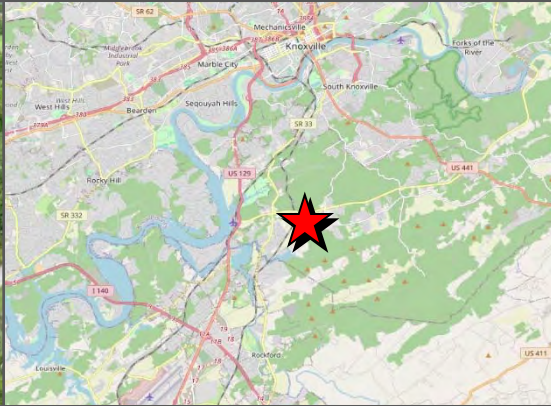


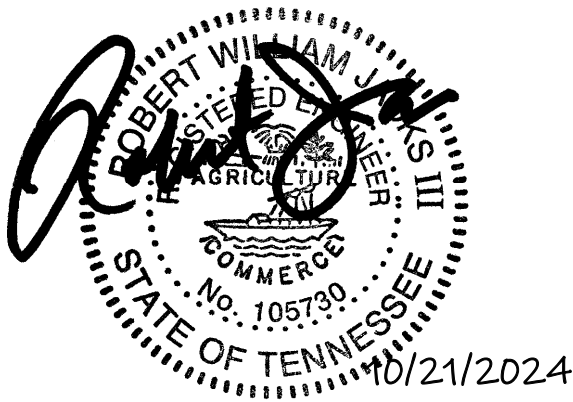


Transportation Impact Letter Crenshaw Road Residential Development Knox County, Tennessee



October 2024

Prepared for:
Sterling Engineering, Inc.
1020 William Blount Drive
P.O. Box 4878
Maryville, TN 37802



8-A-24-DP
TIL Version 1
10/21/2024

EXECUTIVE SUMMARY

Preface:

A residential development is proposed at the corner of Maryville Pike and Crenshaw Road in South Knox County, TN. This review is being provided to assist in determining a suitable and most appropriate location for the Proposed Entrance based on transportation engineering guidelines. The proposed development will include 32 apartments on a single parcel totaling 4.13 +/- acres. The development initially proposed an entrance to Crenshaw Road to the south but has been asked to investigate whether other locations along Maryville Pike to the west would be more appropriate. If actualized, the residential development is expected to be fully constructed and occupied by residents by 2026.

This transportation report includes a review of three potential entrance locations: at the original location on Crenshaw Road, at Maryville Pike between Old Maryville Pike and Crenshaw Road, and at the existing t-intersection of Maryville Pike at Old Maryville Pike.

Recommendations:

The following recommendations are based on the transportation review of the Proposed Entrance locations for the Crenshaw Road Residential Development. More in-depth discussions on the pros and cons of these Proposed Entrance locations are provided at the end of the report.

- **Alternative #1, Proposed Entrance at Maryville Pike between Old Maryville Pike at Crenshaw Road:** Due to the potential of vehicle blocking, the minimal existing distance between Old Maryville Pike and Crenshaw Road, and the complication of meeting TDOT's corner clearance standards, Alternative #1 should be considered the least desirable alternative.
- **Alternative #2, Proposed Entrance at Existing Intersection of Old Maryville Pike at Maryville Pike:** If Alternative #2 is chosen, it is highly recommended that the eastbound approach of Old Maryville Pike be re-configured with a separate left/thru-lane and a separate right-turn lane due to the current and projected high vehicle delays and to accommodate the higher volume right turn movements. If this alternative is chosen, the right-turn lane should be the continuation of the Old Maryville Pike's approach to Maryville Pike, and a left/thru lane should be constructed with a minimum of 75 feet of vehicle storage. Alternative #2 would be a better option than Alternative #1, but adding a 4th leg will increase overall intersection vehicle delays.

- **Alternative #3, Proposed Entrance at Crenshaw Road:** It is understood this location would be the least desired by the surrounding and nearby property owners along Crenshaw Road. However, from a transportation engineering perspective, Alternative #3 would be the best option due to its reduced impact on the existing intersections along Maryville Pike, especially for Old Maryville Pike's eastbound approach, which currently suffers considerable vehicle delays, particularly in the PM peak hour. The required sight distance will be achievable with vegetation removal along Crenshaw Road, and vehicle queues will remain reasonable at the existing intersections along Maryville Pike. Overall, the trips generated by the proposed residential development are expected to be minimal and will be dwarfed by the number of vehicles already traveling on Crenshaw Road due to its attractive connection between W Governor John Sevier Highway and Maryville Pike.

DESCRIPTION OF EXISTING CONDITIONS

▪ STUDY AREA:

The proposed location of this residential development and alternative Proposed Entrance locations is shown in Figure 1 below.

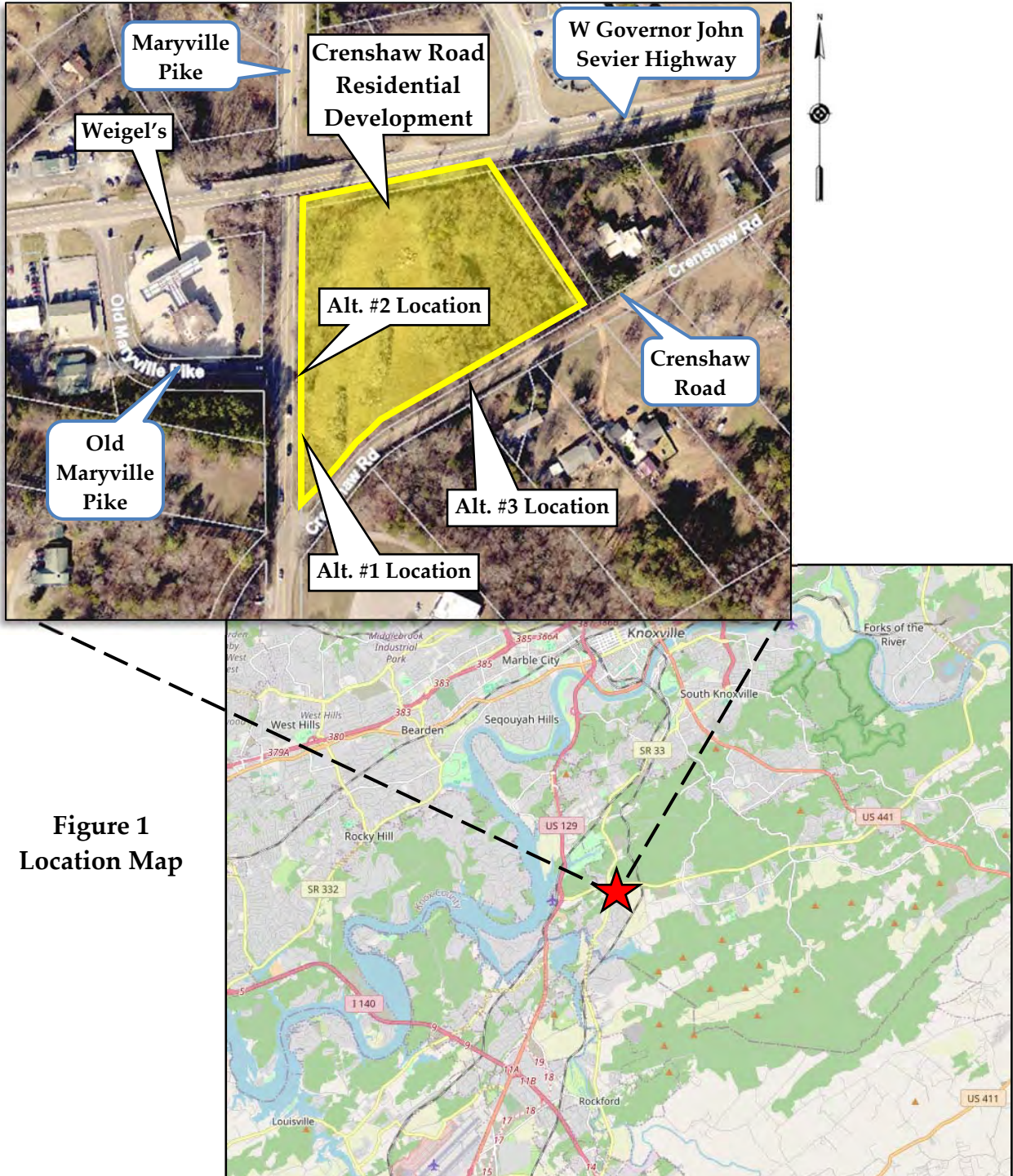


Figure 1
Location Map

▪ **EXISTING ROADWAYS:**

Maryville Pike (SR 33) is categorized as a Minor Arterial by TDOT and traverses north to south adjacent to the proposed development property. Adjacent to the site, the roadway has a 2-lane section with one lane in each direction. To the north, the Maryville Pike name designation begins on the south side of the Tennessee River near downtown Knoxville. To the south, Maryville Pike transitions to Old Knoxville Highway at the Blount County line, and the roadway continues towards Maryville, TN.



Maryville Pike intersects both Crenshaw Road and Old Maryville Pike near the development site at unsignalized t-intersections and on opposite sides. Turn lanes are not provided on Maryville Pike at these intersections. Sidewalks are not provided along Maryville Pike, and the posted speed limit is 45 mph. Maryville Pike has painted white edge lines and a double yellow centerline with a total pavement width of 28 feet. The shoulder pavement outside the white edge lines is approximately 2.5 feet, with the surfaces outside the pavement edge consisting of grass and other vegetation.

Maryville Pike is posted with Offset Side Road Warning Signs (W2-7) with an advisory speed plaque of 40 mph in advance of Crenshaw Road for motorists heading south and in advance of Topside Road for motorists heading north. To the north of the proposed development site, Maryville Pike is crossed by a bridge overpass for W Governor John Sevier Highway (SR 168). A bit further north of the overpass, a short curved road, Circle Oak Drive, intersects Maryville Pike at a t-intersection, providing access to and from W Governor John Sevier Highway to the east of the bridge overpass.

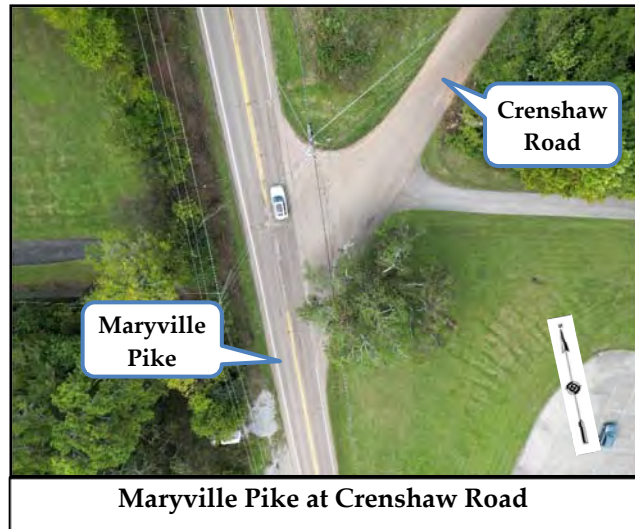
Old Maryville Pike is a short curved roadway that provides access between W Governor John Sevier Highway and Maryville Pike to the southwest of the bridge overpass. This roadway surrounds the west and rear sides of a Weigel’s Convenience Market and has two lanes. This roadway is relatively wide, particularly at each end where it forms unsignalized t-intersections

at W Governor John Sevier Highway and Maryville Pike. Separate turn lanes are not provided on Old Maryville Pike at the intersections. A double yellow centerline is provided on Old Maryville Pike. This roadway has concrete curbing on its edges, and at its widest point near Maryville Pike, the pavement is nearly 38 feet wide. This width allows for side-by-side simultaneous left and right-turning passenger vehicles onto Maryville Pike even though it is striped as a single lane. However, larger vehicles do not allow for side-by-side vehicle turn stacking on Old Maryville Pike at Maryville Pike.



In addition to a generous width at Maryville Pike, a short section of additional pavement in the southwest corner allows right-turning motorists onto Maryville Pike to partially accelerate before fully entering the southbound traffic stream, as shown in the above image.

Crenshaw Road intersects Maryville Pike at an unsignalized y-intersection, 300 feet south of the t-intersection at Old Maryville Pike (centerline to centerline). The approach pavement on Crenshaw Road is extremely wide at Maryville Pike due to the acute angle at which Crenshaw Road intersects. Many single-family detached houses occupy Crenshaw Road on large lots, but the road is also rather heavily traveled by motorists between W Governor John Sevier Highway and Maryville Pike. In particular, motorists traveling from the south on Maryville Pike, heading north, and wanting to travel east on W Governor John Sevier Highway regularly use Crenshaw Road instead of traveling a bit further to the north and using Old Maryville Pike to access the highway. Crenshaw Road has a posted speed limit of 30 mph, a pavement width of around 17-18 feet, and a total length of 1,600 feet between Maryville Pike and W Governor John Sevier Highway.

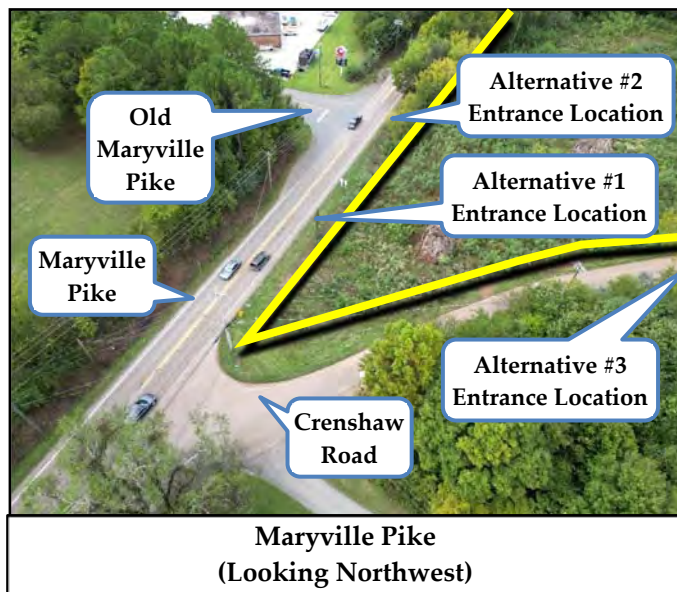


PROJECT DESCRIPTION

▪ PROPOSED DEVELOPMENT:

The proposed residential development will include 32 apartment units spread over four buildings on a single parcel of 4.13 +/- acres, and the original site plan is shown in Figure 2. The proposed property is on a parcel bounded by W Governor John Sevier Highway to the north, Maryville Pike to the west, and Crenshaw Road to the southeast. The road frontage along Maryville Pike is directly across from Old Maryville Pike, which circles around a Weigel's Convenience Market to W Governor John Sevier Highway.

The proposed development originally proposed an entrance to Crenshaw Road to the south, as shown in Figure 2. This entrance was proposed to tie into Crenshaw Road from the north, approximately 480 feet to the northeast of the intersection of Maryville Pike at Crenshaw Road. This location would be about the mid-point of the property road frontage along Crenshaw Road. It was requested that two alternative entrance locations also be investigated. Access to the W Governor John Sevier Highway to the north will not be allowed by TDOT.



These two alternative locations include tying a development entrance to the west to Maryville Pike. Alternative #1 would be an entrance to Maryville Pike between Old Maryville Pike to the north and Crenshaw Road to the south. This location would be approximately 150 feet south of Old Maryville Pike and 150 feet north of Crenshaw Road (centerline to centerline). Alternative #2 would tie into the existing t-intersection with Old Maryville Pike, transforming the intersection to a 4-way approach. This review presents the original entrance location on Crenshaw Road as Alternative #3.

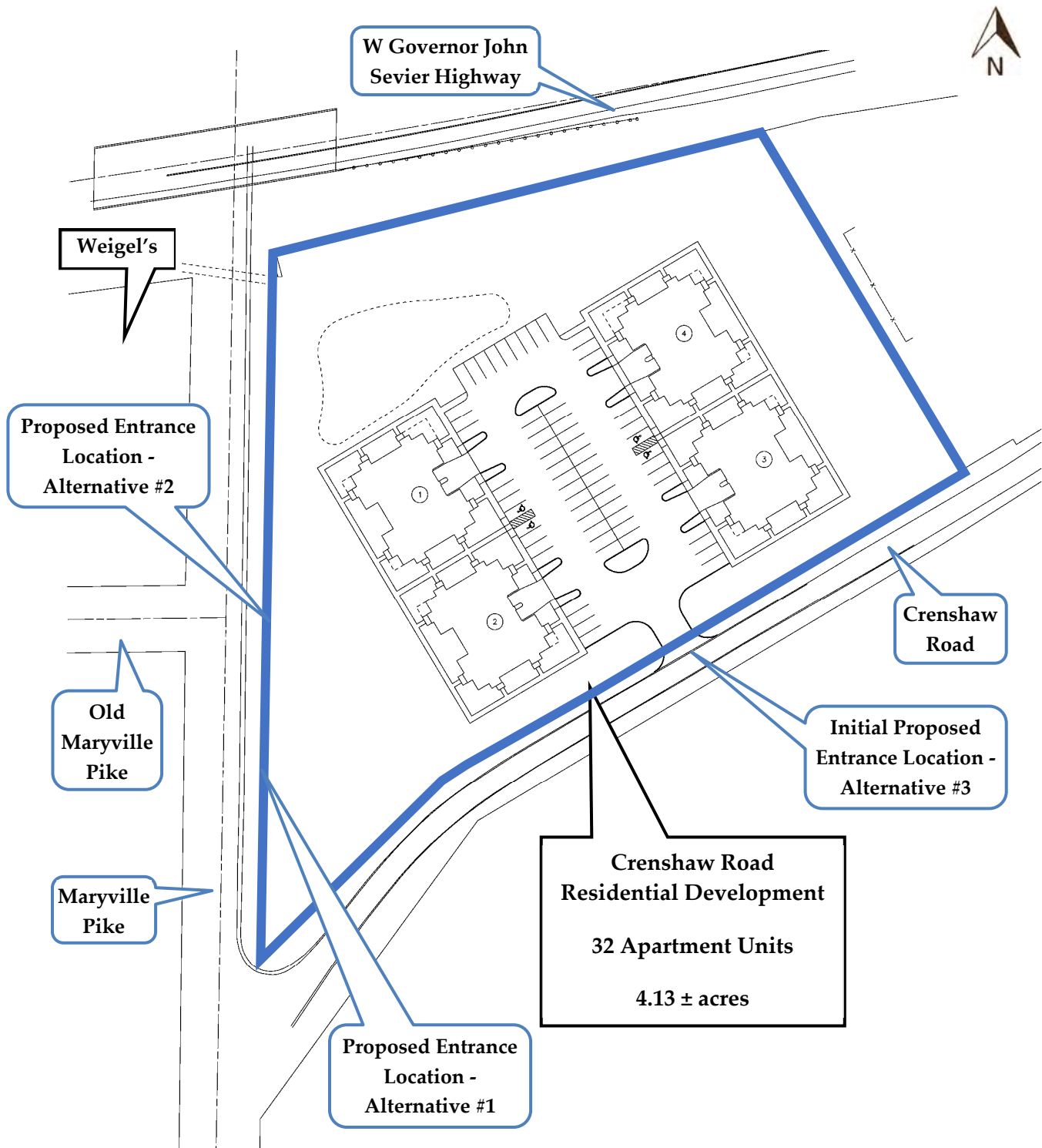


Figure 2
Proposed Plan Layout
Crenshaw Road Residential Development



Not to Scale

ANALYSIS OF EXISTING AND PROJECTED CONDITIONS

▪ EXISTING TRAFFIC CONDITIONS:

This review conducted a 6-hour traffic count at the unsignalized t-intersections of Maryville Pike at Old Maryville Pike and at Crenshaw Road on Wednesday, October 2nd, 2024. Manual traffic counts were conducted to identify and tabulate the morning (7 – 9 a.m.) and afternoon (2 – 6 p.m.) peak period volumes and travel directions near the proposed development site. Local public schools were in session when the traffic counts were conducted. These intersections were both observed with an AM and PM peak hour of traffic at 7:15 – 8:15 a.m. and 4:30 – 5:30 p.m.

The manual tabulated traffic counts can be reviewed in Figure 3 and the Appendix. Some notes of the operations at the observed intersections include the following:

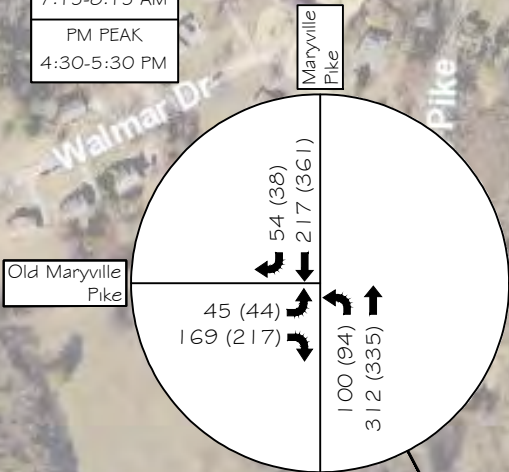
- Most vehicles at these intersections were passenger vehicles, but many larger vehicles, including school buses, semi-tractor trailer trucks, single-unit trucks, dump trucks, delivery vehicles, and construction trucks with trailers, were also observed.
- During the traffic counts, one pedestrian and one bicyclist were both observed heading north on Maryville Pike, turning onto Old Maryville Pike, and returning south a few minutes later. While not directly observed, it is believed that both trips were customers of the adjacent Weigel's Convenience Market.
- On the eastbound approach of Old Maryville Pike at Maryville Pike, much larger traffic volumes were observed turning right (southbound) versus left (northbound).
- Significant amounts of northbound right turns from Maryville Pike to Crenshaw Road were observed and were associated with motorists desiring to travel east on W Governor John Sevier Highway.
- A special event occurred during the traffic count in the afternoon. Mountain View United Methodist Church, located in the southeast corner of the y-intersection of Maryville Pike at Crenshaw Road, held a donation event for victims of the recent hurricane that damaged large areas of East Tennessee and West North Carolina. Two event volunteers were observed at the intersection briefly, drawing attention to the event. One of two entrances to this Church is located on Crenshaw Road just northwest of the intersection of Maryville Pike. It is not believed that this event substantially inflated the traffic volumes.
- Construction activity also occurred during the traffic count observations. Specifically, an underground pipeline is being installed in the area, and this activity caused a brief

backup and traffic jam on Maryville Pike in both directions. Vehicles were observed stopped by construction south of Crenshaw Road and Topside Road in the afternoon, around 3:15 p.m. and at 4:15 p.m. After several minutes of waiting, several motorists were observed losing patience and turned their vehicles around to find another route to travel. However, this activity is not believed to have significantly altered the count results, especially as it relates to the identification and results of the afternoon peak hour, which was observed later, from 4:30 to 5:30 p.m.

- Besides the brief construction backup in the afternoon, another vehicle queue anomaly was observed on Maryville Pike during the AM peak hour. This anomaly occurred when there were heavy vehicle flows on Maryville Pike with motorists attempting to turn left onto the opposite approaches of Old Maryville Pike and Crenshaw Road simultaneously. Due to Old Maryville Pike and Crenshaw Road's relative closeness, a brief gridlock occurred due to the left turners at each intersection being blocked by the heavy thru movements in each direction on Maryville Pike.

Traffic Counts conducted on 10/2/2024
by Ajax Engineering, LLC

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



MARYVILLE PIKE

CIRCLE OAK DRIVE

W GOVERNOR JOHN SEVIER HIGHWAY

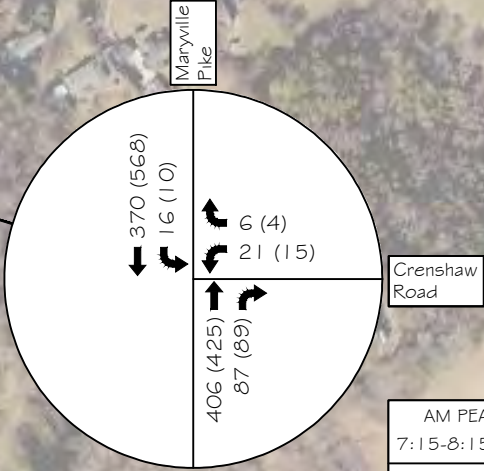
CRENSHAW ROAD

OLD MARYVILLE PIKE

TOPSIDE ROAD

MARYVILLE PIKE

Crenshaw Road Residential Development



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

XXX AM Peak
Hour Volumes
(XXX) PM Peak
Hour Volumes



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NOT TO SCALE



FIGURE 3
Crenshaw Road Residential Development



2024 Peak Hour Traffic Volumes -
EXISTING TRAFFIC CONDITIONS

Capacity analyses were undertaken to determine the Level of Service (LOS) for the existing 2024 traffic volumes shown in Figure 3 at the unsignalized intersections. The capacity analyses were calculated following the Highway Capacity Manual (HCM) methods and utilizing Synchro Traffic Software (Version 12).

Intersection capacity results from the existing 2024 peak hour traffic are shown in Table 1. The intersections in the table are shown with a LOS designation, delay (in seconds), and v/c ratio (volume/capacity) for the AM and PM peak hours. The Appendix includes the worksheets for the existing 2024 peak hour capacity analyses.

As shown in Table 1, the unsignalized intersections are calculated to operate with average LOS and reasonable vehicle delays in the 2024 conditions for most turning movements. However, the eastbound shared left and right lane on Old Maryville Pike in the PM peak hour is reported with a LOS D. Likewise, the westbound shared left and right lane on Crenshaw Road in the PM peak hour is reported with a LOS D. It should be noted that both of these approaches at Old Maryville Pike and Crenshaw Road are wide enough for the majority of vehicles to perform simultaneous left and right-turning movements by allowing side-by-side vehicle stacking. However, both approaches were modeled as a single lane in the software.

TABLE 1
2024 INTERSECTION CAPACITY ANALYSIS RESULTS -
EXISTING TRAFFIC CONDITIONS

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS ^a	DELAY ^b (seconds)	v/c ^c	LOS ^a	DELAY ^b (seconds)	v/c ^c
Maryville Pike (SB & NB) at Old Maryville Pike (EB)	 Unsignalized	Northbound Left	A	8.3	0.095	A	9.2	0.142
		Eastbound Left/Right	C	16.6	0.455	D	34.2	0.727
Maryville Pike (SB & NB) at Crenshaw Road (WB)	 Unsignalized	Westbound Left/Right	C	19.2	0.169	D	25.0	0.166
		Southbound Left	A	8.6	0.023	A	8.9	0.021

Note: All analyses were calculated in Synchro 12 software and reported with HCM 7th Edition methodology

^a Level of Service , ^b Average Delay (sec/vehicle) , ^c Volume-to-Capacity Ratio



▪ **PROJECTED TRAFFIC CONDITIONS WITHOUT THE PROJECT:**

Horizon year traffic conditions represent the projected traffic volumes in the study area without the proposed project being developed (no-build option). This proposed development’s build-out and full occupancy are assumed to occur by 2026.

According to the nearby Knoxville TPO count station, vehicular traffic on Maryville Pike has seen limited growth over the past ten years. This data is included in the Appendix. The data shows that Maryville Pike, just north of W Governor John Sevier Highway, has experienced an annual growth of 1.2%. For this transportation review, an annual growth rate of 2% was used to calculate future growth at the intersections up to 2026 to account for potential traffic growth in the study area and result in a conservative analysis. The annual growth rate of 2% was applied to the existing 2024 intersection volumes shown in Figure 3 to estimate the future volumes in the horizon year of 2026 without the potential development traffic.

Capacity analyses were undertaken to determine the projected LOS in 2026 without the project at the intersections. These results are shown in Table 2, and the Appendix includes the capacity analysis worksheets. As expected, the results in Table 2 show moderately worse vehicle delays for the turning movements in the 2026 projected conditions, even without the developments’ generated trips versus the 2024 existing conditions. The eastbound approach of Old Maryville Pike is shown slipping to LOS E in the PM peak hour, even without the traffic generated by the proposed development.

TABLE 2
2026 INTERSECTION CAPACITY ANALYSIS RESULTS -
PROJECTED TRAFFIC CONDITIONS WITHOUT THE PROJECT

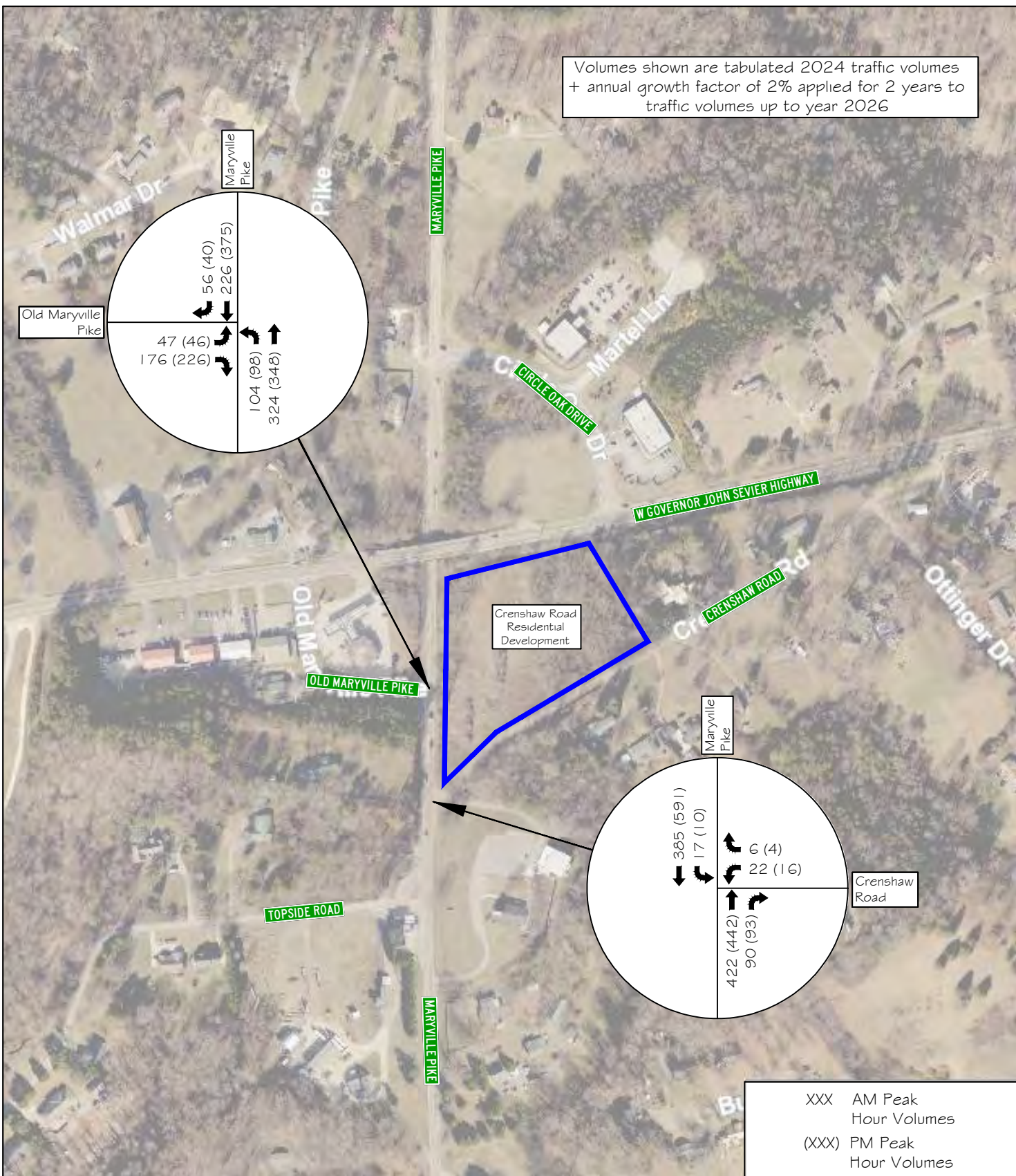
INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS ^a	DELAY ^b (seconds)	v/c ^c	LOS ^a	DELAY ^b (seconds)	v/c ^c
Maryville Pike (SB & NB) at Old Maryville Pike (EB)	 Unsignalized	Northbound Left	A	8.3	0.100	A	9.4	0.151
		Eastbound Left/Right	C	17.8	0.490	E	42.2	0.797
Maryville Pike (SB & NB) at Crenshaw Road (WB)	 Unsignalized	Westbound Left/Right	C	20.3	0.186	D	27.2	0.188
		Southbound Left	A	8.7	0.025	A	8.9	0.021

Note: All analyses were calculated in Synchro 12 software and reported with HCM 7th Edition methodology

^a Level of Service, ^b Average Delay (sec/vehicle), ^c Volume-to-Capacity Ratio

Figure 4 shows the projected 2026 horizon year traffic volumes at the intersections without the project during the AM and PM peak hours.

Volumes shown are tabulated 2024 traffic volumes + annual growth factor of 2% applied for 2 years to traffic volumes up to year 2026



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FIGURE 4

Crenshaw Road Residential Development

2026 Peak Hour Traffic Volumes -
PROJECTED TRAFFIC CONDITIONS
WITHOUT THE PROJECT

▪ **TRIP GENERATION:**

A generated trip is a single or one-direction vehicle movement entering or exiting the study site. The estimated traffic the Crenshaw Road Residential Development will generate was based on equations provided by Knoxville/Knox County Planning. These equations were developed from an extensive local study to estimate townhouse (and apartment) trip generation in the surrounding area. This data is the preferred rate for townhouses and apartments in Knox County and Knoxville.

The data and calculations from the local trip generation study for the proposed Crenshaw Road Residential Development are shown in the Appendix. A summary of this information is presented in Table 3:

TABLE 3
TRIP GENERATION FOR CRENSHAW ROAD RESIDENTIAL DEVELOPMENT
 32 Apartments

ITE LAND USE CODE	LAND USE DESCRIPTION	UNITS	GENERATED DAILY TRAFFIC	GENERATED TRAFFIC AM PEAK HOUR			GENERATED TRAFFIC PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Local Trip Rate	Apartments	32 Apartments	343	22%	78%		55%	45%	
				4	15	19	18	14	32
Total New Volume Site Trips			343	4	15	19	18	14	32

Data from Local Trip Rates and calculated by using Fitted Curve Equations

For the proposed residential development, it could be expected that 4 vehicles will enter and 15 will exit, for a total of 19 generated trips during the AM peak hour in the year 2026. Similarly, it is estimated that 18 vehicles will enter and 14 will exit, for a total of 32 generated trips during the PM peak hour in the year 2026. The calculated trips generated for an average weekday are estimated to be 343 vehicles for the proposed development. No vehicle trip reductions were included in the calculations or analysis.

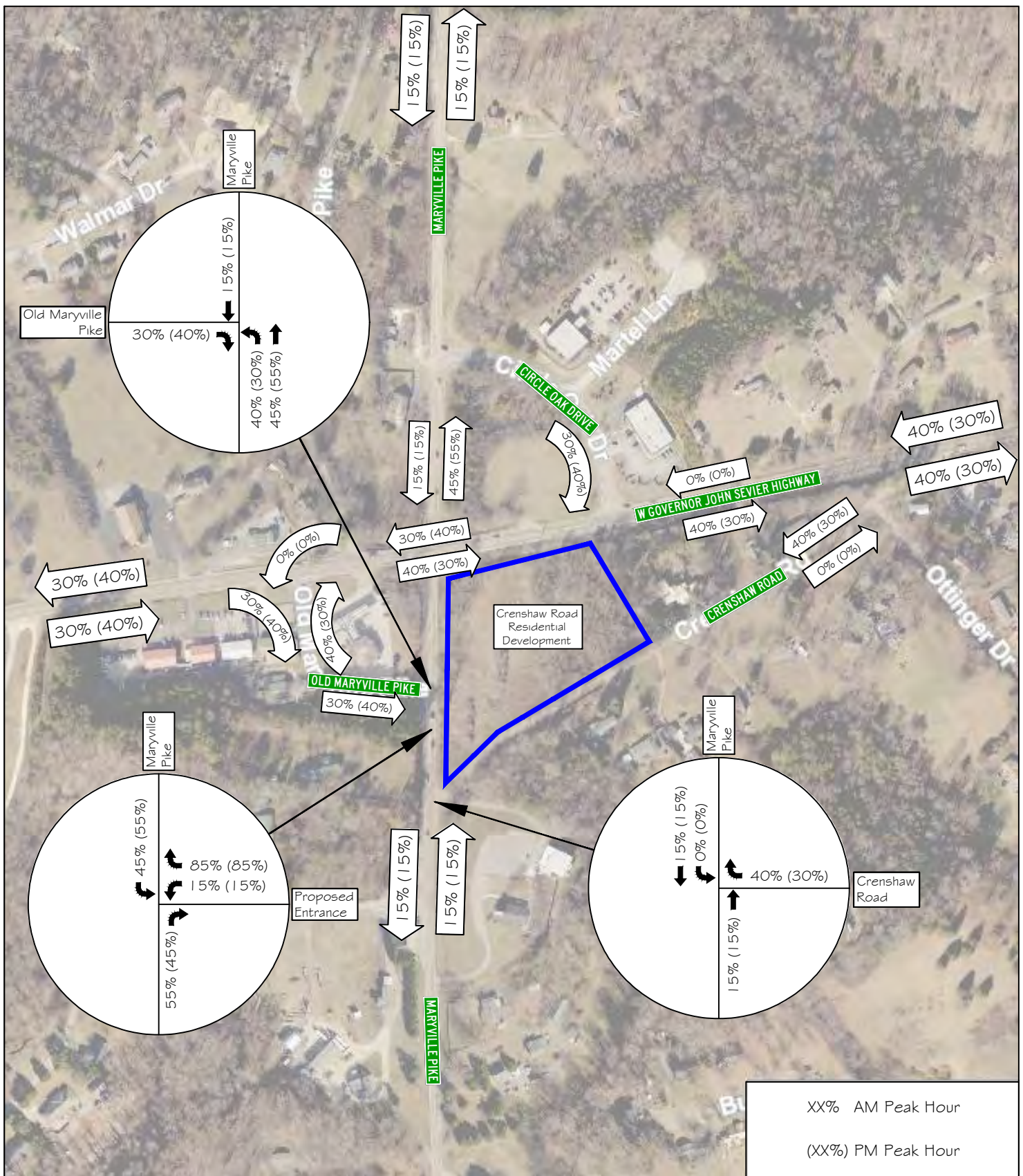
▪ **TRIP DISTRIBUTION AND ASSIGNMENT:**

The projected trip distribution and assignment for the proposed Crenshaw Road Residential Development are based on the existing traffic volumes, observed directional vehicle flows, and engineering judgment. The following figures show the proposed residential development's respective trip distribution and assignment based on the three alternative entrance locations. Multiple figures are included to properly delineate the trips generated by the proposed residential development for the three alternative entrance locations.

The directional distribution of generated trips for the proposed Crenshaw Road Residential Development for Alternatives #1, #2, and #3 are provided in Figures 5a, 5b, and 5c. Figure 5a shows Alternative #1 with a Proposed Entrance at Maryville Pike on the west side between Old Maryville Pike and Crenshaw Road. Figure 5b shows Alternative #2 with a Proposed Entrance at Maryville Pike on the west side at the existing t-intersection at Old Maryville Pike, forming a 4-way intersection. The assumed trip distribution for Alternative #3 with the originally Proposed Entrance at Crenshaw Road is provided in Figure 5c. As shown in the figures, the assumptions regarding the projected traffic flows are heavily reliant on the known turning movements between W Governor John Sevier Highway and Maryville Pike, the projected use of Circle Oak Drive to the north, the use of Crenshaw Road as a conduit for travel to and from the east on W Governor John Sevier Highway, and general avoidance of left turn movements. Overall, it is assumed that 15% of generated traffic will travel north and south, towards downtown Knoxville and downtown Maryville, respectively. The figures show that the remaining generated traffic is assumed to travel east and west on W Governor John Sevier Highway.

Figures 6a – 6c show the traffic assignment of the computed trips generated by the proposed residential development based on the assumed distribution of trips shown in Figures 5a – 5c and according to each entrance location alternative.

Note: The intersection distribution and assignment for the Proposed Entrance at Crenshaw Road, Alternative #3, in Figures 5c, 6c, and 7c, are shown only for accounting and informational purposes and are not included in the capacity analyses or vehicle queue calculations due to the low vehicle volumes.



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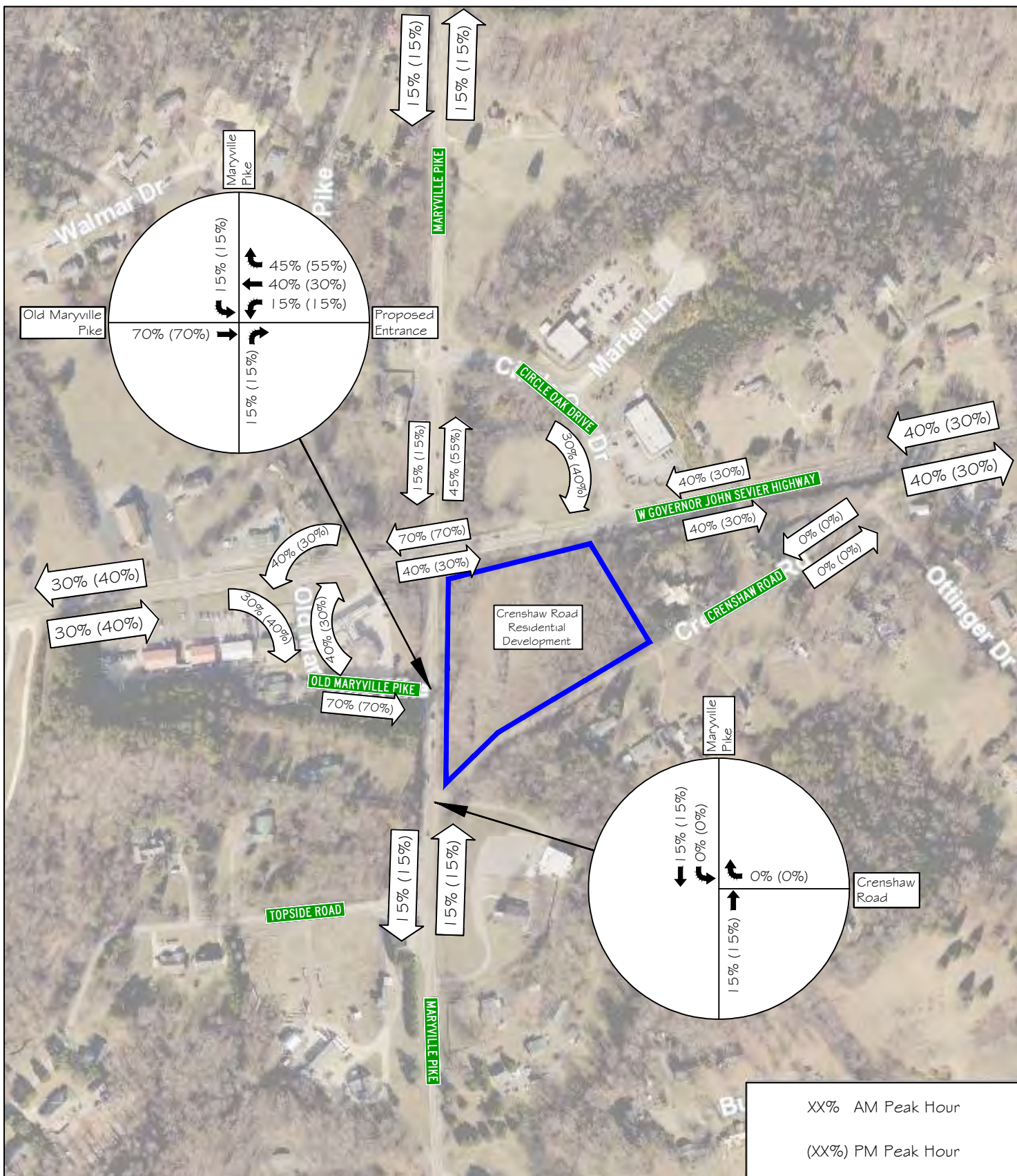
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FIGURE 5a

Crenshaw Road Residential Development

Directional Distribution of Generated Traffic during AM and PM Peak Hour - Alternative # 1



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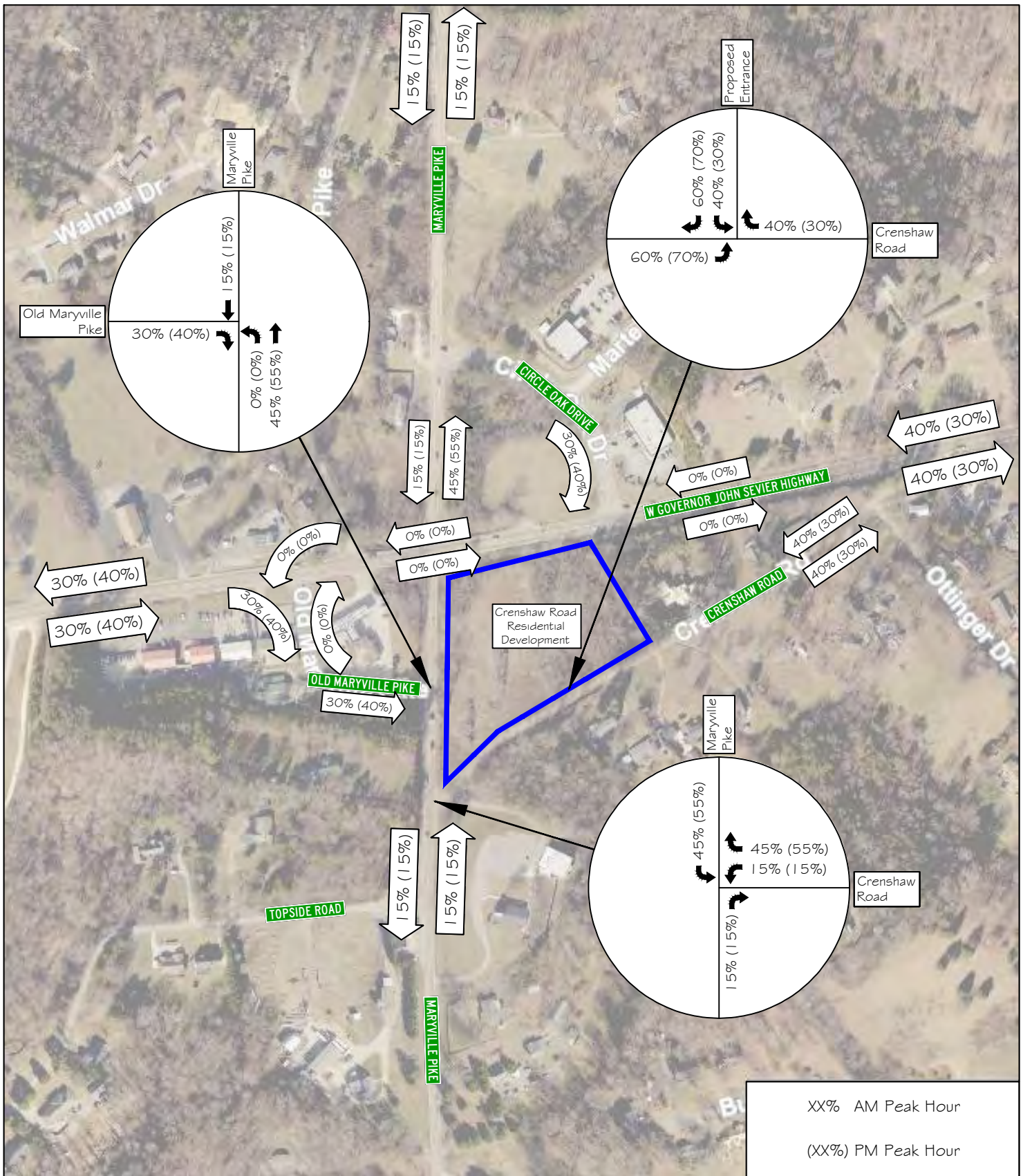
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FIGURE 5b

Crenshaw Road Residential Development

Directional Distribution of Generated Traffic during AM and PM Peak Hour - Alternative #2



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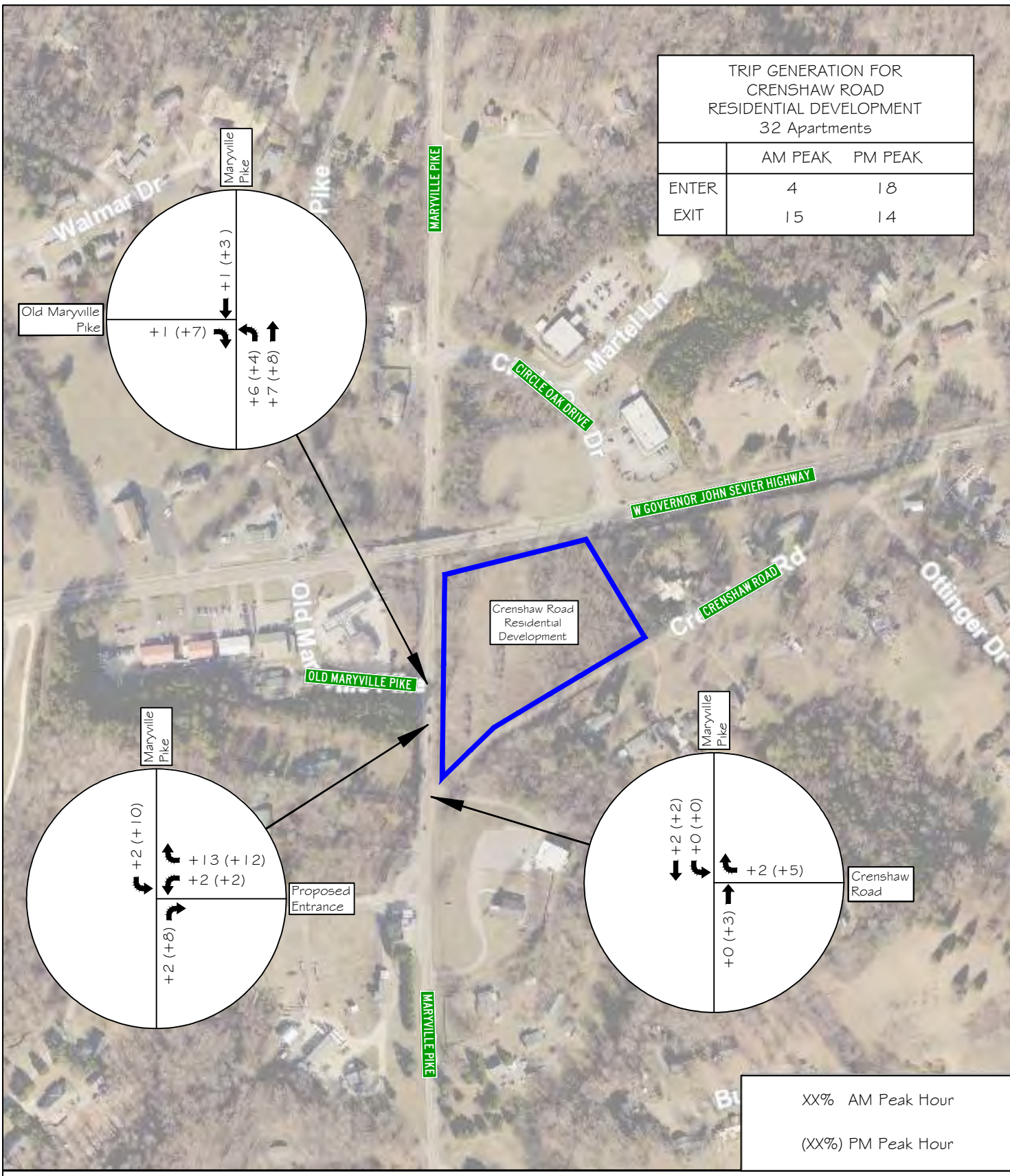


FIGURE 5c

Crenshaw Road Residential Development

Directional Distribution of Generated Traffic during AM and PM Peak Hour - Alternative #3

TRIP GENERATION FOR CRENSHAW ROAD RESIDENTIAL DEVELOPMENT 32 Apartments		
	AM PEAK	PM PEAK
ENTER	4	18
EXIT	15	14



XX% AM Peak Hour
(XX%) PM Peak Hour



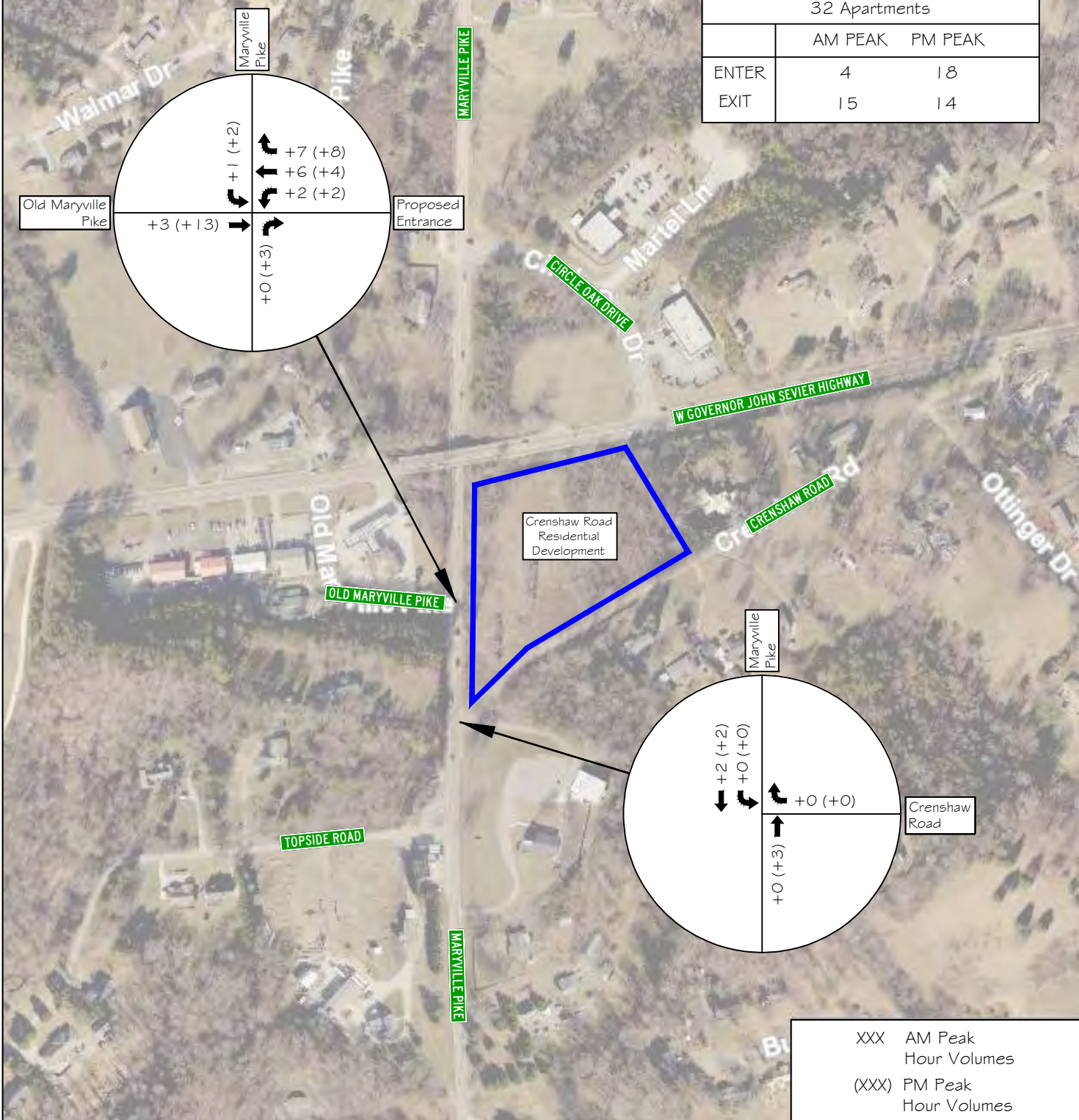
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FIGURE 6a
Crenshaw Road Residential Development
Traffic Assignment of Generated Trips
during AM and PM Peak Hour -
Alternative # 1

TRIP GENERATION FOR CRENSHAW ROAD RESIDENTIAL DEVELOPMENT 32 Apartments		
	AM PEAK	PM PEAK
ENTER	4	18
EXIT	15	14



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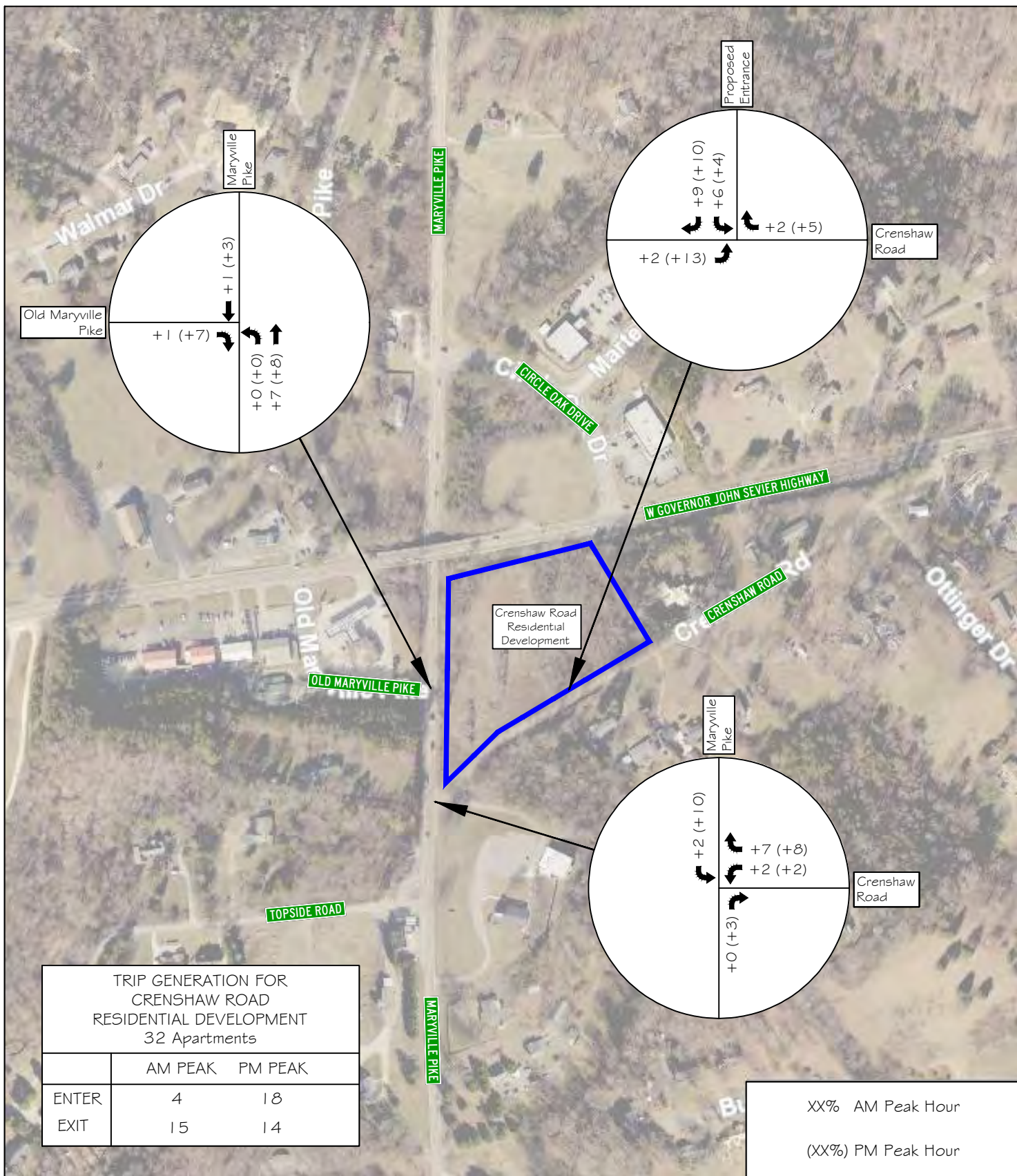
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FIGURE 6b

Crenshaw Road Residential Development

Traffic Assignment of Generated Trips
during AM and PM Peak Hour -
Alternative #2



TRIP GENERATION FOR
CRENSHAW ROAD
RESIDENTIAL DEVELOPMENT
32 Apartments

	AM PEAK	PM PEAK
ENTER	4	18
EXIT	15	14

XX% AM Peak Hour
(XX%) PM Peak Hour



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FIGURE 6c

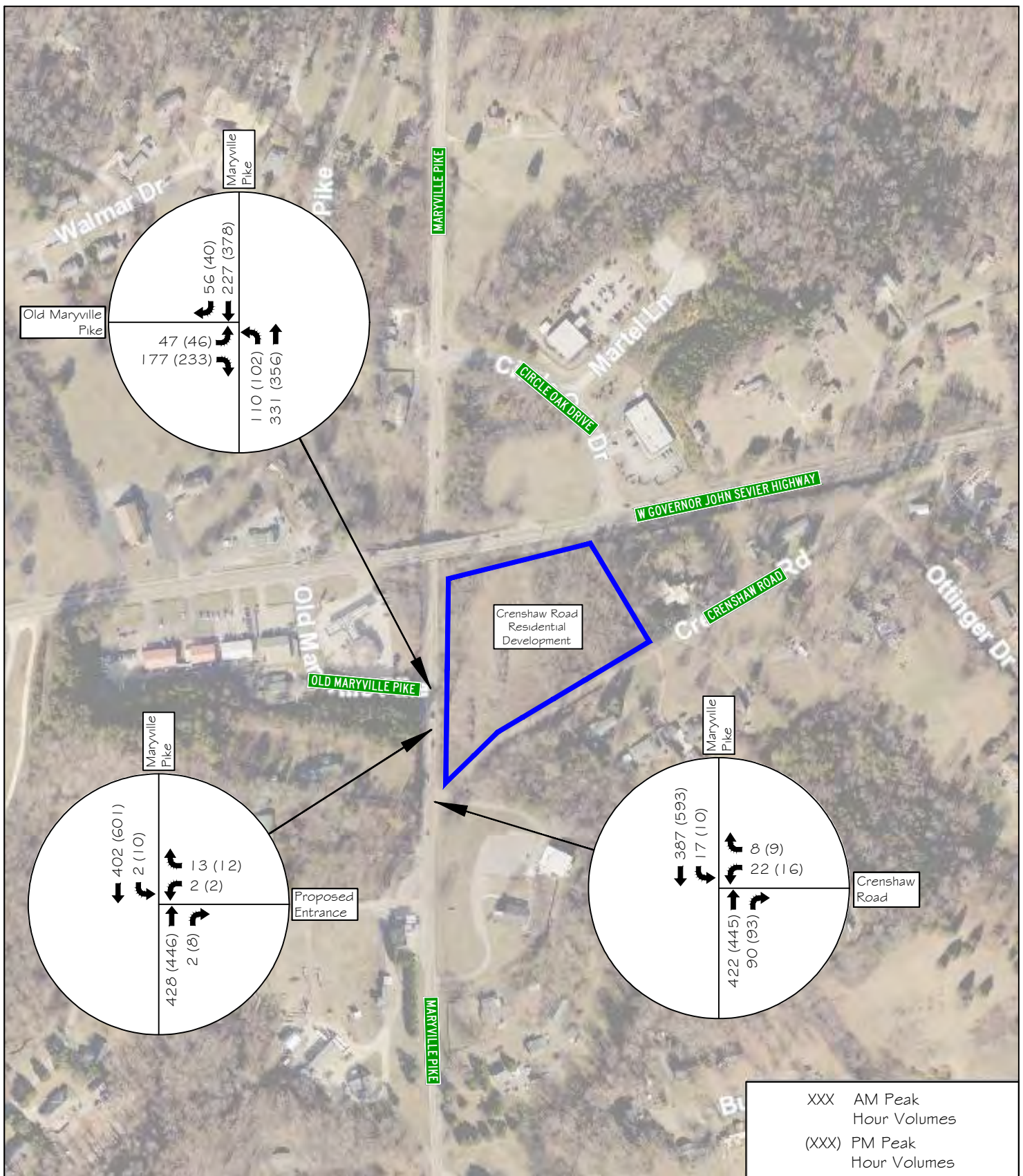
Crenshaw Road Residential Development

Traffic Assignment of Generated Trips
during AM and PM Peak Hour -
Alternative #3

▪ **PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT:**

Overall, several additive steps were taken to estimate the total projected traffic volumes at the adjacent studied intersections and for all three alternative Proposed Entrances to the Crenshaw Road Residential Development.

The calculated peak hour trips generated by the proposed residential development for the three alternatives (Figures 6a – 6c) were added to the 2026 traffic volumes without the project shown in Figure 4. Figures 7a -7c show the projected 2026 AM and PM peak hour volumes at the intersections for the three alternative Proposed Entrance locations.



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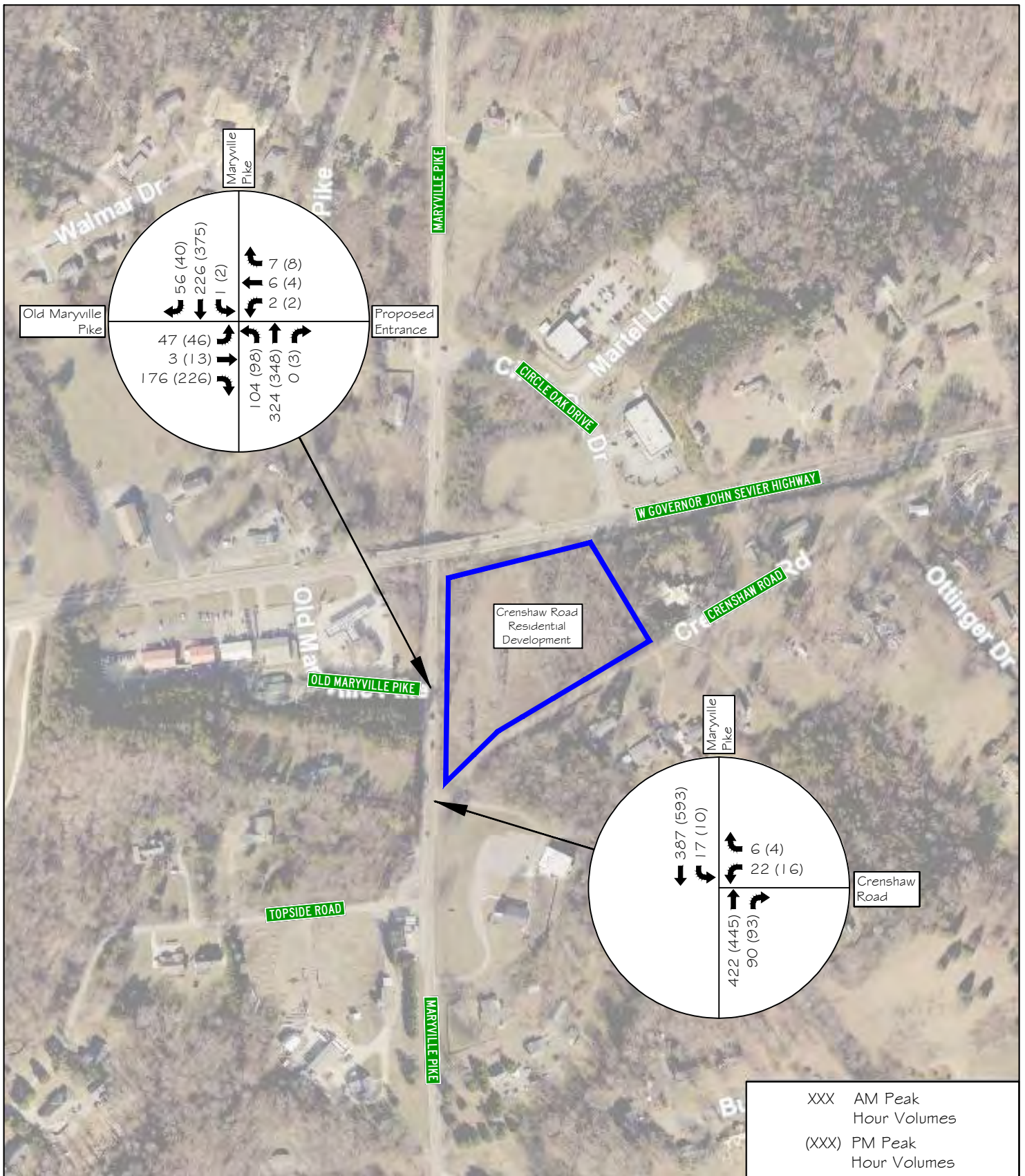
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FIGURE 7a

Crenshaw Road Residential Development

2026 Peak Hour Traffic Volumes -
 PROJECTED TRAFFIC CONDITIONS
 WITH THE PROJECT - Alternative # 1



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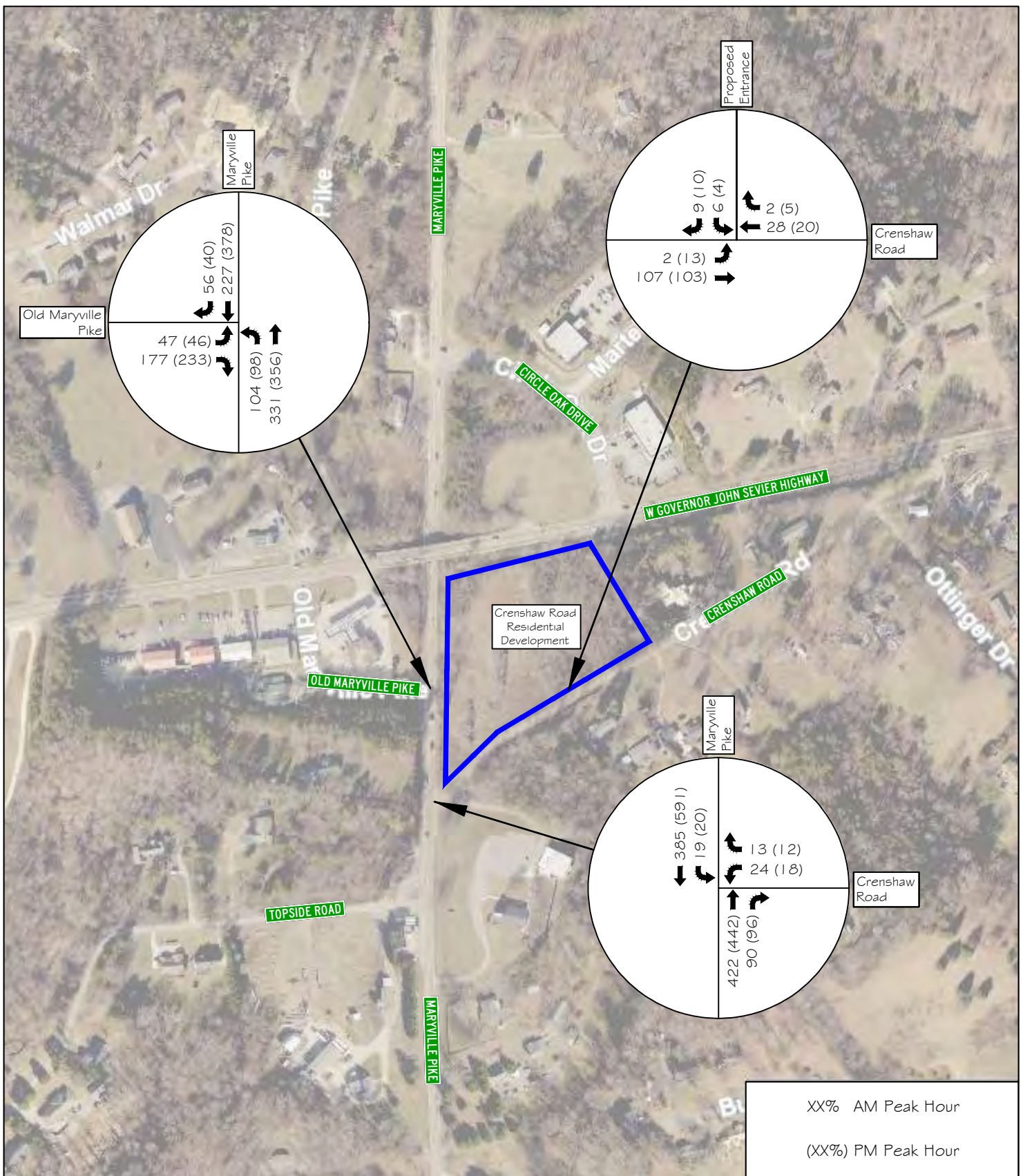
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FIGURE 7b

Crenshaw Road Residential Development

2026 Peak Hour Traffic Volumes -
 PROJECTED TRAFFIC CONDITIONS
 WITH THE PROJECT - Alternative #2



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FIGURE 7c




Crenshaw Road Residential Development

2026 Peak Hour Traffic Volumes -
 PROJECTED TRAFFIC CONDITIONS
 WITH THE PROJECT - Alternative #3

Capacity analyses were conducted to determine the projected 2026 LOS with the development traffic, shown in Figures 7a – 7c. The intersection capacity results from the projected 2026 peak hour traffic for the three alternatives are shown in Tables 4a – 4c. The Appendix includes the worksheets for these capacity analyses.

As shown in the tables, all intersection approaches are calculated to operate with good to average vehicle delays in the projected 2026 conditions. However, the exception is the eastbound approach of Old Maryville Pike at Maryville Pike, which is calculated to operate at LOS E and F in the PM peak hour for all three alternatives. This approach is calculated to operate at LOS E for Alternatives #1 and #3 and LOS F for Alternative #2 with the Proposed Entrance opposite Old Maryville Pike, with the intersection transformed into a 4-way operation. Once again, these results were obtained assuming this approach operates with one lane but was often observed operating with dual occurring left and right turns due to its generous pavement width.



TABLE 4a
2026 INTERSECTION CAPACITY ANALYSIS RESULTS -
PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT - Alternative #1

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS ^a	DELAY ^b (seconds)	v/c ^c	LOS ^a	DELAY ^b (seconds)	v/c ^c
Maryville Pike (SB & NB) at Old Maryville Pike (EB)	 Unsignalized	Northbound Left	A	8.3	0.106	A	9.4	0.158
		Eastbound Left/Right	C	18.3	0.501	E	46.8	0.829
Maryville Pike (SB & NB) at Crenshaw Road (WB)	 Unsignalized	Westbound Left/Right	C	20.0	0.194	D	25.1	0.210
		Southbound Left	A	8.7	0.025	A	9.0	0.021
Maryville Pike (SB & NB) at Proposed Entrance (WB)	 Unsignalized	Westbound Left/Right	B	12.7	0.034	B	14.8	0.041
		Southbound Left	A	8.4	0.002	A	8.6	0.011

Note: All analyses were calculated in Synchro 12 software and reported with HCM 7th Edition methodology

^a Level of Service, ^b Average Delay (sec/vehicle), ^c Volume-to-Capacity Ratio



TABLE 4b
2026 INTERSECTION CAPACITY ANALYSIS RESULTS -
PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT - Alternative #2

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS ^a	DELAY ^b (seconds)	v/c ^c	LOS ^a	DELAY ^b (seconds)	v/c ^c
Maryville Pike (SB & NB) at Old Maryville Pike (EB) and Proposed Entrance (WB)	 Unsignalized	Northbound Left	A	8.3	0.100	A	9.4	0.151
		Eastbound Left/Thru/Right	C	21.5	0.560	F	90.2	1.010
		Westbound Left/Thru/Right	C	17.8	0.056	D	27.8	0.090
		Southbound Left	A	8.1	0.001	A	8.2	0.002
Maryville Pike (SB & NB) at Crenshaw Road (WB)	 Unsignalized	Westbound Left/Right	C	20.4	0.186	D	27.4	0.190
		Southbound Left	A	8.7	0.025	A	9.0	0.021

Note: All analyses were calculated in Synchro 12 software and reported with HCM 7th Edition methodology

^a Level of Service, ^b Average Delay (sec/vehicle), ^c Volume-to-Capacity Ratio

TABLE 4c
2026 INTERSECTION CAPACITY ANALYSIS RESULTS -
PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT - Alternative #3

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS ^a	DELAY ^b (seconds)	v/c ^c	LOS ^a	DELAY ^b (seconds)	v/c ^c
Maryville Pike (SB & NB) at Old Maryville Pike (EB)	 Unsignalized	Northbound Left	A	8.3	0.100	A	9.4	0.151
		Eastbound Left/Right	C	18.0	0.495	E	45.3	0.821
Maryville Pike (SB & NB) at Crenshaw Road (WB)	 Unsignalized	Westbound Left/Right	C	20.0	0.229	D	27.2	0.262
		Southbound Left	A	8.7	0.028	A	9.0	0.043

Note: All analyses were calculated in Synchro 12 software and reported with HCM 7th Edition methodology

^a Level of Service, ^b Average Delay (sec/vehicle), ^c Volume-to-Capacity Ratio

Vehicle queue lengths are another component of an intersection’s assessment. An additional software program calculated the 2026 AM and PM peak hour projected vehicle queues at the studied intersections. The previously mentioned Synchro traffic software includes SimTraffic. The Synchro portion of the software performs the macroscopic calculations for intersections, and SimTraffic performs micro-simulation and animation of vehicular traffic. SimTraffic software was utilized to estimate the projected vehicle queues at the intersections.

The 95th percentile vehicle queue is the recognized measurement in the transportation engineering profession as the design standard used when considering vehicle queue lengths. A 95th percentile vehicle queue length means 95% certainty that the vehicle queue will not extend beyond that point. The calculated vehicle queue results were based on averaging the outcome obtained during ten traffic simulations in the software. These results are shown in Tables 5a – 5c.

The worksheet results from the SimTraffic software are provided in the Appendix. Results are not provided for the Proposed Entrance at Crenshaw Road, Alternative #3, but are assumed to be minimal.

Tables 5a – 5c show relatively reasonable vehicle queue lengths on all the intersection approaches for all three alternatives in the 2026 AM and PM peak hours. The longest calculated vehicle queue is on the eastbound approach of Old Maryville Pike at Maryville Pike during the PM peak hour. This approach’s PM peak hour vehicle queue is shown for all three alternatives around 150 feet. This length would translate to six passenger vehicles, assuming 25 feet per vehicle. It should be noted that these longer vehicle queues for the eastbound approach of Old Maryville Pike at Maryville Pike were obtained by assuming that this approach operates with one lane even though it was often observed operating with dual occurring left and right turns due to its generous pavement width.

TABLE 5a
VEHICLE QUEUE SUMMARY -
PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT - Alternative #1




INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	SIMTRAFFIC 95 th PERCENTILE QUEUE LENGTH (ft)	
			AM PEAK HOUR	PM PEAK HOUR
Maryville Pike (SB & NB) at Old Maryville Pike (EB)	 Unsignalized	Northbound Left/Thru	76	87
		Eastbound Left/Right	107	150
Maryville Pike (SB & NB) at Crenshaw Road (WB)	 Unsignalized	Westbound Left/Right	36	38
		Southbound Left/Thru	48	51
Maryville Pike (SB & NB) at Proposed Entrance (WB)	 Unsignalized	Westbound Left/Right	36	37
		Southbound Left/Thru	22	52

TABLE 5b
VEHICLE QUEUE SUMMARY -
PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT - Alternative #2





INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	SIMTRAFFIC 95 th PERCENTILE QUEUE LENGTH (ft)	
			AM PEAK HOUR	PM PEAK HOUR
Maryville Pike (SB & NB) at Old Maryville Pike (EB) and Proposed Entrance (WB)	 Unsignalized	Northbound Left/Thru/Right	75	90
		Eastbound Left/Thru/Right	106	151
		Westbound Left/Thru/Right	37	38
		Southbound Left/Thru/Right	11	17
Maryville Pike (SB & NB) at Crenshaw Road (WB)	 Unsignalized	Westbound Left/Right	37	30
		Southbound Left/hruRight	57	54

TABLE 5c
VEHICLE QUEUE SUMMARY -
PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT - Alternative #3

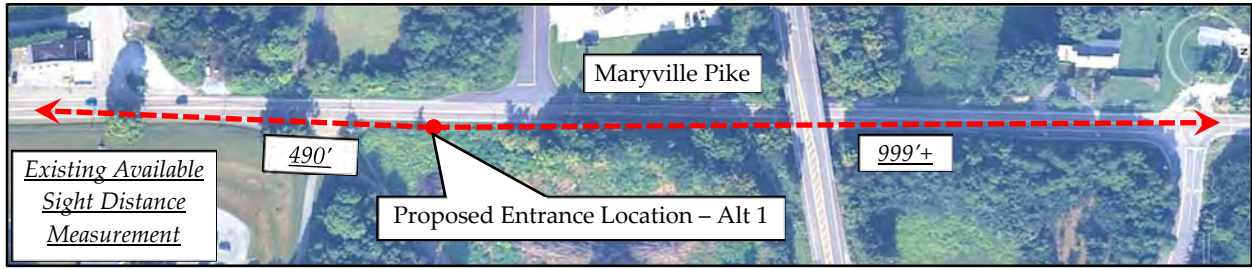
INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	SIMTRAFFIC 95 th PERCENTILE QUEUE LENGTH (ft)	
			AM PEAK HOUR	PM PEAK HOUR
Maryville Pike (SB & NB) at Old Maryville Pike (EB)	 Unsignalized	Northbound Left/Thru	75	100
		Eastbound Left/Right	106	144
Maryville Pike (SB & NB) at Crenshaw Road (WB)	 Unsignalized	Westbound Left/Right	39	38
		Southbound Left/Thru	55	71

o **EVALUATION OF SIGHT DISTANCE**

With a posted speed limit of 45 mph on Maryville Pike, with two lanes, the required intersection sight distance (ISD) is 500 feet for left turns exiting the development site. This value is calculated based on AASHTO’s (American Association of State Highway Transportation Officials) and TDOT’s guidance. This distance is required for a motorist to safely exit to the left onto Maryville Pike from either of the two Proposed Entrance locations presented in this review as Alternative #1 or #2. The ISD for a right-turn movement from either Proposed Entrance location on Maryville Pike is 430 feet.

Knox County maintains Crenshaw Road and has a posted speed limit of 30 mph. Based on Knox County’s policy of requiring 10 feet of sight distance per 1-mph of speed, the required intersection sight distance is 300 feet. This distance is required for a motorist to exit safely to the left and right at the Proposed Entrance on Crenshaw Road, presented in this review as Alternative #3.

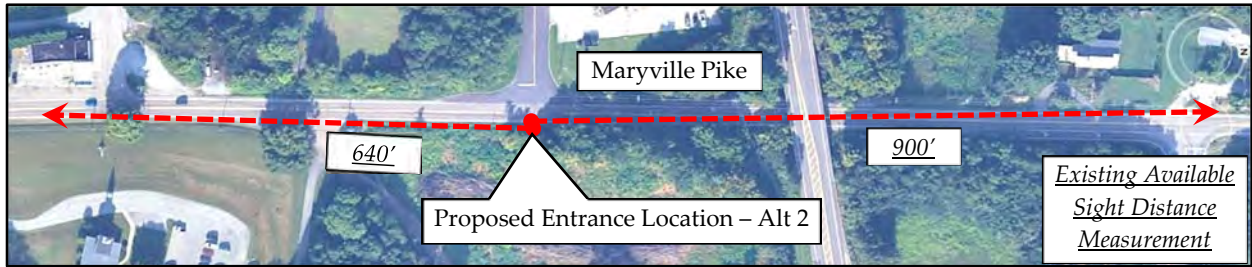
Visual observations of the sight distances at the three potential Proposed Entrance locations were undertaken using a Nikon Laser Rangefinder. Images of the existing sight distance at the three Proposed Entrance locations are labeled below with the required ISD and rangefinder-measured sight distances.



View of Sight Distance on Maryville Pike at the Proposed Entrance Location – Alt 1 (Looking South)



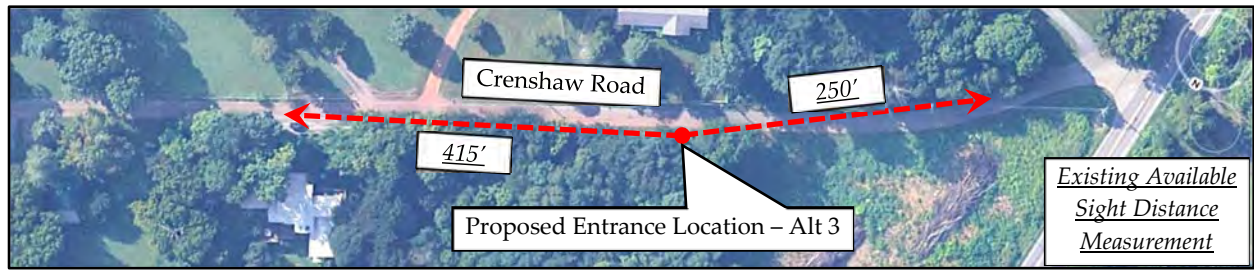
View of Sight Distance on Maryville Pike at the Proposed Entrance Location – Alt 1 (Looking North)



View of Sight Distance on Maryville Pike at the Proposed Entrance Location – Alt 2 (Looking South)



View of Sight Distance on Maryville Pike at the Proposed Entrance Location – Alt 2 (Looking North)



View of Sight Distance on Crenshaw Road at the Proposed Entrance Location - Alt 3 (Looking East)



View of Sight Distance on Crenshaw Road at the Proposed Entrance Location - Alt 3 (Looking West)

○ **EVALUATION OF TURN LANE WARRANTS**

The need for separate left and right-turn lanes at the Proposed Entrance locations on Maryville Pike for Alternatives #1 and #2 was evaluated in the projected 2026 conditions due to the large opposing volumes on this roadway.

The criteria used for the turn lane evaluations at the Proposed Entrance locations on Maryville Pike was based on TDOT's "Highway System Access Manual" since it is located on a State Route. The evaluation was based on the posted speed limit of 45 mph on Maryville Pike. This design policy relates vehicle volume thresholds based on prevailing speeds for two- and four-lane roadways.

According to TDOT's guidelines and based on the projected 2026 peak hour traffic volumes, the warrant threshold for a southbound separate left-turn lane on Maryville Pike at the Proposed Entrance for Alternative #1 would be met in the PM peak hour, but not the AM peak hour. Warrants for a separate northbound right-turn lane on Maryville Pike would not be met in the AM or PM peak hour for Alternative #1.

The Proposed Entrance for Alternative #2 would not meet warrant thresholds for a southbound separate left-turn or northbound right-turn lane in the AM or PM peak hour. The worksheets for these evaluations are provided in the Appendix.

CONCLUSIONS & RECOMMENDATIONS

The following is a summary discussion of the results of each potential alternative Proposed Entrance location for the proposed 32-unit residential development at the corner of Maryville Pike at Crenshaw Road.

Alternative #1, Proposed Entrance at Maryville Pike between Old Maryville Pike at Crenshaw Road: The results of this alternative are the following:

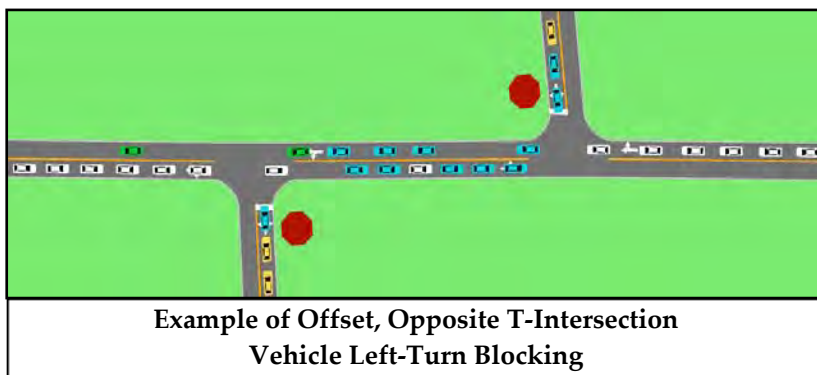
Level of Service Calculations: The results for this alternative were reasonable, with average calculated vehicle delays for the t-intersections of Maryville Pike at Old Maryville Pike, Maryville Pike at Crenshaw Road, and Maryville Pike at the Proposed Entrance. However, the eastbound approach of Old Maryville Pike at Maryville Pike is calculated at LOS E in the 2026 PM peak hour.

Vehicle Queues: The results for this alternative were reasonable for all approaches at the studied intersections. The worst-performing approach was the eastbound approach of Old Maryville Pike at Maryville Pike, with a 95th percentile vehicle queue of 150 feet in the PM peak hour, which would translate to six-passenger vehicles.

There would be limited distance for vehicle queue storage on Maryville Pike between this Proposed Entrance location and Old Maryville Pike and Crenshaw Road. From centerline to centerline, there is only 300 feet of separation between Old Maryville Pike and Crenshaw Road at Maryville Pike. The Proposed Entrance location would need to be mid-way, 150 feet from each existing street.

The northbound and southbound left-turning movements on Maryville Pike to Old Maryville Pike and Crenshaw Road are calculated to have a 95th percentile vehicle queue of 87 feet and 52 feet, respectively, in the 2026 PM peak hour. While reasonable and within the constraints of a mid-way point of 150 feet in each direction, the limited distance between three successive intersections could be an issue. As observed during the existing traffic count, a brief vehicle gridlock occurred on Maryville Pike when motorists were attempting to turn left onto the opposite, offset approaches of Old Maryville Pike and Crenshaw Road. This gridlock occurred due to the relative closeness of Old Maryville Pike and Crenshaw Road, with the left-turning motorists at each intersection being blocked by the large thru movements in each direction on Maryville Pike. The Synchro software image below illustrates this gridlock potential due to

nearby opposite and offset t-intersections. Adding a Proposed Entrance between Old Maryville Pike and Crenshaw Road could aggravate this issue or induce it to occur more often.



Sight Distance: The sight distance at this Proposed Entrance location on Maryville Pike between Old Maryville Pike and Crenshaw Road was visually estimated to be adequate to the north. However, to the south, the sight distance is reduced due to a vertical crest curve on Maryville Pike at the intersection with Topside Road. Due to this restriction, an advisory speed plaque of 40 mph is posted on Maryville Pike in both directions below the Offset Side Road Warning Signs (W2-7) in advance of Crenshaw Road and Topside Road.

Turn Lane Warrants: For Alternative #1, the Proposed Entrance would meet a warrant for a southbound separate left-turn lane in the 2026 PM peak hour. However, due to the limited space on Maryville Pike between Old Maryville Pike and the Proposed Entrance, constructing a separate left-turn lane with appropriate lengths for the bay taper, deceleration distance, and storage length would be likely unachievable.

Other Issues: TDOT has published standard corner clearance requirements for entrance driveways. In TDOT's Manual for Constructing Driveway Entrances on State Highways, for an entrance driveway accessing a Minor Arterial roadway, the minimum clearance from Crenshaw Road and Old Maryville Pike (Local Streets) would be 100 feet. This 100-foot distance would be measured from the right-of-way lines of Old Maryville Pike and Crenshaw Road to the location of the pavement edge for the Proposed Entrance. Due to the limited distance between Old Maryville Pike and Crenshaw Road, locating a Proposed Entrance between the two while meeting TDOT's clearance standard will likely prove to be difficult. This standard would require further investigation of property and right-of-way lines to determine the feasibility. The difficulty of meeting this standard is increased due to the y-shaped configuration of Crenshaw Road's intersection with Maryville Pike.

Conclusions: Due to the potential of vehicle blocking, the minimal existing distance between Old Maryville Pike and Crenshaw Road, and the complication of meeting TDOT's corner clearance standards, Alternative #1 should be considered the least desirable alternative

Alternative #2, Proposed Entrance at Existing Intersection of Old Maryville Pike at Maryville Pike: The results of this alternative are the following:

Level of Service Calculations: The results for this alternative were reasonable, with average calculated vehicle delays for the intersections of Maryville Pike at Old Maryville Pike and the Proposed Entrance and Maryville Pike at Crenshaw Road. However, the eastbound approach of Old Maryville Pike at Maryville Pike for this alternative is calculated at LOS F in the 2026 PM peak hour.

Vehicle Queues: The results for this alternative were reasonable for all approaches at the studied intersections. The worst-performing approach was the eastbound approach of Old Maryville Pike at Maryville Pike, with a 95th percentile vehicle queue of 151 feet in the PM peak hour, which would translate to six-passenger vehicles.

The longest calculated vehicle queue for exiting traffic from the proposed development at the Proposed Entrance is calculated to be 38 feet in the PM peak hour, slightly less than two passenger cars.

Sight Distance: The sight distance at this Proposed Entrance location on Maryville Pike at Old Maryville Pike was visually estimated to be adequate to the north and south. Future motorists exiting the proposed residential development at this location are not expected to be impacted due to issues with sight distance. However, vegetation along the road frontage would need to be removed and maintained to meet the sight distance requirements.

Turn Lane Warrants: For Alternative #2, the Proposed Entrance would not meet warrants for separate left or right-turn lanes on Maryville Pike in the 2026 AM and PM peak hour.

Other Issues: None identified.

Conclusions: The eastbound approach of Old Maryville Pike at Maryville Pike currently operates with high vehicle delays, particularly in the PM peak hour, and is projected to operate with high delays in the future, even without the proposed development. Most vehicles on this approach

are right turns towards the south on Maryville Pike. This approach only has a single lane but is wide enough to allow side-by-side passenger cars to simultaneously attempt to turn left and right, especially during peak periods. If Alternative #2 is chosen, it is highly recommended that the eastbound approach of Old Maryville Pike be re-configured with a separate left/thru-lane and a separate right-turn lane due to the current and projected high vehicle delays and to accommodate the higher volume right turn movements. If this alternative is chosen, the right-turn lane should be the continuation of the Old Maryville Pike’s approach to Maryville Pike, and a left/thru lane should be constructed with a minimum of 75 feet of vehicle storage. Alternative #2 would be a better option than Alternative #1, but adding a 4th leg will increase overall intersection vehicle delays. Adding a lane to this approach would be assisted by its generous width but would require additional pavement, curb relocations, and stormwater (catch basin) modifications.

The results of adding an eastbound lane on Old Maryville Pike at the intersection of Maryville Pike and the Proposed Entrance are provided in the following tables. Table 6a shows the vehicle delay/LOS results, and Table 6b shows the 95th percentile vehicle queue results. While the results show that the recommended separate eastbound left/thru lane on Old Maryville Pike will operate with high vehicle delays in the PM peak hour, the 95th percentile vehicle queue will be 63 feet and will be contained within the recommended storage length of 75 feet. With a separate lane provided for right turn movements towards the south, the majority of traffic on this approach will operate with fewer restrictions due to separating the left and thru movements into an additional, separate lane.

TABLE 6a
2026 INTERSECTION CAPACITY ANALYSIS RESULTS -
PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT - Alternative #2 with Extra EB Lane

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	AM PEAK			PM PEAK		
			LOS ^a	DELAY ^b (seconds)	v/c ^c	LOS ^a	DELAY ^b (seconds)	v/c ^c
Maryville Pike (SB & NB) at Old Maryville Pike (EB) and Proposed Entrance (WB)		Northbound Left	A	8.3	0.100	A	9.4	0.151
		Eastbound Left/Thru	D	27.0	0.289	F	62.0	0.537
		Eastbound Right	B	11.5	0.271	C	17.6	0.473
		Westbound Left/Thru/Right	C	17.8	0.056	D	27.8	0.090
		Southbound Left	A	8.1	0.001	A	8.2	0.002

Note: All analyses were calculated in Synchro 12 software and reported with HCM 7th Edition methodology

^a Level of Service, ^b Average Delay (sec/vehicle), ^c Volume-to-Capacity Ratio

TABLE 6b
VEHICLE QUEUE SUMMARY -
PROJECTED TRAFFIC CONDITIONS WITH THE PROJECT - Alternative #2 with Extra EB Lane

INTERSECTION	TRAFFIC CONTROL	APPROACH/ MOVEMENT	SIMTRAFFIC 95 th PERCENTILE QUEUE LENGTH (#)	
			AM PEAK HOUR	PM PEAK HOUR
Maryville Pike (SB & NB) at Old Maryville Pike (EB) and Proposed Entrance (WB)	 Unsignalized	Northbound Left/Thru/Right	62	73
		Eastbound Left/Thru	52	63
		Eastbound Right	75	94
		Westbound Left/Thru/Right	37	39
		Southbound Left/Thru/Right	9	18

Alternative #3, Proposed Entrance at Crenshaw Road: The results of this alternative are the following:

Level of Service Calculations: The results for this alternative were reasonable, with average calculated vehicle delays for the t-intersections of Maryville Pike at Old Maryville Pike and Maryville Pike at Crenshaw Road. Based on the analyses, Alternative #3 (and Alternative #1) is calculated to have the least impact on the eastbound approach of Old Maryville Pike at Maryville Pike, which is already in the current conditions operating with high vehicle delays in the PM peak hour. The vehicle delay/LOS calculations at the Proposed Entrance on Crenshaw Road were not calculated due to low thru volumes on Crenshaw Road, and the intersection is expected to have minimal vehicle delays.

Vehicle Queues: The results for this alternative were reasonable for all approaches at the studied intersections on Maryville Pike. The worst performing approach was the eastbound approach of Old Maryville Pike at Maryville Pike, with a 95th percentile vehicle queue of 144 feet in the PM peak hour, which would translate to just under six passenger vehicles. Vehicle queues were not calculated at the Proposed Entrance location on Crenshaw Road due to, once again, the low thru volume present on Crenshaw Road. No vehicle queues would be expected on Crenshaw Road, and the Proposed Entrance approach could be expected to be at or less than one vehicle.

Sight Distance: The sight distance at this Proposed Entrance location on Crenshaw Road was visually estimated to be adequate to the east and west if vegetation was removed, including a large hackberry tree adjacent to the road. Vegetation along the road frontage would need to be removed and maintained to meet the sight distance requirements. In particular, in addition to the vegetation on the north side of Crenshaw Road along the development property's road frontage, additional vegetation on the south and west of this Proposed Entrance location must be removed and maintained. This vegetation is on the inside curve near an existing utility pole. If this vegetation were controlled, sight distance to the west would be available from the Proposed Entrance on Crenshaw Road up to Old Maryville Pike.



Other Issues: Locating the Proposed Entrance on Crenshaw Road will induce more travel on Crenshaw Road, which is not desired by the nearby residents. However, this residential development will generate minimal traffic, with 19 trips calculated during the AM peak hour and 32 during the PM peak hour. This roadway is currently used as a cut-thru between Maryville Pike and W Governor John Sevier Highway and experiences a lot of traffic outside of what would be expected based on the number of residences along Crenshaw Road (and Ottinger Drive – a dead-end street to the south and off Crenshaw Road). As tabulated in the traffic counts on Crenshaw Road at Maryville Pike, around 100 vehicles were recorded heading east on Crenshaw Road during the AM and PM peak hours, and around 20 – 30 vehicles heading west.

Conclusions: It is understood this location would be the least desired by the surrounding and nearby property owners along Crenshaw Road. However, from a transportation engineering perspective, Alternative #3 would be the best option due to its reduced impact on the existing intersections along Maryville Pike, especially for Old Maryville Pike's eastbound approach, which currently suffers considerable vehicle delays, particularly in the PM peak hour. The required sight distance will be achievable with vegetation removal along Crenshaw Road, and vehicle queues will remain reasonable at the existing intersections along Maryville Pike. Overall, the trips generated by the proposed residential development are expected to be minimal and will be dwarfed by the number of vehicles already traveling on Crenshaw Road due to its attractive connection between W Governor John Sevier Highway and Maryville Pike.

APPENDIX

TRAFFIC COUNT DATA

Major Street: Maryville Pike (SB and NB)
 Minor Street: Old Maryville Pike (EB)
 Traffic Control: Stop Sign on Minor Street

10/2/2024 (Wednesday)
 Morning: Foggy / Afternoon: Mostly Sunny
 Conducted by: Ajax Engineering

TIME BEGIN	Maryville Pike		Maryville Pike		Old Maryville Pike		VEHICLE TOTAL	PEAK HOUR
	SOUTHBOUND		NORTHBOUND		EASTBOUND			
	THRU	RT	LT	THRU	LT	RT		
7:00 AM	30	12	23	67	6	31	169	
7:15 AM	46	14	29	63	5	42	199	7:15 AM - 8:15 AM
7:30 AM	63	16	22	96	14	37	248	
7:45 AM	57	12	24	82	15	41	231	
8:00 AM	51	12	25	71	11	49	219	
8:15 AM	39	9	11	65	8	40	172	
8:30 AM	33	5	18	40	9	28	133	
8:45 AM	26	6	15	50	9	35	141	
TOTAL	345	86	167	534	77	303	1512	
2:00 PM	34	13	19	39	8	25	138	
2:15 PM	45	13	14	43	13	34	162	
2:30 PM	51	12	26	66	12	41	208	
2:45 PM	46	13	8	49	11	36	163	
3:00 PM	58	7	11	33	15	31	155	
3:15 PM	61	15	22	53	7	35	193	
3:30 PM	43	10	16	31	11	31	142	
3:45 PM	67	10	23	87	13	40	240	
4:00 PM	55	6	10	40	9	42	162	
4:15 PM	21	11	11	53	6	16	118	
4:30 PM	81	5	35	91	7	61	280	4:30 PM - 5:30 PM
4:45 PM	85	12	19	73	11	54	254	
5:00 PM	93	7	23	104	13	54	294	
5:15 PM	102	14	17	67	13	48	261	
5:30 PM	92	14	15	76	17	42	256	
5:45 PM	68	10	19	75	18	56	246	
TOTAL	1002	172	288	980	184	646	3272	

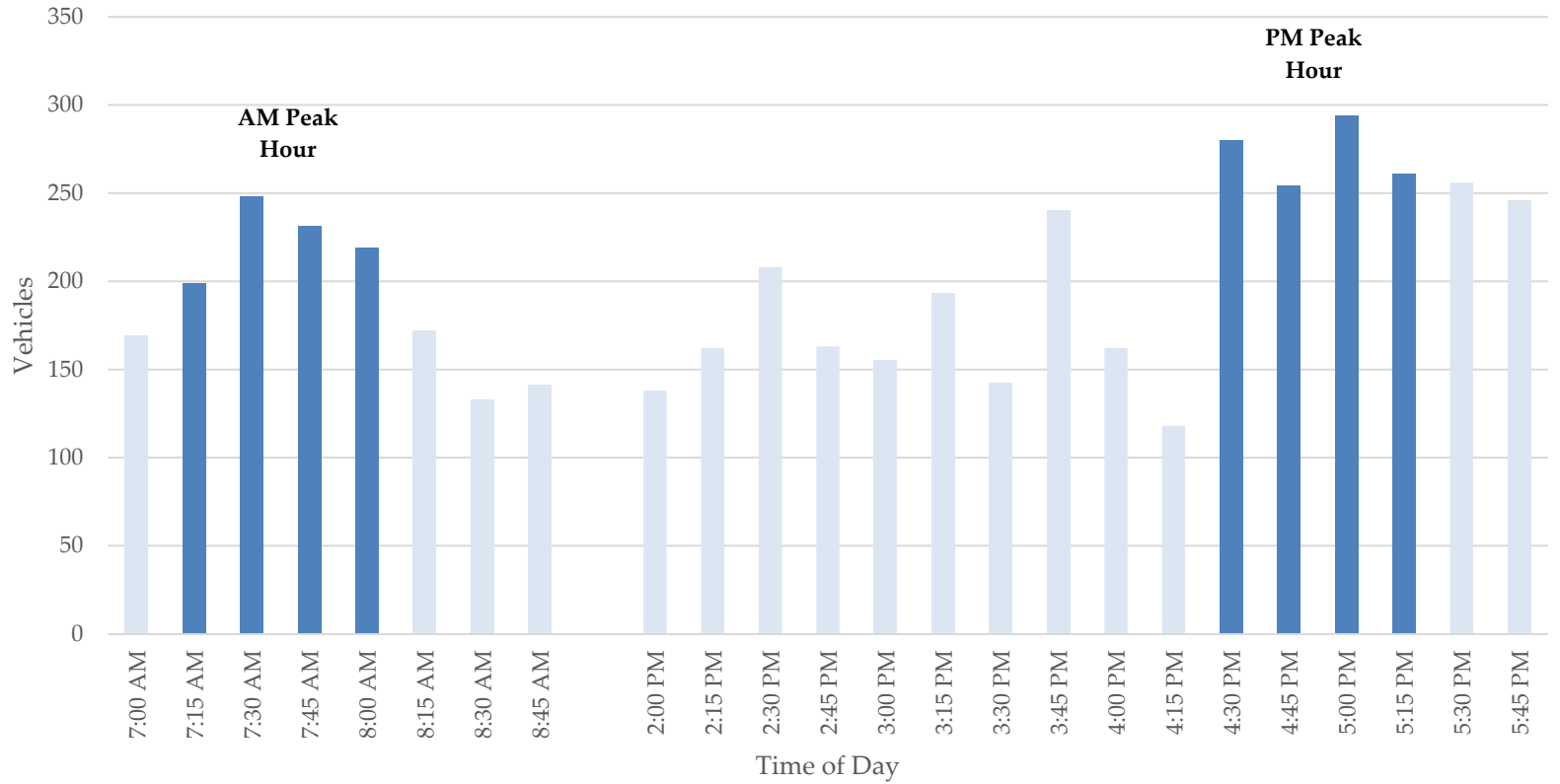
2024 AM Peak Hour **7:15 AM - 8:15 AM**

TIME BEGIN	Maryville Pike		Maryville Pike		Old Maryville Pike	
	SOUTHBOUND		NORTHBOUND		EASTBOUND	
	THRU	RT	LT	THRU	LT	RT
7:15 AM	46	14	29	63	5	42
7:30 AM	63	16	22	96	14	37
7:45 AM	57	12	24	82	15	41
8:00 AM	51	12	25	71	11	49
TOTAL	217	54	100	312	45	169
PHF	0.86	0.84	0.86	0.81	0.75	0.86
TRUCK %	1.4%	1.9%	6.0%	1.6%	0.0%	2.4%

2024 PM Peak Hour **4:30 PM - 5:30 PM**

TIME BEGIN	Maryville Pike		Maryville Pike		Old Maryville Pike	
	SOUTHBOUND		NORTHBOUND		EASTBOUND	
	THRU	RT	LT	THRU	LT	RT
4:30 PM	81	5	35	91	7	61
4:45 PM	85	12	19	73	11	54
5:00 PM	93	7	23	104	13	54
5:15 PM	102	14	17	67	13	48
TOTAL	361	38	94	335	44	217
PHF	0.88	0.68	0.67	0.81	0.85	0.89
TRUCK %	0.8%	5.3%	4.3%	0.6%	0.0%	0.9%

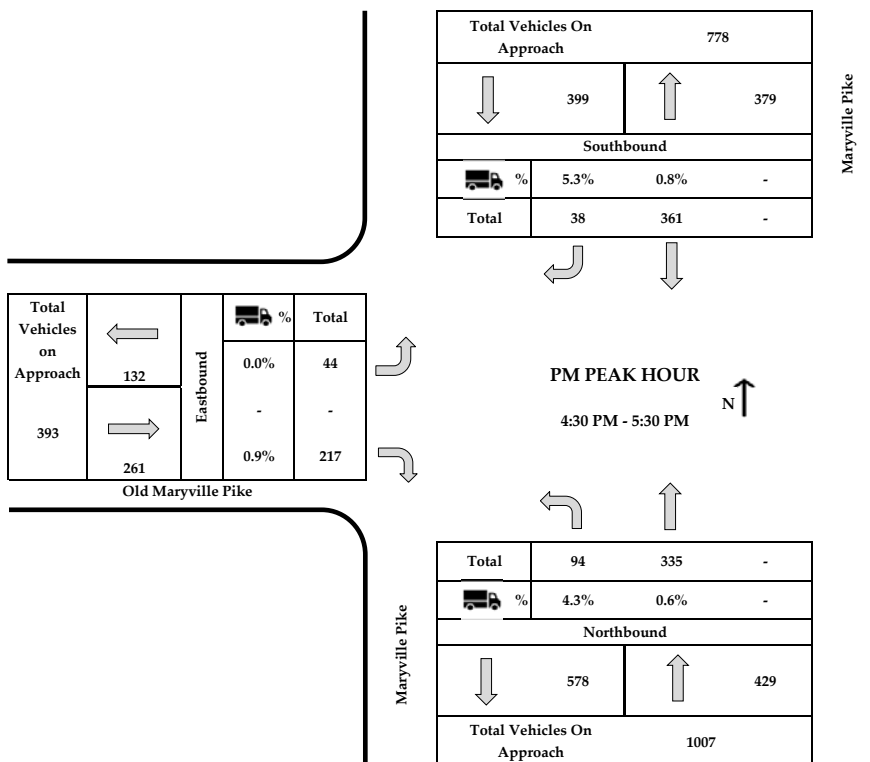
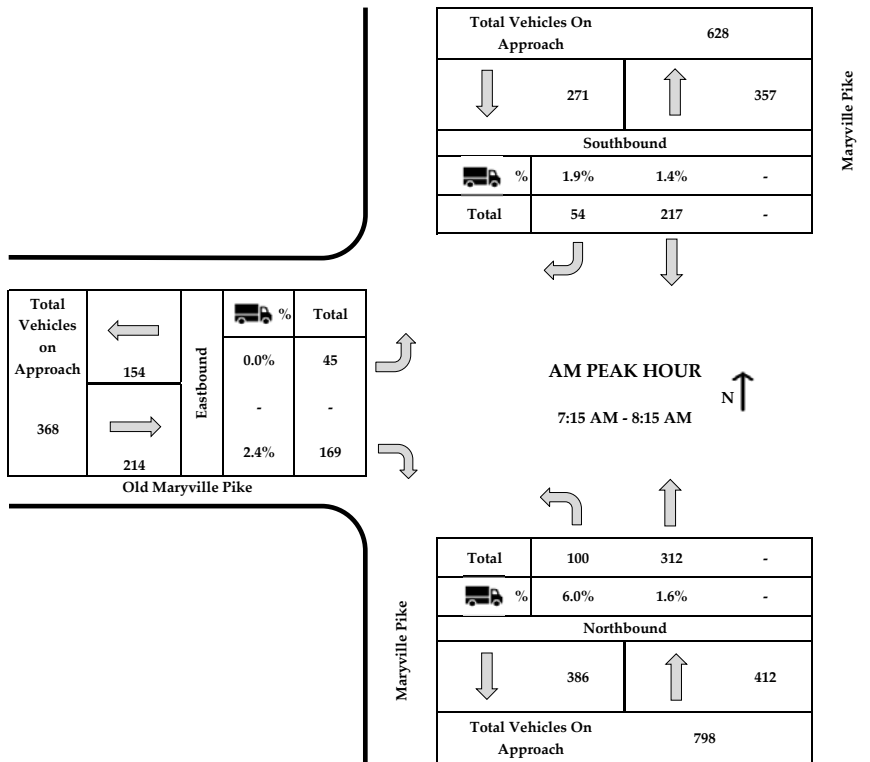
Maryville Pike at Old Maryville Pike
Intersection Traffic Count Totals
10/2/2024



PEAK HOUR DATA

Major Street: Maryville Pike (SB and NB)
 Minor Street: Old Maryville Pike (EB)
 Traffic Control: Stop Sign on Minor Street

10/2/2024 (Wednesday)
 Morning: Foggy / Afternoon: Mostly Sunny
 Conducted by: Ajax Engineering



TRAFFIC COUNT DATA

Major Street: Maryville Pike (SB and NB)
 Minor Street: Crenshaw Road (WB)
 Traffic Control: Stop Sign on Minor Street

10/2/2024 (Wednesday)
 Morning: Foggy / Afternoon: Mostly Sunny
 Conducted by: Ajax Engineering

TIME BEGIN	Maryville Pike		Crenshaw Road		Maryville Pike		VEHICLE TOTAL	PEAK HOUR
	SOUTHBOUND		WESTBOUND		NORTHBOUND			
	LT	THRU	LT	RT	THRU	RT		
7:00 AM	2	59	4	3	87	13	168	
7:15 AM	6	82	10	1	91	22	212	7:15 AM - 8:15 AM
7:30 AM	5	95	3	2	116	22	243	
7:45 AM	2	96	6	0	106	25	235	
8:00 AM	3	97	2	3	93	18	216	
8:15 AM	0	79	4	2	74	20	179	
8:30 AM	2	59	1	2	56	10	130	
8:45 AM	1	60	1	1	64	5	132	
TOTAL	21	627	31	14	687	135	1515	
2:00 PM	6	53	5	0	58	17	139	
2:15 PM	3	76	2	0	57	16	154	
2:30 PM	1	91	6	1	91	18	208	
2:45 PM	6	76	7	2	55	12	158	
3:00 PM	6	83	4	1	43	15	152	
3:15 PM	1	95	4	2	73	20	195	
3:30 PM	2	72	1	3	44	9	131	
3:45 PM	5	102	7	3	107	32	256	
4:00 PM	4	93	3	1	49	17	167	
4:15 PM	3	34	4	1	63	19	124	
4:30 PM	2	140	4	2	124	18	290	4:30 PM - 5:30 PM
4:45 PM	5	134	7	1	91	16	254	
5:00 PM	2	145	3	0	127	33	310	
5:15 PM	1	149	1	1	83	22	257	
5:30 PM	0	134	4	0	91	13	242	
5:45 PM	1	123	8	0	94	24	250	
TOTAL	48	1600	70	18	1250	301	3287	

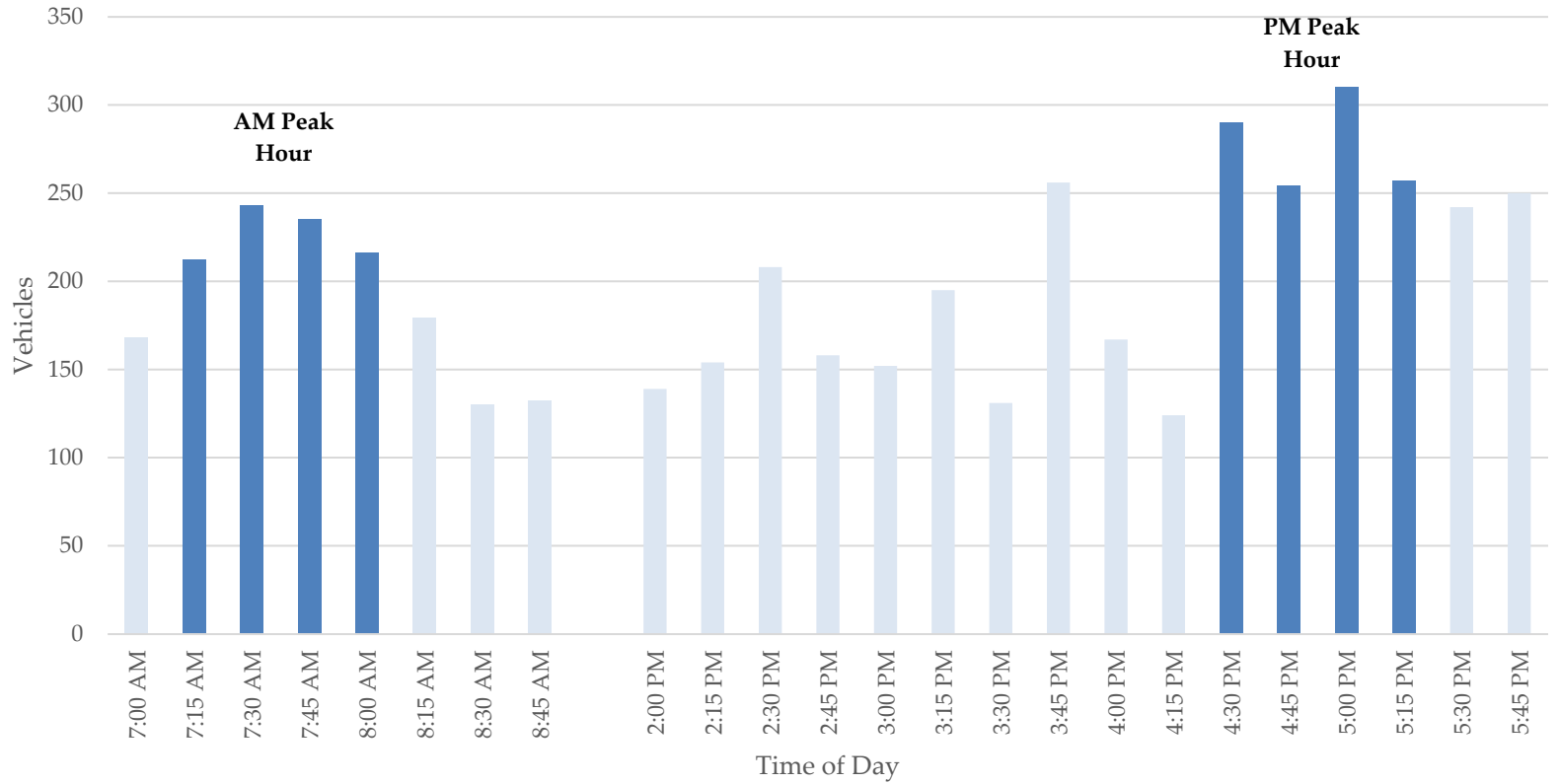
2024 AM Peak Hour **7:15 AM - 8:15 AM**

TIME BEGIN	Maryville Pike		Crenshaw Road		Maryville Pike	
	SOUTHBOUND		WESTBOUND		NORTHBOUND	
	LT	THRU	LT	RT	THRU	RT
7:15 AM	6	82	10	1	91	22
7:30 AM	5	95	3	2	116	22
7:45 AM	2	96	6	0	106	25
8:00 AM	3	97	2	3	93	18
TOTAL	16	370	21	6	406	87
PHF	0.67	0.95	0.53	0.50	0.88	0.87
TRUCK %	0.0%	1.4%	0.0%	0.0%	1.6%	0.0%

2024 PM Peak Hour **4:30 PM - 5:30 PM**

TIME BEGIN	Maryville Pike		Crenshaw Road		Maryville Pike	
	SOUTHBOUND		WESTBOUND		NORTHBOUND	
	LT	THRU	LT	RT	THRU	RT
4:30 PM	2	140	4	2	124	18
4:45 PM	5	134	7	1	91	16
5:00 PM	2	145	3	0	127	33
5:15 PM	1	149	1	1	83	22
TOTAL	10	568	15	4	425	89
PHF	0.50	0.95	0.54	0.50	0.84	0.67
TRUCK %	0.0%	0.8%	0.0%	0.0%	0.6%	1.1%

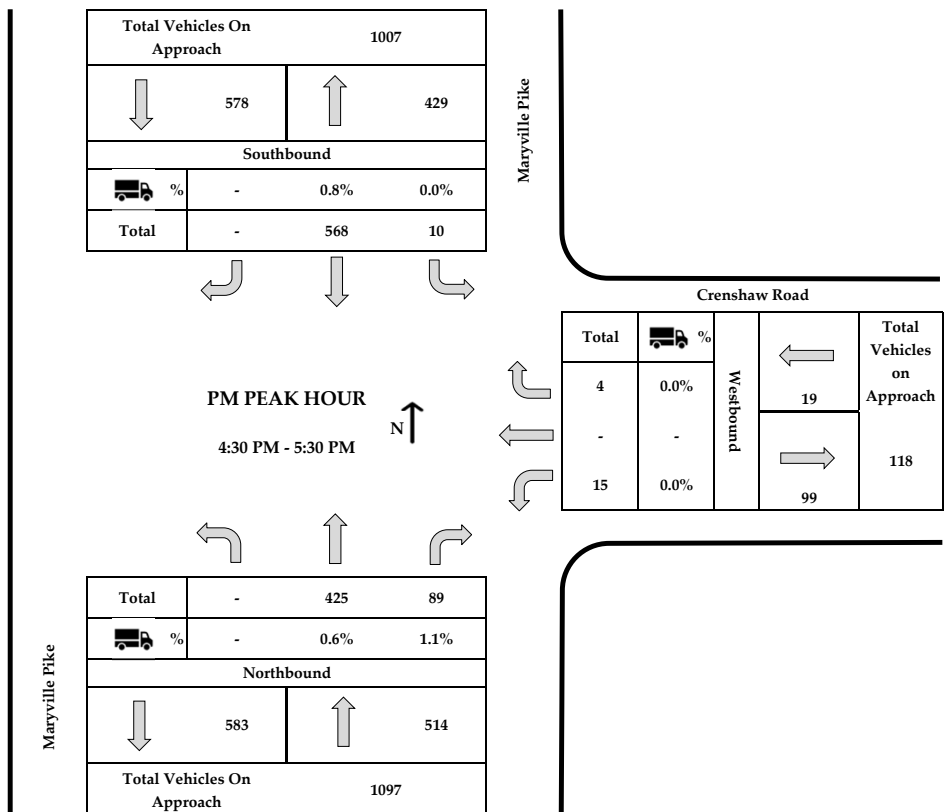
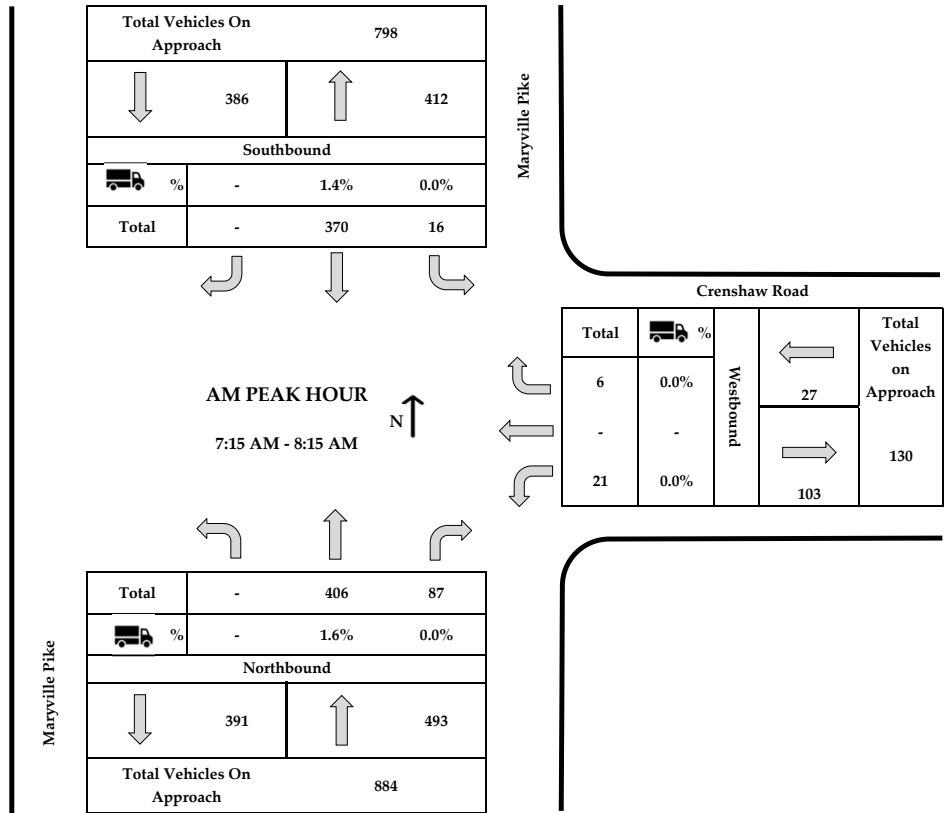
Maryville Pike at Crenshaw Road
Intersection Traffic Count Totals
10/2/2024



PEAK HOUR DATA

Major Street: Maryville Pike (SB and NB)
 Minor Street: Crenshaw Road (WB)
 Traffic Control: Stop Sign on Minor Street

10/2/2024 (Wednesday)
 Morning: Foggy / Afternoon: Mostly Sunny
 Conducted by: Ajax Engineering



HCM 7th TWSC
 4: Maryville Pike & Old Maryville Pike

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	45	169	100	312	217	54
Future Vol, veh/h	45	169	100	312	217	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-3	3	-
Peak Hour Factor	75	86	86	81	86	84
Heavy Vehicles, %	0	2	6	2	1	2
Mvmt Flow	60	197	116	385	252	64

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	902	284	317	0	0
Stage 1	284	-	-	-	-
Stage 2	618	-	-	-	-
Critical Hdwy	6	6.02	4.16	-	-
Critical Hdwy Stg 1	5	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-
Follow-up Hdwy	3.5	3.318	2.254	-	-
Pot Cap-1 Maneuver	343	767	1221	-	-
Stage 1	793	-	-	-	-
Stage 2	580	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	302	767	1221	-	-
Mov Cap-2 Maneuver	302	-	-	-	-
Stage 1	697	-	-	-	-
Stage 2	580	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	16.61	1.91	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	417	-	564	-	-
HCM Lane V/C Ratio	0.095	-	0.455	-	-
HCM Control Delay (s/veh)	8.3	0	16.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.4	-	-

HCM 7th TWSC
6: Maryville Pike & Crenshaw Road

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	6	406	87	16	370
Future Vol, veh/h	21	6	406	87	16	370
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	-3	-	-	3
Peak Hour Factor	53	50	88	87	67	95
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	40	12	461	100	24	389

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	949	511	0	0	561	0
Stage 1	511	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.1	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	277	558	-	-	1020	-
Stage 1	589	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	268	558	-	-	1020	-
Mov Cap-2 Maneuver	268	-	-	-	-	-
Stage 1	589	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v19.18		0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	305	104
HCM Lane V/C Ratio	-	-	0.169	0.023
HCM Control Delay (s/veh)	-	-	19.2	8.6
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1

HCM 7th TWSC
 4: Maryville Pike & Old Maryville Pike

Intersection						
Int Delay, s/veh	8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	44	217	94	335	361	38
Future Vol, veh/h	44	217	94	335	361	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-3	3	-
Peak Hour Factor	85	89	67	81	68	88
Heavy Vehicles, %	0	1	4	1	1	5
Mvmt Flow	52	244	140	414	531	43

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1247	552	574	0	-	0
Stage 1	552	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Critical Hdwy	6	6.01	4.14	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.236	-	-	-
Pot Cap-1 Maneuver	222	552	989	-	-	-
Stage 1	617	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	181	552	989	-	-	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	504	-	-	-	-	-
Stage 2	539	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	34.16	2.34	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	456	-	406	-	-
HCM Lane V/C Ratio	0.142	-	0.727	-	-
HCM Control Delay (s/veh)	9.2	0	34.2	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.5	-	5.7	-	-

HCM 7th TWSC
 6: Maryville Pike & Crenshaw Road

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		T			T
Traffic Vol, veh/h	15	4	425	89	10	568
Future Vol, veh/h	15	4	425	89	10	568
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	-3	-	-	3
Peak Hour Factor	54	50	84	67	50	95
Heavy Vehicles, %	0	0	1	1	0	1
Mvmt Flow	28	8	506	133	20	598

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1210	572	0	0	639	0
Stage 1	572	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.1	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	190	515	-	-	955	-
Stage 1	551	-	-	-	-	-
Stage 2	512	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	184	515	-	-	955	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	551	-	-	-	-	-
Stage 2	496	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v25.04		0	0.29
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	215	58
HCM Lane V/C Ratio	-	-	0.166	0.021
HCM Control Delay (s/veh)	-	-	25	8.9
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1

HCM 7th TWSC
 4: Maryville Pike & Old Maryville Pike

Intersection						
Int Delay, s/veh	5.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	47	176	104	324	226	56
Future Vol, veh/h	47	176	104	324	226	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-3	3	-
Peak Hour Factor	75	86	86	81	86	84
Heavy Vehicles, %	0	2	6	2	1	2
Mvmt Flow	63	205	121	400	263	67

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	938	296	329	0	-	0
Stage 1	296	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Critical Hdwy	6	6.02	4.16	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	328	756	1208	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	286	756	1208	-	-	-
Mov Cap-2 Maneuver	286	-	-	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	567	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v17.77		1.93	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	418	-	546	-	-
HCM Lane V/C Ratio	0.1	-	0.49	-	-
HCM Control Delay (s/veh)	8.3	0	17.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.3	-	2.7	-	-

HCM 7th TWSC
 6: Maryville Pike & Crenshaw Road

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	22	6	422	90	17	385
Future Vol, veh/h	22	6	422	90	17	385
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	-3	-	-	3
Peak Hour Factor	53	50	88	87	67	95
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	42	12	480	103	25	405

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	987	531	0	0	583	0
Stage 1	531	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.1	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	262	544	-	-	1001	-
Stage 1	576	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	253	544	-	-	1001	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	606	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v20.35		0	0.51
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	288	106
HCM Lane V/C Ratio	-	-	0.186	0.025
HCM Control Delay (s/veh)	-	-	20.3	8.7
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1

HCM 7th TWSC
 4: Maryville Pike & Old Maryville Pike

Intersection						
Int Delay, s/veh	9.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	46	226	98	348	375	40
Future Vol, veh/h	46	226	98	348	375	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-3	3	-
Peak Hour Factor	85	89	67	81	68	88
Heavy Vehicles, %	0	1	4	1	1	5
Mvmt Flow	54	254	146	430	551	45

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1296	574	597	0	-	0
Stage 1	574	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Critical Hdwy	6	6.01	4.14	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.236	-	-	-
Pot Cap-1 Maneuver	209	537	970	-	-	-
Stage 1	605	-	-	-	-	-
Stage 2	525	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	167	537	970	-	-	-
Mov Cap-2 Maneuver	167	-	-	-	-	-
Stage 1	485	-	-	-	-	-
Stage 2	525	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	42.24	2.38	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	457	-	387	-	-
HCM Lane V/C Ratio	0.151	-	0.797	-	-
HCM Control Delay (s/veh)	9.4	0	42.2	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.5	-	6.9	-	-

HCM 7th TWSC
 6: Maryville Pike & Crenshaw Road

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		T			T
Traffic Vol, veh/h	16	4	442	93	10	591
Future Vol, veh/h	16	4	442	93	10	591
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	-3	-	-	3
Peak Hour Factor	54	50	84	67	50	95
Heavy Vehicles, %	0	0	1	1	0	1
Mvmt Flow	30	8	526	139	20	622

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1258	596	0	0	665
Stage 1	596	-	-	-	-
Stage 2	662	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.1
Critical Hdwy Stg 1	5.6	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	178	499	-	-	934
Stage 1	536	-	-	-	-
Stage 2	498	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	172	499	-	-	934
Mov Cap-2 Maneuver	172	-	-	-	-
Stage 1	536	-	-	-	-
Stage 2	482	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v27.16		0	0.28
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	200	56
HCM Lane V/C Ratio	-	-	0.188	0.021
HCM Control Delay (s/veh)	-	-	27.2	8.9
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1

HCM 7th TWSC
 4: Maryville Pike & Old Maryville Pike

Intersection						
Int Delay, s/veh	5.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	47	177	110	331	227	56
Future Vol, veh/h	47	177	110	331	227	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-3	3	-
Peak Hour Factor	75	86	86	81	86	84
Heavy Vehicles, %	0	2	6	2	1	2
Mvmt Flow	63	206	128	409	264	67

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	962	297	331	0	-	0
Stage 1	297	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Critical Hdwy	6	6.02	4.16	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	2.254	-	-	-
Pot Cap-1 Maneuver	319	755	1207	-	-	-
Stage 1	784	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	275	755	1207	-	-	-
Mov Cap-2 Maneuver	275	-	-	-	-	-
Stage 1	676	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	18.25	1.99	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	429	-	536	-	-
HCM Lane V/C Ratio	0.106	-	0.501	-	-
HCM Control Delay (s/veh)	8.3	0	18.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.4	-	2.8	-	-

HCM 7th TWSC
 6: Maryville Pike & Crenshaw Road

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	22	8	422	90	17	387
Future Vol, veh/h	22	8	422	90	17	387
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	-3	-	-	3
Peak Hour Factor	53	50	88	87	67	95
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	42	16	480	103	25	407

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	989	531	0	0	583
Stage 1	531	-	-	-	-
Stage 2	458	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.1
Critical Hdwy Stg 1	5.6	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2
Pot Cap-1 Maneuver	261	544	-	-	1001
Stage 1	576	-	-	-	-
Stage 2	625	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	253	544	-	-	1001
Mov Cap-2 Maneuver	253	-	-	-	-
Stage 1	576	-	-	-	-
Stage 2	605	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v20.03		0	0.51
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	297	106
HCM Lane V/C Ratio	-	-	0.194	0.025
HCM Control Delay (s/veh)	-	-	20	8.7
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1

HCM 7th TWSC
 8: Maryville Pike & Proposed Entrance

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	2	13	428	2	2	402
Future Vol, veh/h	2	13	428	2	2	402
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-3	-	-	3
Peak Hour Factor	90	90	81	90	90	86
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	2	14	528	2	2	467

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1001	530	0	0	531	0
Stage 1	530	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	271	553	-	-	1047	-
Stage 1	595	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	271	553	-	-	1047	-
Mov Cap-2 Maneuver	271	-	-	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	630	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	12.68	0	0.04
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	486	9
HCM Lane V/C Ratio	-	-	0.034	0.002
HCM Control Delay (s/veh)	-	-	12.7	8.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM 7th TWSC
 4: Maryville Pike & Old Maryville Pike

Intersection						
Int Delay, s/veh	10.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	46	233	102	356	378	40
Future Vol, veh/h	46	233	102	356	378	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-3	3	-
Peak Hour Factor	85	89	67	81	68	88
Heavy Vehicles, %	0	1	4	1	1	5
Mvmt Flow	54	262	152	440	556	45

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1323	579	601	0	-	0
Stage 1	579	-	-	-	-	-
Stage 2	744	-	-	-	-	-
Critical Hdwy	6	6.01	4.14	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.236	-	-	-
Pot Cap-1 Maneuver	202	534	966	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	160	534	966	-	-	-
Mov Cap-2 Maneuver	160	-	-	-	-	-
Stage 1	477	-	-	-	-	-
Stage 2	514	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	46.78	2.42	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	463	-	381	-	-
HCM Lane V/C Ratio	0.158	-	0.829	-	-
HCM Control Delay (s/veh)	9.4	0	46.8	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.6	-	7.6	-	-

HCM 7th TWSC
 6: Maryville Pike & Crenshaw Road

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		T			T
Traffic Vol, veh/h	16	9	445	93	10	593
Future Vol, veh/h	16	9	445	93	10	593
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	-3	-	-	3
Peak Hour Factor	54	50	84	67	50	95
Heavy Vehicles, %	0	0	1	1	0	1
Mvmt Flow	30	18	530	139	20	624

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1263	599	0	0	669	0
Stage 1	599	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.1	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	176	497	-	-	931	-
Stage 1	534	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	170	497	-	-	931	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	534	-	-	-	-	-
Stage 2	481	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v25.05		0	0.28
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	227	56
HCM Lane V/C Ratio	-	-	0.21	0.021
HCM Control Delay (s/veh)	-	-	25.1	9
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1

HCM 7th TWSC
 7: Maryville Pike & Proposed Entrance

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		T			T
Traffic Vol, veh/h	2	12	446	8	10	601
Future Vol, veh/h	2	12	446	8	10	601
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-3	-	-	3
Peak Hour Factor	90	90	81	90	90	68
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	2	13	551	9	11	884

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1461	555	0	0	560	0
Stage 1	555	-	-	-	-	-
Stage 2	906	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	143	535	-	-	1022	-
Stage 1	579	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	140	535	-	-	1022	-
Mov Cap-2 Maneuver	140	-	-	-	-	-
Stage 1	579	-	-	-	-	-
Stage 2	389	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	14.83	0	0.11
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	382	22
HCM Lane V/C Ratio	-	-	0.041	0.011
HCM Control Delay (s/veh)	-	-	14.8	8.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	47	3	176	2	6	7	104	324	0	1	226	56
Future Vol, veh/h	47	3	176	2	6	7	104	324	0	1	226	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	0	-	-	-3	-	-	3	-
Peak Hour Factor	75	90	86	90	90	90	86	81	90	90	86	84
Heavy Vehicles, %	0	0	2	0	0	0	6	2	0	0	1	2
Mvmt Flow	63	3	205	2	7	8	121	400	0	1	263	67

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	944	940	296	909	974	400	329	0	0	400	0	0
Stage 1	298	298	-	642	642	-	-	-	-	-	-	-
Stage 2	645	642	-	267	332	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6.02	7.1	6.5	6.2	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	5.7	5.1	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	271	295	756	258	254	654	1208	-	-	1170	-	-
Stage 1	739	693	-	466	472	-	-	-	-	-	-	-
Stage 2	499	507	-	743	648	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	227	257	756	162	221	654	1208	-	-	1170	-	-
Mov Cap-2 Maneuver	227	257	-	162	221	-	-	-	-	-	-	-
Stage 1	738	692	-	406	411	-	-	-	-	-	-	-
Stage 2	422	442	-	539	647	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	1.49	17.76	1.93	0.03
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	418	-	-	484	299	6	-	-
HCM Lane V/C Ratio	0.1	-	-	0.56	0.056	0.001	-	-
HCM Control Delay (s/veh)	8.3	0	-	21.5	17.8	8.1	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	3.4	0.2	0	-	-

HCM 7th TWSC
6: Maryville Pike & Crenshaw Road

Alternative #2

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	22	6	422	90	17	387
Future Vol, veh/h	22	6	422	90	17	387
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	-3	-	-	3
Peak Hour Factor	53	50	88	87	67	95
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	42	12	480	103	25	407

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	989	531	0	0	583	0
Stage 1	531	-	-	-	-	-
Stage 2	458	-	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.1	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	261	544	-	-	1001	-
Stage 1	576	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	253	544	-	-	1001	-
Mov Cap-2 Maneuver	253	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	605	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	20.4	0	0.51
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	287	106
HCM Lane V/C Ratio	-	-	0.186	0.025
HCM Control Delay (s/veh)	-	-	20.4	8.7
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1

Intersection												
Int Delay, s/veh	20.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	46	13	226	2	4	8	98	348	3	2	375	40
Future Vol, veh/h	46	13	226	2	4	8	98	348	3	2	375	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	0	-	-	-3	-	-	3	-
Peak Hour Factor	85	90	89	90	90	90	67	81	90	90	68	88
Heavy Vehicles, %	0	0	1	0	0	0	4	1	0	0	1	5
Mvmt Flow	54	14	254	2	4	9	146	430	3	2	551	45

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1303	1304	574	1287	1325	431	597	0	0	433	0	0
Stage 1	579	579	-	724	724	-	-	-	-	-	-	-
Stage 2	724	726	-	563	601	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6.01	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	5.7	5.1	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.309	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	160	187	537	142	157	628	970	-	-	1137	-	-
Stage 1	538	538	-	420	433	-	-	-	-	-	-	-
Stage 2	455	469	-	514	492	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	123	149	537	55	126	628	970	-	-	1137	-	-
Mov Cap-2 Maneuver	123	149	-	55	126	-	-	-	-	-	-	-
Stage 1	536	536	-	337	347	-	-	-	-	-	-	-
Stage 2	355	376	-	263	491	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v90.24		27.81	2.37	0.03
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	454	-	-	319	173	7	-
HCM Lane V/C Ratio	0.151	-	-	1.01	0.09	0.002	-
HCM Control Delay (s/veh)	9.4	0	-	90.2	27.8	8.2	0
HCM Lane LOS	A	A	-	F	D	A	A
HCM 95th %tile Q(veh)	0.5	-	-	11.2	0.3	0	-

HCM 7th TWSC
6: Maryville Pike & Crenshaw Road

Alternative #2

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		T			T
Traffic Vol, veh/h	16	4	445	93	10	593
Future Vol, veh/h	16	4	445	93	10	593
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	-3	-	-	3
Peak Hour Factor	54	50	84	67	50	95
Heavy Vehicles, %	0	0	1	1	0	1
Mvmt Flow	30	8	530	139	20	624

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1263	599	0	0	669	0
Stage 1	599	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.1	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	176	497	-	-	931	-
Stage 1	534	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	170	497	-	-	931	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	534	-	-	-	-	-
Stage 2	481	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v27.38		0	0.28
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	198	56
HCM Lane V/C Ratio	-	-	0.19	0.021
HCM Control Delay (s/veh)	-	-	27.4	9
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1

HCM 7th TWSC
4: Maryville Pike & Old Maryville Pike

Alternative #3

Intersection						
Int Delay, s/veh	5.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	47	177	109	326	227	56
Future Vol, veh/h	47	177	109	326	227	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-3	3	-
Peak Hour Factor	75	86	86	81	86	84
Heavy Vehicles, %	0	2	6	2	1	2
Mvmt Flow	63	206	127	402	264	67

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	953	297	331	0	0
Stage 1	297	-	-	-	-
Stage 2	656	-	-	-	-
Critical Hdwy	6	6.02	4.16	-	-
Critical Hdwy Stg 1	5	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-
Follow-up Hdwy	3.5	3.318	2.254	-	-
Pot Cap-1 Maneuver	322	755	1207	-	-
Stage 1	784	-	-	-	-
Stage 2	559	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	279	755	1207	-	-
Mov Cap-2 Maneuver	279	-	-	-	-
Stage 1	678	-	-	-	-
Stage 2	559	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	18.1	2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	431	-	539	-	-
HCM Lane V/C Ratio	0.105	-	0.498	-	-
HCM Control Delay (s/veh)	8.3	0	18.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.4	-	2.7	-	-

HCM 7th TWSC
6: Maryville Pike & Crenshaw Road

Alternative #3

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	24	13	422	90	19	385
Future Vol, veh/h	24	13	422	90	19	385
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	-3	-	-	3
Peak Hour Factor	53	50	88	87	67	95
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	45	26	480	103	28	405

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	993	531	0	0	583	0
Stage 1	531	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.1	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	260	544	-	-	1001	-
Stage 1	576	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	250	544	-	-	1001	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	600	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v19.95		0	0.57
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	311	118
HCM Lane V/C Ratio	-	-	0.229	0.028
HCM Control Delay (s/veh)	-	-	20	8.7
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1

HCM 7th TWSC
 4: Maryville Pike & Old Maryville Pike

Intersection						
Int Delay, s/veh	10.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	46	233	104	350	378	40
Future Vol, veh/h	46	233	104	350	378	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	-3	3	-
Peak Hour Factor	85	89	67	81	68	88
Heavy Vehicles, %	0	1	4	1	1	5
Mvmt Flow	54	262	155	432	556	45

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1321	579	601	0	-	0
Stage 1	579	-	-	-	-	-
Stage 2	743	-	-	-	-	-
Critical Hdwy	6	6.01	4.14	-	-	-
Critical Hdwy Stg 1	5	-	-	-	-	-
Critical Hdwy Stg 2	5	-	-	-	-	-
Follow-up Hdwy	3.5	3.309	2.236	-	-	-
Pot Cap-1 Maneuver	202	534	966	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	515	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	159	534	966	-	-	-
Mov Cap-2 Maneuver	159	-	-	-	-	-
Stage 1	475	-	-	-	-	-
Stage 2	515	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	46.89	2.49	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	476	-	381	-	-
HCM Lane V/C Ratio	0.161	-	0.83	-	-
HCM Control Delay (s/veh)	9.4	0	46.9	-	-
HCM Lane LOS	A	A	E	-	-
HCM 95th %tile Q(veh)	0.6	-	7.6	-	-

HCM 7th TWSC
 6: Maryville Pike & Crenshaw Road

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		TT			TT
Traffic Vol, veh/h	18	12	442	96	20	591
Future Vol, veh/h	18	12	442	96	20	591
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	1	-	-3	-	-	3
Peak Hour Factor	54	50	84	67	50	95
Heavy Vehicles, %	0	0	1	1	0	1
Mvmt Flow	33	24	526	143	40	622

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1300	598	0	0	669	0
Stage 1	598	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Critical Hdwy	6.6	6.3	-	-	4.1	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	167	498	-	-	930	-
Stage 1	535	-	-	-	-	-
Stage 2	476	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	156	498	-	-	930	-
Mov Cap-2 Maneuver	156	-	-	-	-	-
Stage 1	535	-	-	-	-	-
Stage 2	445	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v27.15		0	0.55
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	219	109
HCM Lane V/C Ratio	-	-	0.262	0.043
HCM Control Delay (s/veh)	-	-	27.2	9
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	1	0.1

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	47	3	176	2	6	7	104	324	0	1	226	56
Future Vol, veh/h	47	3	176	2	6	7	104	324	0	1	226	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	0	-	-	-3	-	-	3	-
Peak Hour Factor	75	90	86	90	90	90	86	81	90	90	86	84
Heavy Vehicles, %	0	0	2	0	0	0	6	2	0	0	1	2
Mvmt Flow	63	3	205	2	7	8	121	400	0	1	263	67

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	944	940	296	909	974	400	329	0	0	400	0	0
Stage 1	298	298	-	642	642	-	-	-	-	-	-	-
Stage 2	645	642	-	267	332	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6.02	7.1	6.5	6.2	4.16	-	-	4.1	-	-
Critical Hdwy Stg 1	5.7	5.1	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.254	-	-	2.2	-	-
Pot Cap-1 Maneuver	271	295	756	258	254	654	1208	-	-	1170	-	-
Stage 1	739	693	-	466	472	-	-	-	-	-	-	-
Stage 2	499	507	-	743	648	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	227	257	756	162	221	654	1208	-	-	1170	-	-
Mov Cap-2 Maneuver	227	257	-	162	221	-	-	-	-	-	-	-
Stage 1	738	692	-	406	411	-	-	-	-	-	-	-
Stage 2	422	442	-	539	647	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	15.3	17.76	1.93	0.03
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	418	-	-	229	756	299	6	-	-
HCM Lane V/C Ratio	0.1	-	-	0.289	0.271	0.056	0.001	-	-
HCM Control Delay (s/veh)	8.3	0	-	27	11.5	17.8	8.1	0	-
HCM Lane LOS	A	A	-	D	B	C	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	1.2	1.1	0.2	0	-	-

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Vol, veh/h	46	13	226	2	4	8	98	348	3	2	375	40
Future Vol, veh/h	46	13	226	2	4	8	98	348	3	2	375	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	75	-	0	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-2	-	-	0	-	-	-3	-	-	3	-
Peak Hour Factor	85	90	89	90	90	90	67	81	90	90	68	88
Heavy Vehicles, %	0	0	1	0	0	0	4	1	0	0	1	5
Mvmt Flow	54	14	254	2	4	9	146	430	3	2	551	45

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1303	1304	574	1287	1325	431	597	0	0	433	0	0
Stage 1	579	579	-	724	724	-	-	-	-	-	-	-
Stage 2	724	726	-	563	601	-	-	-	-	-	-	-
Critical Hdwy	6.7	6.1	6.01	7.1	6.5	6.2	4.14	-	-	4.1	-	-
Critical Hdwy Stg 1	5.7	5.1	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.7	5.1	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.309	3.5	4	3.3	2.236	-	-	2.2	-	-
Pot Cap-1 Maneuver	160	187	537	142	157	628	970	-	-	1137	-	-
Stage 1	538	538	-	420	433	-	-	-	-	-	-	-
Stage 2	455	469	-	514	492	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	123	149	537	55	126	628	970	-	-	1137	-	-
Mov Cap-2 Maneuver	123	149	-	55	126	-	-	-	-	-	-	-
Stage 1	536	536	-	337	347	-	-	-	-	-	-	-
Stage 2	355	376	-	263	491	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v27.02		27.81	2.37	0.03
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	454	-	-	128	537	173	7	-	-
HCM Lane V/C Ratio	0.151	-	-	0.537	0.473	0.09	0.002	-	-
HCM Control Delay (s/veh)	9.4	0	-	62	17.6	27.8	8.2	0	-
HCM Lane LOS	A	A	-	F	C	D	A	A	-
HCM 95th %tile Q(veh)	0.5	-	-	2.6	2.5	0.3	0	-	-

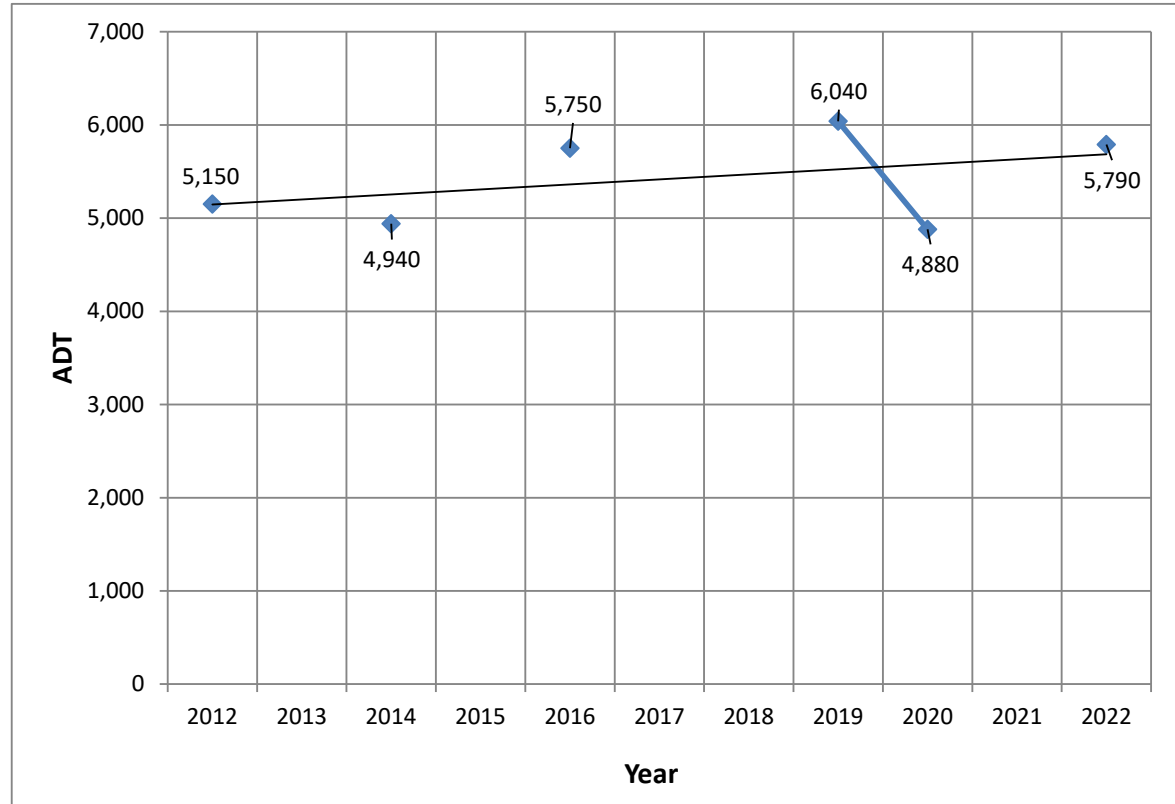
Historical Traffic Counts

Organization: Knox TPO

Station ID #: 093M049

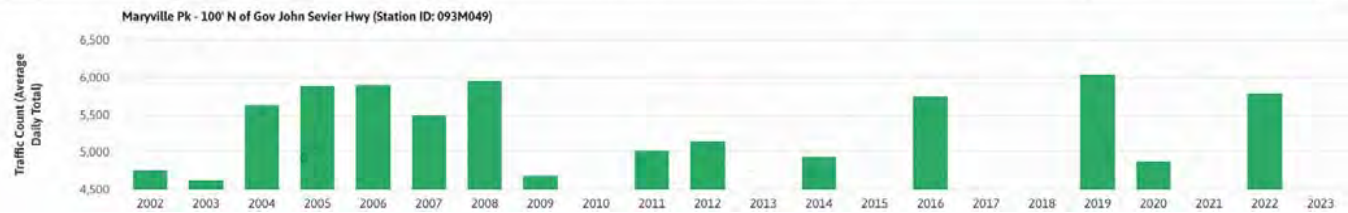
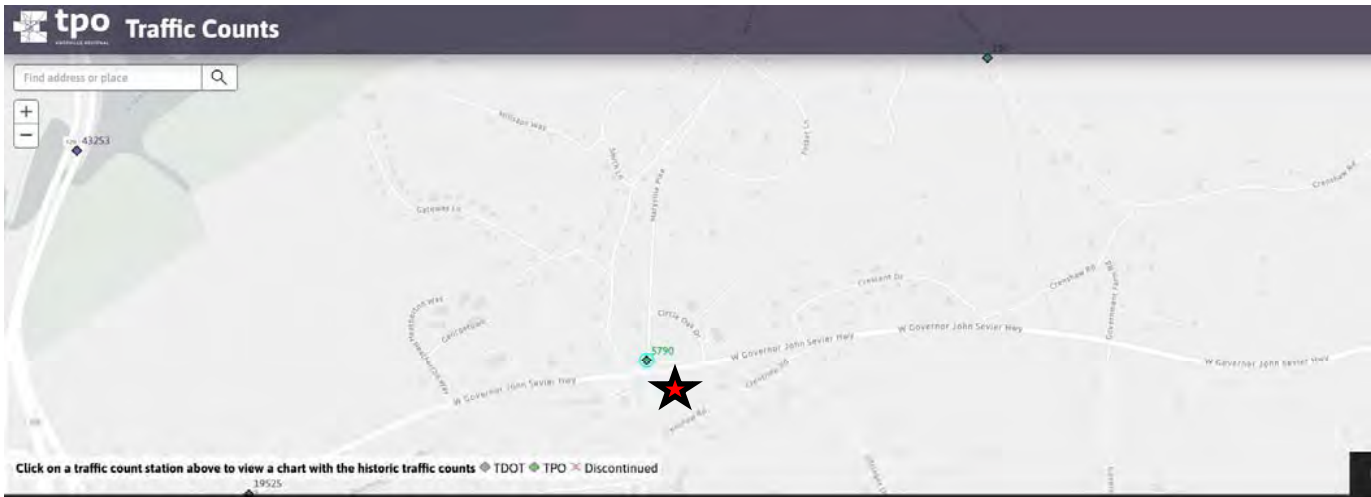
Location: Maryville Pike, south of Circle Oak Drive

YEAR	ADT	
2012	5,150	Trendline ↓
2013		
2014	4,940	
2015		
2016	5,750	
2017		
2018		
2019	6,040	
2020	4,880	
2021		
2022	5,790	



2012 - 2022 Growth Rate = 12.4%

Average Annual Growth Rate = 1.2%



TRIP GENERATION FOR CRENSHAW ROAD RESIDENTIAL DEVELOPMENT

32 Apartments

ITE LAND USE CODE	LAND USE DESCRIPTION	UNITS	GENERATED DAILY TRAFFIC	GENERATED TRAFFIC AM PEAK HOUR			GENERATED TRAFFIC PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Local Trip Rate	Apartments	32 Apartments	343	22%	78%		55%	45%	
				4	15	19	18	14	32
Total New Volume Site Trips			343	4	15	19	18	14	32

Data from Local Trip Rates and calculated by using Fitted Curve Equations

TRIP GENERATION FOR CRENSHAW ROAD RESIDENTIAL DEVELOPMENT

32 Apartments

$$32 \text{ Units} = X$$

Weekday:

Fitted Curve Equation: $T = 15.193(X)^{0.899}$

$$T = 15.193 * 22.55$$
$$T = \underline{\underline{343 \text{ trips}}}$$

Peak Hour of Adjacent Traffic between 7 and 9 am:

Fitted Curve Equation: $T = 0.758(X)^{0.924}$

$$T = 0.758 * 25$$
$$T = \underline{\underline{19 \text{ trips}}}$$

Peak Hour of Adjacent Traffic between 4 and 6 pm:

Fitted Curve Equation: $T = 0.669(X)+10.069$

$$T = 0.669 * 32 + 10.07$$
$$T = \underline{\underline{32 \text{ trips}}}$$

Queuing and Blocking Report

Alternative #1

Alternative #1

Intersection: 4: Maryville Pike & Old Maryville Pike

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	137	96	11
Average Queue (ft)	61	30	1
95th Queue (ft)	107	76	8
Link Distance (ft)	201	82	243
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		2	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Maryville Pike & Crenshaw Road

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	40	2	78
Average Queue (ft)	16	0	11
95th Queue (ft)	36	2	48
Link Distance (ft)	233	191	89
Upstream Blk Time (%)			0
Queuing Penalty (veh)			1
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Maryville Pike & Proposed Entrance

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	36	50	42
Average Queue (ft)	11	3	2
95th Queue (ft)	36	23	22
Link Distance (ft)	54	89	82
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 3

Queuing and Blocking Report

Alternative #1

Alternative #1

Intersection: 4: Maryville Pike & Old Maryville Pike

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	181	94	41
Average Queue (ft)	82	41	3
95th Queue (ft)	150	87	22
Link Distance (ft)	201	81	243
Upstream Blk Time (%)	1	1	
Queuing Penalty (veh)	0	3	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Maryville Pike & Crenshaw Road

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	50	10	85
Average Queue (ft)	14	0	10
95th Queue (ft)	38	6	51
Link Distance (ft)	233	191	91
Upstream Blk Time (%)			0
Queuing Penalty (veh)			3
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Maryville Pike & Proposed Entrance

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	39	58	87
Average Queue (ft)	12	3	11
95th Queue (ft)	37	25	52
Link Distance (ft)	60	91	81
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	0	2
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 8

Intersection: 4: Maryville Pike & Old Maryville Pike/Proposed Entrance

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	126	37	95	23
Average Queue (ft)	63	12	30	1
95th Queue (ft)	106	37	75	11
Link Distance (ft)	200	135	227	248
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Maryville Pike & Crenshaw Road

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	48	5	98
Average Queue (ft)	16	0	12
95th Queue (ft)	37	4	57
Link Distance (ft)	234	191	227
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Intersection: 4: Maryville Pike & Old Maryville Pike/Proposed Entrance

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	197	41	120	38
Average Queue (ft)	82	13	38	2
95th Queue (ft)	151	38	90	17
Link Distance (ft)	200	149	227	248
Upstream Blk Time (%)	1			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Maryville Pike & Crenshaw Road

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	33	2	93
Average Queue (ft)	11	0	10
95th Queue (ft)	30	2	54
Link Distance (ft)	234	191	227
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Intersection: 4: Maryville Pike & Old Maryville Pike

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	135	106	15
Average Queue (ft)	64	30	1
95th Queue (ft)	107	78	8
Link Distance (ft)	201	230	243
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Maryville Pike & Crenshaw Road

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	48	4	85
Average Queue (ft)	16	0	13
95th Queue (ft)	39	3	55
Link Distance (ft)	234	191	230
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report

Intersection: 4: Maryville Pike & Old Maryville Pike

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	180	142	23
Average Queue (ft)	80	43	1
95th Queue (ft)	144	102	12
Link Distance (ft)	201	230	243
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Maryville Pike & Crenshaw Road

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	52	2	109
Average Queue (ft)	15	0	17
95th Queue (ft)	38	2	70
Link Distance (ft)	234	191	230
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Queuing and Blocking Report
Alternative #2 with Extra EB Lane

Alternative #2 with Extra EB Lane

Intersection: 4: Maryville Pike & Old Maryville Pike/Proposed Entrance

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	LTR	LTR
Maximum Queue (ft)	58	90	37	92	17
Average Queue (ft)	27	46	12	22	1
95th Queue (ft)	52	75	37	62	9
Link Distance (ft)		199	135	202	248
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	75				
Storage Blk Time (%)	0	1			
Queuing Penalty (veh)	0	0			

Queuing and Blocking Report
Alternative #2 with Extra EB Lane

Alternative #2 with Extra EB Lane

Intersection: 4: Maryville Pike & Old Maryville Pike/Proposed Entrance

Movement	EB	EB	WB	NB	SB
Directions Served	LT	R	LTR	LTR	LTR
Maximum Queue (ft)	71	122	44	109	40
Average Queue (ft)	34	53	13	28	3
95th Queue (ft)	63	94	39	73	18
Link Distance (ft)		199	149	202	248
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)	75				
Storage Blk Time (%)	1	2			
Queuing Penalty (veh)	2	1			

where a left-turn lane would help mitigate traffic conflicts, not necessarily situations where a left-turn lane is required or must be constructed.

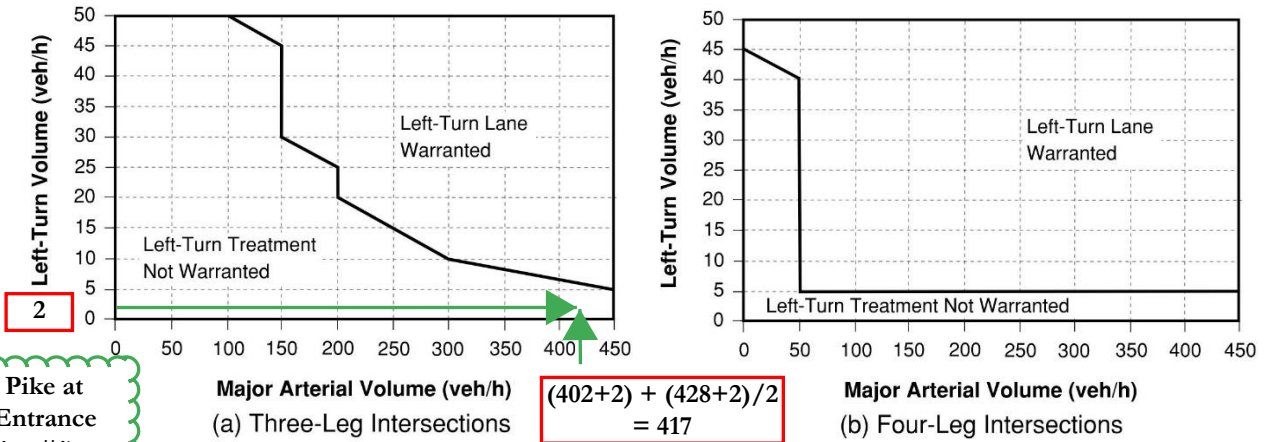


Figure 3-15: Left-Turn Lane Warrant for Urban and Suburban Arterials (Unsignalized)^{20, 21}

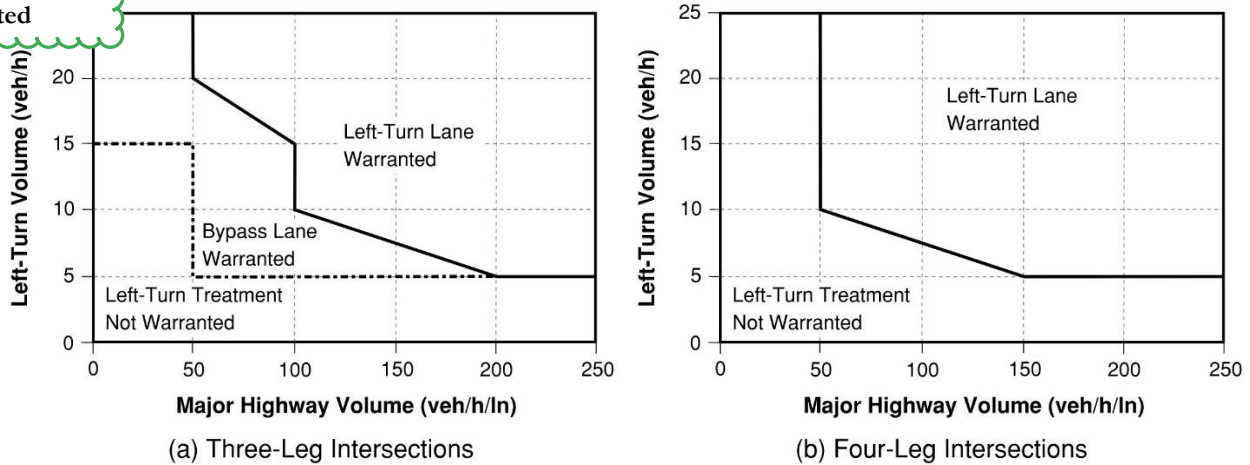


Figure 3-16: Left-Turn Lane Warrant for Two-Lane Rural Roadways (Unsignalized)^{20, 21}

Maryville Pike at Proposed Entrance (Alternative #1)

2026 Projected AM SB Left Turns = 2

SB Left Turn Lane NOT Warranted

²⁰ TRB, NCHRP Report 745, Left-Turn Accommodations at Unsignalized Intersections (2013)

²¹ AASHTO, A Policy on Geometric Design of Highways and Streets 7th Edition (2018)

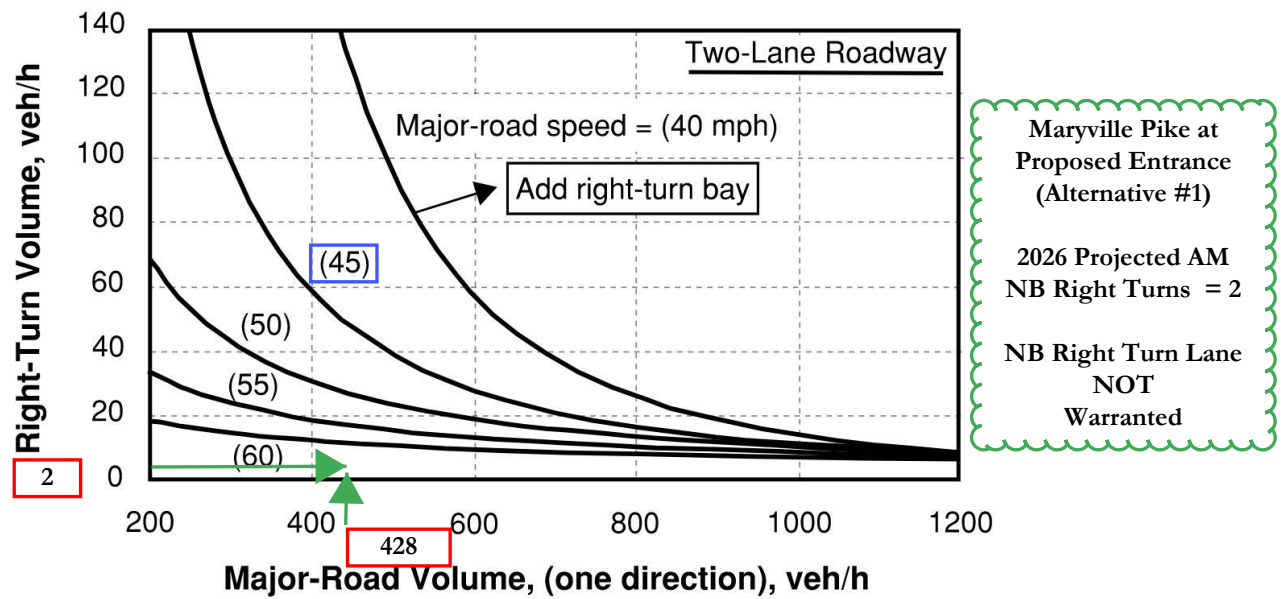


Figure 3-18: Right-Turn Lane Warrant along Two-Lane Roadway (Unsignalized Intersection with Two-Way Stop-Control)²⁴

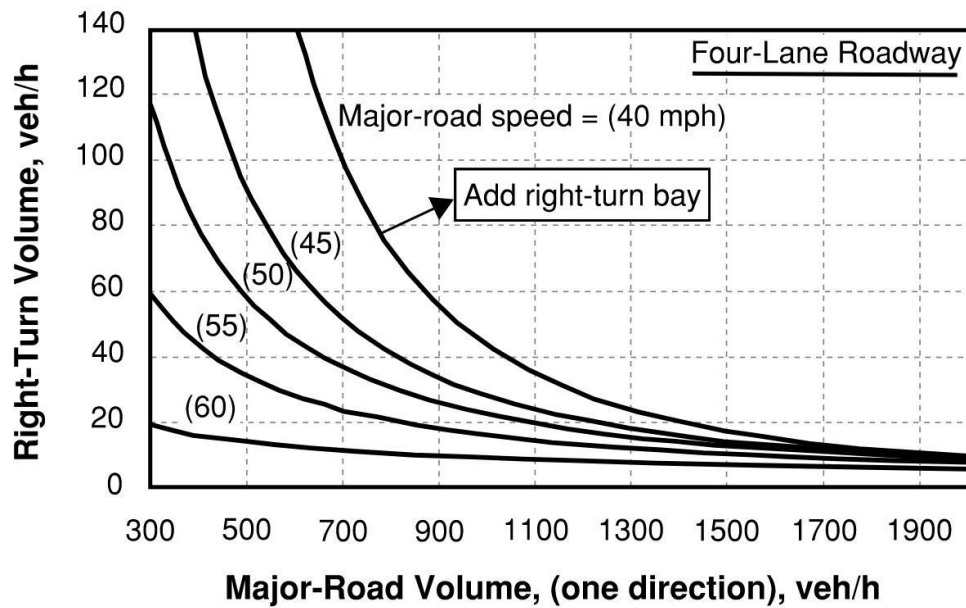


Figure 3-19: Right-Turn Lane Warrant along Four-Lane Roadway (Unsignalized Intersection with Two-Way Stop-Control)²⁵

²⁴ TRB, NCHRP 457, Evaluating Intersection Improvements (2001)

²⁵ TRB, NCHRP 457, Evaluating Intersection Improvements (2001)

where a left-turn lane would help mitigate traffic conflicts, not necessarily situations where a left-turn lane is required or must be constructed.

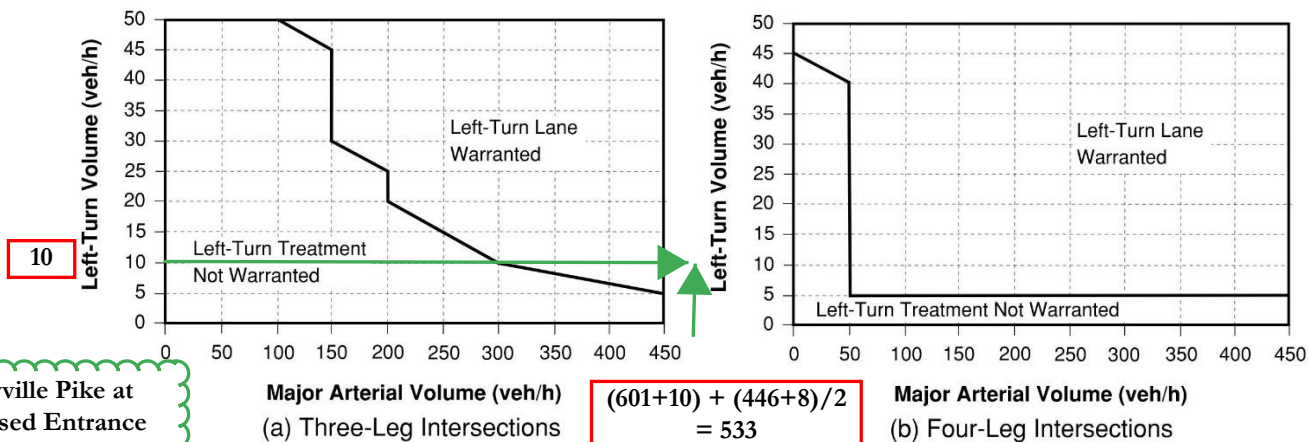


Figure 3-15: Left-Turn Lane Warrant for Urban and Suburban Arterials (Unsignalized)^{20, 21}

Maryville Pike at Proposed Entrance (Alternative #1)

2026 Projected PM SB Left Turns = 10

SB Left Turn Lane Warranted

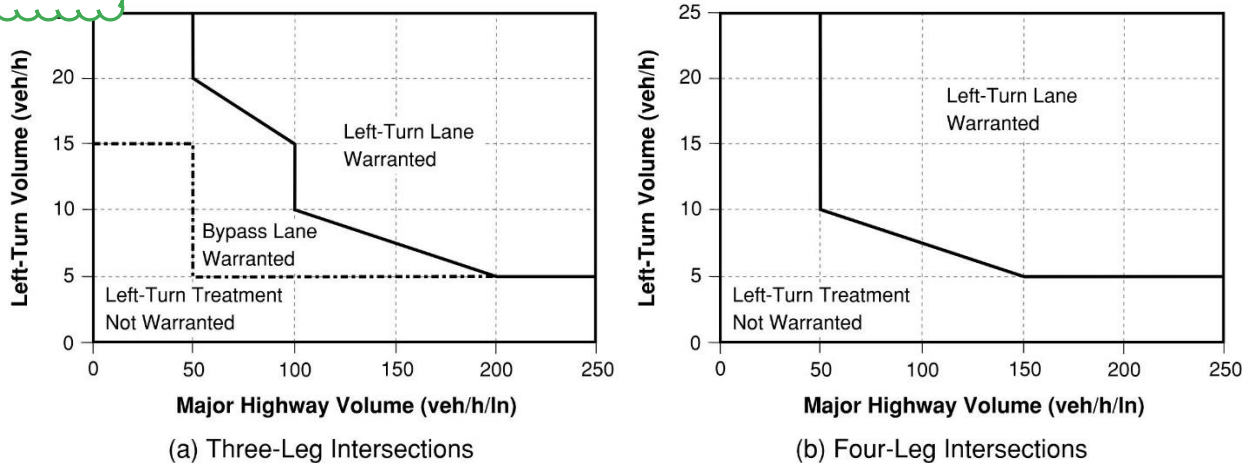


Figure 3-16: Left-Turn Lane Warrant for Two-Lane Rural Roadways (Unsignalized)^{20, 21}

²⁰ TRB, NCHRP Report 745, Left-Turn Accommodations at Unsignalized Intersections (2013)

²¹ AASHTO, A Policy on Geometric Design of Highways and Streets 7th Edition (2018)

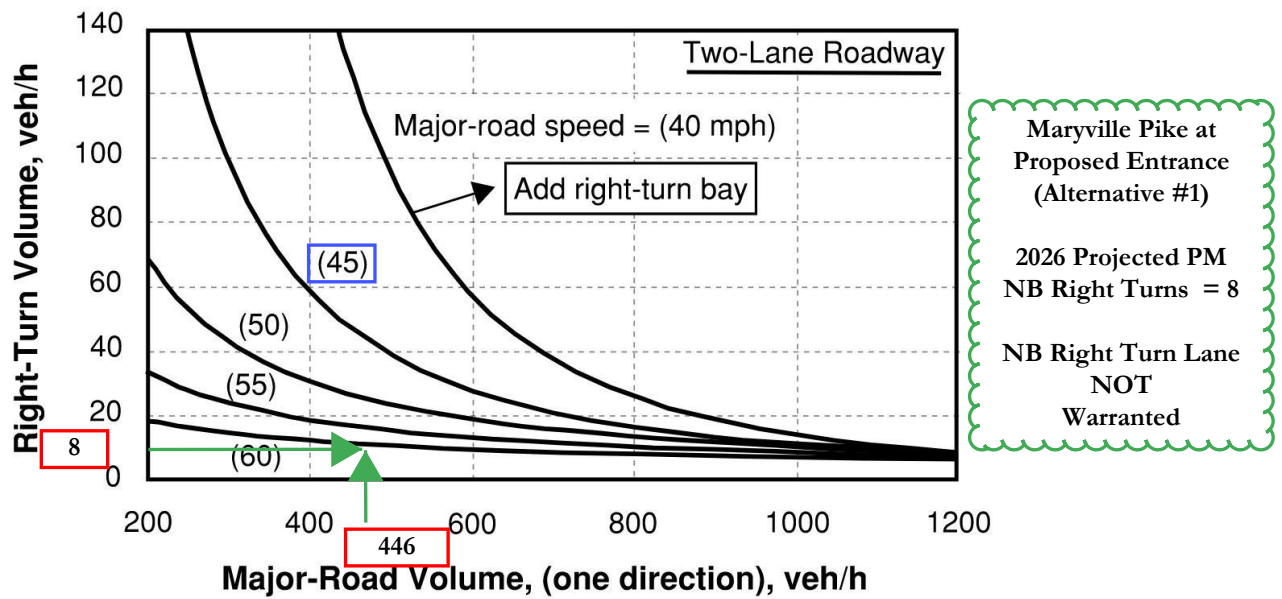


Figure 3-18: Right-Turn Lane Warrant along Two-Lane Roadway (Unsignalized Intersection with Two-Way Stop-Control)²⁴

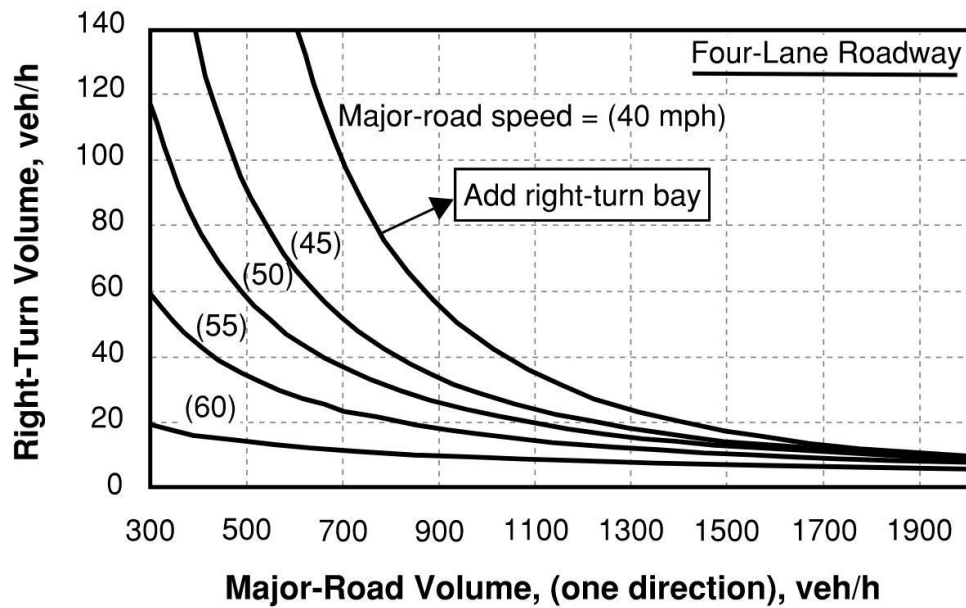


Figure 3-19: Right-Turn Lane Warrant along Four-Lane Roadway (Unsignalized Intersection with Two-Way Stop-Control)²⁵

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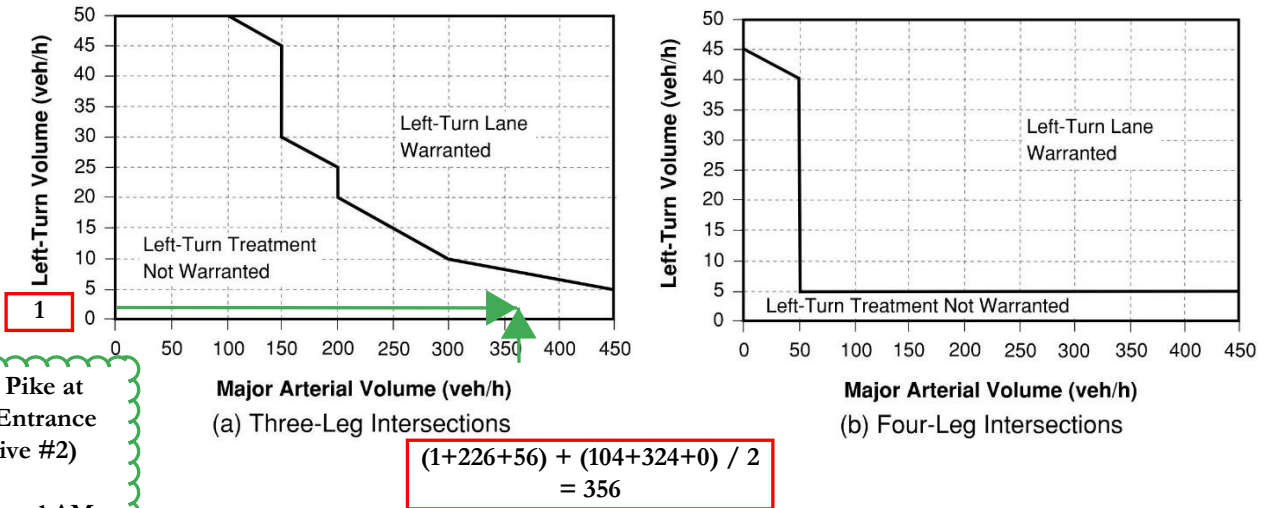


Figure 3-15: Left-Turn Lane Warrant for Urban and Suburban Arterials (Unsignalized)^{20, 21}

Maryville Pike at Proposed Entrance (Alternative #2)
 2026 Projected AM SB Left Turns = 1
 SB Left Turn Lane NOT Warranted

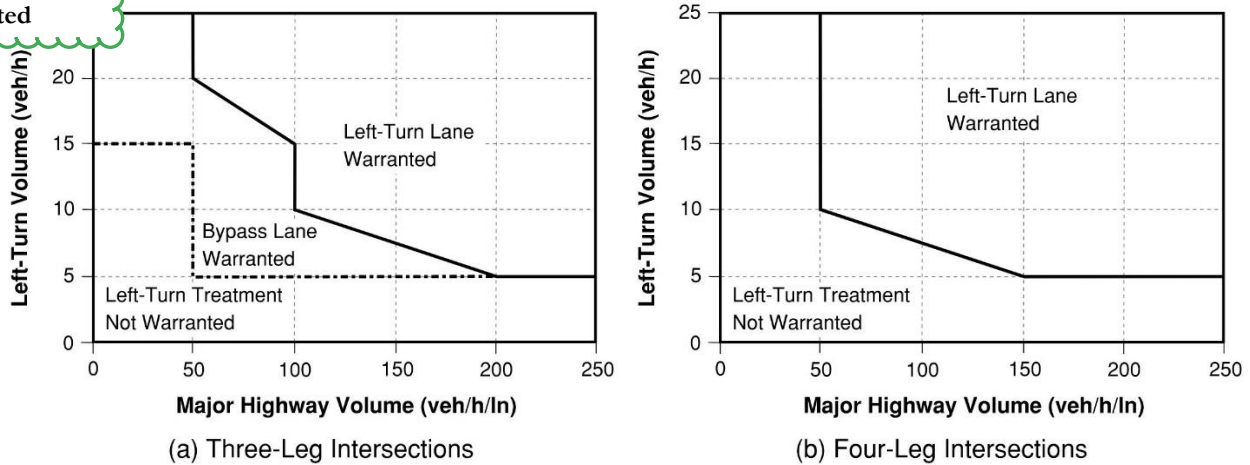


Figure 3-16: Left-Turn Lane Warrant for Two-Lane Rural Roadways (Unsignalized)^{20, 21}

²⁰ TRB, NCHRP Report 745, Left-Turn Accommodations at Unsignalized Intersections (2013)

²¹ AASHTO, A Policy on Geometric Design of Highways and Streets 7th Edition (2018)

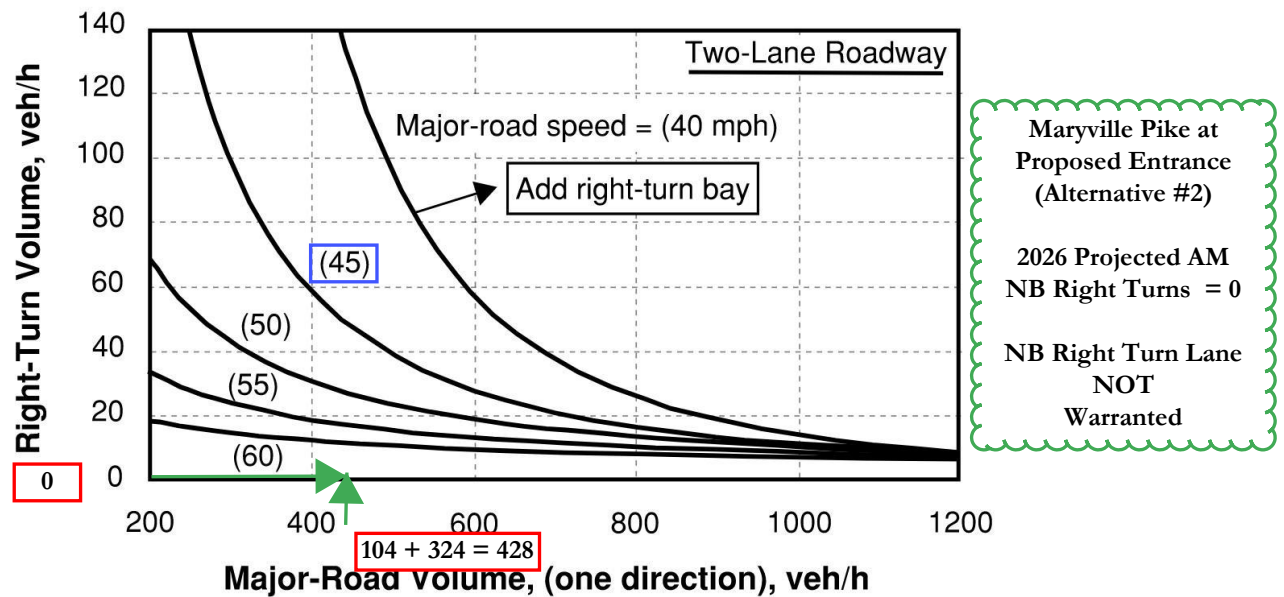


Figure 3-18: Right-Turn Lane Warrant along Two-Lane Roadway (Unsignalized Intersection with Two-Way Stop-Control)²⁴

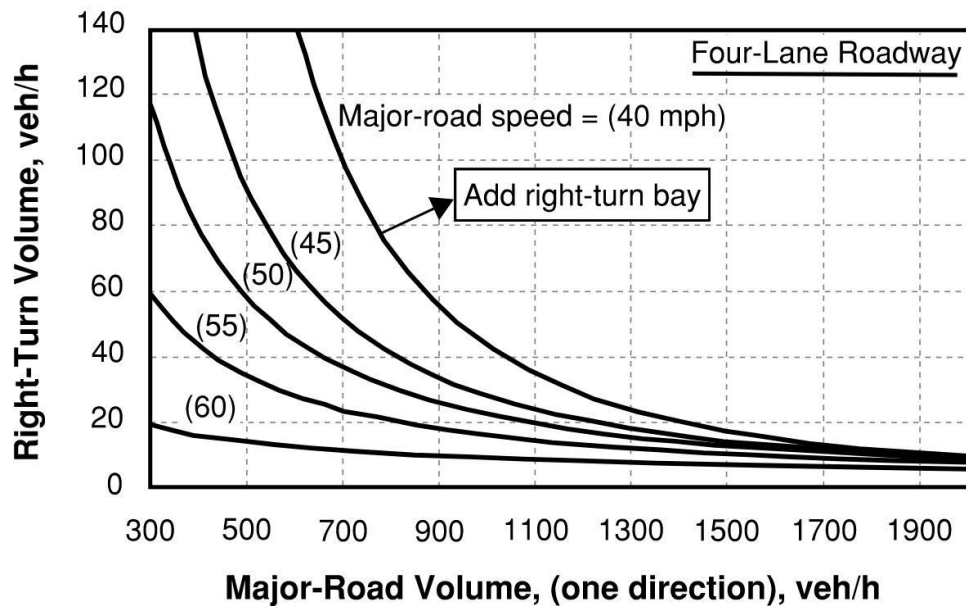


Figure 3-19: Right-Turn Lane Warrant along Four-Lane Roadway (Unsignalized Intersection with Two-Way Stop-Control)²⁵

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²⁵ TRB, NCHRP 457, Evaluating Intersection Improvements (2001)

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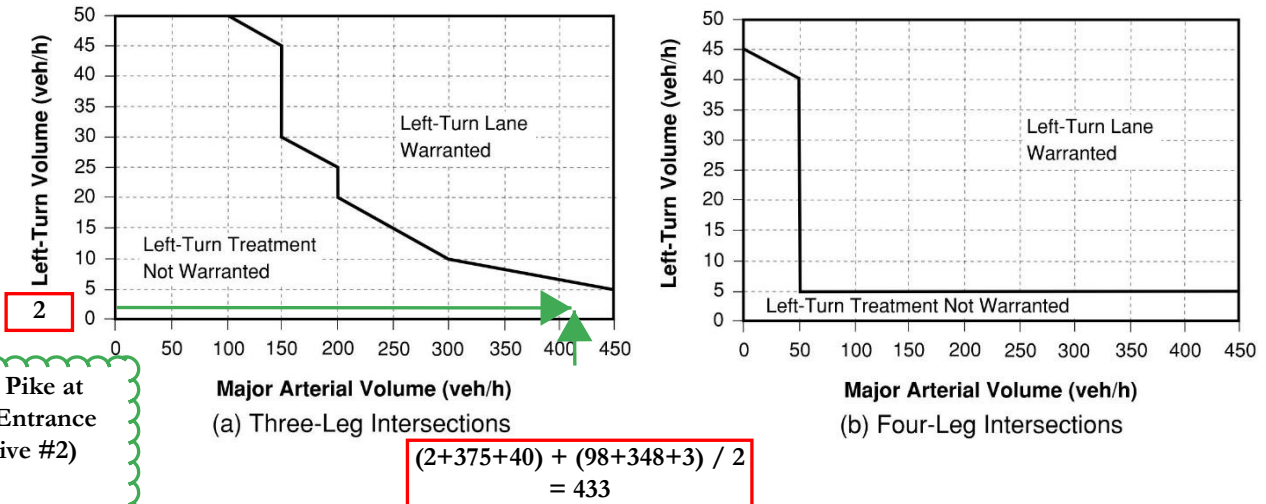


Figure 3-15: Left-Turn Lane Warrant for Urban and Suburban Arterials (Unsignalized)^{20, 21}

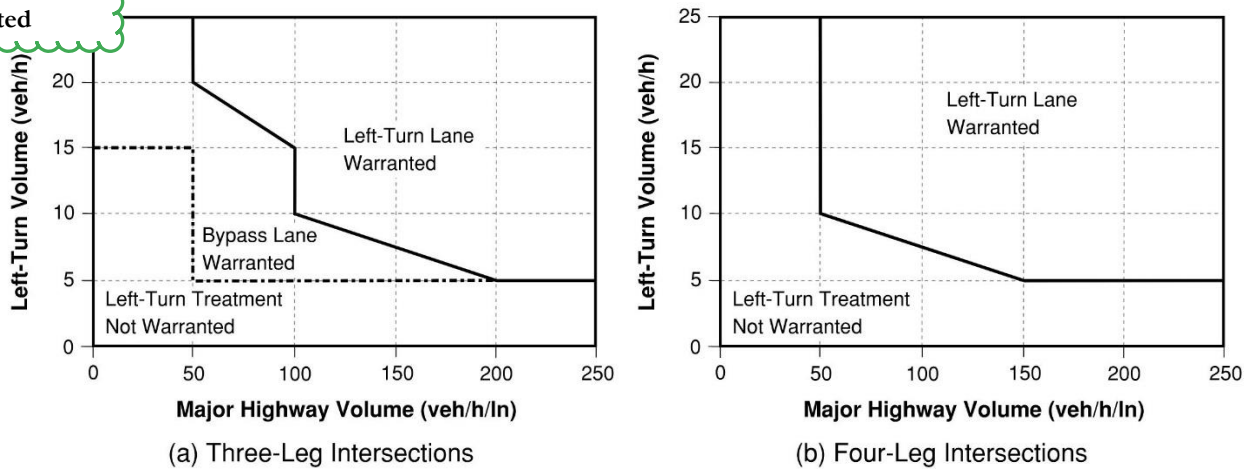


Figure 3-16: Left-Turn Lane Warrant for Two-Lane Rural Roadways (Unsignalized)^{20, 21}

²⁰ TRB, NCHRP Report 745, Left-Turn Accommodations at Unsignalized Intersections (2013)

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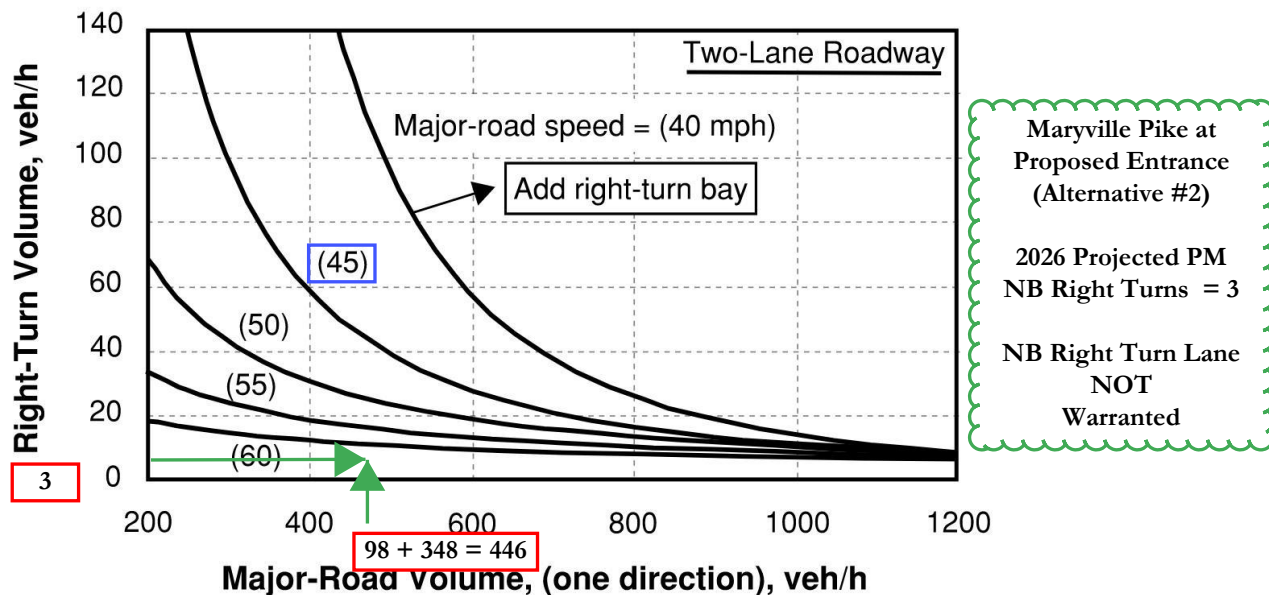


Figure 3-18: Right-Turn Lane Warrant along Two-Lane Roadway (Unsignalized Intersection with Two-Way Stop-Control)²⁴

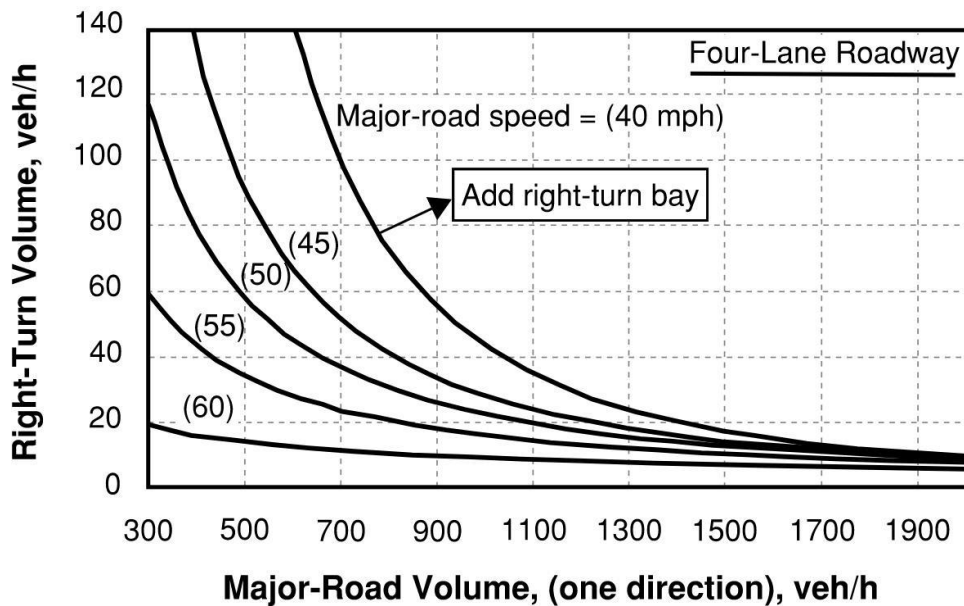


Figure 3-19: Right-Turn Lane Warrant along Four-Lane Roadway (Unsignalized Intersection with Two-Way Stop-Control)²⁵

²⁴ TRB, NCHRP 457, Evaluating Intersection Improvements (2001)

²⁵ TRB, NCHRP 457, Evaluating Intersection Improvements (2001)

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