



WELLS + ASSOCIATES

11616 OLD NATIONAL PIKE TRAFFIC IMPACT ANALYSIS

FREDERICK COUNTY, MARYLAND

April 10, 2026

DRAFT



11616 OLD NATIONAL PIKE

Traffic Impact Analysis

Frederick County, Maryland

April 10, 2026

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11616 OLD NATIONAL PIKE RETAIL TRAFFIC IMPACT ANALYSIS

Introduction

This report presents the results of a traffic impact analysis for the proposed 11616 Old National Pike Retail development. The purpose of this study is to evaluate potential transportation impacts associated with the proposed development and to assess compliance with the Town of New Market review criteria. The subject site is located on the west side of Old National Pike, approximately 0.25 miles west of Green Valley Road (MD 75), and north of US-70 in Frederick County, Maryland, as shown on Figure 1. The site is currently located in Frederick County and is proposed to be annexed into the Town of New Market.

For purposes of this study, the property was assumed to be developed with up to 11,700 SF of retail, a 6,000 SF Restaurant with a drive-thru, a 2,800 “donut shop” with drive-thru, and 4,500 SF (total) of office space, to be developed in one phase. The concept development plan is shown on Figure 2. Vehicular access would be provided via two full-movement access driveways on Old National Pike.

This study has assumed a two (2) year buildout with completion of the project in 2028. This traffic study includes an analysis of existing conditions, background conditions without the project and total future conditions in 2028 with the project.

This traffic impact study was conducted in accordance with the Frederick County Guidelines for the Preparation of Traffic Impact Analysis for Development Applications for traffic study purposes. A copy of the traffic scoping agreement is contained in Appendix A of this report.

Tasks undertaken in this study included the following:

1. Coordination with Frederick County and Town of New Market Staff to review the proposed development program, identify traffic issues, and compile background information.
2. Analysis of existing peak hour intersection levels of service in the site vicinity.
3. Forecasts of future 2028 background future traffic volumes without development of the subject property but with planned future pipeline development.
4. Analysis of background future intersection levels of service and queues.
5. Determination of the directional distributions of site-generated traffic based on existing travel patterns, location of adjacent developments, and regional development.

6. Identification of the amount of vehicular traffic that would be generated by the proposed retail site based on standard Institute of Transportation Engineers (ITE) trip generation rates.
7. Forecasts of total future 2028 traffic conditions with the proposed retail.
8. Analyses of total future intersection levels of service and queues.

Sources of data for this analysis included Frederick County, the Town of New Market, the Maryland State Highway Administration (SHA), the Institute of Transportation Engineers (ITE), and Wells + Associates.

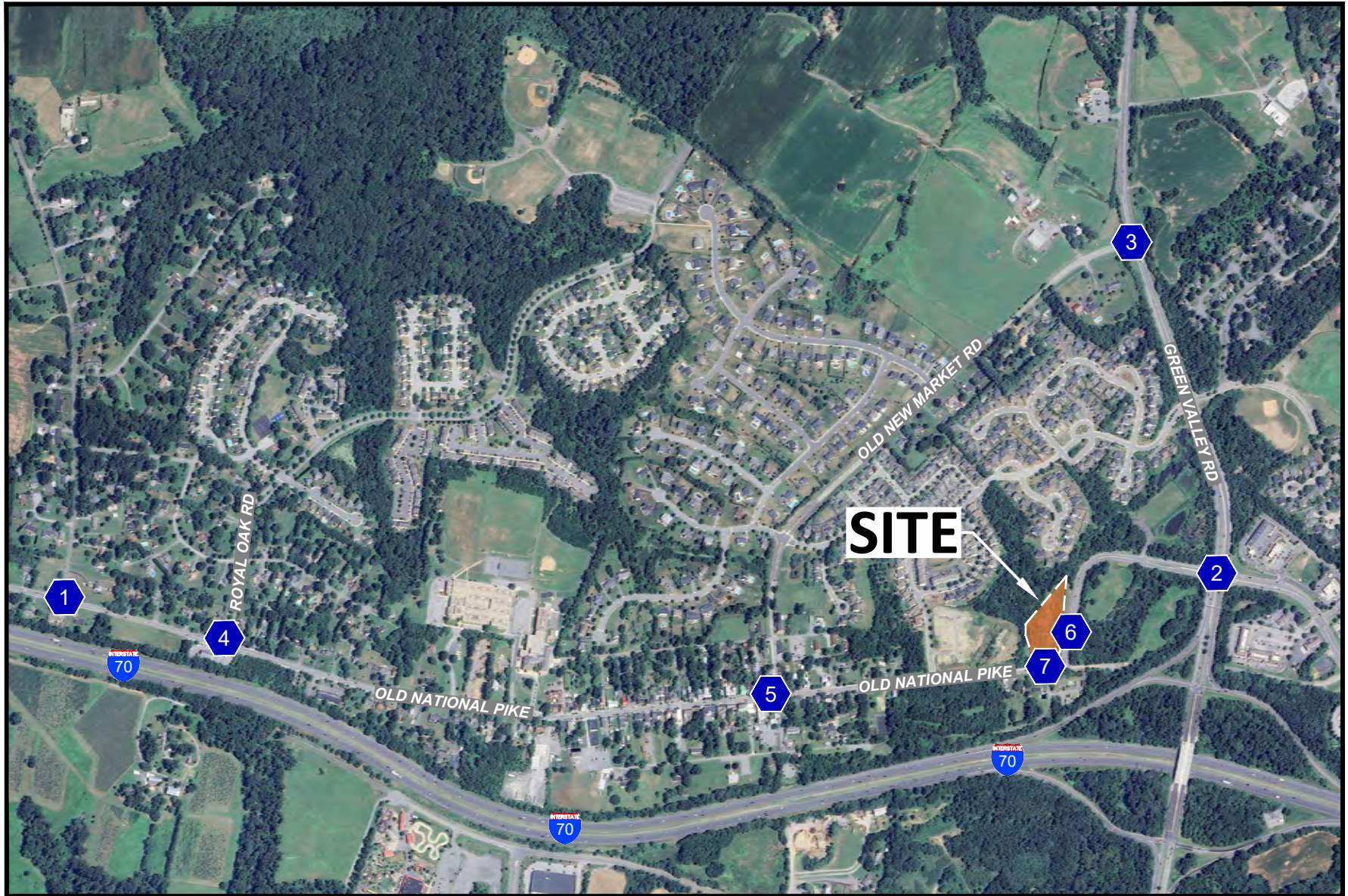


Figure 1
Site Location and Study Intersections



11616 Old National Pike
Frederick County, Maryland

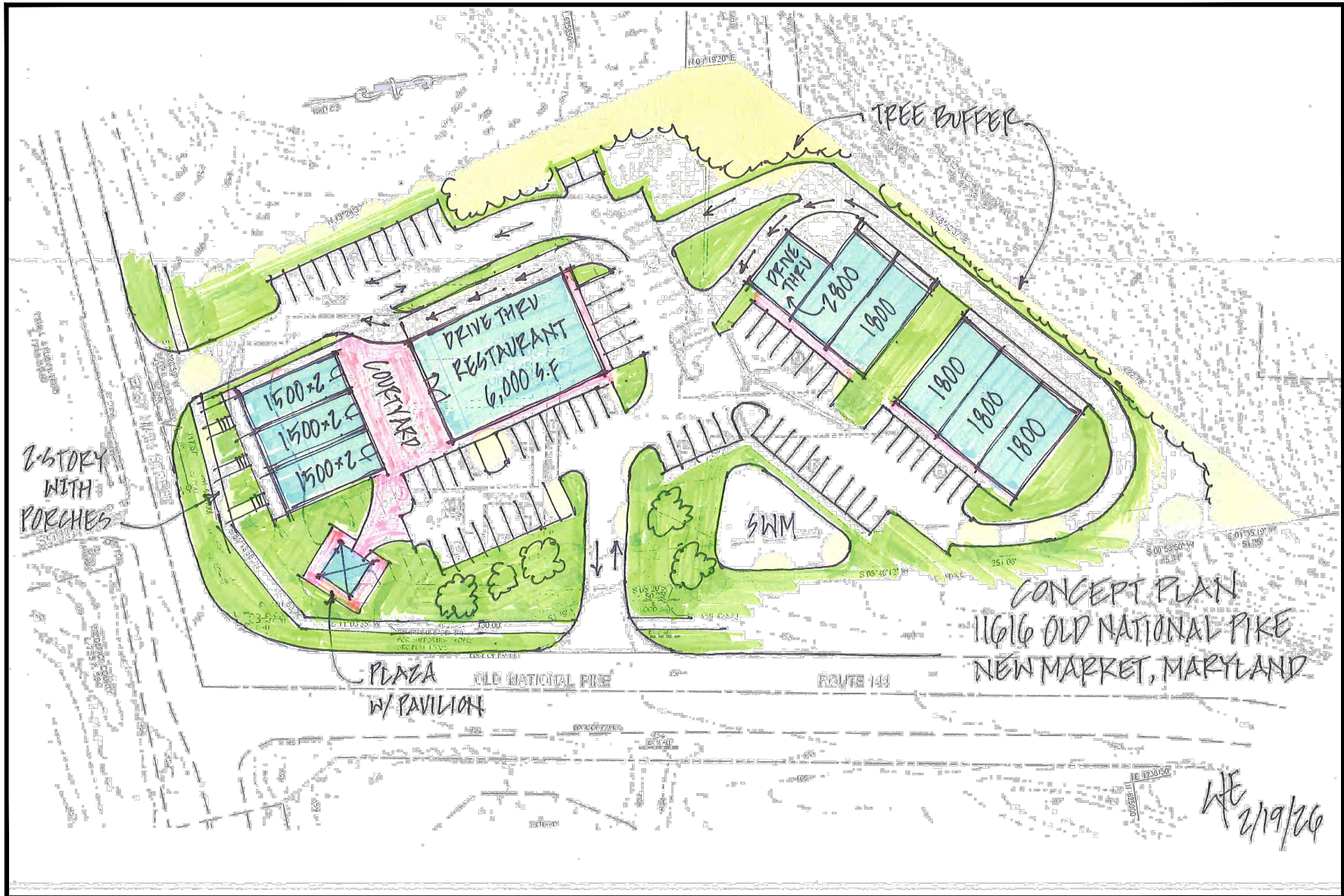


Figure 2
Concept Development Plan



11616 Old National Pike
Frederick County, Maryland

Background Data

Public Road Network

Existing Network

Primary regional access to the site is provided from I-70 and MD 144 to the south and MD Route 75 to the east. Direct access would be provided from Old National Pike. Existing intersection lane use and traffic control at key intersections in the site vicinity are shown on Figure 3.

Interstate 70 is an east-west, six-lane, limited access highway with a posted speed limit of 70 miles per hour connecting I-695 in Baltimore to Frederick County and points west. This roadway is a major commuting route and regional transportation corridor for the movement of goods. It is under the jurisdiction of the Maryland State Highway Administration.

MD Route 75 is a north-south, two- to four-lane roadway in the vicinity of the site with a posted speed limit of 45 miles per hour north of I-70 and 40 miles per hour south of I-70. It intersects with MD Route 80 in a dog-leg configuration, with traffic signals controlling both locations. Approximately 700 feet separate these two intersections. MD Route 75 is classified as an urban minor arterial from south of MD 80 to north of the Town of New Market. MD 75 is ultimately planned to be realigned to the south from E. Baldwin Road to just south of the existing railroad bridge. This improvement would realign MD 75 to eliminate the dogleg at East Baldwin Road and West Baldwin Road. North of Old National Pike, MD Route 75 is identified for a proposed on-street bikeway by the Frederick County Bikeways and Trails Plan. As defined by the plan, a bikeway is “any road, path, trail or way which in some manner is specifically designated as being open to bicycle travel”.

Old National Pike/Main Street (MD Route 144) exists parallel to I-70 on the north side, and traverses downtown New Market. This roadway generally provides a single travel lane in each direction with curbside parking, and traffic signals exist at the MD Route 75, Boyers Mill Road, Mussetter Road and Meadow Road intersections. This roadway has a posted speed limit ranging from 30 to 50 mph and is designated as a Minor Arterial outside the Town of New Market and an urban collector within the Town limits. West of the Town of New Market, Old National Pike is maintained by Frederick County. Within the Town limits, the roadway functions as Main Street and is maintained by the Town of New Market. MD 144 designation resumes at the eastern town boundary, where the roadway is under the jurisdiction of the Maryland Department of Transportation State Highway Administration (MDOT SHA) and extends east to MD 75 (Green Valley Road). Old National Pike is designated as a Historic National Scenic Byway in the vicinity of the site and is identified for a proposed on-street bikeway by the Frederick County Bikeways and Trails Plan.

Boyers Mill Road is a north-south Frederick County roadway extending from Old National Pike to Gas House Pike. In the vicinity of the site, Boyers Mill Road is a two-lane roadway with right and left turn lanes at the signalized intersection with Old National Pike.

Royal Oak Drive is a north-south Frederick County roadway extending north from Old National Pike and eventually terminating at the Linganore Oakdale Urbana Youth Athletic Association fields. Royal Oak Drive is a two-lane divided roadway. There is an auxiliary lane along Old National Pike on the approach and departure from its stop-controlled intersection with Royal Oak Drive.

Outside of the proposed study area, Mussetter Road is an east-west Frederick County roadway extending north from Old National Pike terminating west of Boyers Mill Road. Mussetter Road is a two-lane roadway with a right turn lane at the signalized intersection with Old National Pike. The extension of Mussetter Road, referred to as the New Market Bypass in this report, between Empire Boulevard and MD-75, including an intersection with Boyers Mill Road, is an important regional connector that provides an alternative east-west route that also allows north-south traffic to bypass Main Street through the Town of New Market to reduce the number of vehicles traveling along Main Street and increase travel options in the region. In addition, it provides alternative methods of transportation (biking/walking) to the adjoining developments, parks, and recreation opportunities with the proposed trail.



Figure 3
Existing Lane Use and Traffic Control

- ← Represents One Travel Lane
- 🚦 Signalized Intersection
- 🛑 Stop Sign



11616 Old National Pike
Frederick County, Maryland



Proposed Pedestrian and Bicycle Infrastructure

Pedestrian access in the vicinity of the site is currently limited. An existing four-foot sidewalk is provided along the south side of Old National Pike from the Town of New Market to the east, terminating opposite the southern property boundary prior to the horizontal curve. No sidewalk currently exists between the eastern boundary of the subject property and MD 75.

To enhance pedestrian connectivity and support safe site access, a sidewalk is proposed along the site frontage that would improve pedestrian accessibility to adjacent properties and the surrounding roadway network.

There are currently no designated bicycle lanes provided along Old National Pike in the study area. In recognition of the Frederick County Bikeways and Trails Plan designation of Old National Pike as a potential on-street bikeway corridor, installation of “Bicycles May Use Full Lane” signage, consistent with the Maryland Manual on Uniform Traffic Control Devices (MdMUTCD), may be considered along the site frontage to enhance driver awareness of shared roadway conditions. Review, approval, and installation of any such signage would be at the discretion of the MDOT SHA.

The proposed development is not expected to adversely affect existing pedestrian or bicycle facilities and would provide incremental improvements to multimodal access along the site frontage.

Existing Traffic Counts

Weekday AM and PM peak hour vehicular and pedestrian traffic counts were collected on Thursday, December 18, 2025, at each of the six (6) study area intersections outlined below:

1. Old National Pike/Boyers Mill Road
2. Old National Pike/MD 75
3. MD 75/Old New Market Road
4. Main Street/Royal Oaks Drive
5. Main Street/Old New Market Road
6. Old National Pike/Site Access

The selected count date represents a typical weekday and did not coincide with holidays, school closures, or unusual traffic conditions. A summary of the existing conditions weekday AM and PM traffic volumes is shown on Figure 4. Copies of the count data are contained in Appendix B.

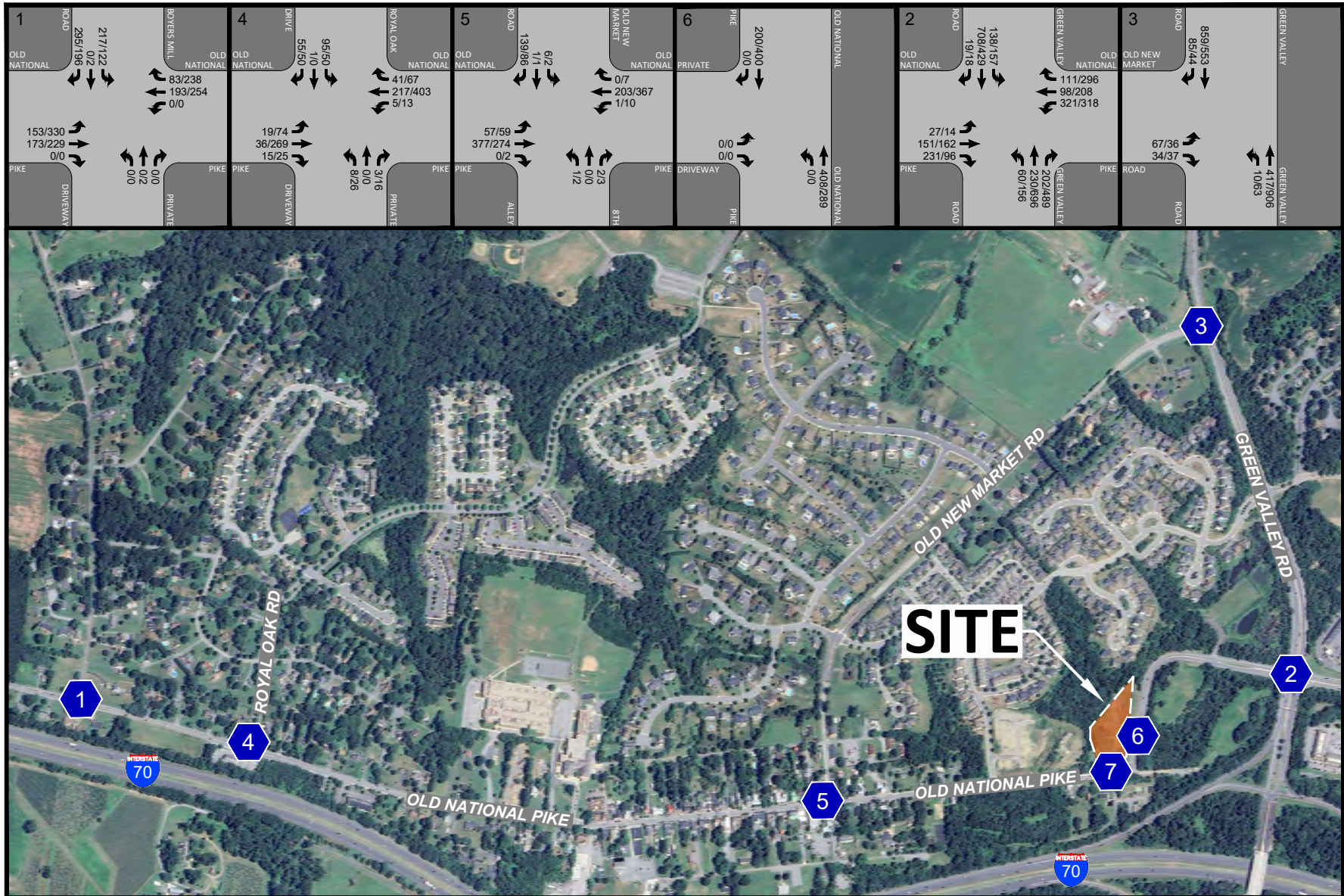


Figure 4
Existing Traffic Counts

AM PEAK HOUR
PM PEAK HOUR
000 / 000



11616 Old National Pike
Frederick County, Maryland



Other Approved Developments

Nine (9) other developments within the site vicinity were included in this traffic study, as specified in the scoping agreement, located in Appendix A. These other developments include:

1. Eaglehead on the Lakes (south of Lake Linganore)
2. Marley Commons
3. 105/113 W. Main Street
4. East Main Street
5. Calumet
6. Cherry Run
7. England Woods
8. Gordon Mill
9. New Market Retail

The locations of these developments are shown on Figure 5.



Figure 5
Pipeline Development Locations



11616 Old National Pike
Frederick County, Maryland

Analysis

Capacity Standards

The project site is in the New Market Planning Region of Frederick County. The critical lane volume standard for this region is 1,600 (or Level of Service (LOS "E")), according to the current Frederick County Guidelines for Traffic Impact Analysis for Development Applications.

Unsignalized intersections and roadway links were evaluated using the Highway Capacity Manual (HCM) methodology in accordance with Frederick County standards. The standard threshold for capacity for turning movements at unsignalized intersections and links is LOS "E".

Existing Intersection Analyses

Existing peak hour critical lane volumes and 95th percentile queues were estimated at two (2) signalized intersections while the Highway Capacity Manual (HCM) methodology was utilized at the unsignalized intersections, as specified in the scoping agreement. All analyses were based on the existing lane usage and traffic control shown on Figure 3 and the existing traffic volumes shown on Figure 4.

The critical lane volume (CLV) intersection capacity analysis was conducted in accordance with Frederick County and MDSHA standards. The 95th percentile queue lengths at the signalized study intersections were evaluated using the Maryland Department of Transportation State Highway Administration (MDOT SHA) methodology, per the scoping agreement with the Town of New Market. This approach estimates the maximum queue expected during peak-period conditions by applying a statistical adjustment to average queue lengths to account for variability in traffic arrivals. The analysis considers traffic volumes, signal timing, and capacity characteristics to estimate conservative back-of-queue conditions. The estimated queues were compared to available storage lengths to assess the adequacy of existing lane configurations.

The results of the capacity and queue analyses are summarized in Tables 1a and 1b and Appendix C, and indicate the following:

1. All signalized intersections currently operate at acceptable levels of service (CLV's below 1,600) during both the AM and PM peak hours.
2. All unsignalized study intersections currently operate with stop control delays at acceptable thresholds under existing conditions.
3. The southbound left turn movement at the signalized Boyers Mill Road/Old National Pike intersection (4) currently experiences 95th percentile queues in excess of the available

storage area during the AM and PM peak hours. The remaining queues for all other movements are adequately accommodated.

Table 1a
11616 Old National Pike
Intersection Level of Service

Intersection		2025 Existing Conditions				2028 Background Conditions				2028 Future Conditions				
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
		LOS	CLV/Delay	LOS	CLV/Delay	LOS	CLV/Delay	LOS	CLV/Delay	LOS	CLV/Delay	LOS	CLV/Delay	
Signalized Intersections LOS (CLV)														
1	Old National Pike & Boyers Mill Rd	A	572	A	689	A	835	C	1173	A	841	C	1179	
	with improvements by others									A	841	C	1179	
2	Old National Pike & Green Valley Rd	A	791	A	861	C	1224	D	1364	C	1214	D	1368	
	with improvements by others									A	828	B	1102	
Unsignalized Intersections LOS (Delay (sec/vehicle))														
	Approach													
3	Old New Market Rd & Green Valley Road	NBL	B	10.4	A	9.2	B	15.0	B	11.7	C	15.3	B	11.9
		EBL	E	35.0	E	36.2	F	331.2	F	*	F	378.6		*
		EBR	C	17.7	B	12.8	E	44.2	C	21.6	E	46.4	C	22.2
4	Old National Pike & Royal Oak Dr	NBL	C	15.6	C	22.3	D	26.5	F	71.5	D	28.7	F	83.5
		EBL	A	7.9	A	8.7	A	8.3	B	10.0	A	8.3	B	10.2
		WBL	A	8.1	A	7.9	A	9.0	A	8.6	A	9.1	A	8.7
		SBL	B	14.3	C	18.3	C	22.6	E	46.2	D	25.3	F	55.6
5	Old National Pike & Old New Market Rd	NB	B	14.2	C	15.0	C	21.7	D	29.9	C	23.4	D	32.6
		EBL	A	7.8	A	8.3	A	8.2	A	9.5	A	8.3	A	9.6
		WBL	A	8.1	A	7.9	A	8.9	A	8.4	A	9.0	A	8.5
		SB	B	11.0	B	11.9	C	19.1	C	24.6	C	23.1	D	30.1
6	Old National Pike & Existing Site Driveway	NBL	A	0.0	A	0.0	A	0.0	A	0.0	A	8.9	B	10.1
		EBL	A	0.0	A	0.0	A	0.0	A	0.0	F	191.4	F	183.8
7	Old National Pike & Existing Site Driveway	EBL									A	8.2	A	9.4
		SBL									C	19.8	C	24.8

* Delay exceeds 300s

Table 1b

11616 Old National Pike

Signalized Intersection Queues

	Available Storage (ft)	2025 Existing Conditions		2028 Background Conditions		2028 Future Conditions		2028 Future Conditions w/ Improvements by Others	
		AM 95th Percentile Queue	PM 95th Percentile Queue	AM 95th Percentile Queue	PM 95th Percentile Queue	AM 95th Percentile Queue	PM 95th Percentile Queue	AM 95th Percentile Queue	PM 95th Percentile Queue
1. Old National Pike and Boyers Mill Road									
EB	150	84.0	133.0	167.0	#359.0	175.0	#365.0	121.0	#307.0
WB	225	52.0	53.0	85.0	72.0	90.0	74.0	92.0	70.0
SB Left	75	119.0	100.0	232.0	#244.0	244.0	#261.0	209.0	#238
SB Right	75	40.0	48.0	83.0	74.0	93.0	85.0	90.0	73.0
2. Old National Pike and Green Valley Road									
EB Left	200	51.0	33.0	82.0	79.0	107.0	149.0	107.0	#110.0
WB Left	400	209.0	229.0	236.0	#353.0	236.0	#369.0	209.0	#276.0
NB Left	275	93.0	191.0	#194.0	#446.0	#297.0	#561.0	186.0	363.0
SB Left	400	#200.0	190.0	#279.0	253.0	#288.0	253.0	253.0	#331.0

*Maryland SHA 95th Percentile Queuing Analysis

Other Approved Development Traffic

Development densities and site traffic assignments for the pipeline developments were based on previously prepared traffic studies. The number of peak hour trips expected to be generated by the nine (9) pipeline developments located within the study area were extracted from previously approved traffic studies. To better represent anticipated 2028 traffic conditions, the densities for the Calumet, Cherry Run, and Gordon Mill developments were prorated, consistent with guidance from Town of New Market staff, to reflect the construction of 175 dwelling units during the 2027–2028 timeframe.

As shown in Table 2, it is estimated that these projects would generate a total of 2,198 AM peak hour trips and 3,153 PM peak hour trips by the buildout year of 2028. The distribution and/or traffic assignments of peak hour trips generated by the other approved developments was determined based on the previously approved traffic studies. Individual pipeline development traffic assignments are summarized in Appendix D.

The combined pipeline development assignments for background conditions are shown on Figure 6.

Background Traffic Growth

Per the scoping agreement, a growth rate of 1.0 percent per year was applied to all arterial roadways at each of the intersections studied for 2028 conditions. Background traffic growth estimates are shown on Figure 7.

Background Traffic Forecasts for 2028 Conditions

Future traffic forecasts for 2028 background conditions without the 11616 Old National Pike retail development were prepared by adding existing traffic, background growth, and pipeline development trips for background conditions, and are summarized on Figure 8.

Table 2

11616 Old National Pike

Pipeline Development Trip Generation ⁽¹⁾

	Quan.	AM Peak Hour			PM Peak Hour			Buildout Year	Required Improvements For Full Buildout
		In	Out	Total	In	Out	Total		
1 Eaglehead on the Lakes (south of Lake Linganore)*	450 SFH, 900 TH, 400 MFH, 200 KSF S.C.	308	736	1044	974	695	1669	2037	None in our study area
2 Marley Commons	8 SFH	1	5	6	5	3	8		
3 105/113 W. Main Street	1 SFH, 11.2 KSF Retail, 8 Mobile homes	30	32	62	59	49	108	2028	
4 East Main Street	42 TH, 8 KSF Retail, 10 KSF Office, 4 KSF Rest.	61	41	102	49	58	107	2025	Recc - SB RT at Boyers Mill/ONP
5 Calumet	925 units total (mix of SFH and TH)*	112	394	506	402	223	624		New Market By-pass
	*Pro-rated to 350 homes by 2028	65	175	240	189	116	305		
6 Cherry Run	Phase 1 – 300 SFD, 100 TH. Phase 2 – 500 SFD, 250 TH, and 10 KSF retail. Phase 3 – 680 SFD, 337 TH, and 10 KSF retail.*	163	488	651	527	322	849	2017/ 2027	MD 75/ONP - EB thru, WB left, SB thru
	*Pro-rated to 350 homes by 2028	65	175	240	189	116	305		
7 England Woods	30 SFH, 500 Senior Housing Units	43	81	124	84	66	150	2028	
8 Gordon Mill	435 SFH and 175 TH*	100	269	369	307	190	497	2030	New Market By-pass, 2nd EB left at Boyers Mill/ONP
	*Pro-rated to 350 homes by 2028	65	175	240	189	116	305		
9 New Market Retail	50.819 KSF Retail, 10 KSF Medical Office	84	56	140	86	110	196	2028	
Total:		721	1477	2198	1824	1329	3153		

⁽¹⁾ Based on approved TIS

Background Future Intersection Levels of Service

Background conditions future peak hour levels of service and 95th percentile queues were calculated at the study intersections using the background future traffic forecasts (Figure 8) and the background future lane use and traffic controls (Figure 9) with the corresponding analyses methods for each study intersection. The resulting levels of service and queues are shown on Tables 1a and 1b, detailed in Appendix C and are discussed below:

1. The following unsignalized study intersections are expected to operate with stop control delays in excess of the acceptable thresholds under background conditions:

Intersection 3. Old New Market Rd & Green Valley Road

- Eastbound Left: LOS F during the AM and PM peak hours.

Intersection 4. Old National Pike & Royal Oak Dr

- Northbound Left: LOS F during the PM peak hour.

2. The following turn lanes at signalized intersections are expected to experience 95th percentile queues in excess of the available storage area in addition to those identified under existing conditions:

Intersection 1. Old National Pike and Boyers Mill Road

- Eastbound: AM/PM peak hour.

Intersection 2. Old National Pike and Green Valley Road

- Northbound Left: PM peak hour.



Figure 6
Pipeline Development Traffic Assignments

AM PEAK HOUR
PM PEAK HOUR
000 / 000



11616 Old National Pike
Frederick County, Maryland



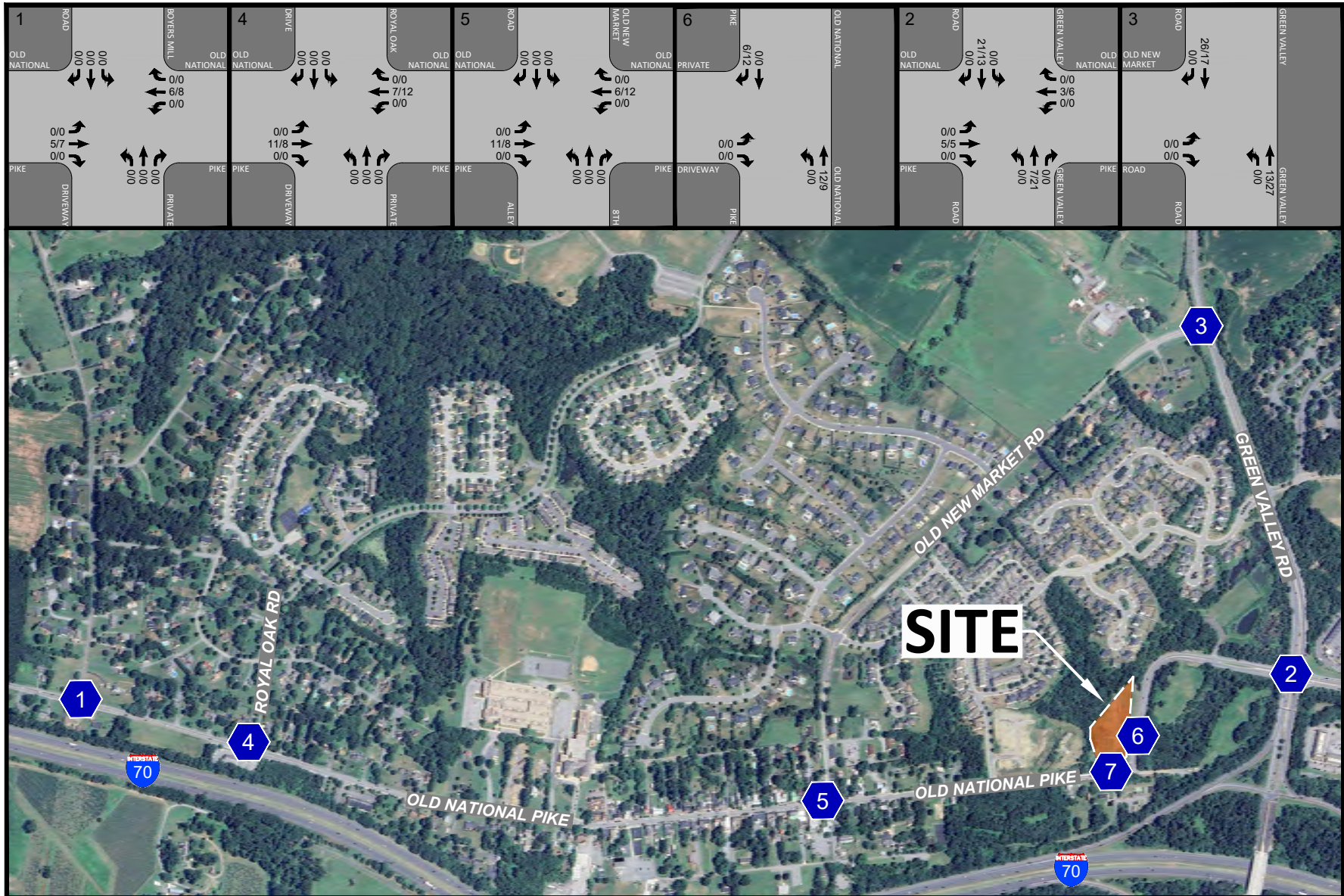


Figure 7
Background Traffic Growth

AM PEAK HOUR
PM PEAK HOUR
000 / 000



11616 Old National Pike
Frederick County, Maryland



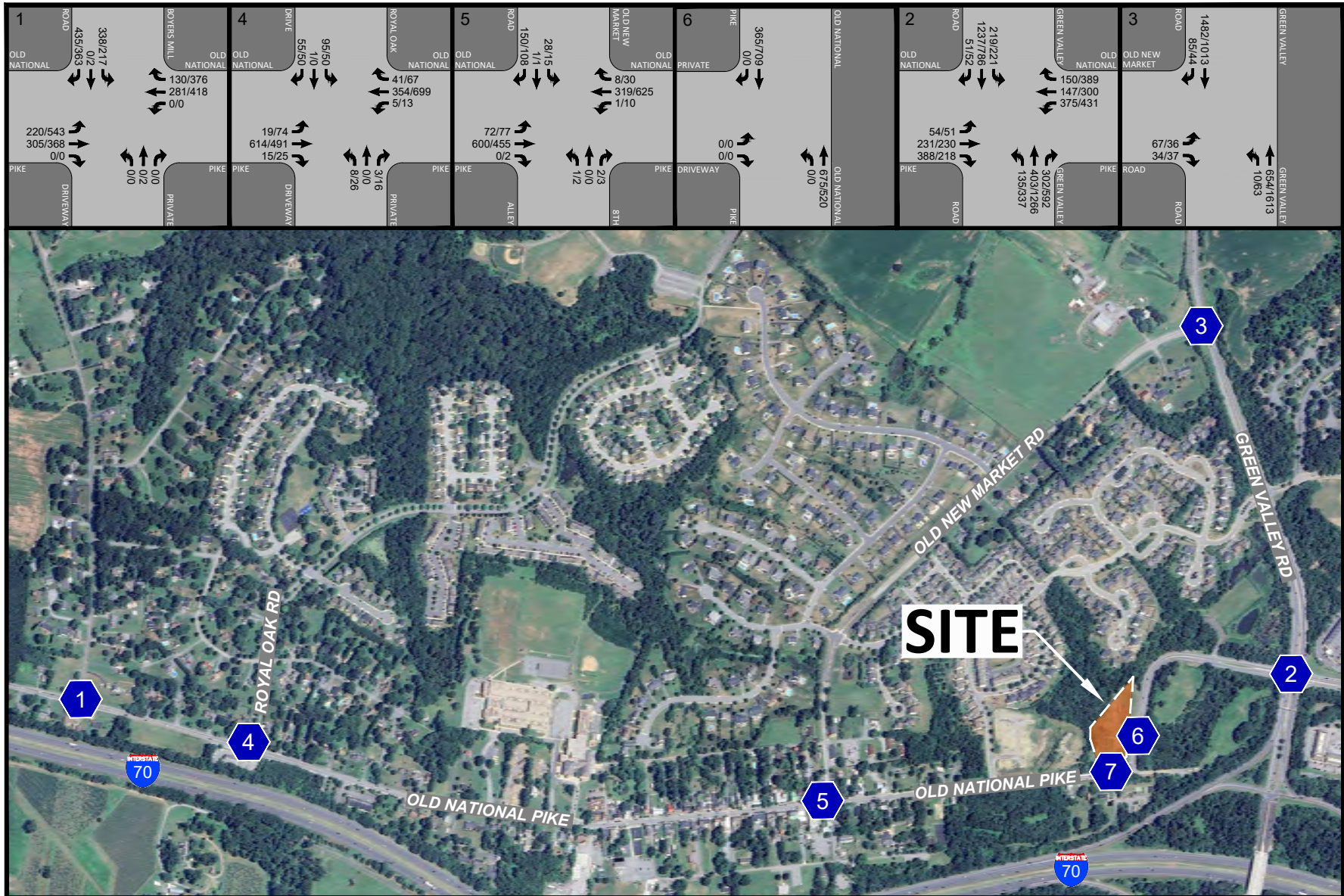


Figure 8
2028 Background Traffic Forecast

AM PEAK HOUR
PM PEAK HOUR
000 / 000



11616 Old National Pike
Frederick County, Maryland



Future Traffic Analyses

2028 Total Future Conditions:

Total future conditions assume the existing roadway network, with the addition of site access improvements proposed along Old National Pike. These required site access improvements, a left turn lane, right turn lane and shoulder stabilization are incorporated into the 2028 Total Future Conditions to support safe and efficient access to the development while maintaining overall traffic operations along the corridor.

Site Development Traffic

The number of peak hour trips expected to be generated by the proposed development was calculated using the rates and equations published by The Institute of Transportation Engineers in the *Trip Generation Manual, 12th Edition*. The resulting trip generation estimates are summarized below and indicate the site is expected to generate approximately 193 net external AM peak hour trips (103 in and 90 out), 169 net external PM peak hour trips (85 in and 84 out) and 5,072 total daily trips on a typical weekday, as summarized on Table 3.

The ITE-based trip generation estimates include both new and pass-by travel. New trips represent travel made specifically to access the site and result in new traffic on the study area roadway system. Pass-by trips represent intermediate stops made by motorists already traveling on the adjacent roadway network and therefore do not add new external traffic demand.

Pass-by trips were estimated using published ITE pass-by rates for the proposed land use and were deducted from the gross trip generation totals. To maintain a conservative assessment of traffic impacts, pass-by trip reductions were applied only to the PM peak hour for the strip-retail land use because morning travel patterns are primarily commute-oriented and typically do not include retail stops. However, pass-by reductions were applied to the restaurant and donut shop land uses during both peak hours, consistent with ITE guidance for high-turnover food service uses.

Diverted link trips were also considered in the trip distribution and assignment. These trips represent motorists traveling on the surrounding roadway network, particularly along Green Valley Road, who may divert from their existing route to access the site before returning to their original path. Unlike pass-by trips, which occur along the site frontage (Old National Pike), diverted link trips introduce traffic to the site access points via adjacent roadways and intersections. However, because these trips are already present on the local roadway system, they do not represent entirely new external demand but rather a redistribution of existing traffic. Accordingly, diverted link trips were not removed from the trip generation totals but were incorporated into the traffic assignment to reflect their influence on turning movements and intersection operations along Green Valley Road and at its intersection with Old National Pike.

The site-generated new trips were distributed and assigned to the roadway network based on existing travel patterns, regional roadway connectivity, and the location of adjacent developments and major commuter routes. The following trip distribution was assumed:

To/From

MD 75 (north of Old New Market Road):	25 percent
Old National Pike (east of MD 75):	20 percent
MD 75 (south of Old National Pike):	20 percent
MD 144 (west of Boyers Mill Road):	10 percent
Boyers Mill Road (north of Old National Pike):	15 percent
Royal Oak Drive (north of Old National Pike):	5 percent
<u>Old New Market Road</u>	<u>5 percent</u>
Total	100 percent

The distribution percentages reflect observed traffic patterns, regional travel demand, and the location of major generators and commuter routes in the study area.

Pass-by trips were assigned to Old National Pike during the PM peak hour based on the directional distribution of traffic along the adjacent corridor.

Site generated new and pass-by traffic volumes are shown on Figure 9.

Table 3

11616 Old National Pike

Trip Generation Analysis ⁽¹⁾

ITE Land Use	Land Use	Size (GSF)	AM Peak Hour			PM Peak Hour			Daily Trips
			In	Out	Total	In	Out	Total	
<i>Proposed Site Development Plan</i>									
<i>Retail</i>	822	11,700	25	21	46	43	42	85	637
<i>Less pass-by (AM/PM) ⁽²⁾</i>	0%	40%	-	-	-	(17)	(17)	(33)	
<i>Restaurant (Panera-type w/ Drive-thru)</i>	934	6,000	101	98	199	99	91	190	2,689
<i>Less pass-by (AM/PM) ⁽³⁾</i>	50%	55%	(51)	(49)	(100)	(54)	(50)	(104)	
<i>Coffee/Donut Shop</i>	937	2,800	122	117	239	55	55	109	1,681
<i>Less pass-by (AM/PM) ⁽³⁾</i>	83%	81%	(101)	(97)	(198)	(44)	(44)	(88)	
<i>Office</i>	712	4,500	6	1	7	3	7	10	65
<i>Total New Trips</i>			254	237	491	200	194	394	
<i>Total Pass-by</i>			(152)	(146)	(298)	(115)	(110)	(225)	
<i>Net External Trips</i>			103	90	193	85	84	169	5,072

Notes:

⁽¹⁾ Based on rates and equations from ITE's Trip Generation, 12th Edition.

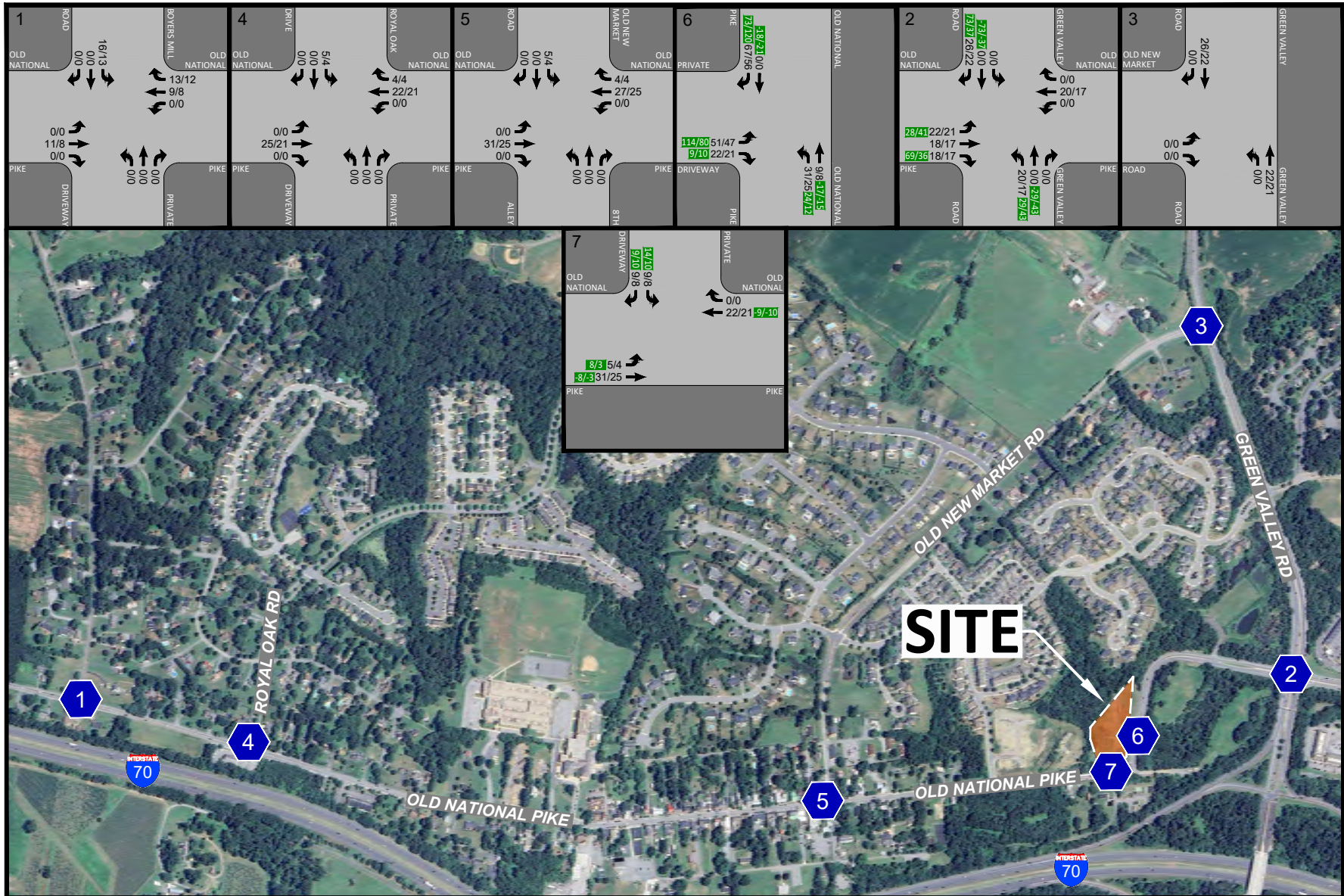


Figure 9
Site Traffic

XX / XX PASS-BY TRIPS
 AM SITE TRIPS
 PM SITE TRIPS



11616 Old National Pike
Frederick County, Maryland



Total Future Traffic Forecasts for 2028 Conditions

Total future traffic forecasts for 2028 were developed by adding background traffic forecasts to the site-generated trip assignments. The total future traffic forecasts are shown on Figure 10.

Site Access Concept

Old National Pike is a Frederick County roadway classified as an urban major collector with a posted speed limit of 25 mph northbound and 35 mph southbound adjacent to the site. Both proposed access points are anticipated to be stop-controlled commercial entrances.

SHA provides standards guiding access management in its Access Manual. Specifically, Sections 4.3, 4.4, and 4.5 of the Access Manual examine the requirements and standards for deceleration lanes, acceleration lanes, and left turn and bypass lanes, respectively. Generally, SHA's requirements for deceleration, acceleration, left turn, and bypass lanes are dictated by the following:

- Type of access (Controlled or Uncontrolled)
- Type of highway (Primary or Secondary)
- Type of property (Commercial or Residential)
- Type of Area (Rural or Developed)
- Speed limit
- Peak hour turning volume
- Traffic volume on highway (for left turn and bypass lanes only)

Further, Section 1.4 of SHA's Access Manual requires commercial entrances to maintain a minimum corner distance of 100 feet from adjacent intersections and interchanges.

The recommended lane configurations were evaluated using projected peak-hour turning volumes and MDOT SHA access management warrant criteria. The requirements show the following as necessary per SHA Access Manual standards:

- Eastern Driveway
 - 535-foot Full Deceleration Lane
 - 435-foot approach lane
 - 100-foot taper
 - 100-foot Shoulder Improvement for Acceleration.
- Western Driveway
 - No Deceleration Lane or Shoulder Improvement for Acceleration required.

Left bypass and exclusive left turn lanes were reviewed in accordance with SHA's Left Turn Lane and Bypass Lane Guidance Standards. The need for an exclusive left turn lane or consideration of a bypass lane is determined based on the percentage of left-turning traffic and opposing and

advancing volumes. Based on these analyses, SHA standards recommend a bypass lane be considered at this access location.

- Eastern Driveway (Intersection 6)
 - 150-foot Left Turn Lane
 - 50-foot lane length
 - 100-foot taper length
- Western Driveway (Intersection 7)
 - No Left Turn Lane or Bypass Lane required.

The future lane use and traffic control are shown on Figure 11, and the supporting documentation are provided in Appendix E.

Total Future Intersection Levels of Service

Total future conditions peak hour levels of service and 95th percentile queues were calculated at the study intersections using the total future traffic forecasts (Figure 10) and the total future lane use and traffic controls (Figure 11) with the corresponding analyses methods for each study intersection. The resulting levels of service and queues are shown on Tables 1a and 1b, detailed in Appendices H through J and are discussed below:

1. Signalized Intersections. The signalized study intersections are expected to operate at acceptable levels, or consistent with background conditions, in the case of locations operating at unacceptable levels under background conditions.
2. Unsignalized Intersections. The unsignalized study intersections are expected to operate at acceptable levels or consistent with background conditions with the exception of the following:
 - Old National Pike & Royal Oak Drive – SB left is expected to operate beyond capacity (at LOS “F”) during PM peak hour.
 - Old National Pike & the Existing (Eastern) Site Driveway – EB left would operate at LOS “F” during AM/PM peak hour.
3. 95th Percentile Queues. 95th percentile queues would continue to exceed available storage at turn lanes previously identified under background conditions.

Driveway Operations

The capacity analyses indicate that the turning movements at the site driveway will operate at acceptable levels of service with one exception. The exiting left-turn movement from the existing site (eastern) driveway is projected to operate at LOS F during the PM peak hour. This result reflects the conservative nature of the Highway Capacity Manual (HCM) methodology,

which assumes continuous conflicting traffic flow and does not account for upstream traffic control.

The signalized intersection of Green Valley Road and Old National Pike, located approximately 1,300 ft away from this driveway, will introduce periodic gaps in the traffic streams along Old National Pike, which are not reflected in the HCM analysis. These signal-induced gaps are expected to provide additional opportunities for vehicles exiting the site to complete left-turn maneuvers, thereby improving actual operating conditions relative to those reported by the HCM results.

Traffic signal control at the site driveway would be subject to the warrant criteria in the Manual on Uniform Traffic Control Devices (MUTCD). Based on the projected traffic volumes, these warrants are not expected to be met; therefore, a signal is not anticipated or required at this location.

Furthermore, the site will be served by two full-access driveways along Old National Pike. This provides flexibility for vehicles to enter and exit the site using either access point, which will distribute traffic and reduce demand on the primary driveway, including the exiting left-turn movement.

Future Improvements by Others

Several transportation improvements planned by others within the Town of New Market are anticipated to improve capacity and operational conditions throughout the study area and were considered in the evaluation of future traffic conditions.

Intersection 1. Old National Pike and Boyers Mill Road

- Dual EB left-turn lanes on Old National Pike

Intersection 2. Old National Pike and Green Valley Road

- An additional eastbound through lane
- An additional southbound through lane
- Dual westbound left-turn lanes with a separate westbound through lane.

Future conditions with improvements peak hour levels of service and CLVs were calculated at the study intersections using the future traffic forecasts (Figure 10) and the lane configuration described above with the corresponding analyses methods for each study intersection. The resulting levels of service and queues are shown on Tables 1a and 1b, detailed in Appendix C and are discussed below:

Intersection 1. Old National Pike and Boyers Mill Road

- CLVs will not change at this intersection as the improvement does not affect the critical movements affecting operation. However, the improvement would increase the storage capacity to accommodate left-turning vehicles on this approach.

Intersection 2. Old National Pike and Green Valley Road

- LOS at this intersection would improve from LOS C to LOS A during the AM peak hour, and LOS D to LOS B during the PM peak hour.

In addition, a New Market Bypass is proposed to provide an alternative route from Old National Pike to Green Valley Road via Boyers Mill Road and Old New Market Road. The bypass is expected to reduce through volumes along Old National Pike and would improve intersection capacity, upgrade intersection traffic control, and improve overall operational performance at study area intersections.

These improvements are being funded by others and are independent of the proposed development. Given the relatively small number of site-generated trips compared to background growth and pipeline development traffic, the applicant could participate in a proportionate pro-rata share contribution toward planned transportation improvements, if requested by the Town.

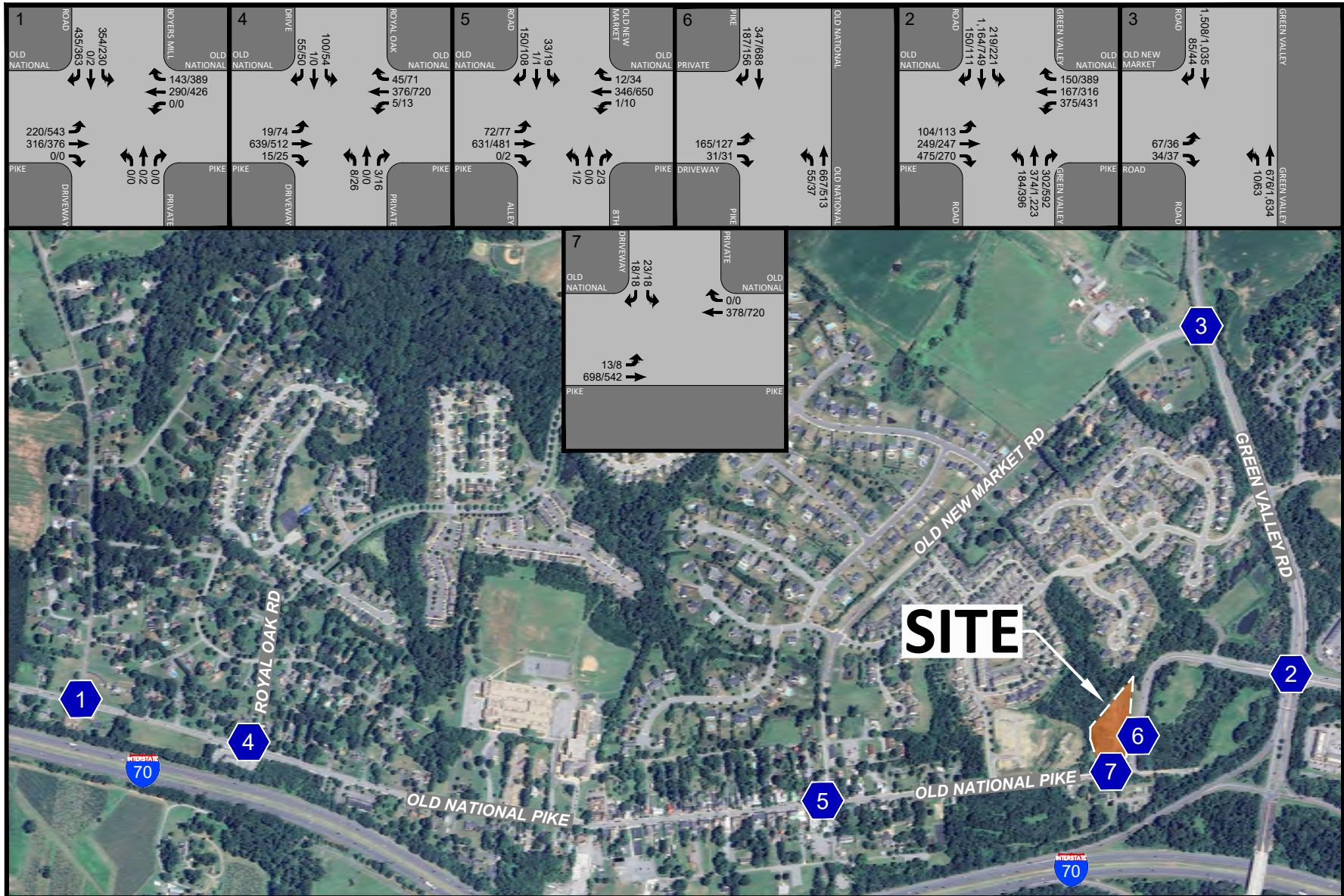


Figure 10
Total Future Traffic Forecast

AM PEAK HOUR
PM PEAK HOUR
000 / 000



11616 Old National Pike
Frederick County, Maryland

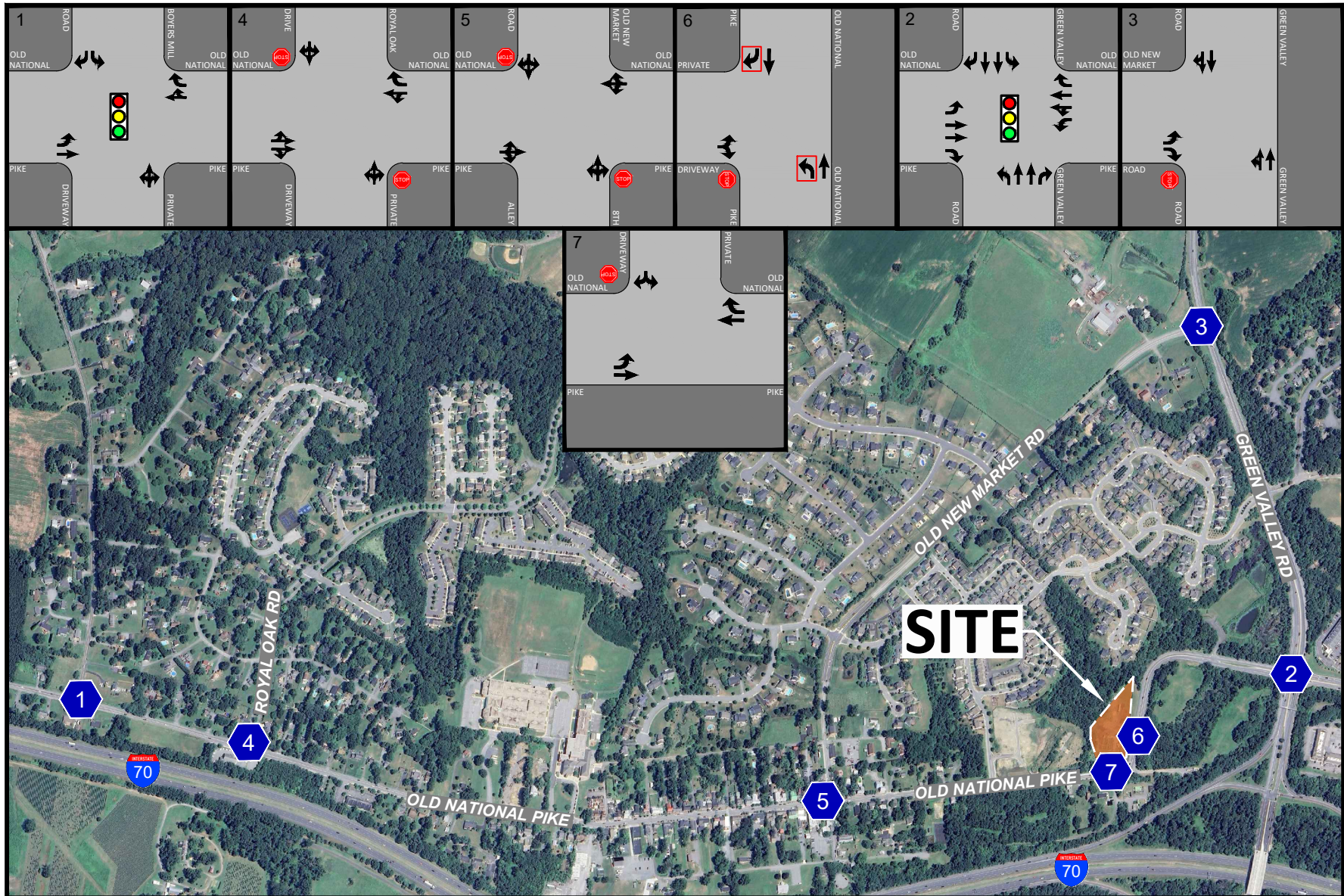


Figure 11
Future Lane Use and Traffic Control

- ← Represents One Travel Lane
- 🚦 Signalized Intersection
- 🛑 Stop Sign
- 📐 Proposed Improvement



11616 Old National Pike
Frederick County, Maryland

Adequate Public Facilities Evaluation

The proposed development was evaluated in accordance with the Frederick County Guidelines for the Preparation of Traffic Impact Analysis for Development Applications to determine compliance with Adequate Road Facilities requirements. The project site is located within the New Market Planning Region, where the applicable intersection adequacy standard is a critical lane volume (CLV) threshold of 1,600, corresponding to Level of Service (LOS E).

The Adequate Road Facilities evaluation compares existing, background (2028), and total future (2028) traffic conditions with the proposed development to the applicable capacity standards. Signalized intersections were evaluated using the Critical Lane Volume (CLV) methodology, while unsignalized intersections were evaluated using Highway Capacity Manual (HCM) procedures, consistent with Frederick County requirements. In addition, 95th percentile queue lengths at signalized intersections were evaluated using the Maryland Department of Transportation State Highway Administration (MDOT SHA) methodology to assess storage adequacy.

Existing Conditions

Under existing conditions, all signalized study intersections operate below the applicable CLV standard of 1,600, and unsignalized intersections operate at acceptable levels of service in accordance with Frederick County criteria. While certain turning movements currently experience queue lengths exceeding available storage, these conditions reflect existing traffic patterns and are not attributable to the proposed development.

Background Conditions (2028)

Future background conditions were developed by applying an annual traffic growth rate and incorporating traffic associated with approved pipeline developments within the study area. Under background conditions, several intersections are projected to approach or experience capacity constraints due to regional growth trends and cumulative development impacts within the New Market Planning Region.

Total Future Conditions (2028) with Development

Total future conditions were evaluated by adding site-generated traffic to the background traffic forecasts and incorporating proposed site access improvements. The analyses indicate that study area signalized intersections would continue to operate below the applicable CLV standard and at levels consistent with Frederick County adequacy requirements.

The HCM analysis indicates that the northbound left-turn movement at Old National Pike/Royal Oak Drive is projected to operate at LOS F during the 2028 PM peak hour, compared to LOS E under background conditions. This change represents a marginal exceedance of the LOS E/F delay threshold associated with a small incremental increase in delay relative to background

conditions. The projected change does not introduce operational deficiencies such as queue spillback, safety concerns, or substantial degradation of intersection performance.

Given the limited number of site-generated trips and the minor magnitude of change compared to background conditions, the proposed development is not expected to materially affect intersection operations or overall transportation performance in the study area. The change in LOS designation reflects sensitivity of unsignalized delay estimates near threshold conditions rather than a substantial change in operational performance.

Adequacy Determination

Based on the results of the capacity and queue analyses, the proposed development satisfies Frederick County Adequate Road Facilities requirements. The project does not result in unacceptable degradation of signalized intersection capacity and does not materially worsen operational conditions beyond those associated with background traffic growth and approved pipeline development.

The proposed access improvements along Old National Pike, including turn lane provisions and frontage improvements, are recommended to support safe and efficient site access and to maintain operational performance along the corridor. The applicant may participate in proportionate pro-rata share contributions toward planned transportation improvements, if required by Frederick County or the Town of New Market.

Accordingly, the proposed development is determined to comply with applicable Frederick County Adequate Road Facilities standards and transportation adequacy requirements.

Conclusions

Based on the analyses conducted in accordance with Frederick County and Town of New Market standards, the proposed development is not expected to adversely affect transportation operations and complies with applicable adequacy requirements.

Key findings of the traffic impact analysis are summarized below:

1. The existing conditions analyses indicate the following:
 - All study area intersections currently operate below the applicable CLV standard of 1,600 (LOS E or better).
 - The 95th percentile queues on the southbound left turn movements at the signalized intersection of Old National Pike and Boyers Mill Road currently exceed the available storage lengths.
2. Pipeline projects in the study area would generate a total of 2,198 AM peak hour trips and 3,153 PM peak hour trips by the buildout year 2028.
3. The 2028 background condition traffic volumes were developed by combining the existing traffic, background growth, and pipeline development trips.
4. The 2028 background condition analyses indicate the study area intersections are expected to operate at the same level as under existing conditions with the exception of:
 - LOS F on the EB left during both peak hours at the intersection of Old New Market Road and Green Valley Road.
 - LOS F on the NB left during the PM peak hour at the intersection of Old National Pike and Royal Oak Dr.
5. Based on ITE trip generation rates,
 - the 11,700 SF retail space would generate a total of 46 AM peak hour trips (25 in and 21 out), 85 PM peak hour trips (43 in and 42 out) of which 33 will be pass-by trips, and 637 total daily trips on a typical weekday.
 - ITE pass-by reductions were applied to the retail space for the PM peak hour only (none in AM for conservatism); PM pass-by trips were assigned to Old National Pike and do not represent new external traffic demand.
 - The 6,000 SF restaurant would generate a total of 199 AM peak hour trips (101 in and 98 out) of which 100 will be pass-by trips, 190 PM peak hour trips (99 in and 91 out) of which 104 will be pass-by trips, and 2,689 total daily trips on a typical weekday.

- The 2,800 SF donut shop would generate a total of 239 AM peak hour trips (122 in and 117 out) of which 198 will be pass-by trips, 109 PM peak hour trips (55 in and 55 out) of which 88 will be pass-by trips, and 1,681 total daily trips on a typical weekday.
 - The 4,500 SF office space would generate a total of 7 AM peak hour trips (6 in and 1 out), 10 PM peak hour trips (3 in and 7 out), and 65 total daily trips on a typical weekday.
6. The results of the Total future (2028) condition analyses with the site development show generally consistent intersection operations based on CLV and HCM analyses of weekday AM and PM traffic conditions, with the exception of the intersection of the following:
- The delay on the southbound Royal Oak Drive approach to Old National Pike increases by 9.4 seconds, from LOS E under background conditions to LOS F under total future conditions, representing a marginal change in operations that does not materially affect intersection performance.
7. The exiting left-turn movement at the eastern site driveway is projected to operate at LOS F under HCM methodology; however, this result is conservative and does not account for signal-induced gaps at the nearby Green Valley Road intersection, which are expected to improve actual operations.
8. Based on MDOT SHA access management criteria, the section of Old National Pike along the east site frontage is recommended to be widened to provide separate left and right turn lanes at the site driveway to accommodate site generated traffic.
- A 150-foot left turn lane with a 50-foot storage bay and 100-foot taper length should be provided on northbound Old National Pike.
 - A 535-foot full deceleration lane with a 435-foot approach lane and 100-foot taper should be installed on southbound Old National Pike approach
 - A 100-foot Shoulder Improvement should be installed along the site frontage on Old National Pike south of the site driveway.

The applicant may participate in proportionate pro-rata share contributions toward planned transportation improvements, if required by Frederick County or the Town of New Market. Based on the results of the CLV and HCM analyses, the proposed development satisfies Frederick County Adequate Road Facilities requirements and does not result in unacceptable degradation of study area transportation conditions.