	0	73	0	0	73	0	59	7	0	66	151
3 Hr Totals	232	2	4	0	238	9	0	6	0	15	14	1355	15	0	1384	6	870	137	0	1013	2650
1 Hr Totals																					
4:00 - 5:00	75	0	1	0	76	4	0	1	0	5	5	460	4	0	469	3	301	52	0	356	906
4:15 - 5:15	91	1	1	0	93	4	0	0	0	4	1	477	7	0	485	4	309	59	0	372	954
4:30 - 5:30	109	1	1	0	111	4	0	2	0	6	3	492	6	0	501	2	333	59	0	394	1012
4:45 - 5:45	127	1	2	0	130	3	0	2	0	5	2	496	9	0	507	1	325	59	0	385	1027
5:00 - 6:00	108	1	2	0	111	3	0	2	0	5	3	497	7	0	507	2	330	59	0	391	1014
5:15 - 6:15	90	0	3	0	93	2	0	2	0	4	7	487	6	0	500	1	325	46	0	372	969
5:30 - 6:30	67	0	2	0	69	2	0	3	0	5	6	478	7	0	491	1	304	43	0	348	913
5:45 - 6:45	47	1	1	0	49	2	0	3	0	5	7	449	4	0	460	2	270	31	0	303	817
6:00 - 7:00	49	1	1	0	51	2	0	3	0	5	6	398	4	0	408	1	239	26	0	266	730
PEAK HOUR																					
4:45 - 5:45	127	1	2	0	130	3	0	2	0	5	2	496	9	0	507	1	325	59	0	385	1027


Main Street @ Old New Market Rd
Legend
874
Strawberry Alley
Prospect St
N Federal St
N Federal St
Old National Pike
144
Old National Pike
Old National Pike
7th Alley
8th Alley
8th Alley
S Federal St
S Federal St
7th
Google Earth
N
100 ft

APPENDIX B

Intersection Capacity Analysis Worksheets

CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: MD 75
Conditions: Existing Traffic

Date of Count: 2/25/2021
Day of Week: Thursday
Analyst: Qiang Tian

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

MD 75

R	T	L	
20	256	99	PM
30	542	107	AM

R T T L

OLD NATIONAL PIKE

— R
— TL
— L

R	76	207
T	110	232
L	307	299
	AM	PM

WB LUF based on existing count

PM	AM	
20	19	L
182	146	T
89	228	R

L —
T —
FR —

L T T FR

OLD NATIONAL PIKE

	L	T	R
AM	75	145	214
PM	226	530	464

MD 75

Capacity Analysis - East/West Split

Morning Peak Hour

	Thru Volumes			+ Opposing Lefts			AM
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
EB	146	1.00	146				146
WB	417	0.75	313				313
NB	145	0.55	80	107	1.00	107	373
SB	542	0.55	298	75	1.00	75	
						CLV TOTAL=	832
						Level of Service (LOS)=	A

Evening Peak Hour

	Thru Volumes			+ Opposing Lefts			PM
Dir	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
EB	182	1.00	182				182
WB	531	0.64	340				340
NB	530	0.55	292	99	1.00	99	391
SB	256	0.55	141	226	1.00	226	
						CLV TOTAL=	913
						Level of Service (LOS)=	A

Scenario ID - EXIST1

AM V/C =0.52

PM V/C =0.57

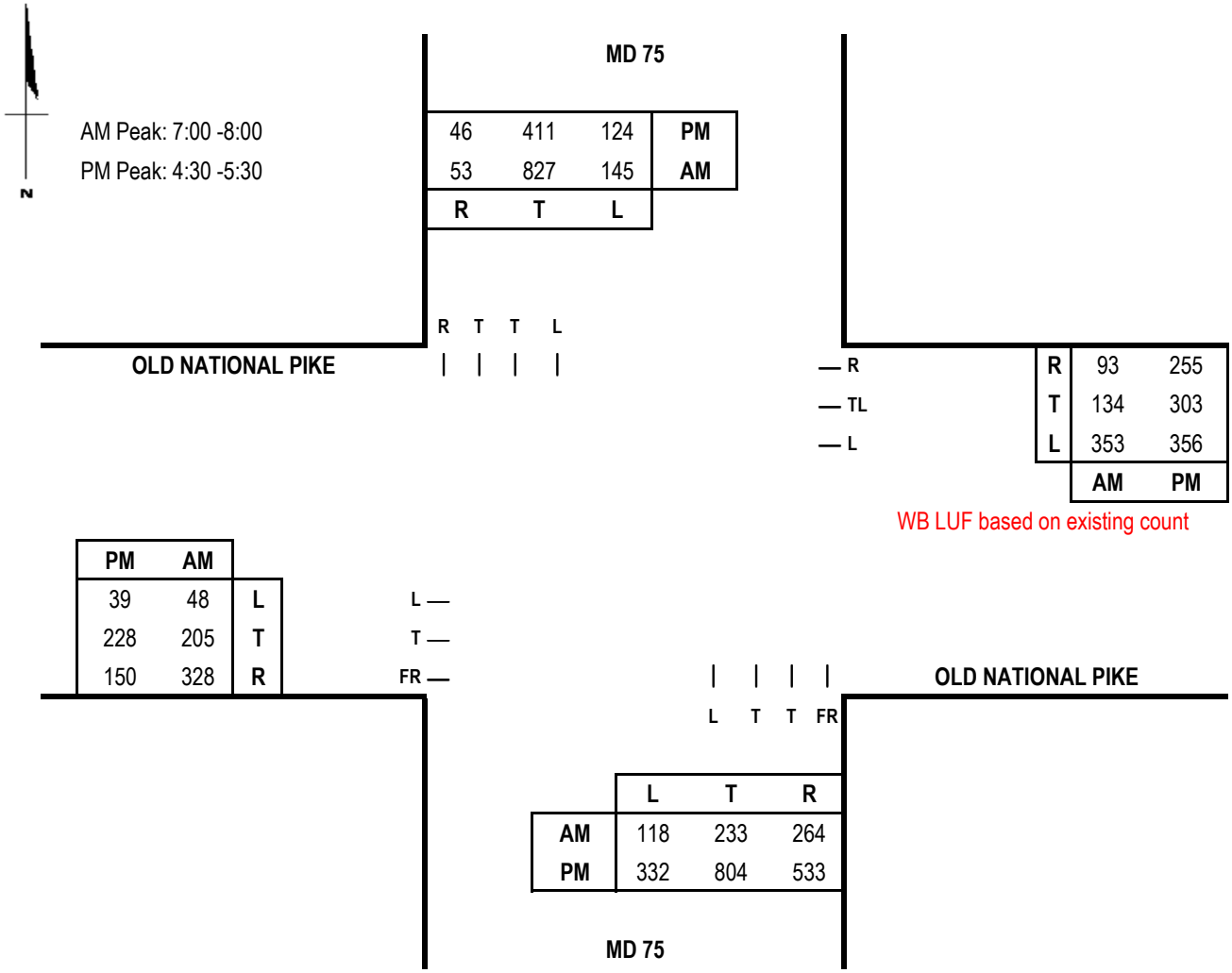
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: MD 75
Conditions: 2028 Background Traffic

Date of Count: 2/25/2021
Day of Week: Thursday
Analyst: Qiang Tian

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



Capacity Analysis - East/West Split

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	205	1.00	205				205
WB	487	0.75	365				365
NB	233	0.55	128	145	1.00	145	573
SB	827	0.55	455	118	1.00	118	

CLV TOTAL= **1,143**
Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	228	1.00	228				228
WB	659	0.64	422				422
NB	804	0.55	442	124	1.00	124	566
SB	411	0.55	226	332	1.00	332	

CLV TOTAL= **1,216**
Level of Service (LOS)= **C**

Scenario ID - BACK1
AM V/C =0.71
PM V/C =0.76

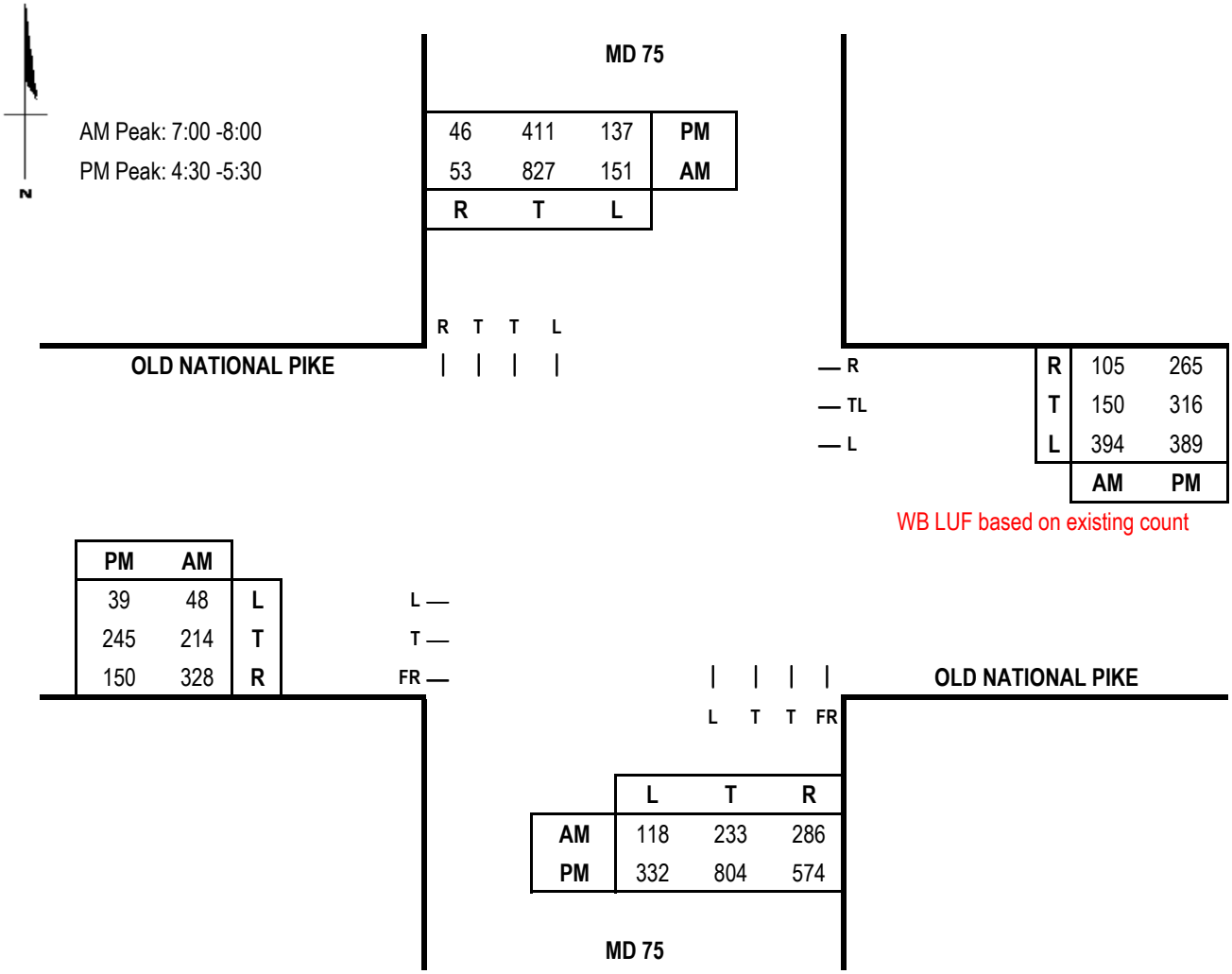
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: MD 75
Conditions: 2028 Total Traffic

Date of Count: 2/25/2021
Day of Week: Thursday
Analyst: Qiang Tian

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



Capacity Analysis - East/West Split

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	214	1.00	214				214
WB	544	0.75	408				408
NB	233	0.55	128	151	1.00	151	573
SB	827	0.55	455	118	1.00	118	
						CLV TOTAL=	1,195
						Level of Service (LOS)=	C

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	245	1.00	245				245
WB	705	0.64	451				451
NB	804	0.55	442	137	1.00	137	579
SB	411	0.55	226	332	1.00	332	
						CLV TOTAL=	1,275
						Level of Service (LOS)=	C

Scenario ID - TOT1

AM V/C =0.75

PM V/C =0.8

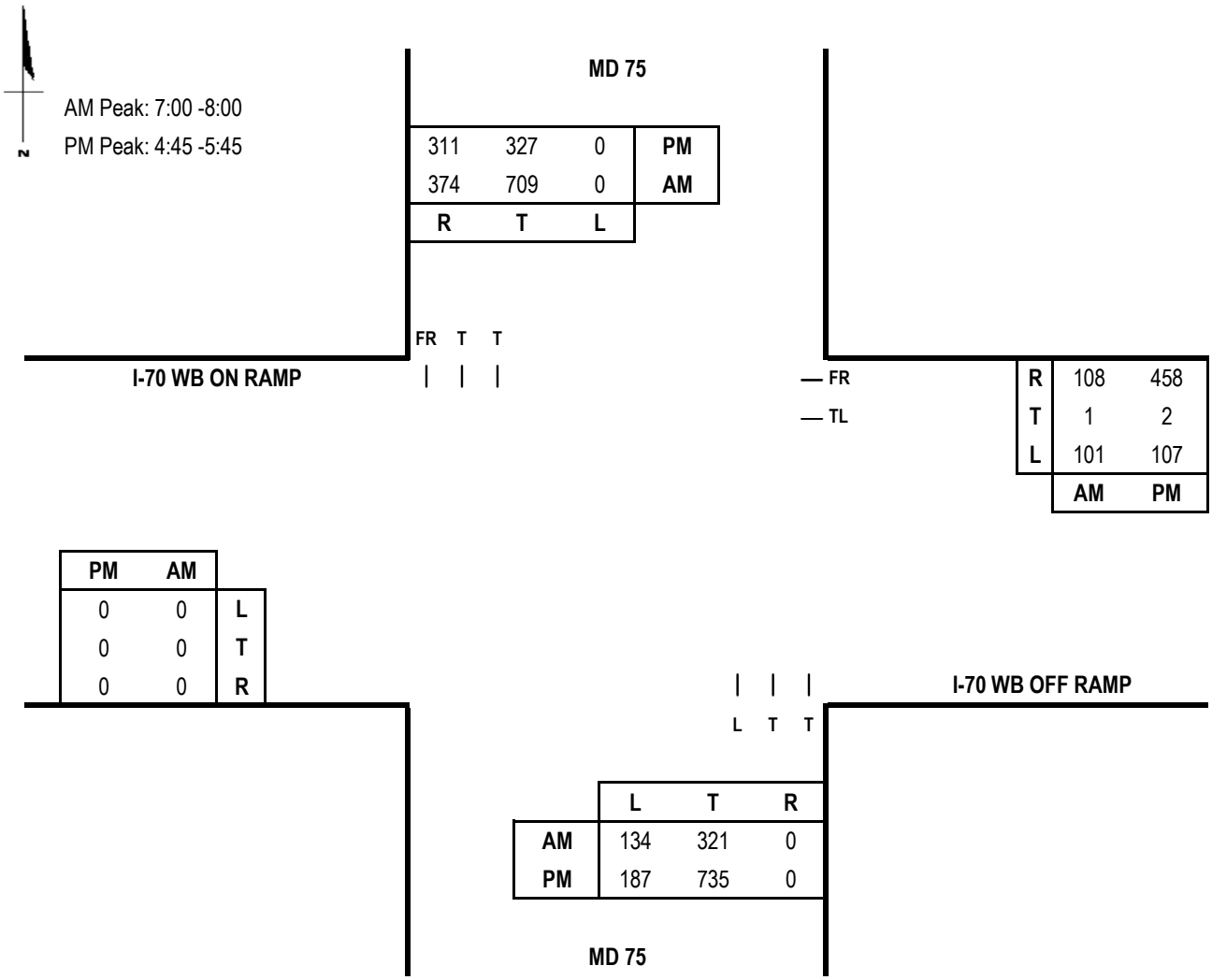
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: I-70 WB Off Ramp/I-70 Wb On Ramp **Date of Count:** 2/25/2021

N/S Road: MD 75 **Day of Count:** Thursday

Conditions: Existing Traffic **Analyst:** Qiang Tian



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	321	0.55	177	0	0.00	0	524
SB	709	0.55	390	134	1.00	134	
EB	0	0.00	0	101	1.00	101	102
WB	102	1.00	102	0	0.00	0	

CLV TOTAL= **626**

Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	735	0.55	404	0	0.00	0	404
SB	327	0.55	180	187	1.00	187	
EB	0	0.00	0	107	1.00	107	109
WB	109	1.00	109	0	0.00	0	

CLV TOTAL= **513**

Level of Service (LOS)= **A**

Scenario ID - EXIST2

AM V/C =0.39

PM V/C =0.32

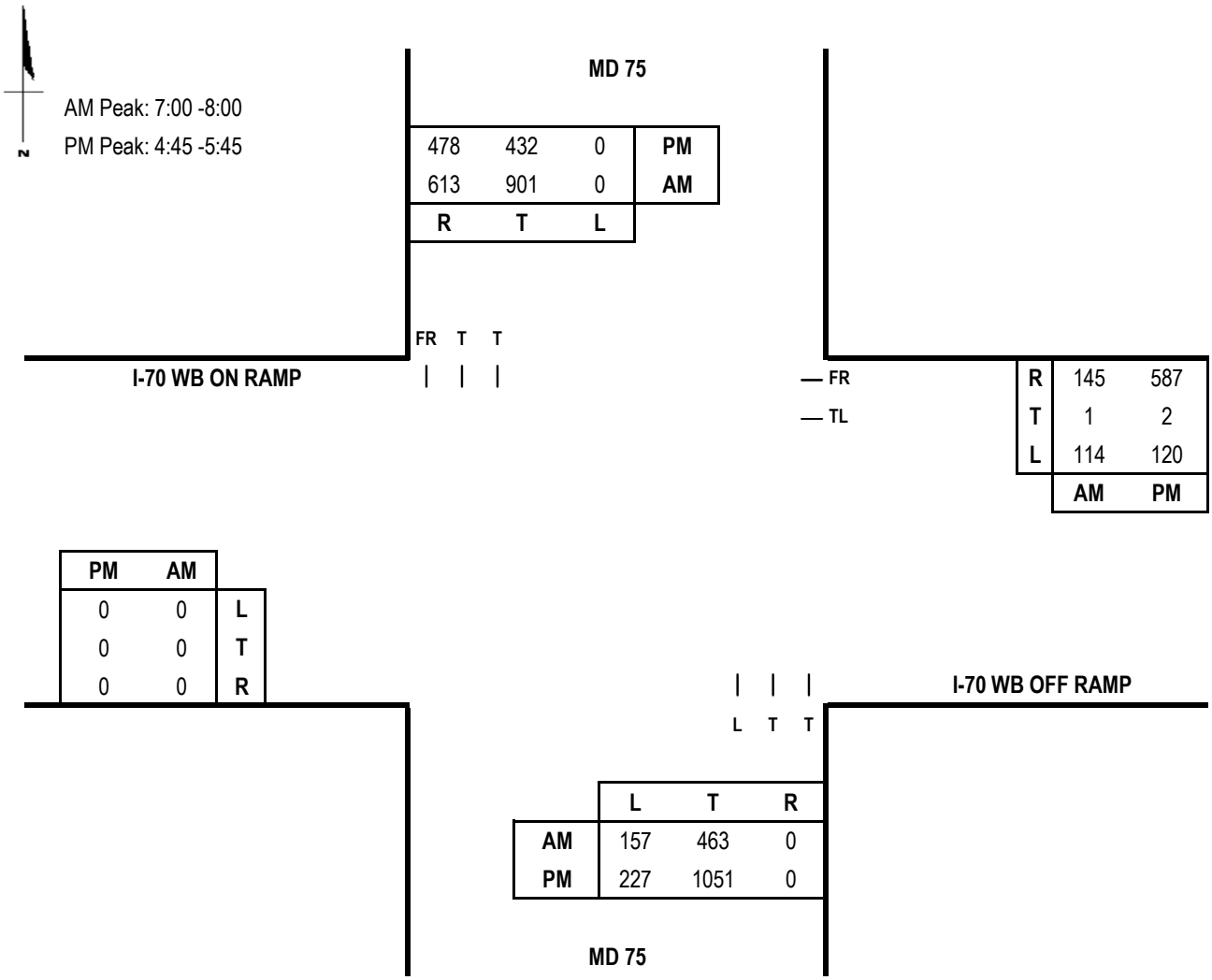
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: I-70 WB Off Ramp/I-70 Wb On Ramp **Date of Count:** 2/25/2021

N/S Road: MD 75 **Day of Count:** Thursday

Conditions: 2028 Background Traffic **Analyst:** Qiang Tian



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	463	0.55	255	0	0.00	0	653
SB	901	0.55	496	157	1.00	157	
EB	0	0.00	0	114	1.00	114	115
WB	115	1.00	115	0	0.00	0	

CLV TOTAL= **768**

Level of Service (LOS)= **A**

AM V/C =0.48

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1051	0.55	578	0	0.00	0	578
SB	432	0.55	238	227	1.00	227	
EB	0	0.00	0	120	1.00	120	122
WB	122	1.00	122	0	0.00	0	

CLV TOTAL= **700**

Level of Service (LOS)= **A**

PM V/C =0.44

Scenario ID - BACK2

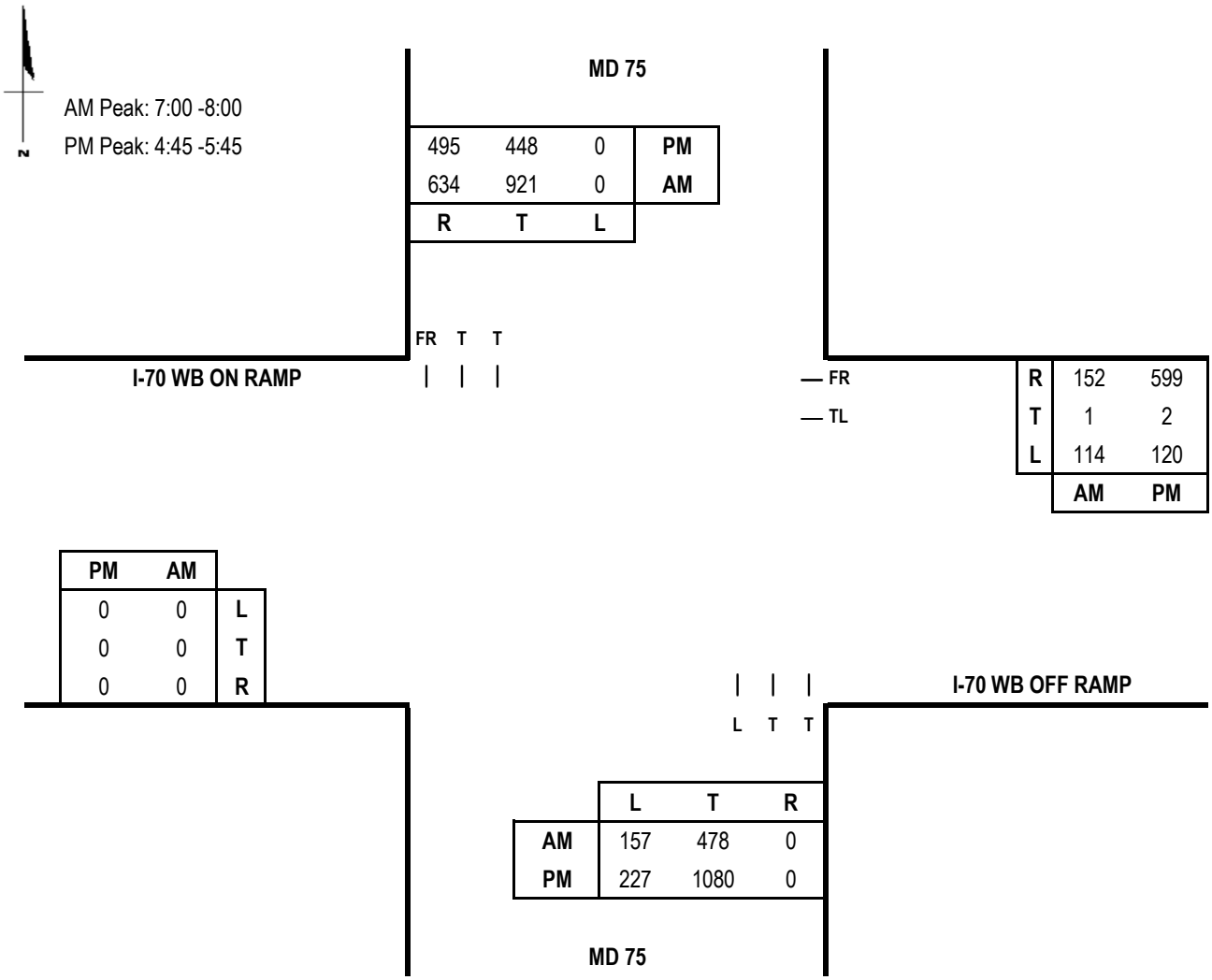
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: I-70 WB Off Ramp/I-70 Wb On Ramp **Date of Count:** 2/25/2021

N/S Road: MD 75 **Day of Count:** Thursday

Conditions: 2028 Total Traffic **Analyst:** Qiang Tian



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	478	0.55	263	0	0.00	0	664
SB	921	0.55	507	157	1.00	157	
EB	0	0.00	0	114	1.00	114	115
WB	115	1.00	115	0	0.00	0	

CLV TOTAL= **779**

Level of Service (LOS)= **A**

AM V/C =0.49

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1080	0.55	594	0	0.00	0	594
SB	448	0.55	246	227	1.00	227	
EB	0	0.00	0	120	1.00	120	122
WB	122	1.00	122	0	0.00	0	

CLV TOTAL= **716**

Level of Service (LOS)= **A**

PM V/C =0.45

Scenario ID - TOT2

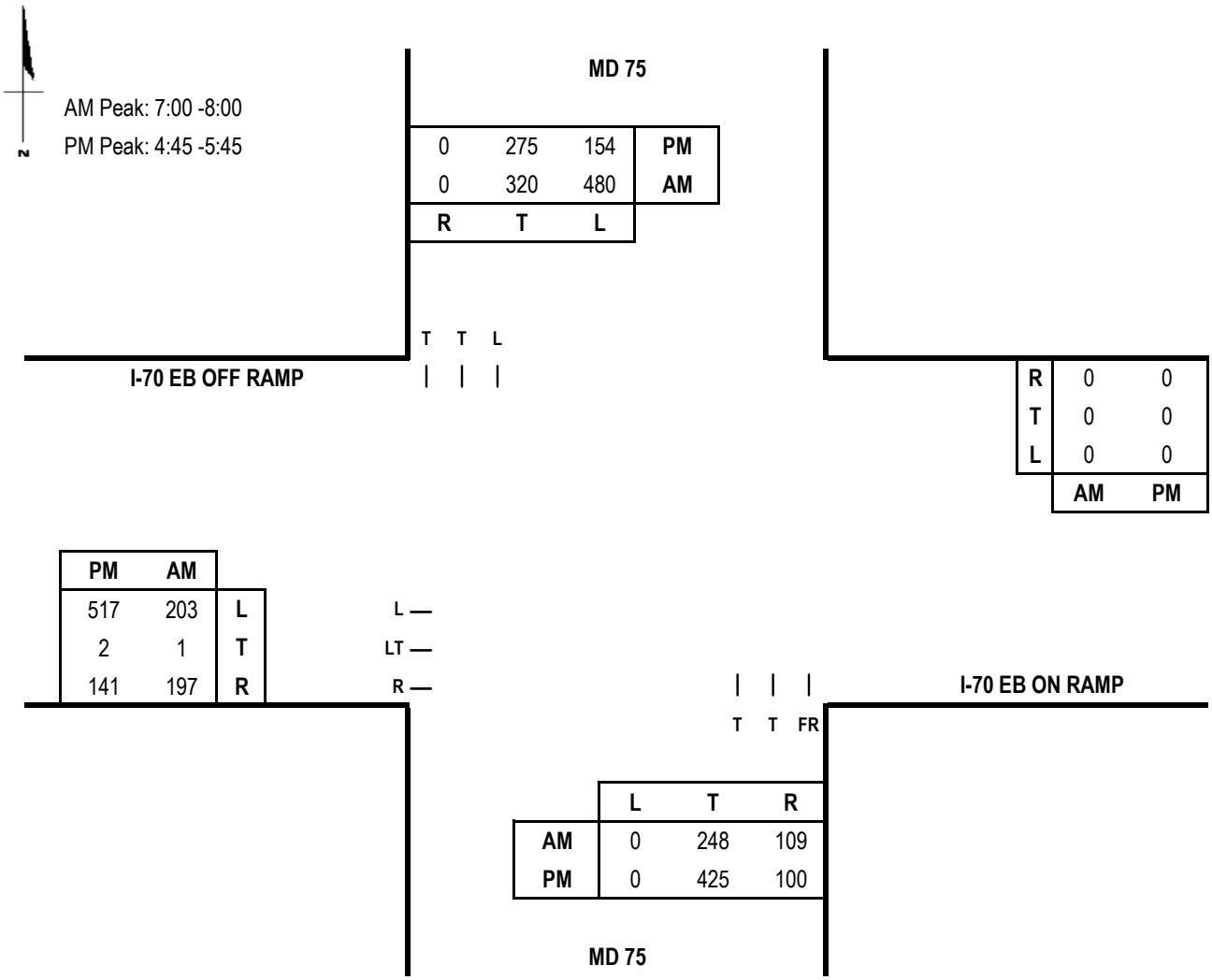
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: I-70 EB On Ramp/I-70 Eb Off Ramp **Date of Count:** 2/25/21

N/S Road: MD 75 **Day of Count:** Thursday

Conditions: Existing Traffic **Analyst:** Qiang Tian



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	248	0.55	136	480	1.00	480	616
SB	320	0.55	176	0	0.00	0	
EB	204	0.60	122	0	0.00	0	122
WB	0	0.00	0	203	0.60	122	

CLV TOTAL= **738**

Level of Service (LOS)= **A**

AM V/C =0.46

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	425	0.55	234	154	1.00	154	388
SB	275	0.55	151	0	0.00	0	
EB	519	0.60	311	0	0.00	0	311
WB	0	0.00	0	517	0.60	310	

CLV TOTAL= **699**

Level of Service (LOS)= **A**

PM V/C =0.44

Scenario ID - EXIST3

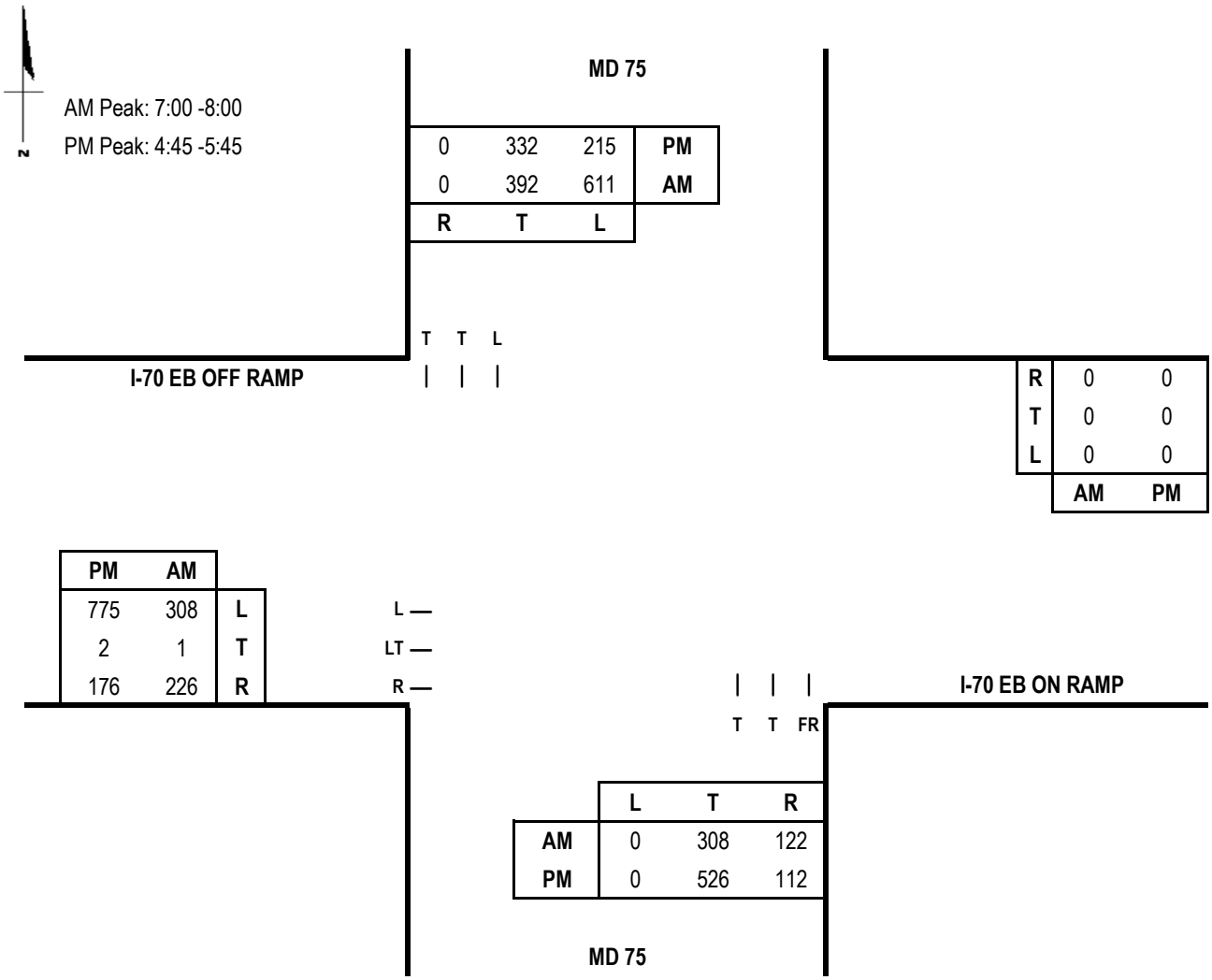
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: I-70 EB On Ramp/I-70 Eb Off Ramp **Date of Count:** 2/25/21

N/S Road: MD 75 **Day of Count:** Thursday

Conditions: 2028 Background Traffic **Analyst:** Qiang Tian



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	308	0.55	169	611	1.00	611	780
SB	392	0.55	216	0	0.00	0	
EB	309	0.60	185	0	0.00	0	185
WB	0	0.00	0	308	0.60	185	

CLV TOTAL= **965**

Level of Service (LOS)= **A**

AM V/C =0.6

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	526	0.55	289	215	1.00	215	504
SB	332	0.55	183	0	0.00	0	
EB	777	0.60	466	0	0.00	0	466
WB	0	0.00	0	775	0.60	465	

CLV TOTAL= **970**

Level of Service (LOS)= **A**

PM V/C =0.61

Scenario ID - BACK3

CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

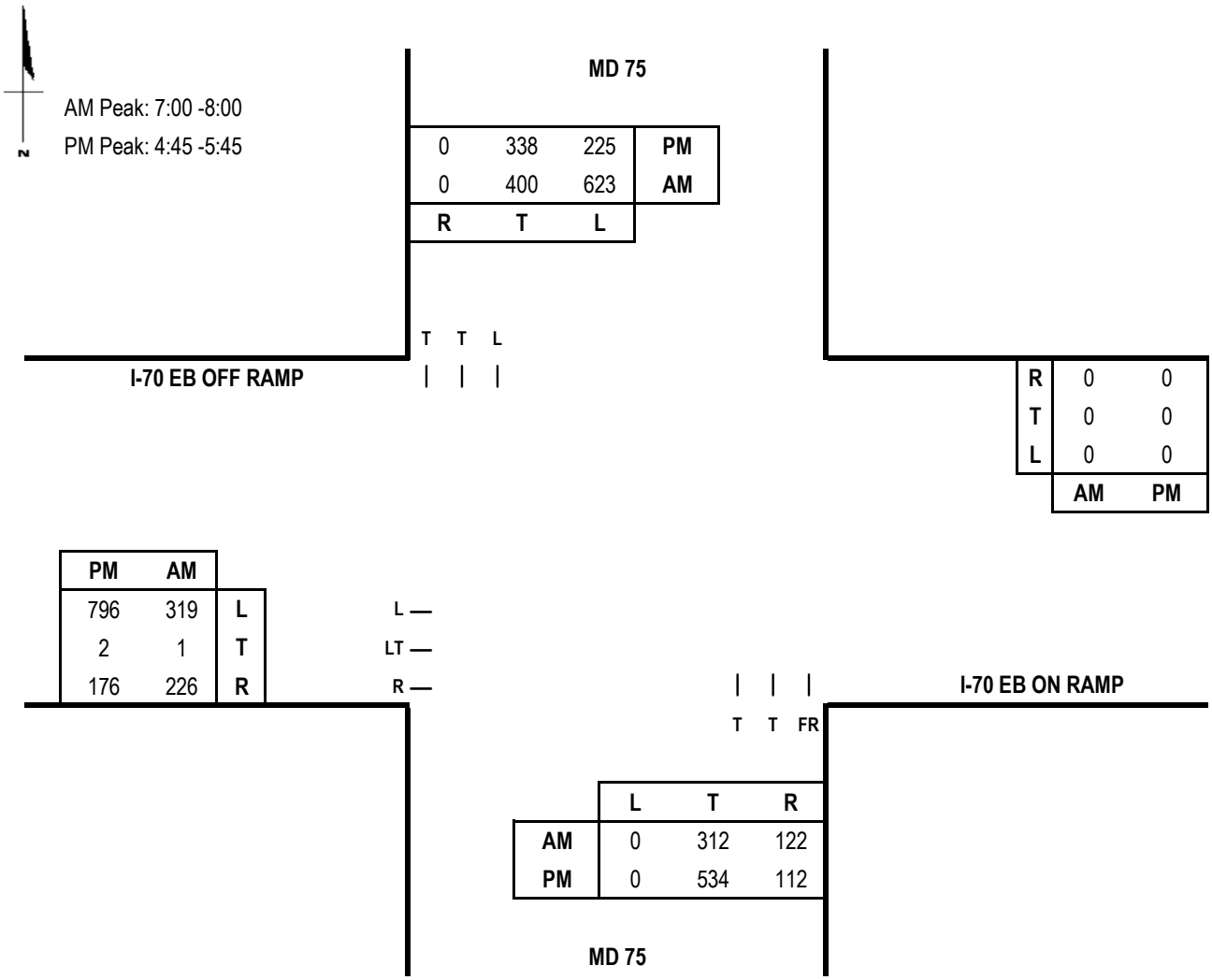
E/W Road: I-70 EB On Ramp/I-70 Eb Off Ramp **Date of Count:** 2/25/21

N/S Road: MD 75 **Day of Count:** Thursday

Conditions: 2028 Total Traffic **Analyst:** Qiang Tian

AM Peak: 7:00 -8:00

PM Peak: 4:45 -5:45



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	312	0.55	172	623	1.00	623	795
SB	400	0.55	220	0	0.00	0	
EB	320	0.60	192	0	0.00	0	192
WB	0	0.00	0	319	0.60	191	

CLV TOTAL= **987**

Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	534	0.55	294	225	1.00	225	519
SB	338	0.55	186	0	0.00	0	
EB	798	0.60	479	0	0.00	0	479
WB	0	0.00	0	796	0.60	478	

CLV TOTAL= **998**

Level of Service (LOS)= **A**

Scenario ID - TOT3

AM V/C =0.62

PM V/C =0.62

CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike **Date of Count:** 2/25/2021

N/S Road: Morning Gate Lane/Shopping Center Acces **Day of Count:** Thursday

Conditions: Existing Traffic **Analyst:** Qiang Tian

AM Peak: 7:15 -8:15

PM Peak: 4:30 -5:30

MORNING GATE LANE

R	T	L	
98	16	45	PM
86	10	34	AM

RT L

OLD NATIONAL PIKE

RT

T

L

	AM	PM
R	23	58
T	236	448
L	19	28

PM	AM	
162	126	L
437	227	T
153	131	R

L

T

TR

L TR

OLD NATIONAL PIKE

	L	T	R
AM	110	7	24
PM	128	28	52

SHOPPING CENTER ACCESS

Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	31	1.00	31	34	1.00	34	206
SB	96	1.00	96	110	1.00	110	
EB	358	0.55	197	19	1.00	19	268
WB	259	0.55	142	126	1.00	126	

CLV TOTAL= **474**

Level of Service (LOS)= **A**

AM V/C =0.3

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	80	1.00	80	45	1.00	45	242
SB	114	1.00	114	128	1.00	128	
EB	590	0.55	325	28	1.00	28	440
WB	506	0.55	278	162	1.00	162	

CLV TOTAL= **682**

Level of Service (LOS)= **A**

PM V/C =0.43

Scenario ID - EXIST4

CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

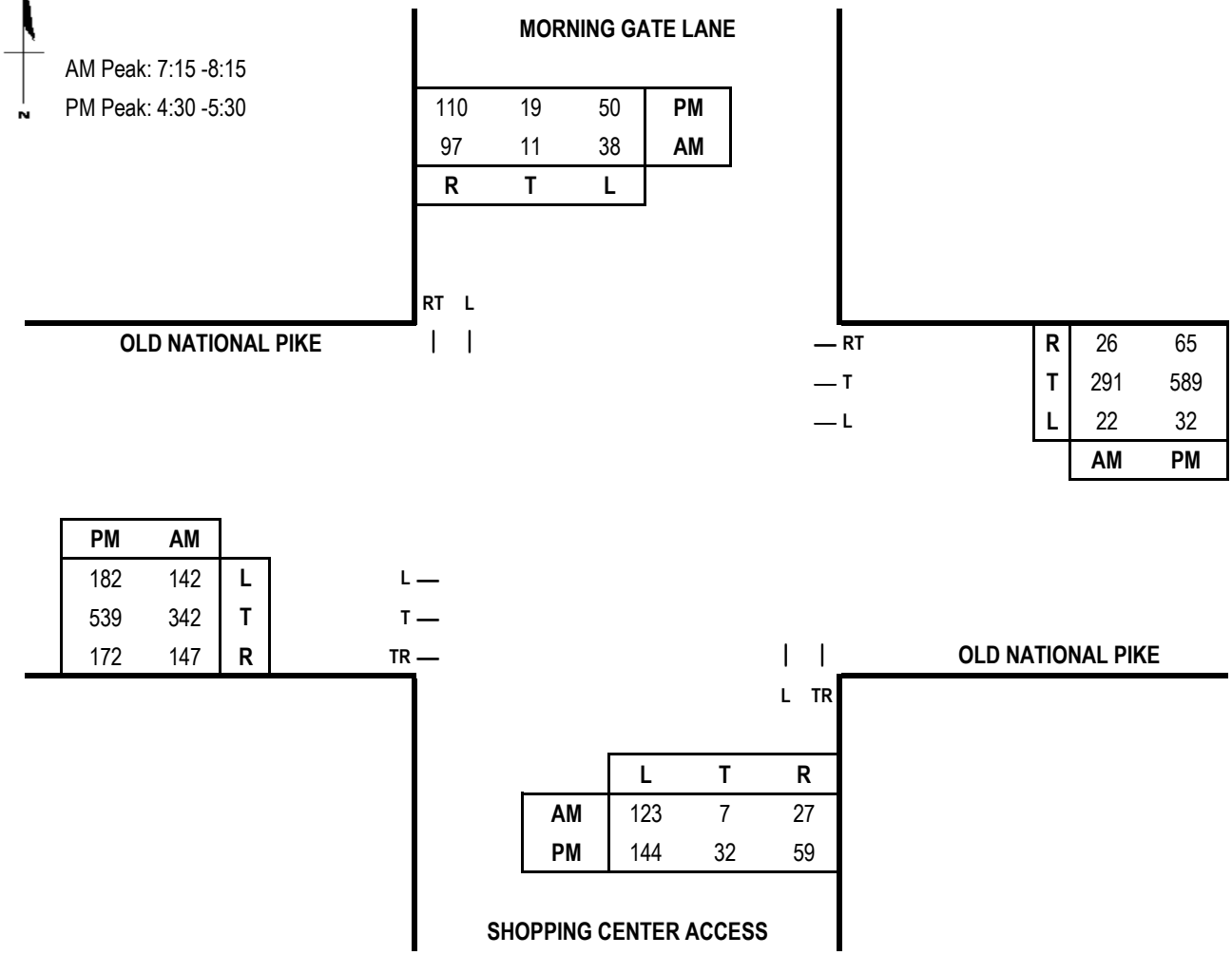
E/W Road: Old National Pike **Date of Count:** 2/25/2021

N/S Road: Morning Gate Lane/Shopping Center Acces **Day of Count:** Thursday

Conditions: 2028 Background Traffic **Analyst:** Qiang Tian

AM Peak: 7:15 -8:15

PM Peak: 4:30 -5:30



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	34	1.00	34	38	1.00	38	231
SB	108	1.00	108	123	1.00	123	
EB	489	0.55	269	22	1.00	22	316
WB	317	0.55	174	142	1.00	142	

CLV TOTAL= **547**

Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	91	1.00	91	50	1.00	50	273
SB	129	1.00	129	144	1.00	144	
EB	711	0.55	391	32	1.00	32	542
WB	654	0.55	360	182	1.00	182	

CLV TOTAL= **815**

Level of Service (LOS)= **A**

Scenario ID - BACK4

AM V/C =0.34

PM V/C =0.51

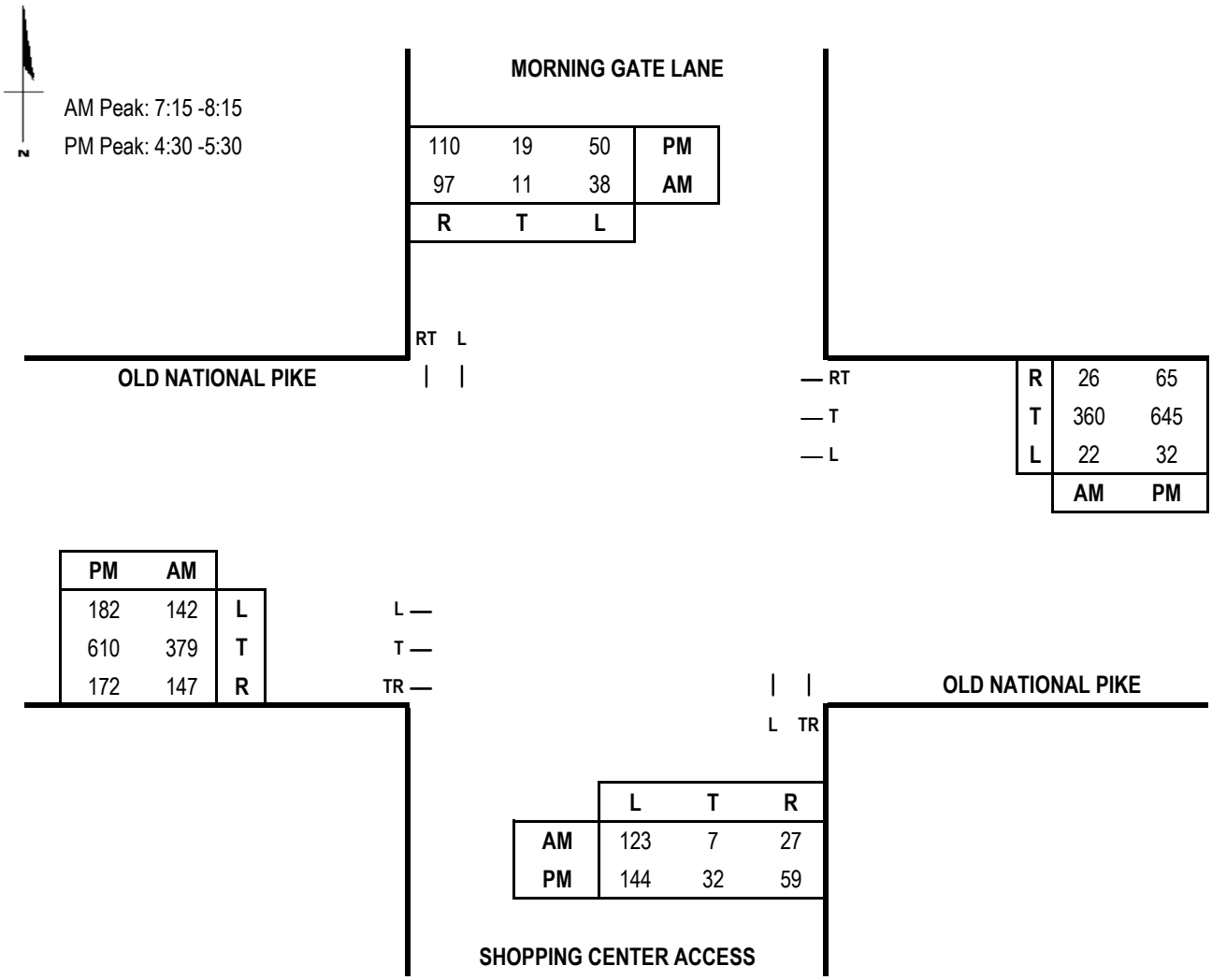
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike **Date of Count:** 2/25/2021

N/S Road: Morning Gate Lane/Shopping Center Acces **Day of Count:** Thursday

Conditions: 2028 Total Traffic **Analyst:** Qiang Tian



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	34	1.00	34	38	1.00	38	231
SB	108	1.00	108	123	1.00	123	
EB	526	0.55	289	22	1.00	22	354
WB	386	0.55	212	142	1.00	142	
						CLV TOTAL=	585
						Level of Service (LOS)=	A

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	91	1.00	91	50	1.00	50	273
SB	129	1.00	129	144	1.00	144	
EB	782	0.55	430	32	1.00	32	573
WB	710	0.55	391	182	1.00	182	
						CLV TOTAL=	846
						Level of Service (LOS)=	A

Scenario ID - TOT4 AM V/C =0.37 PM V/C =0.53

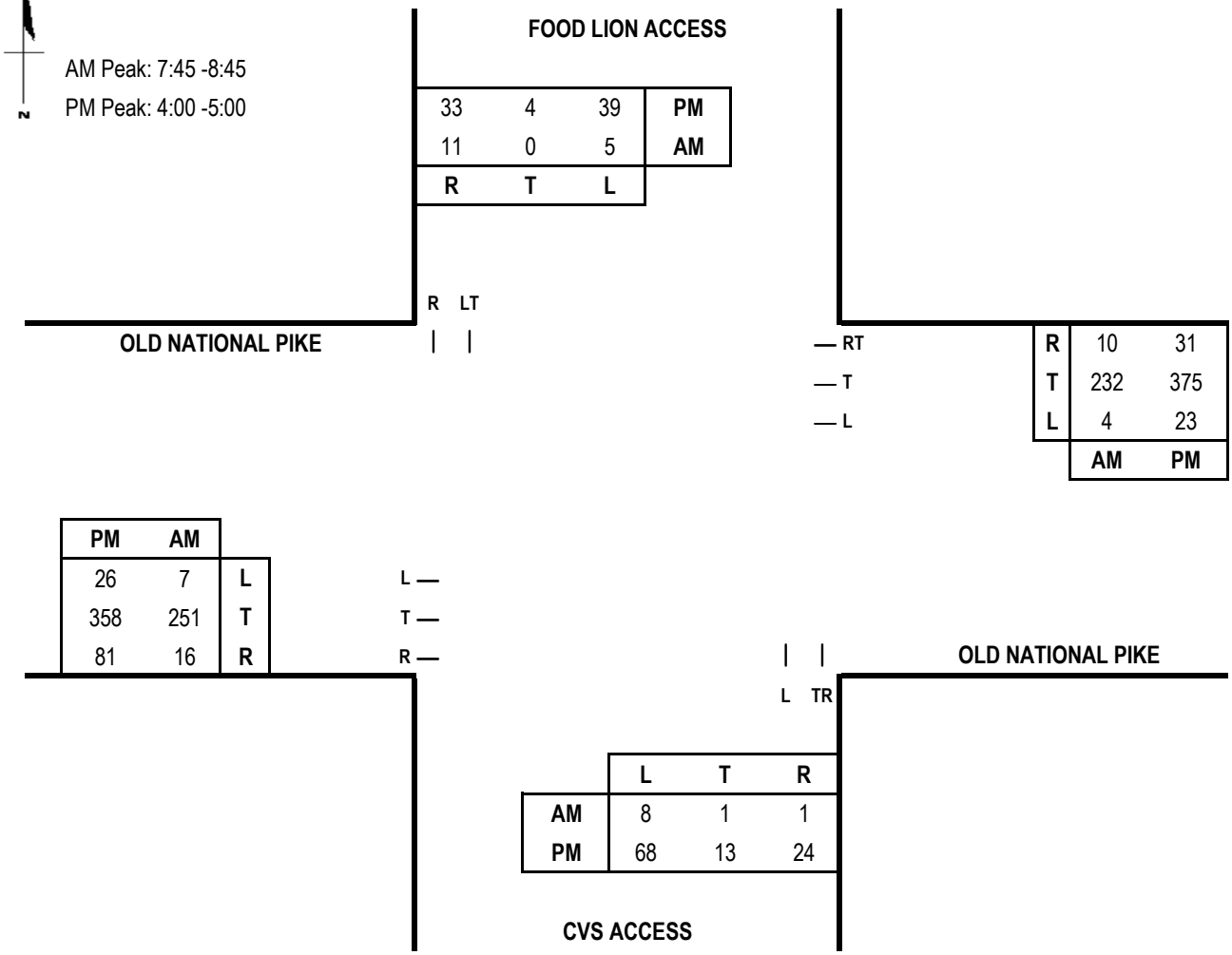
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: Food Lion Access/Cvs Access
Conditions: Existing Traffic

Date of Count: 2/25/2021
Day of Count: Thursday
Analyst: Qiang Tian

AM Peak: 7:45 -8:45
PM Peak: 4:00 -5:00



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	2	1.00	2	5	1.00	5	13
SB	5	1.00	5	8	1.00	8	
EB	251	1.00	251	4	1.00	4	255
WB	242	0.55	133	7	1.00	7	
						CLV TOTAL=	268
						Level of Service (LOS)=	A

AM V/C =0.17

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	37	1.00	37	39	1.00	39	111
SB	43	1.00	43	68	1.00	68	
EB	358	1.00	358	23	1.00	23	381
WB	406	0.55	223	26	1.00	26	
						CLV TOTAL=	492
						Level of Service (LOS)=	A

PM V/C =0.31

Scenario ID - EXIST5

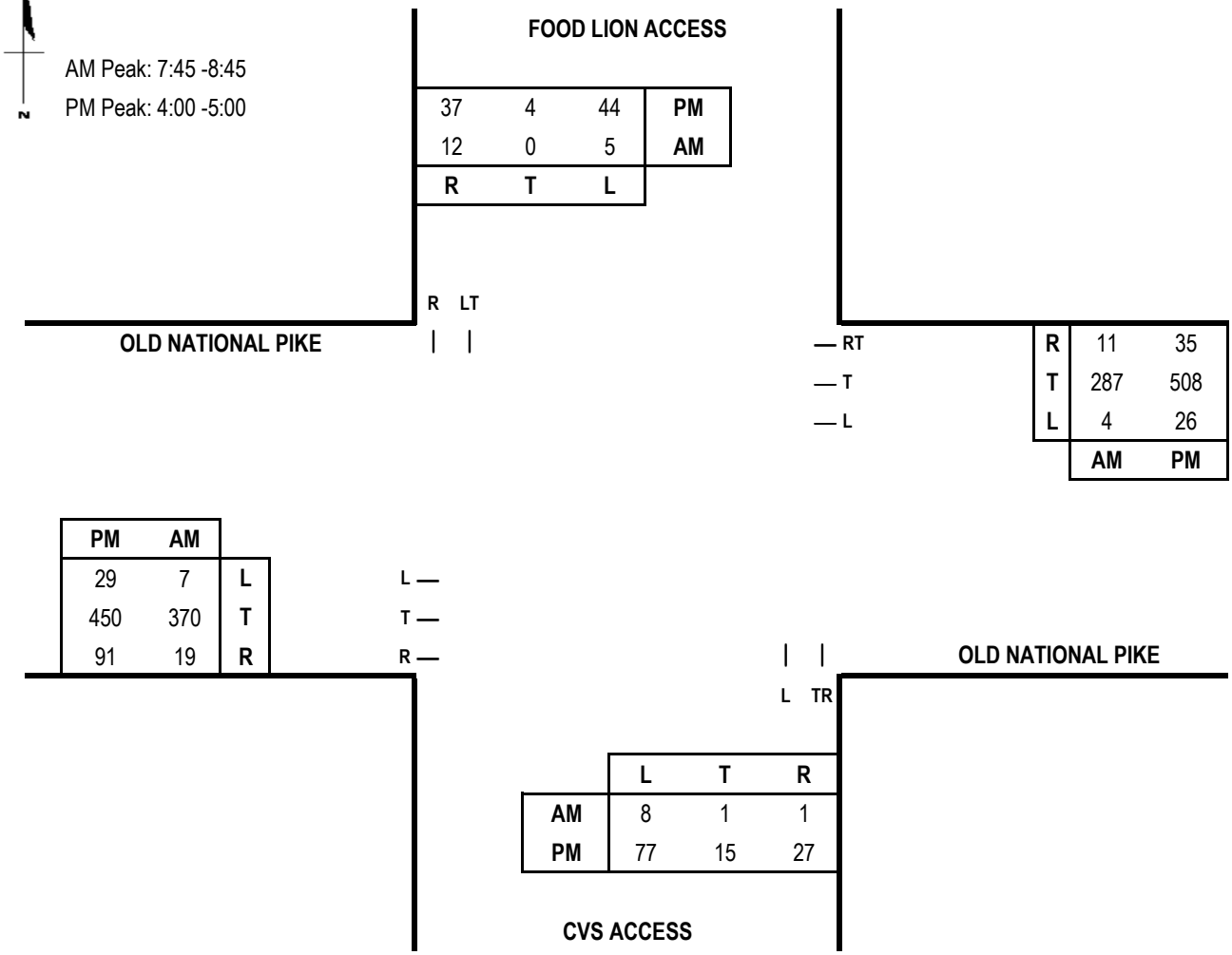
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: Food Lion Access/Cvs Access
Conditions: 2028 Background Traffic

Date of Count: 2/25/2021
Day of Count: Thursday
Analyst: Qiang Tian

AM Peak: 7:45 -8:45
PM Peak: 4:00 -5:00



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	2	1.00	2	5	1.00	5	13
SB	5	1.00	5	8	1.00	8	
EB	370	1.00	370	4	1.00	4	374
WB	298	0.55	164	7	1.00	7	
						CLV TOTAL=	387
						Level of Service (LOS)=	A

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	42	1.00	42	44	1.00	44	125
SB	48	1.00	48	77	1.00	77	
EB	450	1.00	450	26	1.00	26	476
WB	543	0.55	299	29	1.00	29	
						CLV TOTAL=	601
						Level of Service (LOS)=	A

Scenario ID - BACK5
AM V/C =0.24
PM V/C =0.38

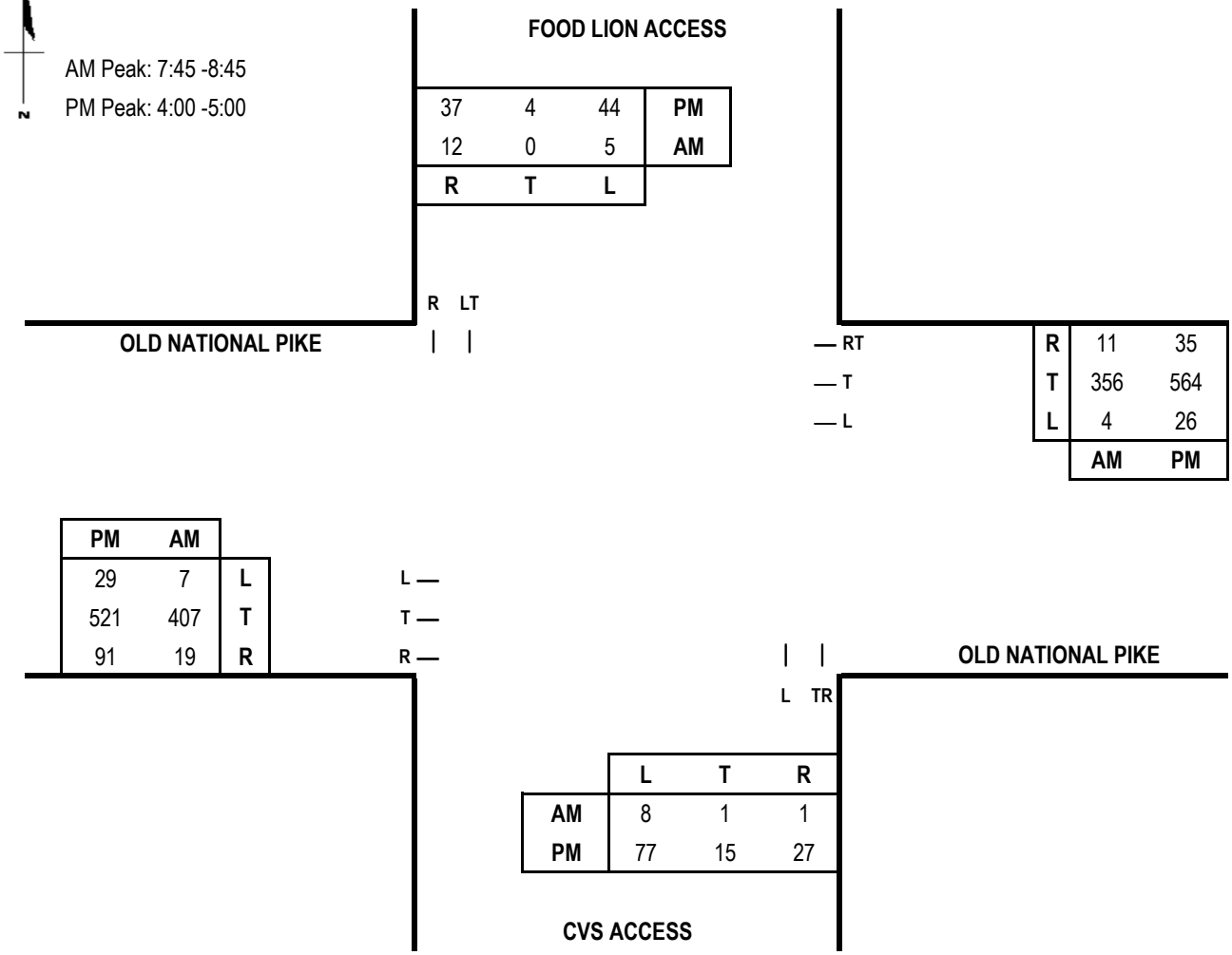
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: Food Lion Access/Cvs Access
Conditions: 2028 Total Traffic

Date of Count: 2/25/2021
Day of Count: Thursday
Analyst: Qiang Tian

AM Peak: 7:45 -8:45
PM Peak: 4:00 -5:00



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	2	1.00	2	5	1.00	5	13
SB	5	1.00	5	8	1.00	8	
EB	407	1.00	407	4	1.00	4	411
WB	367	0.55	202	7	1.00	7	
						CLV TOTAL=	424
						Level of Service (LOS)=	A

AM V/C =0.27

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	42	1.00	42	44	1.00	44	125
SB	48	1.00	48	77	1.00	77	
EB	521	1.00	521	26	1.00	26	547
WB	599	0.55	329	29	1.00	29	
						CLV TOTAL=	672
						Level of Service (LOS)=	A

PM V/C =0.42

Scenario ID - TOT5

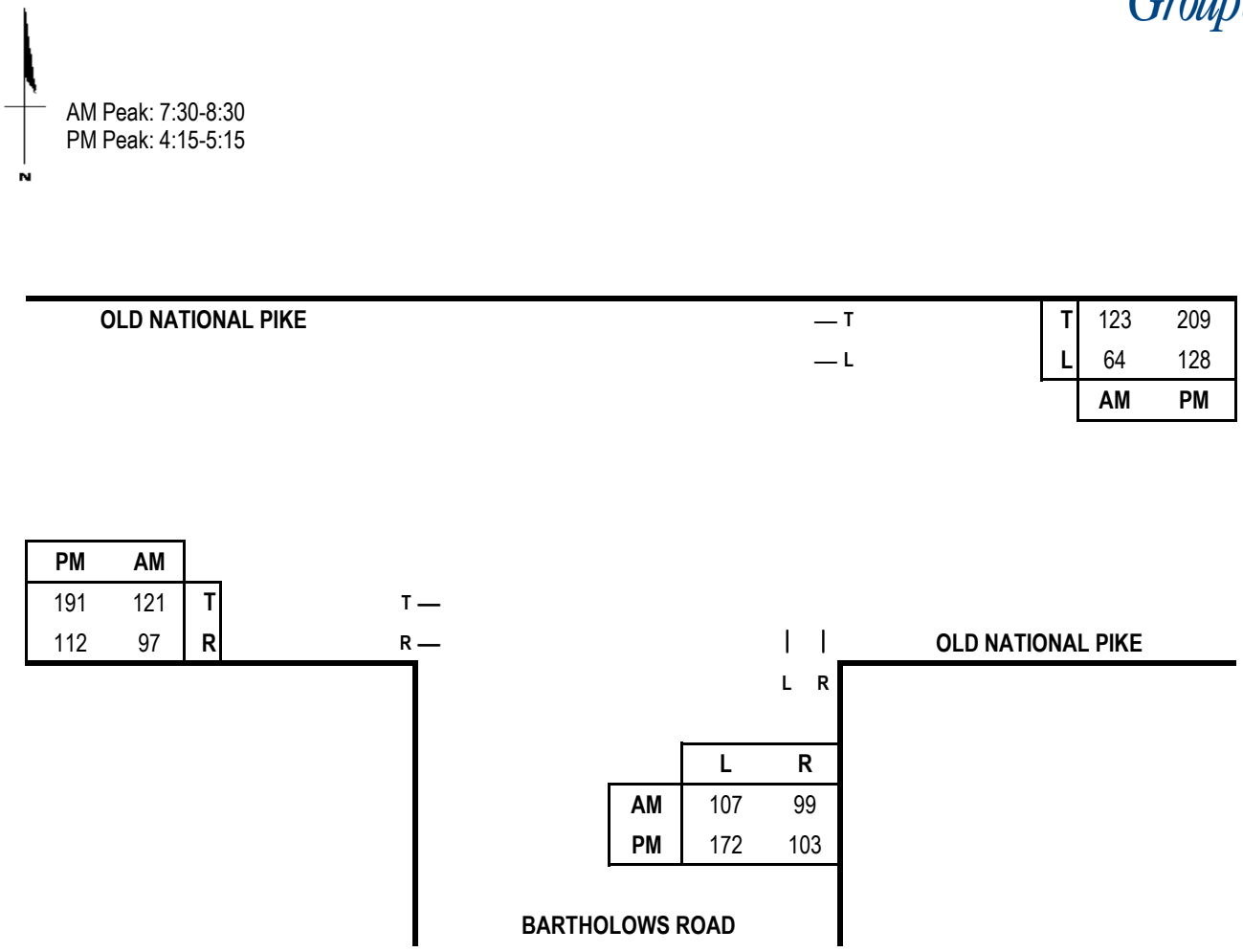
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: Bartholows Road
Conditions: Existing Traffic

Date of Count: 3/4/2021
Day of Count: Thursday
Analyst: Qiang Tian

AM Peak: 7:30-8:30
PM Peak: 4:15-5:15



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	107	1.00	107				107
EB	121	1.00	121	64	1.00	64	185
WB	123	1.00	123				

CLV TOTAL= **292**
Level of Service (LOS)= **A**
CLV V/C =0.18

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	172	1.00	172				172
EB	191	1.00	191	128	1.00	128	319
WB	209	1.00	209				

CLV TOTAL= **491**
Level of Service (LOS)= **A**
CLV V/C =0.31

Scenario ID - EXIST6

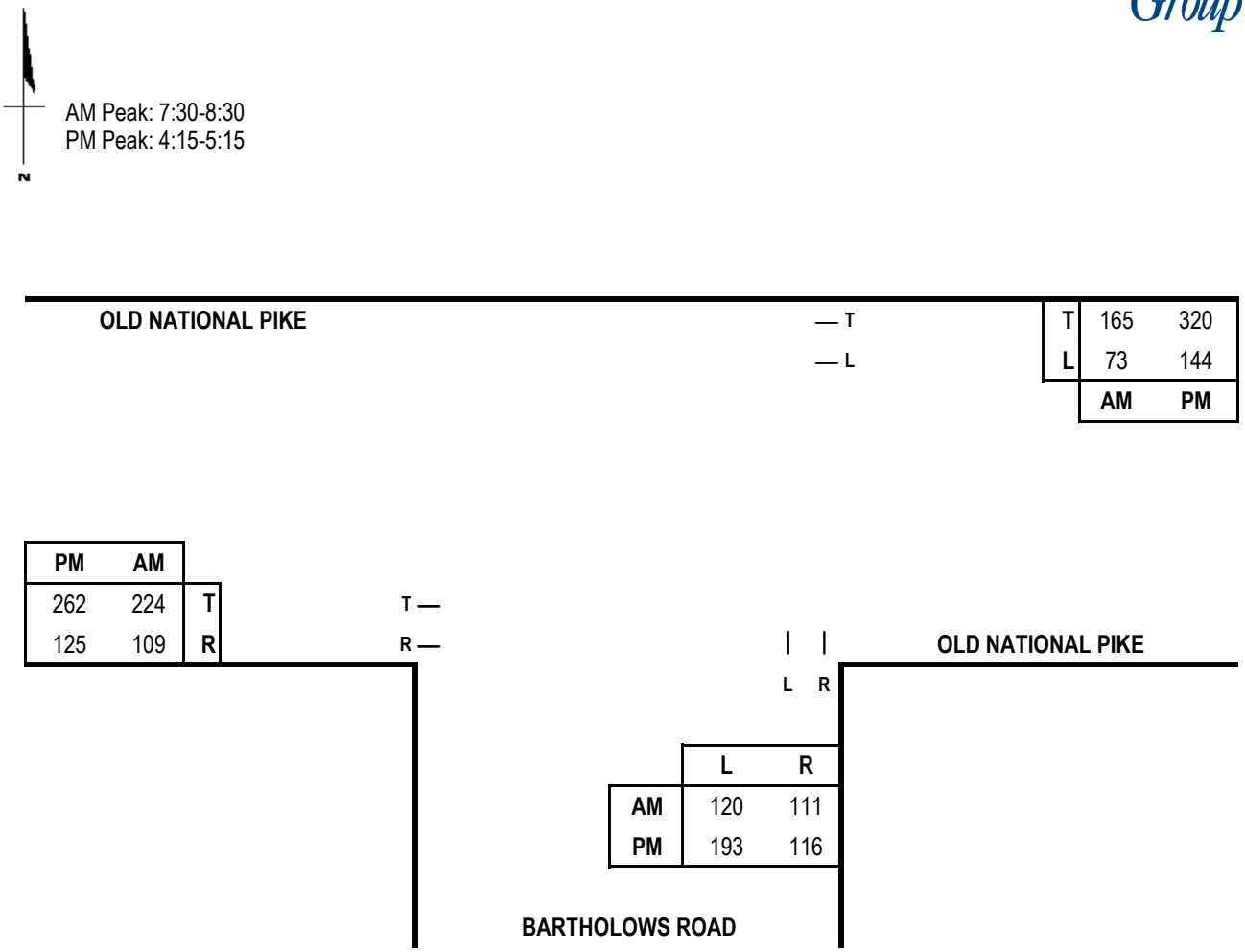
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: Bartholows Road
Conditions: 2028 Background Traffic

Date of Count: 3/4/2021
Day of Count: Thursday
Analyst: Qiang Tian

AM Peak: 7:30-8:30
PM Peak: 4:15-5:15



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	120	1.00	120				120
EB	224	1.00	224	73	1.00	73	297
WB	165	1.00	165				

CLV TOTAL= **417**
Level of Service (LOS)= **A**
CLV V/C =0.26

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	193	1.00	193				193
EB	262	1.00	262	144	1.00	144	406
WB	320	1.00	320				

CLV TOTAL= **599**
Level of Service (LOS)= **A**
CLV V/C =0.37

Scenario ID - BACK6

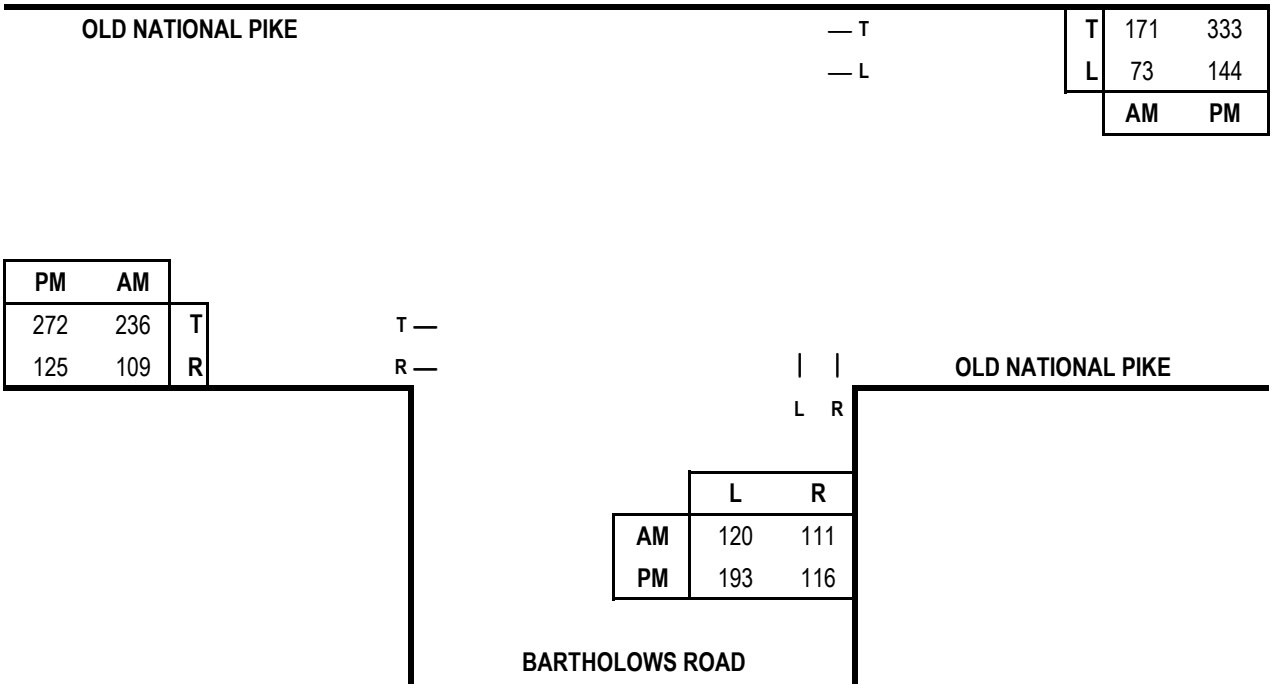
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: Bartholows Road
Conditions: 2028 Total Traffic

Date of Count: 3/4/2021
Day of Count: Thursday
Analyst: Qiang Tian

AM Peak: 7:30-8:30
PM Peak: 4:15-5:15



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	120	1.00	120				120
EB	236	1.00	236	73	1.00	73	309
WB	171	1.00	171				

CLV TOTAL= **429**
Level of Service (LOS)= **A**
CLV V/C =0.27

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	193	1.00	193				193
EB	272	1.00	272	144	1.00	144	416
WB	333	1.00	333				

CLV TOTAL= **609**
Level of Service (LOS)= **A**
CLV V/C =0.38

Scenario ID - TOT6

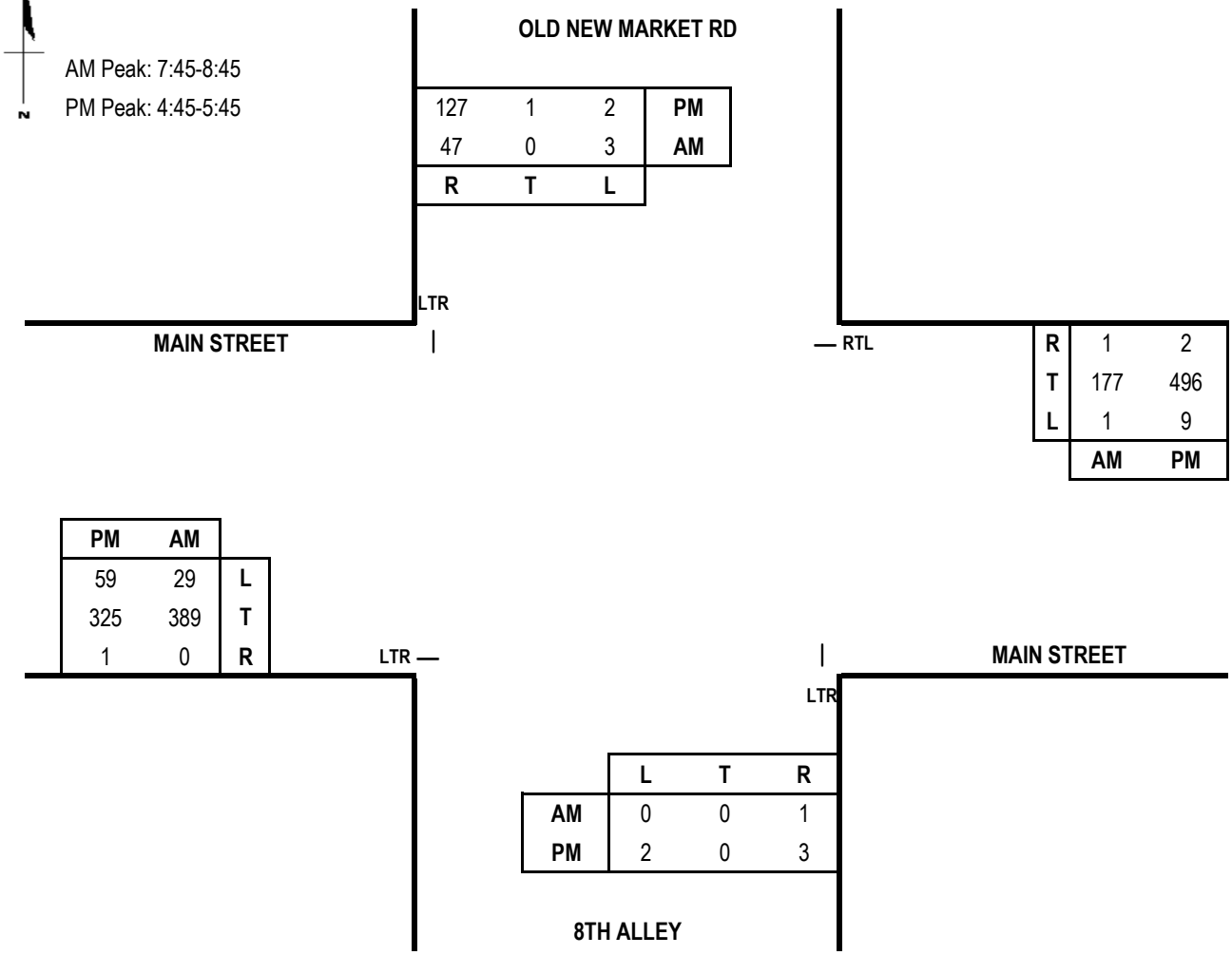
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Main Street
N/S Road: Old New Market Rd
Conditions: Existing Traffic

Date of Count: 10/26/2021
Day of Count: Tuesday
Analyst: Qiang Tian

AM Peak: 7:45-8:45
PM Peak: 4:45-5:45



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	1	1.00	1	3	1.00	3	50
SB	50	1.00	50	0	1.00	0	
EB	418	1.00	418	1	1.00	1	419
WB	179	1.00	179	29	1.00	29	

CLV TOTAL= **469**
Level of Service (LOS)= **A**
AM V/C =0.29

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	5	1.00	5	2	1.00	2	132
SB	130	1.00	130	2	1.00	2	
EB	385	1.00	385	9	1.00	9	566
WB	507	1.00	507	59	1.00	59	

CLV TOTAL= **698**
Level of Service (LOS)= **A**
PM V/C =0.44

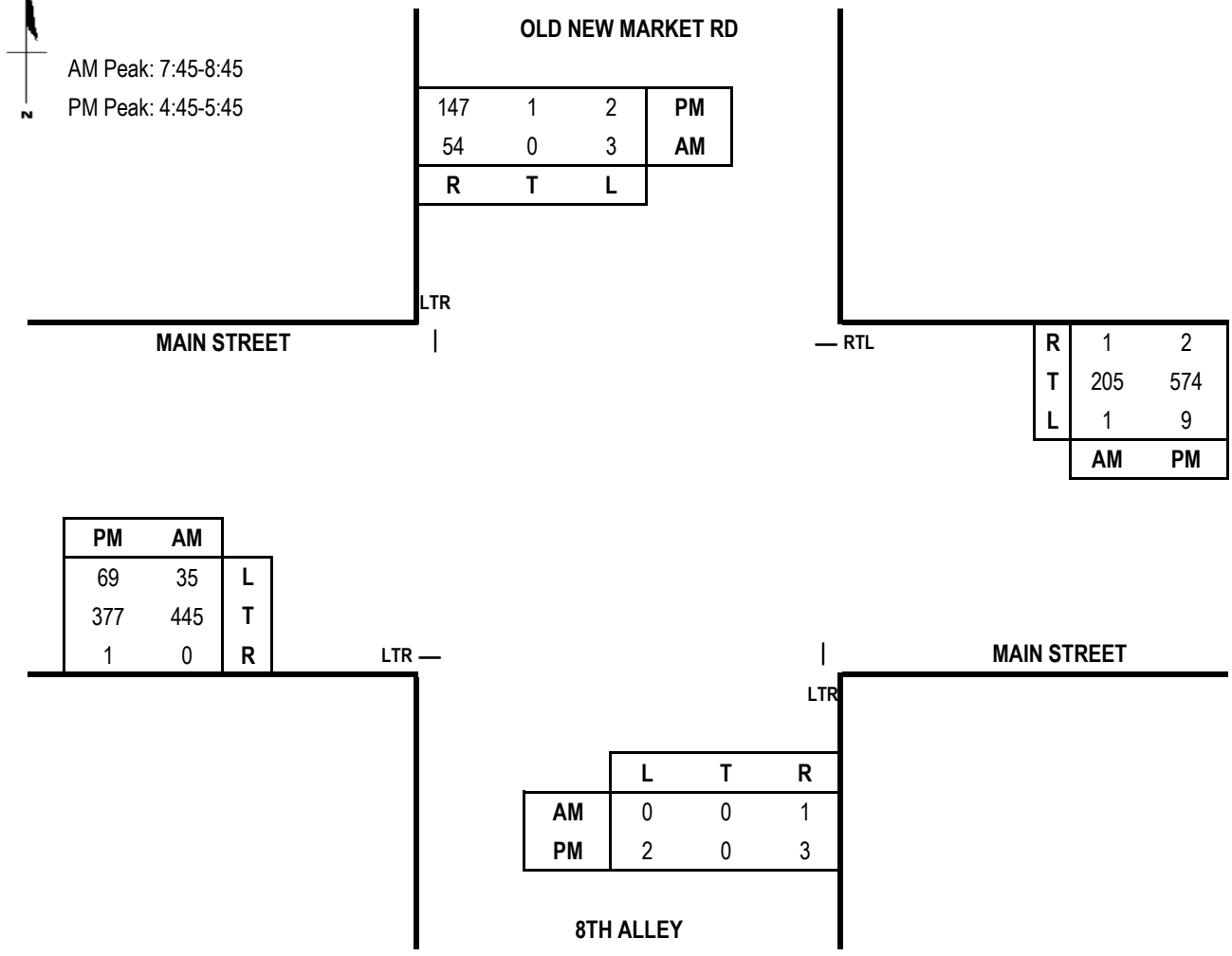
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Main Street
N/S Road: Old New Market Rd/8Th Alley
Conditions: 2028 Background Traffic

Date of Count: 10/26/2021
Day of Count: Tuesday
Analyst: Qiang Tian

AM Peak: 7:45-8:45
PM Peak: 4:45-5:45



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	1	1.00	1	3	1.00	3	57
SB	57	1.00	57	0	1.00	0	
EB	480	1.00	480	1	1.00	1	481
WB	207	1.00	207	35	1.00	35	
						CLV TOTAL=	538
						Level of Service (LOS)=	A

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	5	1.00	5	2	1.00	2	152
SB	150	1.00	150	2	1.00	2	
EB	447	1.00	447	9	1.00	9	654
WB	585	1.00	585	69	1.00	69	
						CLV TOTAL=	806
						Level of Service (LOS)=	A

Scenario ID - BACK7

AM V/C =0.34

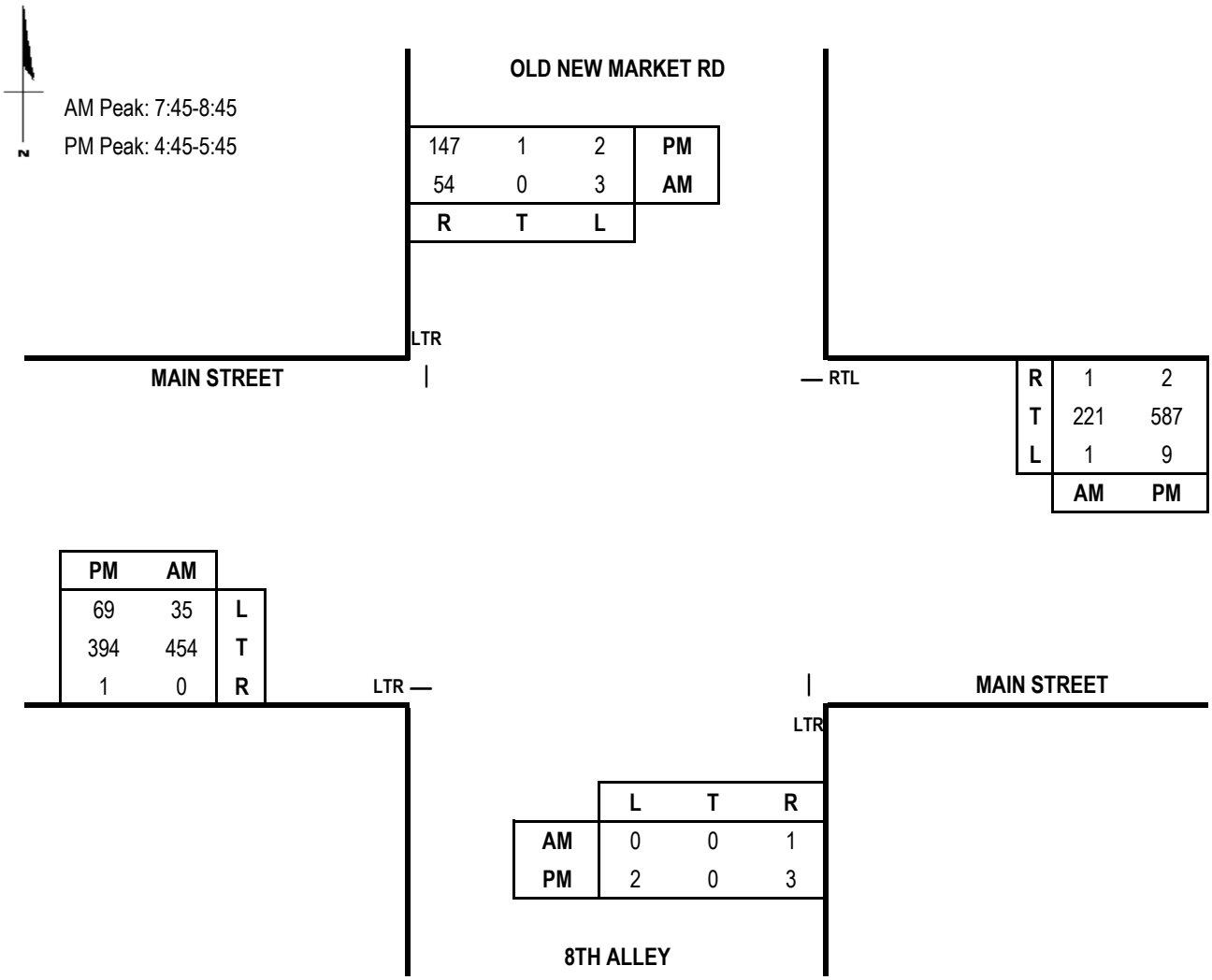
PM V/C =0.5

CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Main Street
N/S Road: Old New Market Rd/8Th Alley
Conditions: 2028 Total Traffic

Date of Count: 10/26/2021
Day of Count: Tuesday
Analyst: Qiang Tian



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	1	1.00	1	3	1.00	3	57
SB	57	1.00	57	0	1.00	0	
EB	489	1.00	489	1	1.00	1	490
WB	223	1.00	223	35	1.00	35	

CLV TOTAL= **547**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	5	1.00	5	2	1.00	2	152
SB	150	1.00	150	2	1.00	2	
EB	464	1.00	464	9	1.00	9	667
WB	598	1.00	598	69	1.00	69	

CLV TOTAL= **819**
Level of Service (LOS)= **A**

Scenario ID - TOT7
AM V/C =0.34
PM V/C =0.51

HCS7 Two-Way Stop-Control Report

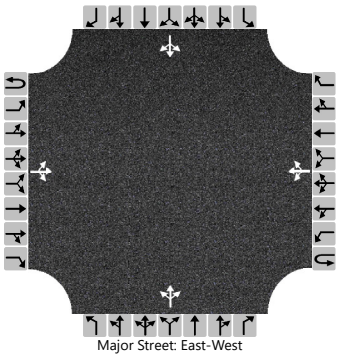
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2021
Time Analyzed	Existing AM
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Main St. & Old New Market
Jurisdiction	Frederick, MD
East/West Street	Main St.
North/South Street	Old New Market Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		29	389	0		1	177	1		0	0	1		3	0	47
Percent Heavy Vehicles (%)		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.12				7.12	6.52	6.22		7.12	6.52	6.22
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.22				3.52	4.02	3.32		3.52	4.02	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		36				1					1				62	
Capacity, c (veh/h)		1350				1082					586				745	
v/c Ratio		0.03				0.00					0.00				0.08	
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.0				0.3	
Control Delay (s/veh)		7.7				8.3					11.2				10.3	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.8				0.1				11.2				10.3			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

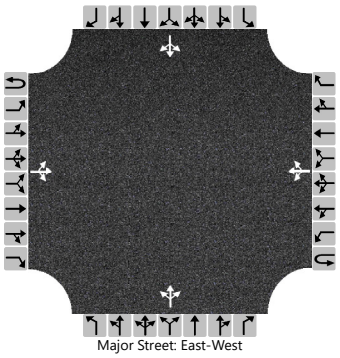
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2021
Time Analyzed	Existing PM
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Main St. & Old New Market
Jurisdiction	Frederick, MD
East/West Street	Main St.
North/South Street	Old New Market Rd
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		59	325	1		9	496	2		2	0	3		2	1	127
Percent Heavy Vehicles (%)		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.12				7.12	6.52	6.22		7.12	6.52	6.22
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.22				3.52	4.02	3.32		3.52	4.02	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		61				9					5				134	
Capacity, c (veh/h)		1052				1223					279				542	
v/c Ratio		0.06				0.01					0.02				0.25	
95% Queue Length, Q_{95} (veh)		0.2				0.0					0.1				1.0	
Control Delay (s/veh)		8.6				8.0					18.2				13.8	
Level of Service (LOS)		A				A					C				B	
Approach Delay (s/veh)		1.8				0.2				18.2				13.8		
Approach LOS										C				B		

HCS7 Two-Way Stop-Control Report

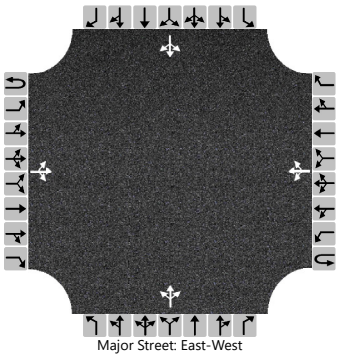
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2028
Time Analyzed	Background AM
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Main St. & Old New Market
Jurisdiction	Frederick, MD
East/West Street	Main St.
North/South Street	Old New Market Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		35	445	0		1	205	1		0	0	1		3	0	54
Percent Heavy Vehicles (%)		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.12				7.12	6.52	6.22		7.12	6.52	6.22
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.22				3.52	4.02	3.32		3.52	4.02	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		43				1					1				70	
Capacity, c (veh/h)		1311				1020					535				706	
v/c Ratio		0.03				0.00					0.00				0.10	
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.0				0.3	
Control Delay (s/veh)		7.8				8.5					11.7				10.7	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.9				0.1				11.7				10.7			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

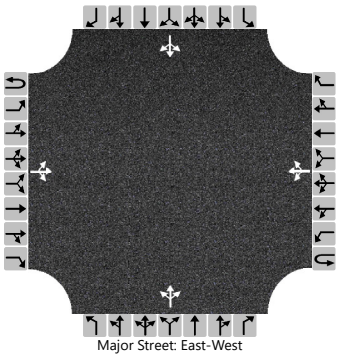
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2028
Time Analyzed	Background PM
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Main St. & Old New Market
Jurisdiction	Frederick, MD
East/West Street	Main St.
North/South Street	Old New Market Rd
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		69	377	1		9	574	2		2	0	3		2	1	147
Percent Heavy Vehicles (%)		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.12				7.12	6.52	6.22		7.12	6.52	6.22
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.22				3.52	4.02	3.32		3.52	4.02	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		71				9					5				155	
Capacity, c (veh/h)		982				1169					205				486	
v/c Ratio		0.07				0.01					0.03				0.32	
95% Queue Length, Q_{95} (veh)		0.2				0.0					0.1				1.4	
Control Delay (s/veh)		9.0				8.1					23.0				15.8	
Level of Service (LOS)		A				A					C				C	
Approach Delay (s/veh)		2.1				0.2				23.0				15.8		
Approach LOS										C				C		

HCS7 Two-Way Stop-Control Report

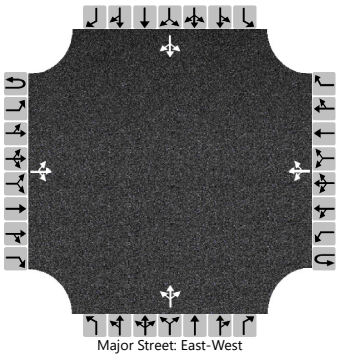
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2028
Time Analyzed	Total AM
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Main St. & Old New Market
Jurisdiction	Frederick, MD
East/West Street	Main St.
North/South Street	Old New Market Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		35	454	0		1	221	1		0	0	1		3	0	54
Percent Heavy Vehicles (%)		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.12				7.12	6.52	6.22		7.12	6.52	6.22
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.22				3.52	4.02	3.32		3.52	4.02	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		43				1					1				70	
Capacity, c (veh/h)		1289				1011					527				686	
v/c Ratio		0.03				0.00					0.00				0.10	
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.0				0.3	
Control Delay (s/veh)		7.9				8.6					11.8				10.8	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.9				0.1				11.8				10.8			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

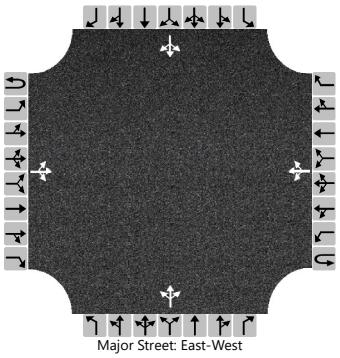
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2028
Time Analyzed	Total PM
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Main St. & Old New Market
Jurisdiction	Frederick, MD
East/West Street	Main St.
North/South Street	Old New Market Rd
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		69	394	1		9	587	2		2	0	3		2	1	147
Percent Heavy Vehicles (%)		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.12				7.12	6.52	6.22		7.12	6.52	6.22
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.22				3.52	4.02	3.32		3.52	4.02	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		71				9					5				155	
Capacity, c (veh/h)		971				1152					195				477	
v/c Ratio		0.07				0.01					0.03				0.32	
95% Queue Length, Q_{95} (veh)		0.2				0.0					0.1				1.4	
Control Delay (s/veh)		9.0				8.2					24.0				16.1	
Level of Service (LOS)		A				A					C				C	
Approach Delay (s/veh)		2.1				0.2				24.0				16.1		
Approach LOS										C				C		

HCS7 Two-Way Stop-Control Report

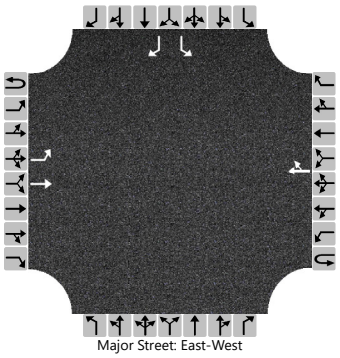
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2028
Time Analyzed	Total AM
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Old National Pike & Site
Jurisdiction	Frederick, MD
East/West Street	Old National Pike
North/South Street	Site Access
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		37	376				302	6						12		69
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		40												13		75
Capacity, c (veh/h)		1225												333		710
v/c Ratio		0.03												0.04		0.11
95% Queue Length, Q_{95} (veh)		0.1												0.1		0.4
Control Delay (s/veh)		8.0												16.3		10.7
Level of Service (LOS)		A												C		B
Approach Delay (s/veh)		0.7												11.5		
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

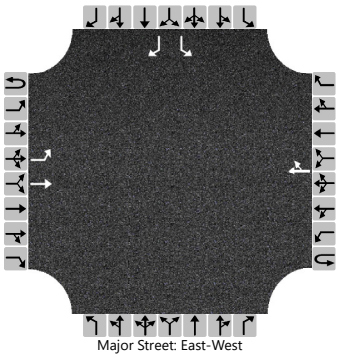
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2028
Time Analyzed	Total PM
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Old National Pike & Site
Jurisdiction	Frederick, MD
East/West Street	Old National Pike
North/South Street	Site Access
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		71	521				569	13						10		56
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		77												11		61
Capacity, c (veh/h)		950												153		484
v/c Ratio		0.08												0.07		0.13
95% Queue Length, Q_{95} (veh)		0.3												0.2		0.4
Control Delay (s/veh)		9.1												30.3		13.5
Level of Service (LOS)		A												D		B
Approach Delay (s/veh)		1.1												16.0		
Approach LOS														C		

1. MD 75 @ Old National Pike

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

Existing Traffic		Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
AM Peak Hour	***(WB left/thru lane use factors based on existing traffic count)***								
EB (Old National Pike) left turn		***200***	50	19	1	120	0.6	Yes	2
EB (Old National Pike) thru		***1000+***	225	146	1	120	4.9	Yes	9
WB (Old National Pike) most left lane		***400***	175	417	0.25	120	3.5	Yes	7
WB (Old National Pike) left/thru shared lane		***680***	400	417	0.75	120	10.4	Yes	16
WB (Old National Pike) right turn		***680***	125	76	1	120	2.5	Yes	5
NB (MD 75) left turn		***275***	125	75	1	120	2.5	Yes	5
NB (Old National Pike) thru		***700***	125	145	0.55	120	2.7	Yes	5
SB (MD 75) left turn		***425***	175	107	1	120	3.6	Yes	7
SB (MD 75) thru		***1000+***	375	542	0.55	120	9.9	Yes	15
SB (MD 75) right turn		***300***	75	30	1	120	1.0	Yes	3
PM Peak Hour									
EB (Old National Pike) left turn		***200***	50	20	1	120	0.7	Yes	2
EB (Old National Pike) thru		***1000+***	250	182	1	120	6.1	Yes	10
WB (Old National Pike) most left lane		***400***	275	531	0.36	120	6.4	Yes	11
WB (Old National Pike) left/thru shared lane		***680***	425	531	0.64	120	11.3	Yes	17
WB (Old National Pike) right turn		***680***	275	207	1	120	6.9	Yes	11
NB (MD 75) left turn		***275***	300	226	1	120	7.5	Yes	12
NB (Old National Pike) thru		***700***	375	530	0.55	120	9.7	Yes	15
SB (MD 75) left turn		***425***	175	99	1	120	3.3	Yes	7
SB (MD 75) thru		***1000+***	200	256	0.55	120	4.7	Yes	8
SB (MD 75) right turn		***300***	50	20	1	120	0.7	Yes	2
2028 Background Traffic									
AM Peak Hour									
EB (Old National Pike) left turn		***200***	100	48	1	120	1.6	Yes	4
EB (Old National Pike) thru		***1000+***	275	205	1	120	6.8	Yes	11
WB (Old National Pike) most left lane		***400***	200	487	0.25	120	4.1	Yes	8
WB (Old National Pike) left/thru shared lane		***680***	450	487	0.75	120	12.2	Yes	18
WB (Old National Pike) right turn		***680***	150	93	1	120	3.1	Yes	6
NB (MD 75) left turn		***275***	175	118	1	120	3.9	Yes	7
NB (Old National Pike) thru		***700***	200	233	0.55	120	4.3	Yes	8
SB (MD 75) left turn		***425***	225	145	1	120	4.8	Yes	9
SB (MD 75) thru		***1000+***	550	827	0.55	120	15.2	Yes	22
SB (MD 75) right turn		***300***	100	53	1	120	1.8	Yes	4

1. MD 75 @ Old National Pike

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Background Traffic								
PM Peak Hour								
EB (Old National Pike) left turn	***200***	75	39	1	120	1.3	Yes	3
EB (Old National Pike) thru	***1000+***	300	228	1	120	7.6	Yes	12
WB (Old National Pike) most left lane	***400***	325	659	0.36	120	7.9	Yes	13
WB (Old National Pike) left/thru shared lane	***680***	500	659	0.64	120	14.1	Yes	20
WB (Old National Pike) right turn	***680***	350	255	1	120	8.5	Yes	14
NB (MD 75) left turn	***275***	425	332	1	120	11.1	Yes	17
NB (Old National Pike) thru	***700***	525	804	0.55	120	14.7	Yes	21
SB (MD 75) left turn	***425***	200	124	1	120	4.1	Yes	8
SB (MD 75) thru	***1000+***	300	411	0.55	120	7.5	Yes	12
SB (MD 75) right turn	***300***	100	46	1	120	1.5	Yes	4
2028 Total Traffic								
AM Peak Hour								
EB (Old National Pike) left turn	***200***	100	48	1	120	1.6	Yes	4
EB (Old National Pike) thru	***1000+***	300	214	1	120	7.1	Yes	12
WB (Old National Pike) most left lane	***400***	200	544	0.25	120	4.5	Yes	8
WB (Old National Pike) left/thru shared lane	***680***	500	544	0.75	120	13.6	Yes	20
WB (Old National Pike) right turn	***680***	175	105	1	120	3.5	Yes	7
NB (MD 75) left turn	***275***	175	118	1	120	3.9	Yes	7
NB (Old National Pike) thru	***700***	200	233	0.55	120	4.3	Yes	8
SB (MD 75) left turn	***425***	225	151	1	120	5.0	Yes	9
SB (MD 75) thru	***1000+***	550	827	0.55	120	15.2	Yes	22
SB (MD 75) right turn	***300***	100	53	1	120	1.8	Yes	4
PM Peak Hour								
EB (Old National Pike) left turn	***200***	75	39	1	120	1.3	Yes	3
EB (Old National Pike) thru	***1000+***	325	245	1	120	8.2	Yes	13
WB (Old National Pike) most left lane	***400***	325	705	0.36	120	8.5	Yes	13
WB (Old National Pike) left/thru shared lane	***680***	550	705	0.64	120	15.0	Yes	22
WB (Old National Pike) right turn	***680***	350	265	1	120	8.8	Yes	14
NB (MD 75) left turn	***275***	425	332	1	120	11.1	Yes	17
NB (Old National Pike) thru	***700***	525	804	0.55	120	14.7	Yes	21
SB (MD 75) left turn	***425***	200	137	1	120	4.6	Yes	8
SB (MD 75) thru	***1000+***	300	411	0.55	120	7.5	Yes	12
SB (MD 75) right turn	***300***	100	46	1	120	1.5	Yes	4

2. MD 75 @ I-70 WB Ramps

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

Existing Traffic	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
AM Peak Hour								
WB (I-70 WB off Ramps) left/thru	***500+***	175	102	1	120	3.4	Yes	7
NB (MD 75) left turn	***225***	200	134	1	120	4.5	Yes	8
NB (MD 75) thru	***900***	250	321	0.55	120	5.9	Yes	10
SB (MD 75) thru	***700***	475	709	0.55	120	13.0	Yes	19
PM Peak Hour								
WB (I-70 WB off Ramps) left/thru	***500+***	175	109	1	120	3.6	Yes	7
NB (MD 75) left turn	***225***	275	187	1	120	6.2	Yes	11
NB (MD 75) thru	***900***	500	735	0.55	120	13.5	Yes	20
SB (MD 75) thru	***700***	250	327	0.55	120	6.0	Yes	10
2028 Background Traffic								
AM Peak Hour								
WB (I-70 WB off Ramps) left/thru	***500+***	175	115	1	120	3.8	Yes	7
NB (MD 75) left turn	***225***	225	157	1	120	5.2	Yes	9
NB (MD 75) thru	***900***	325	463	0.55	120	8.5	Yes	13
SB (MD 75) thru	***700***	575	901	0.55	120	16.5	Yes	23
PM Peak Hour								
WB (I-70 WB off Ramps) left/thru	***500+***	200	122	1	120	4.1	Yes	8
NB (MD 75) left turn	***225***	300	227	1	120	7.6	Yes	12
NB (MD 75) thru	***900***	675	1051	0.55	120	19.3	Yes	27
SB (MD 75) thru	***700***	325	432	0.55	120	7.9	Yes	13
2028 Total Traffic								
AM Peak Hour								
WB (I-70 WB off Ramps) left/thru	***500+***	175	115	1	120	3.8	Yes	7
NB (MD 75) left turn	***225***	225	157	1	120	5.2	Yes	9
NB (MD 75) thru	***900***	350	478	0.55	120	8.8	Yes	14
SB (MD 75) thru	***700***	600	921	0.55	120	16.9	Yes	24
PM Peak Hour								
WB (I-70 WB off Ramps) left/thru	***500+***	200	122	1	120	4.1	Yes	8
NB (MD 75) left turn	***225***	300	227	1	120	7.6	Yes	12
NB (MD 75) thru	***900***	675	1080	0.55	120	19.8	Yes	27
SB (MD 75) thru	***700***	325	448	0.55	120	8.2	Yes	13

3. MD 75 @ I-70 EB Ramps

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

Existing Traffic		Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
AM Peak Hour									
	EB (I-70 EB off Ramps) left/thru	***800+***	200	204	0.6	120	4.1	Yes	8
	NB (MD 75) thru	***1000+***	200	248	0.55	120	4.5	Yes	8
	SB (MD 75) left turn	***225***	575	480	1	120	16.0	Yes	23
	SB (MD 75) thru	***900***	250	320	0.55	120	5.9	Yes	10
PM Peak Hour									
	EB (I-70 EB off Ramps) left/thru	***800+***	400	519	0.6	120	10.4	Yes	16
	NB (MD 75) thru	***1000+***	300	425	0.55	120	7.8	Yes	12
	SB (MD 75) left turn	***225***	225	154	1	120	5.1	Yes	9
	SB (MD 75) thru	***900***	225	275	0.55	120	5.0	Yes	9
2028 Background Traffic									
AM Peak Hour									
	EB (I-70 EB off Ramps) left/thru	***800+***	250	309	0.6	120	6.2	Yes	10
	NB (MD 75) thru	***1000+***	250	308	0.55	120	5.6	Yes	10
	SB (MD 75) left turn	***225***	713	611	1	120	20.4	No	29
	SB (MD 75) thru	***900***	300	392	0.55	120	7.2	Yes	12
PM Peak Hour									
	EB (I-70 EB off Ramps) left/thru	***800+***	550	777	0.6	120	15.5	Yes	22
	NB (MD 75) thru	***1000+***	375	526	0.55	120	9.6	Yes	15
	SB (MD 75) left turn	***225***	300	215	1	120	7.2	Yes	12
	SB (MD 75) thru	***900***	250	332	0.55	120	6.1	Yes	10
2028 Total Traffic									
AM Peak Hour									
	EB (I-70 EB off Ramps) left/thru	***800+***	275	320	0.6	120	6.4	Yes	11
	NB (MD 75) thru	***1000+***	250	312	0.55	120	5.7	Yes	10
	SB (MD 75) left turn	***225***	727	623	1	120	20.8	No	29
	SB (MD 75) thru	***900***	300	400	0.55	120	7.3	Yes	12
PM Peak Hour									
	EB (I-70 EB off Ramps) left/thru	***800+***	575	798	0.6	120	16.0	Yes	23
	NB (MD 75) thru	***1000+***	375	534	0.55	120	9.8	Yes	15
	SB (MD 75) left turn	***225***	300	225	1	120	7.5	Yes	12
	SB (MD 75) thru	***900***	250	338	0.55	120	6.2	Yes	10

4. Old National Pike @ Morning Gate Lane

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

Existing Traffic	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
AM Peak Hour								
EB (Old National Pike) left turn	***150***	150	126	1	90	3.2	Yes	6
EB (Old National Pike) thru/right	***680***	225	358	0.55	90	4.9	Yes	9
WB (Old National Pike) left turn	***125***	50	19	1	90	0.5	Yes	2
WB (Old National Pike) thru/right	***650***	175	259	0.55	90	3.6	Yes	7
NB (Shopping Ctr Acc) left turn	***200***	150	110	1	90	2.8	Yes	6
NB (Shopping Ctr Acc) thru/right	***200***	50	31	1	90	0.8	Yes	2
SB (Morning Gate Lane) left turn	***300***	50	34	1	90	0.9	Yes	2
SB (Morning Gate Lane) thru/right	***300***	125	96	1	90	2.4	Yes	5
PM Peak Hour								
EB (Old National Pike) left turn	***150***	200	162	1	90	4.1	Yes	8
EB (Old National Pike) thru/right	***680***	325	590	0.55	90	8.1	Yes	13
WB (Old National Pike) left turn	***125***	50	28	1	90	0.7	Yes	2
WB (Old National Pike) thru/right	***650***	275	506	0.55	90	7.0	Yes	11
NB (Shopping Ctr Acc) left turn	***200***	150	128	1	90	3.2	Yes	6
NB (Shopping Ctr Acc) thru/right	***200***	125	80	1	90	2.0	Yes	5
SB (Morning Gate Lane) left turn	***300***	75	45	1	90	1.1	Yes	3
SB (Morning Gate Lane) thru/right	***300***	150	114	1	90	2.9	Yes	6
2028 Background Traffic								
AM Peak Hour								
EB (Old National Pike) left turn	***150***	175	142	1	90	3.6	Yes	7
EB (Old National Pike) thru/right	***680***	275	489	0.55	90	6.7	Yes	11
WB (Old National Pike) left turn	***125***	50	22	1	90	0.6	Yes	2
WB (Old National Pike) thru/right	***650***	200	317	0.55	90	4.4	Yes	8
NB (Shopping Ctr Acc) left turn	***200***	150	123	1	90	3.1	Yes	6
NB (Shopping Ctr Acc) thru/right	***200***	50	34	1	90	0.9	Yes	2
SB (Morning Gate Lane) left turn	***300***	75	38	1	90	1.0	Yes	3
SB (Morning Gate Lane) thru/right	***300***	150	108	1	90	2.7	Yes	6

4. Old National Pike @ Morning Gate Lane

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

		Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Background Traffic									
PM Peak Hour									
	EB (Old National Pike) left turn	***150***	200	182	1	90	4.6	Yes	8
	EB (Old National Pike) thru/right	***680***	375	711	0.55	90	9.8	Yes	15
	WB (Old National Pike) left turn	***125***	50	32	1	90	0.8	Yes	2
	WB (Old National Pike) thru/right	***650***	350	654	0.55	90	9.0	Yes	14
	NB (Shopping Ctr Acc) left turn	***200***	175	144	1	90	3.6	Yes	7
	NB (Shopping Ctr Acc) thru/right	***200***	125	91	1	90	2.3	Yes	5
	SB (Morning Gate Lane) left turn	***300***	75	50	1	90	1.3	Yes	3
	SB (Morning Gate Lane) thru/right	***300***	150	129	1	90	3.2	Yes	6
2028 Total Traffic									
AM Peak Hour									
	EB (Old National Pike) left turn	***150***	175	142	1	90	3.6	Yes	7
	EB (Old National Pike) thru/right	***680***	300	526	0.55	90	7.2	Yes	12
	WB (Old National Pike) left turn	***125***	50	22	1	90	0.6	Yes	2
	WB (Old National Pike) thru/right	***650***	225	386	0.55	90	5.3	Yes	9
	NB (Shopping Ctr Acc) left turn	***200***	150	123	1	90	3.1	Yes	6
	NB (Shopping Ctr Acc) thru/right	***200***	50	34	1	90	0.9	Yes	2
	SB (Morning Gate Lane) left turn	***300***	75	38	1	90	1.0	Yes	3
	SB (Morning Gate Lane) thru/right	***300***	150	108	1	90	2.7	Yes	6
PM Peak Hour									
	EB (Old National Pike) left turn	***150***	200	182	1	90	4.6	Yes	8
	EB (Old National Pike) thru/right	***680***	400	782	0.55	90	10.8	Yes	16
	WB (Old National Pike) left turn	***125***	50	32	1	90	0.8	Yes	2
	WB (Old National Pike) thru/right	***650***	375	710	0.55	90	9.8	Yes	15
	NB (Shopping Ctr Acc) left turn	***200***	175	144	1	90	3.6	Yes	7
	NB (Shopping Ctr Acc) thru/right	***200***	125	91	1	90	2.3	Yes	5
	SB (Morning Gate Lane) left turn	***300***	75	50	1	90	1.3	Yes	3
	SB (Morning Gate Lane) thru/right	***300***	150	129	1	90	3.2	Yes	6

MD SHA QUEUING ANALYSIS
4. OLD NATIONAL PIKE @ MORNING GATE LANE

5. Old National Pike @ CVS/Food Lion Access

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

Existing Traffic	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
AM Peak Hour								
EB (Old National Pike) left turn	***150***	25	7	1	120	0.2	Yes	1
EB (Old National Pike) thru	***650***	325	251	1	120	8.4	Yes	13
EB (Old National Pike) right turn	***650***	50	16	1	120	0.5	Yes	2
WB (Old National Pike) left turn	***150***	25	4	1	120	0.1	Yes	1
WB (Old National Pike) thru/right	***1000+***	200	242	0.55	120	4.4	Yes	8
NB (CVS Acc) left turn	***250***	25	8	1	120	0.3	Yes	1
NB (CVS Acc) thru/right	***250***	0	2	1	120	0.1	Yes	0
SB (Food Lion Acc) left/thru	***150***	25	5	1	120	0.2	Yes	1
SB (Food Lion Acc) right turn	***150***	25	11	1	120	0.4	Yes	1
PM Peak Hour								
EB (Old National Pike) left turn	***150***	50	26	1	120	0.9	Yes	2
EB (Old National Pike) thru	***650***	450	358	1	120	11.9	Yes	18
EB (Old National Pike) right turn	***650***	150	81	1	120	2.7	Yes	6
WB (Old National Pike) left turn	***150***	50	23	1	120	0.8	Yes	2
WB (Old National Pike) thru/right	***1000+***	300	406	0.55	120	7.4	Yes	12
NB (CVS Acc) left turn	***250***	125	68	1	120	2.3	Yes	5
NB (CVS Acc) thru/right	***250***	75	37	1	120	1.2	Yes	3
SB (Food Lion Acc) left/thru	***150***	100	43	1	120	1.4	Yes	4
SB (Food Lion Acc) right turn	***150***	75	33	1	120	1.1	Yes	3
2028 Background Traffic								
AM Peak Hour								
EB (Old National Pike) left turn	***150***	25	7	1	120	0.2	Yes	1
EB (Old National Pike) thru	***650***	450	370	1	120	12.3	Yes	18
EB (Old National Pike) right turn	***650***	50	19	1	120	0.6	Yes	2
WB (Old National Pike) left turn	***150***	25	4	1	120	0.1	Yes	1
WB (Old National Pike) thru/right	***1000+***	225	298	0.55	120	5.5	Yes	9
NB (CVS Acc) left turn	***250***	25	8	1	120	0.3	Yes	1
NB (CVS Acc) thru/right	***250***	0	2	1	120	0.1	Yes	0
SB (Food Lion Acc) left/thru	***150***	25	5	1	120	0.2	Yes	1
SB (Food Lion Acc) right turn	***150***	50	12	1	120	0.4	Yes	2

5. Old National Pike @ CVS/Food Lion Access

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20:	Poisson Distribution Maximum No. of Vehicles per Cycle	x 25 Feet per Vehicle
If Average No. of Vehicle (Specific Movement) per Cycle > 20:	Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds) / 3600 (Seconds per hour)	x 25 Feet per Vehicle x 1.4 Surge Factor

	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Background Traffic								
PM Peak Hour								
EB (Old National Pike) left turn	***150***	75	29	1	120	1.0	Yes	3
EB (Old National Pike) thru	***650***	550	450	1	120	15.0	Yes	22
EB (Old National Pike) right turn	***650***	150	91	1	120	3.0	Yes	6
WB (Old National Pike) left turn	***150***	50	26	1	120	0.9	Yes	2
WB (Old National Pike) thru/right	***1000+***	375	543	0.55	120	10.0	Yes	15
NB (CVS Acc) left turn	***250***	125	77	1	120	2.6	Yes	5
NB (CVS Acc) thru/right	***250***	100	42	1	120	1.4	Yes	4
SB (Food Lion Acc) left/thru	***150***	100	48	1	120	1.6	Yes	4
SB (Food Lion Acc) right turn	***150***	75	37	1	120	1.2	Yes	3
2028 Total Traffic								
AM Peak Hour								
EB (Old National Pike) left turn	***150***	25	7	1	120	0.2	Yes	1
EB (Old National Pike) thru	***650***	500	407	1	120	13.6	Yes	20
EB (Old National Pike) right turn	***650***	50	19	1	120	0.6	Yes	2
WB (Old National Pike) left turn	***150***	25	4	1	120	0.1	Yes	1
WB (Old National Pike) thru/right	***1000+***	275	367	0.55	120	6.7	Yes	11
NB (CVS Acc) left turn	***250***	25	8	1	120	0.3	Yes	1
NB (CVS Acc) thru/right	***250***	0	2	1	120	0.1	Yes	0
SB (Food Lion Acc) left/thru	***150***	25	5	1	120	0.2	Yes	1
SB (Food Lion Acc) right turn	***150***	50	12	1	120	0.4	Yes	2
PM Peak Hour								
EB (Old National Pike) left turn	***150***	75	29	1	120	1.0	Yes	3
EB (Old National Pike) thru	***650***	600	521	1	120	17.4	Yes	24
EB (Old National Pike) right turn	***650***	150	91	1	120	3.0	Yes	6
WB (Old National Pike) left turn	***150***	50	26	1	120	0.9	Yes	2
WB (Old National Pike) thru/right	***1000+***	425	599	0.55	120	11.0	Yes	17
NB (CVS Acc) left turn	***250***	125	77	1	120	2.6	Yes	5
NB (CVS Acc) thru/right	***250***	100	42	1	120	1.4	Yes	4
SB (Food Lion Acc) left/thru	***150***	100	48	1	120	1.6	Yes	4
SB (Food Lion Acc) right turn	***150***	75	37	1	120	1.2	Yes	3

6. Old National Pike @ Bartholows Road

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

Existing Traffic		Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
AM Peak Hour									
	EB (Old National Pike) thru	*1000+*	125	121	1	60	2.0	Yes	5
	EB (Old National Pike) right turn	*400*	100	97	1	60	1.6	Yes	4
	WB (Old National Pike) left turn	*225*	75	64	1	60	1.1	Yes	3
	WB (Old National Pike) thru	*1000+*	125	123	1	60	2.1	Yes	5
	NB (Bartholows Road) left turn	*1000+*	100	107	1	60	1.8	Yes	4
	NB (Bartholows Road) right turn	*275*	100	99	1	60	1.7	Yes	4
PM Peak Hour									
	EB (Old National Pike) thru	*1000+*	150	191	1	60	3.2	Yes	6
	EB (Old National Pike) right turn	*400*	100	112	1	60	1.9	Yes	4
	WB (Old National Pike) left turn	*225*	125	128	1	60	2.1	Yes	5
	WB (Old National Pike) thru	*1000+*	175	209	1	60	3.5	Yes	7
	NB (Bartholows Road) left turn	*1000+*	150	172	1	60	2.9	Yes	6
	NB (Bartholows Road) right turn	*275*	100	103	1	60	1.7	Yes	4
2028 Background Traffic									
AM Peak Hour									
	EB (Old National Pike) thru	*1000+*	175	224	1	60	3.7	Yes	7
	EB (Old National Pike) right turn	*400*	100	109	1	60	1.8	Yes	4
	WB (Old National Pike) left turn	*225*	75	73	1	60	1.2	Yes	3
	WB (Old National Pike) thru	*1000+*	150	165	1	60	2.8	Yes	6
	NB (Bartholows Road) left turn	*1000+*	125	120	1	60	2.0	Yes	5
	NB (Bartholows Road) right turn	*275*	100	111	1	60	1.9	Yes	4
PM Peak Hour									
	EB (Old National Pike) thru	*1000+*	200	262	1	60	4.4	Yes	8
	EB (Old National Pike) right turn	*400*	125	125	1	60	2.1	Yes	5
	WB (Old National Pike) left turn	*225*	125	144	1	60	2.4	Yes	5
	WB (Old National Pike) thru	*1000+*	225	320	1	60	5.3	Yes	9
	NB (Bartholows Road) left turn	*1000+*	150	193	1	60	3.2	Yes	6
	NB (Bartholows Road) right turn	*275*	100	116	1	60	1.9	Yes	4
2028 Total Traffic									
AM Peak Hour									
	EB (Old National Pike) thru	*1000+*	175	236	1	60	3.9	Yes	7
	EB (Old National Pike) right turn	*400*	100	109	1	60	1.8	Yes	4
	WB (Old National Pike) left turn	*225*	75	73	1	60	1.2	Yes	3
	WB (Old National Pike) thru	*1000+*	150	171	1	60	2.9	Yes	6
	NB (Bartholows Road) left turn	*1000+*	125	120	1	60	2.0	Yes	5
	NB (Bartholows Road) right turn	*275*	100	111	1	60	1.9	Yes	4
PM Peak Hour									
	EB (Old National Pike) thru	*1000+*	200	272	1	60	4.5	Yes	8
	EB (Old National Pike) right turn	*400*	125	125	1	60	2.1	Yes	5
	WB (Old National Pike) left turn	*225*	125	144	1	60	2.4	Yes	5
	WB (Old National Pike) thru	*1000+*	250	333	1	60	5.6	Yes	10
	NB (Bartholows Road) left turn	*1000+*	150	193	1	60	3.2	Yes	6
	NB (Bartholows Road) right turn	*275*	100	116	1	60	1.9	Yes	4

7. Main Street & Old New Market Rd

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2021 Existing Traffic								
AM Peak Hour								
EB (Main Street) left turn	***500+***	50	29	1	90	0.7	Yes	2
WB (Main Street) left turn	***500+***	0	1	1	90	0.0	Yes	0
NB (8th Alley) approach	***500+***	0	1	1	90	0.0	Yes	0
SB (Old New Market Rd) approach	***500+***	75	50	1	90	1.3	Yes	3
PM Peak Hour								
EB (Main Street) left turn	***500+***	100	59	1	90	1.5	Yes	4
WB (Main Street) left turn	***500+***	25	9	1	90	0.2	Yes	1
NB (8th Alley) approach	***500+***	25	5	1	90	0.1	Yes	1
SB (Old New Market Rd) approach	***500+***	150	130	1	90	3.3	Yes	6
2028 Background Traffic								
AM Peak Hour								
EB (Main Street) left turn	***500+***	50	35	1	90	0.9	Yes	2
WB (Main Street) left turn	***500+***	0	1	1	90	0.0	Yes	0
NB (8th Alley) approach	***500+***	0	1	1	90	0.0	Yes	0
SB (Old New Market Rd) approach	***500+***	100	57	1	90	1.4	Yes	4
PM Peak Hour								
EB (Main Street) left turn	***500+***	100	69	1	90	1.7	Yes	4
WB (Main Street) left turn	***500+***	25	9	1	90	0.2	Yes	1
NB (8th Alley) approach	***500+***	25	5	1	90	0.1	Yes	1
SB (Old New Market Rd) approach	***500+***	175	150	1	90	3.8	Yes	7
2028 Total Traffic								
AM Peak Hour								
EB (Main Street) left turn	***500+***	50	35	1	90	0.9	Yes	2
WB (Main Street) left turn	***500+***	0	1	1	90	0.0	Yes	0
NB (8th Alley) approach	***500+***	0	1	1	90	0.0	Yes	0
SB (Old New Market Rd) approach	***500+***	100	57	1	90	1.4	Yes	4
PM Peak Hour								
EB (Main Street) left turn	***500+***	100	69	1	90	1.7	Yes	4
WB (Main Street) left turn	***500+***	25	9	1	90	0.2	Yes	1
NB (8th Alley) approach	***500+***	25	5	1	90	0.1	Yes	1
SB (Old New Market Rd) approach	***500+***	175	150	1	90	3.8	Yes	7

8. Old National Pike & Site Access

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

		Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Total Traffic									
AM Peak Hour									
	EB (Old National Pike) left turn	***new***	75	37	1	90	0.9	Yes	3
	SB (Site Access) left turn	***new***	25	12	1	90	0.3	Yes	1
	SB (Site Access) right turn	***new***	100	69	1	90	1.7	Yes	4
PM Peak Hour									
	EB (Old National Pike) left turn	***new***	100	71	1	90	1.8	Yes	4
	SB (Site Access) left turn	***new***	25	10	1	90	0.3	Yes	1
	SB (Site Access) right turn	***new***	100	56	1	90	1.4	Yes	4

Analysis Worksheets

With Casey Property

CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike **Date of Count:** 2/25/2021

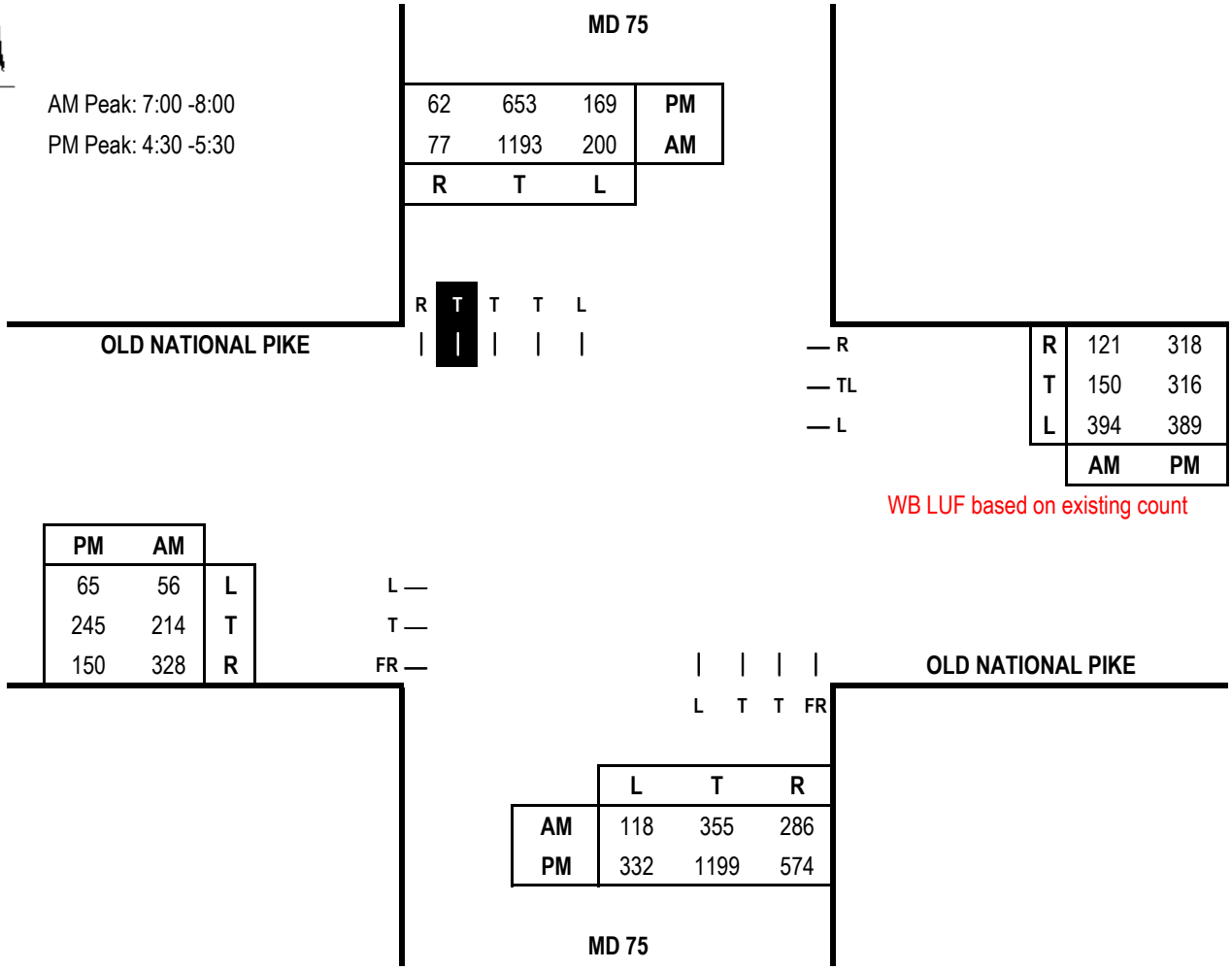
N/S Road: MD 75 **Day of Week:** Thursday

Conditions: w. Casey Pro. Total Traffic **Analyst:** Qiang Tian

w. Casey Property Phase 1 Improvement

AM Peak: 7:00 -8:00

PM Peak: 4:30 -5:30



Capacity Analysis - East/West Split

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	214	1.00	214				214
WB	544	0.75	408				408
NB	355	0.55	195	200	1.00	200	595
SB	1193	0.40	477	118	1.00	118	

CLV TOTAL= **1,217**

Level of Service (LOS)= **C**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	245	1.00	245				245
WB	705	0.64	451				451
NB	1199	0.55	659	169	1.00	169	828
SB	653	0.40	261	332	1.00	332	

CLV TOTAL= **1,524**

Level of Service (LOS)= **E**

Scenario ID - TOT11

AM V/C =0.76

PM V/C =0.95

CRITICAL LANE VOLUME (CLV) METHODOLOGY

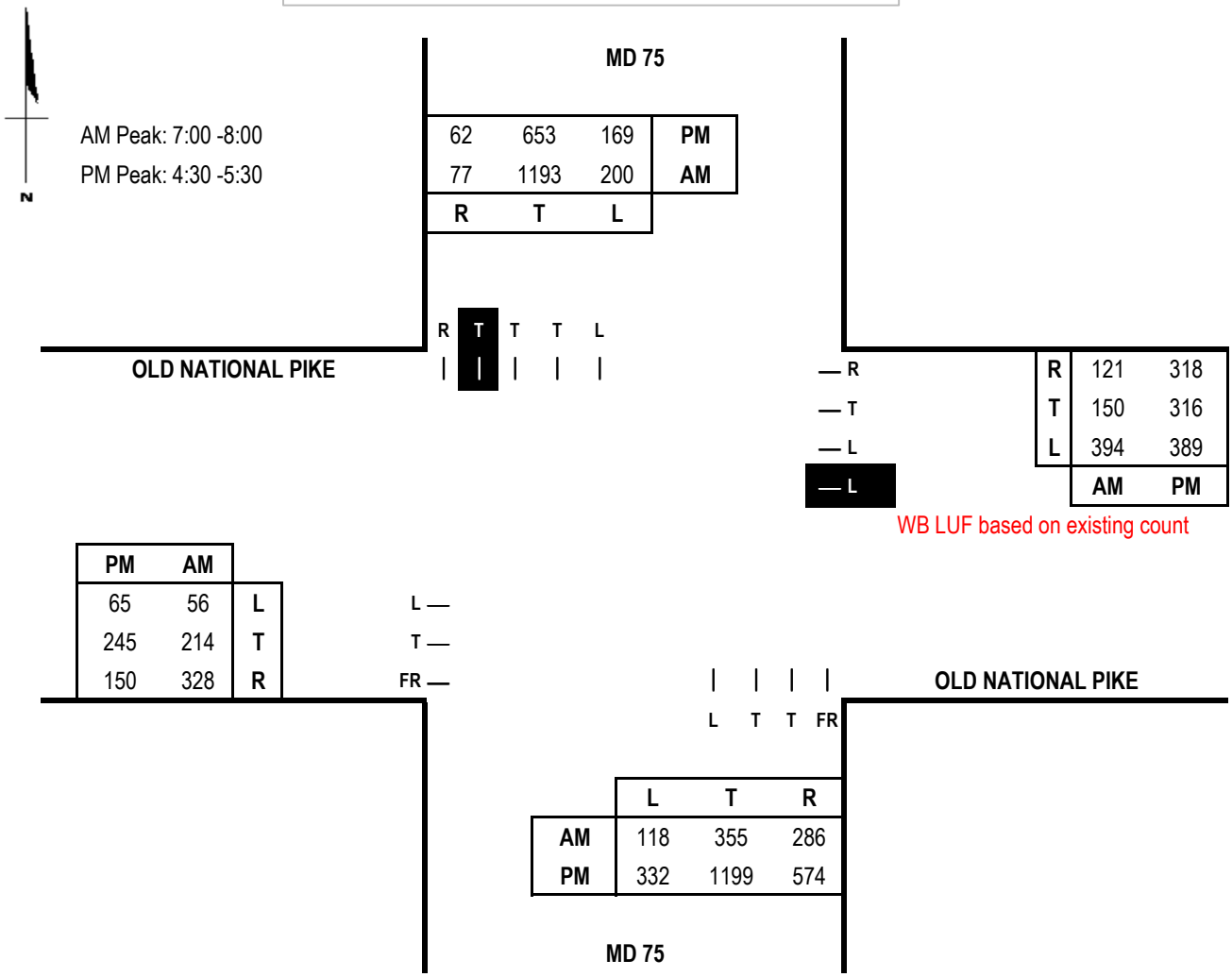
for Frederick County

E/W Road: Old National Pike **Date of Count:** 2/25/2021

N/S Road: MD 75 **Day of Week:** Thursday

Conditions: w. Casey Pro. Total Traffic **Analyst:** Qiang Tian

w. Casey Property Phases 1 &2 Improvement



Capacity Analysis - East/West Split

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	214	1.00	214				214
WB	394	0.75	296				296
NB	355	0.55	195	200	1.00	200	595
SB	1193	0.40	477	118	1.00	118	

CLV TOTAL= **1,105**

Level of Service (LOS)= **B**

Scenario ID - TOT11

AM V/C =0.69

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	245	1.00	245				245
WB	316	0.64	202				202
NB	1199	0.55	659	169	1.00	169	828
SB	653	0.40	261	332	1.00	332	

CLV TOTAL= **1,275**

Level of Service (LOS)= **C**

PM V/C =0.8

CRITICAL LANE VOLUME (CLV) METHODOLOGY

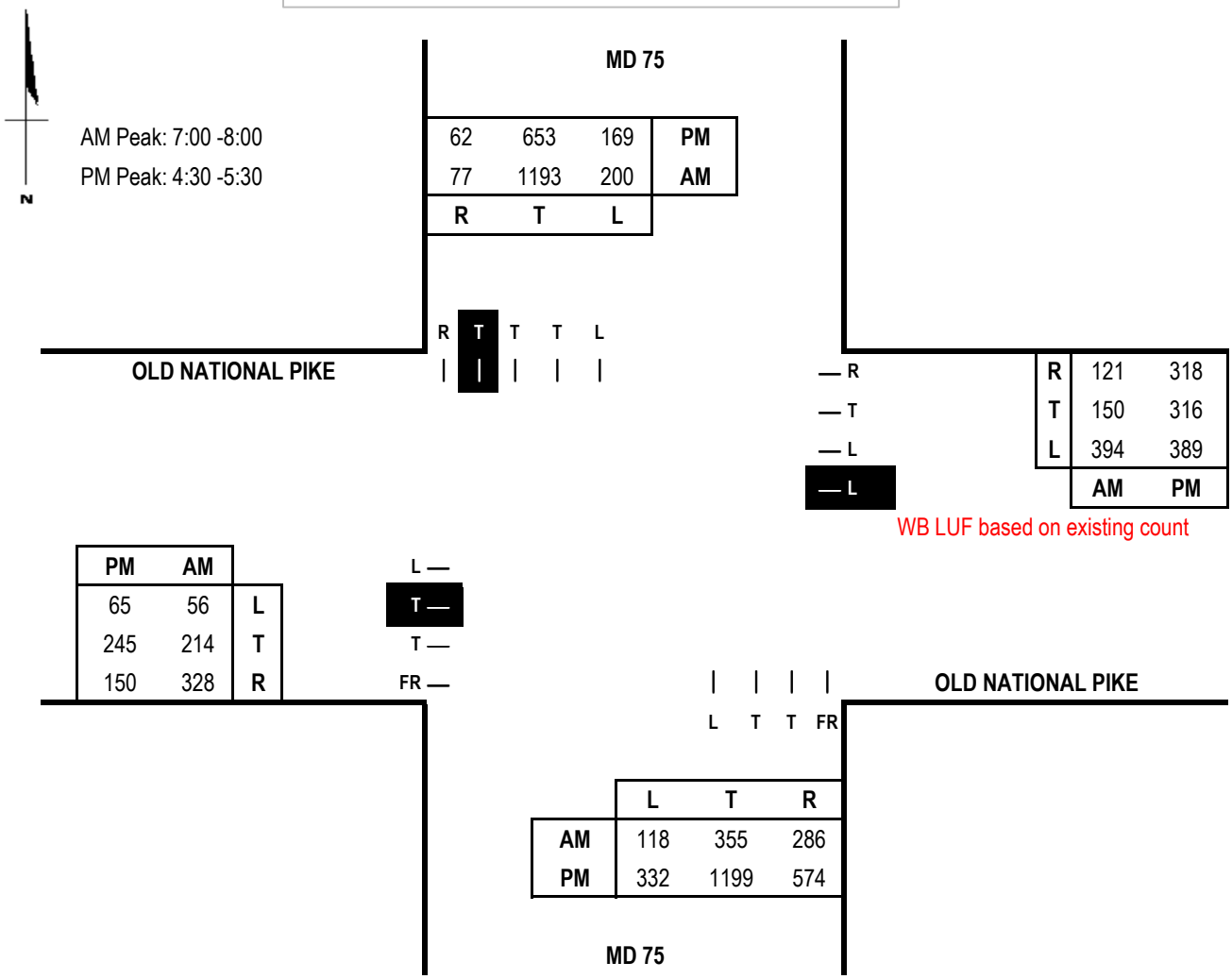
for Frederick County

E/W Road: Old National Pike **Date of Count:** 2/25/2021

N/S Road: MD 75 **Day of Week:** Thursday

Conditions: w. Casey Pro. Total Traffic **Analyst:** Qiang Tian

w. Casey Property Phases 1, 2, & 3 Improvement



Capacity Analysis - East/West Split

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
EB	214	0.55	118				118
WB	394	0.75	296				296
NB	355	0.55	195	200	1.00	200	595
SB	1193	0.40	477	118	1.00	118	

CLV TOTAL= **1,009**

Level of Service (LOS)= **B**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
EB	245	0.55	135				135
WB	316	0.64	202				202
NB	1199	0.55	659	169	1.00	169	828
SB	653	0.40	261	332	1.00	332	

CLV TOTAL= **1,165**

Level of Service (LOS)= **C**

Scenario ID - TOT11

AM V/C =0.63

PM V/C =0.73

CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: I-70 WB Off Ramp/I-70 Wb On Ramp **Date of Count:** 2/25/2021

N/S Road: MD 75 **Day of Count:** Thursday

Conditions: w. Casey Pro. Total Traffic **Analyst:** Qiang Tian

AM Peak: 7:00 -8:00

PM Peak: 4:45 -5:45

MD 75

R	T	L	
585	599	0	**PM**
771	1150	0	**AM**

I-70 WB ON RAMP FR T T

— FR

— TL

R	193	731
T	1	2
L	114	120
	AM	**PM**

PM	AM	
0	0	**L**
0	0	**T**
0	0	**R**

I-70 WB OFF RAMP L T T

	L	T	R
AM	157	560	0
PM	227	1344	0

MD 75

Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	560	0.55	308	0	0.00	0	790
SB	1150	0.55	633	157	1.00	157	
EB	0	0.00	0	114	1.00	114	115
WB	115	1.00	115	0	0.00	0	

CLV TOTAL= **905**

Level of Service (LOS)= **A**

AM V/C =0.57

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	1344	0.55	739	0	0.00	0	739
SB	599	0.55	329	227	1.00	227	
EB	0	0.00	0	120	1.00	120	122
WB	122	1.00	122	0	0.00	0	

CLV TOTAL= **861**

Level of Service (LOS)= **A**

PM V/C =0.54

Scenario ID - TOT12

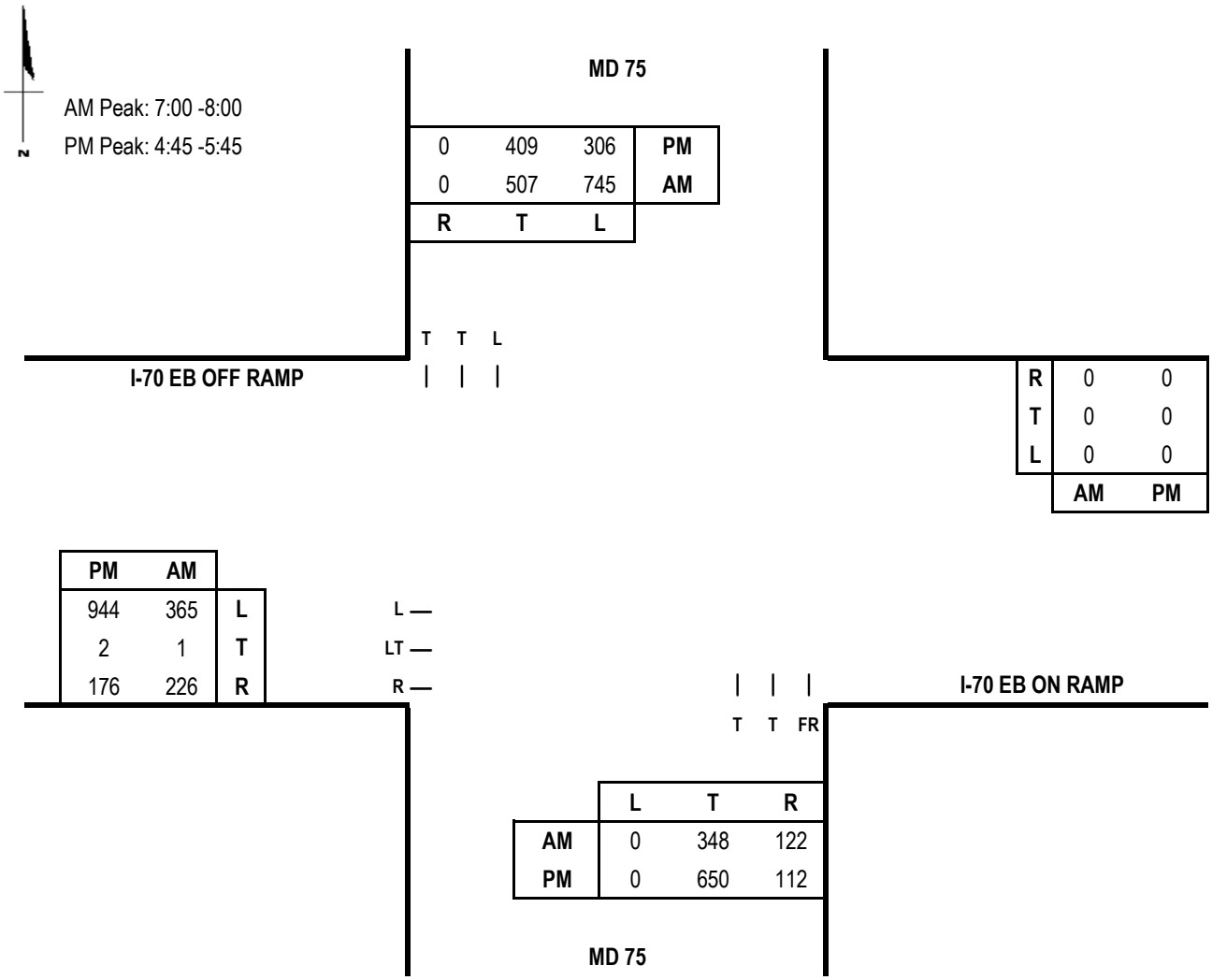
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: I-70 EB On Ramp/I-70 Eb Off Ramp **Date of Count:** 2/25/21

N/S Road: MD 75 **Day of Count:** Thursday

Conditions: w. Casey Pro. Total Traffic **Analyst:** Qiang Tian



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	348	0.55	191	745	1.00	745	936
SB	507	0.55	279	0	0.00	0	
EB	366	0.60	220	0	0.00	0	220
WB	0	0.00	0	365	0.60	219	

CLV TOTAL= **1,156**

Level of Service (LOS)= **C**

AM V/C =0.72

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	650	0.55	358	306	1.00	306	664
SB	409	0.55	225	0	0.00	0	
EB	946	0.60	568	0	0.00	0	568
WB	0	0.00	0	944	0.60	566	

CLV TOTAL= **1,232**

Level of Service (LOS)= **C**

PM V/C =0.77

Scenario ID - TOT13

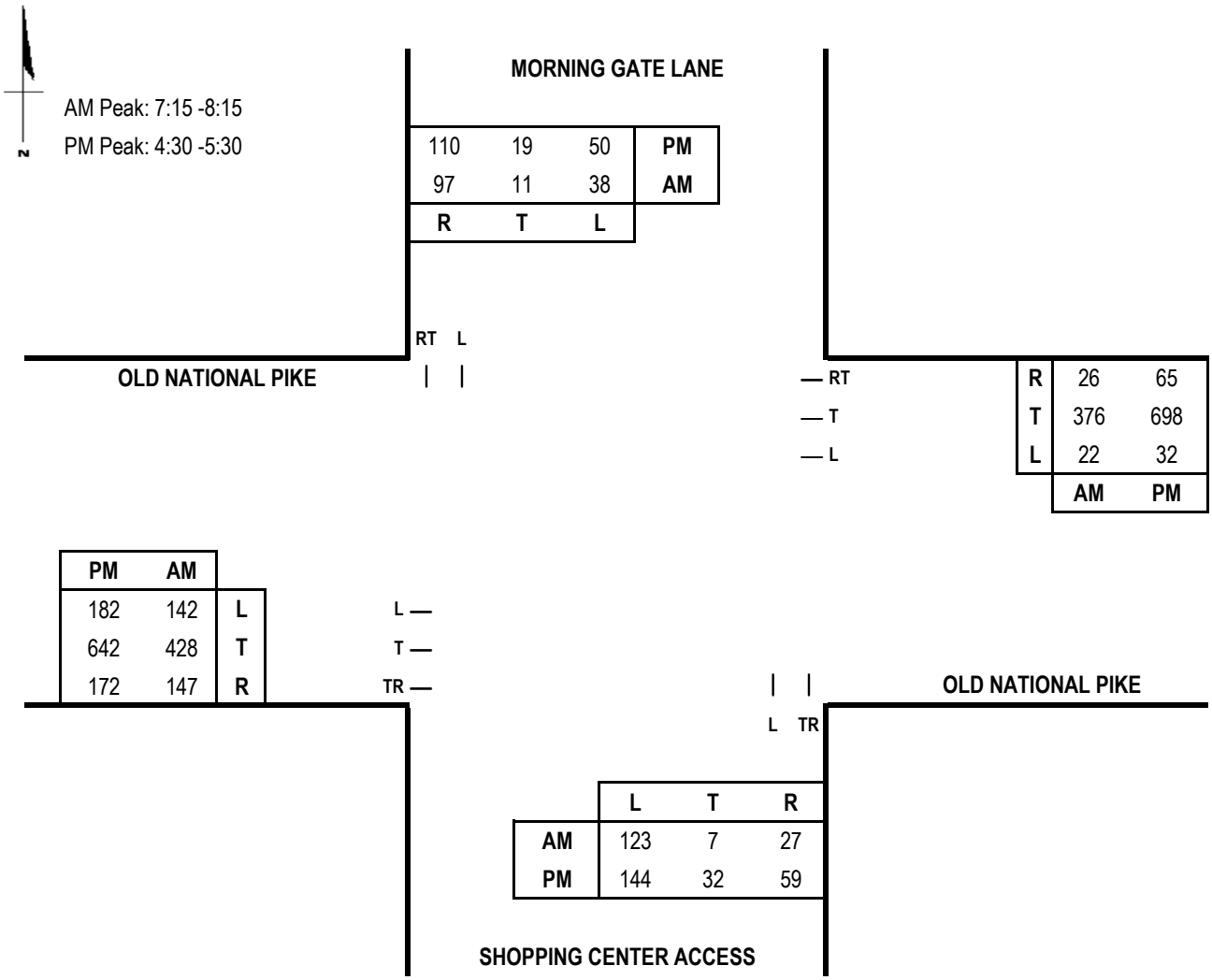
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike **Date of Count:** 2/25/2021

N/S Road: Morning Gate Lane/Shopping Center Acce **Day of Count:** Thursday

Conditions: w. Casey Pro. Total Traffic **Analyst:** Qiang Tian



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	34	1.00	34	38	1.00	38	231
SB	108	1.00	108	123	1.00	123	
EB	575	0.55	316	22	1.00	22	363
WB	402	0.55	221	142	1.00	142	

CLV TOTAL= **594**

Level of Service (LOS)= **A**

AM V/C =0.37

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	91	1.00	91	50	1.00	50	273
SB	129	1.00	129	144	1.00	144	
EB	814	0.55	448	32	1.00	32	602
WB	763	0.55	420	182	1.00	182	

CLV TOTAL= **875**

Level of Service (LOS)= **A**

PM V/C =0.55

Scenario ID - TOT14

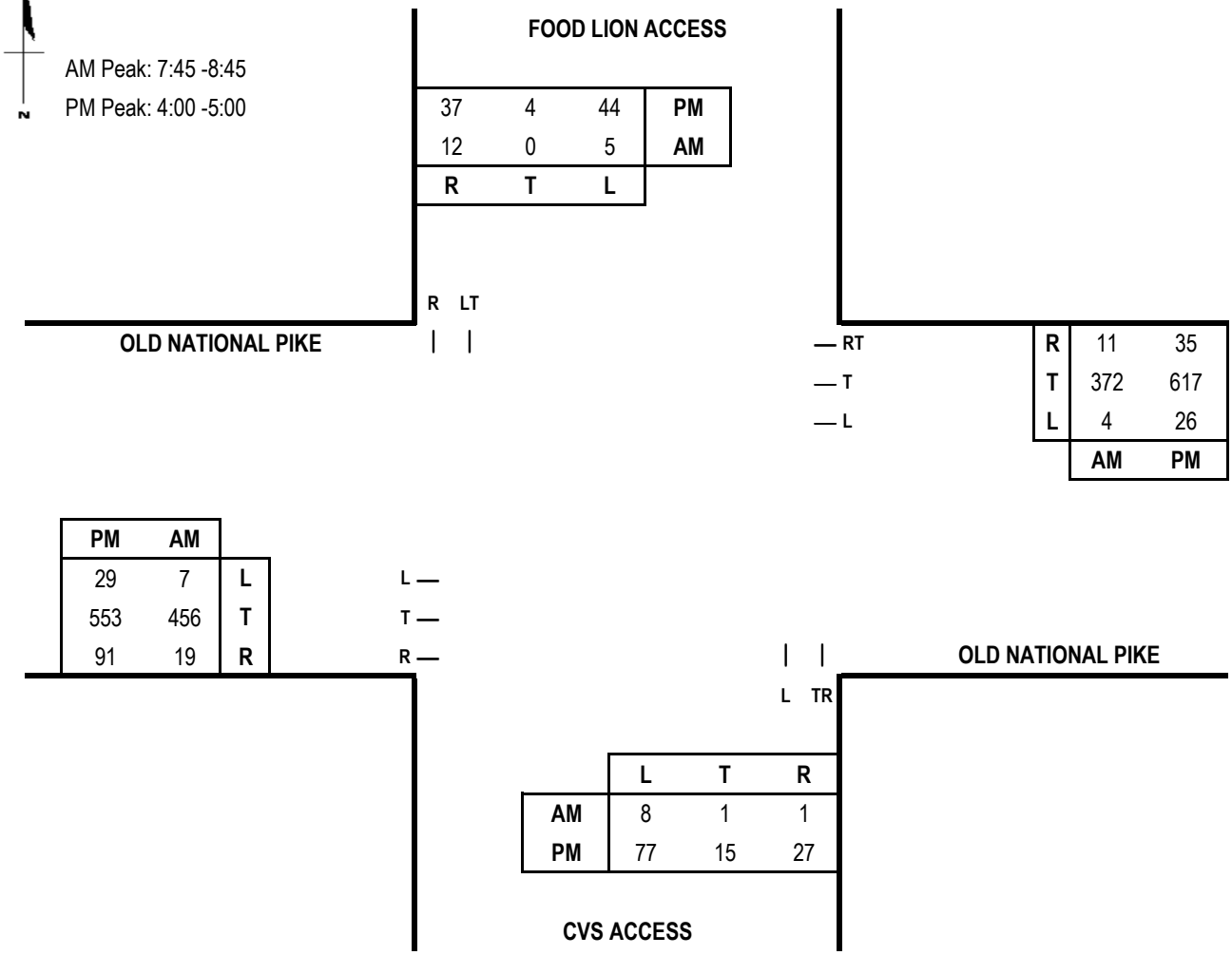
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: Food Lion Access/Cvs Access
Conditions: w. Casey Pro. Total Traffic

Date of Count: 2/25/2021
Day of Count: Thursday
Analyst: Qiang Tian

AM Peak: 7:45 -8:45
PM Peak: 4:00 -5:00



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	2	1.00	2	5	1.00	5	13
SB	5	1.00	5	8	1.00	8	
EB	456	1.00	456	4	1.00	4	460
WB	383	0.55	211	7	1.00	7	

CLV TOTAL= **473**
Level of Service (LOS)= **A**

Scenario ID - TOT15
AM V/C =0.3

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	42	1.00	42	44	1.00	44	125
SB	48	1.00	48	77	1.00	77	
EB	553	1.00	553	26	1.00	26	579
WB	652	0.55	359	29	1.00	29	

CLV TOTAL= **704**
Level of Service (LOS)= **A**

PM V/C =0.44

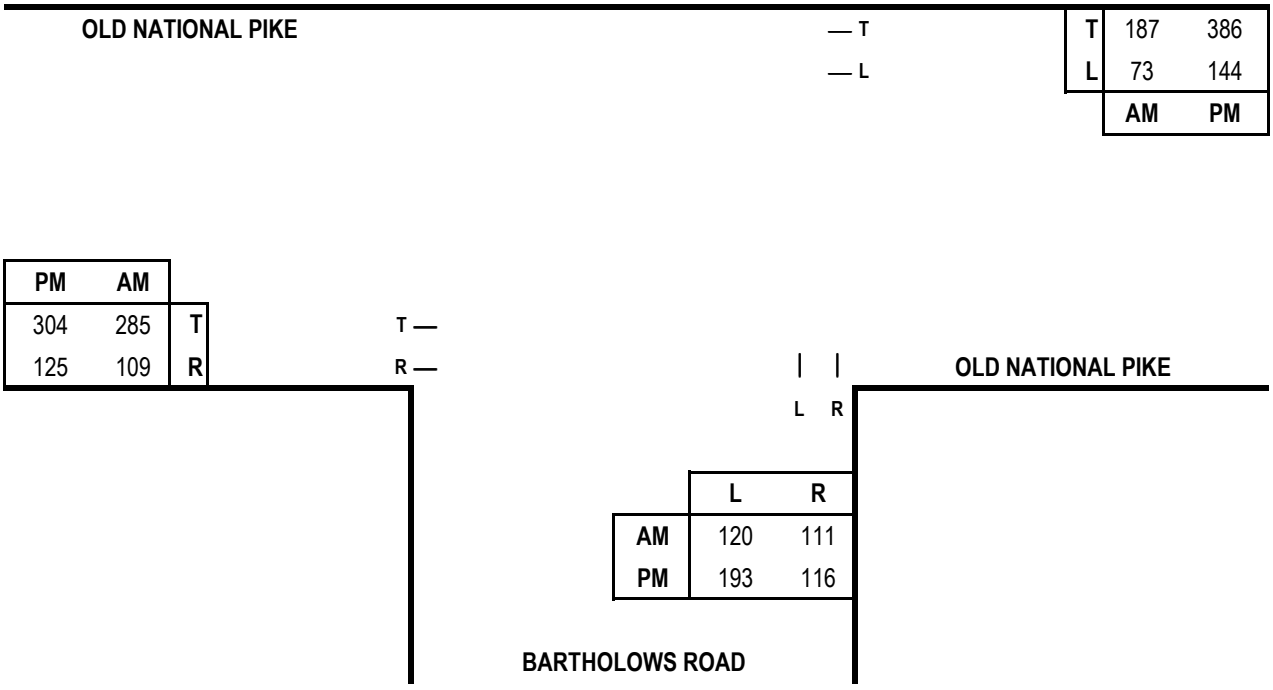
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Old National Pike
N/S Road: Bartholows Road
Conditions: w. Casey Pro. Total Traffic

Date of Count: 3/4/2021
Day of Count: Thursday
Analyst: Qiang Tian

AM Peak: 7:30-8:30
PM Peak: 4:15-5:15



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	120	1.00	120				120
EB	285	1.00	285	73	1.00	73	358
WB	187	1.00	187				

CLV TOTAL= **478**
Level of Service (LOS)= **A**

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	193	1.00	193				193
EB	304	1.00	304	144	1.00	144	448
WB	386	1.00	386				

CLV TOTAL= **641**
Level of Service (LOS)= **A**

Scenario ID - TOT16
CLV V/C =0.3
CLV V/C =0.4

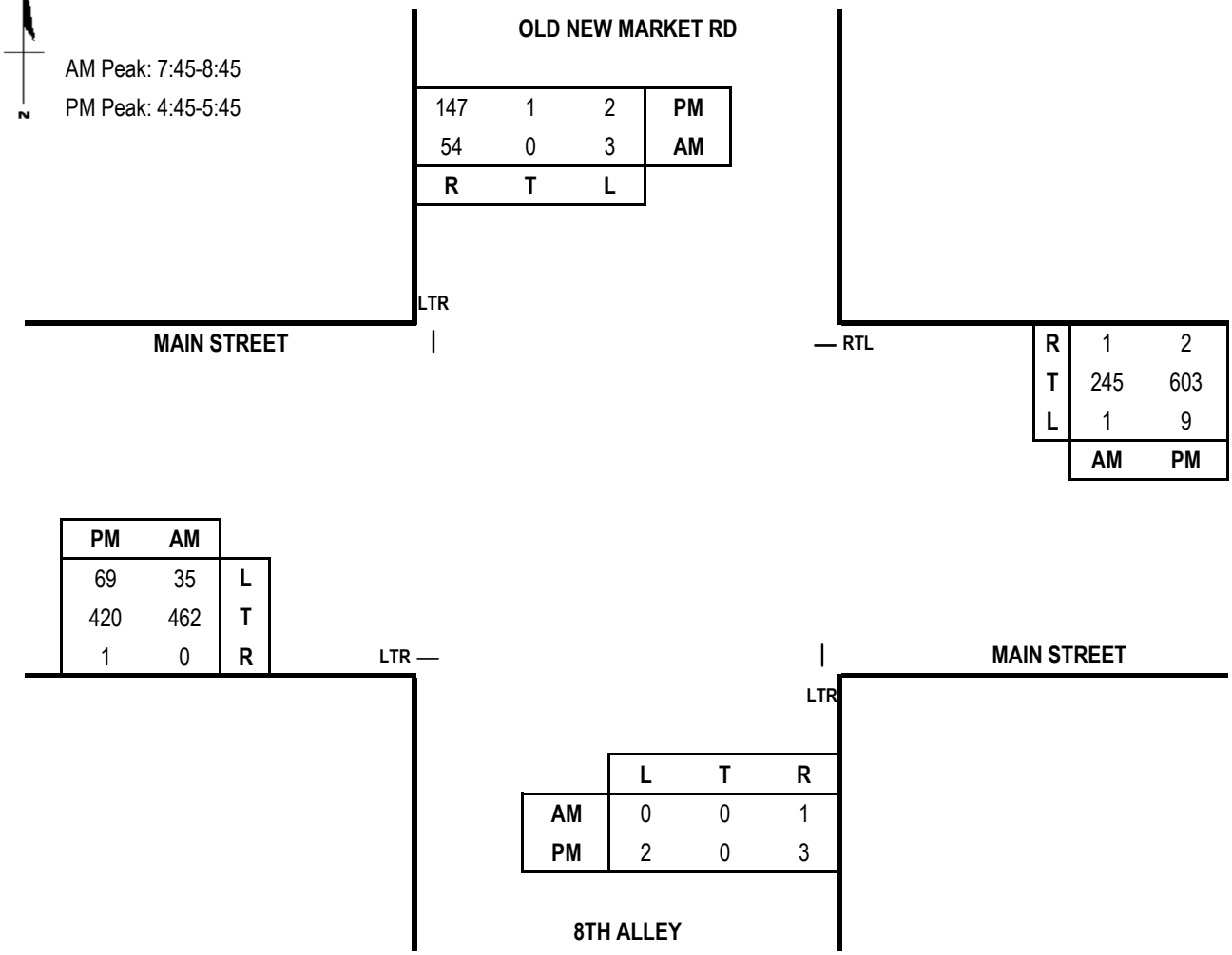
CRITICAL LANE VOLUME (CLV) METHODOLOGY

for Frederick County

E/W Road: Main Street
N/S Road: Old New Market Rd/8Th Alley
Conditions: w. Casey Pro. Total Traffic

Date of Count: 10/26/2021
Day of Count: Tuesday
Analyst: Qiang Tian

AM Peak: 7:45-8:45
PM Peak: 4:45-5:45



Capacity Analysis

Morning Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	AM CLV
NB	1	1.00	1	3	1.00	3	57
SB	57	1.00	57	0	1.00	0	
EB	497	1.00	497	1	1.00	1	498
WB	247	1.00	247	35	1.00	35	

CLV TOTAL= **555**
Level of Service (LOS)= **A**
AM V/C =0.35

Evening Peak Hour

Dir	Thru Volumes VOL	x LUF	= Total	+ Opposing Lefts VOL	x LUF	= Total	PM CLV
NB	5	1.00	5	2	1.00	2	152
SB	150	1.00	150	2	1.00	2	
EB	490	1.00	490	9	1.00	9	683
WB	614	1.00	614	69	1.00	69	

CLV TOTAL= **835**
Level of Service (LOS)= **A**
PM V/C =0.52

Scenario ID - TOT17

HCS7 Two-Way Stop-Control Report

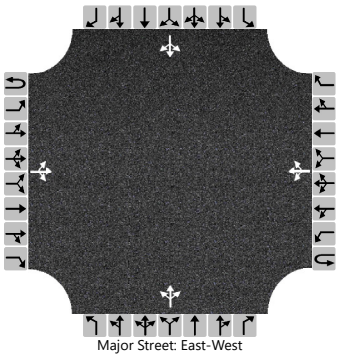
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2028
Time Analyzed	Total AM w. Casey Pro.
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Main St. & Old New Market
Jurisdiction	Frederick, MD
East/West Street	Main St.
North/South Street	Old New Market Rd
Peak Hour Factor	0.81
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		35	462	0		1	245	1		0	0	1		3	0	54
Percent Heavy Vehicles (%)		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.12				7.12	6.52	6.22		7.12	6.52	6.22
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.22				3.52	4.02	3.32		3.52	4.02	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		43				1					1				70	
Capacity, c (veh/h)		1257				1002					521				658	
v/c Ratio		0.03				0.00					0.00				0.11	
95% Queue Length, Q_{95} (veh)		0.1				0.0					0.0				0.4	
Control Delay (s/veh)		8.0				8.6					11.9				11.1	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.9				0.0				11.9				11.1			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

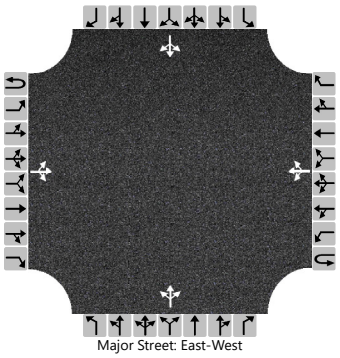
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2028
Time Analyzed	Total PM w. Casey Pro.
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Main St. & Old New Market
Jurisdiction	Frederick, MD
East/West Street	Main St.
North/South Street	Old New Market Rd
Peak Hour Factor	0.97
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		69	420	1		9	603	2		2	0	3		2	1	147
Percent Heavy Vehicles (%)		2				2				2	2	2		2	2	2
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.12				4.12				7.12	6.52	6.22		7.12	6.52	6.22
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.22				2.22				3.52	4.02	3.32		3.52	4.02	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		71				9					5				155	
Capacity, c (veh/h)		957				1126					181				465	
v/c Ratio		0.07				0.01					0.03				0.33	
95% Queue Length, Q_{95} (veh)		0.2				0.0					0.1				1.4	
Control Delay (s/veh)		9.1				8.2					25.5				16.5	
Level of Service (LOS)		A				A					D				C	
Approach Delay (s/veh)		2.0				0.2				25.5				16.5		
Approach LOS										D				C		

HCS7 Two-Way Stop-Control Report

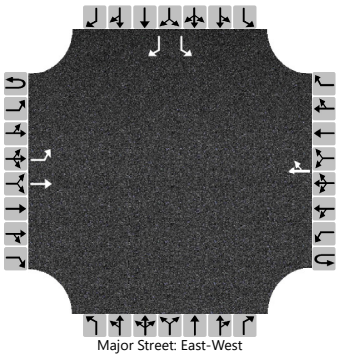
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2028
Time Analyzed	Total AM w. Casey Pro.
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Old National Pike & Site
Jurisdiction	Frederick, MD
East/West Street	Old National Pike
North/South Street	Site Access
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		37	425				318	6						12		69
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		40												13		75
Capacity, c (veh/h)		1207												302		694
v/c Ratio		0.03												0.04		0.11
95% Queue Length, Q_{95} (veh)		0.1												0.1		0.4
Control Delay (s/veh)		8.1												17.4		10.8
Level of Service (LOS)		A												C		B
Approach Delay (s/veh)		0.6												11.8		
Approach LOS														B		

HCS7 Two-Way Stop-Control Report

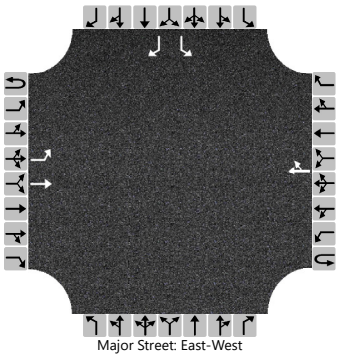
General Information

Analyst	QT
Agency/Co.	TTG, Inc.
Date Performed	4/13/2021
Analysis Year	2028
Time Analyzed	Total PM w. Casey Pro.
Intersection Orientation	East-West
Project Description	England Woods

Site Information

Intersection	Old National Pike & Site
Jurisdiction	Frederick, MD
East/West Street	Old National Pike
North/South Street	Site Access
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		71	553				622	13						10		56
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized														No		
Median Type | Storage			Undivided													

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.42		6.22
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.52		3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		77												11		61
Capacity, c (veh/h)		904												134		449
v/c Ratio		0.09												0.08		0.14
95% Queue Length, Q_{95} (veh)		0.3												0.3		0.5
Control Delay (s/veh)		9.4												34.2		14.3
Level of Service (LOS)		A												D		B
Approach Delay (s/veh)		1.1												17.3		
Approach LOS														C		

1. MD 75 @ Old National Pike

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Total Traffic w. Casey Property								
AM Peak Hour								
EB (Old National Pike) left turn	***200***	100	56	1	120	1.9	Yes	4
EB (Old National Pike) thru	***1000+***	175	214	0.55	120	3.9	Yes	7
WB (Old National Pike) left turn	***400***	375	394	0.75	120	9.9	Yes	15
WB (Old National Pike) thru	***680***	225	150	1	120	5.0	Yes	9
WB (Old National Pike) right turn	***680***	200	121	1	120	4.0	Yes	8
NB (MD 75) left turn	***275***	175	118	1	120	3.9	Yes	7
NB (Old National Pike) thru	***700***	275	355	0.55	120	6.5	Yes	11
SB (MD 75) left turn	***425***	275	200	1	120	6.7	Yes	11
SB (MD 75) thru	***1000+***	575	1193	0.4	120	15.9	Yes	23
SB (MD 75) right turn	***300***	125	77	1	120	2.6	Yes	5
PM Peak Hour								
EB (Old National Pike) left turn	***200***	125	65	1	120	2.2	Yes	5
EB (Old National Pike) thru	***1000+***	200	245	0.55	120	4.5	Yes	8
WB (Old National Pike) left turn	***400***	325	389	0.64	120	8.3	Yes	13
WB (Old National Pike) thru	***680***	400	316	1	120	10.5	Yes	16
WB (Old National Pike) right turn	***680***	400	318	1	120	10.6	Yes	16
NB (MD 75) left turn	***275***	425	332	1	120	11.1	Yes	17
NB (Old National Pike) thru	***700***	769	1199	0.55	120	22.0	No	31
SB (MD 75) left turn	***425***	250	169	1	120	5.6	Yes	10
SB (MD 75) thru	***1000+***	350	653	0.4	120	8.7	Yes	14
SB (MD 75) right turn	***300***	125	62	1	120	2.1	Yes	5

2. MD 75 @ I-70 WB Ramps

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20:	Poisson Distribution Maximum No. of Vehicles per Cycle	x 25 Feet per Vehicle
If Average No. of Vehicle (Specific Movement) per Cycle > 20:	Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds) / 3600 (Seconds per hour)	x 25 Feet per Vehicle x 1.4 Surge Factor

Existing Traffic	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Total Traffic with Casey Property								
AM Peak Hour								
WB (I-70 WB off Ramps) left/thru	***500+***	175	115	1	120	3.8	Yes	7
NB (MD 75) left turn	***225***	225	157	1	120	5.2	Yes	9
NB (MD 75) thru	***900***	400	560	0.55	120	10.3	Yes	16
SB (MD 75) thru	***700***	738	1150	0.55	120	21.1	No	30
PM Peak Hour								
WB (I-70 WB off Ramps) left/thru	***500+***	200	120	1	120	4.0	Yes	8
NB (MD 75) left turn	***225***	300	227	1	120	7.6	Yes	12
NB (MD 75) thru	***900***	862	1344	0.55	120	24.6	No	34
SB (MD 75) thru	***700***	425	599	0.55	120	11.0	Yes	17

3. MD 75 @ I-70 EB Ramps

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20:	Poisson Distribution Maximum No. of Vehicles per Cycle	x 25 Feet per Vehicle
If Average No. of Vehicle (Specific Movement) per Cycle > 20:	Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds) / 3600 (Seconds per hour)	x 25 Feet per Vehicle x 1.4 Surge Factor

Existing Traffic	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Total Traffic with Casey Property								
AM Peak Hour								
EB (I-70 EB off Ramps) left/thru	***800+***	300	366	0.6	120	7.3	Yes	12
NB (MD 75) thru	***1000+***	275	348	0.55	120	6.4	Yes	11
SB (MD 75) left turn	***225***	869	745	1	120	24.8	No	35
SB (MD 75) thru	***900***	350	507	0.55	120	9.3	Yes	14
PM Peak Hour								
EB (I-70 EB off Ramps) left/thru	***800+***	650	946	0.6	120	18.9	Yes	26
NB (MD 75) thru	***1000+***	450	650	0.55	120	11.9	Yes	18
SB (MD 75) left turn	***225***	400	306	1	120	10.2	Yes	16
SB (MD 75) thru	***900***	300	409	0.55	120	7.5	Yes	12

The Traffic Group

MD SHA QUEUING ANALYSIS
3. MD 75 @ I-70 EB RAMPS

4. Old National Pike @ Morning Gate Lane

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20:	Poisson Distribution Maximum No. of Vehicles per Cycle	x 25 Feet per Vehicle
If Average No. of Vehicle (Specific Movement) per Cycle > 20:	Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds) / 3600 (Seconds per hour)	x 25 Feet per Vehicle x 1.4 Surge Factor

	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Total Traffic with Casey Property								
AM Peak Hour								
EB (Old National Pike) left turn	***150***	175	142	1	90	3.6	Yes	7
EB (Old National Pike) thru/right	***680***	325	575	0.55	90	7.9	Yes	13
WB (Old National Pike) left turn	***125***	50	22	1	90	0.6	Yes	2
WB (Old National Pike) thru/right	***650***	250	402	0.55	90	5.5	Yes	10
NB (Shopping Ctr Acc) left turn	***200***	150	123	1	90	3.1	Yes	6
NB (Shopping Ctr Acc) thru/right	***200***	50	34	1	90	0.9	Yes	2
SB (Morning Gate Lane) left turn	***300***	75	38	1	90	1.0	Yes	3
SB (Morning Gate Lane) thru/right	***300***	150	108	1	90	2.7	Yes	6
PM Peak Hour								
EB (Old National Pike) left turn	***150***	200	182	1	90	4.6	Yes	8
EB (Old National Pike) thru/right	***680***	425	814	0.55	90	11.2	Yes	17
WB (Old National Pike) left turn	***125***	50	32	1	90	0.8	Yes	2
WB (Old National Pike) thru/right	***650***	400	763	0.55	90	10.5	Yes	16
NB (Shopping Ctr Acc) left turn	***200***	175	144	1	90	3.6	Yes	7
NB (Shopping Ctr Acc) thru/right	***200***	125	91	1	90	2.3	Yes	5
SB (Morning Gate Lane) left turn	***300***	75	50	1	90	1.3	Yes	3
SB (Morning Gate Lane) thru/right	***300***	150	129	1	90	3.2	Yes	6

5. Old National Pike @ CVS/Food Lion Access

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Total Traffic with Casey Property								
AM Peak Hour								
EB (Old National Pike) left turn	***150***	25	7	1	120	0.2	Yes	1
EB (Old National Pike) thru	***650***	550	456	1	120	15.2	Yes	22
EB (Old National Pike) right turn	***650***	50	19	1	120	0.6	Yes	2
WB (Old National Pike) left turn	***150***	25	4	1	120	0.1	Yes	1
WB (Old National Pike) thru/right	***1000+***	300	383	0.55	120	7.0	Yes	12
NB (CVS Acc) left turn	***250***	25	8	1	120	0.3	Yes	1
NB (CVS Acc) thru/right	***250***	0	2	1	120	0.1	Yes	0
SB (Food Lion Acc) left/thru	***150***	25	5	1	120	0.2	Yes	1
SB (Food Lion Acc) right turn	***150***	50	12	1	120	0.4	Yes	2
PM Peak Hour								
EB (Old National Pike) left turn	***150***	75	29	1	120	1.0	Yes	3
EB (Old National Pike) thru	***650***	650	553	1	120	18.4	Yes	26
EB (Old National Pike) right turn	***650***	150	91	1	120	3.0	Yes	6
WB (Old National Pike) left turn	***150***	50	26	1	120	0.9	Yes	2
WB (Old National Pike) thru/right	***1000+***	450	652	0.55	120	12.0	Yes	18
NB (CVS Acc) left turn	***250***	125	77	1	120	2.6	Yes	5
NB (CVS Acc) thru/right	***250***	100	42	1	120	1.4	Yes	4
SB (Food Lion Acc) left/thru	***150***	100	48	1	120	1.6	Yes	4
SB (Food Lion Acc) right turn	***150***	75	37	1	120	1.2	Yes	3

6. Old National Pike @ Bartholows Road

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Total Traffic with Casey Property								
AM Peak Hour								
EB (Old National Pike) thru	***1000+***	200	285	1	60	4.8	Yes	8
EB (Old National Pike) right turn	***400***	100	109	1	60	1.8	Yes	4
WB (Old National Pike) left turn	***225***	75	73	1	60	1.2	Yes	3
WB (Old National Pike) thru	***1000+***	150	187	1	60	3.1	Yes	6
NB (Bartholows Road) left turn	***1000+***	125	120	1	60	2.0	Yes	5
NB (Bartholows Road) right turn	***275***	100	111	1	60	1.9	Yes	4
PM Peak Hour								
EB (Old National Pike) thru	***1000+***	225	304	1	60	5.1	Yes	9
EB (Old National Pike) right turn	***400***	125	125	1	60	2.1	Yes	5
WB (Old National Pike) left turn	***225***	125	144	1	60	2.4	Yes	5
WB (Old National Pike) thru	***1000+***	275	386	1	60	6.4	Yes	11
NB (Bartholows Road) left turn	***1000+***	150	193	1	60	3.2	Yes	6
NB (Bartholows Road) right turn	***275***	100	116	1	60	1.9	Yes	4

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MD SHA QUEUING ANALYSIS
6. OLD NATIONAL PIKE @ BARTHOLOWS ROAD

Qt, 210209\REV1\Queuesnew w. Casey.xls-6, F11/01/21

7. Main Street & Old New Market Rd

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Total Traffic with Casey Property								
AM Peak Hour								
EB (Main Street) left turn	***500+***	50	35	1	90	0.9	Yes	2
WB (Main Street) left turn	***500+***	0	1	1	90	0.0	Yes	0
NB (8th Alley) approach	***500+***	0	1	1	90	0.0	Yes	0
SB (Old New Market Rd) approach	***500+***	100	57	1	90	1.4	Yes	4
PM Peak Hour								
EB (Main Street) left turn	***500+***	100	69	1	90	1.7	Yes	4
WB (Main Street) left turn	***500+***	25	9	1	90	0.2	Yes	1
NB (8th Alley) approach	***500+***	25	5	1	90	0.1	Yes	1
SB (Old New Market Rd) approach	***500+***	175	150	1	90	3.8	Yes	7

8. Old National Pike & Site Access

Maryland State Highway Administration Queuing Analysis Formula

Queue Length (feet) =

If Average No. of Vehicle (Specific Movement) per Cycle <= 20: Poisson Distribution Maximum No. of Vehicles per Cycle x 25 Feet per Vehicle

If Average No. of Vehicle (Specific Movement) per Cycle > 20: $\frac{\text{Turning Volume (veh per hour) x Lane Use Factor x Cycle Length (Seconds)}}{\text{3600 (Seconds per hour)}}$ x 25 Feet per Vehicle x 1.4 Surge Factor

	Available Storage (feet)	Queue Length (feet)	Veh / Hour	Lane Use Factor	Cycle Length (seconds)	Average No. of Vehicle per Cycle	Is Average No. of Vehicle (Specific Movement) per Cycle <= 20?	Poisson Distribution Maximum No. of Vehilce per Cycle
2028 Total Traffic with Casey Property								
AM Peak Hour								
EB (Old National Pike) left turn	***new***	75	37	1	90	0.9	Yes	3
SB (Site Access) left turn	***new***	25	12	1	90	0.3	Yes	1
SB (Site Access) right turn	***new***	100	69	1	90	1.7	Yes	4
PM Peak Hour								
EB (Old National Pike) left turn	***new***	100	71	1	90	1.8	Yes	4
SB (Site Access) left turn	***new***	25	10	1	90	0.3	Yes	1
SB (Site Access) right turn	***new***	100	56	1	90	1.4	Yes	4

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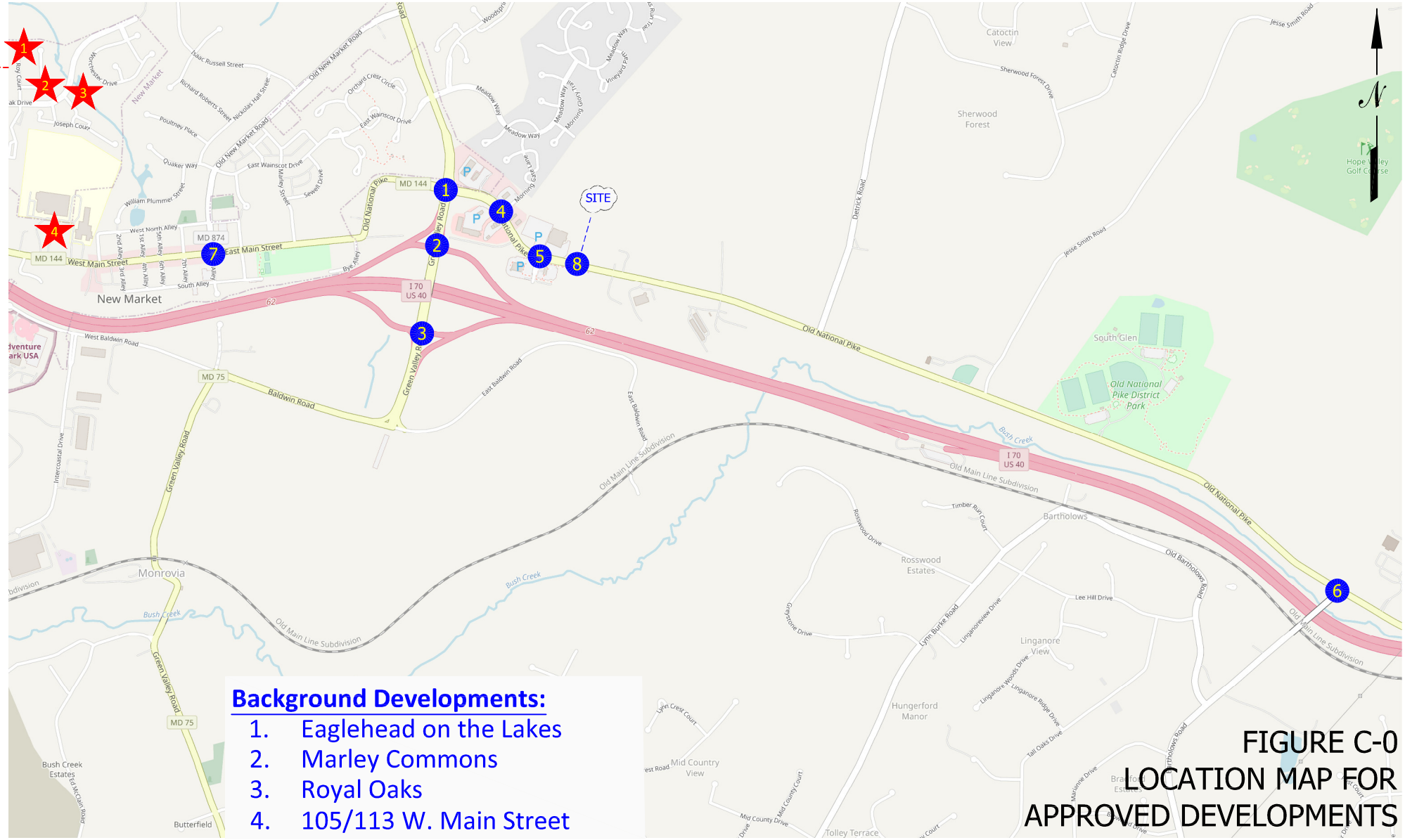
MD SHA QUEUING ANALYSIS
8. OLD NATIONAL PIKE & SITE ACCESS

Qt, 210209\REV1\Queuesnew w. Casey.xls-8, F11/01/21

APPENDIX C

Trip Assignment for

Approved Developments



Background Developments:

1. Eaglehead on the Lakes
2. Marley Commons
3. Royal Oaks
4. 105/113 W. Main Street

FIGURE C-0
LOCATION MAP FOR
APPROVED DEVELOPMENTS

based on TIS for Eaglehead-on-the-Lakes PUD, dated 2/15/2013.

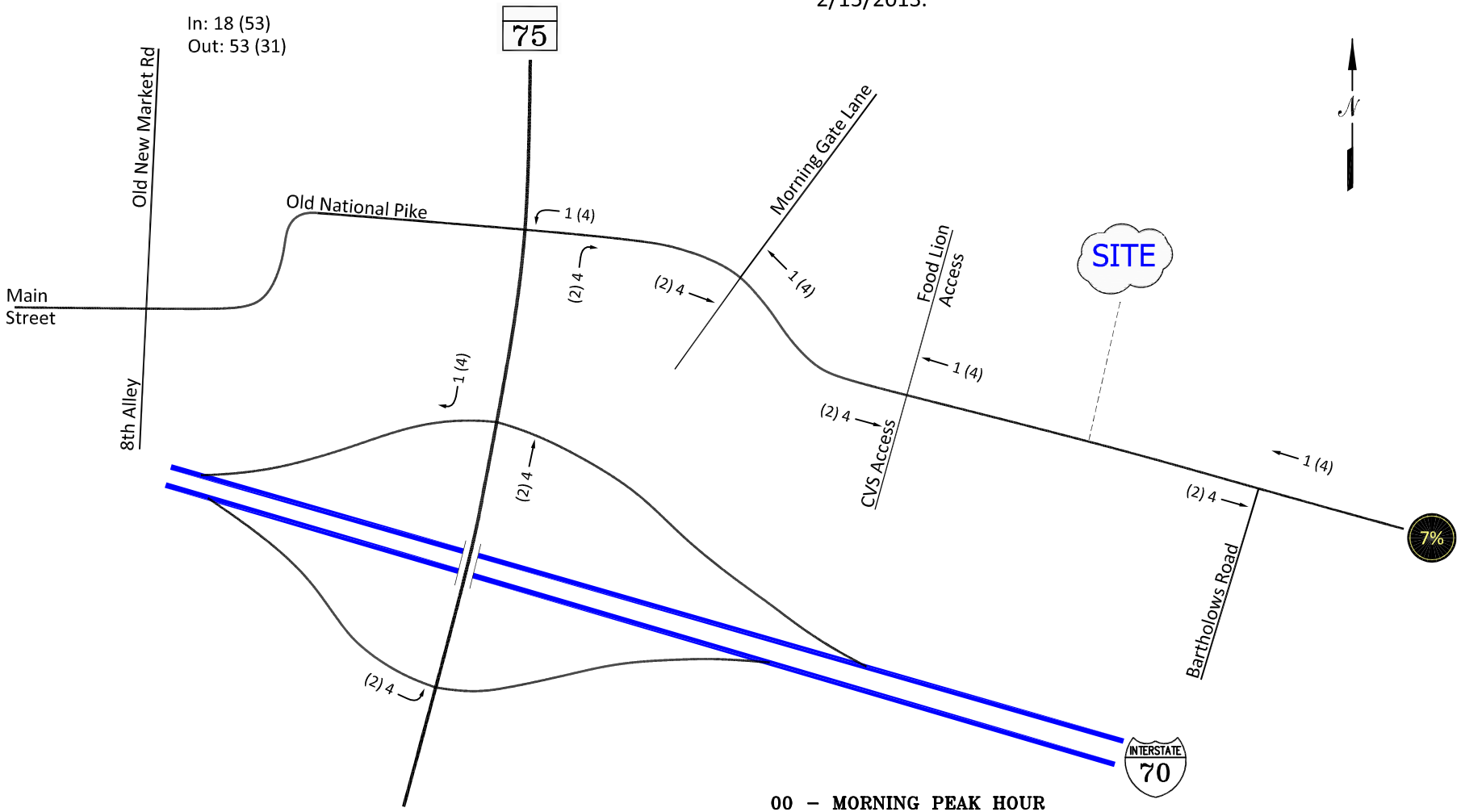


FIGURE C-1
NEW TRIP ASSIGNMENT
FOR APPROVED DEVELOPMENTS #1 - ALPINE

qt, 210209_turnpike farms and stone oak manor\rev1\figures.dwg-1, f11/1/2021

based on TIS for Eaglehead-on-the-Lakes PUD, dated 2/15/2013.

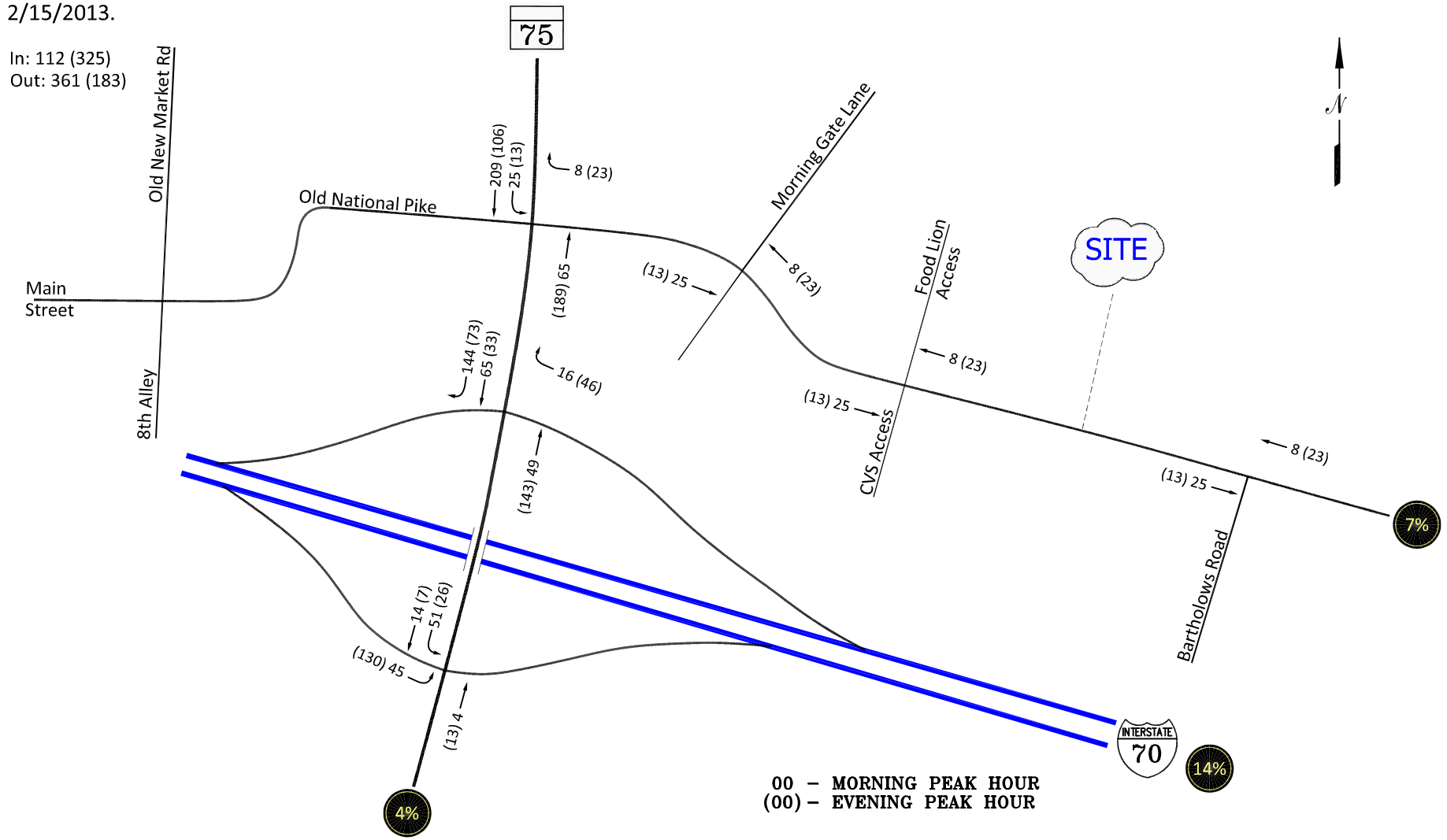


FIGURE C-2
NEW TRIP ASSIGNMENT
FOR APPROVED DEVELOPMENTS
#1 - HAMPTONS WEST & HAMPTONS EAST

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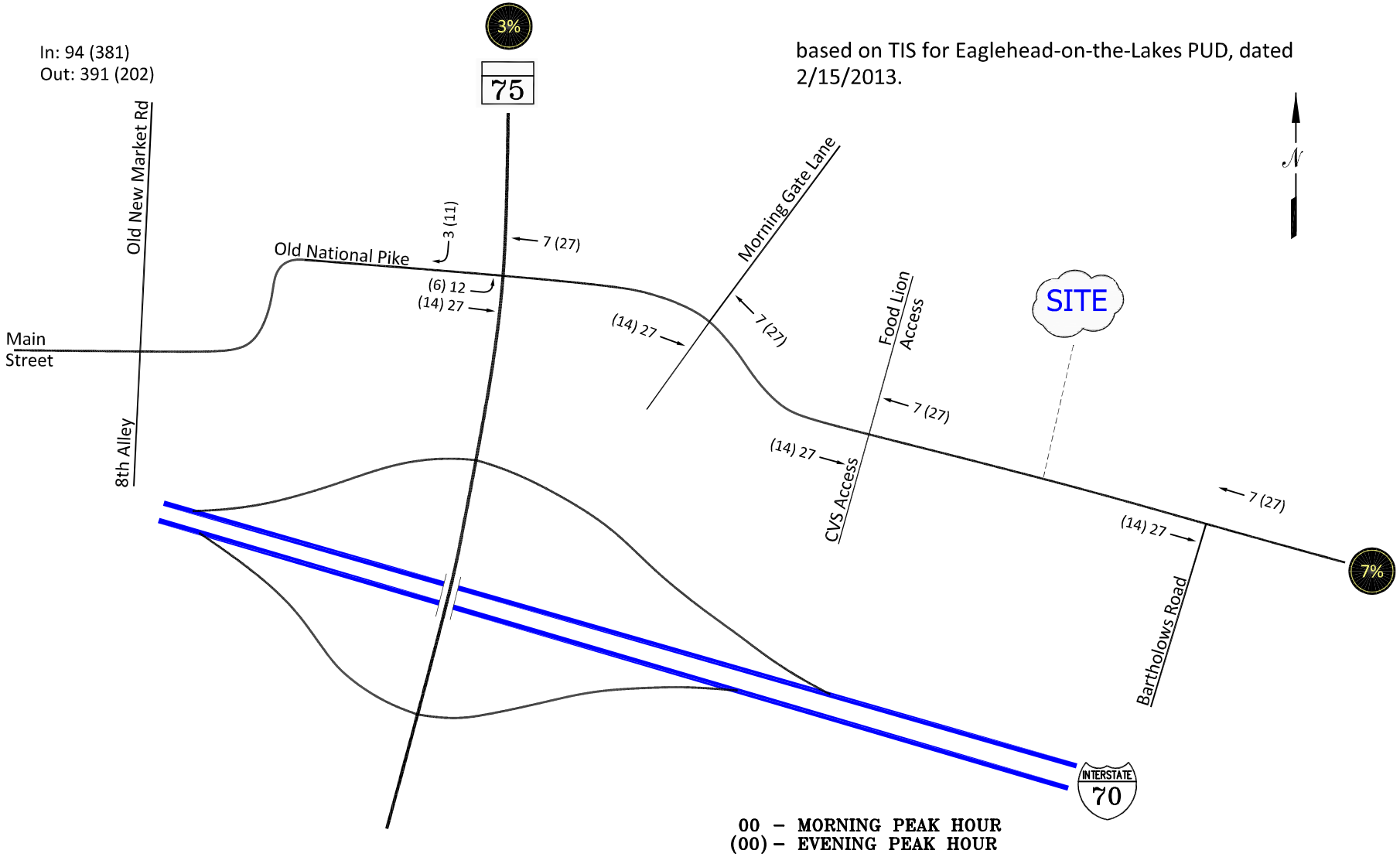

FIGURE C-3A
NEW TRIP ASSIGNMENT
FOR APPROVED DEVELOPMENTS
#1 - TOWN CENTER (RESIDENTIAL - BUILD-OUT)

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qt, 210209_turnpike farms and stone oak manor\rev1\figures.dwg-3, f11/1/2021

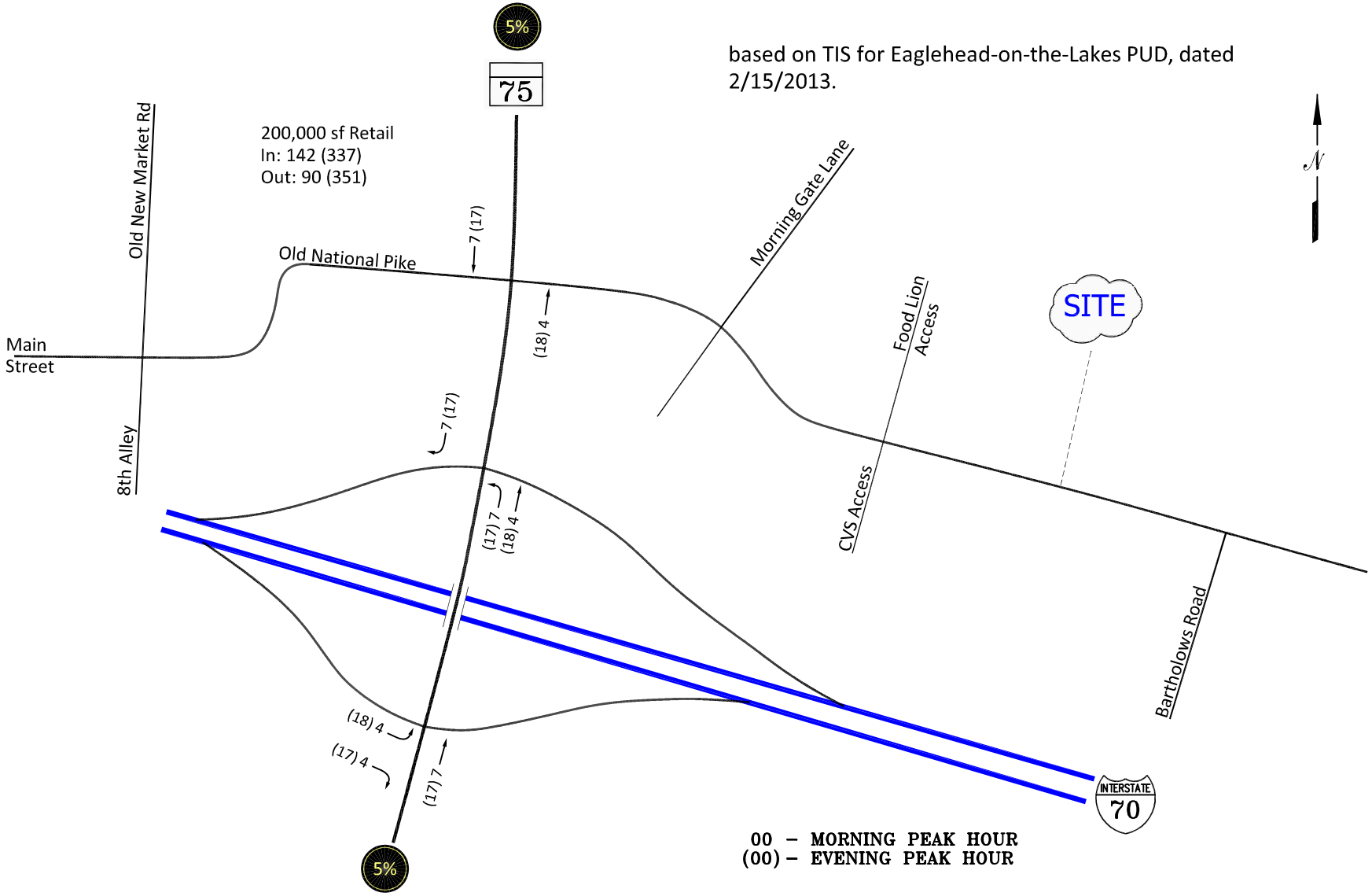

FIGURE C-3B
NEW TRIP ASSIGNMENT
FOR APPROVED DEVELOPMENTS
#1 - TOWN CENTER (COMMERCIAL)

based on TIS for Eaglehead-on-the-Lakes PUD, dated 2/15/2013.

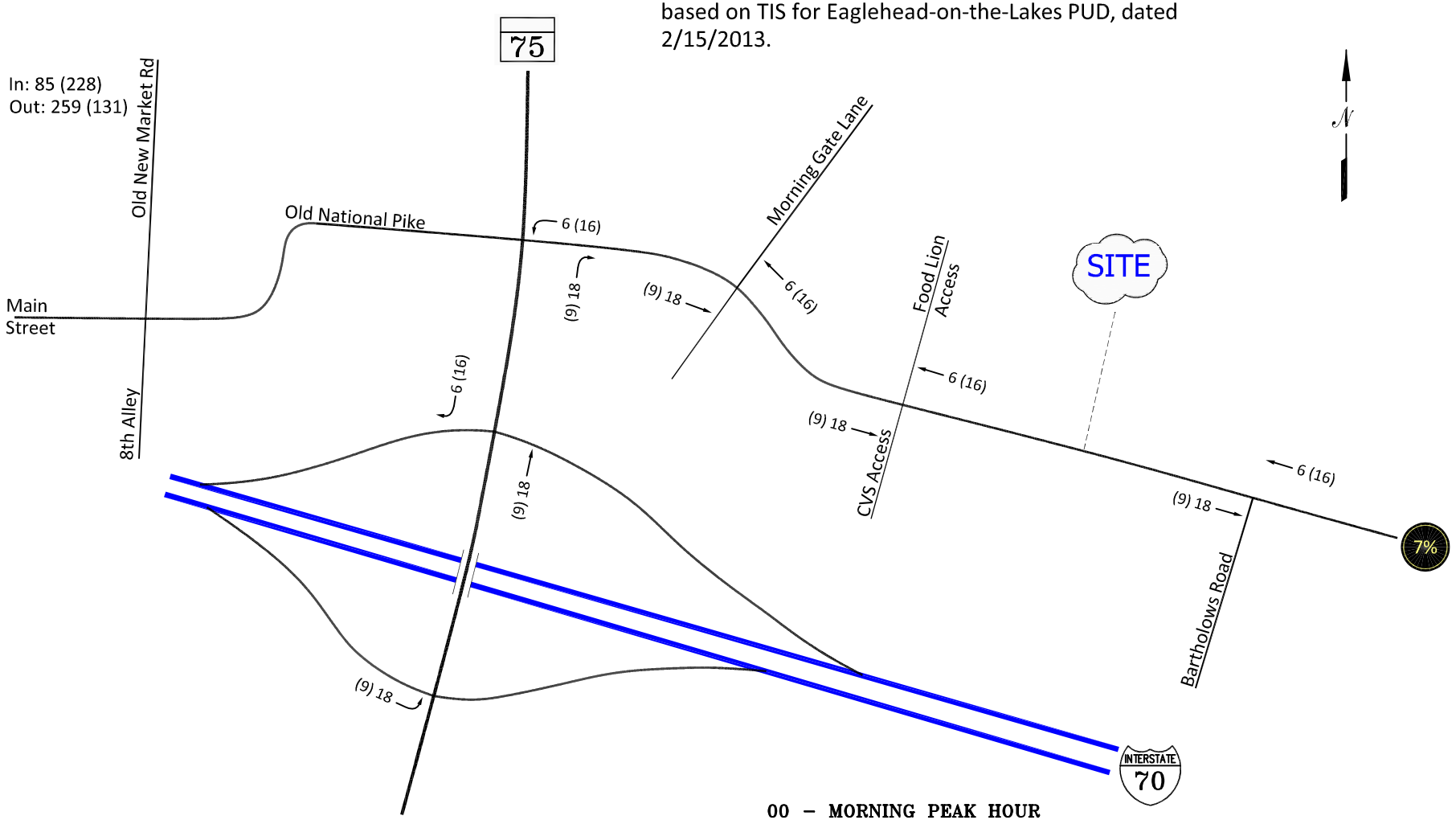

FIGURE C-4
NEW TRIP ASSIGNMENT
FOR APPROVED DEVELOPMENTS
#1 - WESTRIDGE & WOODRIDGE

based on TIS for Eaglehead-on-the-Lakes PUD, dated 2/15/2013.

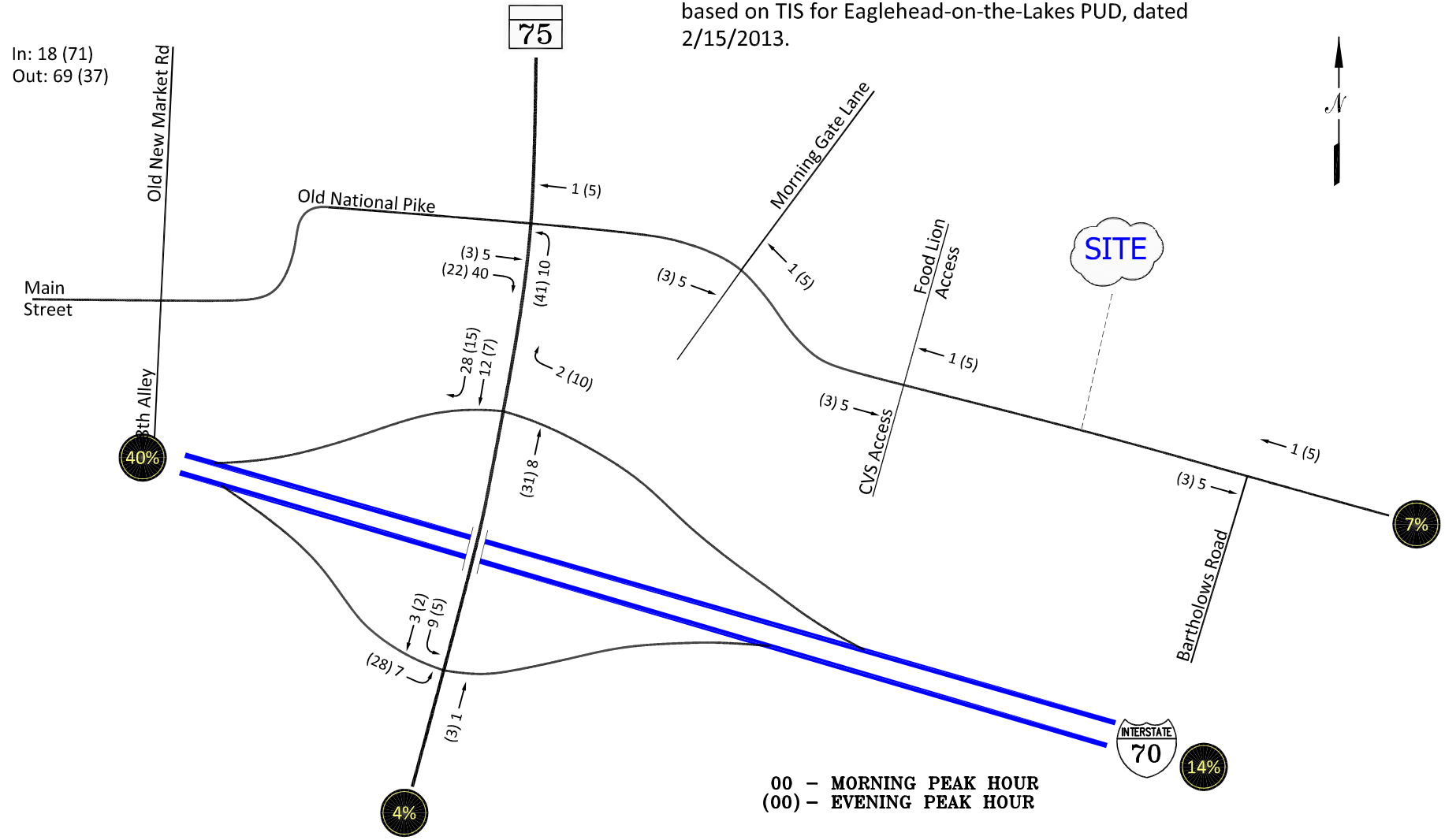

FIGURE C-5
NEW TRIP ASSIGNMENT
FOR APPROVED DEVELOPMENTS
#1 - EAGLESTREAM, NIGHTINGALE & ASPEN

qt, 210209_turnpike farms and stone oak manor\rev1\figures.dwg-5, f11/1/2021

based on TIS for Linganore Town Center - South Commercial , dated 12/6/2018..

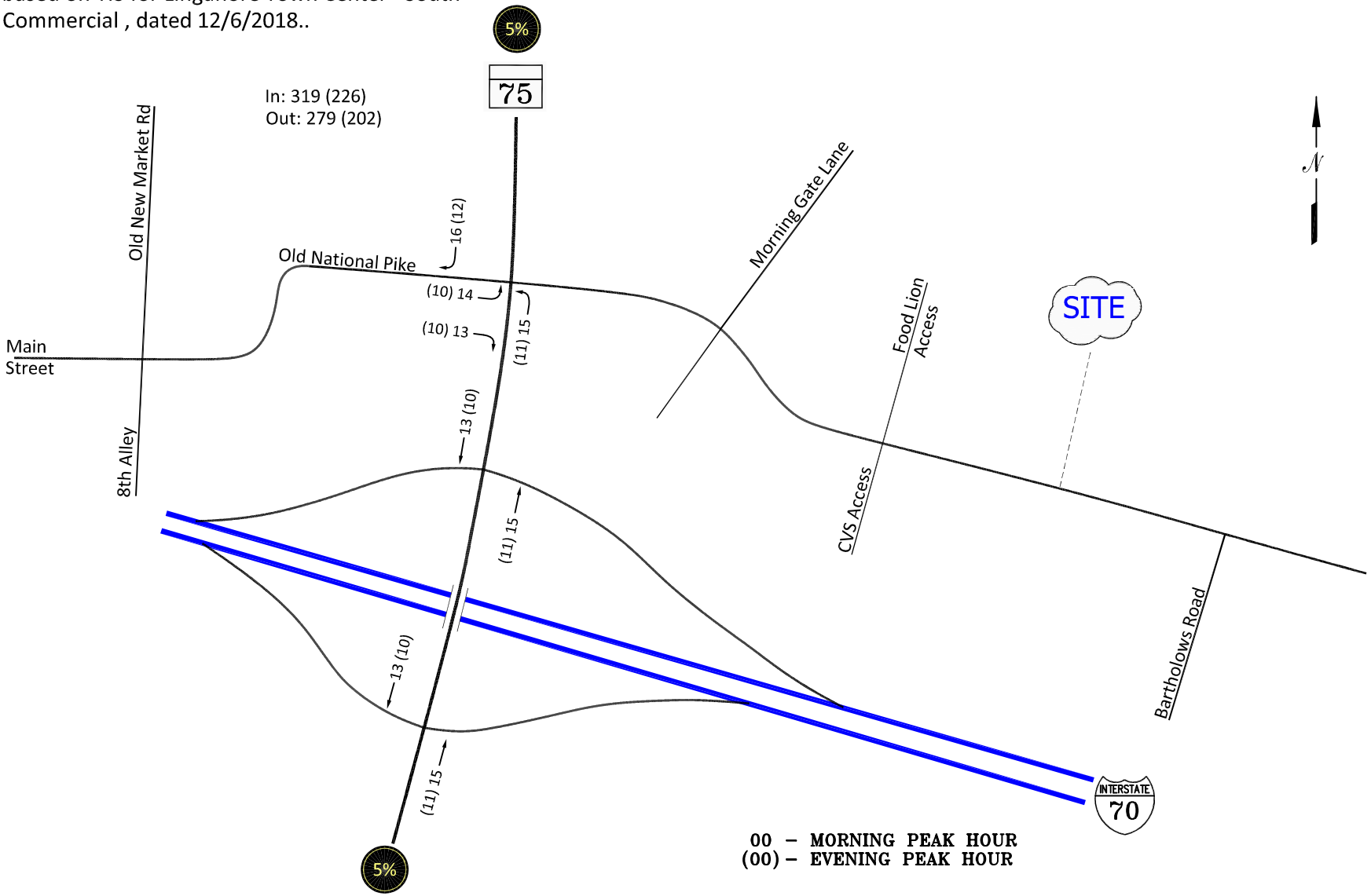

FIGURE C-6
NEW TRIP ASSIGNMENT
FOR LINGANORE TC
- SOUTH COMMERCIAL

qt, 210209_turnpike farms and stone oak manor\rev1\figures.dwg-6, f11/1/2021

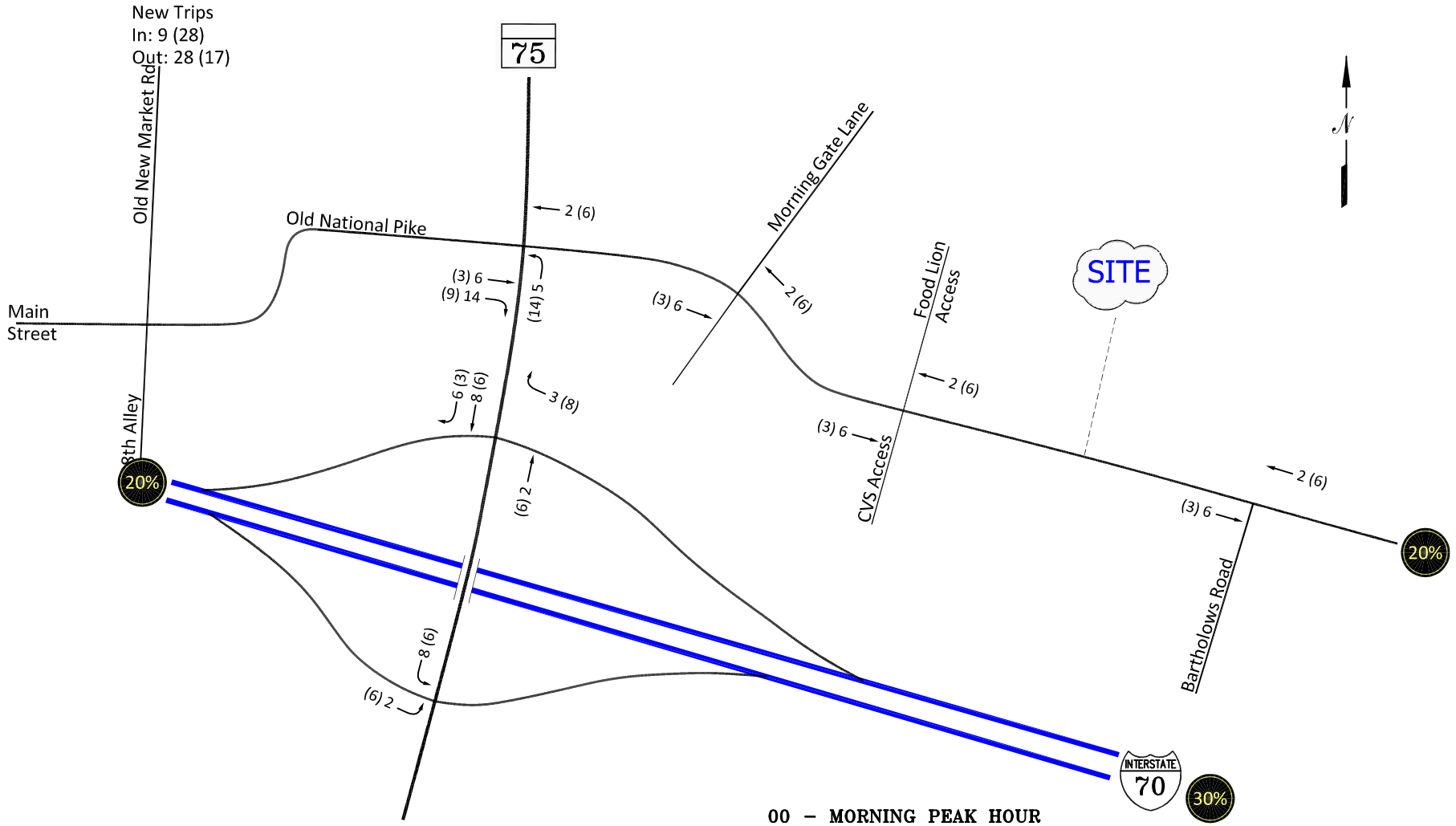

FIGURE C-7
TRIP ASSIGNMENT
FOR #2 & #3

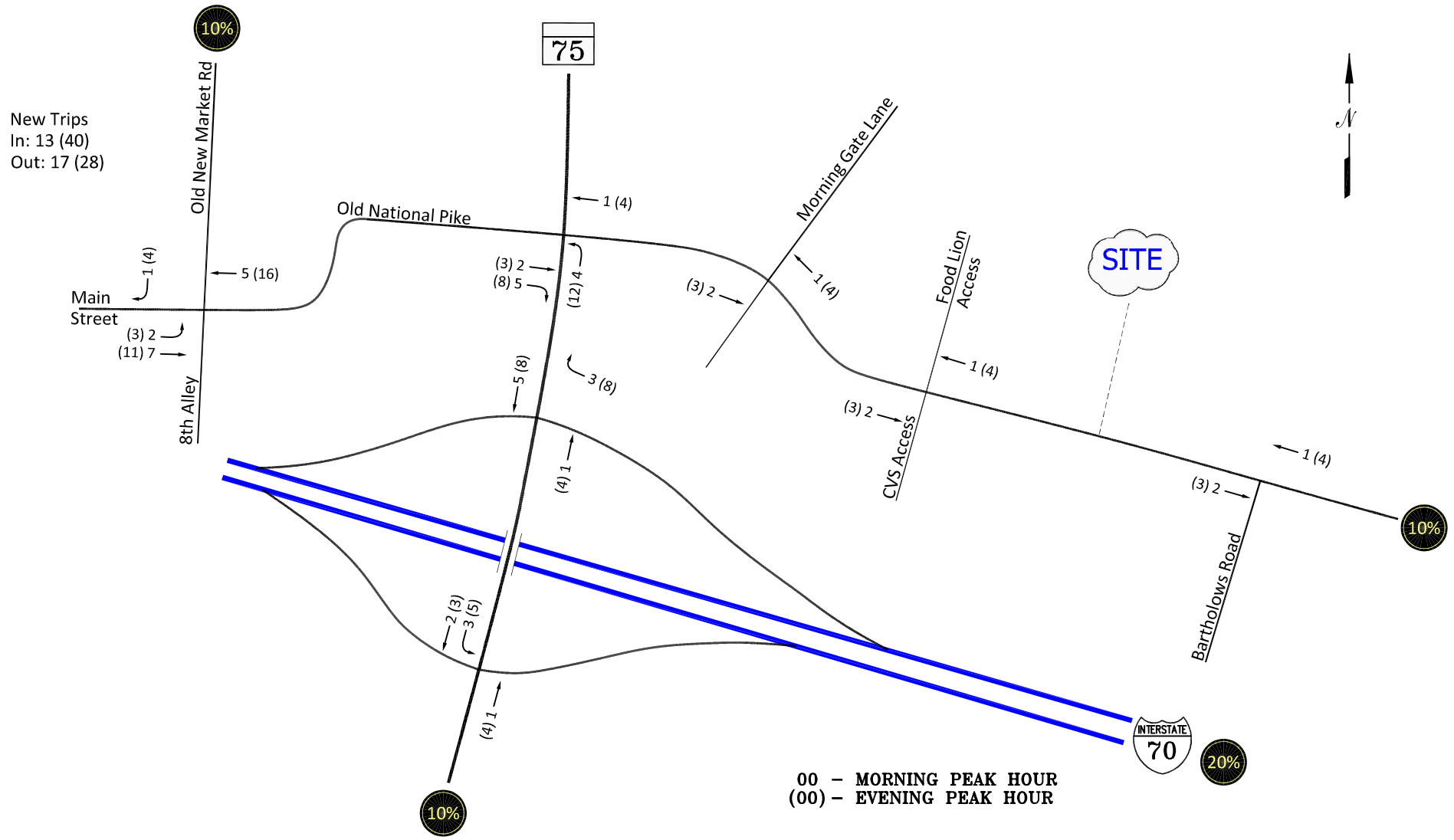

FIGURE C-8
TRIP ASSIGNMENT
FOR #4

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qt, 210209_turnpike farms and stone oak manor\rev1\figures.dwg-8, f11/1/2021

Casey Property

Information

CASEY PROPERTY
TRAFFIC IMPACT ANALYSIS
FREDERICK COUNTY, MARYLAND

Prepared for:
Linowes & Blocher, LLP

Prepared by:
Wells + Associates, Inc.
1420 Spring Hill Road
Suite 610
Tysons, Virginia 22102

July 17, 2013

Revised March 28, 2014

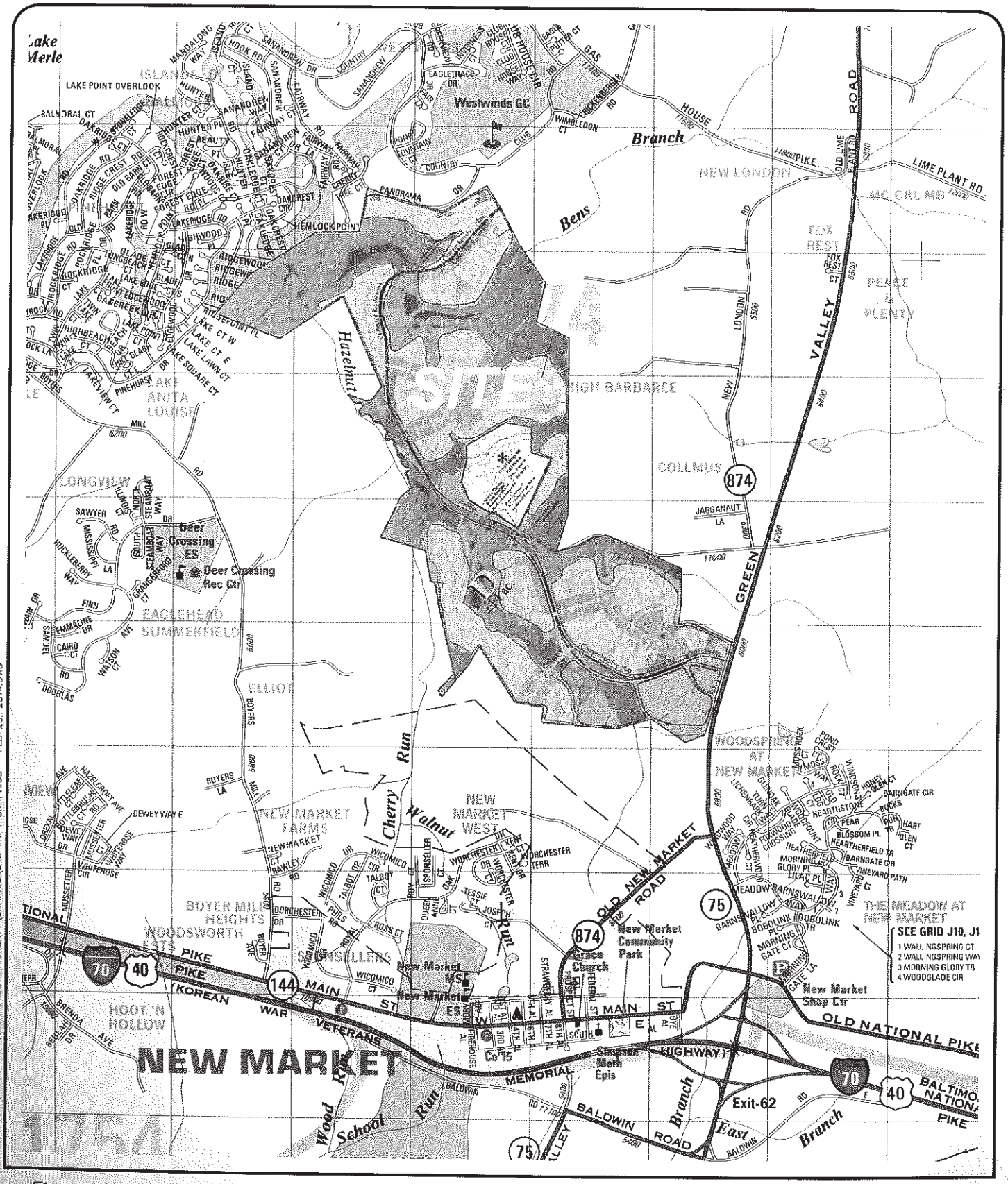

Figure 1
Site Location

North

Casey Property
Frederick County, Maryland

Wells + Associates, Inc.

O:\PROJECTS\5001-5500\5484 CASEY PROPERTY\GRAPHICS\5484 RPT GRAPHICS -- FEB 28, 2014.DWG

DAD

Table 8
Casey Property
Site Trip Generation

Development/Use	Percent Reduction	ITE Land Use Code	Amount	Units	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Average Daily Traffic
Phase I (2017)											
Single Family Detached		210	300	DU's	55	165	220	178	104	282	2,857
Condominium/Townhouse		230	100	DU's	9	43	52	40	20	60	643
Total Trips					**64**	**208**	**272**	**218**	**124**	**342**	**3500**
Phase II (2022)											
Single Family Detached		210	500	DU's	90	270	360	282	165	447	4,571
Condominium/Townhouse		230	250	DU's	18	89	107	85	42	127	1,427
Shopping Center		820	10,000	SF	24	14	38	61	67	128	1,520
Pass-by	25%				6	4	10	15	17	32	
Total Retail Trips					18	11	29	46	50	96	
Total Trips					**126**	**370**	**496**	**413**	**257**	**670**	**7518**
Phase III (2027) Project Buildout											
Single Family Detached		210	680	DU's	122	364	486	372	218	590	6,065
Condominium/Townhouse		230	337	DU's	23	113	136	109	54	163	1,851
Shopping Center		820	10,000	SF	24	14	38	61	67	128	1,520
Pass-by	25%				6	4	10	15	17	32	
Total Retail Trips					18	11	29	46	50	96	
Total Trips					**163**	**488**	**651**	**527**	**322**	**849**	**9436**

Note Trip calculations based on ITE Trip Generation, 9th Edition

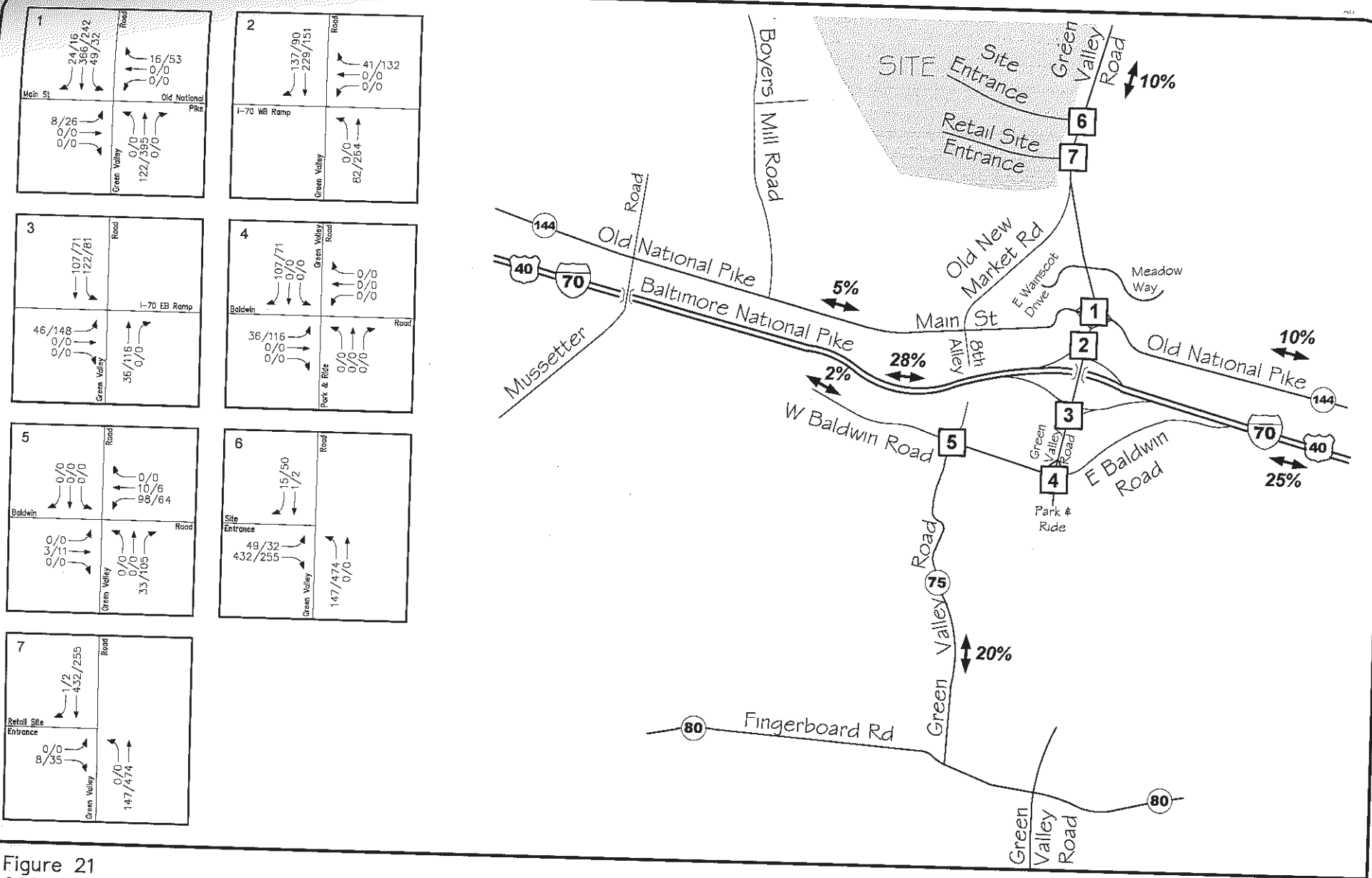

Figure 21
2027 Phase III (Project Buildout) Site Trip Assignments

Casey Property
Frederick County, Maryland

Wells + Associates, Inc.

peak hour trips by the end of Phase 1; a cumulative 496 a.m. peak hour trips and 670 p.m. peak hour trips by the end of Phase 2; and a total of 659 a.m. peak hour trips and 856 p.m. peak hour trips by the time of full build-out. Road improvements intended to create additional road network capacity adequate to serve the Project and enhance the safety and circulation of the road network serving the Project and the surrounding neighborhood have been identified and are set forth below.

The roadway impacts for each development phase of the Project will be mitigated through either construction or a pro-rata contribution to existing and/or future County-held escrow accounts (where applicable) in accordance with Frederick County APFO and Guidelines for Preparation of Traffic Impact Analyses for Development Applications, adopted September 6, 2011, by the BOCC by Resolution No. 11-24 ("TIA Guidelines"). The Charitable Foundation agrees to construct or contribute to the following improvements and phasing schedule as identified in the TIA in order to mitigate the effects upon the transportation network serving the Project:

A. APFO Road Improvements and/or Full Fee-in-lieu Funding:

In satisfaction of APFO requirements to fully mitigate site-generated trips (and in addition to the escrow contributions set forth in Section II.B. below) the Charitable Foundation shall construct or cause to be constructed the following road improvements during the three (3) phases of development of the Project:

1. Phase 1, (1-500 Residential Units)

The Phase 1 Improvements shall be guaranteed prior to the issuance of any building permits, other than models, for residential lots in the Project with completion prior to issuance of a building permit for the 100th residential dwelling unit in the Project or one year, whichever occurs first:

a. Construct an additional lane on the southbound MD 75 to westbound I-70 slip ramp.

b. Provide a $100,000 payment to Frederick County to be used to mitigate operational issues as deemed necessary by Frederick County and the SHA at the MD 75/I-70 Interchange. This contribution must be made prior to the first recorded plat for a residential lot in the Project.

2. Phase 2, (501- 800 Residential Units)

The Phase 2 Improvements shall be guaranteed prior to the issuance of a building permit for the 501st residential lot in the Project, with completion within one (1) full year of the issuance

thereof, or prior to issuance of the building permit for the 600th dwelling unit in the Project, whichever occurs first:

a. Construct an additional westbound left turn lane (dual lefts) along MD 144 approaching MD 75.

3. Phase 3, (801-1,010 Residential Units and 10,000 square feet of commercial)

Phase 3 Improvements shall be guaranteed prior to issuance of the building permit for the 801st residential dwelling unit in the Project or any commercial use, with completion within one (1) full year of the issuance thereof, or prior to issuance of a building permit for the 900th dwelling unit in the Project, whichever occurs first:

a. Construct an additional eastbound through lane along MD 144 approaching MD 75; and

b. Reconfigure the I-70/MD 75 interchange to provide a divergent diamond, substantially in accordance with the preliminary concept plan shown on **EXHIBIT G** attached hereto and incorporated by reference herein, or an alternative improvement that will result in the I-70/MD 75 on and off ramps functioning at LOS "E" or better, as mutually agreed upon by SHA, County and the Charitable Foundation; and

c. Consistent with the Phase I PUD Zoning condition, widen MD 75 from north of MD 144 to the primary collector road site access, up to 4 lanes divided in width, as detailed by SHA.

4. The Charitable Foundation shall provide full fee-in-lieu funding for the construction of roadway improvements that would result in the MD 75/Baldwin East and MD 75/Baldwin West intersections functioning at LOS "E" or better, as mutually agreed upon by the County and the Charitable Foundation. As determined by DPDR-Traffic Engineering Staff, the full fee in lieu for this road improvement is $1,250,000, which shall be provided prior to recordation of the subdivision plat for the 601st residential lot in the Project. If mutually agreed upon by SHA and the County, these funds may be transferred to Escrow Account No. 3891 and allocated for the relocation of MD 75 just south of I-70.

5. The Charitable Foundation shall contribute the appropriate pro-rata share to existing Escrow Account No. 3891 for improvements to MD 75 between I-70 and MD 355 inclusive. As determined by DPDR-Traffic Engineering Staff, the Charitable Foundation's pro-rata contribution to this road improvement is to be determined, based on a calculation of $17,171

105/113 W. Main Street

Information

WELLS + ASSOCIATES

MEMORANDUM

1420 Spring Hill Road,
Suite 610,
Tysons, VA 22102
703-917-6620
WellsandAssociates.com

To: Donavan Corum
Robert Mochi
CBM Consulting

From: Michael J. Workosky, PTP, TOPS, TSOS
William L. Zeid, P.E.
Wells + Associates, Inc.

Date: December 21, 2020

Re: 105/113 W. Main Street
Traffic Assessment;
New Market, Maryland

Introduction

This memorandum summarizes a traffic assessment for the 105/113 W. Main Street property. The site is located on the north side of Main Street, between the New Market elementary and middle school driveways in the Town of New Market, Maryland as shown on Figure 1.

The site is currently occupied by the following uses:

- One Single Family Home
- 3,712 SF Arts and Crafts business
- 7,520 SF Tractor Supply and Repair business
- Eight Mobile Homes

The site is proposed to be redeveloped with the following uses and removal of all existing uses:

- 27 residential townhouses
- 3,270 S.F. Retail Use
- 4,105 S.F. Restaurant Use (Without Drive Through)
- 1,540 S.F. Small Office Use

Access to the redeveloped site would be consolidated to a single driveway located between the existing site driveways that would be removed. For purposes of this assessment, a buildout year of 2023 was selected. The proposed site plan is shown on Figure 2.

O:\PROJECTS\8001-8500\83XX - NEW MARKET MAIN STREET\GRAPHICS\20.1210 105-113 W. MAIN STREET GRAPHICS.DWG

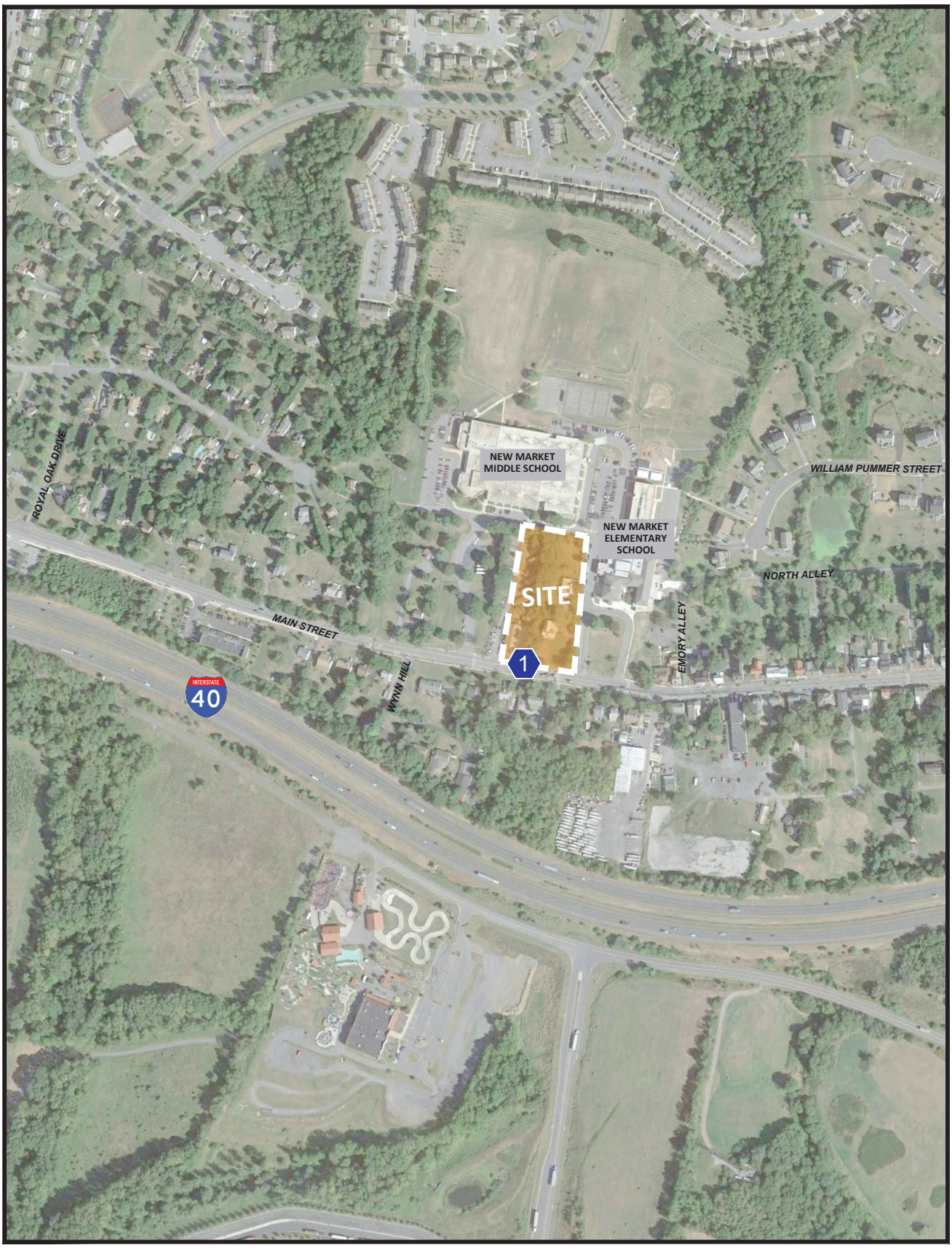

Figure 1
Site Location

105/113 W. Main Street
Town of New Market, Maryland

- Mode split: 68 percent bus, 12 percent drop-off, 20 percent walk.
- Buses and vehicles serving the Middle School enter using the east driveway and exit via the West School Driveway.
- Crossing Guards are not currently utilized at the Middle School Crosswalk.

A total of 19 buses are provided for each school. Based on information provided by FCPS, congestion occurs at the west Middle School driveway for traffic exiting the Middle School. In addition, the traffic data indicates that the schools generate traffic during the PM commuter peak hour generally consistent with the afternoon school pick-up period, likely resulting from after school activities.

Site Trip Generation

The number of AM and PM peak hour vehicle trips expected to be generated by the site for both approved and proposed conditions were calculated based on the standard rates and equations published in the Institute of Transportation Engineers' (ITE) *Trip Generation, 10th Edition*. The results are summarized on Table 1 and indicate that the approved uses on site could generate up to approximately 32 AM peak hour trips and 40 PM peak hour trips as a combination of inbound and outbound vehicles based on the most recent use categories. These potential site trips for existing approved uses are shown on Figure 3 at the existing site driveways. Further, the proposed redevelopment is expected to generate 62 AM peak hour trips (30 in and 32 out) and 108 PM peak hour trips (59 in and 49 out) subsequent to full buildout and occupancy. This represents an overall potential net change of 30 additional trips during the AM peak hour and 68 additional trips during the PM peak hour as a result of the redevelopment.

Table 1: Trip Generation Summary

Land Use	LUC	Amount	Unit	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Existing/Approved Uses									
Single Family Home	210[2]	1	DU	0	1	1	1	0	1
Arts and Crafts Store	879	3712	SF	9	9	18	11	13	24
Tractor Supply Store	810	7,520	SF	7	3	10	5	6	11
Mobile Homes	240	8	DU	1	2	3	2	2	4
Subtotal				**17**	**15**	**32**	**19**	**21**	**40**
Proposed Uses									
Small Office Building	712	1,540	SF	2	1	3	1	3	4
Restaurant	932	4,105	SF	23	18	41	25	16	41
Retail[4]	820	3,270	SF	2	2	4	21	23	44
Townhomes	220	27	DU	3	11	14	12	7	19
Subtotal				**30**	**32**	**62**	**59**	**49**	**108**
Net Difference - Approved vs Proposed				13	17	30	40	28	68

Note:
1. Trip generation based on ITE Trip Generation Manual 10th Edition
2. Given the small size of units, the rates for all peak periods were used.
3. No AM data published, therefore, the ratio of PM:AM peak hour trips for Auto Parts Sales and Service (LUC 943) was used to estimate AM peak hour using the PM peak hour estimate.
4. Given the small size of the retail use in comparison to the average size for LUC 820, the AM rate was used.

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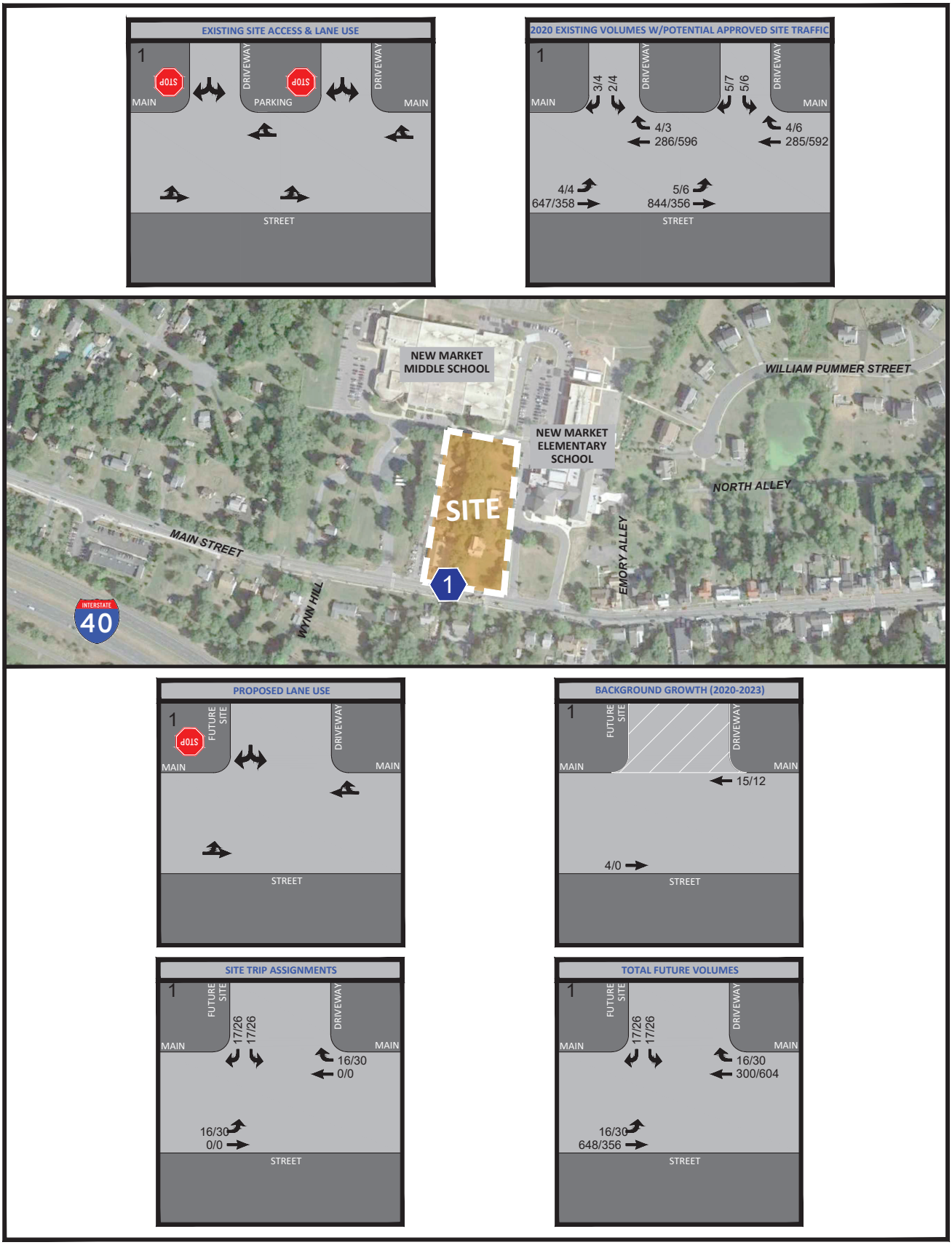

Figure 3

Existing Lane Use, 2020 Existing Volumes, Proposed Lane Use, Background Growth 2020-2023, Site Trip Assignments, Total Future Volumes

AM PEAK HOUR
PM PEAK HOUR
000 / 000

NORTH

105/113 W. Main Street
Town of New Market, Maryland