

TRAFFIC IMPACT ANALYSIS

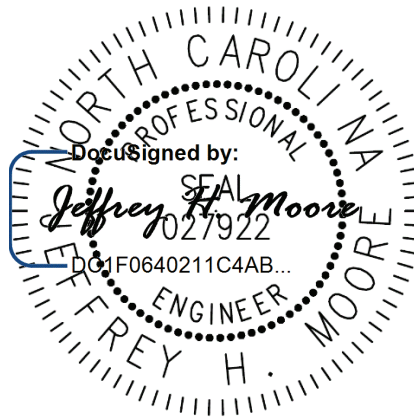
For
Etowah Residential
Etowah, North Carolina

Prepared For:
Civil Design Concepts
168 Patton Avenue
Asheville, NC 28801

Prepared By:



22 S. Pack Square
Suite 800
Asheville, NC 28801
NC Licensure No. F-0270



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I. Executive Summary

INTRODUCTION

A residential development known as *Etowah Residential* is proposed on US 64 (Brevard Road) and SR 1323 (Brickyard Road) in Etowah, NC. The total project will consist of 299 Single Family Attached Housing (Duplexes) (ITE LUC 215). The total number of proposed dwelling units is 598.

According to the site plan dated July 2023 by Civil Design Concepts Access #1 to the development is proposed as a full access intersection with US 64 (Brevard Road). The Access #2 is proposed as a full access intersection with SR 1323 (Brickyard Road).

TRIP GENERATION

The amount of traffic generated by a new development is a function of the size and type of development. Trip generation data for this report was conducted in accordance with the procedures outlined in the Institute of Transportation Engineers (ITE) report entitled ***Trip Generation 11th Edition***¹. Table 1 illustrates the total number of daily, AM peak hour, and PM peak hour trips expected to be generated by the proposed development.

CAPACITY ANALYSIS

Capacity analyses were performed for 2023 Existing Conditions, 2026 Background Condition, and 2026 Future Buildout Condition for the following intersection:

1. US 64 (Brevard Road) / SR 1424 (Brickyard Road)
2. US 64 (Brevard Road) / SR 1488 (N Greenwood Forest Drive)
3. SR 1323 (Brickyard Road) / SR 1325 (Turnpike Road)
4. SR 1323 (Brickyard Road) / SR 1488 (N Greenwood Forest Drive)
5. SR 1323 (Brickyard Road) / SR 1322 (Holly Springs Road)
6. SR 1424 (Brickyard Road) / SR 1323 (McKinney Road)
7. US 64 (Brevard Road) / Access #1
8. SR 1323 (Brickyard Road) / Access #2



RECOMMENDED IMPROVEMENTS

To mitigate the traffic-related impacts caused by the *Etowah Residential* and to provide for safe, efficient, and reliable traffic flow, Gannett Fleming recommends the following:

US 64 (Brevard Road) / SR 1424 (Brickyard Road)

Gannett Fleming recommends no changes to this intersection.

US 64 (Brevard Road) / SR 1488 (N Greenwood Forest Drive)

Gannett Fleming recommends no changes to this intersection.

SR 1323 (Brickyard Road) / SR 1325 (Turnpike Road)

Gannett Fleming recommends no changes to this intersection.

SR 1323 (Brickyard Road) / SR 1488 (N Greenwood Forest Drive)

Gannett Fleming recommends no changes to this intersection.

SR 1323 (Brickyard Road) / SR 1322 (Holly Springs Road)

Gannett Fleming recommends no changes to this intersection.

SR 1424 (Brickyard Road) / SR 1323 (McKinney Road)

Gannett Fleming recommends no changes to this intersection.

Access #1 / US 64 (Brevard Road)

Gannett Fleming recommends the proposed Site Drive be constructed as shown on the site plan (included in Appendix C) with full access stop control and at least 100 feet of stem length as per NCDOT Guidelines. Gannett Fleming recommends a dedicated left turn lane with 100 feet of full storage be constructed on US 64 (Brevard Road) with an appropriate taper. Gannett Fleming recommends a dedicated right turn lane with 100 feet of full storage be constructed on US 64 (Brevard Road) with an appropriate taper.

Access #2 / SR 1323 (Brickyard Road)

Gannett Fleming recommends the proposed Site Drive be constructed as shown on the site plan (included in Appendix C) with full access stop control and at least 100 feet of stem length as per NCDOT Guidelines.

CONCLUSIONS

This Traffic Impact Analysis shows that the proposed *Etowah Residential* impacts on the traffic operations at the study area intersections will be mitigated by the recommended improvements. It is the opinion of Gannett Fleming that with the recommended improvements in place, the proposed development will not negatively impact the health, safety, and welfare of the traveling public.

II. Introduction

A residential development known as *Etowah Residential* is proposed on SR 1323 (Brickyard Road) in Etowah, NC. The total project will consist of 299 Multifamily Attached Housing (ITE LUC 220). The total number of proposed dwelling units is 598.

According to the site plan developed by Civil Design Concepts. One of the Site Drives to the development is proposed as a full access intersection with US 64 (Brevard Road). The other Site Drive is a proposed full access intersection with SR 1323 (Brickyard Road).

The purpose of this report is to evaluate the traffic impacts from the proposed *Etowah Residential* and to recommend transportation improvements needed to mitigate congestion that may result from the additional site traffic. This report presents trip generation, trip distribution, traffic analyses, and recommendations for transportation improvements needed to meet anticipated traffic demands. This report examines existing 2023 existing conditions, 2026 Background conditions, and 2026 Future Buildout conditions.



Figure 1 – Site and Count Locations

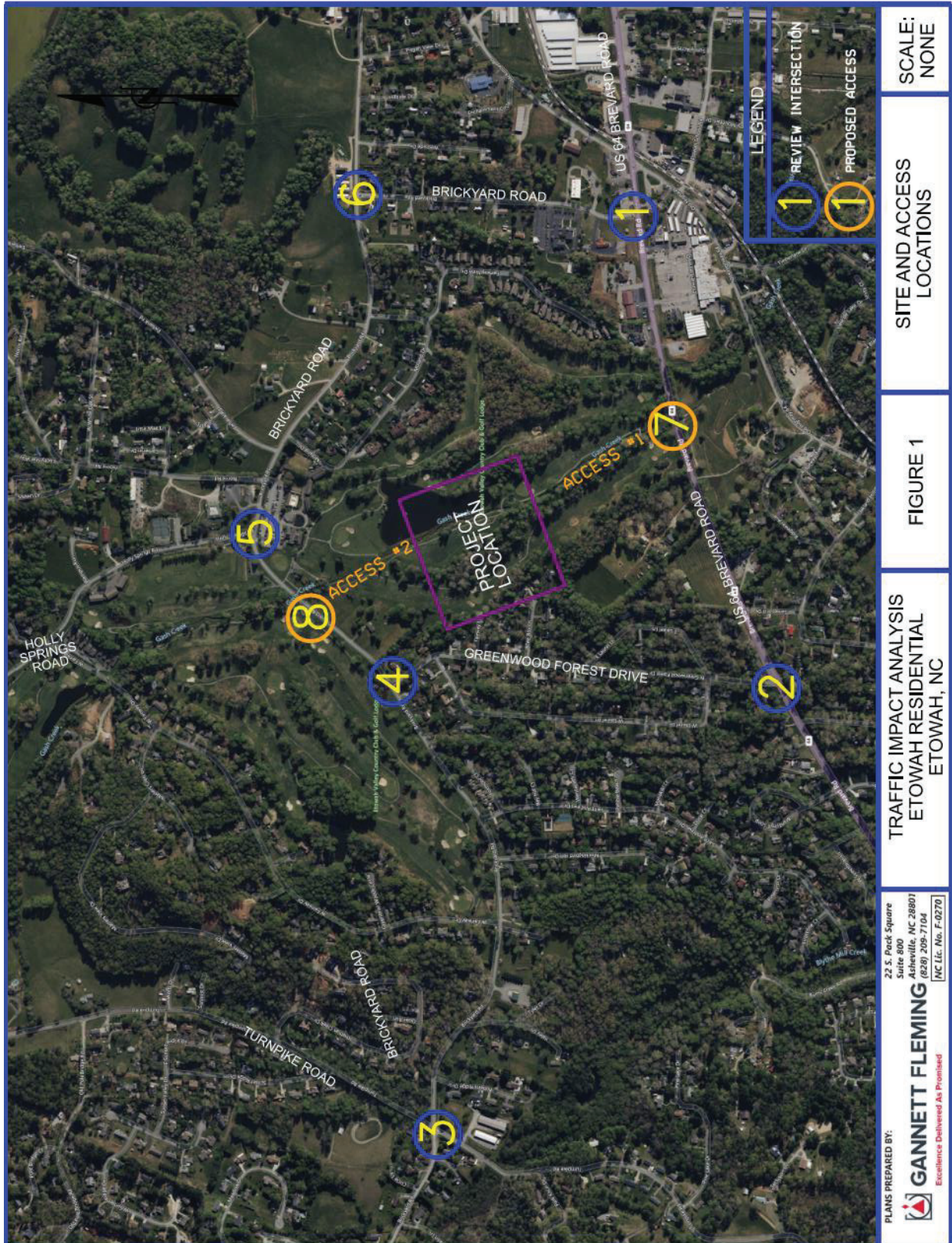
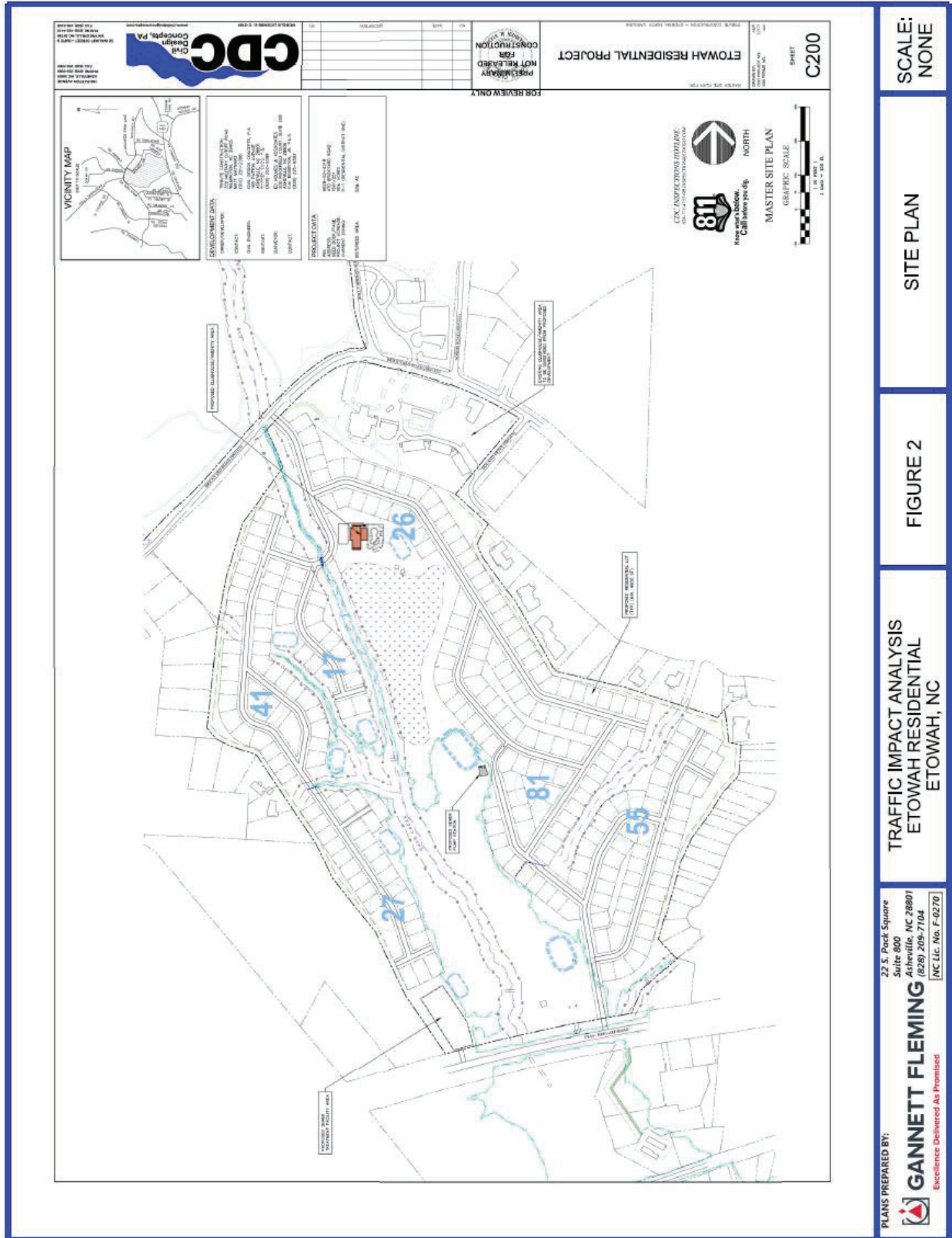


Figure 2 – Site Plan



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III. Inventory of Traffic Conditions

A. Study Area

After consultation with NCDOT, the following intersections be analyzed to determine the associated impacts from the proposed development (See Figure 1):

1. US 64 (Brevard Road) / SR 1424 (Brickyard Road)
2. US 64 (Brevard Road) / SR 1488 (N Greenwood Forest Drive)
3. SR 1323 (Brickyard Road) / SR 1325 (Turnpike Road)
4. SR 1323 (Brickyard Road) / SR 1488 (N Greenwood Forest Drive)
5. SR 1323 (Brickyard Road) / SR 1322 (Holly Springs Road)
6. SR 1424 (Brickyard Road) / SR 1323 (McKinney Road)
7. US 64 (Brevard Road) / Access #1
8. SR 1323 (Brickyard Road) / Access #2

B. Roadway Facilities

A description of roadway facilities in the general vicinity of this proposed development is as follows:

US 64 is maintained by NCDOT as part of the US Highway System. The 2021 AADT was measured at 11,500 vehicles per day east of SR 1424 (Brickyard Road) and the 8,600 west of SR 1424 (Brickyard Road). US 64 is classified a “Minor Arterial” in the project area.

SR 1323/1424 (Brickyard Road) is maintained by NCDOT as a secondary road and has a cross section of two lanes in the subject area. The 2019 AADT was measured at 3,000 vehicles per day. SR 1323/1424 (Brickyard Road) is classified as a “Local Road” by NCDOT’s Functional Classification Map.

SR 1488 (North Greenwood Forest Drive) is maintained by NCDOT as a secondary road with a two-lane cross section. It has residential uses along its length. The 2019 AADT was measured at 2,200 vehicles per day. SR 1488 (North Greenwood Forest Drive) is classified as a “Local Road” by NCDOT’s Functional Classification Map.

SR 1322 (Holly Springs Road) is maintained by NCDOT as a secondary road with a two-lane cross section. It has agricultural and residential uses along its length. The 2019 AADT was measured at 3,000 vehicles per day. SR 1322 (Holly Springs Road) is classified as a “Local Road” by NCDOT’s Functional Classification Map.

SR 1325 (Turnpike Road) is maintained by NCDOT as a secondary road with a two-lane cross section. It has agricultural and residential uses along its length. No AADT information is available currently. SR 1325 (Turnpike Road) is classified as a “Local Road” by NCDOT’s Functional Classification Map.

SR 1323 (McKinney Road) is maintained by NCDOT as a secondary road with a two-lane cross section. It has agricultural and residential uses along its length. No AADT information is available currently. SR 1323 (McKinney Road) is classified as a “Local Road” by NCDOT’s Functional Classification Map.

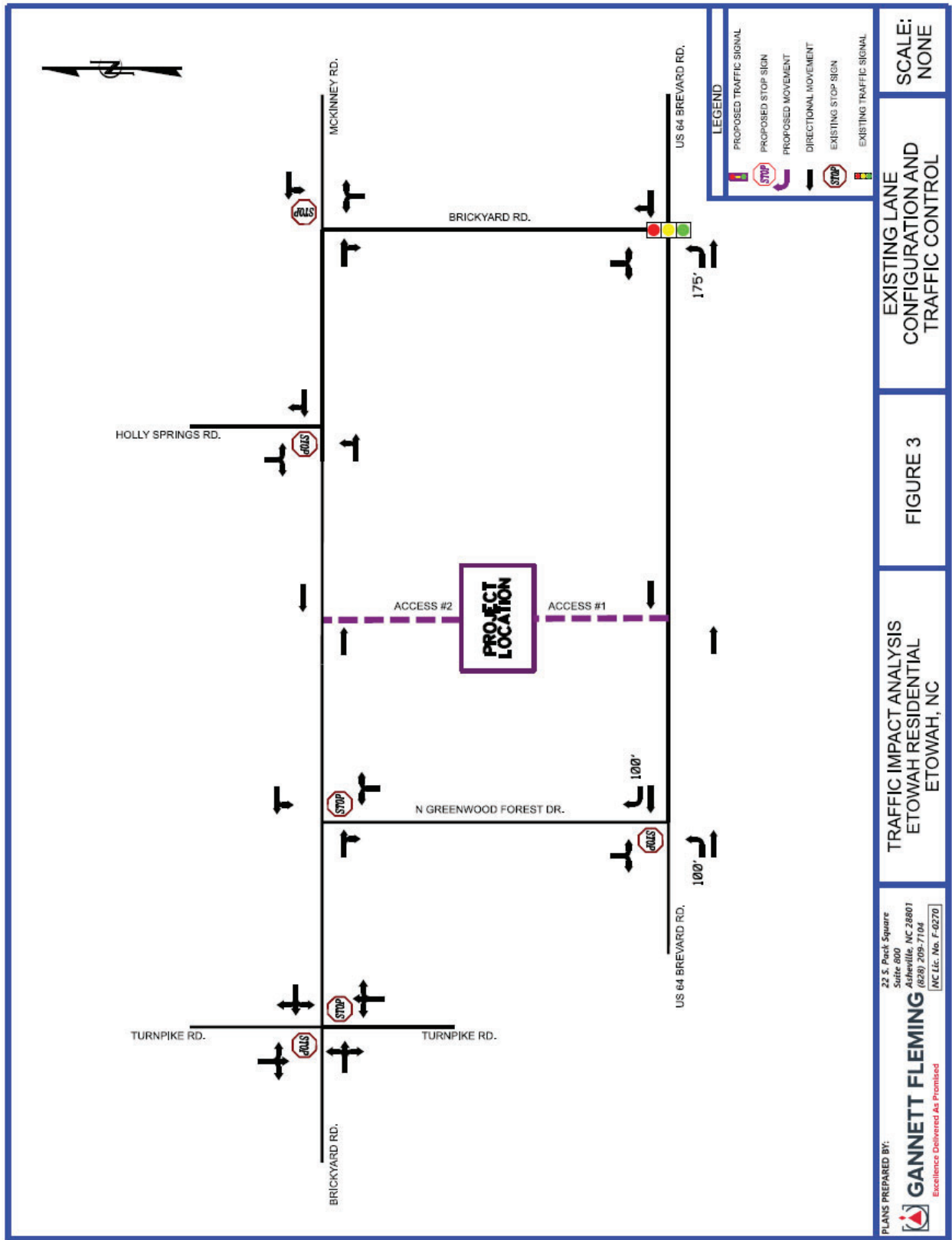
The AADT volumes are based on the NCDOT *Interactive Traffic Volume Map*². The existing lane configuration and traffic control for the study area intersections are illustrated in Figure 3.

C. Projected Transportation Improvements

A planned NCDOT STIP project will be constructed in the study area. STIP project EB-6037B is currently in right-of-way with no projected construction date. The project consists of converting railway into a multi-use bike path. This project is not expected to affect traffic within the study area.



Figure 3 - Existing Lane Configuration and Traffic Control



IV. Existing Traffic Volumes

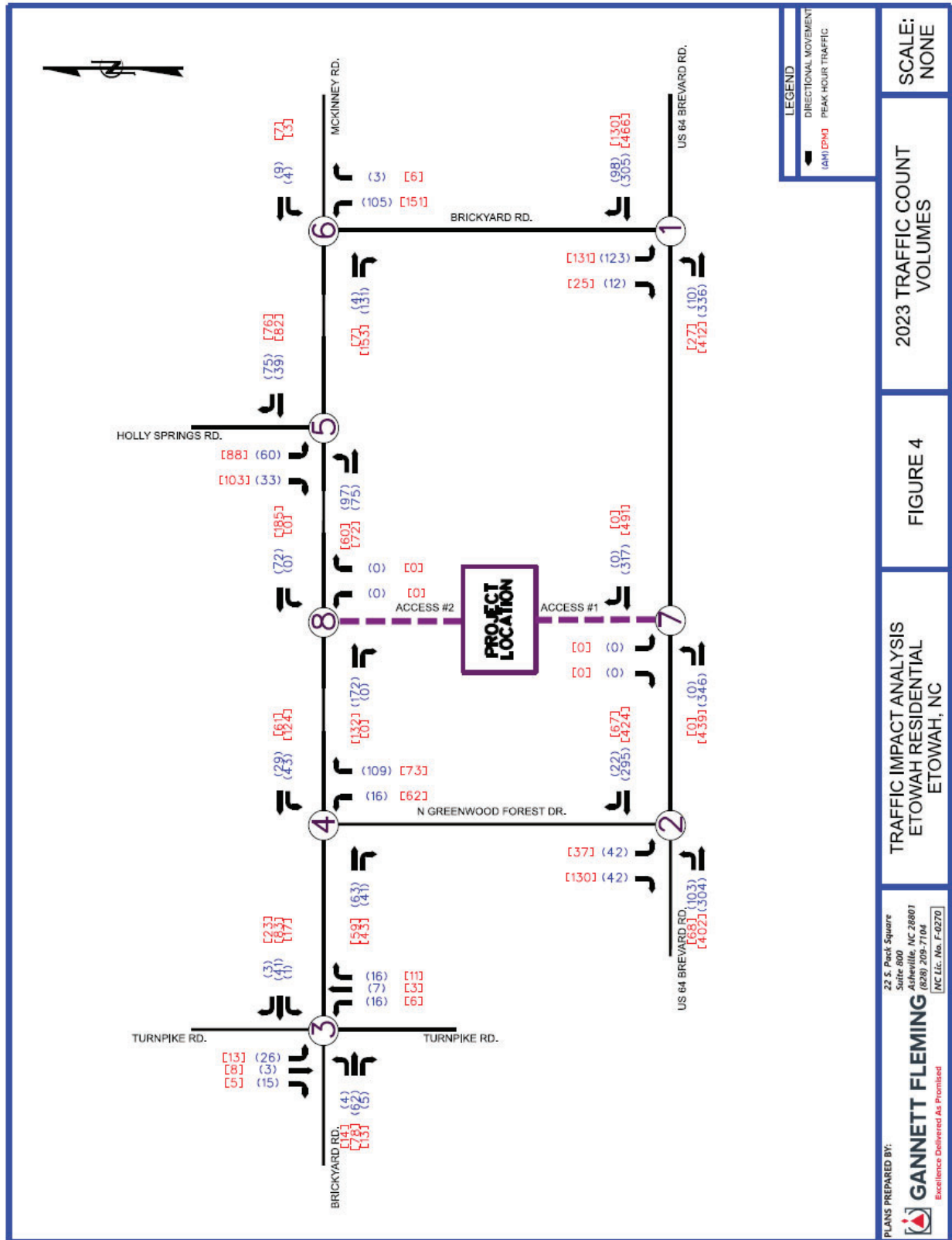
A. Existing Traffic

Gannett Fleming performed traffic counts from AM peak hour (7-9 AM) and PM peak hour (4-6 PM) turning movement traffic counts performed in May 2023.

In accordance with NCDOT Congestion Management Guidelines, Gannett Fleming “balanced” the factored traffic volumes. This balancing reconciles volumes for adjacent intersections on shared routes. Because the volumes observed at the study intersections were not within the range that would be acceptable when considering business uses and driveways between them, it is Gannett Fleming’s opinion that balancing the volumes was necessary. The volumes displayed in Figure 4 have been balanced.



Figure 4 - 2023 Traffic Count Volumes



V. Background Traffic Volumes

A. Historical Traffic Growth

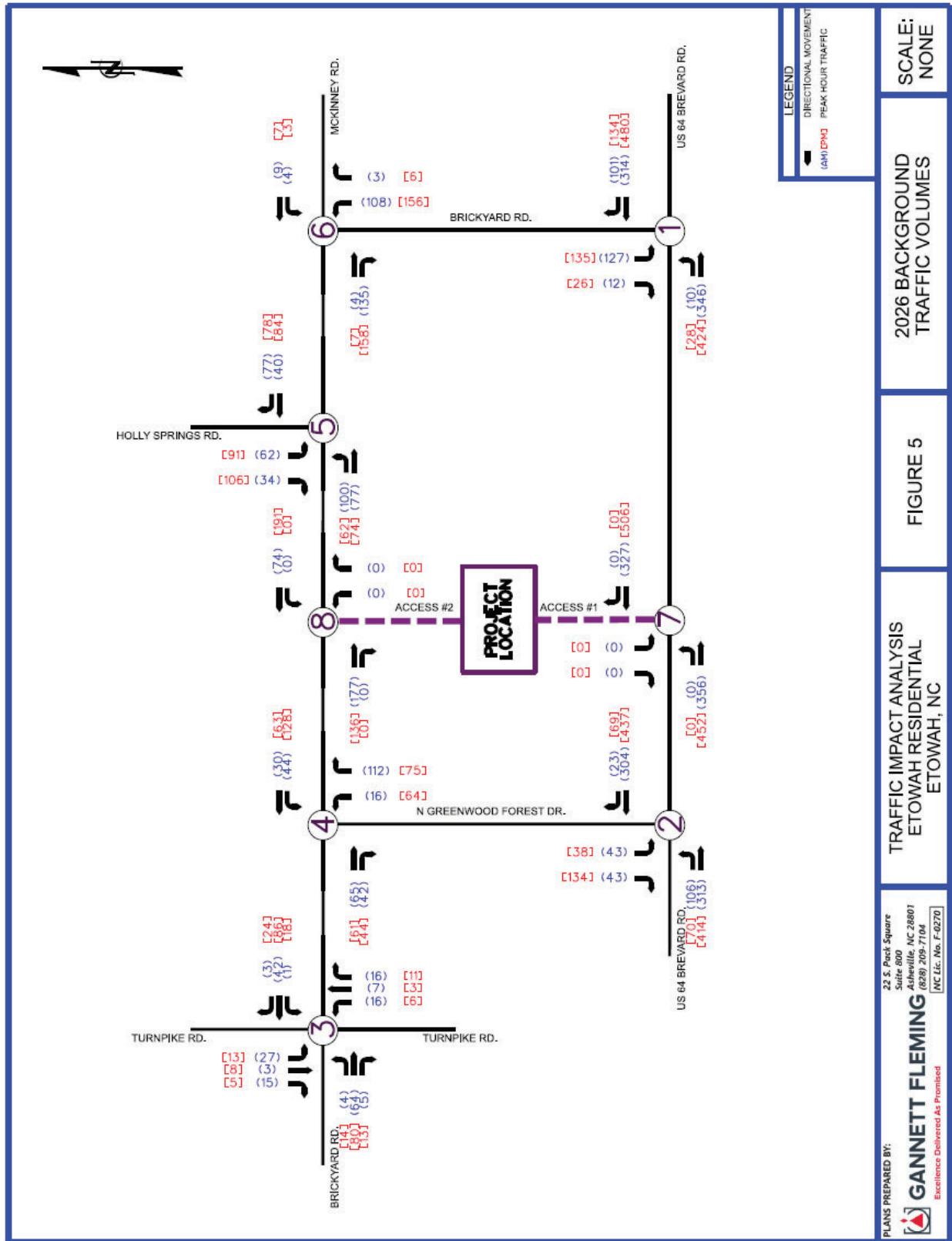
Historical traffic growth is the increase in traffic volumes due to usage increases and non-specific growth throughout the area. To account for normal increases in traffic as well as smaller, undetermined development, the existing 2023 traffic volumes were grown by 1% per year compounded annually to 2026 to develop the background traffic volumes. This percentage is based on NCDOT AADT Maps² And observed growth patterns in this area of Henderson County, NC. Figure 5 illustrates the 2026 background traffic volumes.

B. Approved Development Traffic

Approved development traffic is traffic generated by specific approved but not yet constructed, developments within the vicinity of the subject project. Gannett Fleming is not aware of any developments being constructed in the study area that will influence the traffic conditions beyond the approved growth rate.



Figure 5 - 2026 Background Traffic Volumes



VI. Land Use Trip Generation and Distribution

A. Land Use Trip Generation

The amount of traffic generated by a new development is a function of the size and type of development. Once the proposed land use data for the site are known, the number of trips generated by the development can be estimated. Trip generation data for this report was conducted in accordance with the procedures outlined in the Institute of Transportation Engineers (ITE) report entitled *Trip Generation*¹. Table 1 illustrates the number of daily, AM peak hour, and PM peak hour trips expected to be generated by the proposed development.

Table 1 – ITE Trip Generation Summary

Table 1 - ITE Trip Generation Summary												
LUC	Description	Density	Variable	PK HR	METHOD	Daily	In	AM Out	Total	In	PM Out	Total
215	Single Family Attached	598.00	Dwelling Units	Adj	EQN	4,506	76	229	305	209	146	355
			Pass-by Adjustment AM (0%) PM (0%)				0	0	0	0	0	0
	Single Family Attached New Trips						76	229	305	209	146	355
	Total New Trips					4,506	76	229	305	209	146	355

Traffic impact is determined by estimating the total number of daily vehicle trips, as well as the number of peak hour vehicle trips. Table 1 indicates the proposed development will generate approximately 4,506 total trips per day, 305 trips in the AM Peak Hour, and 355 trips in the PM Peak Hour when it is fully built out.

Pass-by and internal capture trip reductions are not applicable for residential developments. Gannett Fleming did not apply these trip reductions. Pass-by reductions are generally applicable to retail land uses. Internal Capture is generally applicable to mixed-use developments.

B. Land Use Trip Distribution

To properly determine the impact of the traffic generated by the proposed development, it is necessary to determine the distribution of traffic to and from the development (See Table 2). These percentages are based on the projected traffic patterns and population/employment centers in the area. They are also based on existing AADTs obtained using the NCDOT *Interactive Traffic Volume Map*² and data obtained from traffic counts. The project traffic distribution is further illustrated in Figure 6.

Table 2 – Land Use Traffic Distribution

Facility	Directions of Approach and Departure
US 64 (Brevard Road) west	25%
US 64 (Brevard Road) east	60%
SR 1325 (Turnpike Road)	5%
SR 1322 (Holly Springs Road)	10%
TOTAL	100%

The Site Trip traffic volumes are illustrated in Figure 7.

Figure 6 – Land Use Trip Distribution

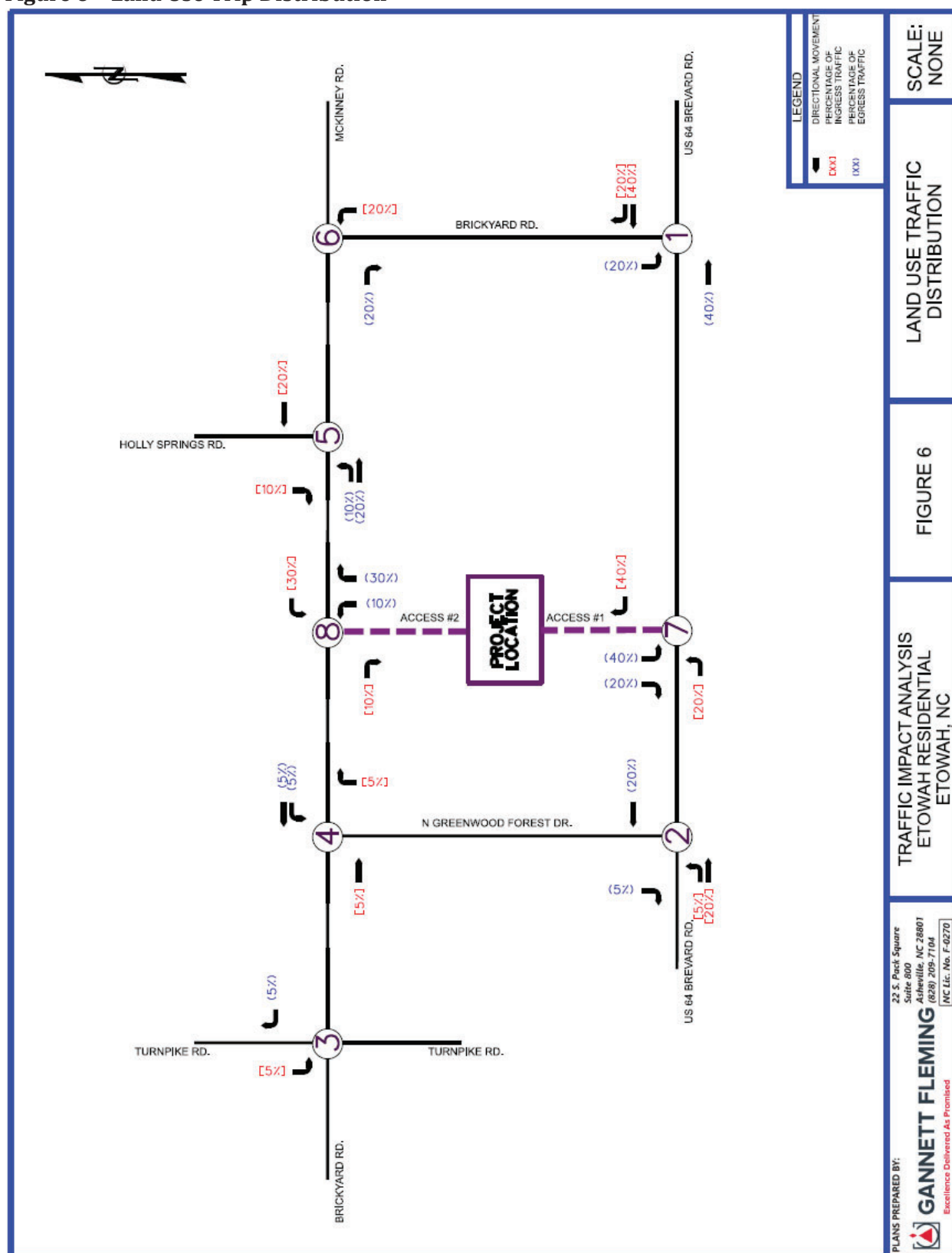
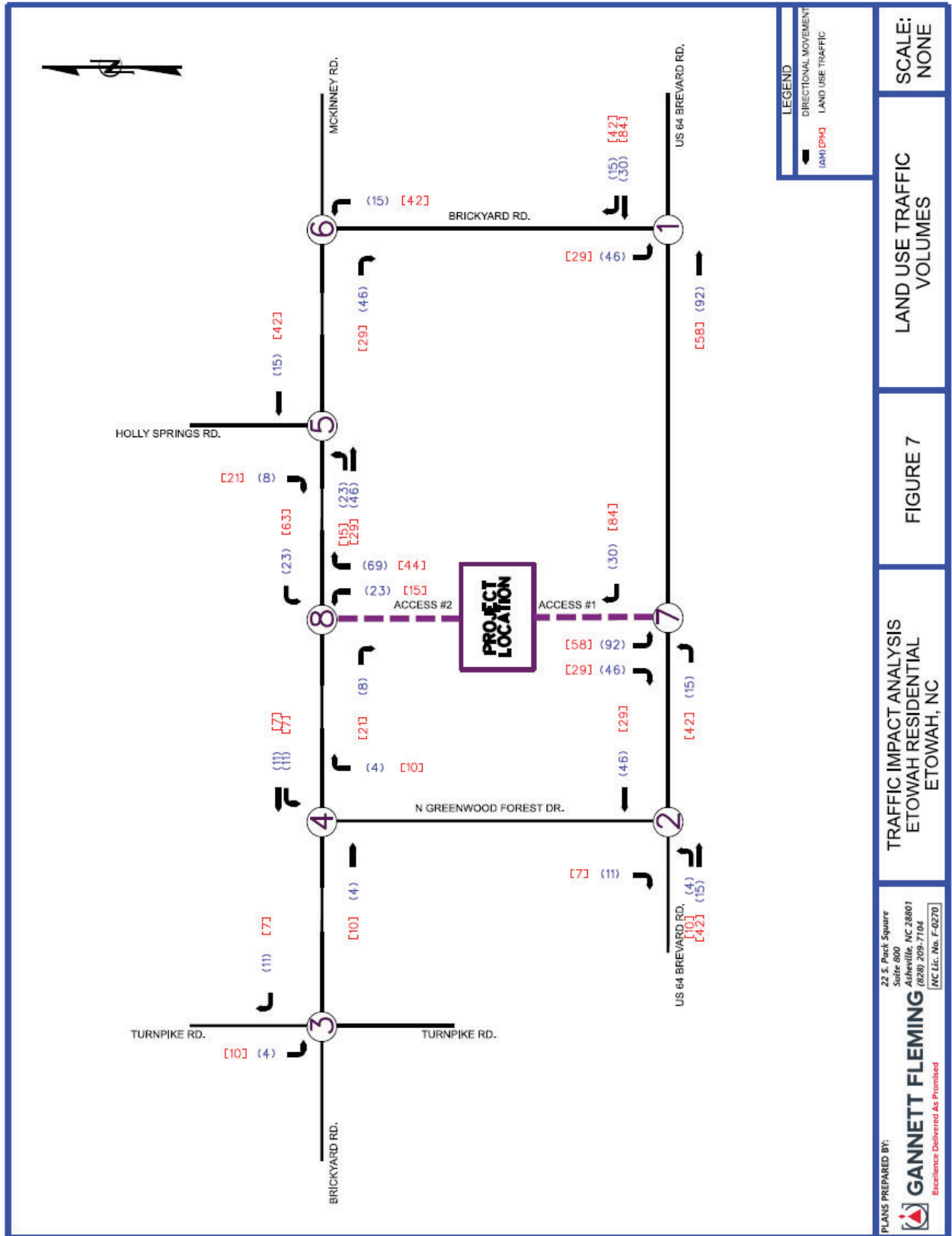


Figure 7 - Land Use Traffic Volumes



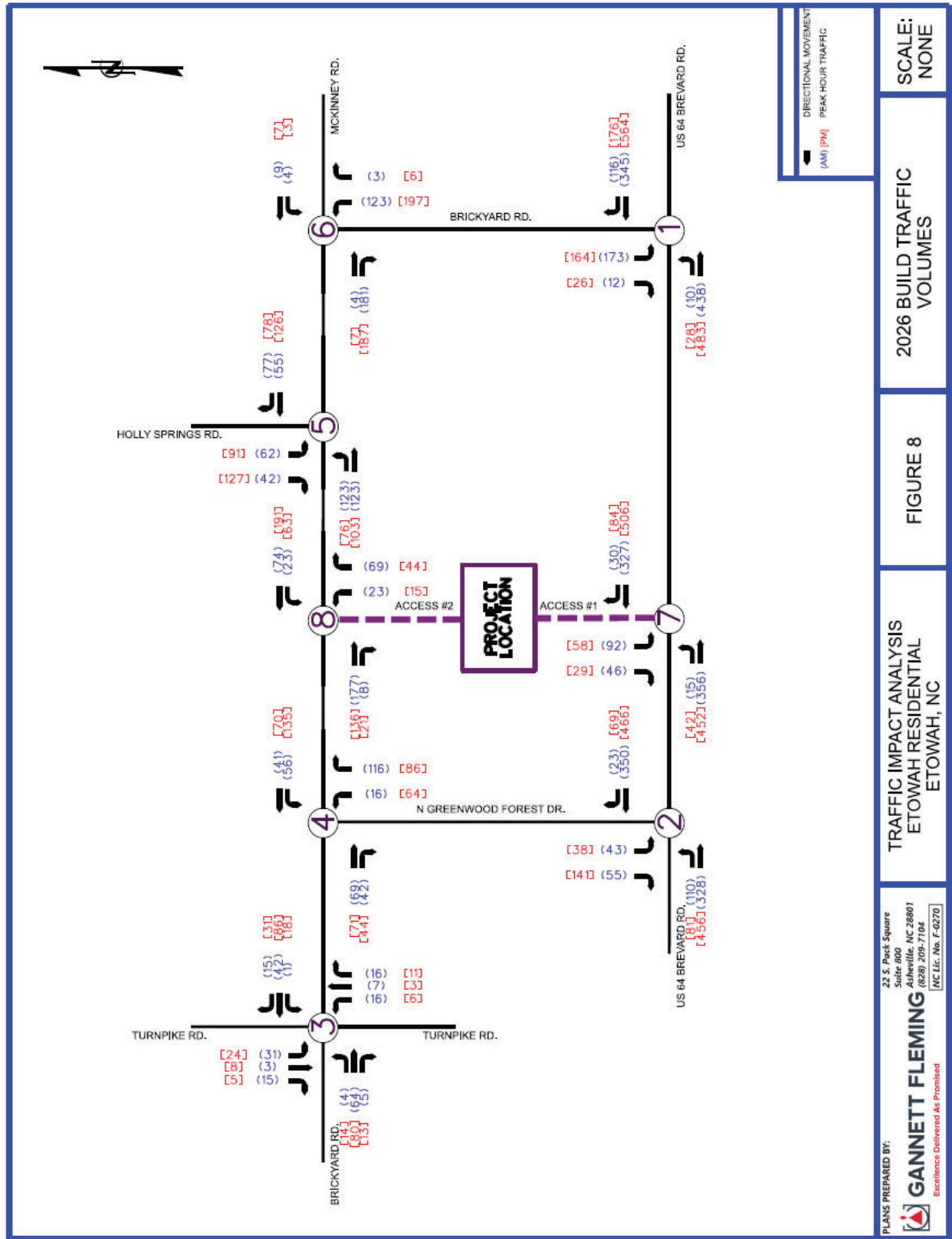
VII. Future Traffic Volumes

A. 2026 Total Build Volumes

To obtain total 2026 Future Buildout traffic volumes, the development traffic was distributed by percentage as shown on Figure 6. The development traffic volumes are shown in Figure 7 and were added to the 2026 Background traffic volumes. The AM and PM peak-hour turning movements for the studied intersections were then calculated and analyzed for the build-out years. The 2026 Future Buildout traffic volumes for the AM and PM peak hours are illustrated in Figure 8.



Figure 8 - 2026 Build Traffic Volumes



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VIII. Traffic Analysis

The study area intersections were analyzed using the methods outlined in the **Highway Capacity Manual**⁴ and Synchro Version 11 Software. The **Highway Capacity Manual**⁴ defines capacity as “the maximum rate of flow at which persons or vehicles can be reasonably expected to traverse a point or uniform section of a lane or roadway during a specified time period under prevailing roadway, traffic, and control conditions, usually expressed as vehicles per hour or persons per hour”.

Level of service (LOS) is a term used to represent different traffic conditions and is defined as a “qualitative measure describing operational conditions within a traffic stream, and their perception by motorist/or passengers.” Level of Service varies from Level A, representing free flow, to Level F where traffic breakdown conditions are evident. Level B represents good progression with minimal congestion. At Level C, the number of vehicles stopping is significant, although many still pass through the intersection without stopping. Level D represents more congestion, but the overall operations are acceptable. At Level E, freedom to maneuver within the traffic stream is extremely difficult with driver frustration being generally high.

For signalized intersections, service levels pertain to each approach as well as an overall value. The unsignalized intersection analysis method in the **Highway Capacity Manual**⁴ assigns LOS values for each movement that yields the right-of-way, but not to the overall intersection. This movement is generally a secondary movement from a minor street. At an unsignalized intersection, the primary traffic on the main roadway is virtually uninterrupted. Therefore, the overall level of service is usually much greater than what is represented by the results of the minor street movements. Synchro Version 11 will calculate an amount of delay for the overall intersection but will not assign LOS value. Therefore, the overall intersection delay is not reported in the summary tables of this report. Generally, Level of Service D is acceptable for signalized intersections in suburban areas during peak periods. With the current method of reporting levels of service for unsignalized intersections, it is not uncommon for some of the minor street movements to be operating at LOS F during the peak hours.

Note: In accordance with NCDOT Guidelines, right turn on red movements were prohibited for each scenario. Additionally, all left turns from exclusive left turn lanes were modeled as “protected only.” The minimum cycle length for a traffic signal was set as 90 seconds for a three-phase and 120 seconds for a four-phase signal. Synchro modeling software may predict that cycle lengths greater than 180 seconds may be most efficient for coordinated signal systems.

Table 3 presents criteria of each level of service as indicated in the **Highway Capacity Manual**⁴.

Table 3 - Intersection Level of Service Criteria

Intersection Level of Service Criteria		
Level of Service	Signalized Stopped Delay Per Vehicle (sec)	Unsignalized Average Total Delay(sec/veh)
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Capacity analyses were performed for 2023 existing conditions, 2026 Background, and 2026 Future Buildout conditions for the following intersection:

1. US 64 (Brevard Road) / SR 1424 (Brickyard Road)
2. US 64 (Brevard Road) / SR 1488 (N Greenwood Forest Drive)
3. SR 1323 (Brickyard Road) / SR 1325 (Turnpike Road)
4. SR 1323 (Brickyard Road) / SR 1488 (N Greenwood Forest Drive)
5. SR 1323 (Brickyard Road) / SR 1322 (Holly Springs Road)
6. SR 1424 (Brickyard Road) / SR 1323 (McKinney Road)
7. US 64 (Brevard Road) / Access #1
8. SR 1323 (Brickyard Road) / Access #2

Synchro 11 calculated the AM and PM peak hour level of service and delay for the study area intersections using methods outlined in the **Highway Capacity Manual**⁴. All capacity analyses are included in Appendix B and are briefly summarized in the following sub-sections. *It should be noted that with traffic signal operations, levels of service and delays may change with counterintuitive results. Individual approaches or intersections may experience less delay even with increased volumes due to cycle lengths that may approach the natural cycle length for that individual intersection.*



1. US 64 (Brevard Road) / SR 1424 (Brickyard Road)

2023 Existing Condition

is currently a signalized three-leg intersection. For the 2023 Existing Condition, this signalized intersection operates at LOS B with an overall total intersection delay of 11.1 seconds during the AM peak hour and LOS B with total delay of 15.0 seconds during the PM peak hour.

2026 Background Condition

During the 2026 Background Condition the intersection is predicted to operate at LOS B for both the AM and PM peak hours with overall intersection delays of 11.2 seconds and 15.3 seconds, respectively.

2026 Future Buildout Condition

During the 2026 Buildout Condition the intersection is predicted to operate at LOS B for both the AM and PM peak hours with overall intersection delays of 13.8 seconds and 17.9 seconds, respectively. The LOS for all approaches is D or better.

The queues predicted by SimTraffic at this intersection show the queue lengths on the eastbound and southbound approach to decrease during the AM Peak. During the PM Peak the eastbound approach is predicted to decrease. The westbound and southbound approaches are predicted to increase by more than 25% during the PM peak, but the overall increase is predicted to be less than 5 car lengths.

Gannett Fleming does not recommend any improvements to this intersection because of the *Etowah Residential*.

Table 4 displays the Level of Service and Delay for the subject intersection for the 2023 Existing condition, 2026 Background condition, and 2026 Build condition. Table 5 displays projected queueing for the intersection.



Table 4 – US 64 (Brevard Road) / SR 1424 (Brickyard Road) – Level of Service

Table 4 – US 64 (Brevard Rd.) / SR 1424 (Brickyard Rd.) – Level of Service					
AM Peak Hour					
Intersection Level of Service (LOS)		2023 Existing	2026 Background	2026 Build	
Total Intersection Delay (Seconds)		B	B	B	
US 64 (Brevard Rd) Eastbound	LOS	11.1	11.2	13.8	
	Approach Delay	A	A	B	
	LOS	7.9	7.9	10.4	
US 64 (Brevard Rd) Westbound	LOS	B	B	B	
	Approach Delay	11.4	11.5	14.3	
	LOS	-	-	-	
	Approach Delay	-	-	-	
	LOS	B	B	C	
SR 1424 (Brickyard Rd) Southbound	Approach Delay	18.3	18.7	21.0	
PM Peak Hour					
Intersection Level of Service (LOS)		2023 Existing	2026 Background	2026 Build	
Total Intersection Delay (Seconds)		B	B	B	
US 64 (Brevard Rd) Eastbound	LOS	15.0	15.3	17.9	
	Approach Delay	A	A	A	
	LOS	8.6	8.7	8.5	
US 64 (Brevard Rd) Westbound	LOS	B	B	B	
	Approach Delay	15.5	15.9	19.0	
	LOS	-	-	-	
	Approach Delay	-	-	-	
	LOS	C	C	D	
SR 1424 (Brickyard Rd) Southbound	Approach Delay	30.9	31.6	38.5	







 Delay Decrease or LOS Improvement
 Delay Increase > 25% or LOS Decrease by 1 Letter Grade
 LOS "F"



Table 5 - US 64 (Brevard Road) / SR 1424 (Brickyard Road) - Queues

Table 5 - US 64 (Brevard Rd.) / SR 1424 (Brickyard Rd.) - Queues					
AM Peak Hour	Queue Length	2023 Existing	2026 Background	2026 Build	
	Feet	Feet	Feet	Feet	
US 64 (Brevard Rd) Eastbound	Maximum	183	143	140	
	95th Percentile	113	118	168	
US 64 (Brevard Rd) Westbound	Maximum	138	201	247	
	95th Percentile	234	245	290	
SR 1424 (Brickyard Rd) Southbound	Maximum	-	-	-	
	95th Percentile	-	-	-	
SR 1424 (Brickyard Rd) Southbound	Maximum	116	164	155	
	95th Percentile	109	113	157	
PM Peak Hour	Queue Length	2023 Existing	2026 Background	2026 Build	
	Feet	Feet	Feet	Feet	
US 64 (Brevard Rd) Eastbound	Maximum	165	177	163	
	95th Percentile	127	131	148	
US 64 (Brevard Rd) Westbound	Maximum	259	283	407	
	95th Percentile	368	386	526	
SR 1424 (Brickyard Rd) Southbound	Maximum	-	-	-	
	95th Percentile	-	-	-	
SR 1424 (Brickyard Rd) Southbound	Maximum	133	201	257	
	95th Percentile	158	161	#215	

 Queue Decrease
 Queue Increase > 25%
 Queue > Available Storage
 # = 95th percentile volume exceeds capacity, queue may be longer.



2. US 64 (Brevard Road) / SR 1488 (N Greenwood Forest Drive)

2023 Existing Condition

The intersection is currently a three-leg unsignalized intersection. For the 2023 Existing Condition, the eastbound and westbound approaches operate at LOS A during the AM peak hour. The southbound approach operates at LOS B during the AM peak hour. The northbound and southbound approaches operate at LOS A and the eastbound approach operates at LOS C during the PM peak hour.

2026 Background Condition

During the 2026 Background Condition, the eastbound and westbound approaches operate at LOS A during the AM peak hour. The southbound approach operates at LOS B during the AM peak hour. During the PM peak hour, the eastbound and westbound approaches operate at LOS A and the southbound approach operates at LOS C.

2026 Future Buildout Condition

During the 2026 Buildout Condition, the eastbound and westbound approaches operate at LOS A. The southbound approach is predicted to operate at LOS B during the AM peak hour. During the PM Peak, the eastbound and westbound approaches are predicted to operate at LOS A and eastbound approach is predicted to operate at LOS C.

The maximum queues predicted by SimTraffic at this intersection during the 2026 Build PM Peak hour is expected to increase by more than 25%, which will amount to 7 car lengths. The expected queues at the remaining approaches for the 2026 Build conditions are approximately 3 car lengths or less.

Gannett Fleming does not recommend any improvements to this intersection because of the *Etowah Residential*.

Table 6 displays the Level of Service and Delay for the subject intersection for the 2023 Existing condition, 2026 Background condition, and the 2026 Build condition. Table 7 displays projected queueing for the intersection.

Table 6 - US 64 (Brevard Road) / SR 1488 (N Greenwood Forest Drive) - Level of Service

Table 6 - US 64 (Brevard Rd) / SR 1488 (N Greenwood Forest Dr) - Level of Service					
AM Peak Hour		2023 Existing	2026 Background	2026 Build	
Intersection Level of Service (LOS)		N/A	N/A	N/A	
Total Intersection Delay (Seconds)		N/A	N/A	N/A	
US 64 (Brevard Rd) Eastbound		A	A	A	
Approach Delay		2.1	2.1	2.1	
LOS		A	A	A	
US 64 (Brevard Rd) Westbound		0.0	0.0	0.0	
Approach Delay		0.0	0.0	0.0	
LOS		-	-	-	
Approach Delay		-	-	-	
LOS		B	B	B	
SR 1488 (N Greenwood Forest Dr) Southbound		13.5	13.7	14.4	
Approach Delay		13.5	13.7	14.4	
LOS		13.5	13.7	14.4	
PM Peak Hour		2023 Existing	2026 Background	2026 Build	
Intersection Level of Service (LOS)		N/A	N/A	N/A	
Total Intersection Delay (Seconds)		N/A	N/A	N/A	
US 64 (Brevard Rd) Eastbound		A	A	A	
Approach Delay		1.3	1.3	1.4	
LOS		A	A	A	
US 64 (Brevard Rd) Westbound		0.0	0.0	0.0	
Approach Delay		0.0	0.0	0.0	
LOS		-	-	-	
Approach Delay		-	-	-	
LOS		C	C	C	
SR 1488 (N Greenwood Forest Dr) Southbound		15.7	16.3	17.6	
Approach Delay		15.7	16.3	17.6	
LOS		15.7	16.3	17.6	







 Delay Decrease or LOS Improvement
 Delay Increase > 25% or LOS Decrease by 1 Letter Grade
 LOS "F"



Table 7 - US 64 (Brevard Road) / SR 1488 (N Greenwood Forest Drive) - Queues

Table 7 - US 64 (Brevard Rd) / SR 1488 (N Greenwood Forest Dr) - Queues						
AM Peak Hour	Queue Length	2023 Existing		2026 Background		2026 Build
		Feet		Feet		Feet
US 64 (Brevard Rd) Eastbound	Maximum	54		72		56
	95th Percentile	8		8		10
	Maximum	0		0		22
	95th Percentile	0		0		0
US 64 (Brevard Rd) Westbound	Maximum	-		-		-
	95th Percentile	-		-		-
	Maximum	110		85		69
SR 1488 (N Greenwood Forest Dr) Southbound	Maximum	18		18		20
	95th Percentile					
PM Peak Hour	Queue Length	2023 Existing		2026 Background		2026 Build
		Feet		Feet		Feet
US 64 (Brevard Rd) Eastbound	Maximum	51		55		79
	95th Percentile	5		5		8
	Maximum	22		0		22
US 64 (Brevard Rd) Westbound	95th Percentile	0		0		0
	Maximum	-		-		-
	95th Percentile	-		-		-
SR 1488 (N Greenwood Forest Dr) Southbound	Maximum	179		106		153
	95th Percentile	40		43		50

 Queue Decrease
 Queue Increase > 25%
 Queue > Available Storage
 # = 95th percentile volume exceeds capacity, queue may be longer.



3. SR 1323 (Brickyard Road) / SR 1325 (Turnpike Road)

2023 Existing Condition

The intersection is currently a unsignalized four-leg intersection with all approaches operating at LOS A during the AM peak hour. During the PM peak hour, the eastbound, westbound, and northbound approaches operate at LOS A. The southbound approach operates at LOS B.

2026 Background Condition

During the 2026 background condition all approaches operate at LOS A during the AM peak hour. During the PM peak hour, the eastbound, westbound, and northbound approaches operate at LOS A. The southbound approach operates at LOS B.

2026 Future Buildout Condition

During the 2026 buildout condition all approaches operate at LOS A during the AM peak hour. During the PM peak hour, the eastbound, westbound, and northbound approaches operate at LOS A. The southbound approach operates at LOS B.

The queues predicted by SimTraffic at this intersection are less than 2 car lengths for all approaches during the 2026 Build conditions.

Gannett Fleming does not recommend any improvements to this intersection.

Table 8 displays the Level of Service and Delay for the subject intersection for the 2023 Existing condition, 2026 Background condition, 2026 Build condition. Table 9 displays projected queueing for the intersection.

Table 8 - SR 1323 (Brickyard Road) / SR 1325 (Turnpike Road) - Level of Service

Table 8 - SR 1323 (Brickyard Rd) / SR 1325 (Turnpike Rd) - Level of Service					
AM Peak Hour			2023 Existing	2026 Background	2026 Build
Intersection Level of Service (LOS)			N/A	N/A	N/A
Total Intersection Delay (Seconds)			N/A	N/A	N/A
SR 1323 (Brickyard Rd) Eastbound			A	A	A
SR 1323 (Brickyard Rd) Westbound			A	A	A
SR 1325 (Turnpike Rd) Northbound			A	A	A
SR 1325 (Turnpike Rd) Southbound			A	A	A
Approach Delay			9.5	9.5	9.6
PM Peak Hour			2023 Existing	2026 Background	2026 Build
Intersection Level of Service (LOS)			N/A	N/A	N/A
Total Intersection Delay (Seconds)			N/A	N/A	N/A
SR 1323 (Brickyard Rd) Eastbound			A	A	A
SR 1323 (Brickyard Rd) Westbound			A	A	A
SR 1325 (Turnpike Rd) Northbound			A	A	A
SR 1325 (Turnpike Rd) Southbound			B	B	B
Approach Delay			10.5	10.6	10.8




 Delay Decrease or LOS Improvement
 Delay Increase > 25% or LOS Decrease by 1 Letter Grade
 LOS "F"



Table 9 - SR 1323 (Brickyard Road) / SR 1325 (Turnpike Road) - Queues

Table 9 - SR 1323 (Brickyard Rd) / SR 1325 (Turnpike Rd) - Queues						
AM Peak Hour	Queue Length Maximum	95th Percentile	2023 Existing Feet	2026 Background Feet	2026 Build Feet	
SR 1323 (Brickyard Rd) Eastbound			0	0	0	
SR 1323 (Brickyard Rd) Westbound			0	0	0	
SR 1325 (Turnpike Rd) Northbound			13	35	36	
SR 1325 (Turnpike Rd) Southbound			5	5	5	
			61	61	37	
			5	5	5	
PM Peak Hour	Queue Length Maximum	95th Percentile	2023 Existing Feet	2026 Background Feet	2026 Build Feet	
SR 1323 (Brickyard Rd) Eastbound			25	23	25	
SR 1323 (Brickyard Rd) Westbound			0	0	0	
SR 1325 (Turnpike Rd) Northbound			24	25	25	
SR 1325 (Turnpike Rd) Southbound			0	0	0	
			12	13	13	
			3	3	3	
			13	13	13	
			3	3	5	

Queue Decrease

Queue Increase > 25%

Queue > Available Storage

= 95th percentile volume exceeds capacity, queue may be longer.


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4. SR 1323 (Brickyard Road) / SR 1488 (N Greenwood Forest Drive)

2023 Existing Condition

This intersection is currently an unsignalized three-leg intersection. The eastbound, westbound, and northbound approaches operate at LOS A during the AM peak hour. During the PM peak hour, the eastbound and westbound approaches operate at LOS A. The northbound approach operates at LOS B.

2026 Background Condition

During the 2026 background condition the eastbound, westbound, and northbound approaches operate at LOS A during the AM peak hour. During the PM peak hour, the eastbound and westbound approaches operate at LOS A. The northbound approach operates at LOS B.

2026 Future Buildout Condition

For the 2026 future buildout condition the eastbound, westbound, and northbound approaches operate at LOS A during the AM peak hour. During the PM peak hour, the eastbound and westbound approaches operate at LOS A. The northbound approach operates at LOS B.

The queues predicted by SimTraffic at this intersection for the 2026 Build condition are approximately 5 car lengths or less for all approaches.

Gannett Fleming does not recommend any improvements to this intersection.

Table 10 displays the Level of Service and Delay for the subject intersection for the 2023 Existing condition, 2026 Background condition, and 2026 Build condition. Table 11 displays projected queueing for the intersection.

Table 10 - SR 1323 (Brickyard Road) / SR 1488 (N Greenwood Forest Drive) - Level of Service

Table 10 - SR 1323 (Brickyard Rd) / SR 1488 (N Greenwood Forest Dr) - Level of Service					
AM Peak Hour		2023 Existing	2026 Background	2026 Build	
Intersection Level of Service (LOS)		N/A	N/A	N/A	
Total Intersection Delay (Seconds)		N/A	N/A	N/A	
SR 1323 (Brickyard Rd) Eastbound	LOS	A	A	A	
	Approach Delay	0.0	0.0	0.0	
SR 1323 (Brickyard Rd) Westbound	LOS	A	A	A	
	Approach Delay	4.5	4.5	4.4	
SR 1488 (N Greenwood Forest Dr) Northbound	LOS	A	A	A	
	Approach Delay	9.6	9.6	9.7	
	LOS	-	-	-	
	Approach Delay	-	-	-	
PM Peak Hour		2023 Existing	2026 Background	2026 Build	
Intersection Level of Service (LOS)		N/A	N/A	N/A	
Total Intersection Delay (Seconds)		N/A	N/A	N/A	
SR 1323 (Brickyard Rd) Eastbound	LOS	A	A	A	
	Approach Delay	0.0	0.0	0.0	
SR 1323 (Brickyard Rd) Westbound	LOS	A	A	A	
	Approach Delay	5.2	5.2	5.1	
SR 1488 (N Greenwood Forest Dr) Northbound	LOS	B	B	B	
	Approach Delay	11.6	11.8	12.1	
	LOS	-	-	-	
	Approach Delay	-	-	-	




 Delay Decrease or LOS Improvement
 Delay Increase > 25% or LOS Decrease by 1 Letter Grade
 LOS "F"



Table 11 - SR 1323 (Brickyard Road) / SR 1488 (N Greenwood Forest Drive) - Queues

Table 11 - SR 1323 (Brickyard Rd) / SR 1488 (N Greenwood Forest Dr) - Queues						
AM Peak Hour	Queue Length	2023 Existing	2026 Background	2026 Build		
	Maximum	Feet	Feet	Feet		
	SR 1323 (Brickyard Rd) Eastbound	0	0	0		
	95th Percentile	0	0	0		
	SR 1323 (Brickyard Rd) Westbound	31	55	73		
SR 1488 (N Greenwood Forest Dr) Northbound	95th Percentile	3	3	3		
	Maximum	55	72	55		
	95th Percentile	13	13	15		
	Maximum	-	-	-		
	95th Percentile	-	-	-		
PM Peak Hour	Queue Length	2023 Existing	2026 Background	2026 Build		
	Maximum	Feet	Feet	Feet		
	SR 1323 (Brickyard Rd) Eastbound	0	0	0		
	95th Percentile	0	0	0		
	SR 1323 (Brickyard Rd) Westbound	75	54	50		
SR 1488 (N Greenwood Forest Dr) Northbound	95th Percentile	8	8	8		
	Maximum	74	79	104		
	95th Percentile	20	23	25		
	Maximum	-	-	-		
	95th Percentile	-	-	-		

Queue Decrease

Queue Increase > 25%

Queue > Available Storage

= 95th percentile volume exceeds capacity, queue may be longer.


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5. SR 1323 (Brickyard Road) / SR 1322 (Holly Springs Road)

2023 Existing Condition

This intersection is currently an unsignalized three-leg intersection. The eastbound, westbound approaches operate at LOS A and the southbound approach operates at LOS B during the AM peak hour. During the PM peak hour, the eastbound and westbound approaches operate at LOS A. The southbound approach operates at LOS B.

2026 Background Condition

During the 2026 background condition the eastbound, westbound approaches operate at LOS A and the southbound approach operates at LOS B during the AM peak hour. During the PM peak hour, the eastbound and westbound approaches operate at LOS A. The southbound approach operates at LOS B.

2026 Future Buildout Condition

For the 2026 future buildout condition the eastbound, westbound approaches operate at LOS A and the southbound approach operates at LOS B during the AM peak hour. During the PM peak hour, the eastbound and westbound approaches operate at LOS A. The southbound approach operates at LOS B.

The queues predicted by SimTraffic for the 2026 Build conditions at this intersection show little change from the 2026 Background conditions. Although some of the queues show an increase greater than 25%, the increases are less than 1 car length.

Gannett Fleming does not recommend any improvements to this intersection.

Table 12 displays the Level of Service and Delay for the subject intersection for the 2023 Existing condition, 2026 Background condition, and 2026 Future Build condition. Table 13 displays projected queueing for the intersection.

Table 12 - SR 1323 (Brickyard Road) / SR 1322 (Holly Springs Road) - Level of Service

Table 12 - SR 1323 (Brickyard Rd) / SR 1322 (Holly Springs Rd) - Level of Service					
AM Peak Hour		2023 Existing	2026 Background	2026 Build	
Intersection Level of Service (LOS)		N/A	N/A	N/A	
Total Intersection Delay (Seconds)		N/A	N/A	N/A	
SR 1323 (Brickyard Rd) Eastbound		LOS	A	A	
		Approach Delay	4.3	3.9	
SR 1323 (Brickyard Rd) Westbound		LOS	A	A	
		Approach Delay	0.0	0.0	
		LOS	-	-	
		Approach Delay	-	-	
SR 1322 (Holly Springs Rd) Southbound		LOS	B	B	
		Approach Delay	11.4	11.5	
PM Peak Hour		2023 Existing	2026 Background	2026 Build	
Intersection Level of Service (LOS)		N/A	N/A	N/A	
Total Intersection Delay (Seconds)		N/A	N/A	N/A	
SR 1323 (Brickyard Rd) Eastbound		LOS	A	A	
		Approach Delay	3.5	3.3	
SR 1323 (Brickyard Rd) Westbound		LOS	A	A	
		Approach Delay	0.0	0.0	
		LOS	-	-	
		Approach Delay	-	-	
SR 1322 (Holly Springs Rd) Southbound		LOS	B	B	
		Approach Delay	11.7	11.9	

 Delay Decrease or LOS Improvement
 Delay Increase > 25% or LOS Decrease by 1 Letter Grade
 LOS "F"



Table 13 - SR 1323 (Brickyard Road) / SR 1322 (Holly Springs Drive - Queues

Table 13 - SR 1323 (Brickyard Rd) / SR 1322 (Holly Springs Rd) - Queues					
AM Peak Hour	Queue Length	2023 Existing Feet	2026 Background Feet	2026 Build Feet	
	Maximum	53	76	76	
	95th Percentile	5	5	8	
	Maximum	0	22	0	
	95th Percentile	0	0	0	
	Maximum	-	-	-	
	95th Percentile	-	-	-	
	Maximum	72	75	73	
SR 1322 (Holly Springs Rd) Southbound	95th Percentile	13	15	18	
PM Peak Hour	Queue Length	2023 Existing Feet	2026 Background Feet	2026 Build Feet	
	Maximum	31	55	74	
	95th Percentile	3	5	5	
	Maximum	0	0	0	
	95th Percentile	0	0	0	
	Maximum	-	-	-	
	95th Percentile	-	-	-	
	Maximum	133	89	93	
SR 1322 (Holly Springs Rd) Southbound	95th Percentile	30	30	40	

Queue Decrease

Queue Increase > 25%

Queue > Available Storage

= 95th percentile volume exceeds capacity, queue may be longer.


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6. SR 1424 (Brickyard Road) / SR 1323 (McKinney Road)

2023 Existing Condition

This intersection is currently an unsignalized three-leg intersection. All approaches operate at LOS A during the AM peak hour. During the PM peak hour, all approaches operate at LOS A.

2026 Background Condition

During the 2026 background condition all approaches operate at LOS A during the AM peak hour. During the PM peak hour, all approaches operate at LOS A.

2026 Future Buildout Condition

For the 2026 future buildout condition all approaches operate at LOS A during the AM peak hour. During the PM peak hour, all approaches operate at LOS A.

The westbound maximum queue predicted by SimTraffic at this intersection increases by more than 25% but less than 1 car length during the AM peak hour. During the PM peak hour, the queues remain constant for the PM Peak Hour 2026 Build condition.

Gannett Fleming does not recommend any improvements to this intersection.

Table 14 displays the Level of Service and Delay for the subject intersection for the 2023 Existing condition, 2026 Background condition, and 2026 Build condition. Table 15 displays projected queueing for the intersection.



Table 14 - SR 1424 (Brickyard Road) / SR 1323 (McKinney Road) - Level of Service

Table 14 - SR 1424 (Brickyard Rd) / SR 1323 (McKinney Rd) - Level of Service					
AM Peak Hour					
Intersection Level of Service (LOS)		2023 Existing	2026 Background	2026 Build	
Total Intersection Delay (Seconds)		N/A	N/A	N/A	
SR 1323 (Brickyard Rd) Eastbound	LOS	A	A	A	
	Approach Delay	0.0	0.0	0.0	
SR 1323 (McKinney Rd) Westbound	LOS	A	A	A	
	Approach Delay	8.9	9.0	9.1	
SR 1424 (Brickyard Rd) Northbound	LOS	A	A	A	
	Approach Delay	0.0	0.0	0.0	
	LOS	-	-	-	
	Approach Delay	-	-	-	
PM Peak Hour					
Intersection Level of Service (LOS)		2023 Existing	2026 Background	2026 Build	
Total Intersection Delay (Seconds)		N/A	N/A	N/A	
SR 1323 (Brickyard Rd) Eastbound	LOS	A	A	A	
	Approach Delay	0.0	0.0	0.0	
SR 1323 (McKinney Rd) Westbound	LOS	A	A	A	
	Approach Delay	9.0	9.0	9.1	
SR 1424 (Brickyard Rd) Northbound	LOS	A	A	A	
	Approach Delay	0.0	0.0	0.0	
	LOS	-	-	-	
	Approach Delay	-	-	-	




 Delay Decrease or LOS Improvement
 Delay Increase > 25% or LOS Decrease by 1 Letter Grade
 LOS "F"



Table 15 – SR 1424 (Brickyard Road) / SR 1323 (McKinney Road) – Queues

Table 15 – SR 1424 (Brickyard Rd) / SR 1323 (McKinney Rd) – Queues					
AM Peak Hour	Queue Length	2023 Existing Feet	2026 Background Feet	2026 Build Feet	
SR 1323 (Brickyard Rd) Eastbound	Maximum	0	0	0	
	95th Percentile	0	0	0	
	Maximum	31	31	53	
SR 1323 (McKinney Rd) Westbound	95th Percentile	0	0	0	
	Maximum	27	0	0	
	95th Percentile	0	0	0	
SR 1424 (Brickyard Rd) Northbound	Maximum	-	-	-	
	95th Percentile	-	-	-	
PM Peak Hour	Queue Length	2023 Existing Feet	2026 Background Feet	2026 Build Feet	
SR 1323 (Brickyard Rd) Eastbound	Maximum	0	0	0	
	95th Percentile	0	0	0	
	Maximum	53	31	31	
SR 1323 (McKinney Rd) Westbound	95th Percentile	0	0	0	
	Maximum	48	20	20	
	95th Percentile	0	0	0	
SR 1424 (Brickyard Rd) Northbound	Maximum	-	-	-	
	95th Percentile	-	-	-	

Queue Decrease

Queue Increase > 25%

Queue > Available Storage

= 95th percentile volume exceeds capacity, queue may be longer.


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7. US 64 (Brevard Road) / Access #1

2023 Existing Condition

This intersection does not exist during the 2023 existing condition.

2026 Background Condition

This intersection does not exist during the 2026 background condition.

2026 Future Buildout Condition

For the 2026 future buildout condition the eastbound and westbound approaches operate at LOS A, and the southbound approach operates at LOS B during the AM peak hour. During the PM peak hour, the eastbound and westbound approaches operate at LOS A, and the southbound approach operates at LOS C.

The queues predicted by SimTraffic at this intersection for the 2026 Buildout Condition are predicted to be within the available storage lengths.

Gannett Fleming recommends the proposed Site Drive be constructed as shown on the site plan (included in Appendix C) with full access stop control and at least 100 feet of stem length as per NCDOT Guidelines. Gannett Fleming recommends a dedicated left turn lane with 100 feet of full storage be constructed on US 64 (Brevard Road) with an appropriate taper. Gannett Fleming recommends a dedicated right turn lane with 100 feet of full storage be constructed on US 64 (Brevard Road) with an appropriate taper.

Table 16 displays the Level of Service and Delay for the subject intersection for the 2023 Existing condition, 2026 Background condition, and 2026 Build condition. Table 17 displays projected queueing for the intersection.

Table 16 - US 64 (Brevard Road) / Access #1 - Level of Service

Table 16 - US 64 (Brevard Rd) / Access #1 - Level of Service					
AM Peak Hour		2023 Existing	2026 Background	2026 Build	
Intersection Level of Service (LOS)		N/A	N/A	N/A	
Total Intersection Delay (Seconds)		N/A	N/A	N/A	
US 64 (Brevard Rd) Eastbound	LOS	-	-	A	
	Approach Delay	-	-	0.3	
	LOS	-	-	A	
US 64 (Brevard Rd) Westbound	Approach Delay	-	-	0.0	
	LOS	-	-	-	
	Approach Delay	-	-	-	
Access #1 Southbound	LOS	-	-	B	
	Approach Delay	-	-	14.7	
	Approach Delay	-	-		
PM Peak Hour		2023 Existing	2026 Background	2026 Build	
Intersection Level of Service (LOS)		N/A	N/A	N/A	
Total Intersection Delay (Seconds)		N/A	N/A	N/A	
US 64 (Brevard Rd) Eastbound	LOS	-	-	A	
	Approach Delay	-	-	0.8	
	LOS	-	-	A	
US 64 (Brevard Rd) Westbound	Approach Delay	-	-	0.0	
	LOS	-	-	-	
	Approach Delay	-	-	-	
Access #1 Southbound	LOS	-	-	C	
	Approach Delay	-	-	17.3	
	Approach Delay	-	-		




 Delay Decrease or LOS Improvement
 Delay Increase > 25% or LOS Decrease by 1 Letter Grade
 LOS "F"



Table 17 - US 64 (Brevard Road) / Access #1 - Queues

Table 17 - US 64 (Brevard Rd) / Access #1 - Queues					
AM Peak Hour	Queue Length	2023 Existing	2026 Background	2026 Build	
	Feet	Feet	Feet	Feet	
US 64 (Brevard Rd) Eastbound	Maximum	-	-	32	
	95th Percentile	-	-	0	
US 64 (Brevard Rd) Westbound	Maximum	-	-	0	
	95th Percentile	-	-	0	
	Maximum	-	-	-	
	95th Percentile	-	-	-	
Access #1 Southbound	Maximum	-	-	84	
	95th Percentile	-	-	30	
PM Peak Hour	Queue Length	2023 Existing	2026 Background	2026 Build	
	Feet	Feet	Feet	Feet	
US 64 (Brevard Rd) Eastbound	Maximum	-	-	54	
	95th Percentile	-	-	5	
US 64 (Brevard Rd) Westbound	Maximum	-	-	22	
	95th Percentile	-	-	0	
	Maximum	-	-	-	
	95th Percentile	-	-	-	
Access #1 Southbound	Maximum	-	-	86	
	95th Percentile	-	-	25	

Queue Decrease

Queue Increase > 25%

Queue > Available Storage

= 95th percentile volume exceeds capacity, queue may be longer.


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8. SR 1323 (Brickyard Road) / Access #2

2023 Existing Condition

This intersection does not exist during the 2023 existing condition.

2026 Background Condition

This intersection does not exist during the 2026 background condition.

2026 Future Buildout Condition

For the 2026 future buildout condition the eastbound and westbound approaches operate at LOS A, the northbound approach operates at LOS B during the AM peak hour. During the PM peak hour, the eastbound and westbound approaches will operate at LOS A, the northbound approach will operate at LOS B.

The queues predicted by SimTraffic at this intersection for the 2026 Buildout Condition are predicted to be within the available storage lengths.

Table 18 displays the Level of Service and Delay for the subject intersection for the 2023 Existing condition, 2026 Background condition, and 2026 Build condition. Table 19 displays projected queueing for the intersection.



Table 18 – SR 1323 (Brickyard Road) / Access #2 - Level of Service

Table 18 – SR 1323 (Brickyard Rd) / Access #2 - Level of Service					
AM Peak Hour			2023 Existing	2026 Background	2026 Build
Intersection Level of Service (LOS)			N/A	N/A	N/A
Total Intersection Delay (Seconds)			N/A	N/A	N/A
SR 1323 (Brickyard Rd) Eastbound	LOS		-	-	A
	Approach Delay		-	-	0.0
SR 1323 (Brickyard Rd) Westbound	LOS		-	-	A
	Approach Delay		-	-	1.8
Access #2 Northbound	LOS		-	-	B
	Approach Delay		-	-	10.3
	LOS		-	-	-
	Approach Delay		-	-	-
PM Peak Hour					
Intersection Level of Service (LOS)			N/A	N/A	N/A
Total Intersection Delay (Seconds)			N/A	N/A	N/A
SR 1323 (Brickyard Rd) Eastbound	LOS		-	-	A
	Approach Delay		-	-	0.0
SR 1323 (Brickyard Rd) Westbound	LOS		-	-	A
	Approach Delay		-	-	1.9
Access #2 Northbound	LOS		-	-	B
	Approach Delay		-	-	10.4
	LOS		-	-	-
	Approach Delay		-	-	-




 Delay Decrease or LOS Improvement
 Delay Increase > 25% or LOS Decrease by 1 Letter Grade
 LOS "F"



Table 19 - SR 1323 (Brickyard Road) / Access #2 - Queues

Table 19 - SR 1323 (Brickyard Rd) / Access #2 - Queues					
AM Peak Hour	Queue Length	2023 Existing	2026 Background	2026 Build	
	Feet	Feet	Feet	Feet	
SR 1323 (Brickyard Rd) Eastbound	Maximum	-	-	0	
	95th Percentile	-	-	0	
SR 1323 (Brickyard Rd) Westbound	Maximum	-	-	31	
	95th Percentile	-	-	3	
Access #2 Northbound	Maximum	-	-	66	
	95th Percentile	-	-	10	
	Maximum	-	-	-	
	95th Percentile	-	-	-	
PM Peak Hour	Queue Length	2023 Existing	2026 Background	2026 Build	
	Feet	Feet	Feet	Feet	
SR 1323 (Brickyard Rd) Eastbound	Maximum	-	-	0	
	95th Percentile	-	-	0	
SR 1323 (Brickyard Rd) Westbound	Maximum	-	-	75	
	95th Percentile	-	-	5	
Access #2 Northbound	Maximum	-	-	44	
	95th Percentile	-	-	8	
	Maximum	-	-	-	
	95th Percentile	-	-	-	

■ Queue Decrease
■ Queue Increase > 25%
■ Queue > Available Storage
 # = 95th percentile volume exceeds capacity, queue may be longer.



IX. Recommendations

To mitigate the traffic-related impacts caused by the *Etowah Residential* and to provide for safe, efficient, and reliable traffic flow, Gannett Fleming recommends the following:

US 64 (Brevard Road) / SR 1424 (Brickyard Road)

Gannett Fleming recommends no changes to this intersection.

US 64 (Brevard Road) / SR 1488 (N Greenwood Forest Drive)

Gannett Fleming recommends no changes to this intersection.

SR 1323 (Brickyard Road) / SR 1325 (Turnpike Road)

Gannett Fleming recommends no changes to this intersection.

SR 1323 (Brickyard Road) / SR 1488 (N Greenwood Forest Drive)

Gannett Fleming recommends no changes to this intersection.

SR 1323 (Brickyard Road) / SR 1322 (Holly Springs Road)

Gannett Fleming recommends no changes to this intersection.

SR 1424 (Brickyard Road) / SR 1323 (McKinney Road)

Gannett Fleming recommends no changes to this intersection.

US 64 (Brevard Road) / Access #1

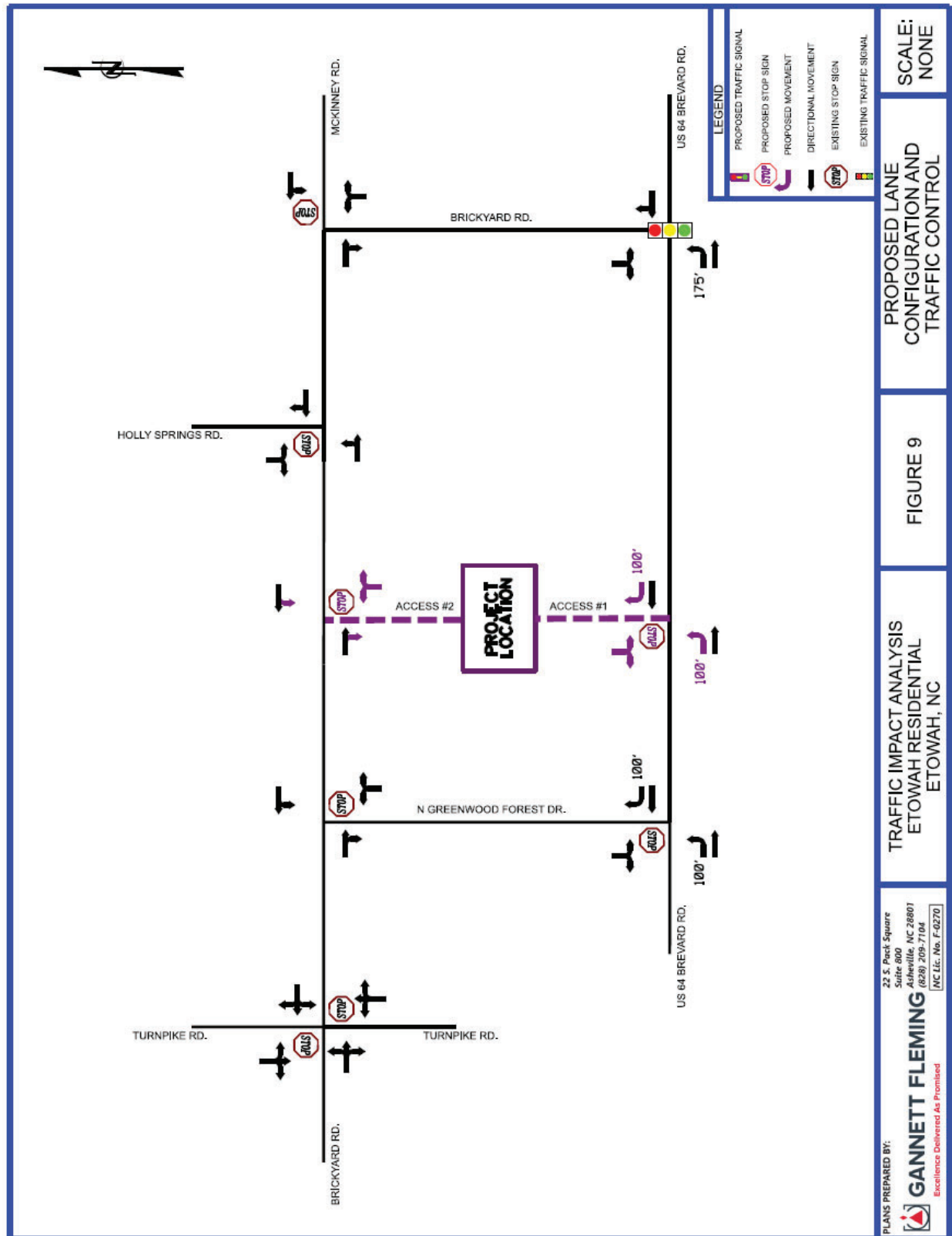
Gannett Fleming recommends the proposed Site Drive be constructed as shown on the site plan (included in Appendix C) with full access stop control and at least 100 feet of stem length as per NCDOT Guidelines. Gannett Fleming recommends a dedicated left turn lane with 100 feet of full storage be constructed on US 64 (Brevard Road) with an appropriate taper. Gannett Fleming recommends a dedicated right turn lane with 100 feet of full storage be constructed on US 64 (Brevard Road) with an appropriate taper.

SR 1323 (Brickyard Road) / Access #2

Gannett Fleming recommends the proposed Site Drive be constructed as shown on the site plan (included in Appendix C) with full access stop control and at least 100 feet of stem length as per NCDOT Guidelines.

The project recommendations and proposed lane configuration and traffic control are illustrated in Figure 9.

Figure 9 - Proposed Lane Configuration and Traffic Control



IX. Conclusions

This Traffic Impact Analysis shows that the proposed *Etowah Residential* impacts on the traffic operations at the study area intersections will be mitigated by the recommended improvements. It is the opinion of Gannett Fleming that with the recommended improvements in place, the proposed development will not negatively impact the health, safety, and welfare of the traveling public.

X. References

¹ ***Trip Generation Manual***, Institute of Transportation Engineers, 11th Edition, Washington, D.C., 2022

² ***NCDOT Interactive Traffic Volume Map***:
<http://ncdot.maps.arcgis.com/apps/webappviewer/index.html?id=5f6fe58c1d90482ab9107ccc03026280>

³ ***NCDOT Rate vs Equation Spreadsheet***, July 2022

⁴ ***Highway Capacity Manual***, Special Report 209, Transportation Research Board, National Research Council, Washington, D.C., 1998



Appendix A: Traffic Data

A



GANNETT FLEMING

Excellence Delivered As Promised

Brevard Rd. (US 64) @ Brickyard Rd.

File Name: AM

Location:

Cars and Peds

Site Code:

Study Date: 05/25/2023

	Brickyard Rd. Southbound						Brevard Rd. (US 64) Westbound						Northbound						Brevard Rd. (US 64) Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		3	0	26		29		13	42	0		55						0		0	64	2		66	150
07:15		3	0	30		33		18	85	0		103						0		0	79	0		79	215
07:30		3	0	31		34		24	60	0		84						0		0	97	6		103	221
07:45		3	0	25		28		23	75	0		98						0		0	75	2		77	203
Total	0	12	0	112	0	124	0	78	262	0	0	340	0	0	0	0	0	0	0	0	315	10	0	325	789
08:00		1	0	34		35		24	66	0		90						0		0	79	1		80	205
08:15		3	0	32		35		16	67	0		83						0		0	58	4		62	180
08:30		9	0	25		34		11	72	0		83						0		0	82	6		88	205
08:45		5	0	23		28		9	63	0		72						0		0	72	5		77	177
Total	0	18	0	114	0	132	0	60	268	0	0	328	0	0	0	0	0	0	0	0	291	16	0	307	767
Grand Total	0	30	0	226	0	256	0	138	530	0	0	668	0	0	0	0	0	0	0	0	606	26	0	632	1556
Appr %		11.7	0	88.3	0			20.7	79.3	0	0			-2	-2	-2	-2			0	95.9	4.1	0		
Total %		1.9	0	14.5	0			8.9	34.1	0	0			0	0	0	0			0	38.9	1.7	0		
AM Pk Hr		07:15	07:15	07:15	07:15	07:15		07:15	07:15	07:15	07:15	07:15		07:15	07:15	07:15	07:15	07:15		07:15	07:15	07:15	07:15	07:15	07:15
AM Pk Vol		10	0	120	0	130		89	286	0	0	375		0	0	0	0	0		0	330	9	0	339	844
AM PHF		0.833	NaN	0.882	NaN	0.929		0.927	0.841	NaN	NaN	0.910		NaN	NaN	NaN	NaN	NaN		NaN	0.851	0.375	NaN	0.823	0.955

Brevard Rd. (US 64) @ Brickyard Rd.

File Name: AM

Location:

Trucks and Bikes

Site Code:

Study Date: 05/25/2023

	Brickyard Rd. Southbound						Brevard Rd. (US 64) Westbound						Northbound						Brevard Rd. (US 64) Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		0	0	1		1		0	2	0		2						0		0	4	0		4	7
07:15		1	0	0		1		0	3	0		3						0		0	0	0		0	4
07:30		0	0	1		1		0	3	0		3						0		0	1	0		1	5
07:45		1	0	2		3		2	4	0		6						0		0	1	1		2	11
Total	0	2	0	4	0	6	0	2	12	0	0	14	0	0	0	0	0	0	0	0	6	1	0	7	27
08:00		0	0	0		0		1	9	0		10						0		0	4	0		4	14
08:15		0	0	0		0		1	4	0		5						0		0	3	1		4	9
08:30		0	0	1		1		0	8	0		8						0		0	3	1		4	13
08:45		0	0	2		2		0	2	0		2						0		0	2	0		2	6
Total	0	0	0	3	0	3	0	2	23	0	0	25	0	0	0	0	0	0	0	0	12	2	0	14	42
Grand Total	0	2	0	7	0	9	0	4	35	0	0	39	0	0	0	0	0	0	0	0	18	3	0	21	69
Appr %		22.2	0	77.8	0			10.3	89.7	0	0			-2	-2	-2	-2			0	85.7	14.3	0		
Total %		2.9	0	10.1	0			5.8	50.7	0	0			0	0	0	0			0	26.1	4.3	0		
AM Pk Hr		07:45	07:45	07:45	07:45	07:45		07:45	07:45	07:45	07:45	07:45		07:45	07:45	07:45	07:45	07:45		07:45	07:45	07:45	07:45	07:45	07:45
AM Pk Vol		1	0	3	0	4		4	25	0	0	29		0	0	0	0	0		0	11	3	0	14	47
AM PHF		0.250	NaN	0.375	NaN	0.333		0.500	0.694	NaN	NaN	0.725		NaN	NaN	NaN	NaN	NaN		NaN	0.688	0.750	NaN	0.875	0.839

Brevard Rd. (US 64) @ Brickyard Rd.

File Name: AM

Location:

All Vehicles

Site Code:

Study Date: 05/25/2023

	Brickyard Rd. Southbound					Brevard Rd. (US 64) Westbound					Northbound					Brevard Rd. (US 64) Eastbound					
Time	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00	3	0	27	0	30	13	44	0	0	57	0	0	0	0	0	0	68	2	0	70	157
07:15	4	0	30	0	34	18	88	0	0	106	0	0	0	0	0	0	79	0	0	79	219
07:30	3	0	32	0	35	24	63	0	0	87	0	0	0	0	0	0	98	6	0	104	226
07:45	4	0	27	0	31	25	79	0	0	104	0	0	0	0	0	0	76	3	0	79	214
Total	14	0	116	0	130	80	274	0	0	354	0	0	0	0	0	0	321	11	0	332	816
08:00	1	0	34	0	35	25	75	0	0	100	0	0	0	0	0	0	83	1	0	84	219
08:15	3	0	32	0	35	17	71	0	0	88	0	0	0	0	0	0	61	5	0	66	189
08:30	9	0	26	0	35	11	80	0	0	91	0	0	0	0	0	0	85	7	0	92	218
08:45	5	0	25	0	30	9	65	0	0	74	0	0	0	0	0	0	74	5	0	79	183
Total	18	0	117	0	135	62	291	0	0	353	0	0	0	0	0	0	303	18	0	321	809
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	32	0	233	0	265	142	565	0	0	707	0	0	0	0	0	0	624	29	0	653	1625
Appr %	12.1	00.0	87.9	00.0		20.1	79.9	00.0	00.0		NaN	NaN	NaN	NaN		00.0	95.6	04.4	00.0		
Total %	02.0	00.0	14.3	00.0		08.7	34.8	00.0	00.0		00.0	00.0	00.0	00.0		00.0	38.4	01.8	00.0		
% Trucks	06.3	-	03.0	-	03.4	02.8	06.2	-	-	05.5	-	-	-	-	-	-	02.9	10.3	-	03.2	04.2
AM Pk Hr	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15	07:15
AM Pk Vol	12	0	123	0	135	92	305	0	0	397	0	0	0	0	0	0	336	10	0	346	878
AM PHF	0.750	NaN	0.904	NaN	0.964	0.920	0.866	NaN	NaN	0.936	NaN	NaN	NaN	NaN	NaN	NaN	0.857	0.417	NaN	0.832	0.971

Brevard Rd. (US 64) @ Brickyard Rd.





File Name: AM





Location:

All Vehicles





Site Code:





Study Date: 05/25/2023

Brevard Rd. (US 64)			
In = 597		Out = 653	
0	624	29	0
Right	Thru	Left	U-Turn
			

Brickyard Rd.			
In = 171		Out = 265	
32	0	233	0
Right	Thru	Left	U-Turn
			

Total Volumes
07:00 to 09:00
Volume = 1625

Brevard Rd. (US 64)			
In = 857		Out = 707	
142	565	0	0
Right	Thru	Left	U-Turn
			

			
U-Turn	Left	Thru	Right
0	0	0	0
In = 0		Out = 0	

Brevard Rd. (US 64) @ Brickyard Rd.





File Name: AM





Location:

All Vehicles





Site Code:





Study Date: 05/25/2023

Brevard Rd. (US 64)			
0	336	10	0
Right	Thru	Left	U-Turn
			

Brickyard Rd.			
12	0	123	0
Right	Thru	Left	U-Turn
			

AM Peak Hour Statistics
 AM Peak Hour Begins: 07:15
 AM Peak Hour Volume: 878
 AM Peak Hour Factor: 0.971

			
U-Turn	Left	Thru	Right
0	0	0	0

Brevard Rd. (US 64)			
92	305	0	0
Right	Thru	Left	U-Turn
			

Brevard Rd. (US 64) @ Brickyard Rd.

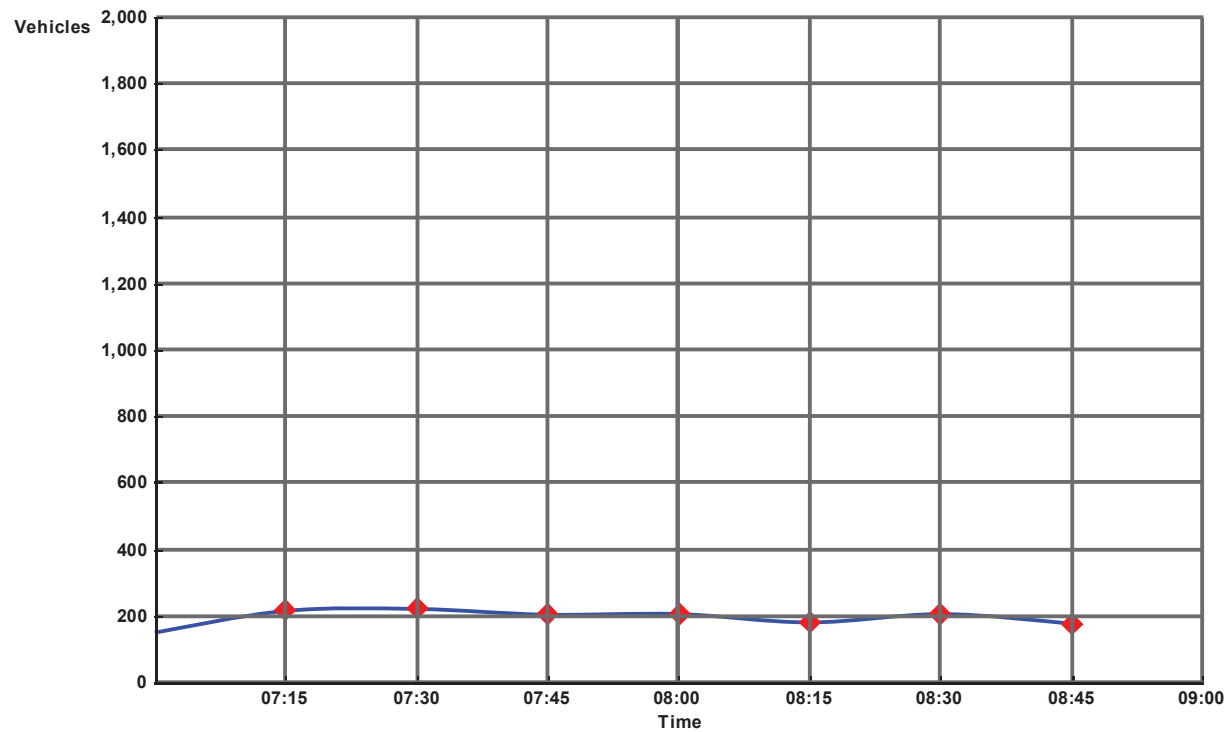
File Name: AM

Location:

Cars

Site Code:

Study Date: 05/25/2023



Brevard Rd. (US 64) @ Brickyard Rd.

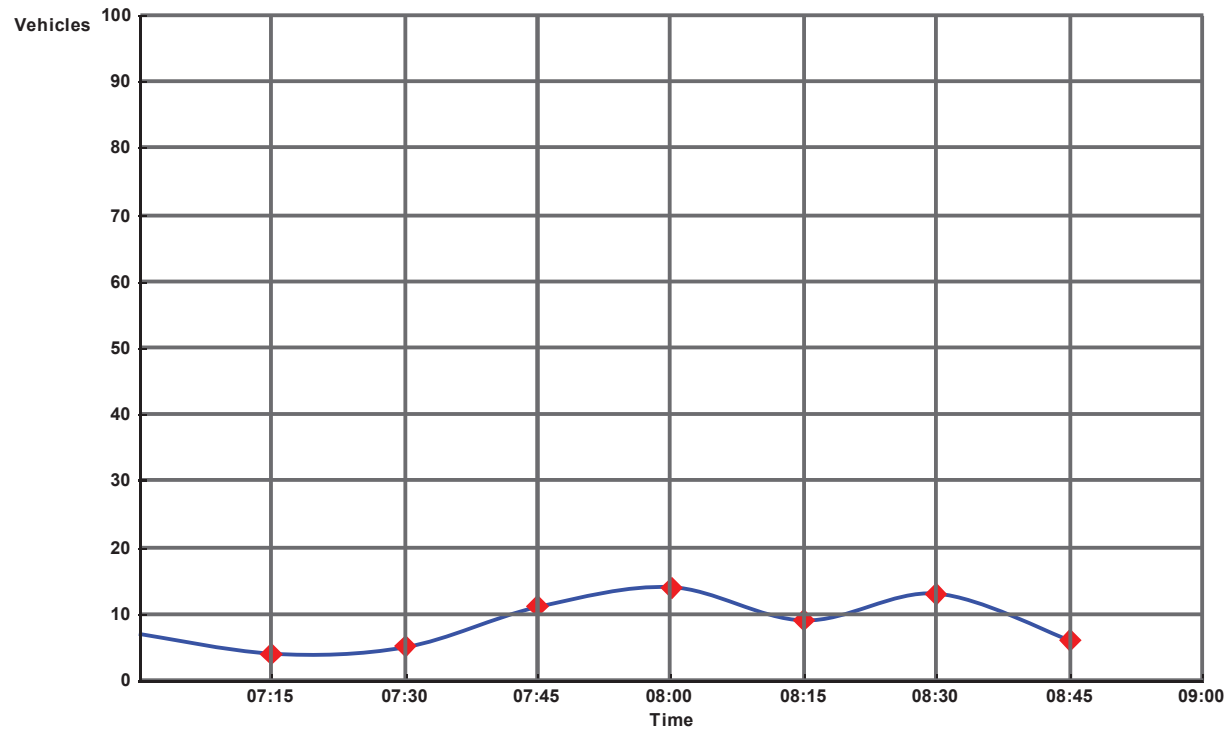
File Name: AM

Location:

Trucks

Site Code:

Study Date: 05/25/2023



Brevard Rd. (US 64) @ Brickyard Rd.

File Name: PM

Site Code:

Location:

Cars and Peds

Study Date: 05/24/2023

	Brickyard Rd. Southbound						Brevard Rd. (US 64) Westbound						Northbound						Brevard Rd. (US 64) Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00		8	0	34		42		30	92	0		122						0		0	106	8		114	278
16:15		4	0	41		45		28	123	0		151						0		0	104	12		116	312
16:30		5	0	34		39		32	97	0		129						0		0	78	6		84	252
16:45		5	0	21		26		28	102	0		130						0		0	106	9		115	271
Total	0	22	0	130	0	152	0	118	414	0	0	532	0	0	0	0	0	0	0	0	394	35	0	429	1113
17:00		3	0	31		34		31	116	0		147						0		0	102	5		107	288
17:15		4	0	38		42		34	120	0		154						0		0	107	9		116	312
17:30		10	0	25		35		33	122	0		155						0		0	90	3		93	283
17:45		2	0	17		19		33	71	0		104						0		0	110	3		113	236
Total	0	19	0	111	0	130	0	131	429	0	0	560	0	0	0	0	0	0	0	0	409	20	0	429	1119
18:00		0	0	0		0		0	0	0		0						0		0	0	0		0	0
Total	0	21	0	128	0	149	0	164	500	0	0	664	0	0	0	0	0	0	0	0	519	23	0	542	1355
Grand Total	0	41	0	241	0	282	0	249	843	0	0	1092	0	0	0	0	0	0	0	0	803	55	0	858	2232
Appr %		14.5	0	85.5	0			22.8	77.2	0	0			-2	-2	-2	-2			0	93.6	6.4	0		
Total %		1.8	0	10.8	0			11.2	37.8	0	0			0	0	0	0			0	36	2.5	0		
PM Pk Hr		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45	16:45
PM Pk Vol		22	0	115	0	137		126	460	0	0	586		0	0	0	0	0		0	405	26	0	431	1154
PM PHF		0.550	NaN	0.757	NaN	0.815		0.926	0.943	NaN	NaN	0.945		NaN	NaN	NaN	NaN	NaN		NaN	0.946	0.722	NaN	0.929	0.925

Brevard Rd. (US 64) @ Brickyard Rd.

File Name: PM

Site Code:

Location:

Trucks and Bikes

Study Date: 05/24/2023

	Brickyard Rd. Southbound						Brevard Rd. (US 64) Westbound						Northbound						Brevard Rd. (US 64) Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00		0	0	0		0		0	1	0		1						0		0	2	0		2	3
16:15		0	0	0		0		0	2	0		2						0		0	1	1		2	4
16:30		0	0	0		0		1	2	0		3						0		0	1	1		2	5
16:45		1	0	0		1		3	2	0		5						0		0	5	0		5	11
Total	0	1	0	0	0	1	0	4	7	0	0	11	0	0	0	0	0	0	0	0	9	2	0	11	23
17:00		2	0	0		2		1	2	0		3						0		0	1	0		1	6
17:15		0	0	0		0		0	1	0		1						0		0	0	1		1	2
17:30		0	0	0		0		0	1	0		1						0		0	1	0		1	2
17:45		0	0	0		0		0	4	0		4						0		0	1	0		1	5
Total	0	2	0	0	0	2	0	1	8	0	0	9	0	0	0	0	0	0	0	0	3	1	0	4	15
18:00		0	0	0		0		0	0	0		0						0		0	0	0		0	0
Total	0	2	0	0	0	2	0	1	12	0	0	13	0	0	0	0	0	0	0	0	4	1	0	5	20
Grand Total	0	3	0	0	0	3	0	5	15	0	0	20	0	0	0	0	0	0	0	0	12	3	0	15	38
Appr %		100	0	0	0			25	75	0	0			-2	-2	-2	-2			0	80	20	0		
Total %		7.9	0	0	0			13.2	39.5	0	0			0	0	0	0			0	31.6	7.9	0		
PM Pk Hr		16:15	16:15	16:15	16:15	16:15		16:15	16:15	16:15	16:15	16:15		16:15	16:15	16:15	16:15	16:15		16:15	16:15	16:15	16:15	16:15	16:15
PM Pk Vol		3	0	0	0	3		5	8	0	0	13		0	0	0	0	0		0	8	2	0	10	26
PM PHF		0.375	NaN	NaN	NaN	0.375		0.417	1.000	NaN	NaN	0.650		NaN	NaN	NaN	NaN	NaN		NaN	0.400	0.500	NaN	0.500	0.591

Brevard Rd. (US 64) @ Brickyard Rd.

File Name: PM

Site Code:

Location:

All Vehicles

Study Date: 05/24/2023

Time	Brickyard Rd. Southbound					Brevard Rd. (US 64) Westbound					Northbound					Brevard Rd. (US 64) Eastbound					Int Total
	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	
16:00	8	0	34	0	42	30	93	0	0	123	0	0	0	0	0	0	108	8	0	116	281
16:15	4	0	41	0	45	28	125	0	0	153	0	0	0	0	0	0	105	13	0	118	316
16:30	5	0	34	0	39	33	99	0	0	132	0	0	0	0	0	0	79	7	0	86	257
16:45	6	0	21	0	27	31	104	0	0	135	0	0	0	0	0	0	111	9	0	120	282
Total	23	0	130	0	153	122	421	0	0	543	0	0	0	0	0	0	403	37	0	440	1136
17:00	5	0	31	0	36	32	118	0	0	150	0	0	0	0	0	0	103	5	0	108	294
17:15	4	0	38	0	42	34	121	0	0	155	0	0	0	0	0	0	107	10	0	117	314
17:30	10	0	25	0	35	33	123	0	0	156	0	0	0	0	0	0	91	3	0	94	285
17:45	2	0	17	0	19	33	75	0	0	108	0	0	0	0	0	0	111	3	0	114	241
Total	21	0	111	0	132	132	437	0	0	569	0	0	0	0	0	0	412	21	0	433	1134
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	23	0	128	0	151	165	512	0	0	677	0	0	0	0	0	0	523	24	0	547	1375
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	44	0	241	0	285	254	858	0	0	1112	0	0	0	0	0	0	815	58	0	873	2270
Appr %	15.4	00.0	84.6	00.0		22.8	77.2	00.0	00.0		NaN	NaN	NaN	NaN		00.0	93.4	06.6	00.0		
Total %	01.9	00.0	10.6	00.0		11.2	37.8	00.0	00.0		00.0	00.0	00.0	00.0		00.0	35.9	02.6	00.0		
% Trucks	06.8	-	00.0	-	01.1	02.0	01.7	-	-	01.8	-	-	-	-	-	-	01.5	05.2	-	01.7	01.7
PM Pk Hr	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45
PM Pk Vol	25	0	115	0	140	130	466	0	0	596	0	0	0	0	0	0	412	27	0	439	1175
PM PHF	0.625	NaN	0.757	NaN	0.833	0.956	0.947	NaN	NaN	0.955	NaN	NaN	NaN	NaN	NaN	NaN	0.928	0.675	NaN	0.915	0.930

Brevard Rd. (US 64) @ Brickyard Rd.





File Name: PM





Location:

All Vehicles





Site Code:





Study Date: 05/24/2023

Brevard Rd. (US 64)			
In = 902		Out = 873	
0	815	58	0
Right	Thru	Left	U-Turn
			

Brickyard Rd.			
In = 312		Out = 285	
44	0	241	0
Right	Thru	Left	U-Turn
			

Total Volumes
16:00 to 18:15
Volume = 2270

			
U-Turn	Left	Thru	Right
0	0	0	0
In = 0		Out = 0	

Brevard Rd. (US 64)			
In = 1056		Out = 1112	
254	858	0	0
Right	Thru	Left	U-Turn
			

Brevard Rd. (US 64) @ Brickyard Rd.

File Name: PM





Location:

All Vehicles





Site Code:





Study Date: 05/24/2023

Brevard Rd. (US 64)			
0	412	27	0
Right	Thru	Left	U-Turn
			

Brickyard Rd.			
25	0	115	0
Right	Thru	Left	U-Turn
			

PM Peak Hour Statistics
 PM Peak Hour Begins: 16:45
 PM Peak Hour Volume: 1175
 PM Peak Hour Factor: 0.930

			
U-Turn	Left	Thru	Right
0	0	0	0

Brevard Rd. (US 64)			
130	466	0	0
Right	Thru	Left	U-Turn
			

Brevard Rd. (US 64) @ Brickyard Rd.

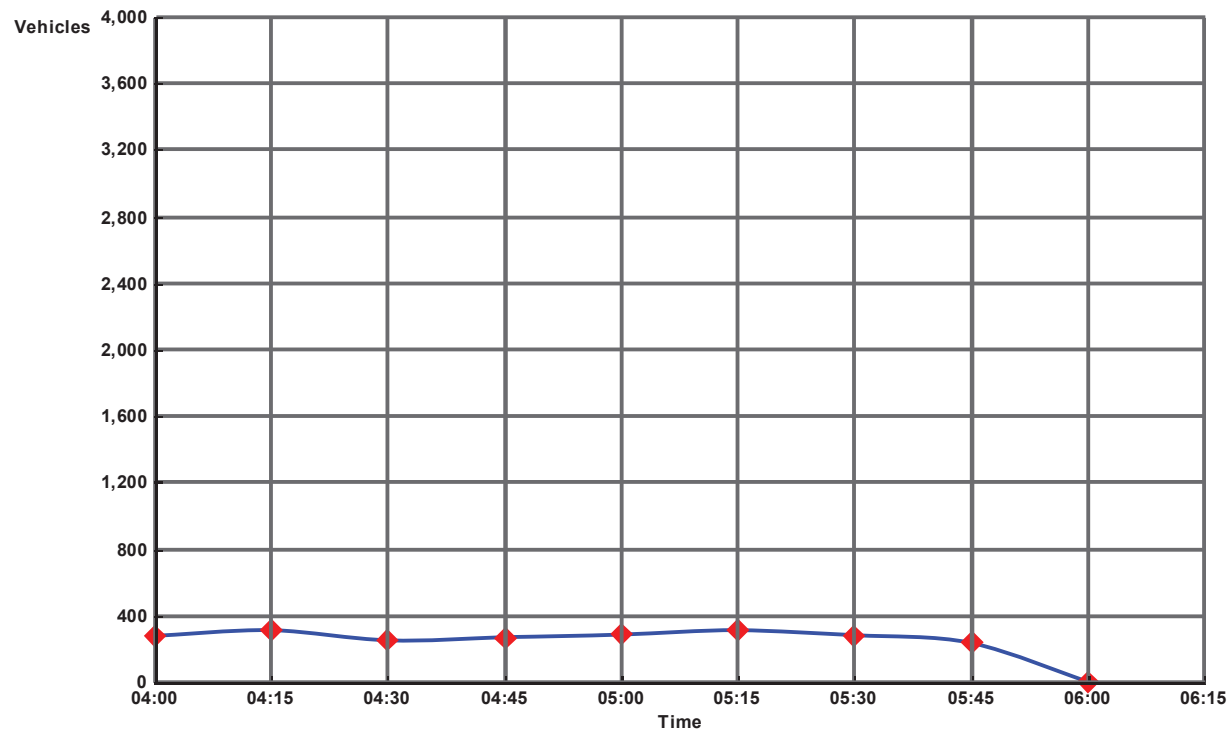
File Name: PM

Location:

Cars

Site Code:

Study Date: 05/24/2023



Brevard Rd. (US 64) @ Brickyard Rd.

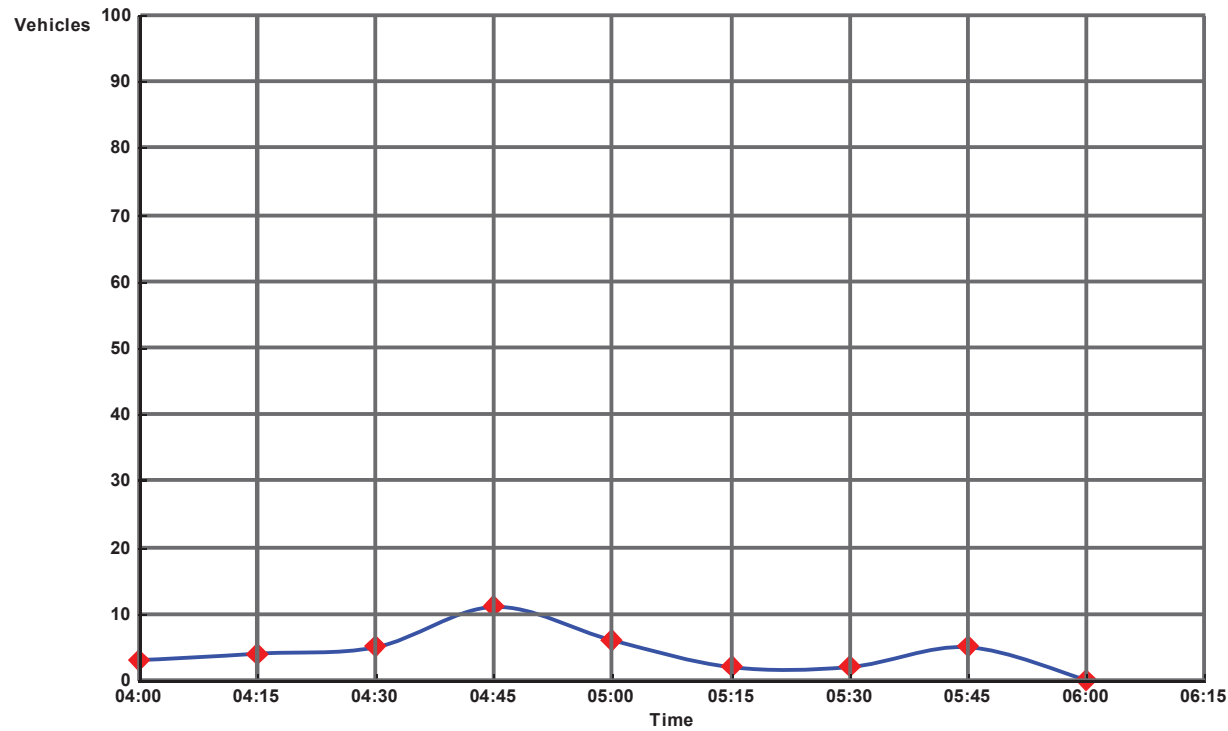
File Name: PM

Location:

Trucks

Site Code:

Study Date: 05/24/2023



Brevard Rd. @ N Greenwood Forest Dr.

File Name: AM

Location:

Cars and Peds

Site Code:

Study Date: 06/01/2023

	N Greenwood Forest Dr. Southbound						Brevard Rd. Westbound						Northbound						Brevard Rd. Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		12	0	18		30		0	59	0		59						0		0	56	28		84	173
07:15		9	0	12		21		2	63	0		65						0		0	67	19		86	172
07:30		9	0	9		18		3	70	0		73						0		0	74	25		99	190
07:45		12	0	3		15		10	68	0		78						0		0	87	19		106	199
Total	0	42	0	42	0	84	0	15	260	0	0	275	0	0	0	0	0	0	0	0	284	91	0	375	734
08:00		13	0	6		19		4	53	0		57						0		0	69	16		85	161
08:15		12	0	10		22		1	53	0		54						0		0	66	8		74	150
08:30		20	0	8		28		3	66	0		69						0		0	67	20		87	184
08:45		10	0	3		13		7	62	0		69						0		0	66	16		82	164
Total	0	55	0	27	0	82	0	15	234	0	0	249	0	0	0	0	0	0	0	0	268	60	0	328	659
09:00						0						0						0						0	0
Total	0	65	0	30	0	95	0	22	296	0	0	318	0	0	0	0	0	0	0	0	334	76	0	410	823
Grand Total	0	97	0	69	0	166	0	30	494	0	0	524	0	0	0	0	0	0	0	0	552	151	0	703	1393
Appr %		58.4	0	41.6	0			5.7	94.3	0	0			-2	-2	-2	-2			0	78.5	21.5	0		
Total %		7	0	5	0			2.2	35.5	0	0			0	0	0	0			0	39.6	10.8	0		
AM Pk Hr		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00	07:00
AM Pk Vol		42	0	42	0	84		15	260	0	0	275		0	0	0	0	0		0	284	91	0	375	734
AM PHF		0.875	NaN	0.583	NaN	0.700		0.375	0.929	NaN	NaN	0.881		NaN	NaN	NaN	NaN	NaN		NaN	0.816	0.813	NaN	0.884	0.922

Brevard Rd. @ N Greenwood Forest Dr.

File Name: AM

Location:

Trucks and Bikes

Site Code:

Study Date: 06/01/2023

	N Greenwood Forest Dr. Southbound						Brevard Rd. Westbound						Northbound						Brevard Rd. Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		0	0	0		0		0	4	0		4						0		0	2	1		3	7
07:15		0	0	0		0		0	5	0		5						0		0	2	0		2	7
07:30		0	0	0		0		2	0	0		2						0		0	3	0		3	5
07:45		0	0	0		0		0	0	0		0						0		0	0	0		0	0
Total	0	0	0	0	0	0	0	2	9	0	0	11	0	0	0	0	0	0	0	0	7	1	0	8	19
08:00		0	0	0		0		1	8	0		9						0		0	6	1		7	16
08:15		0	0	0		0		0	2	0		2						0		0	4	0		4	6
08:30		0	0	0		0		0	4	0		4						0		0	1	0		1	5
08:45		0	0	0		0		0	6	0		6						0		0	3	1		4	10
Total	0	0	0	0	0	0	0	1	20	0	0	21	0	0	0	0	0	0	0	0	14	2	0	16	37
09:00						0						0						0						0	0
Total	0	0	0	0	0	0	0	1	26	0	0	27	0	0	0	0	0	0	0	0	17	3	0	20	47
Grand Total	0	0	0	0	0	0	0	3	29	0	0	32	0	0	0	0	0	0	0	0	21	3	0	24	56
Appr %		-2	-2	-2	-2			9.4	90.6	0	0			-2	-2	-2	-2			0	87.5	12.5	0		
Total %		0	0	0	0			5.4	51.8	0	0			0	0	0	0			0	37.5	5.4	0		
AM Pk Hr		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00	08:00
AM Pk Vol		0	0	0	0	0		1	20	0	0	21		0	0	0	0	0		0	14	2	0	16	37
AM PHF		NaN	NaN	NaN	NaN	NaN		0.250	0.625	NaN	NaN	0.583		NaN	NaN	NaN	NaN	NaN		NaN	0.583	0.500	NaN	0.571	0.578

Brevard Rd. @ N Greenwood Forest Dr.

File Name: AM

Location:

All Vehicles

Site Code:

Study Date: 06/01/2023

	N Greenwood Forest Dr. Southbound						Brevard Rd. Westbound						Northbound						Brevard Rd. Eastbound					
Time	Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00	12	0	18	0	30		0	63	0	0	63		0	0	0	0	0		0	58	29	0	87	180
07:15	9	0	12	0	21		2	68	0	0	70		0	0	0	0	0		0	69	19	0	88	179
07:30	9	0	9	0	18		5	70	0	0	75		0	0	0	0	0		0	77	25	0	102	195
07:45	12	0	3	0	15		10	68	0	0	78		0	0	0	0	0		0	87	19	0	106	199
Total	42	0	42	0	84		17	269	0	0	286		0	0	0	0	0		0	291	92	0	383	753
08:00	13	0	6	0	19		5	61	0	0	66		0	0	0	0	0		0	75	17	0	92	177
08:15	12	0	10	0	22		1	55	0	0	56		0	0	0	0	0		0	70	8	0	78	156
08:30	20	0	8	0	28		3	70	0	0	73		0	0	0	0	0		0	68	20	0	88	189
08:45	10	0	3	0	13		7	68	0	0	75		0	0	0	0	0		0	69	17	0	86	174
Total	55	0	27	0	82		16	254	0	0	270		0	0	0	0	0		0	282	62	0	344	696
09:00	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
Total	65	0	30	0	95		23	322	0	0	345		0	0	0	0	0		0	351	79	0	430	870
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
Grand Total	97	0	69	0	166		33	523	0	0	556		0	0	0	0	0		0	573	154	0	727	1449
Appr %	58.4	00.0	41.6	00.0			05.9	94.1	00.0	00.0			NaN	NaN	NaN	NaN			00.0	78.8	21.2	00.0		
Total %	06.7	00.0	04.8	00.0			02.3	36.1	00.0	00.0			00.0	00.0	00.0	00.0			00.0	39.5	10.6	00.0		
% Trucks	00.0	-	00.0	-	00.0		09.1	05.5	-	-	05.8		-	-	-	-	-		-	03.7	01.9	-	03.3	03.9
AM Pk Hr	07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00	07:00
AM Pk Vol	42	0	42	0	84		17	269	0	0	286		0	0	0	0	0		0	291	92	0	383	753
AM PHF	0.875	NaN	0.583	NaN	0.700		0.425	0.961	NaN	NaN	0.917		NaN	NaN	NaN	NaN	NaN		NaN	0.836	0.793	NaN	0.903	0.946

Brevard Rd. @ N Greenwood Forest Dr.





File Name: AM





Location:

Site Code:





Study Date: 06/01/2023





All Vehicles

Brevard Rd.			
In = 620		Out = 727	
0	573	154	0
Right	Thru	Left	U-Turn
			

N Greenwood Forest Dr.			
In = 187		Out = 166	
97	0	69	0
Right	Thru	Left	U-Turn
			

Total Volumes
07:00 to 09:15
Volume = 1449

Brevard Rd.			
In = 642		Out = 556	
33	523	0	0
Right	Thru	Left	U-Turn
			

			
U-Turn	Left	Thru	Right
0	0	0	0
In = 0		Out = 0	

Brevard Rd. @ N Greenwood Forest Dr.





File Name: AM





Location:

All Vehicles





Site Code:





Study Date: 06/01/2023

Brevard Rd.	0	U-Turn	
	92	Left	
	291	Thru	
	0	Right	

N Greenwood Forest Dr.			
42	0	42	0
Right	Thru	Left	U-Turn
			

AM Peak Hour Statistics
 AM Peak Hour Begins: 07:00
 AM Peak Hour Volume: 753
 AM Peak Hour Factor: 0.946

			
U-Turn	Left	Thru	Right
0	0	0	0

Brevard Rd.	17	Right	
	269	Thru	
	0	Left	
	0	U-Turn	

Brevard Rd. @ N Greenwood Forest Dr.

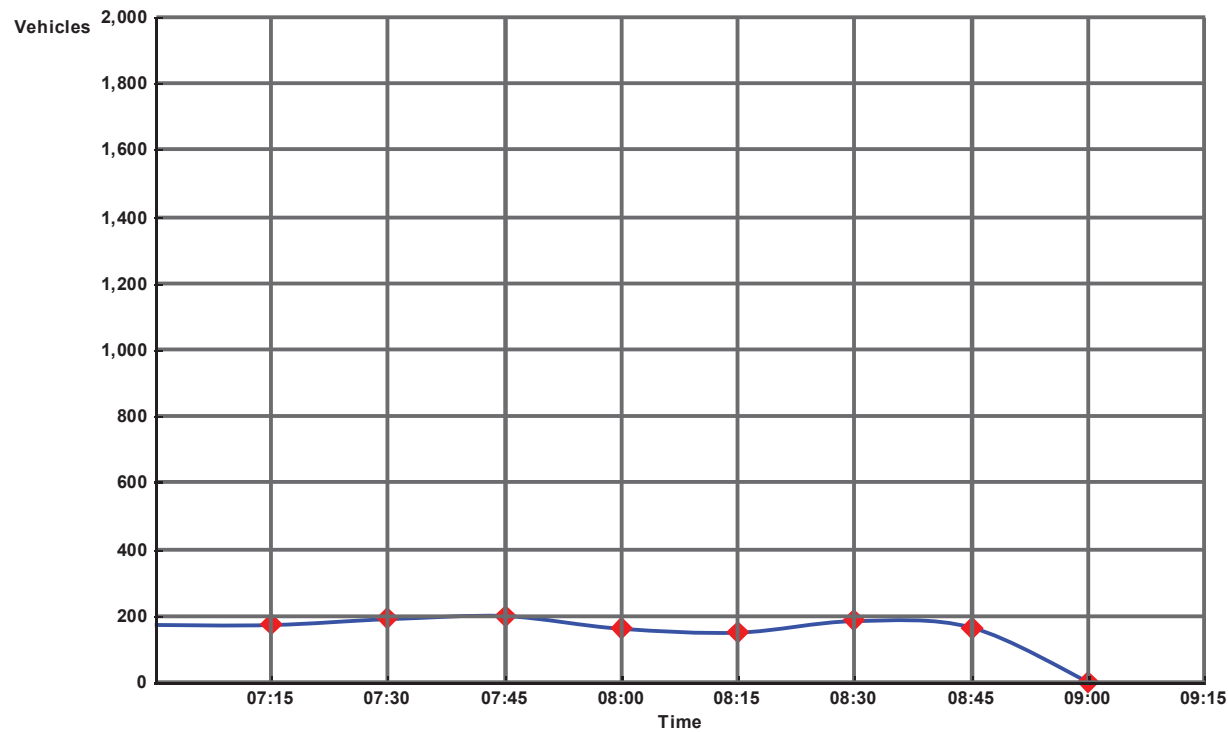
File Name: AM

Location:

Cars

Site Code:

Study Date: 06/01/2023



Brevard Rd. @ N Greenwood Forest Dr.

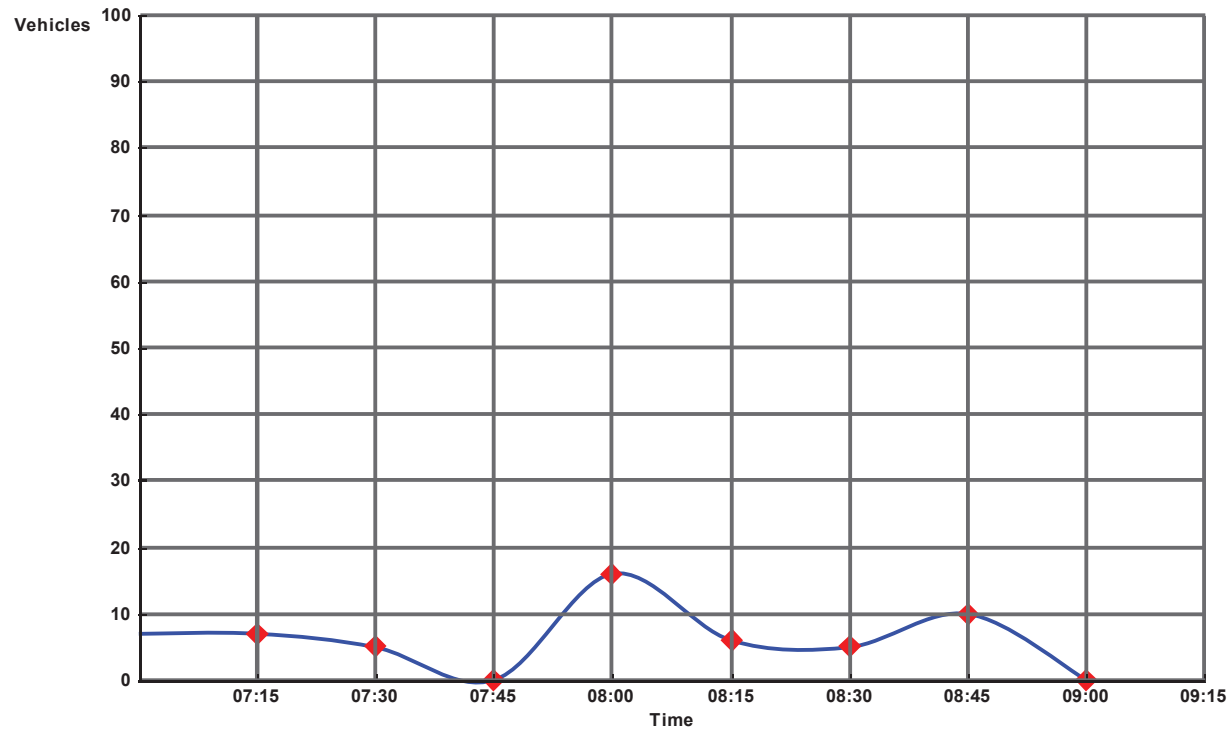
File Name: AM

Location:

Trucks

Site Code:

Study Date: 06/01/2023



Brevard Rd. @ N Greenwood Forest Dr.

File Name: PM

Location:

Cars and Peds

Site Code:

Study Date: 05/31/2023

	N Greenwood Forest Dr. Southbound						Brevard Rd. Westbound						Northbound						Brevard Rd. Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00		18	0	5		23		11	105	0		116						0		0	79	15		94	233
16:15		22	0	5		27		5	108	0		113						0		0	82	11		93	233
16:30		18	0	7		25		13	90	0		103						0		0	74	12		86	214
16:45		16	0	10		26		12	97	0		109						0		0	79	13		92	227
Total	0	74	0	27	0	101	0	41	400	0	0	441	0	0	0	0	0	0	0	0	314	51	0	365	907
17:00		38	0	5		43		9	97	0		106						0		0	104	23		127	276
17:15		33	0	11		44		18	109	0		127						0		0	95	20		115	286
17:30		22	0	6		28		13	86	0		99						0		0	86	12		98	225
17:45		26	0	7		33		10	69	0		79						0		0	85	14		99	211
Total	0	119	0	29	0	148	0	50	361	0	0	411	0	0	0	0	0	0	0	0	370	69	0	439	998
18:00						0						0						0						0	0
Total	0	145	0	36	0	181	0	60	430	0	0	490	0	0	0	0	0	0	0	0	455	83	0	538	1209
Grand Total	0	193	0	56	0	249	0	91	761	0	0	852	0	0	0	0	0	0	0	0	684	120	0	804	1905
Appr %		77.5	0	22.5	0			10.7	89.3	0	0			-2	-2	-2	-2			0	85.1	14.9	0		
Total %		10.1	0	2.9	0			4.8	39.9	0	0			0	0	0	0			0	35.9	6.3	0		
PM Pk Hr		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45		16:45	16:45	16:45	16:45	16:45	16:45
PM Pk Vol		109	0	32	0	141		52	389	0	0	441		0	0	0	0	0		0	364	68	0	432	1014
PM PHF		0.717	NaN	0.727	NaN	0.801		0.722	0.892	NaN	NaN	0.868		NaN	NaN	NaN	NaN	NaN		NaN	0.875	0.739	NaN	0.850	0.886

Brevard Rd. @ N Greenwood Forest Dr.

File Name: PM

Site Code:

Location:

Trucks and Bikes

Study Date: 05/31/2023

	N Greenwood Forest Dr. Southbound						Brevard Rd. Westbound						Northbound						Brevard Rd. Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00		0	0	1		1		0	3	0		3						0		0	5	2		7	11
16:15		0	0	0		0		0	1	0		1						0		0	3	0		3	4
16:30		2	0	0		2		0	1	0		1						0		0	5	0		5	8
16:45		0	0	0		0		0	1	0		1						0		0	3	0		3	4
Total	0	2	0	1	0	3	0	0	6	0	0	6	0	0	0	0	0	0	0	0	16	2	0	18	27
17:00		0	0	0		0		0	0	0		0						0		0	4	0		4	4
17:15		0	0	0		0		0	1	0		1						0		0	0	0		0	1
17:30		1	0	0		1		0	0	0		0						0		0	1	0		1	2
17:45		0	0	0		0		0	1	0		1						0		0	1	1		2	3
Total	0	1	0	0	0	1	0	0	2	0	0	2	0	0	0	0	0	0	0	0	6	1	0	7	10
18:00						0						0						0						0	0
Total	0	1	0	0	0	1	0	0	3	0	0	3	0	0	0	0	0	0	0	0	7	2	0	9	13
Grand Total	0	3	0	1	0	4	0	0	8	0	0	8	0	0	0	0	0	0	0	0	22	3	0	25	37
Appr %		75	0	25	0			0	100	0	0			-2	-2	-2	-2			0	88	12	0		
Total %		8.1	0	2.7	0			0	21.6	0	0			0	0	0	0			0	59.5	8.1	0		
PM Pk Hr		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00	16:00
PM Pk Vol		2	0	1	0	3		0	6	0	0	6		0	0	0	0	0		0	16	2	0	18	27
PM PHF		0.250	NaN	0.250	NaN	0.375		NaN	0.500	NaN	NaN	0.500		NaN	NaN	NaN	NaN	NaN		NaN	0.800	0.250	NaN	0.643	0.614

Brevard Rd. @ N Greenwood Forest Dr.

File Name: PM

Site Code:

Location:

All Vehicles

Study Date: 05/31/2023

Time	N Greenwood Forest Dr. Southbound					Brevard Rd. Westbound					Northbound					Brevard Rd. Eastbound					Int Total
	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	
16:00	18	0	6	0	24	11	108	0	0	119	0	0	0	0	0	0	84	17	0	101	244
16:15	22	0	5	0	27	5	109	0	0	114	0	0	0	0	0	0	85	11	0	96	237
16:30	20	0	7	0	27	13	91	0	0	104	0	0	0	0	0	0	79	12	0	91	222
16:45	16	0	10	0	26	12	98	0	0	110	0	0	0	0	0	0	82	13	0	95	231
Total	76	0	28	0	104	41	406	0	0	447	0	0	0	0	0	0	330	53	0	383	934
17:00	38	0	5	0	43	9	97	0	0	106	0	0	0	0	0	0	108	23	0	131	280
17:15	33	0	11	0	44	18	110	0	0	128	0	0	0	0	0	0	95	20	0	115	287
17:30	23	0	6	0	29	13	86	0	0	99	0	0	0	0	0	0	87	12	0	99	227
17:45	26	0	7	0	33	10	70	0	0	80	0	0	0	0	0	0	86	15	0	101	214
Total	120	0	29	0	149	50	363	0	0	413	0	0	0	0	0	0	376	70	0	446	1008
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	146	0	36	0	182	60	433	0	0	493	0	0	0	0	0	0	462	85	0	547	1222
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	196	0	57	0	253	91	769	0	0	860	0	0	0	0	0	0	706	123	0	829	1942
Appr %	77.5	00.0	22.5	00.0		10.6	89.4	00.0	00.0		NaN	NaN	NaN	NaN		00.0	85.2	14.8	00.0		
Total %	10.1	00.0	02.9	00.0		04.7	39.6	00.0	00.0		00.0	00.0	00.0	00.0		00.0	36.4	06.3	00.0		
% Trucks	01.5	-	01.8	-	01.6	00.0	01.0	-	-	00.9	-	-	-	-	-	-	03.1	02.4	-	03.0	01.9
PM Pk Hr	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45	16:45
PM Pk Vol	110	0	32	0	142	52	391	0	0	443	0	0	0	0	0	0	372	68	0	440	1025
PM PHF	0.724	NaN	0.727	NaN	0.807	0.722	0.889	NaN	NaN	0.865	NaN	NaN	NaN	NaN	NaN	NaN	0.861	0.739	NaN	0.840	0.893

Brevard Rd. @ N Greenwood Forest Dr.





File Name: PM





Location:

All Vehicles





Site Code:





Study Date: 05/31/2023

Brevard Rd.			
In = 965		Out = 829	
0	706	123	0
Right	Thru	Left	U-Turn
			

N Greenwood Forest Dr.			
In = 214		Out = 253	
196	0	57	0
Right	Thru	Left	U-Turn
			

Total Volumes
16:00 to 18:15
Volume = 1942

			
U-Turn	Left	Thru	Right
0	0	0	0
In = 0		Out = 0	

Brevard Rd.			
In = 763		Out = 860	
91	769	0	0
Right	Thru	Left	U-Turn
			

Brevard Rd. @ N Greenwood Forest Dr.





File Name: PM





Location:

All Vehicles





Site Code:





Study Date: 05/31/2023

Brevard Rd.	0	U-Turn	
	68	Left	
	372	Thru	
	0	Right	

N Greenwood Forest Dr.			
110	0	32	0
Right	Thru	Left	U-Turn
			

PM Peak Hour Statistics
 PM Peak Hour Begins: 16:45
 PM Peak Hour Volume: 1025
 PM Peak Hour Factor: 0.893

			
U-Turn	Left	Thru	Right
0	0	0	0

Brevard Rd.	52	Right	
	391	Thru	
	0	Left	
	0	U-Turn	

Brevard Rd. @ N Greenwood Forest Dr.

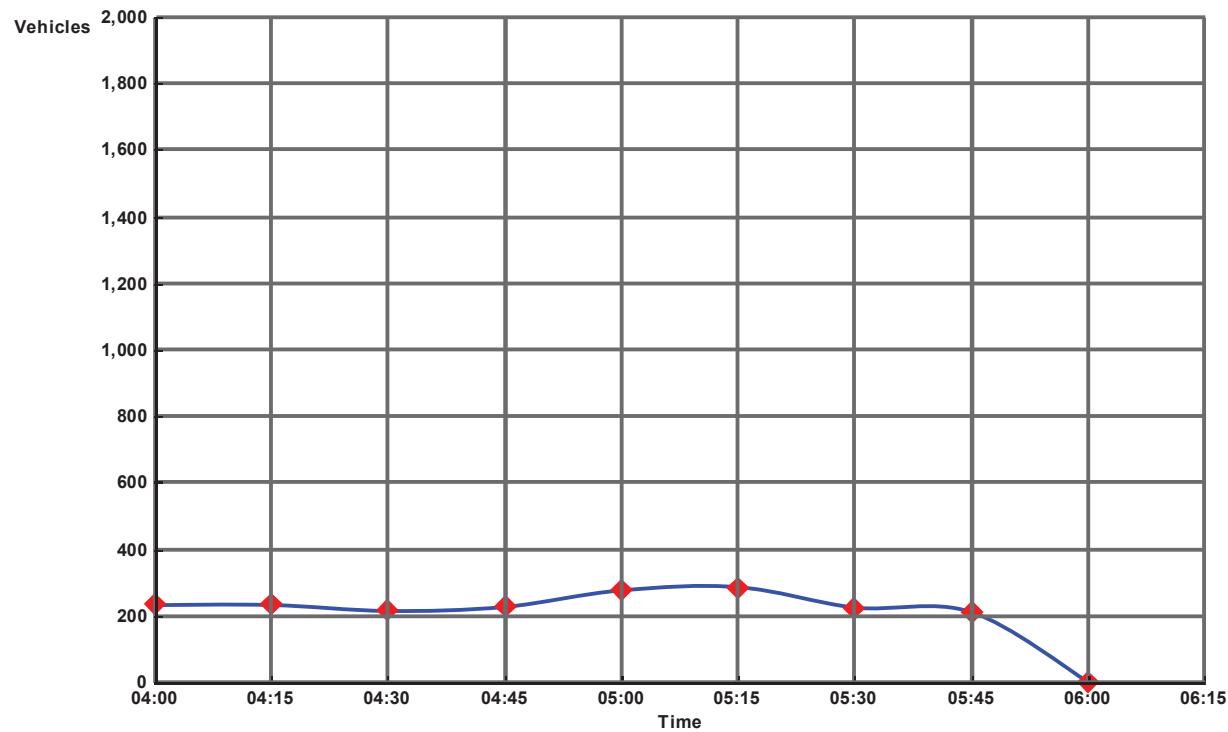
File Name: PM

Location:

Cars

Site Code:

Study Date: 05/31/2023



Brevard Rd. @ N Greenwood Forest Dr.

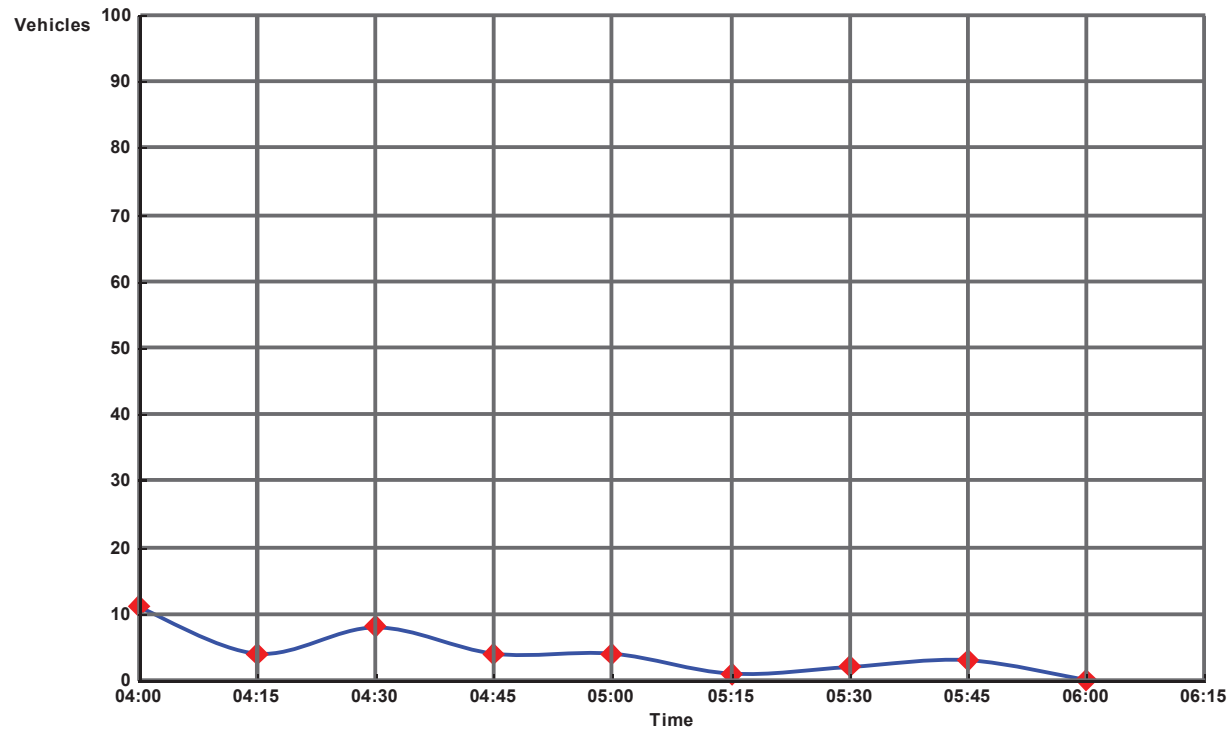
File Name: PM

Location:

Trucks

Site Code:

Study Date: 05/31/2023



Turnpike Rd. @ Brickyard Rd.

File Name: AM

Location:

Cars and Peds

Site Code:

Study Date: 06/01/2023

	Turnpike Rd. Southbound						Brickyard Rd. Westbound						Turnpike Rd. Northbound						Brickyard Rd. Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		3	0	6		9		0	8	0		8		6	3	5		14		1	11	1		13	44
07:15		4	1	6		11		1	13	0		14		0	2	3		5		1	13	0		14	44
07:30		6	2	2		10		0	9	0		9		2	2	6		10		0	7	1		8	37
07:45		2	0	4		6		2	10	1		13		4	0	2		6		3	7	0		10	35
Total	0	15	3	18	0	36	0	3	40	1	0	44	0	12	7	16	0	35	0	5	38	2	0	45	160
08:00		0	0	4		4		0	10	1		11		1	0	3		4		0	6	0		6	25
08:15		2	0	3		5		0	2	1		3		1	0	1		2		1	9	2		12	22
08:30		3	1	5		9		0	8	2		10		2	1	2		5		1	7	0		8	32
08:45		4	0	5		9		1	10	2		13		4	0	2		6		3	4	1		8	36
Total	0	9	1	17	0	27	0	1	30	6	0	37	0	8	1	8	0	17	0	5	26	3	0	34	115
Grand Total	0	24	4	35	0	63	0	4	70	7	0	81	0	20	8	24	0	52	0	10	64	5	0	79	275
Appr %		38.1	6.3	55.6	0			4.9	86.4	8.6	0			38.5	15.4	46.2	0			12.7	81	6.3	0		
Total %		8.7	1.5	12.7	0			1.5	25.5	2.5	0			7.3	2.9	8.7	0			3.6	23.3	1.8	0		
AM Pk Hr		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00	07:00
AM Pk Vol		15	3	18	0	36		3	40	1	0	44		12	7	16	0	35		5	38	2	0	45	160
AM PHF		0.625	0.375	0.750	NaN	0.818		0.375	0.769	0.250	NaN	0.786		0.500	0.583	0.667	NaN	0.625		0.417	0.731	0.500	NaN	0.804	0.909

Turnpike Rd. @ Brickyard Rd.

File Name: AM

Location:

Trucks and Bikes

Site Code:

Study Date: 06/01/2023

	Turnpike Rd. Southbound						Brickyard Rd. Westbound						Turnpike Rd. Northbound						Brickyard Rd. Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		0	0	0		0		0	0	0		0		1	0	0		1		0	0	1		1	2
07:15		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
07:30		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
07:45		0	0	0		0		0	1	0		1		0	0	0		0		0	0	1		1	2
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0	2	0	2	4
08:00		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
08:15		0	0	0		0		0	0	0		0		0	0	0		0		0	0	1		1	1
08:30		1	1	0		2		0	0	0		0		1	0	0		1		0	0	0		0	3
08:45		0	0	1		1		0	0	0		0		0	0	0		0		1	0	0		1	2
Total	0	1	1	1	0	3	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	1	0	2	6
Grand Total	0	1	1	1	0	3	0	0	1	0	0	1	0	2	0	0	0	2	0	1	0	3	0	4	10
Appr %		33.3	33.3	33.3	0			0	100	0	0			100	0	0	0			25	0	75	0		
Total %		10	10	10	0			0	10	0	0			20	0	0	0			10	0	30	0		
AM Pk Hr		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00	08:00
AM Pk Vol		1	1	1	0	3		0	0	0	0	0		1	0	0	0	1		1	0	1	0	2	6
AM PHF		0.250	0.250	0.250	NaN	0.375		NaN	NaN	NaN	NaN	NaN		0.250	NaN	NaN	NaN	0.250		0.250	NaN	0.250	NaN	0.500	0.500

Turnpike Rd. @ Brickyard Rd.

File Name: AM

Location:

All Vehicles

Site Code:

Study Date: 06/01/2023

Time	Turnpike Rd. Southbound					Brickyard Rd. Westbound					Turnpike Rd. Northbound					Brickyard Rd. Eastbound					Int Total
	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	
07:00	3	0	6	0	9	0	8	0	0	8	7	3	5	0	15	1	11	2	0	14	46
07:15	4	1	6	0	11	1	13	0	0	14	0	2	3	0	5	1	13	0	0	14	44
07:30	6	2	2	0	10	0	9	0	0	9	2	2	6	0	10	0	7	1	0	8	37
07:45	2	0	4	0	6	2	11	1	0	14	4	0	2	0	6	3	7	1	0	11	37
Total	15	3	18	0	36	3	41	1	0	45	13	7	16	0	36	5	38	4	0	47	164
08:00	0	0	4	0	4	0	10	1	0	11	1	0	3	0	4	0	6	0	0	6	25
08:15	2	0	3	0	5	0	2	1	0	3	1	0	1	0	2	1	9	3	0	13	23
08:30	4	2	5	0	11	0	8	2	0	10	3	1	2	0	6	1	7	0	0	8	35
08:45	4	0	6	0	10	1	10	2	0	13	4	0	2	0	6	4	4	1	0	9	38
Total	10	2	18	0	30	1	30	6	0	37	9	1	8	0	18	6	26	4	0	36	121
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	25	5	36	0	66	4	71	7	0	82	22	8	24	0	54	11	64	8	0	83	285
Appr %	37.9	07.6	54.5	00.0		04.9	86.6	08.5	00.0		40.7	14.8	44.4	00.0		13.3	77.1	09.6	00.0		
Total %	08.8	01.8	12.6	00.0		01.4	24.9	02.5	00.0		07.7	02.8	08.4	00.0		03.9	22.5	02.8	00.0		
% Trucks	04.0	20.0	02.8	-	04.5	00.0	01.4	00.0	-	01.2	09.1	00.0	00.0	-	03.7	09.1	00.0	37.5	-	04.8	03.5
AM Pk Hr	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00
AM Pk Vol	15	3	18	0	36	3	41	1	0	45	13	7	16	0	36	5	38	4	0	47	164
AM PHF	0.625	0.375	0.750	NaN	0.818	0.375	0.788	0.250	NaN	0.804	0.464	0.583	0.667	NaN	0.600	0.417	0.731	0.500	NaN	0.839	0.891

Turnpike Rd. @ Brickyard Rd.





File Name: AM





Location:

Site Code:





Study Date: 06/01/2023





All Vehicles

Brickyard Rd.			
In = 120	Out = 83		
11	64	8	0
Right	Thru	Left	U-Turn
			

Turnpike Rd.			
In = 20		Out = 66	
25	5	36	0
Right	Thru	Left	U-Turn
			

Total Volumes
07:00 to 09:00
Volume = 285

			
U-Turn	Left	Thru	Right
0	24	8	22
In = 23		Out = 54	
Turnpike Rd.			

Brickyard Rd.			
In = 122	Out = 82		
4	71	7	0
Right	Thru	Left	U-Turn
			

Turnpike Rd. @ Brickyard Rd.





File Name: AM





Location:

All Vehicles





Site Code:





Study Date: 06/01/2023

Brickyard Rd.	0	U-Turn	
	4	Left	
	38	Thru	
	5	Right	

Turnpike Rd.			
15	3	18	0
Right	Thru	Left	U-Turn
			

AM Peak Hour Statistics
 AM Peak Hour Begins: 07:00
 AM Peak Hour Volume: 164
 AM Peak Hour Factor: 0.891

			
U-Turn	Left	Thru	Right
0	16	7	13
Turnpike Rd.			

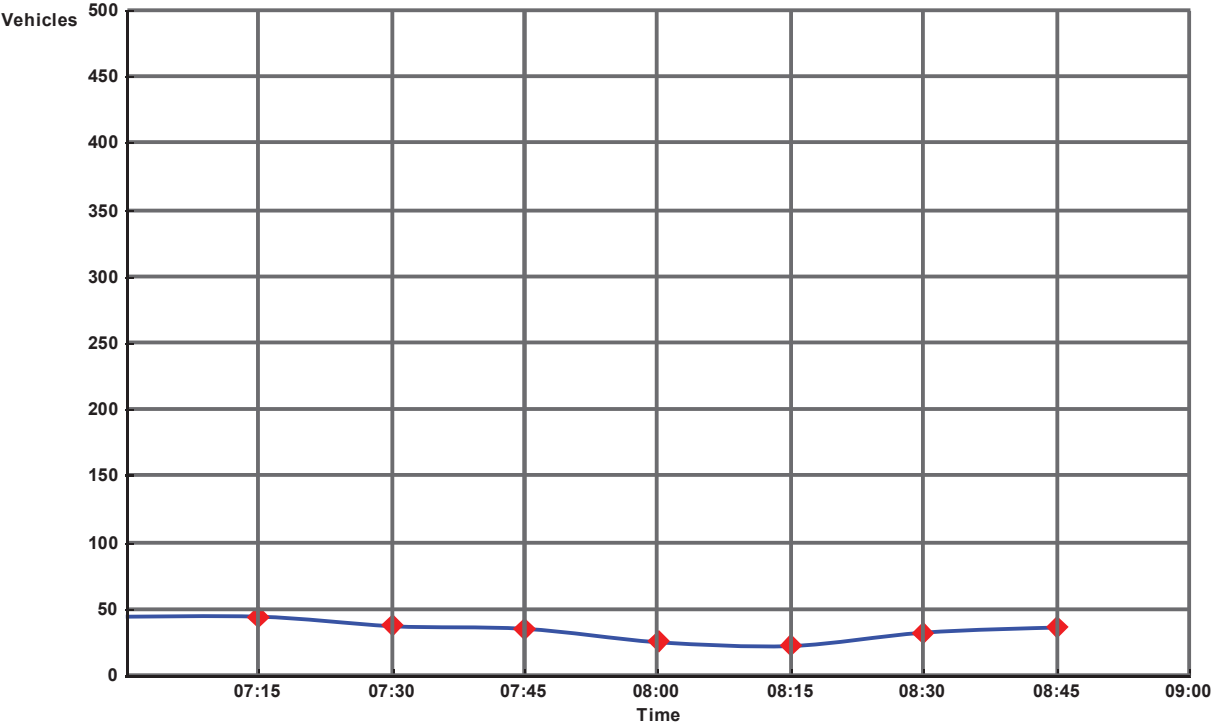
Brickyard Rd.	3	Right	
	41	Thru	
	1	Left	
	0	U-Turn	

Turnpike Rd. @ Brickyard Rd.

File Name: AM
Location:

Cars

Site Code:
Study Date: 06/01/2023

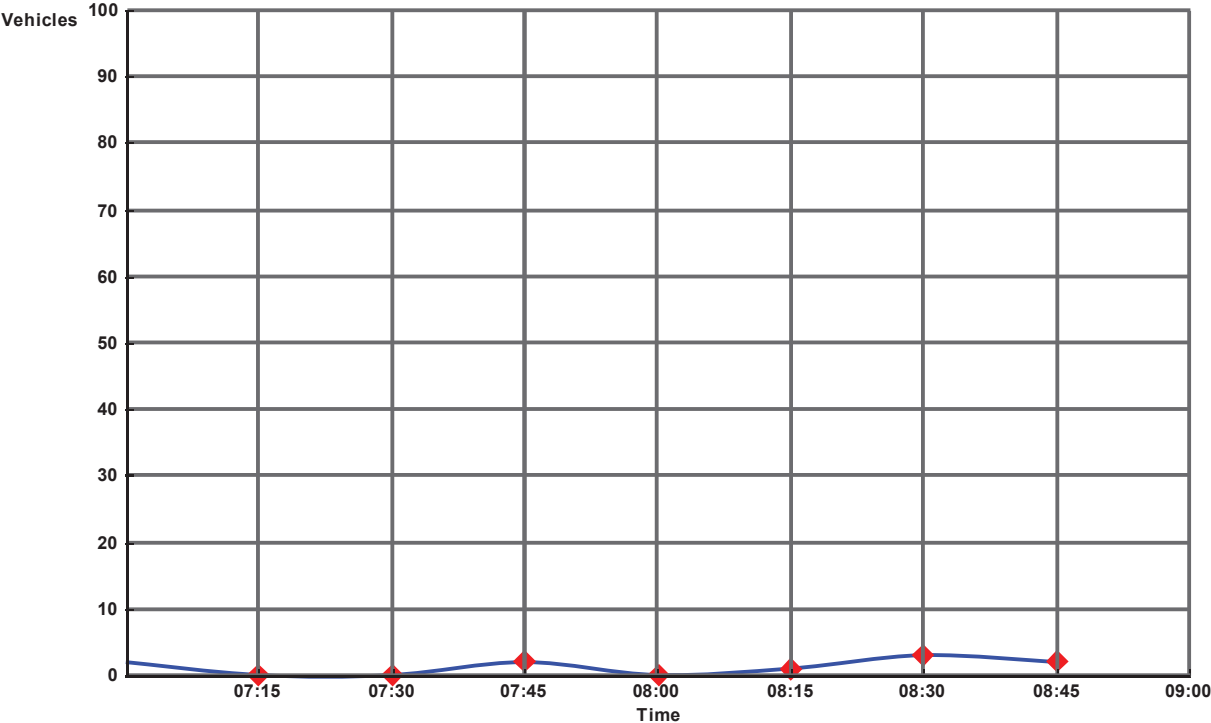


Turnpike Rd. @ Brickyard Rd.

File Name: AM
Location:

Trucks

Site Code:
Study Date: 06/01/2023



Turnpike Rd. @ Brickyard Rd.

File Name: PM

Location:

Cars and Peds

Site Code:

Study Date: 05/31/2023

	Turnpike Rd. Southbound						Brickyard Rd. Westbound						Turnpike Rd. Northbound						Brickyard Rd. Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00		0	1	3		4		12	15	5		32		1	1	2		4		2	16	0		18	58
16:15		3	4	4		11		6	9	2		17		1	3	1		5		4	6	4		14	47
16:30		3	0	2		5		5	10	1		16		1	1	1		3		1	11	5		17	41
16:45		1	1	4		6		4	7	2		13		3	2	3		8		2	19	2		23	50
Total	0	7	6	13	0	26	0	27	41	10	0	78	0	6	7	7	0	20	0	9	52	11	0	72	196
17:00		1	2	4		7		1	12	1		14		4	1	3		8		1	15	1		17	46
17:15		0	2	4		6		7	8	4		19		4	2	0		6		7	19	5		31	62
17:30		1	2	2		5		6	15	5		26		0	0	0		0		2	13	2		17	48
17:45		3	2	3		8		4	17	4		25		3	0	3		6		3	16	6		25	64
Total	0	5	8	13	0	26	0	18	52	14	0	84	0	11	3	6	0	20	0	13	63	14	0	90	220
18:00		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
Total	0	8	10	16	0	34	0	22	69	18	0	109	0	14	3	9	0	26	0	16	79	20	0	115	284
Grand Total	0	12	14	26	0	52	0	45	93	24	0	162	0	17	10	13	0	40	0	22	115	25	0	162	416
Appr %		23.1	26.9	50	0			27.8	57.4	14.8	0			42.5	25	32.5	0			13.6	71	15.4	0		
Total %		2.9	3.4	6.3	0			10.8	22.4	5.8	0			4.1	2.4	3.1	0			5.3	27.6	6	0		
PM Pk Hr		17:00	17:00	17:00	17:00	17:00		17:00	17:00	17:00	17:00	17:00		17:00	17:00	17:00	17:00	17:00		17:00	17:00	17:00	17:00	17:00	17:00
PM Pk Vol		5	8	13	0	26		18	52	14	0	84		11	3	6	0	20		13	63	14	0	90	220
PM PHF		0.417	1.000	0.813	NaN	0.813		0.643	0.765	0.700	NaN	0.808		0.688	0.375	0.500	NaN	0.625		0.464	0.829	0.583	NaN	0.726	0.859

Turnpike Rd. @ Brickyard Rd.

File Name: PM

Site Code:

Location:

Trucks and Bikes

Study Date: 05/31/2023

	Turnpike Rd. Southbound						Brickyard Rd. Westbound						Turnpike Rd. Northbound						Brickyard Rd. Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00		0	0	0		0		0	0	0		0		0	0	1		1		1	0	1		2	3
16:15		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
16:30		0	0	0		0		0	0	0		0		0	0	0		0		0	1	0		1	1
16:45		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	1	0	3	4
17:00		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
17:15		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
17:30		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
17:45		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00		0	0	0		0		0	0	0		0		0	0	0		0		0	0	0		0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	1	0	3	4
Appr %		-2	-2	-2	-2			-2	-2	-2	-2			0	0	100	0			33.3	33.3	33.3	0		
Total %		0	0	0	0			0	0	0	0			0	0	25	0			25	25	25	0		
PM Pk Hr		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00	16:00
PM Pk Vol		0	0	0	0	0		0	0	0	0	0		0	0	1	0	1		1	1	1	0	3	4
PM PHF		NaN	NaN	NaN	NaN	NaN		NaN	NaN	NaN	NaN	NaN		NaN	NaN	0.250	NaN	0.250		0.250	0.250	0.250	NaN	0.375	0.333

Turnpike Rd. @ Brickyard Rd.

File Name: PM

Location:

All Vehicles

Site Code:

Study Date: 05/31/2023

	Turnpike Rd. Southbound						Brickyard Rd. Westbound						Turnpike Rd. Northbound						Brickyard Rd. Eastbound					
Time	Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00	0	1	3	0	4		12	15	5	0	32		1	1	3	0	5		3	16	1	0	20	61
16:15	3	4	4	0	11		6	9	2	0	17		1	3	1	0	5		4	6	4	0	14	47
16:30	3	0	2	0	5		5	10	1	0	16		1	1	1	0	3		1	12	5	0	18	42
16:45	1	1	4	0	6		4	7	2	0	13		3	2	3	0	8		2	19	2	0	23	50
Total	7	6	13	0	26		27	41	10	0	78		6	7	8	0	21		10	53	12	0	75	200
17:00	1	2	4	0	7		1	12	1	0	14		4	1	3	0	8		1	15	1	0	17	46
17:15	0	2	4	0	6		7	8	4	0	19		4	2	0	0	6		7	19	5	0	31	62
17:30	1	2	2	0	5		6	15	5	0	26		0	0	0	0	0		2	13	2	0	17	48
17:45	3	2	3	0	8		4	17	4	0	25		3	0	3	0	6		3	16	6	0	25	64
Total	5	8	13	0	26		18	52	14	0	84		11	3	6	0	20		13	63	14	0	90	220
18:00	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
Total	8	10	16	0	34		22	69	18	0	109		14	3	9	0	26		16	79	20	0	115	284
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
Grand Total	12	14	26	0	52		45	93	24	0	162		17	10	14	0	41		23	116	26	0	165	420
Appr %	23.1	26.9	50.0	00.0			27.8	57.4	14.8	00.0			41.5	24.4	34.1	00.0			13.9	70.3	15.8	00.0		
Total %	02.9	03.3	06.2	00.0			10.7	22.1	05.7	00.0			04.0	02.4	03.3	00.0			05.5	27.6	06.2	00.0		
% Trucks	00.0	00.0	00.0	-	00.0		00.0	00.0	00.0	-	00.0		00.0	00.0	07.1	-	02.4		04.3	00.9	03.8	-	01.8	01.0
PM Pk Hr	17:00	17:00	17:00	17:00	17:00		17:00	17:00	17:00	17:00	17:00		17:00	17:00	17:00	17:00	17:00		17:00	17:00	17:00	17:00	17:00	17:00
PM Pk Vol	5	8	13	0	26		18	52	14	0	84		11	3	6	0	20		13	63	14	0	90	220
PM PHF	0.417	1.000	0.813	NaN	0.813		0.643	0.765	0.700	NaN	0.808		0.688	0.375	0.500	NaN	0.625		0.464	0.829	0.583	NaN	0.726	0.859

Turnpike Rd. @ Brickyard Rd.





File Name: PM





Location:

Site Code:





Study Date: 05/31/2023





All Vehicles

Brickyard Rd.			
In = 119	Out = 165		
23	116	Right	Thru
	26	Left	U-Turn
	0		
			
			

Turnpike Rd.			
In = 81		Out = 52	
12	14	26	0
Right	Thru	Left	U-Turn
			

Total Volumes
16:00 to 18:15
Volume = 420

			
U-Turn	Left	Thru	Right
0	14	10	17
In = 61		Out = 41	
Turnpike Rd.			

Brickyard Rd.			
In = 159	Out = 162		
45	93	Right	Thru
	24	Left	U-Turn
	0		
			
			

Turnpike Rd. @ Brickyard Rd.





File Name: PM





Location:

All Vehicles





Site Code:





Study Date: 05/31/2023

Brickyard Rd.	0	U-Turn	
	14	Left	
	63	Thru	
	13	Right	

Turnpike Rd.			
5	8	13	0
Right	Thru	Left	U-Turn
			

PM Peak Hour Statistics
 PM Peak Hour Begins: 17:00
 PM Peak Hour Volume: 220
 PM Peak Hour Factor: 0.859

			
U-Turn	Left	Thru	Right
0	6	3	11
Turnpike Rd.			

Brickyard Rd.	18	Right	
	52	Thru	
	14	Left	
	0	U-Turn	

Turnpike Rd. @ Brickyard Rd.

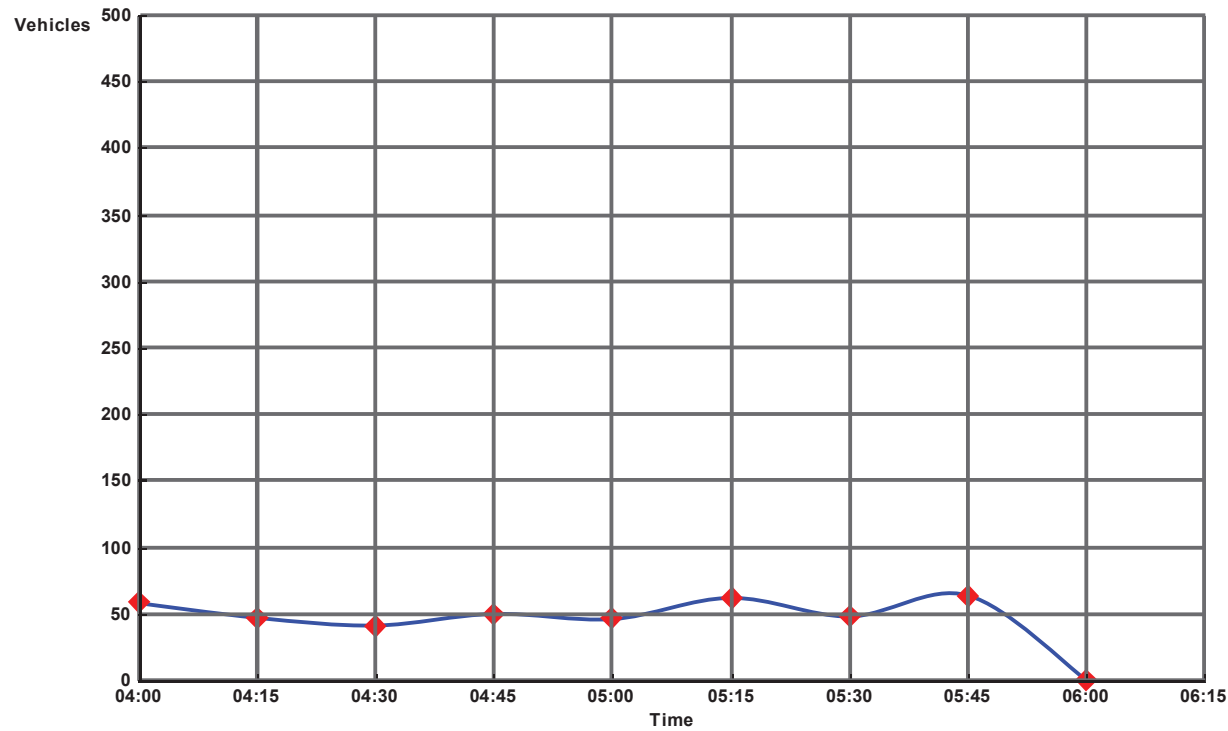
File Name: PM

Location:

Cars

Site Code:

Study Date: 05/31/2023

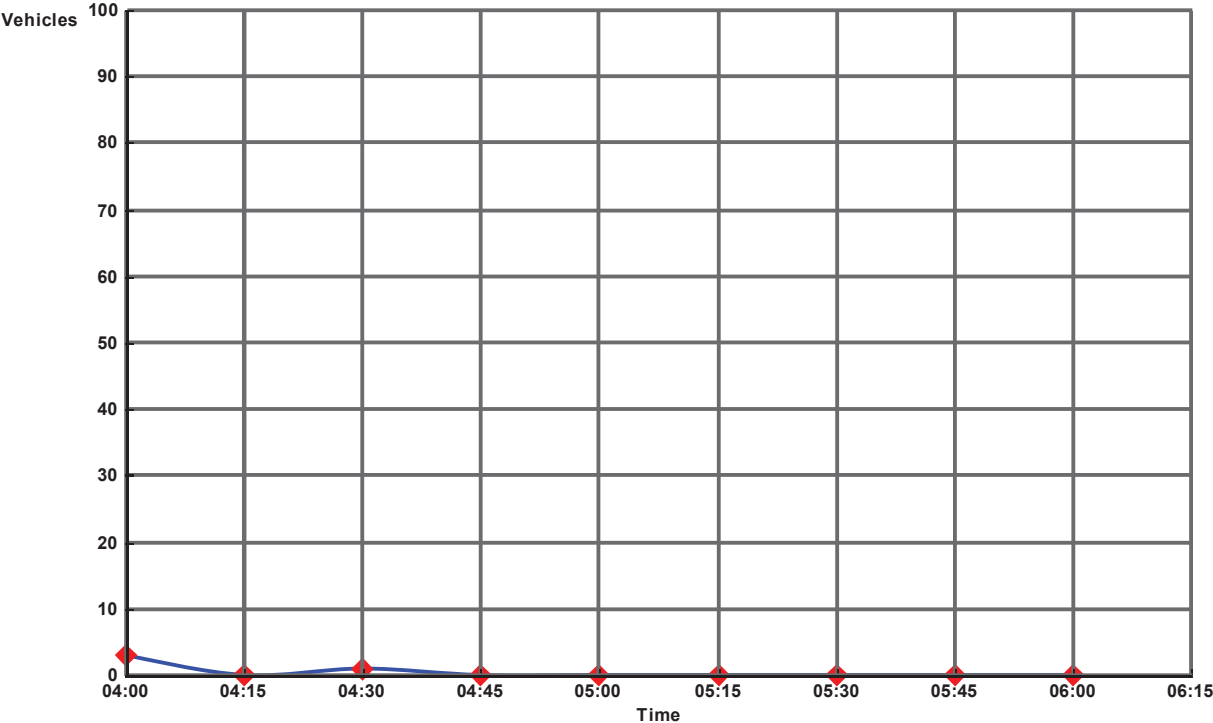


Turnpike Rd. @ Brickyard Rd.

File Name: PM
Location:

Trucks

Site Code:
Study Date: 05/31/2023



N Greenwood Forest Dr. @ Brickyard Rd.

File Name: AM

Location:

Cars and Peds

Site Code:

Study Date: 06/01/2023

	Southbound						Brickyard Rd. Westbound						N Greenwood Forest Dr. Northbound						Brickyard Rd. Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00						0		0	4	11		15		23	0	4		27		15	10	0		25	67
07:15						0		0	6	9		15		23	0	3		26		8	13	0		21	62
07:30						0		0	3	5		8		25	0	3		28		5	18	0		23	59
07:45						0		0	9	11		20		21	0	6		27		6	11	0		17	64
Total	0	0	0	0	0	0	0	0	22	36	0	58	0	92	0	16	0	108	0	34	52	0	0	86	252
08:00						0		0	3	12		15		17	0	4		21		6	14	0		20	56
08:15						0		0	4	9		13		10	0	1		11		11	12	0		23	47
08:30						0		0	4	18		22		19	0	6		25		4	10	0		14	61
08:45						0		0	8	7		15		16	0	6		22		5	12	0		17	54
Total	0	0	0	0	0	0	0	0	19	46	0	65	0	62	0	17	0	79	0	26	48	0	0	74	218
Grand Total	0	0	0	0	0	0	0	0	41	82	0	123	0	154	0	33	0	187	0	60	100	0	0	160	470
Appr %		-2	-2	-2	-2			0	33.3	66.7	0			82.4	0	17.6	0			37.5	62.5	0	0		
Total %		0	0	0	0			0	8.7	17.4	0			32.8	0	7	0			12.8	21.3	0	0		
AM Pk Hr		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00	07:00
AM Pk Vol		0	0	0	0	0		0	22	36	0	58		92	0	16	0	108		34	52	0	0	86	252
AM PHF		NaN	NaN	NaN	NaN	NaN		NaN	0.611	0.818	NaN	0.725		0.920	NaN	0.667	NaN	0.964		0.567	0.722	NaN	NaN	0.860	0.940

N Greenwood Forest Dr. @ Brickyard Rd.

File Name: AM

Location:

Trucks and Bikes

Site Code:

Study Date: 06/01/2023

	Southbound						Brickyard Rd. Westbound						N Greenwood Forest Dr. Northbound						Brickyard Rd. Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00						0		0	0	0		0		1	0	0		1		0	1	0		1	2
07:15						0		0	0	0		0		0	0	0		0		0	0	0		0	0
07:30						0		0	0	0		0		0	0	0		0		0	0	0		0	0
07:45						0		0	1	0		1		0	0	0		0		0	0	0		0	1
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	1	0	0	1	0	0	1	3
08:00						0		0	0	0		0		1	0	0		1		0	0	0		0	1
08:15						0		0	0	0		0		0	0	0		0		0	0	0		0	0
08:30						0		0	0	0		0		0	0	0		0		0	0	0		0	0
08:45						0		0	0	0		0		2	0	0		2		1	0	0		1	3
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	1	0	0	0	1	4
Grand Total	0	0	0	0	0	0	0	0	1	0	0	1	0	4	0	0	0	4	0	1	1	0	0	2	7
Appr %		-2	-2	-2	-2			0	100	0	0			100	0	0	0			50	50	0	0		
Total %		0	0	0	0			0	14.3	0	0			57.1	0	0	0			14.3	14.3	0	0		
AM Pk Hr		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00	08:00
AM Pk Vol		0	0	0	0	0		0	0	0	0	0		3	0	0	0	3		1	0	0	0	1	4
AM PHF		NaN	NaN	NaN	NaN	NaN		NaN	NaN	NaN	NaN	NaN		0.375	NaN	NaN	NaN	0.375		0.250	NaN	NaN	NaN	0.250	0.333

N Greenwood Forest Dr. @ Brickyard Rd.

File Name: AM

Location:

All Vehicles

Site Code:

Study Date: 06/01/2023

	Southbound					Brickyard Rd. Westbound					N Greenwood Forest Dr. Northbound					Brickyard Rd. Eastbound					
Time	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00	0	0	0	0	0	0	4	11	0	15	24	0	4	0	28	15	11	0	0	26	69
07:15	0	0	0	0	0	0	6	9	0	15	23	0	3	0	26	8	13	0	0	21	62
07:30	0	0	0	0	0	0	3	5	0	8	25	0	3	0	28	5	18	0	0	23	59
07:45	0	0	0	0	0	0	10	11	0	21	21	0	6	0	27	6	11	0	0	17	65
Total	0	0	0	0	0	0	23	36	0	59	93	0	16	0	109	34	53	0	0	87	255
08:00	0	0	0	0	0	0	3	12	0	15	18	0	4	0	22	6	14	0	0	20	57
08:15	0	0	0	0	0	0	4	9	0	13	10	0	1	0	11	11	12	0	0	23	47
08:30	0	0	0	0	0	0	4	18	0	22	19	0	6	0	25	4	10	0	0	14	61
08:45	0	0	0	0	0	0	8	7	0	15	18	0	6	0	24	6	12	0	0	18	57
Total	0	0	0	0	0	0	19	46	0	65	65	0	17	0	82	27	48	0	0	75	222
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	42	82	0	124	158	0	33	0	191	61	101	0	0	162	477
Appr %	NaN	NaN	NaN	NaN		00.0	33.9	66.1	00.0		82.7	00.0	17.3	00.0		37.7	62.3	00.0	00.0		
Total %	00.0	00.0	00.0	00.0		00.0	08.8	17.2	00.0		33.1	00.0	06.9	00.0		12.8	21.2	00.0	00.0		
% Trucks	-	-	-	-	-	-	02.4	00.0	-	00.8	02.5	-	00.0	-	02.1	01.6	01.0	-	-	01.2	01.5
AM Pk Hr	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00
AM Pk Vol	0	0	0	0	0	0	23	36	0	59	93	0	16	0	109	34	53	0	0	87	255
AM PHF	NaN	NaN	NaN	NaN	NaN	NaN	0.575	0.818	NaN	0.702	0.930	NaN	0.667	NaN	0.973	0.567	0.736	NaN	NaN	0.837	0.924

N Greenwood Forest Dr. @ Brickyard Rd.





File Name: AM





Location:

Site Code:





Study Date: 06/01/2023





All Vehicles

Brickyard Rd.			
In = 75		Out = 162	
61	101	0	0
Right	Thru	Left	U-Turn
			

In = 0		Out = 0	
0	0	0	0
Right	Thru	Left	U-Turn
			

Total Volumes
07:00 to 09:00
Volume = 477

			
U-Turn	Left	Thru	Right
0	33	0	158
In = 143		Out = 191	
N Greenwood Forest Dr.			

Brickyard Rd.			
In = 259		Out = 124	
0	42	82	0
Right	Thru	Left	U-Turn
			

N Greenwood Forest Dr. @ Brickyard Rd.





File Name: AM





Location:

All Vehicles





Site Code:





Study Date: 06/01/2023

Brickyard Rd.			
0	U-Turn		
0	Left		
53	Thru		
34	Right		

0	0	0	0
Right	Thru	Left	U-Turn
			

AM Peak Hour Statistics
 AM Peak Hour Begins: 07:00
 AM Peak Hour Volume: 255
 AM Peak Hour Factor: 0.924

			
U-Turn	Left	Thru	Right
0	16	0	93
N Greenwood Forest Dr.			

Brickyard Rd.			
0	Right		
23	Thru		
36	Left		
0	U-Turn		

N Greenwood Forest Dr. @ Brickyard Rd.

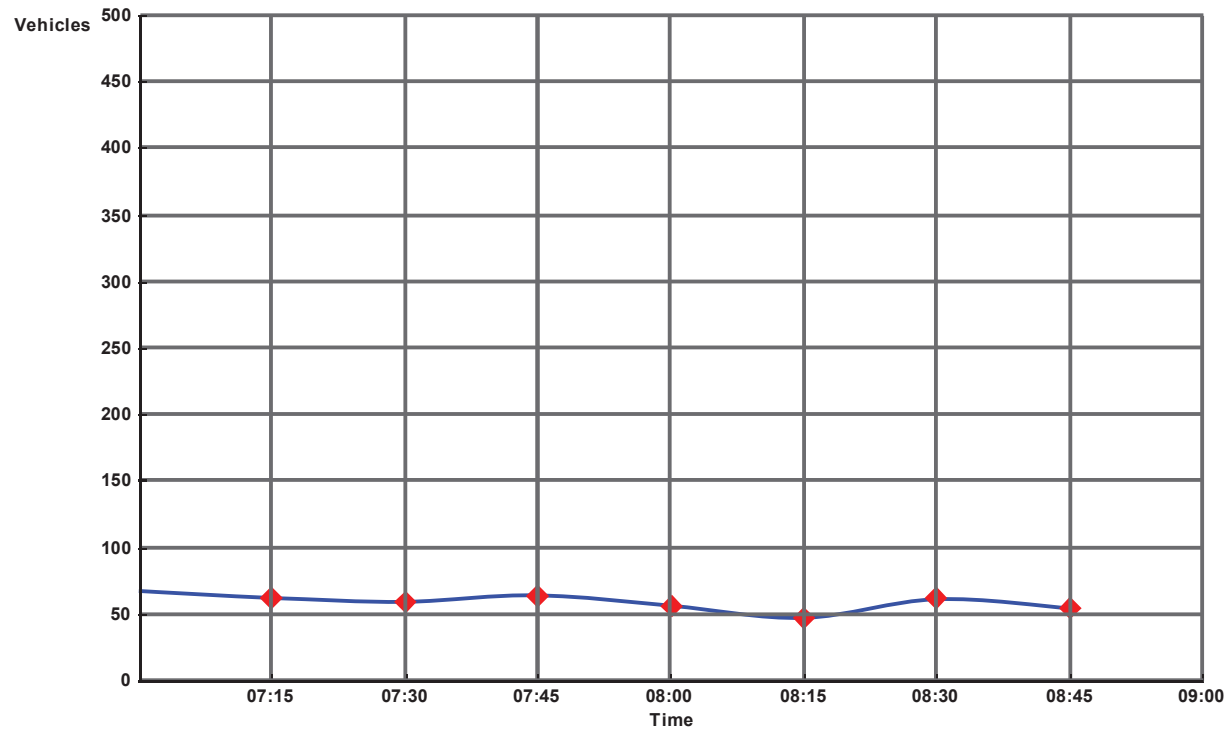
File Name: AM

Location:

Cars

Site Code:

Study Date: 06/01/2023



N Greenwood Forest Dr. @ Brickyard Rd.

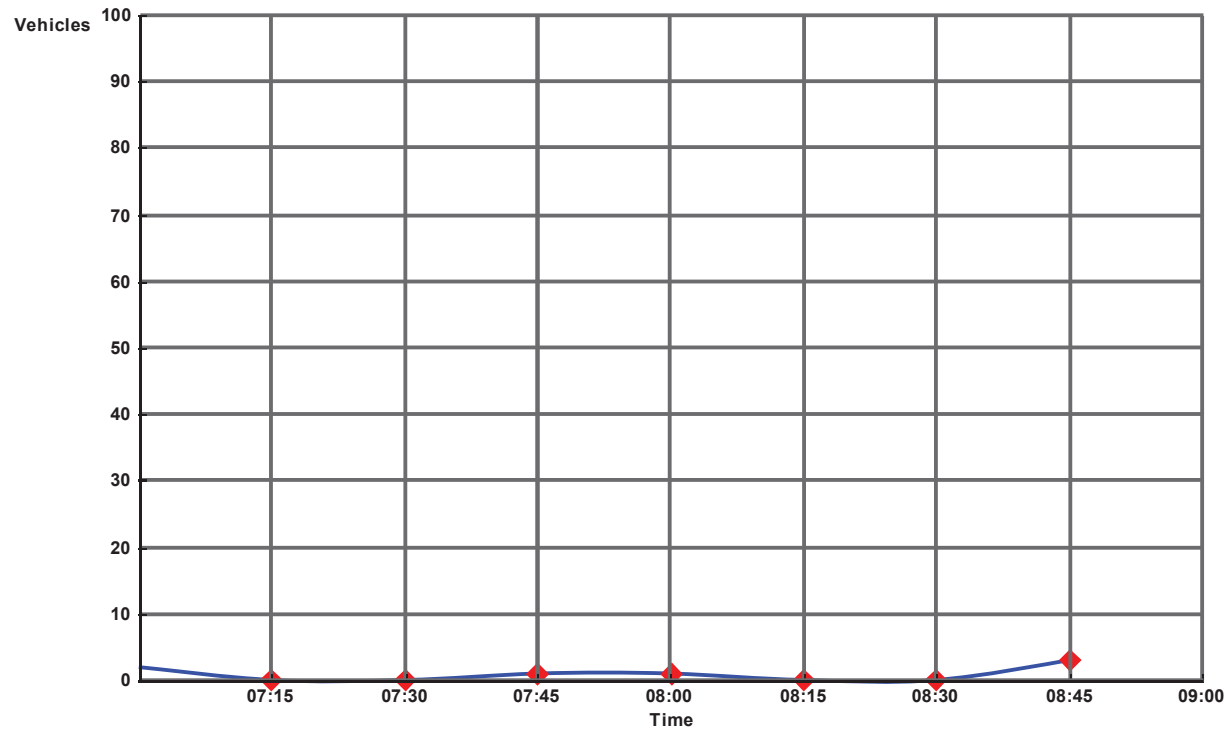
File Name: AM

Location:

Trucks

Site Code:

Study Date: 06/01/2023



N Greenwood Forest Dr. @ Brickyard Rd.

File Name: PM

Location:

Cars and Peds

Site Code:

Study Date: 05/31/2023

	Southbound						Brickyard Rd. Westbound						N Greenwood Forest Dr. Northbound						Brickyard Rd. Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00						0		0	23	17		40		14	0	12		26		7	10	0		17	83
16:15						0		0	14	22		36		12	0	6		18		4	8	0		12	66
16:30						0		0	13	20		33		13	0	9		22		12	4	0		16	71
16:45						0		0	11	14		25		13	0	8		21		8	17	0		25	71
Total	0	0	0	0	0	0	0	0	61	73	0	134	0	52	0	35	0	87	0	31	39	0	0	70	291
17:00						0		0	13	24		37		18	0	12		30		18	10	0		28	95
17:15						0		0	18	33		51		18	0	13		31		14	19	0		33	115
17:30						0		0	14	21		35		11	0	18		29		5	11	0		16	80
17:45						0		0	12	26		38		9	0	13		22		6	14	0		20	80
Total	0	0	0	0	0	0	0	0	57	104	0	161	0	56	0	56	0	112	0	43	54	0	0	97	370
18:00						0		0	0	0		0		0	0	0		0		0	0	0		0	0
Total	0	0	0	0	0	0	0	0	69	130	0	199	0	65	0	69	0	134	0	49	68	0	0	117	450
Grand Total	0	0	0	0	0	0	0	0	118	177	0	295	0	108	0	91	0	199	0	74	93	0	0	167	661
Appr %		-2	-2	-2	-2			0	40	60	0			54.3	0	45.7	0			44.3	55.7	0	0		
Total %		0	0	0	0			0	17.9	26.8	0			16.3	0	13.8	0			11.2	14.1	0	0		
PM Pk Hr		17:00	17:00	17:00	17:00	17:00		17:00	17:00	17:00	17:00	17:00		17:00	17:00	17:00	17:00	17:00		17:00	17:00	17:00	17:00	17:00	17:00
PM Pk Vol		0	0	0	0	0		0	57	104	0	161		56	0	56	0	112		43	54	0	0	97	370
PM PHF		NaN	NaN	NaN	NaN	NaN		NaN	0.792	0.788	NaN	0.789		0.778	NaN	0.778	NaN	0.903		0.597	0.711	NaN	NaN	0.735	0.804

N Greenwood Forest Dr. @ Brickyard Rd.

File Name: PM

Location:

Trucks and Bikes

Site Code:

Study Date: 05/31/2023

	Southbound						Brickyard Rd. Westbound						N Greenwood Forest Dr. Northbound						Brickyard Rd. Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00						0		0	0	0		0		1	0	0		1		0	0	0		0	1
16:15						0		0	0	0		0		1	0	0		1		0	0	0		0	1
16:30						0		0	0	1		1		0	0	0		0		1	0	0		1	2
16:45						0		0	0	0		0		0	0	0		0		0	0	0		0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	0	2	0	1	0	0	0	1	4
17:00						0		0	0	0		0		0	0	0		0		0	0	0		0	0
17:15						0		0	0	0		0		0	0	0		0		0	0	0		0	0
17:30						0		0	0	1		1		0	0	0		0		0	0	0		0	1
17:45						0		0	0	0		0		0	0	0		0		0	0	0		0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
18:00						0		0	0	0		0		0	0	0		0		0	0	0		0	0
Total	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	0	0	2	0	1	0	0	0	1	5
Appr %		-2	-2	-2	-2			0	0	100	0			100	0	0	0			100	0	0	0		
Total %		0	0	0	0			0	0	40	0			40	0	0	0			20	0	0	0		
PM Pk Hr		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00	16:00
PM Pk Vol		0	0	0	0	0		0	0	1	0	1		2	0	0	0	2		1	0	0	0	1	4
PM PHF		NaN	NaN	NaN	NaN	NaN		NaN	NaN	0.250	NaN	0.250		0.500	NaN	NaN	NaN	0.500		0.250	NaN	NaN	NaN	0.250	0.500

N Greenwood Forest Dr. @ Brickyard Rd.

File Name: PM

Location:

All Vehicles

Site Code:

Study Date: 05/31/2023

Time	Southbound					Brickyard Rd. Westbound					N Greenwood Forest Dr. Northbound					Brickyard Rd. Eastbound					Int Total
	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	
16:00	0	0	0	0	0	0	23	17	0	40	15	0	12	0	27	7	10	0	0	17	84
16:15	0	0	0	0	0	0	14	22	0	36	13	0	6	0	19	4	8	0	0	12	67
16:30	0	0	0	0	0	0	13	21	0	34	13	0	9	0	22	13	4	0	0	17	73
16:45	0	0	0	0	0	0	11	14	0	25	13	0	8	0	21	8	17	0	0	25	71
Total	0	0	0	0	0	0	61	74	0	135	54	0	35	0	89	32	39	0	0	71	295
17:00	0	0	0	0	0	0	13	24	0	37	18	0	12	0	30	18	10	0	0	28	95
17:15	0	0	0	0	0	0	18	33	0	51	18	0	13	0	31	14	19	0	0	33	115
17:30	0	0	0	0	0	0	14	22	0	36	11	0	18	0	29	5	11	0	0	16	81
17:45	0	0	0	0	0	0	12	26	0	38	9	0	13	0	22	6	14	0	0	20	80
Total	0	0	0	0	0	0	57	105	0	162	56	0	56	0	112	43	54	0	0	97	371
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	69	131	0	200	65	0	69	0	134	49	68	0	0	117	451
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	118	179	0	297	110	0	91	0	201	75	93	0	0	168	666
Appr %	NaN	NaN	NaN	NaN		00.0	39.7	60.3	00.0		54.7	00.0	45.3	00.0		44.6	55.4	00.0	00.0		
Total %	00.0	00.0	00.0	00.0		00.0	17.7	26.9	00.0		16.5	00.0	13.7	00.0		11.3	14.0	00.0	00.0		
% Trucks	-	-	-	-	-	-	00.0	01.1	-	00.7	01.8	-	00.0	-	01.0	01.3	00.0	-	-	00.6	00.8
PM Pk Hr	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00
PM Pk Vol	0	0	0	0	0	0	57	105	0	162	56	0	56	0	112	43	54	0	0	97	371
PM PHF	NaN	NaN	NaN	NaN	NaN	NaN	0.792	0.795	NaN	0.794	0.778	NaN	0.778	NaN	0.903	0.597	0.711	NaN	NaN	0.735	0.807

N Greenwood Forest Dr. @ Brickyard Rd.

File Name: PM





Location:

Site Code:





Study Date: 05/31/2023

All Vehicles

Brickyard Rd.			
In = 209		Out = 168	
75	Right	0	U-Turn
93	Thru	0	Left

In = 0		Out = 0	
0	0	0	0
Right	Thru	Left	U-Turn
			

Total Volumes
16:00 to 18:15
Volume = 666

			
U-Turn	Left	Thru	Right
0	91	0	110
In = 254		Out = 201	
N Greenwood Forest Dr.			

Brickyard Rd.			
In = 203		Out = 297	
0	Right	118	Thru
		179	Left
		0	U-Turn

N Greenwood Forest Dr. @ Brickyard Rd.





File Name: PM





Location:

All Vehicles





Site Code:





Study Date: 05/31/2023

Brickyard Rd.			
0	U-Turn		
0	Left		
54	Thru		
43	Right		

0	0	0	0
Right	Thru	Left	U-Turn
			

PM Peak Hour Statistics
 PM Peak Hour Begins: 17:00
 PM Peak Hour Volume: 371
 PM Peak Hour Factor: 0.807

			
U-Turn	Left	Thru	Right
0	56	0	56
N Greenwood Forest Dr.			

Brickyard Rd.			
0	Right		
57	Thru		
105	Left		
0	U-Turn		

N Greenwood Forest Dr. @ Brickyard Rd.

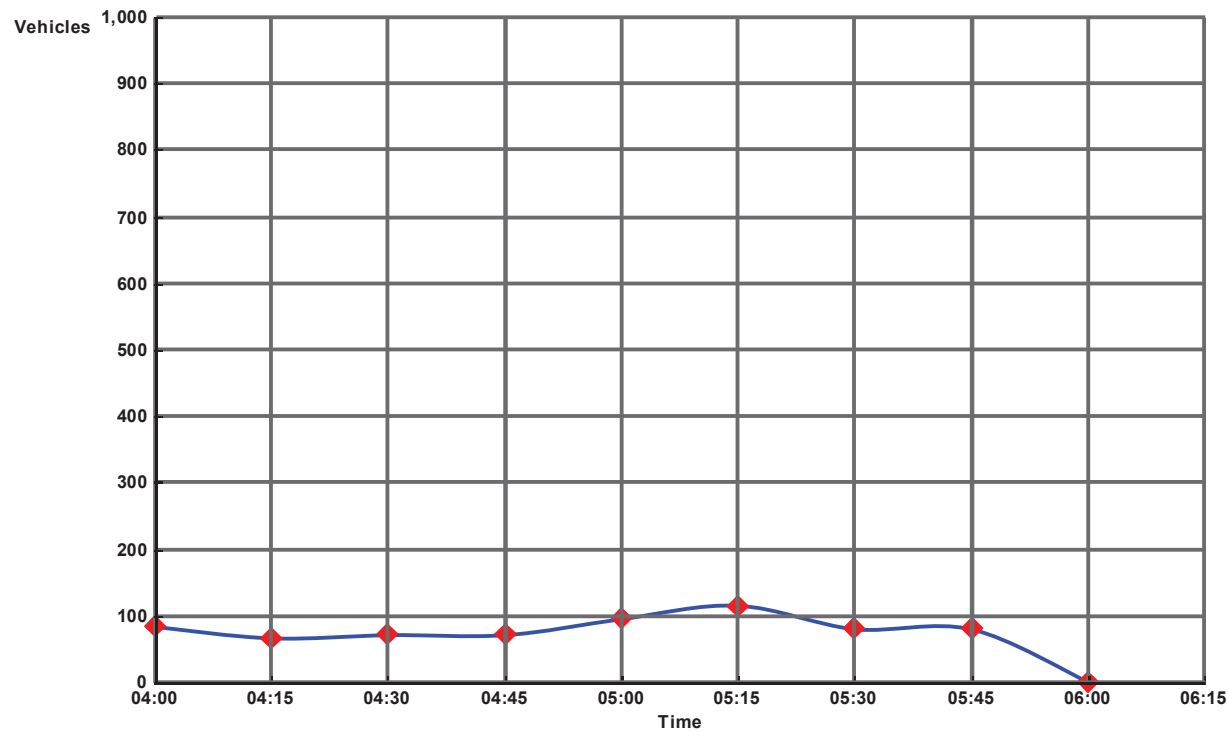
File Name: PM

Location:

Cars

Site Code:

Study Date: 05/31/2023



N Greenwood Forest Dr. @ Brickyard Rd.

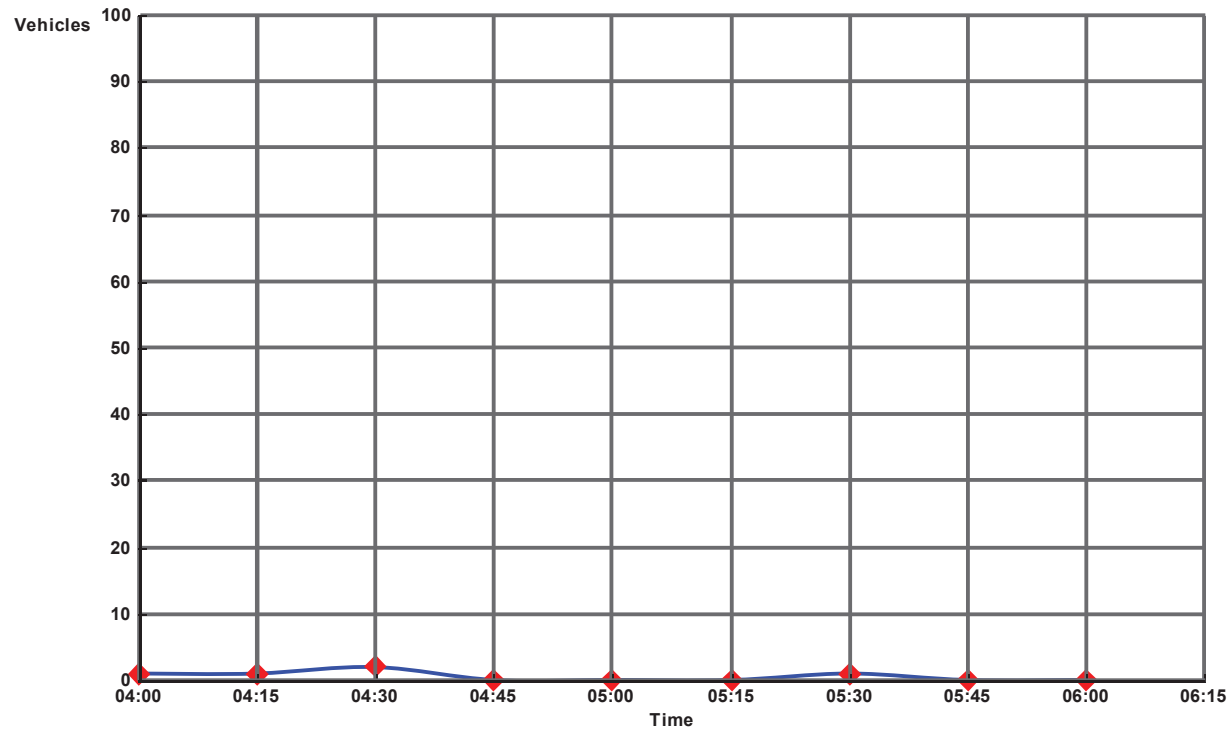
File Name: PM

Location:

Trucks

Site Code:

Study Date: 05/31/2023



Holly Springs Rd. @ Brickyard Rd.

File Name: AM

Location:

Cars and Peds

Site Code:

Study Date: 05/25/2023

	Holly Springs Rd. Southbound						Brickyard Rd. Westbound						Northbound						Brickyard Rd. Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		4	0	7		11		18	5	0		23						0		0	9	39		48	82
07:15		15	0	13		28		14	6	0		20						0		0	13	25		38	86
07:30		4	0	10		14		18	12	0		30						0		0	22	22		44	88
07:45		8	0	15		23		10	10	0		20						0		0	11	9		20	63
Total	0	31	0	45	0	76	0	60	33	0	0	93	0	0	0	0	0	0	0	0	55	95	0	150	319
08:00		13	0	16		29		10	6	0		16						0		0	14	13		27	72
08:15		11	0	12		23		11	5	0		16						0		0	12	28		40	79
08:30		8	0	15		23		15	6	0		21						0		0	13	15		28	72
08:45		10	0	10		20		10	8	0		18						0		0	13	9		22	60
Total	0	42	0	53	0	95	0	46	25	0	0	71	0	0	0	0	0	0	0	0	52	65	0	117	283
09:00		0	0	0		0		0	0	0		0						0		0	0	0		0	0
Total	0	52	0	63	0	115	0	56	33	0	0	89	0	0	0	0	0	0	0	0	65	74	0	139	343
Grand Total	0	73	0	98	0	171	0	106	58	0	0	164	0	0	0	0	0	0	0	0	107	160	0	267	602
Appr %		42.7	0	57.3	0			64.6	35.4	0	0			-2	-2	-2	-2			0	40.1	59.9	0		
Total %		12.1	0	16.3	0			17.6	9.6	0	0			0	0	0	0			0	17.8	26.6	0		
AM Pk Hr		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00		07:00	07:00	07:00	07:00	07:00	07:00
AM Pk Vol		31	0	45	0	76		60	33	0	0	93		0	0	0	0	0		0	55	95	0	150	319
AM PHF		0.517	NaN	0.750	NaN	0.679		0.833	0.688	NaN	NaN	0.775		NaN	NaN	NaN	NaN	NaN		NaN	0.625	0.609	NaN	0.781	0.906

Holly Springs Rd. @ Brickyard Rd.

File Name: AM

Location:

Trucks and Bikes

Site Code:

Study Date: 05/25/2023

	Holly Springs Rd. Southbound						Brickyard Rd. Westbound						Northbound						Brickyard Rd. Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		0	0	0		0		0	0	0		0						0		0	1	1		2	2
07:15		0	0	1		1		0	0	0		0						0		0	0	1		1	2
07:30		0	0	0		0		0	0	0		0						0		0	0	0		0	0
07:45		0	0	2		2		2	0	0		2						0		0	0	0		0	4
Total	0	0	0	3	0	3	0	2	0	0	0	2	0	0	0	0	0	0	0	0	1	2	0	3	8
08:00		0	0	0		0		0	1	0		1						0		0	0	0		0	1
08:15		0	0	0		0		1	0	0		1						0		0	0	2		2	3
08:30		0	0	0		0		0	0	0		0						0		0	0	0		0	0
08:45		2	0	0		2		0	1	0		1						0		0	1	0		1	4
Total	0	2	0	0	0	2	0	1	2	0	0	3	0	0	0	0	0	0	0	0	1	2	0	3	8
09:00		0	0	0		0		0	0	0		0						0		0	0	0		0	0
Total	0	4	0	0	0	4	0	1	3	0	0	4	0	0	0	0	0	0	0	0	2	2	0	4	12
Grand Total	0	2	0	3	0	5	0	3	2	0	0	5	0	0	0	0	0	0	0	0	2	4	0	6	16
Appr %		40	0	60	0			60	40	0	0			-2	-2	-2	-2			0	33.3	66.7	0		
Total %		12.5	0	18.8	0			18.8	12.5	0	0			0	0	0	0			0	12.5	25	0		
AM Pk Hr		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00		08:00	08:00	08:00	08:00	08:00	08:00
AM Pk Vol		2	0	0	0	2		1	2	0	0	3		0	0	0	0	0		0	1	2	0	3	8
AM PHF		0.250	NaN	NaN	NaN	0.250		0.250	0.500	NaN	NaN	0.750		NaN	NaN	NaN	NaN	NaN		NaN	0.250	0.250	NaN	0.375	0.500

Holly Springs Rd. @ Brickyard Rd.

File Name: AM

Location:

All Vehicles

Site Code:

Study Date: 05/25/2023

Time	Holly Springs Rd. Southbound					Brickyard Rd. Westbound					Northbound					Brickyard Rd. Eastbound					Int Total
	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	Right	Thru	Left	U-Turn	Appr Total	
07:00	4	0	7	0	11	18	5	0	0	23	0	0	0	0	0	0	10	40	0	50	84
07:15	15	0	14	0	29	14	6	0	0	20	0	0	0	0	0	0	13	26	0	39	88
07:30	4	0	10	0	14	18	12	0	0	30	0	0	0	0	0	0	22	22	0	44	88
07:45	8	0	17	0	25	12	10	0	0	22	0	0	0	0	0	0	11	9	0	20	67
Total	31	0	48	0	79	62	33	0	0	95	0	0	0	0	0	0	56	97	0	153	327
08:00	13	0	16	0	29	10	7	0	0	17	0	0	0	0	0	0	14	13	0	27	73
08:15	11	0	12	0	23	12	5	0	0	17	0	0	0	0	0	0	12	30	0	42	82
08:30	8	0	15	0	23	15	6	0	0	21	0	0	0	0	0	0	13	15	0	28	72
08:45	12	0	10	0	22	10	9	0	0	19	0	0	0	0	0	0	14	9	0	23	64
Total	44	0	53	0	97	47	27	0	0	74	0	0	0	0	0	0	53	67	0	120	291
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	56	0	63	0	119	57	36	0	0	93	0	0	0	0	0	0	67	76	0	143	355
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	75	0	101	0	176	109	60	0	0	169	0	0	0	0	0	0	109	164	0	273	618
Appr %	42.6	00.0	57.4	00.0		64.5	35.5	00.0	00.0		NaN	NaN	NaN	NaN		00.0	39.9	60.1	00.0		
Total %	12.1	00.0	16.3	00.0		17.6	09.7	00.0	00.0		00.0	00.0	00.0	00.0		00.0	17.6	26.5	00.0		
% Trucks	02.7	-	03.0	-	02.8	02.8	03.3	-	-	03.0	-	-	-	-	-	-	01.8	02.4	-	02.2	02.6
AM Pk Hr	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00	07:00
AM Pk Vol	31	0	48	0	79	62	33	0	0	95	0	0	0	0	0	0	56	97	0	153	327
AM PHF	0.517	NaN	0.706	NaN	0.681	0.861	0.688	NaN	NaN	0.792	NaN	NaN	NaN	NaN	NaN	NaN	0.636	0.606	NaN	0.765	0.929

Holly Springs Rd. @ Brickyard Rd.





File Name: AM





Location:

Site Code:





Study Date: 05/25/2023





All Vehicles

Brickyard Rd.			
In = 135		Out = 273	
0	109	164	0
Right	Thru	Left	U-Turn
			

Holly Springs Rd.			
In = 273		Out = 176	
75	0	101	0
Right	Thru	Left	U-Turn
			

Total Volumes
07:00 to 09:15
Volume = 618

Brickyard Rd.			
In = 210		Out = 169	
109	60	0	0
Right	Thru	Left	U-Turn
			

			
U-Turn	Left	Thru	Right
0	0	0	0
In = 0		Out = 0	

Holly Springs Rd. @ Brickyard Rd.





File Name: AM





Location:

All Vehicles





Site Code:





Study Date: 05/25/2023

Brickyard Rd.	0	U-Turn	
	97	Left	
	56	Thru	
	0	Right	

Holly Springs Rd.			
31	0	48	0
Right	Thru	Left	U-Turn
			

AM Peak Hour Statistics
 AM Peak Hour Begins: 07:00
 AM Peak Hour Volume: 327
 AM Peak Hour Factor: 0.929

			
U-Turn	Left	Thru	Right
0	0	0	0

Brickyard Rd.	62	Right	
	33	Thru	
	0	Left	
	0	U-Turn	

Holly Springs Rd. @ Brickyard Rd.

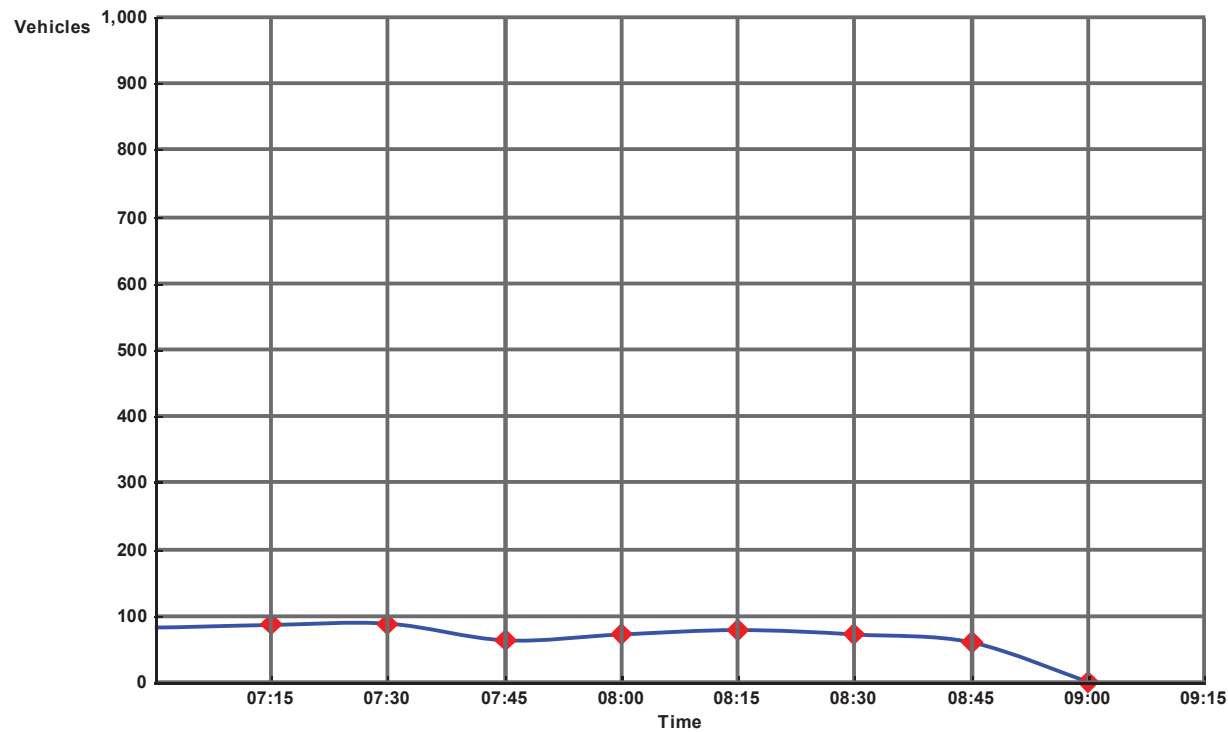
File Name: AM

Location:

Cars

Site Code:

Study Date: 05/25/2023



Holly Springs Rd. @ Brickyard Rd.

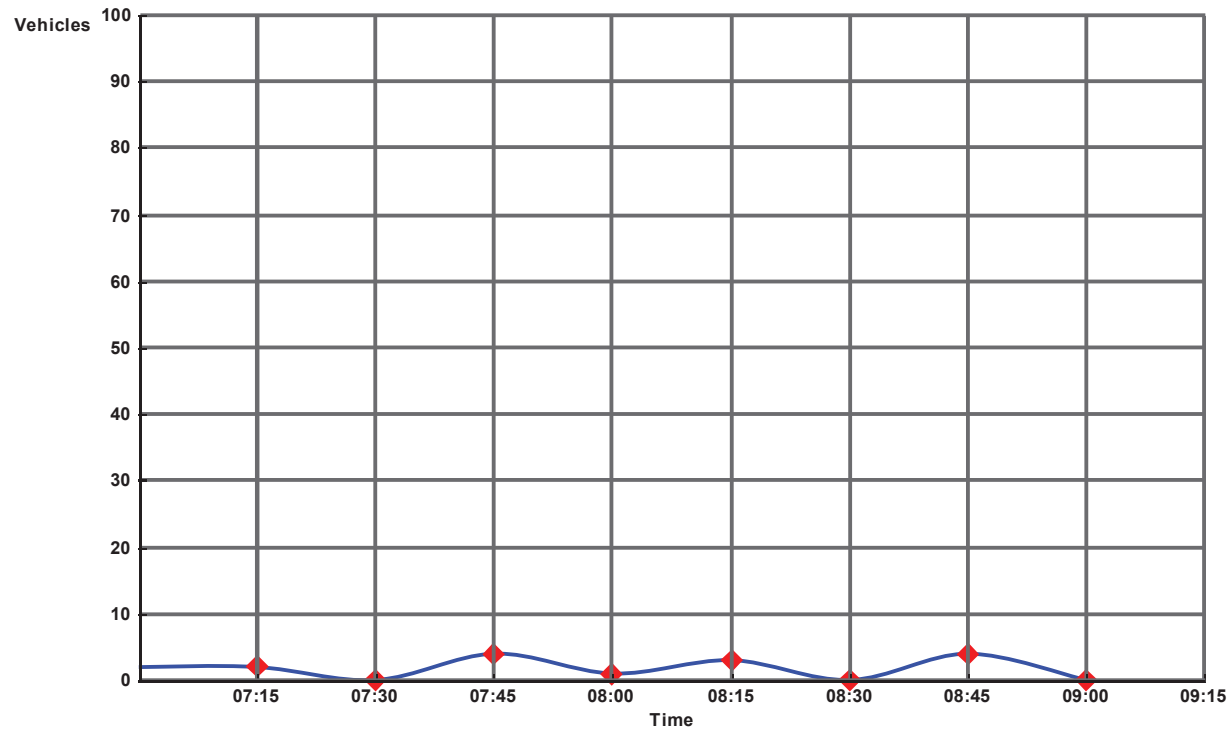
File Name: AM

Location:

Trucks

Site Code:

Study Date: 05/25/2023



Holly Springs Rd. @ Brickyard Rd.

File Name: PM

Site Code:

Location:

Cars and Peds

Study Date: 05/24/2023

	Holly Springs Rd. Southbound						Brickyard Rd. Westbound						Northbound						Brickyard Rd. Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00		18	0	14		32		22	16	0		38						0		0	24	13		37	107
16:15		21	0	23		44		10	28	0		38						0		0	12	17		29	111
16:30		24	0	25		49		18	19	0		37						0		0	8	12		20	106
16:45		20	0	18		38		20	13	0		33						0		0	12	10		22	93
Total	0	83	0	80	0	163	0	70	76	0	0	146	0	0	0	0	0	0	0	0	56	52	0	108	417
17:00		15	0	14		29		14	16	0		30						0		0	19	16		35	94
17:15		32	0	21		53		20	20	0		40						0		0	13	18		31	124
17:30		30	0	21		51		11	23	0		34						0		0	18	12		30	115
17:45		23	0	12		35		12	18	0		30						0		0	12	12		24	89
Total	0	100	0	68	0	168	0	57	77	0	0	134	0	0	0	0	0	0	0	0	62	58	0	120	422
Grand Total	0	183	0	148	0	331	0	127	153	0	0	280	0	0	0	0	0	0	0	0	118	110	0	228	839
Appr %		55.3	0	44.7	0			45.4	54.6	0	0			-2	-2	-2	-2			0	51.8	48.2	0		
Total %		21.8	0	17.6	0			15.1	18.2	0	0			0	0	0	0			0	14.1	13.1	0		

Holly Springs Rd. @ Brickyard Rd.

File Name: PM

Site Code:

Location:

Trucks and Bikes

Study Date: 05/24/2023

	Holly Springs Rd. Southbound						Brickyard Rd. Westbound						Northbound						Brickyard Rd. Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00		0	0	0		0		0	0	0		0						0		0	0	0		0	0
16:15		0	0	0		0		0	0	0		0						0		0	0	0		0	0
16:30		0	0	0		0		2	1	0		3						0		0	0	0		0	3
16:45		1	0	2		3		1	1	0		2						0		0	0	0		0	5
Total	0	1	0	2	0	3	0	3	2	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	8
17:00		2	0	0		2		0	0	0		0						0		0	0	0		0	2
17:15		0	0	0		0		1	1	0		2						0		0	0	0		0	2
17:30		0	0	0		0		0	0	0		0						0		0	0	0		0	0
17:45		0	0	0		0		0	0	0		0						0		0	0	0		0	0
Total	0	2	0	0	0	2	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	4
Grand Total	0	3	0	2	0	5	0	4	3	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	12
Appr %		60	0	40	0			57.1	42.9	0	0			-2	-2	-2	-2			-2	-2	-2	-2		
Total %		25	0	16.7	0			33.3	25	0	0			0	0	0	0			0	0	0	0		

Holly Springs Rd. @ Brickyard Rd.

File Name: PM

Site Code:

Location:

All Vehicles

Study Date: 05/24/2023

	Holly Springs Rd. Southbound						Brickyard Rd. Westbound						Northbound						Brickyard Rd. Eastbound					
Time	Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00	18	0	14	0	32		22	16	0	0	38		0	0	0	0	0		0	24	13	0	37	107
16:15	21	0	23	0	44		10	28	0	0	38		0	0	0	0	0		0	12	17	0	29	111
16:30	24	0	25	0	49		20	20	0	0	40		0	0	0	0	0		0	8	12	0	20	109
16:45	21	0	20	0	41		21	14	0	0	35		0	0	0	0	0		0	12	10	0	22	98
Total	84	0	82	0	166		73	78	0	0	151		0	0	0	0	0		0	56	52	0	108	425
17:00	17	0	14	0	31		14	16	0	0	30		0	0	0	0	0		0	19	16	0	35	96
17:15	32	0	21	0	53		21	21	0	0	42		0	0	0	0	0		0	13	18	0	31	126
17:30	30	0	21	0	51		11	23	0	0	34		0	0	0	0	0		0	18	12	0	30	115
17:45	23	0	12	0	35		12	18	0	0	30		0	0	0	0	0		0	12	12	0	24	89
Total	102	0	68	0	170		58	78	0	0	136		0	0	0	0	0		0	62	58	0	120	426
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
Grand Total	186	0	150	0	336		131	156	0	0	287		0	0	0	0	0		0	118	110	0	228	851
Appr %	55.4	00.0	44.6	00.0			45.6	54.4	00.0	00.0			NaN	NaN	NaN	NaN			00.0	51.8	48.2	00.0		
Total %	21.9	00.0	17.6	00.0			15.4	18.3	00.0	00.0			00.0	00.0	00.0	00.0			00.0	13.9	12.9	00.0		
% Trucks	01.6	-	01.3	-	01.5		03.1	01.9	-	-	02.4		-	-	-	-	-		-	00.0	00.0	-	00.0	01.4

Holly Springs Rd. @ Brickyard Rd.

File Name: PM

Location:

Site Code:

Study Date: 05/24/2023

All Vehicles

Brickyard Rd.	
In = 342	Out = 228
0	118
Right	Thru
Left	U-Turn

Holly Springs Rd.			
In = 241		Out = 336	
186	0	150	0
Right	Thru	Left	U-Turn

Total Volumes
16:00 to 18:00
Volume = 851

Brickyard Rd.	
In = 268	Out = 287
131	156
Right	Thru
Left	U-Turn

U-Turn	Left	Thru	Right
0	0	0	0
In = 0		Out = 0	

Holly Springs Rd. @ Brickyard Rd.

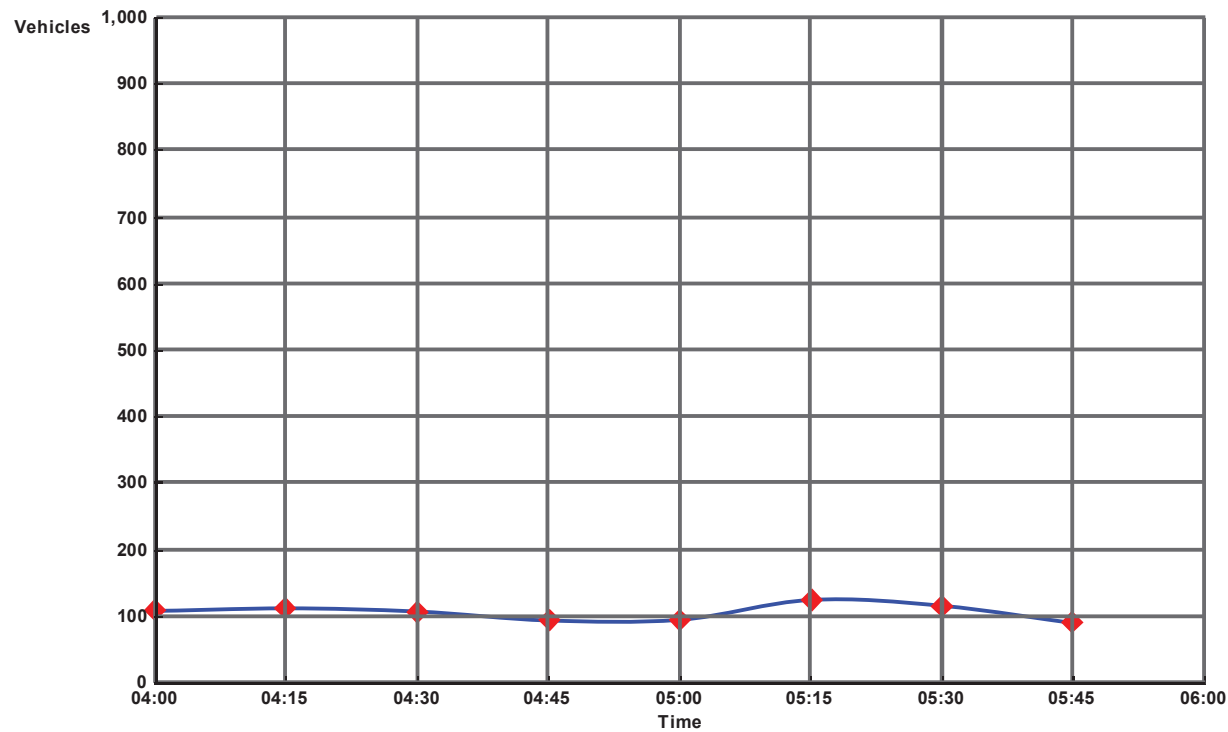
File Name: PM

Location:

Cars

Site Code:

Study Date: 05/24/2023



Holly Springs Rd. @ Brickyard Rd.

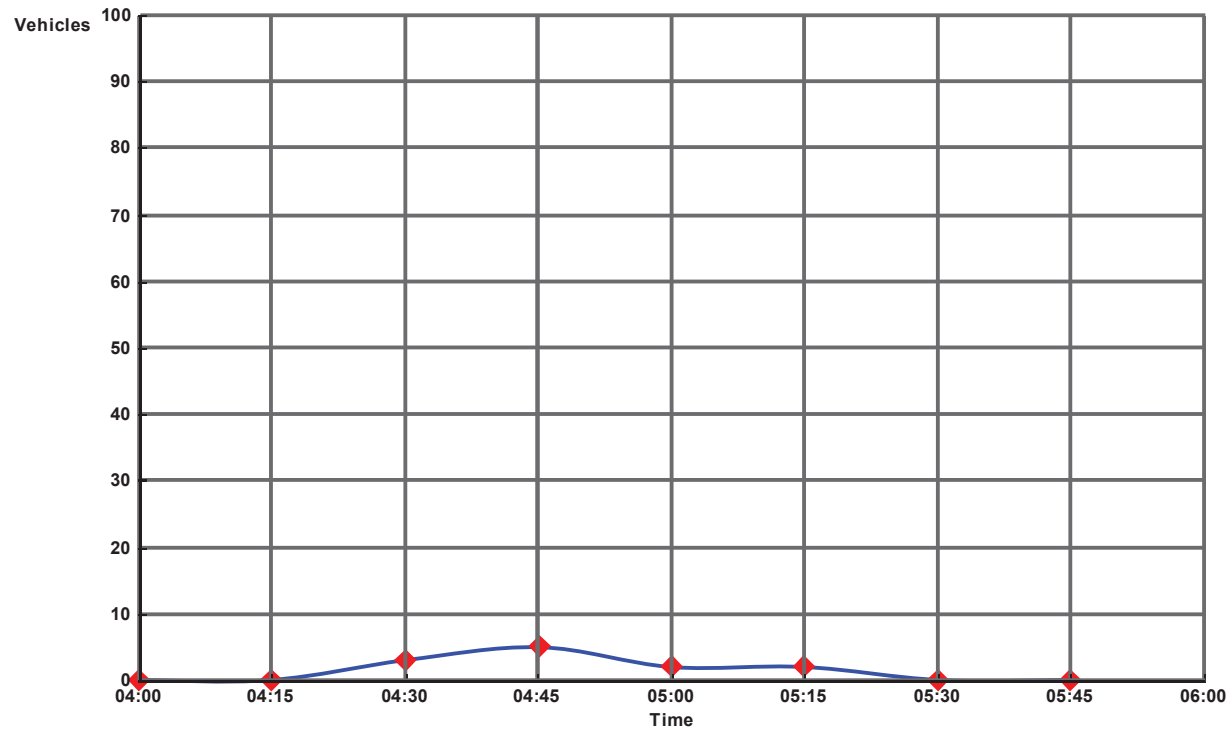
File Name: PM

Location:

Trucks

Site Code:

Study Date: 05/24/2023



Brickyard Rd. @ Mckinney Rd.

File Name: AM

Location:

Cars and Peds

Site Code:

Study Date: 05/25/2023

	Brickyard Rd. Southbound						Mckinney Rd. Westbound						Brickyard Rd. Northbound						Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		0	23	0		23		2	0	2		4		0	9	0		9						0	36
07:15		0	27	1		28		3	0	3		6		0	16	0		16						0	50
07:30		0	35	0		35		4	0	0		4		0	21	0		21						0	60
07:45		0	27	1		28		2	0	0		2		1	23	0		24						0	54
Total	0	0	112	2	0	114	0	11	0	5	0	16	0	1	69	0	0	70	0	0	0	0	0	0	200
08:00		0	30	3		33		2	0	2		4		0	14	0		14						0	51
08:15		0	28	0		28		1	0	2		3		0	19	0		19						0	50
08:30		0	29	2		31		2	0	1		3		1	17	0		18						0	52
08:45		0	26	1		27		1	0	0		1		0	10	0		10						0	38
Total	0	0	113	6	0	119	0	6	0	5	0	11	0	1	60	0	0	61	0	0	0	0	0	0	191
09:00		0	0	0		0		0	0	0		0		0	0	0		0						0	0
Total	0	0	139	7	0	146	0	7	0	5	0	12	0	1	70	0	0	71	0	0	0	0	0	0	229
Grand Total	0	0	225	8	0	233	0	17	0	10	0	27	0	2	129	0	0	131	0	0	0	0	0	0	391
Appr %		0	96.6	3.4	0			63	0	37	0			1.5	98.5	0	0			-2	-2	-2	-2		
Total %		0	57.5	2	0			4.3	0	2.6	0			0.5	33	0	0			0	0	0	0		
AM Pk Hr		07:30	07:30	07:30	07:30	07:30		07:30	07:30	07:30	07:30	07:30		07:30	07:30	07:30	07:30	07:30		07:30	07:30	07:30	07:30	07:30	07:30
AM Pk Vol		0	120	4	0	124		9	0	4	0	13		1	77	0	0	78		0	0	0	0	0	215
AM PHF		NaN	0.857	0.333	NaN	0.886		0.563	NaN	0.500	NaN	0.813		0.250	0.837	NaN	NaN	0.813		NaN	NaN	NaN	NaN	NaN	0.896

Brickyard Rd. @ Mckinney Rd.

File Name: AM

Location:

Trucks and Bikes

Site Code:

Study Date: 05/25/2023

	Brickyard Rd. Southbound						Mckinney Rd. Westbound						Brickyard Rd. Northbound						Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00		0	1	0		1		0	0	0		0		0	0	0		0						0	1
07:15		0	1	0		1		0	0	0		0		0	0	0		0						0	1
07:30		0	1	0		1		0	0	0		0		0	1	0		1						0	2
07:45		0	2	0		2		0	0	0		0		0	2	0		2						0	4
Total	0	0	5	0	0	5	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	8
08:00		0	1	0		1		0	0	0		0		0	1	0		1						0	2
08:15		0	0	0		0		0	0	0		0		0	2	0		2						0	2
08:30		0	1	0		1		0	0	0		0		0	0	0		0						0	1
08:45		0	1	0		1		0	0	0		0		0	0	0		0						0	1
Total	0	0	3	0	0	3	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	6
09:00		0	0	0		0		0	0	0		0		0	0	0		0						0	0
Total	0	0	4	0	0	4	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	7
Grand Total	0	0	8	0	0	8	0	0	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	14
Appr %		0	100	0	0			-2	-2	-2	-2			0	100	0	0			-2	-2	-2	-2		
Total %		0	57.1	0	0			0	0	0	0			0	42.9	0	0			0	0	0	0		
AM Pk Hr		07:30	07:30	07:30	07:30	07:30		07:30	07:30	07:30	07:30	07:30		07:30	07:30	07:30	07:30	07:30		07:30	07:30	07:30	07:30	07:30	07:30
AM Pk Vol		0	4	0	0	4		0	0	0	0	0		0	6	0	0	6		0	0	0	0	0	10
AM PHF		NaN	0.500	NaN	NaN	0.500		NaN	NaN	NaN	NaN	NaN		NaN	0.750	NaN	NaN	0.750		NaN	NaN	NaN	NaN	NaN	0.625

Brickyard Rd. @ Mckinney Rd.

File Name: AM

Location:

All Vehicles

Site Code:

Study Date: 05/25/2023

	Brickyard Rd. Southbound						Mckinney Rd. Westbound						Brickyard Rd. Northbound						Eastbound					
Time	Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total	Int Total
07:00	0	24	0	0	24		2	0	2	0	4		0	9	0	0	9		0	0	0	0	0	37
07:15	0	28	1	0	29		3	0	3	0	6		0	16	0	0	16		0	0	0	0	0	51
07:30	0	36	0	0	36		4	0	0	0	4		0	22	0	0	22		0	0	0	0	0	62
07:45	0	29	1	0	30		2	0	0	0	2		1	25	0	0	26		0	0	0	0	0	58
Total	0	117	2	0	119		11	0	5	0	16		1	72	0	0	73		0	0	0	0	0	208
08:00	0	31	3	0	34		2	0	2	0	4		0	15	0	0	15		0	0	0	0	0	53
08:15	0	28	0	0	28		1	0	2	0	3		0	21	0	0	21		0	0	0	0	0	52
08:30	0	30	2	0	32		2	0	1	0	3		1	17	0	0	18		0	0	0	0	0	53
08:45	0	27	1	0	28		1	0	0	0	1		0	10	0	0	10		0	0	0	0	0	39
Total	0	116	6	0	122		6	0	5	0	11		1	63	0	0	64		0	0	0	0	0	197
09:00	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
Total	0	143	7	0	150		7	0	5	0	12		1	73	0	0	74		0	0	0	0	0	236
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
Grand Total	0	233	8	0	241		17	0	10	0	27		2	135	0	0	137		0	0	0	0	0	405
Appr %	00.0	96.7	03.3	00.0			63.0	00.0	37.0	00.0			01.5	98.5	00.0	00.0			NaN	NaN	NaN	NaN		
Total %	00.0	57.5	02.0	00.0			04.2	00.0	02.5	00.0			00.5	33.3	00.0	00.0			00.0	00.0	00.0	00.0		
% Trucks	-	03.4	00.0	-	03.3		00.0	-	00.0	-	00.0		00.0	04.4	-	-	04.4		-	-	-	-	-	03.5
AM Pk Hr	07:30	07:30	07:30	07:30	07:30		07:30	07:30	07:30	07:30	07:30		07:30	07:30	07:30	07:30	07:30		07:30	07:30	07:30	07:30	07:30	07:30
AM Pk Vol	0	124	4	0	128		9	0	4	0	13		1	83	0	0	84		0	0	0	0	0	225
AM PHF	NaN	0.861	0.333	NaN	0.889		0.563	NaN	0.500	NaN	0.813		0.250	0.830	NaN	NaN	0.808		NaN	NaN	NaN	NaN	NaN	0.907

Brickyard Rd. @ Mckinney Rd.

File Name: AM





Location:

All Vehicles





Site Code:





Study Date: 05/25/2023

Out = 0		In = 0	
0	U-Turn	0	Right
0	Left	0	Thru
0	Thru	0	Left
0	Right	0	U-Turn

Brickyard Rd.			
In = 152		Out = 241	
0	233	8	0
Right	Thru	Left	U-Turn
			

Total Volumes
07:00 to 09:15
Volume = 405

			
U-Turn	Left	Thru	Right
0	0	135	2
In = 243		Out = 137	
Brickyard Rd.			

Mckinney Rd.			
In = 10		Out = 27	
17	0	10	0
Right	Thru	Left	U-Turn
			

Brickyard Rd. @ Mckinney Rd.





File Name: AM





Location:

All Vehicles





Site Code:





Study Date: 05/25/2023

0	U-Turn	
0	Left	
0	Thru	
0	Right	

Brickyard Rd.			
0	124	4	0
Right	Thru	Left	U-Turn
			

AM Peak Hour Statistics
 AM Peak Hour Begins: 07:30
 AM Peak Hour Volume: 225
 AM Peak Hour Factor: 0.907

			
U-Turn	Left	Thru	Right
0	0	83	1
Brickyard Rd.			

9	Right	
0	Thru	
4	Left	
0	U-Turn	
Mckinney Rd.		

Brickyard Rd. @ Mckinney Rd.

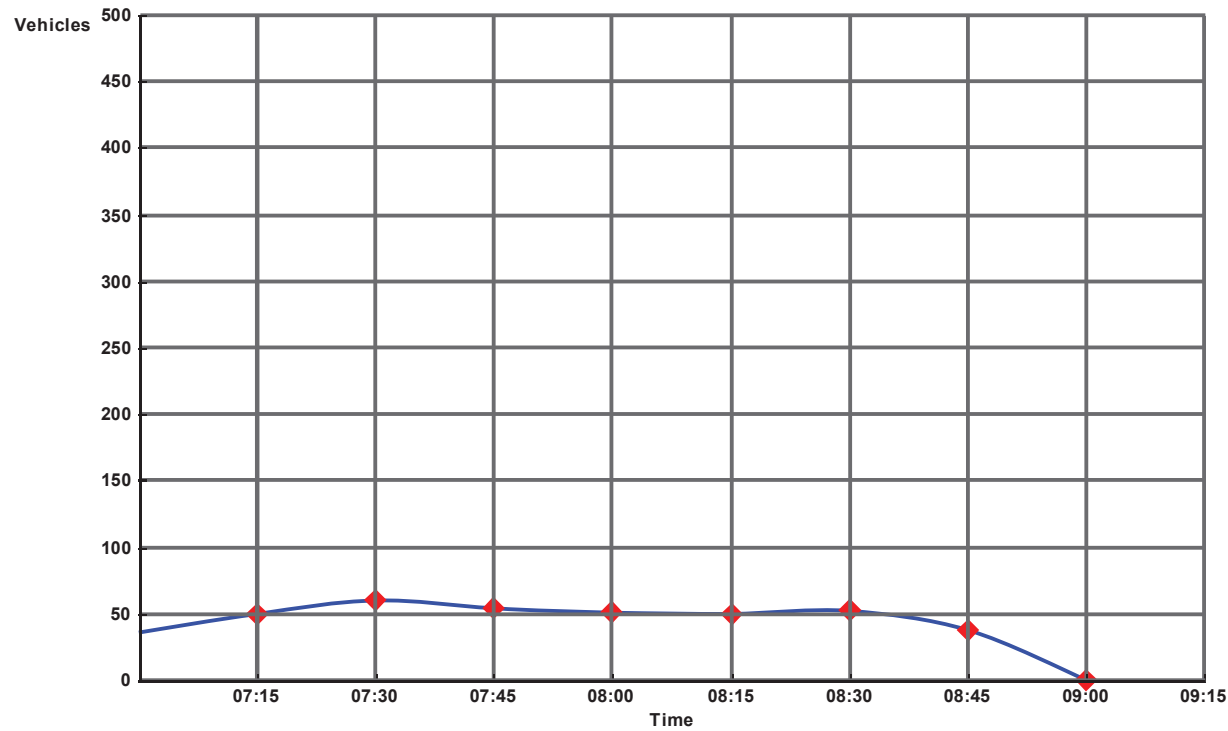
File Name: AM

Location:

Cars

Site Code:

Study Date: 05/25/2023



Brickyard Rd. @ Mckinney Rd.

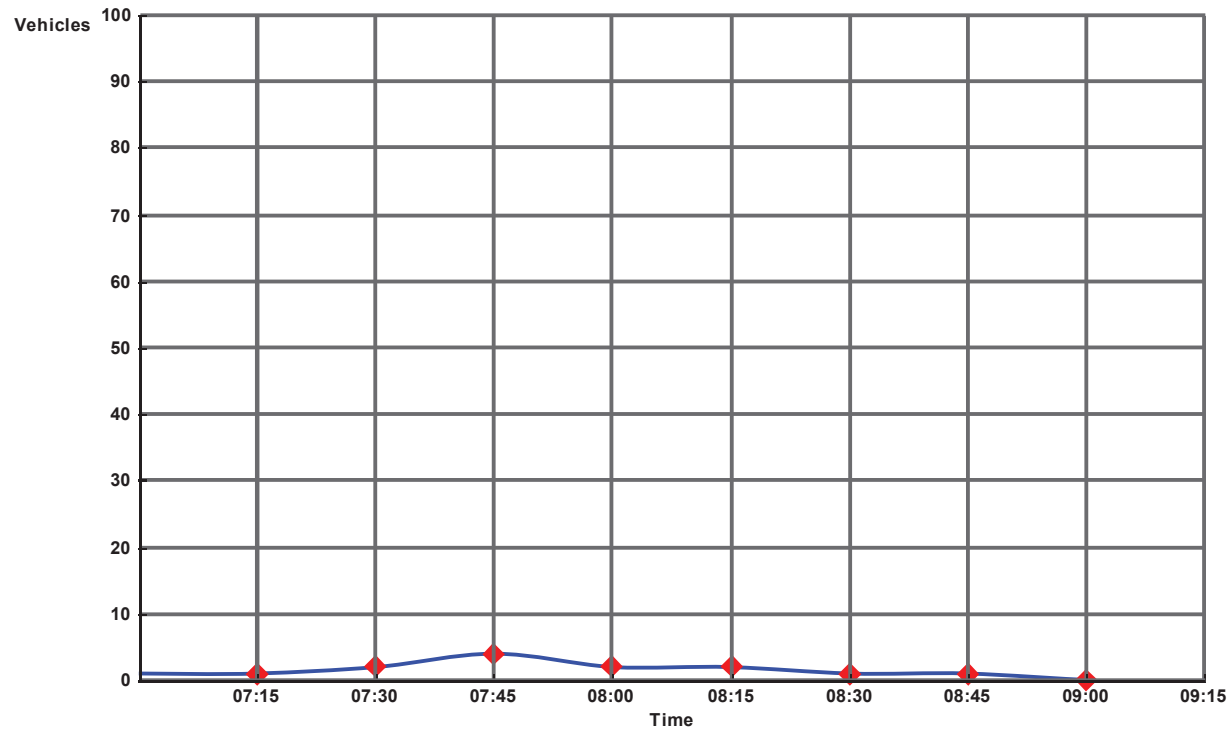
File Name: AM

Location:

Trucks

Site Code:

Study Date: 05/25/2023



Brickyard Rd. @ Mckinney Rd.

File Name: PM

Site Code:

Location:

Cars and Peds

Study Date: 05/24/2023

	Brickyard Rd. Southbound						Mckinney Rd. Westbound						Brickyard Rd. Northbound						Eastbound						
Time	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Peds	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00		0	38	1		39		3	0	0		3		1	34	0		35						0	77
16:15		0	37	3		40		6	0	1		7		1	39	0		40						0	87
16:30		0	40	1		41		2	0	2		4		1	36	0		37						0	82
16:45		0	25	2		27		2	0	0		2		2	33	0		35						0	64
Total	0	0	140	7	0	147	0	13	0	3	0	16	0	5	142	0	0	147	0	0	0	0	0	0	310
17:00		0	36	1		37		1	0	1		2		2	34	0		36						0	75
17:15		0	41	3		44		2	0	0		2		1	40	0		41						0	87
17:30		0	33	4		37		2	0	1		3		2	32	0		34						0	74
17:45		0	22	3		25		1	0	1		2		2	34	0		36						0	63
Total	0	0	132	11	0	143	0	6	0	3	0	9	0	7	140	0	0	147	0	0	0	0	0	0	299
Grand Total	0	0	272	18	0	290	0	19	0	6	0	25	0	12	282	0	0	294	0	0	0	0	0	0	609
Appr %		0	93.8	6.2	0			76	0	24	0			4.1	95.9	0	0			-2	-2	-2	-2		
Total %		0	44.7	3	0			3.1	0	1	0			2	46.3	0	0			0	0	0	0		
PM Pk Hr		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00		16:00	16:00	16:00	16:00	16:00	16:00
PM Pk Vol		0	140	7	0	147		13	0	3	0	16		5	142	0	0	147		0	0	0	0	0	310
PM PHF		NaN	0.875	0.583	NaN	0.896		0.542	NaN	0.375	NaN	0.571		0.625	0.910	NaN	NaN	0.919		NaN	NaN	NaN	NaN	NaN	0.891

Brickyard Rd. @ Mckinney Rd.

File Name: PM

Site Code:

Location:

Trucks and Bikes

Study Date: 05/24/2023

	Brickyard Rd. Southbound						Mckinney Rd. Westbound						Brickyard Rd. Northbound						Eastbound						
Time	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Bikes	Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00		0	0	0		0		0	0	0		0		0	0	0		0						0	0
16:15		0	0	0		0		0	0	0		0		0	1	0		1						0	1
16:30		0	0	0		0		0	0	0		0		0	1	0		1						0	1
16:45		0	1	0		1		0	0	0		0		0	3	0		3						0	4
Total	0	0	1	0	0	1	0	0	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	6
17:00		0	2	0		2		0	0	0		0		0	1	0		1						0	3
17:15		0	0	0		0		0	0	0		0		0	1	0		1						0	1
17:30		0	0	0		0		0	0	0		0		0	0	0		0						0	0
17:45		0	0	0		0		0	0	0		0		0	0	0		0						0	0
Total	0	0	2	0	0	2	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
Grand Total	0	0	3	0	0	3	0	0	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	10
Appr %		0	100	0	0			-2	-2	-2	-2			0	100	0	0			-2	-2	-2	-2		
Total %		0	30	0	0			0	0	0	0			0	70	0	0			0	0	0	0		
PM Pk Hr		16:30	16:30	16:30	16:30	16:30		16:30	16:30	16:30	16:30	16:30		16:30	16:30	16:30	16:30	16:30		16:30	16:30	16:30	16:30	16:30	16:30
PM Pk Vol		0	3	0	0	3		0	0	0	0	0		0	6	0	0	6		0	0	0	0	0	9
PM PHF		NaN	0.375	NaN	NaN	0.375		NaN	NaN	NaN	NaN	NaN		NaN	0.500	NaN	NaN	0.500		NaN	NaN	NaN	NaN	NaN	0.563

Brickyard Rd. @ Mckinney Rd.

File Name: PM

Site Code:

Location:

All Vehicles

Study Date: 05/24/2023

	Brickyard Rd. Southbound						Mckinney Rd. Westbound						Brickyard Rd. Northbound						Eastbound					
Time	Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total		Right	Thru	Left	U-Turn	Appr Total	Int Total
16:00	0	38	1	0	39		3	0	0	0	3		1	34	0	0	35		0	0	0	0	0	77
16:15	0	37	3	0	40		6	0	1	0	7		1	40	0	0	41		0	0	0	0	0	88
16:30	0	40	1	0	41		2	0	2	0	4		1	37	0	0	38		0	0	0	0	0	83
16:45	0	26	2	0	28		2	0	0	0	2		2	36	0	0	38		0	0	0	0	0	68
Total	0	141	7	0	148		13	0	3	0	16		5	147	0	0	152		0	0	0	0	0	316
17:00	0	38	1	0	39		1	0	1	0	2		2	35	0	0	37		0	0	0	0	0	78
17:15	0	41	3	0	44		2	0	0	0	2		1	41	0	0	42		0	0	0	0	0	88
17:30	0	33	4	0	37		2	0	1	0	3		2	32	0	0	34		0	0	0	0	0	74
17:45	0	22	3	0	25		1	0	1	0	2		2	34	0	0	36		0	0	0	0	0	63
Total	0	134	11	0	145		6	0	3	0	9		7	142	0	0	149		0	0	0	0	0	303
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
Grand Total	0	275	18	0	293		19	0	6	0	25		12	289	0	0	301		0	0	0	0	0	619
Appr %	00.0	93.9	06.1	00.0			76.0	00.0	24.0	00.0			04.0	96.0	00.0	00.0			NaN	NaN	NaN	NaN		
Total %	00.0	44.4	02.9	00.0			03.1	00.0	01.0	00.0			01.9	46.7	00.0	00.0			00.0	00.0	00.0	00.0		
% Trucks	-	01.1	00.0	-	01.0		00.0	-	00.0	-	00.0		00.0	02.4	-	-	02.3		-	-	-	-	-	01.6
PM Pk Hr	16:30	16:30	16:30	16:30	16:30		16:30	16:30	16:30	16:30	16:30		16:30	16:30	16:30	16:30	16:30		16:30	16:30	16:30	16:30	16:30	16:30
PM Pk Vol	0	145	7	0	152		7	0	3	0	10		6	149	0	0	155		0	0	0	0	0	317
PM PHF	NaN	0.884	0.583	NaN	0.864		0.875	NaN	0.375	NaN	0.625		0.750	0.909	NaN	NaN	0.923		NaN	NaN	NaN	NaN	NaN	0.901

Brickyard Rd. @ Mckinney Rd.

File Name: PM

Location:

All Vehicles

Site Code:

Study Date: 05/24/2023

Brickyard Rd.		Mckinney Rd.	
In = 0		Out = 0	
Right	0	Thru	0
Left	0	Left	0
U-Turn	0	U-Turn	0

Brickyard Rd.			
In = 308		Out = 293	
Right	0	Thru	18
Left	275	Left	0
U-Turn	0	U-Turn	0

Total Volumes
16:00 to 18:00
Volume = 619

Brickyard Rd.		Mckinney Rd.	
In = 30		Out = 25	
Right	19	Thru	0
Left	0	Left	6
U-Turn	0	U-Turn	0

Brickyard Rd.			
In = 281		Out = 301	
U-Turn	0	Thru	289
Left	0	Left	12
Right	0	Right	0

Brickyard Rd. @ Mckinney Rd.





File Name: PM





Location:

All Vehicles





Site Code:





Study Date: 05/24/2023

0	U-Turn	
0	Left	
0	Thru	
0	Right	

Brickyard Rd.			
0	145	7	0
Right	Thru	Left	U-Turn
			

PM Peak Hour Statistics
 PM Peak Hour Begins: 16:30
 PM Peak Hour Volume: 317
 PM Peak Hour Factor: 0.901

			
U-Turn	Left	Thru	Right
0	0	149	6
Brickyard Rd.			

7	Right	
0	Thru	
3	Left	
0	U-Turn	
Mckinney Rd.		

Brickyard Rd. @ Mckinney Rd.

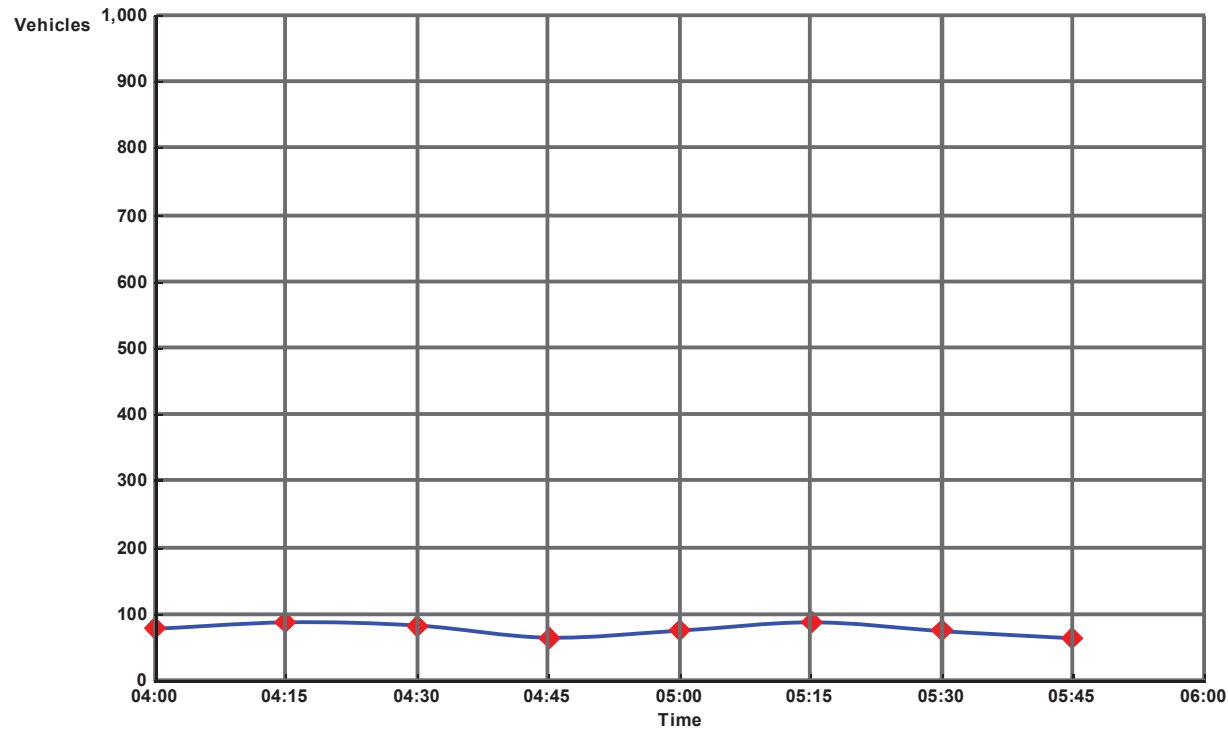
File Name: PM

Location:

Cars

Site Code:

Study Date: 05/24/2023



Brickyard Rd. @ Mckinney Rd.

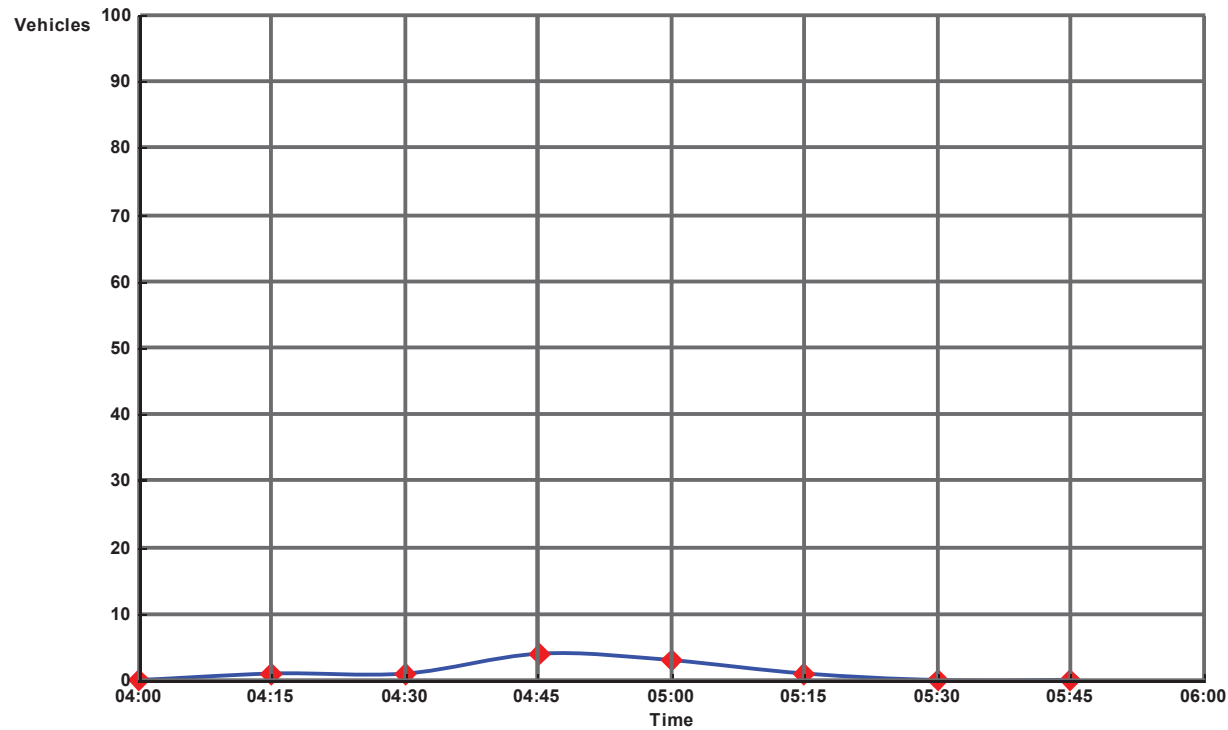
File Name: PM

Location:

Trucks

Site Code:

Study Date: 05/24/2023



Appendix B: Capacity Software Reports

B



Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	336	305	98	123	12
Future Volume (vph)	10	336	305	98	123	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.967		0.988	
Flt Protected	0.950				0.956	
Satd. Flow (prot)	1770	1863	1801	0	1759	0
Flt Permitted	0.950				0.956	
Satd. Flow (perm)	1770	1863	1801	0	1759	0
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		40	40		35	
Link Distance (ft)		1266	1010		2027	
Travel Time (s)		21.6	17.2		39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	373	339	109	137	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	373	448	0	150	0
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Detector Phase	5	2	6		4	
Switch Phase						
Minimum Initial (s)	7.0	12.0	12.0		7.0	
Minimum Split (s)	14.0	19.0	19.0		14.0	
Total Split (s)	14.0	66.0	52.0		24.0	
Total Split (%)	15.6%	73.3%	57.8%		26.7%	
Maximum Green (s)	7.0	59.0	45.0		17.0	
Yellow Time (s)	5.0	5.0	5.0		5.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	9.7	27.5	25.8		12.3	
Actuated g/C Ratio	0.21	0.60	0.57		0.27	
v/c Ratio	0.03	0.33	0.44		0.32	
Control Delay	21.6	7.5	11.4		18.3	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	21.6	7.5	11.4		18.3	
LOS	C	A	B		B	
Approach Delay		7.9	11.4		18.3	
Approach LOS		A	B		B	

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	2	49	62		24	
Queue Length 95th (ft)	19	113	234		109	
Internal Link Dist (ft)		1186	930		1947	
Turn Bay Length (ft)	70					
Base Capacity (vph)	378	1793	1666		794	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.03	0.21	0.27		0.19	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 45.5

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 11.1

Intersection LOS: B

Intersection Capacity Utilization 37.9%

ICU Level of Service A

Analysis Period (min) 15







Splits and Phases: 1: US 64 Brevard Rd. & Brickyard Rd.

 66 s		 24 s	
 14 s	 52 s		

HCM 6th TWSC

2: US 64 Brevard Rd. & N Greenwood Forest Dr.

07/28/2023

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	103	304	295	22	42	42
Future Vol, veh/h	103	304	295	22	42	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	120	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	338	328	24	47	47
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	352	0	-	0	894	328
Stage 1	-	-	-	-	328	-
Stage 2	-	-	-	-	566	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1207	-	-	-	312	713
Stage 1	-	-	-	-	730	-
Stage 2	-	-	-	-	568	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1207	-	-	-	283	713
Mov Cap-2 Maneuver	-	-	-	-	407	-
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	568	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.1	0		13.5		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1207	-	-	-	518	
HCM Lane V/C Ratio	0.095	-	-	-	0.18	
HCM Control Delay (s)	8.3	-	-	-	13.5	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7	

HCM 6th TWSC
3: Turnpike Rd. & Brickyard Rd.

07/28/2023




Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	62	5	4	41	4	16	7	16	26	4	15
Future Vol, veh/h	4	62	5	4	41	4	16	7	16	26	4	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	69	6	4	46	4	18	8	18	29	4	17
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	50	0	0	75	0	0	147	138	72	149	139	48
Stage 1	-	-	-	-	-	-	80	80	-	56	56	-
Stage 2	-	-	-	-	-	-	67	58	-	93	83	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1557	-	-	1524	-	-	821	753	990	819	752	1021
Stage 1	-	-	-	-	-	-	929	828	-	956	848	-
Stage 2	-	-	-	-	-	-	943	847	-	914	826	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1557	-	-	1524	-	-	800	748	990	794	747	1021
Mov Cap-2 Maneuver	-	-	-	-	-	-	800	748	-	794	747	-
Stage 1	-	-	-	-	-	-	926	826	-	953	845	-
Stage 2	-	-	-	-	-	-	920	844	-	886	824	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.6			9.4			9.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	857	1557	-	-	1524	-	-	852				
HCM Lane V/C Ratio	0.051	0.003	-	-	0.003	-	-	0.059				
HCM Control Delay (s)	9.4	7.3	0	-	7.4	0	-	9.5				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2				

HCM 6th TWSC
4: N Greenwood Forest Dr. & Brickyard Rd.

07/28/2023

Intersection

Int Delay, s/veh 5.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	63	41	43	29	16	109
Future Vol, veh/h	63	41	43	29	16	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	70	46	48	32	18	121

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	116
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1473
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1473
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.5	9.6
HCM LOS			A




Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	928	-	-	1473	-
HCM Lane V/C Ratio	0.15	-	-	0.032	-
HCM Control Delay (s)	9.6	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

HCM 6th TWSC
5: Brickyard Rd. & Holly Springs Rd.

07/28/2023

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	97	75	39	75	60	33
Future Vol, veh/h	97	75	39	75	60	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	83	43	83	67	37




Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	126	0	0 384 85
Stage 1	-	-	- 85 -
Stage 2	-	-	- 299 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1460	-	- 619 974
Stage 1	-	-	- 938 -
Stage 2	-	-	- 752 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1460	-	- 571 974
Mov Cap-2 Maneuver	-	-	- 571 -
Stage 1	-	-	- 865 -
Stage 2	-	-	- 752 -

Approach	EB	WB	SB
HCM Control Delay, s	4.3	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1460	-	-	-	669
HCM Lane V/C Ratio	0.074	-	-	-	0.154
HCM Control Delay (s)	7.7	0	-	-	11.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

HCM 6th TWSC
6: Brickyard Rd. & McKinney Rd.

07/28/2023

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	131	4	9	105	4
Future Vol, veh/h	4	131	4	9	105	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	146	4	10	117	4

Major/Minor	Major1	Minor2		
Conflicting Flow All	0	0	77	150
Stage 1	-	-	0	0
Stage 2	-	-	77	150
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	926	742
Stage 1	-	-	-	-
Stage 2	-	-	946	773
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	926	0
Mov Cap-2 Maneuver	-	-	926	0
Stage 1	-	-	-	0
Stage 2	-	-	946	0

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

Minor Lane/Major Mvmt	EBT	EBRWBLn1
Capacity (veh/h)	-	- 926
HCM Lane V/C Ratio	-	- 0.016
HCM Control Delay (s)	-	- 8.9
HCM Lane LOS	-	- A
HCM 95th %tile Q(veh)	-	- 0

Queuing and Blocking Report
2023 Existing AM Peak

07/28/2023

Intersection: 1: US 64 Brevard Rd. & Brickyard Rd.

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	51	183	138	116
Average Queue (ft)	10	73	71	62
95th Queue (ft)	34	143	126	103
Link Distance (ft)		1212	977	1959
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	70			
Storage Blk Time (%)	0	6		
Queuing Penalty (veh)	0	1		

Intersection: 2: US 64 Brevard Rd. & N Greenwood Forest Dr.

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	54	110
Average Queue (ft)	15	34
95th Queue (ft)	42	73
Link Distance (ft)		948
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Turnpike Rd. & Brickyard Rd.

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	13	61
Average Queue (ft)	8	13
95th Queue (ft)	17	35
Link Distance (ft)	1055	1002
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
2023 Existing AM Peak

07/28/2023

Intersection: 4: N Greenwood Forest Dr. & Brickyard Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	31	55
Average Queue (ft)	5	37
95th Queue (ft)	22	55
Link Distance (ft)	977	1201
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Brickyard Rd. & Holly Springs Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	53	72
Average Queue (ft)	12	31
95th Queue (ft)	40	55
Link Distance (ft)	437	1008
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Brickyard Rd. & McKinney Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	31	27
Average Queue (ft)	9	1
95th Queue (ft)	33	9
Link Distance (ft)	998	1959
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	27	412	466	130	131	25
Future Volume (vph)	27	412	466	130	131	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.971		0.978	
Flt Protected	0.950				0.960	
Satd. Flow (prot)	1770	1863	1809	0	1749	0
Flt Permitted	0.950				0.960	
Satd. Flow (perm)	1770	1863	1809	0	1749	0
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		40	40		35	
Link Distance (ft)		1266	1010		2027	
Travel Time (s)		21.6	17.2		39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	30	458	518	144	146	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	458	662	0	174	0
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Detector Phase	5	2	6		4	
Switch Phase						
Minimum Initial (s)	7.0	12.0	12.0		7.0	
Minimum Split (s)	14.0	19.0	19.0		14.0	
Total Split (s)	14.0	69.0	55.0		21.0	
Total Split (%)	15.6%	76.7%	61.1%		23.3%	
Maximum Green (s)	7.0	62.0	48.0		14.0	
Yellow Time (s)	5.0	5.0	5.0		5.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	9.7	39.9	35.7		13.8	
Actuated g/C Ratio	0.15	0.62	0.55		0.21	
v/c Ratio	0.11	0.40	0.66		0.47	
Control Delay	33.4	6.9	15.5		30.9	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	33.4	6.9	15.5		30.9	
LOS	C	A	B		C	
Approach Delay		8.6	15.5		30.9	
Approach LOS		A	B		C	

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	9	78	134		51	
Queue Length 95th (ft)	43	127	368		158	
Internal Link Dist (ft)		1186	930		1947	
Turn Bay Length (ft)	70					
Base Capacity (vph)	267	1678	1455		469	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.11	0.27	0.45		0.37	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 64.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 15.0

Intersection LOS: B

Intersection Capacity Utilization 49.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: US 64 Brevard Rd. & Brickyard Rd.









HCM 6th TWSC

2: US 64 Brevard Rd. & N Greenwood Forest Dr.

07/28/2023

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	68	402	424	67	37	130
Future Vol, veh/h	68	402	424	67	37	130
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	120	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	76	447	471	74	41	144

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	545	0	0 1070 471
Stage 1	-	-	- 471 -
Stage 2	-	-	- 599 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1024	-	- 245 593
Stage 1	-	-	- 628 -
Stage 2	-	-	- 549 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1024	-	- 227 593
Mov Cap-2 Maneuver	-	-	- 361 -
Stage 1	-	-	- 582 -
Stage 2	-	-	- 549 -

Approach	EB	WB	SB
HCM Control Delay, s	1.3	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1024	-	-	-	519
HCM Lane V/C Ratio	0.074	-	-	-	0.358
HCM Control Delay (s)	8.8	-	-	-	15.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.6

HCM 6th TWSC
3: Turnpike Rd. & Brickyard Rd.

07/28/2023




Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	78	13	17	83	23	6	4	11	13	8	5
Future Vol, veh/h	14	78	13	17	83	23	6	4	11	13	8	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	87	14	19	92	26	7	4	12	14	9	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	118	0	0	101	0	0	277	282	94	277	276	105
Stage 1	-	-	-	-	-	-	126	126	-	143	143	-
Stage 2	-	-	-	-	-	-	151	156	-	134	133	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1470	-	-	1491	-	-	675	627	963	675	632	949
Stage 1	-	-	-	-	-	-	878	792	-	860	779	-
Stage 2	-	-	-	-	-	-	851	769	-	869	786	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1470	-	-	1491	-	-	651	611	963	649	616	949
Mov Cap-2 Maneuver	-	-	-	-	-	-	651	611	-	649	616	-
Stage 1	-	-	-	-	-	-	867	782	-	850	768	-
Stage 2	-	-	-	-	-	-	825	758	-	843	777	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			1			9.8			10.5		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	772	1470	-	-	1491	-	-	679				
HCM Lane V/C Ratio	0.03	0.011	-	-	0.013	-	-	0.043				
HCM Control Delay (s)	9.8	7.5	0	-	7.4	0	-	10.5				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

HCM 6th TWSC
4: N Greenwood Forest Dr. & Brickyard Rd.

07/28/2023

Intersection

Int Delay, s/veh 6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	59	43	124	61	62	73
Future Vol, veh/h	59	43	124	61	62	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	48	138	68	69	81

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	114
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1475
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1475
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.2	11.6
HCM LOS			B




Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	696	-	-	1475	-
HCM Lane V/C Ratio	0.216	-	-	0.093	-
HCM Control Delay (s)	11.6	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.3	-

HCM 6th TWSC
5: Brickyard Rd. & Holly Springs Rd.

07/28/2023

Intersection

Int Delay, s/veh 5.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	72	82	76	88	103
Future Vol, veh/h	60	72	82	76	88	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	80	91	84	98	114

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	175	0	0 347 133
Stage 1	-	-	- 133 -
Stage 2	-	-	- 214 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1401	-	- 650 916
Stage 1	-	-	- 893 -
Stage 2	-	-	- 822 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1401	-	- 618 916
Mov Cap-2 Maneuver	-	-	- 618 -
Stage 1	-	-	- 848 -
Stage 2	-	-	- 822 -

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	11.7
HCM LOS			B




Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1401	-	-	-	749
HCM Lane V/C Ratio	0.048	-	-	-	0.283
HCM Control Delay (s)	7.7	0	-	-	11.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2

HCM 6th TWSC
6: Brickyard Rd. & McKinney Rd.

07/28/2023

Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	153	4	7	151	6
Future Vol, veh/h	7	153	4	7	151	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	170	4	8	168	7

Major/Minor	Major1	Minor2
Conflicting Flow All	0	0 93 178
Stage 1	-	- 0 0
Stage 2	-	- 93 178
Critical Hdwy	-	- 6.42 6.52
Critical Hdwy Stg 1	-	- - -
Critical Hdwy Stg 2	-	- 5.42 5.52
Follow-up Hdwy	-	- 3.518 4.018
Pot Cap-1 Maneuver	-	- 907 716
Stage 1	-	- - -
Stage 2	-	- 931 752
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	- 907 0
Mov Cap-2 Maneuver	-	- 907 0
Stage 1	-	- - 0
Stage 2	-	- 931 0

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

Minor Lane/Major Mvmt	EBT	EBRWBLn1
Capacity (veh/h)	-	- 907
HCM Lane V/C Ratio	-	- 0.013
HCM Control Delay (s)	-	- 9
HCM Lane LOS	-	- A
HCM 95th %tile Q(veh)	-	- 0

Queuing and Blocking Report
2023 Existing PM Peak

07/28/2023

Intersection: 1: US 64 Brevard Rd. & Brickyard Rd.

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	116	165	259	133
Average Queue (ft)	30	67	152	83
95th Queue (ft)	65	146	236	131
Link Distance (ft)		1212	977	1959
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	70			
Storage Blk Time (%)	1	7		
Queuing Penalty (veh)	4	2		

Intersection: 2: US 64 Brevard Rd. & N Greenwood Forest Dr.

Movement	EB	WB	SB
Directions Served	L	R	LR
Maximum Queue (ft)	51	22	179
Average Queue (ft)	21	1	48
95th Queue (ft)	49	11	99
Link Distance (ft)			948
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100	120	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Turnpike Rd. & Brickyard Rd.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	25	24	12	13
Average Queue (ft)	2	2	4	8
95th Queue (ft)	15	14	12	18
Link Distance (ft)	1018	1023	1055	1002
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report
2023 Existing PM Peak

07/28/2023

Intersection: 4: N Greenwood Forest Dr. & Brickyard Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	75	74
Average Queue (ft)	11	42
95th Queue (ft)	44	65
Link Distance (ft)	977	1201
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Brickyard Rd. & Holly Springs Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	133
Average Queue (ft)	12	48
95th Queue (ft)	36	84
Link Distance (ft)	437	1008
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Brickyard Rd. & McKinney Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	53	48
Average Queue (ft)	13	2
95th Queue (ft)	40	17
Link Distance (ft)	998	1959
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 6

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	346	314	101	127	12
Future Volume (vph)	10	346	314	101	127	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.967		0.989	
Flt Protected	0.950				0.956	
Satd. Flow (prot)	1770	1863	1801	0	1761	0
Flt Permitted	0.950				0.956	
Satd. Flow (perm)	1770	1863	1801	0	1761	0
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		40	40		35	
Link Distance (ft)		1266	1010		2027	
Travel Time (s)		21.6	17.2		39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	384	349	112	141	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	384	461	0	154	0
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Detector Phase	5	2	6		4	
Switch Phase						
Minimum Initial (s)	7.0	12.0	12.0		7.0	
Minimum Split (s)	14.0	19.0	19.0		14.0	
Total Split (s)	14.0	66.0	52.0		24.0	
Total Split (%)	15.6%	73.3%	57.8%		26.7%	
Maximum Green (s)	7.0	59.0	45.0		17.0	
Yellow Time (s)	5.0	5.0	5.0		5.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	9.8	28.1	26.4		12.4	
Actuated g/C Ratio	0.21	0.61	0.57		0.27	
v/c Ratio	0.03	0.34	0.45		0.33	
Control Delay	22.3	7.5	11.5		18.7	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	22.3	7.5	11.5		18.7	
LOS	C	A	B		B	
Approach Delay		7.9	11.5		18.7	
Approach LOS		A	B		B	

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	2	51	65		25	
Queue Length 95th (ft)	19	118	245		113	
Internal Link Dist (ft)		1186	930		1947	
Turn Bay Length (ft)	70					
Base Capacity (vph)	374	1788	1662		787	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.03	0.21	0.28		0.20	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 46.2

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 11.2

Intersection LOS: B

Intersection Capacity Utilization 38.8%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: US 64 Brevard Rd. & Brickyard Rd.



Intersection

Int Delay, s/veh 2.5

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 106 313 304 23 43 43

Future Vol, veh/h 106 313 304 23 43 43

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length 100 - - 120 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 90 90 90 90 90 90

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 118 348 338 26 48 48

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 364 0 - 0 922 338

Stage 1 - - - - 338 -

Stage 2 - - - - 584 -

Critical Hdwy 4.12 - - - 6.42 6.22

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy 2.218 - - - 3.518 3.318

Pot Cap-1 Maneuver 1195 - - - 300 704

Stage 1 - - - - 722 -

Stage 2 - - - - 557 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1195 - - - 270 704

Mov Cap-2 Maneuver - - - - 396 -

Stage 1 - - - - 651 -

Stage 2 - - - - 557 -

Approach EB WB SB

HCM Control Delay, s 2.1 0 13.7

HCM LOS B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1195 - - - 507

HCM Lane V/C Ratio 0.099 - - - 0.188

HCM Control Delay (s) 8.3 - - - 13.7

HCM Lane LOS A - - - B

HCM 95th %tile Q(veh) 0.3 - - - 0.7

HCM 6th TWSC
3: Turnpike Rd. & Brickyard Rd.

07/28/2023




Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	64	5	4	42	4	16	7	16	27	4	15
Future Vol, veh/h	4	64	5	4	42	4	16	7	16	27	4	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	71	6	4	47	4	18	8	18	30	4	17
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	51	0	0	77	0	0	150	141	74	152	142	49
Stage 1	-	-	-	-	-	-	82	82	-	57	57	-
Stage 2	-	-	-	-	-	-	68	59	-	95	85	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1555	-	-	1522	-	-	818	750	988	815	749	1020
Stage 1	-	-	-	-	-	-	926	827	-	955	847	-
Stage 2	-	-	-	-	-	-	942	846	-	912	824	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1555	-	-	1522	-	-	798	746	988	791	745	1020
Mov Cap-2 Maneuver	-	-	-	-	-	-	798	746	-	791	745	-
Stage 1	-	-	-	-	-	-	923	825	-	952	844	-
Stage 2	-	-	-	-	-	-	919	843	-	884	822	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.6			9.4			9.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	855	1555	-	-	1522	-	-	849				
HCM Lane V/C Ratio	0.051	0.003	-	-	0.003	-	-	0.06				
HCM Control Delay (s)	9.4	7.3	0	-	7.4	0	-	9.5				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2				

HCM 6th TWSC
4: N Greenwood Forest Dr. & Brickyard Rd.

07/28/2023

Intersection

Int Delay, s/veh 5.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	65	42	44	30	16	112
Future Vol, veh/h	65	42	44	30	16	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	47	49	33	18	124

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	119
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1469
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1469
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.5	9.6
HCM LOS			A




Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	925	-	-	1469	-
HCM Lane V/C Ratio	0.154	-	-	0.033	-
HCM Control Delay (s)	9.6	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-

HCM 6th TWSC
5: Brickyard Rd. & Holly Springs Rd.

07/28/2023

Intersection

Int Delay, s/veh 4.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	100	77	40	77	62	34
Future Vol, veh/h	100	77	40	77	62	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	86	44	86	69	38




Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	130	0	0 395 87
Stage 1	-	-	- 87 -
Stage 2	-	-	- 308 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1455	-	- 610 971
Stage 1	-	-	- 936 -
Stage 2	-	-	- 745 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1455	-	- 561 971
Mov Cap-2 Maneuver	-	-	- 561 -
Stage 1	-	-	- 861 -
Stage 2	-	-	- 745 -

Approach	EB	WB	SB
HCM Control Delay, s	4.3	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1455	-	-	-	660
HCM Lane V/C Ratio	0.076	-	-	-	0.162
HCM Control Delay (s)	7.7	0	-	-	11.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6

HCM 6th TWSC
6: Brickyard Rd. & McKinney Rd.

07/28/2023

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	135	4	9	108	4
Future Vol, veh/h	4	135	4	9	108	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	150	4	10	120	4

Major/Minor	Major1	Minor2		
Conflicting Flow All	0	0	79	154
Stage 1	-	-	0	0
Stage 2	-	-	79	154
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	924	738
Stage 1	-	-	-	-
Stage 2	-	-	944	770
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	924	0
Mov Cap-2 Maneuver	-	-	924	0
Stage 1	-	-	-	0
Stage 2	-	-	944	0

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

Minor Lane/Major Mvmt	EBT	EBRWBLn1
Capacity (veh/h)	-	- 924
HCM Lane V/C Ratio	-	- 0.016
HCM Control Delay (s)	-	- 9
HCM Lane LOS	-	- A
HCM 95th %tile Q(veh)	-	- 0

Queuing and Blocking Report
2026 Background AM Peak

07/28/2023

Intersection: 1: US 64 Brevard Rd. & Brickyard Rd.

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	31	143	201	164
Average Queue (ft)	10	64	88	67
95th Queue (ft)	32	128	163	118
Link Distance (ft)		1212	977	1959
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	70			
Storage Blk Time (%)		5		
Queuing Penalty (veh)		1		

Intersection: 2: US 64 Brevard Rd. & N Greenwood Forest Dr.

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	72	85
Average Queue (ft)	22	31
95th Queue (ft)	56	60
Link Distance (ft)		948
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Turnpike Rd. & Brickyard Rd.

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	35	61
Average Queue (ft)	9	11
95th Queue (ft)	21	31
Link Distance (ft)	1055	1002
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
2026 Background AM Peak

07/28/2023

Intersection: 4: N Greenwood Forest Dr. & Brickyard Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	55	72
Average Queue (ft)	5	37
95th Queue (ft)	28	56
Link Distance (ft)	977	1201
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Brickyard Rd. & Holly Springs Rd.

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	76	22	75
Average Queue (ft)	21	1	36
95th Queue (ft)	64	7	61
Link Distance (ft)	437	2512	1008
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Brickyard Rd. & McKinney Rd.

Movement	WB
Directions Served	LT
Maximum Queue (ft)	31
Average Queue (ft)	7
95th Queue (ft)	28
Link Distance (ft)	998
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 1

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023

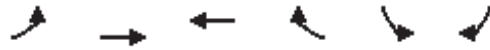


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	424	480	134	135	26
Future Volume (vph)	28	424	480	134	135	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.971		0.978	
Flt Protected	0.950				0.960	
Satd. Flow (prot)	1770	1863	1809	0	1749	0
Flt Permitted	0.950				0.960	
Satd. Flow (perm)	1770	1863	1809	0	1749	0
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		40	40		35	
Link Distance (ft)		1266	1010		2027	
Travel Time (s)		21.6	17.2		39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	31	471	533	149	150	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	471	682	0	179	0
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Detector Phase	5	2	6		4	
Switch Phase						
Minimum Initial (s)	7.0	12.0	12.0		7.0	
Minimum Split (s)	14.0	19.0	19.0		14.0	
Total Split (s)	14.0	69.0	55.0		21.0	
Total Split (%)	15.6%	76.7%	61.1%		23.3%	
Maximum Green (s)	7.0	62.0	48.0		14.0	
Yellow Time (s)	5.0	5.0	5.0		5.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	9.7	40.7	36.4		13.9	
Actuated g/C Ratio	0.15	0.62	0.56		0.21	
v/c Ratio	0.12	0.41	0.68		0.48	
Control Delay	33.9	7.0	15.9		31.6	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	33.9	7.0	15.9		31.6	
LOS	C	A	B		C	
Approach Delay		8.7	15.9		31.6	
Approach LOS		A	B		C	

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	10	82	142		54	
Queue Length 95th (ft)	44	131	386		161	
Internal Link Dist (ft)		1186	930		1947	
Turn Bay Length (ft)	70					
Base Capacity (vph)	262	1672	1438		461	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.12	0.28	0.47		0.39	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 65.4

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 15.3

Intersection LOS: B

Intersection Capacity Utilization 50.8%

ICU Level of Service A

Analysis Period (min) 15







Splits and Phases: 1: US 64 Brevard Rd. & Brickyard Rd.



HCM 6th TWSC





2: US 64 Brevard Rd. & N Greenwood Forest Dr.

07/28/2023

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	70	414	437	69	38	134
Future Vol, veh/h	70	414	437	69	38	134
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	120	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	460	486	77	42	149
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	563	0	-	0	1102	486
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	616	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1008	-	-	-	234	581
Stage 1	-	-	-	-	618	-
Stage 2	-	-	-	-	539	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1008	-	-	-	216	581
Mov Cap-2 Maneuver	-	-	-	-	351	-
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	539	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.3	0		16.3		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1008	-	-	-	508	
HCM Lane V/C Ratio	0.077	-	-	-	0.376	
HCM Control Delay (s)	8.9	-	-	-	16.3	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.2	-	-	-	1.7	




HCM 6th TWSC
3: Turnpike Rd. & Brickyard Rd.

07/28/2023

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	80	13	18	86	24	6	4	11	13	8	5
Future Vol, veh/h	14	80	13	18	86	24	6	4	11	13	8	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	89	14	20	96	27	7	4	12	14	9	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	123	0	0	103	0	0	285	291	96	286	285	110
Stage 1	-	-	-	-	-	-	128	128	-	150	150	-
Stage 2	-	-	-	-	-	-	157	163	-	136	135	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1464	-	-	1489	-	-	667	619	960	666	624	943
Stage 1	-	-	-	-	-	-	876	790	-	853	773	-
Stage 2	-	-	-	-	-	-	845	763	-	867	785	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1464	-	-	1489	-	-	643	603	960	641	608	943
Mov Cap-2 Maneuver	-	-	-	-	-	-	643	603	-	641	608	-
Stage 1	-	-	-	-	-	-	865	781	-	843	762	-
Stage 2	-	-	-	-	-	-	819	752	-	841	776	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			1			9.8			10.6		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	766	1464	-	-	1489	-	-	671				
HCM Lane V/C Ratio	0.03	0.011	-	-	0.013	-	-	0.043				
HCM Control Delay (s)	9.8	7.5	0	-	7.5	0	-	10.6				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

HCM 6th TWSC
4: N Greenwood Forest Dr. & Brickyard Rd.

07/28/2023

Intersection						
Int Delay, s/veh	6.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	61	44	128	63	64	75
Future Vol, veh/h	61	44	128	63	64	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	49	142	70	71	83
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	117	0	447	93
Stage 1	-	-	-	-	93	-
Stage 2	-	-	-	-	354	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1471	-	569	964
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	710	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1471	-	512	964
Mov Cap-2 Maneuver	-	-	-	-	512	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	639	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		5.2		11.8	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	685	-	-	1471	-	
HCM Lane V/C Ratio	0.225	-	-	0.097	-	
HCM Control Delay (s)	11.8	-	-	7.7	0	
HCM Lane LOS	B	-	-	A	A	
HCM 95th %tile Q(veh)	0.9	-	-	0.3	-	

Intersection

Int Delay, s/veh 5.7

Movement EBL EBT WBT WBR SBL SBRLane Configurations 

Traffic Vol, veh/h 62 74 84 78 91 106

Future Vol, veh/h 62 74 84 78 91 106

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 90 90 90 90 90 90

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 69 82 93 87 101 118

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 180 0 - 0 357 137

Stage 1 - - - - 137 -

Stage 2 - - - - 220 -

Critical Hdwy 4.12 - - - 6.42 6.22

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy 2.218 - - - 3.518 3.318

Pot Cap-1 Maneuver 1396 - - - 641 911

Stage 1 - - - - 890 -

Stage 2 - - - - 817 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 1396 - - - 608 911

Mov Cap-2 Maneuver - - - - 608 -

Stage 1 - - - - 844 -

Stage 2 - - - - 817 -

Approach EB WB SB

HCM Control Delay, s 3.5 0 11.9

HCM LOS B

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 1396 - - - 741

HCM Lane V/C Ratio 0.049 - - - 0.295




HCM Control Delay (s) 7.7 0 - - 11.9

HCM Lane LOS A A - - B

HCM 95th %tile Q(veh) 0.2 - - - 1.2

HCM 6th TWSC
6: Brickyard Rd. & McKinney Rd.

07/28/2023

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	158	4	7	156	6
Future Vol, veh/h	7	158	4	7	156	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	176	4	8	173	7

Major/Minor	Major1	Minor2		
Conflicting Flow All	0	0	96	184
Stage 1	-	-	0	0
Stage 2	-	-	96	184
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	903	710
Stage 1	-	-	-	-
Stage 2	-	-	928	747
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	903	0
Mov Cap-2 Maneuver	-	-	903	0
Stage 1	-	-	-	0
Stage 2	-	-	928	0

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

Minor Lane/Major Mvmt	EBT	EBRWBLn1
Capacity (veh/h)	-	- 903
HCM Lane V/C Ratio	-	- 0.014
HCM Control Delay (s)	-	- 9
HCM Lane LOS	-	- A
HCM 95th %tile Q(veh)	-	- 0

Queuing and Blocking Report
2026 Background PM Peak

07/28/2023

Intersection: 1: US 64 Brevard Rd. & Brickyard Rd.

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	94	177	283	201
Average Queue (ft)	20	78	133	92
95th Queue (ft)	55	147	235	156
Link Distance (ft)		1212	977	1959
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	70			
Storage Blk Time (%)	0	7		
Queuing Penalty (veh)	2	2		

Intersection: 2: US 64 Brevard Rd. & N Greenwood Forest Dr.

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	55	106
Average Queue (ft)	15	45
95th Queue (ft)	43	84
Link Distance (ft)		948
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Turnpike Rd. & Brickyard Rd.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	23	25	13	13
Average Queue (ft)	1	1	3	7
95th Queue (ft)	8	8	11	17
Link Distance (ft)	1018	1023	1055	1002
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report
2026 Background PM Peak

07/28/2023

Intersection: 4: N Greenwood Forest Dr. & Brickyard Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	54	79
Average Queue (ft)	10	47
95th Queue (ft)	36	77
Link Distance (ft)	977	1201
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Brickyard Rd. & Holly Springs Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	55	89
Average Queue (ft)	12	48
95th Queue (ft)	41	77
Link Distance (ft)	437	1008
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Brickyard Rd. & McKinney Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	31	20
Average Queue (ft)	7	1
95th Queue (ft)	28	7
Link Distance (ft)	998	1959
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 4

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	438	345	116	173	12
Future Volume (vph)	10	438	345	116	173	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.966		0.991	
Flt Protected	0.950				0.955	
Satd. Flow (prot)	1770	1863	1799	0	1763	0
Flt Permitted	0.950				0.955	
Satd. Flow (perm)	1770	1863	1799	0	1763	0
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		40	40		35	
Link Distance (ft)		1266	1010		2027	
Travel Time (s)		21.6	17.2		39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	487	383	129	192	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	487	512	0	205	0
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Detector Phase	5	2	6		4	
Switch Phase						
Minimum Initial (s)	7.0	12.0	12.0		7.0	
Minimum Split (s)	14.0	19.0	19.0		14.0	
Total Split (s)	14.0	65.0	51.0		25.0	
Total Split (%)	15.6%	72.2%	56.7%		27.8%	
Maximum Green (s)	7.0	58.0	44.0		18.0	
Yellow Time (s)	5.0	5.0	5.0		5.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	9.7	26.5	24.8		14.0	
Actuated g/C Ratio	0.19	0.52	0.48		0.27	
v/c Ratio	0.03	0.51	0.59		0.43	
Control Delay	25.3	10.0	14.3		21.0	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	25.3	10.0	14.3		21.0	
LOS	C	B	B		C	
Approach Delay		10.4	14.3		21.0	
Approach LOS		B	B		C	

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	2	78	84		39	
Queue Length 95th (ft)	20	168	290		157	
Internal Link Dist (ft)		1186	930		1947	
Turn Bay Length (ft)	70					
Base Capacity (vph)	335	1760	1608		742	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.03	0.28	0.32		0.28	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 51.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 13.8

Intersection LOS: B

Intersection Capacity Utilization 43.9%

ICU Level of Service A







Analysis Period (min) 15

Splits and Phases: 1: US 64 Brevard Rd. & Brickyard Rd.







HCM 6th TWSC
2: US 64 Brevard Rd. & N Greenwood Forest Dr.

07/28/2023

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	110	328	350	23	43	55
Future Vol, veh/h	110	328	350	23	43	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	120	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	122	364	389	26	48	61
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	415	0	-	0	997	389
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	608	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1144	-	-	-	271	659
Stage 1	-	-	-	-	685	-
Stage 2	-	-	-	-	543	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1144	-	-	-	242	659
Mov Cap-2 Maneuver	-	-	-	-	372	-
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	543	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.1	0		14.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1144	-	-	-	492	
HCM Lane V/C Ratio	0.107	-	-	-	0.221	
HCM Control Delay (s)	8.5	-	-	-	14.4	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0.4	-	-	-	0.8	

HCM 6th TWSC
3: Turnpike Rd. & Brickyard Rd.

07/28/2023




Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	64	5	4	42	15	16	7	16	31	4	15
Future Vol, veh/h	4	64	5	4	42	15	16	7	16	31	4	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	71	6	4	47	17	18	8	18	34	4	17
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	77	0	0	156	154	74	159	149	56
Stage 1	-	-	-	-	-	-	82	82	-	64	64	-
Stage 2	-	-	-	-	-	-	74	72	-	95	85	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1538	-	-	1522	-	-	810	738	988	807	743	1011
Stage 1	-	-	-	-	-	-	926	827	-	947	842	-
Stage 2	-	-	-	-	-	-	935	835	-	912	824	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1538	-	-	1522	-	-	790	734	988	783	739	1011
Mov Cap-2 Maneuver	-	-	-	-	-	-	790	734	-	783	739	-
Stage 1	-	-	-	-	-	-	923	825	-	944	839	-
Stage 2	-	-	-	-	-	-	912	832	-	884	822	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0.5			9.5			9.6		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	848	1538	-	-	1522	-	-	836				
HCM Lane V/C Ratio	0.051	0.003	-	-	0.003	-	-	0.066				
HCM Control Delay (s)	9.5	7.3	0	-	7.4	0	-	9.6				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2				

HCM 6th TWSC
4: N Greenwood Forest Dr. & Brickyard Rd.

07/28/2023

Intersection

Int Delay, s/veh 5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	69	42	56	41	16	116
Future Vol, veh/h	69	42	56	41	16	116
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	47	62	46	18	129

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	124
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1463
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1463
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.4	9.7
HCM LOS			A




Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	911	-	-	1463	-
HCM Lane V/C Ratio	0.161	-	-	0.043	-
HCM Control Delay (s)	9.7	-	-	7.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-

HCM 6th TWSC
5: Brickyard Rd. & Holly Springs Rd.

07/28/2023

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	123	123	55	77	62	42
Future Vol, veh/h	123	123	55	77	62	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	137	137	61	86	69	47




Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	147	0	0 515 104
Stage 1	-	-	- 104 -
Stage 2	-	-	- 411 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1435	-	- 520 951
Stage 1	-	-	- 920 -
Stage 2	-	-	- 669 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1435	-	- 466 951
Mov Cap-2 Maneuver	-	-	- 466 -
Stage 1	-	-	- 825 -
Stage 2	-	-	- 669 -

Approach	EB	WB	SB
HCM Control Delay, s	3.9	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1435	-	-	-	587
HCM Lane V/C Ratio	0.095	-	-	-	0.197
HCM Control Delay (s)	7.8	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7

HCM 6th TWSC
6: Brickyard Rd. & McKinney Rd.

07/28/2023

Intersection						
Int Delay, s/veh	0.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	4	181	4	9	123	4
Future Vol, veh/h	4	181	4	9	123	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	201	4	10	137	4







Major/Minor	Major1		Minor2	
Conflicting Flow All	0	0	105	205
Stage 1	-	-	0	0
Stage 2	-	-	105	205
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	893	691
Stage 1	-	-	-	-
Stage 2	-	-	919	732
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	893	0
Mov Cap-2 Maneuver	-	-	893	0
Stage 1	-	-	-	0
Stage 2	-	-	919	0

Approach	EB	WB
HCM Control Delay, s	0	9.1
HCM LOS		A

Minor Lane/Major Mvmt	EBT	EBRWBLn1
Capacity (veh/h)	-	- 893
HCM Lane V/C Ratio	-	- 0.016
HCM Control Delay (s)	-	- 9.1
HCM Lane LOS	-	- A
HCM 95th %tile Q(veh)	-	- 0

HCM 6th TWSC
7: US 64 Brevard Rd. & Access #1

07/28/2023

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	356	327	30	92	46
Future Vol, veh/h	15	356	327	30	92	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	396	363	33	102	51
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	396	0	-	0	793	363
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	430	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1163	-	-	-	358	682
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	656	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1163	-	-	-	353	682
Mov Cap-2 Maneuver	-	-	-	-	468	-
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	656	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.3	0		14.7		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1163	-	-	-	523	
HCM Lane V/C Ratio	0.014	-	-	-	0.293	
HCM Control Delay (s)	8.1	-	-	-	14.7	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	1.2	

HCM 6th TWSC
8: Access #2 & Brickyard Rd.

07/28/2023

Intersection						
Int Delay, s/veh	3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	↑
Traffic Vol, veh/h	177	8	23	74	23	69
Future Vol, veh/h	177	8	23	74	23	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	197	9	26	82	26	77

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	206	0	336	202
Stage 1	-	-	-	-	202	-
Stage 2	-	-	-	-	134	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1365	-	659	839
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	892	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1365	-	646	839
Mov Cap-2 Maneuver	-	-	-	-	646	-
Stage 1	-	-	-	-	832	-
Stage 2	-	-	-	-	874	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	781	-	-	1365	-
HCM Lane V/C Ratio	0.131	-	-	0.019	-
HCM Control Delay (s)	10.3	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Queuing and Blocking Report
2026 Build AM Peak

07/28/2023

Intersection: 1: US 64 Brevard Rd. & Brickyard Rd.

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	31	140	247	155
Average Queue (ft)	7	68	102	75
95th Queue (ft)	27	122	177	125
Link Distance (ft)		1207	977	1959
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	70			
Storage Blk Time (%)		5		
Queuing Penalty (veh)		1		

Intersection: 2: US 64 Brevard Rd. & N Greenwood Forest Dr.

Movement	EB	WB	SB
Directions Served	L	R	LR
Maximum Queue (ft)	56	22	69
Average Queue (ft)	23	1	31
95th Queue (ft)	53	7	57
Link Distance (ft)			948
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100	120	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Turnpike Rd. & Brickyard Rd.

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	25	36	37
Average Queue (ft)	1	11	14
95th Queue (ft)	8	24	29
Link Distance (ft)	1023	1055	1002
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report
2026 Build AM Peak

07/28/2023

Intersection: 4: N Greenwood Forest Dr. & Brickyard Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	73	55
Average Queue (ft)	7	37
95th Queue (ft)	33	58
Link Distance (ft)	965	1201
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Brickyard Rd. & Holly Springs Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	76	73
Average Queue (ft)	20	33
95th Queue (ft)	58	56
Link Distance (ft)	446	1008
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Brickyard Rd. & McKinney Rd.

Movement	WB
Directions Served	LT
Maximum Queue (ft)	53
Average Queue (ft)	8
95th Queue (ft)	32
Link Distance (ft)	998
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
2026 Build AM Peak

07/28/2023

Intersection: 7: US 64 Brevard Rd. & Access #1

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	32	84
Average Queue (ft)	4	40
95th Queue (ft)	21	65
Link Distance (ft)		990
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Access #2 & Brickyard Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	31	66
Average Queue (ft)	2	29
95th Queue (ft)	15	48
Link Distance (ft)	446	994
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	483	564	176	164	26
Future Volume (vph)	28	483	564	176	164	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	70			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	100				100	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.968		0.981	
Flt Protected	0.950				0.959	
Satd. Flow (prot)	1770	1863	1803	0	1752	0
Flt Permitted	0.950				0.959	
Satd. Flow (perm)	1770	1863	1803	0	1752	0
Right Turn on Red				No		No
Satd. Flow (RTOR)						
Link Speed (mph)		40	40		35	
Link Distance (ft)		1266	1010		2027	
Travel Time (s)		21.6	17.2		39.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	31	537	627	196	182	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	537	823	0	211	0
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		4	
Permitted Phases						
Detector Phase	5	2	6		4	
Switch Phase						
Minimum Initial (s)	7.0	12.0	12.0		7.0	
Minimum Split (s)	14.0	19.0	19.0		14.0	
Total Split (s)	14.0	70.0	56.0		20.0	
Total Split (%)	15.6%	77.8%	62.2%		22.2%	
Maximum Green (s)	7.0	63.0	49.0		13.0	
Yellow Time (s)	5.0	5.0	5.0		5.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	
Total Lost Time (s)	5.0	5.0	5.0		5.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.0	3.0	3.0		3.0	
Recall Mode	None	Min	Min		None	
Act Effct Green (s)	9.6	46.2	41.8		14.4	
Actuated g/C Ratio	0.13	0.65	0.59		0.20	
v/c Ratio	0.13	0.44	0.78		0.60	
Control Delay	36.3	6.9	19.0		38.5	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	36.3	6.9	19.0		38.5	
LOS	D	A	B		D	
Approach Delay		8.5	19.0		38.5	
Approach LOS		A	B		D	

Lanes, Volumes, Timings

1: US 64 Brevard Rd. & Brickyard Rd.

07/28/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Queue Length 50th (ft)	12	100	200		85	
Queue Length 95th (ft)	44	148	526		#215	
Internal Link Dist (ft)		1186	930		1947	
Turn Bay Length (ft)	70					
Base Capacity (vph)	237	1620	1367		392	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.13	0.33	0.60		0.54	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 71.2

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 17.9

Intersection LOS: B

Intersection Capacity Utilization 59.4%

ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.







Queue shown is maximum after two cycles.

Splits and Phases: 1: US 64 Brevard Rd. & Brickyard Rd.







HCM 6th TWSC
2: US 64 Brevard Rd. & N Greenwood Forest Dr.

07/28/2023

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	81	456	466	69	38	141
Future Vol, veh/h	81	456	466	69	38	141
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	120	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	507	518	77	42	157
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	595	0	-	0	1205	518
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	687	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	981	-	-	-	203	558
Stage 1	-	-	-	-	598	-
Stage 2	-	-	-	-	499	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	981	-	-	-	184	558
Mov Cap-2 Maneuver	-	-	-	-	321	-
Stage 1	-	-	-	-	543	-
Stage 2	-	-	-	-	499	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.4	0		17.6		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	981	-	-	-	482	
HCM Lane V/C Ratio	0.092	-	-	-	0.413	
HCM Control Delay (s)	9	-	-	-	17.6	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.3	-	-	-	2	

HCM 6th TWSC
3: Turnpike Rd. & Brickyard Rd.

07/28/2023




Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	80	13	18	86	31	6	4	11	24	8	5
Future Vol, veh/h	14	80	13	18	86	31	6	4	11	24	8	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	16	89	14	20	96	34	7	4	12	27	9	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	130	0	0	103	0	0	289	298	96	289	288	113
Stage 1	-	-	-	-	-	-	128	128	-	153	153	-
Stage 2	-	-	-	-	-	-	161	170	-	136	135	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1455	-	-	1489	-	-	663	614	960	663	622	940
Stage 1	-	-	-	-	-	-	876	790	-	849	771	-
Stage 2	-	-	-	-	-	-	841	758	-	867	785	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1455	-	-	1489	-	-	638	597	960	638	605	940
Mov Cap-2 Maneuver	-	-	-	-	-	-	638	597	-	638	605	-
Stage 1	-	-	-	-	-	-	865	781	-	839	759	-
Stage 2	-	-	-	-	-	-	814	747	-	841	776	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			1			9.9			10.8		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	762	1455	-	-	1489	-	-	659				
HCM Lane V/C Ratio	0.031	0.011	-	-	0.013	-	-	0.062				
HCM Control Delay (s)	9.9	7.5	0	-	7.5	0	-	10.8				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2				

HCM 6th TWSC
4: N Greenwood Forest Dr. & Brickyard Rd.

07/28/2023

Intersection

Int Delay, s/veh 6.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	71	44	135	70	64	86
Future Vol, veh/h	71	44	135	70	64	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	79	49	150	78	71	96

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	128
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1458
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1458
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.1	12.1
HCM LOS			B




Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	674	-	-	1458	-
HCM Lane V/C Ratio	0.247	-	-	0.103	-
HCM Control Delay (s)	12.1	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0.3	-

HCM 6th TWSC
5: Brickyard Rd. & Holly Springs Rd.

07/28/2023

Intersection

Int Delay, s/veh 5.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	76	103	126	78	91	127
Future Vol, veh/h	76	103	126	78	91	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	114	140	87	101	141




Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	227	0	0 466 184
Stage 1	-	-	- 184 -
Stage 2	-	-	- 282 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1341	-	- 555 858
Stage 1	-	-	- 848 -
Stage 2	-	-	- 766 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1341	-	- 518 858
Mov Cap-2 Maneuver	-	-	- 518 -
Stage 1	-	-	- 791 -
Stage 2	-	-	- 766 -

Approach	EB	WB	SB
HCM Control Delay, s	3.3	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1341	-	-	-	673
HCM Lane V/C Ratio	0.063	-	-	-	0.36
HCM Control Delay (s)	7.9	0	-	-	13.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1.6

HCM 6th TWSC
6: Brickyard Rd. & McKinney Rd.

07/28/2023

Intersection						
Int Delay, s/veh	0.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	7	187	4	7	197	6
Future Vol, veh/h	7	187	4	7	197	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Stop	Stop	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	208	4	8	219	7







Major/Minor	Major1	Minor2		
Conflicting Flow All	0	0	112	216
Stage 1	-	-	0	0
Stage 2	-	-	112	216
Critical Hdwy	-	-	6.42	6.52
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.42	5.52
Follow-up Hdwy	-	-	3.518	4.018
Pot Cap-1 Maneuver	-	-	885	682
Stage 1	-	-	-	-
Stage 2	-	-	913	724
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	885	0
Mov Cap-2 Maneuver	-	-	885	0
Stage 1	-	-	-	0
Stage 2	-	-	913	0

Approach	EB	WB
HCM Control Delay, s	0	9.1
HCM LOS		A

Minor Lane/Major Mvmt	EBT	EBRWBLn1
Capacity (veh/h)	-	- 885
HCM Lane V/C Ratio	-	- 0.014
HCM Control Delay (s)	-	- 9.1
HCM Lane LOS	-	- A
HCM 95th %tile Q(veh)	-	- 0

HCM 6th TWSC
7: US 64 Brevard Rd. & Access #1

07/28/2023

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	42	452	506	84	58	29
Future Vol, veh/h	42	452	506	84	58	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	100	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	47	502	562	93	64	32
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	655	0	-	0	1158	562
Stage 1	-	-	-	-	562	-
Stage 2	-	-	-	-	596	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	932	-	-	-	217	526
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	550	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	932	-	-	-	206	526
Mov Cap-2 Maneuver	-	-	-	-	343	-
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	550	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.8	0		17.3		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	932	-	-	-	388	
HCM Lane V/C Ratio	0.05	-	-	-	0.249	
HCM Control Delay (s)	9.1	-	-	-	17.3	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.2	-	-	-	1	

HCM 6th TWSC
8: Access #2 & Brickyard Rd.

07/28/2023

Intersection						
Int Delay, s/veh	2.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↕	
Traffic Vol, veh/h	136	21	63	191	15	44
Future Vol, veh/h	136	21	63	191	15	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	151	23	70	212	17	49
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	174	0	515	163
Stage 1	-	-	-	-	163	-
Stage 2	-	-	-	-	352	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1403	-	520	882
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	712	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1403	-	490	882
Mov Cap-2 Maneuver	-	-	-	-	490	-
Stage 1	-	-	-	-	866	-
Stage 2	-	-	-	-	671	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.9		10.4	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	733	-	-	1403	-	
HCM Lane V/C Ratio	0.089	-	-	0.05	-	
HCM Control Delay (s)	10.4	-	-	7.7	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-	

Queuing and Blocking Report
2026 Build PM Peak

07/28/2023

Intersection: 1: US 64 Brevard Rd. & Brickyard Rd.

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	88	163	407	257
Average Queue (ft)	30	76	211	132
95th Queue (ft)	63	148	342	215
Link Distance (ft)		1207	977	1959
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	70			
Storage Blk Time (%)	1	8		
Queuing Penalty (veh)	6	2		

Intersection: 2: US 64 Brevard Rd. & N Greenwood Forest Dr.

Movement	EB	WB	WB	SB
Directions Served	L	T	R	LR
Maximum Queue (ft)	79	22	20	153
Average Queue (ft)	30	1	1	54
95th Queue (ft)	65	7	6	105
Link Distance (ft)		2204		948
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100		120	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Turnpike Rd. & Brickyard Rd.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	25	25	13	13
Average Queue (ft)	3	5	6	7
95th Queue (ft)	15	21	16	18
Link Distance (ft)	1018	1023	1055	1002
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report
2026 Build PM Peak

07/28/2023

Intersection: 4: N Greenwood Forest Dr. & Brickyard Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	50	104
Average Queue (ft)	11	47
95th Queue (ft)	37	82
Link Distance (ft)	965	1201
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Brickyard Rd. & Holly Springs Rd.

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	74	93
Average Queue (ft)	17	56
95th Queue (ft)	51	87
Link Distance (ft)	446	1008
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Brickyard Rd. & McKinney Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	31	20
Average Queue (ft)	11	1
95th Queue (ft)	35	7
Link Distance (ft)	998	1959
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
2026 Build PM Peak

07/28/2023

Intersection: 7: US 64 Brevard Rd. & Access #1

Movement	EB	WB	SB
Directions Served	L	R	LR
Maximum Queue (ft)	54	22	86
Average Queue (ft)	20	1	39
95th Queue (ft)	48	7	71
Link Distance (ft)			990
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100	100	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Access #2 & Brickyard Rd.

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	75	44
Average Queue (ft)	19	24
95th Queue (ft)	55	39
Link Distance (ft)	446	994
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 8

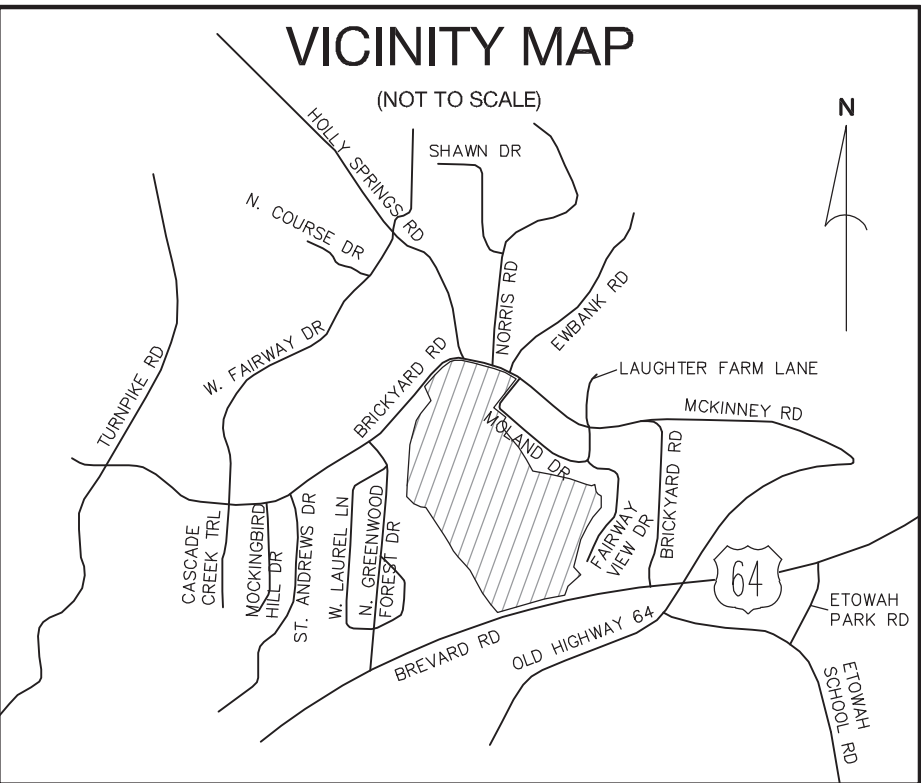
Appendix C: Site Plan

C



GANNETT FLEMING

Excellence Delivered As Promised



DEVELOPMENT DATA	
OWNER/DEVELOPER:	TRIBUTE CONSTRUCTION 332 MILITARY CUTOFF ROAD WILMINGTON, NC 28405 MATT MAYNARD (910) 251-2388
CONTACT:	
CIVIL ENGINEER:	CIVIL DESIGN CONCEPTS, P.A. 168 PATTON AVENUE ASHEVILLE, NC 28801 WARREN SUGGS, P.E. (828) 252-5388
CONTACT:	
SURVEYOR:	ED HOLMES & ASSOCIATES 200 RIDGEFIELD COURT, SUITE 208 ASHEVILLE, NC 28806 C.M. EDGERTON, JR., P.L.S. (828) 225-6562
CONTACT:	

PROJECT DATA	
PIN:	9529-52-4218
ADDRESS:	470 BRICKYARD ROAD
DEED BOOK/PAGE:	1601/251
PROJECT ACREAGE:	90± ACRES
CURRENT ZONING:	R-1 (RESIDENTIAL DISTRICT ONE)
DISTURBED AREA:	50± AC

Know what's below.
Call before you dig.

NORTH

CDC INSPECTIONS HOTLINE:
828-771-4755 OR INSPECTION@CDCGO.COM

MASTER SITE PLAN FOR:

ETOWAH RESIDENTIAL PROJECT

GRAPHIC SCALE

(IN FEET)
1 inch = 150 ft.

FOR REVIEW ONLY

ETOWAH RESIDENTIAL PROJECT

TRIBUTE CONSTRUCTION - ETOWAH, NORTH CAROLINA

MASTER SITE PLAN FOR:

ETOWAH RESIDENTIAL PROJECT

DRAWN BY: AMP
CDC PROJECT NO.: 12171
XXX PERMIT NO.: xxx

SHEET

C200

Civil Design Concepts, PA

168 PATTON AVENUE
ASHEVILLE, NC 28801
PHONE (828) 252-5388
FAX (828) 252-5388

52 WALNUT STREET - SUITE 9
WAYNESVILLE, NC 28786
PHONE (828) 252-5388
FAX (828) 495-5455

NCBELS LICENSE # C-2184

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Appendix D: NCDOT TIA Checklist and MOA

D



GANNETT FLEMING

Excellence Delivered As Promised



NCDOT Traffic Impact Analysis Need Screening / Scoping Request



TIA Need
Screening



TIA
Scoping



TIA
Submittal

A Traffic Impact Analysis (TIA) may be required for developments based on the site trip generation estimates, site context, or at the discretion of the NCDOT District Engineer. The Applicant or the TIA Consultant shall submit this form along with the site plan to the District Engineer to determine the TIA need and, if a TIA is required, initiate the TIA scoping process. Without an approved scope, the TIA is incomplete and will be rejected until the study is revised to conform to NCDOT's TIA requirements.

Project Name: Etowah Residential **Previous Name:** If Applicable _____
Location: 470 Brickyard Road, Etowah NC **County:** Henderson **Municipality:** N/A
Project Description: Single Family Attached (Duplexes) with 598 Units Land Use Code 215
☐

Project Contact: Applicant
Company Name Civil Design Concepts, P. A.
Contact Person Chris Day, P. E.
Phone Number 828.252.5388
Email cday@cdcgo.com
Mailing Address 168 Patton Avenue
Asheville, NC 28801

TIA Consultant
Gannett Fleming, Inc.
Jeffrey Moore, P. E.
828-674-0229
jemoore@gfnet.com
22 S. Pack Square, Suite 800
Asheville, NC 28801

Site Plan Prepared By: Civil Design Concepts
 See site plan/vicinity map requirements on page 2.
Parcel Size: 90 Acre(s)

Site Plan Date: April 2023
Anticipated Build-Out Year: 2026

Weekday Site Trip Generation - Do NOT adjust for mode split, pass-by, internal capture, or diverted trips.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
215	Single Family Att	598	Units	4506	Adj. Street	76	229	305	209	146	355	ITE Equation
Total				4506		76	229	305	209	146	355	

Refer to the current [NCDOT Congestion Management Capacity Analysis Guidelines](#) for acceptable trip calculation methods and data sources.

**Explain local or other data sources, if used: _____

☒ The estimated site trips meet NCDOT's TIA trip threshold of 3,000 daily trips.

☒ The estimated site trips meet the municipal TIA trip threshold of 100 Lots

☐ This project is located in a known [STIP](#) and/ or local CIP project #

☐ This project includes a rezoning request.



NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need
Screening



TIA
Scoping



TIA
Submittal



- ☐ The proposed site access is located within 1,000 feet of an interchange.
- ☐ The Applicant requests for a new or modified control-of-access break.
- ☐ The Applicant requests for a new or modified median break.


Applicant's Signature

Chris Day
Print Name

Date

Site Plan/Vicinity Map Requirement for TIA Need Screening: While the site plan may not be finalized during the TIA scoping stage, the graphic representation of the proposed development shall provide adequate details on the development scope and context. More specifically, the site plan/map shall clearly show the location and type of each access point, spacing to adjacent and opposing driveways or intersections, internal street network, proposed buildings/parcels with their anticipated uses and sizes at full build-out and, if applicable, any nearby interstate, US, NC or Secondary Roads (SR).

Project Name: Etowah Residential **Project Reference Number:** _____

- ☒ **A TIA is Required by the Local Government.** In addition, the study area is expected to include NCDOT maintained transportation facilities.
- ☒ **A TIA is Required by NCDOT,** per the [Policy on Street and Driveway Access to North Carolina Highways](#).

If either or both of the boxes above are checked, the Applicant/TIA Consultant is hereby requested to fill out as much as possible of the following TIA scoping checklist, and return it along with the supporting documents to NCDOT prior to the scoping meeting.

- ☐ **A TIA is NOT required.** This decision is based on the development information presented above. Changes in the development plan will require re-evaluation of the TIA need, and may necessitate a TIA. The Applicant should inform the District Engineer of any significant changes in a timely fashion to avoid delays or rejections of the driveway permit / encroachment agreement applications.



NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need
Screening



TIA
Scoping



TIA
Submittal



Additional Comments:

The TIA need decision is made by the NCDOT Division 14 District 1 on 08/01/2023.

DocuSigned by:

R.H. Darnell

R.H. Darnell

NCDOT District Representative's Signature

Print Name

Email concurrence may be used in lieu of the signature.



NCDOT TIA Scoping Checklist



Project Name: Etowah Residential

TIA Scoping Date: 7-3-23

☒ **TIA Need Screening Forms are Attached.** Project Reference #: _____ Decision Date: _____

☒ **Site Plan and Access**

☒ Provide a site plan illustrating site access, internal and external roadways, buildings and land uses.

Refer to NCDOT's [Policy on Street and Driveway Access to North Carolina Highways](#) pages 14 and 15 for site plan requirements.

☒ Identify site access.

New Access	On Road	Access Type		Driveway Spacing		
	Road Name	Permitted Movements	Traffic Control	Distance (ft)	Direction	Nearest Intersection / Access
Access A	US 64	Conventional Full-Mvmt	2-Way Stop	1200	West	SR 1424
Access B	SR 1424	Conventional Full-Mvmt		650	West	SR 1322
Access C						
Access D						
Access E						
Access F						
Access G						
Access H						
Existing Access	Existing Intersection of		Access Modification	Proposed Interconnectivity (If Applicable)		
	Road A	Road B		Connector #	Road Connected	Adjacent Development
Access 1				Connector 1		
Access 2				Connector 2		
Access 3				Connector 3		
Access 4				Connector 4		

☐ Additional access clarifications and provisions (e.g., proposed control-of-access or median breaks, modifications of existing access, loading/unloading area access, bike/pedestrian accommodation).

☐

Proposed K-12 School Site

- ☐ NCDOT [MSTA School Traffic Calculator](#) for Select School Type shall be used.
- ☐ Peak Hour Factors (PHFs) shall be adjusted/weighted for new school trips (0.5 PHF by default).
- ☐ Internal school circulation analysis is required, and should be submitted in advance or concurrent with the TIA submittal.
- ☐ Clarify traffic operation plans (e.g. traffic circulation pattern, pedestrian access, drop-off/pick-up zone location and configuration, queue storage area and, if applicable, staggered start times).



NCDOT TIA Scoping Checklist

TIA Need
Screening



TIA
Scoping



TIA
Submittal



☒ Trip Generation

The TIA Consultant shall prepare trip generation estimates following the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), and submit the calculation sheets and supporting information to the District Engineer for approval prior to capacity analysis.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
215	Single Family Att	598	Units	4506	Adj. Street	76	229	305	209	146	355	ITE Equation
Unadjusted Site Trips				4506		76	229	305	209	146	355	
Internal Capture Trips (Attach Calculation Sheets)				0		0	0	0	0	0	0	NCHRP 684
Internal Capture % of Unadjusted Site Trips				0 %		0 %			0 %			
LUC	Proposed Land Use	Any Internal Trips?		Pass-By % of External Trips								
		Not Applicable		%	0 %			%				
		Not Applicable		%	%			%				
				%	%			%				
				%	%			%				
				%	%			%				
Pass-By Trips (Attach Calculation Sheets)												
Adjacent Street Volumes												Local Data**
Non-Pass-By Primary Trips				4506		76	229	305	209	146	355	
Diverted Trips, if Applicable and Justifiable												Please Select

**Explain local or other data sources, if used:

☐ Existing Site Trip Information for Redevelopment Projects (Attach separate sheets as needed)

ITE LUC	Existing Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
					Please Select							Please Select
Total Existing Site Trips												



NCDOT TIA Scoping Checklist

TIA Need
Screening



TIA
Scoping



TIA
Submittal



☒ Trip Distribution

- ☒ Trip distribution diagrams are submitted concurrently with this document (attach separate sheets).
- ☐ Trip distribution diagrams will be submitted separately, along with supporting information, to the District Engineer for review and approval prior to capacity analysis. The trip distribution shall be based on the current and anticipated traffic patterns, as well as instructions noted below.

If required by the District Engineer, the following additional diagrams shall also be submitted:

- ☐ Mixed-Use Developments (separate diagrams for residential, commercial, and office trips)
- ☐ Inter-Development Trips (if 'internal' trips cross public streets)
- ☐ Pass-By Trips
- ☐ Diverted Trips
- ☐ Each Analysis Period

☐ Mode Split

- ☐ Provide Data Source and Justification

Mode Period	Auto		
AM Peak	%	%	%
PM Peak	%	%	%
Daily	%	%	%
	%	%	%

- ☐ Identify proper infrastructure and accommodation for other modes of travel.

☒ Analysis Peak Periods:

- ☒ Weekday AM Peak 7-9 AM
- ☒ Weekday PM Peak 4-6 PM
- ☐ Weekday Midday Peak _____
- ☐ Weekday PM School Peak _____
- ☐ Weekend _____ Peak _____
- ☐ Other _____



NCDOT TIA Scoping Checklist



☒ Study Area Intersections and Data Collection

The study area shall include the site access intersections (both new and existing) identified under “Site Plan and Access” on page 1, as well as the following external and, if applicable, internal intersections.

External Intersection	Intersection of		Traffic Control	Intersection Turning Movement Counts			Notes
	Road A	Road B		New / Existing	Date of Counts	Growth Adjustment	
#1	US 64	SR 1424	Signal	Require New Counts			
#2	US 64	SR 1488	2-Way Stop	Require New Counts			
#3	SR 1323	SR 1325	2-Way Stop	Require New Counts			
#4	SR 1323	SR 1488	2-Way Stop	Require New Counts			
#5	SR 1323	SR 1322	2-Way Stop	Require New Counts			
#6	SR 1323	SR 1424	2-Way Stop	Require New Counts			
#7							
#8							
#9							
#10							
#11							
#12							

Internal Intersection	Intersection of		Access Type		Intersection Spacing		
	Road A	Road B	Traffic Control	Permitted Movements	Distance (ft)	Direction	Nearest Intersection
#101							
#102							
#103							
#104							
#105							

The following data will be collected:

- ☒ New traffic turning movement counts in ☒ 15-min intervals ☐ 5-min intervals (near schools)
Unless otherwise noted above, new traffic counts shall be collected at the existing study intersections during the analysis periods. Weekday counts shall avoid Mondays, Fridays, holidays, school breaks, road closures, and major weather events.
- ☐ To account for the impact of existing and/or proposed school traffic, PHFs will be adjusted for:
intersections numbered: _____
and access points numbered: _____
- ☐ Traffic Forecast Data for TIP: _____
- ☒ Roadway/Intersection Configuration & Traffic Control
- ☒ Traffic Signal Phasing & Timing Data
- ☐ Crash Data: _____ Period: _____
- ☐ Other: _____



NCDOT TIA Scoping Checklist



☒ Future Year Conditions

☒ Project Build-Out Year: 2026

☐ Future Analysis Year(s): _____

☐ Identify below any funded/committed future transportation improvements, as well as any approved but incomplete developments near the site.

Funded STIP / Local CIP Project	Project Description		Year Complete
Nearby Approved Development	Location	Future Land Use (exclude any completed phases)	Committed Improvements

☒ Annual Growth Factor: 1 %

Justification/Data Source: NCDOT AADT Counts

☐ Local Comprehensive Transportation Plan Compliance

☐ Identify Applicable Local Transportation Planning Documents

☐ Identify Applicable Roadways inside the Study Area

Road Name	Classification	Speed Limit	Proposed Cross-Section	Proposed Right-of-Way	Compliance Requirements	Affect Study Intersection #



NCDOT TIA Scoping Checklist



☒ Study Method

The traffic analysis shall follow the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), [Policy on Street and Driveway Access to North Carolina Highways](#), and use the current approved version of analysis software (e.g. Synchro/SimTraffic, HCS, Sidra Intersection, TransModeler).

The study shall include the following analysis scenarios for each analysis period.

1. Existing Conditions
2. Future No-Build Conditions (existing + background growth + approved developments + committed or funded improvements)
3. Future Build Conditions (future no-build + site trips)
4. Future Build with Improvements Conditions (future build traffic with improvements to mitigate the proposed development's impacts) and, if applicable:
- ☐ 5. TIP Design Year Analysis _____
- ☐ 6. Alternative Access Scenario (without proposed control-of-access or median break / modification)

The following additional analysis/outputs should be provided as warranted:

- ☐ Signal Warrant Analysis for accesses/intersections _____
- ☐ Multi-Modal Level of Service Analysis
- ☐ School Loading Zone Traffic Simulation
- ☐ Phasing Analysis (scope separately as needed)
- ☐ Safety/Crash Analysis
- ☐ Control-of-Access Modification Justification
- ☐ Median Break / Modification Justification
- ☐ Other _____

☒ Submittals

In addition to the hardcopies required below, the TIA Consultant shall provide the District Engineer and, if required, the local government an electronic copy of the study documents, including the latest site plan, figures and appendices, in searchable PDF files and the original traffic analysis files (e.g., Synchro, HCS).

To expedite review, the NCDOT electronic submittals shall also be delivered concurrently to:

☐ Div. Traffic Engr ☐ Regional Traffic Engr ☒ Congestion Management ☒ Other Henderson County

Submittals	NCDOT		Local Government	
	Electronic	Hardcopy	Electronic	Hardcopy
Trip Generation & Distribution	Required		Required	
Draft TIA Report	Required		Required	
Final Sealed TIA Report	Required		Required	

☐ **Additional Comments** (municipal TIA requirements, approved variations from NCDOT guidelines)



NCDOT TIA Scoping Checklist



Agreement by All Parties

The undersigned agree to the contents and methodology described above for completing the required traffic impact analysis for the proposed development identified herein. Any changes to the above methodology contemplated by the Applicant or the TIA Consultant must be submitted to the District Engineer in writing. If approved by NCDOT, then such changes may be accepted for the TIA report. Subsequent revisions to the development plan (e.g. land use, density, site access, or schedule) may require additional scoping and analysis, and may modify the TIA requirements.

This agreement shall become effective on the date approved by NCDOT, and shall expire ____ months after the effective date or upon significant changes to the roadway network and/or development assumptions, whichever occurs first. Once expired, renewal or re-scoping will be required for subsequent TIA submittals.

APPLICANT




Signature

Chris Day

Print Name

Date

TIA CONSULTANT



Signature

Jeffrey H. Moore, P. E.

Print Name

7-3-23

Date

LOCAL GOVERNMENT REPRESENTATIVE (If Applicable)

DocuSigned by:


Signature

Matt Champion

Print Name

08/01/2023

Date

Email concurrence may be used in lieu of the signature.

NCDOT DISTRICT REPRESENTATIVE

Reviewed and approved by the NCDOT Division 14 District 1 on 08/01/2023.

DocuSigned by:


Signature

R.H. Darnell

Print Name

Email concurrence may be used in lieu of the signature.



NCDOT TIA Submittal Checklist



Submittal: Final Sealed TIA Report Document Date: _____

Project Name: Etowah Residential Previous Name: If Applicable _____

NCDOT Division: 14 District: 1 County: Henderson Municipality: N/A

TIA Consultant: Gannett Fleming Submitted By: Jeffrey H. Moore, P. E.

Phone Number: 828-674-0229 Email: jemoore@gfnet.com

TIA Scoping Checklist Approval Date: _____ Unadjusted Daily Site Trips: 4506

- ☒ The approved TIA Scoping Checklist is included in this submittal.
- ☒ LOS D or better is expected at all study intersections after proposed mitigations.
- ☒ The study report is sealed by a NC Professional Engineer with expertise in traffic engineering.
- ☒ This study has identified all known deficiencies with and without the proposed development.
- ☒ This study has identified mitigation measures to adequately accommodate the site trips.

Explain here if any of the boxes above are unchecked:

The undersigned affirms that, except for the deviations noted below, the TIA submittal conforms to the current [NCDOT Congestion Management Capacity Analysis Guidelines](#), [Policy on Street and Driveway Access to North Carolina Highways](#), and the TIA Scoping Checklist approved by the NCDOT District Office. The undersigned also acknowledges that the TIA will be rejected if the deviations and justifications are not properly documented and approved by NCDOT.

Deviations and Justifications (e.g., changes in site plan, development schedule, site trip and off-site trip estimates, study area, data collection, analysis period and method. Attached separate sheets if needed.)



NCDOT TIA Submittal Checklist

TIA Need
Screening



TIA
Scoping



TIA
Submittal



DocuSigned by:

Jeffrey H. Moore

DC1F0640211C4AB...

Signature

Jeffrey H. Moore, P. E.

Print Name

8/9/2023

Date

(Professional Engineer of TIA Record)

July 5, 2023

To: Ms. Autumn Radcliff, Planning Director, Henderson County
Mr. Troy Wilson, P. E., NCDOT District Engineer
Mr. Chris Day, CDC

From: Jeff Moore, P.E.

Subject: **MEMORANDUM OF ASSUMPTIONS** for Etowah Residential Traffic Impact
Analysis (TIA), Henderson County, NC

Introduction

Etowah Residential, a residential development consisting of 598 units of LUC 215 Single Family Attached Housing, is proposed on US 64 Place in Henderson County (refer to Figure 1 – Site and Study Intersections).

The **Site Plan**, prepared by Civil Design Concepts, dated June 2023 and shown in Figure 2, illustrates that access for the development is proposed on US 64 and SR 1323 (Brickyard Road).

Study Area Intersections

To determine the potential impact of the Etowah Residential development, the following intersections (illustrated on Figure 1) will be studied:

1. US 64 at SR 1424 (Brickyard Road) (signalized intersection)
2. US 64 at SR 1488 (North Greenwood Forest Drive) (unsignalized intersection)
3. SR 1323 (Brickyard Road) at SR 1488 (North Greenwood Forest Drive) (unsignalized intersection)
4. SR 1323 (Brickyard Road) at SR 1322 (Holly Springs Road) (unsignalized intersection)
5. SR 1323 (Brickyard Road) at SR 1325 (Turnpike Road) (unsignalized)
6. SR 1323 (Brickyard Road/McKinney Road) at SR 1424 (Brickyard Road) (unsignalized)

The existing lane configuration and traffic control are illustrated in Figure 3.

AM & PM Peak Hour Turning Movement Counts

Gannett Fleming will perform turning movement traffic counts during the AM (7-9am), PM (4-6pm) peak hours at the study area intersections identified above.

Study Year Scenarios

- 2023 Existing Condition
- 2026 No-Build Condition
- 2026 Buildout Condition

Capacity Analysis

Capacity analysis, using Synchro/SimTraffic Version 11, will be performed for the AM and PM peak hours at the study area intersections for existing and study year scenarios.

Trip Generation

Preliminary trip generation estimates for the proposed residential development has been developed using the *ITE Trip Generation Manual, 11th Edition*. Table 1 below illustrates the trip generation estimates itemized by proposed land use.

Table 1 - ITE Trip Generation Summary												
LUC	Description	Density	Variable	PK HR	METHOD	Daily	In	AM Out	Total	In	PM Out	Total
215	Single Family Attached	598	Units	Adj	EQN	4506	76	229	305	209	146	355
	Pass-by Adjustment AM (0%) PM (0%)						0	0	0	0	0	0
	Single Family Attached New Trips						76	229	305	209	146	355
Total New Trips						4506	76	229	305	209	146	355

The trip generation noted in Table 1 was developed using the suggested method as outlined in the *NCDOT Congestion Management Rate vs Equation Spreadsheet*, dated July 1, 2022.

Growth Rates

According to NCDOT AADT Volumes

(<http://ncdot.maps.arcgis.com/apps/webappviewer/index.html?id=5f6fe58c1d90482ab9107ccc03026280>), the following are the historical annual daily traffic (AADT) on study area roadways.

Facility	% Growth	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Brickyard Rd. SR 1424 (North of US 64)	-0.3%	3,000		3,100		3,000		3,800		2,600		3,100	
McKinney Rd. SR 1203 (North of US 64)	-2.1%				480		550		540		490		570
Brevard Rd. US 64 (West of SR 1424)	0.6%	8,200		8,700		7,700		7,600		6,900		7,700	
N Greenwood Forest Rd. SR 1488 (North of US 64)	0.0%						2,100		1,900		2,100		2,100
Holly Springs Rd. SR 1322 (North of SR 1323)	3.2%	3,000		2,700		2,400		3,100		2,200		2,200	
Brickyard Rd. SR 1323 (West of SR 1322)	-0.6%				2,000		2,000		1,700		1,800		2,100
Average Growth Rate	0.1%												
	1.0%												

As illustrated in the table above, the traffic on study area roadways have increased over the data available for the depicted 14-year period. Gannett Fleming recommends a 1.0 % compounded annual growth rate is to be used on study area and intersections. This annual growth rate is typical for suburban areas in North Carolina.

Approved Developments / Approved Transportation Projects

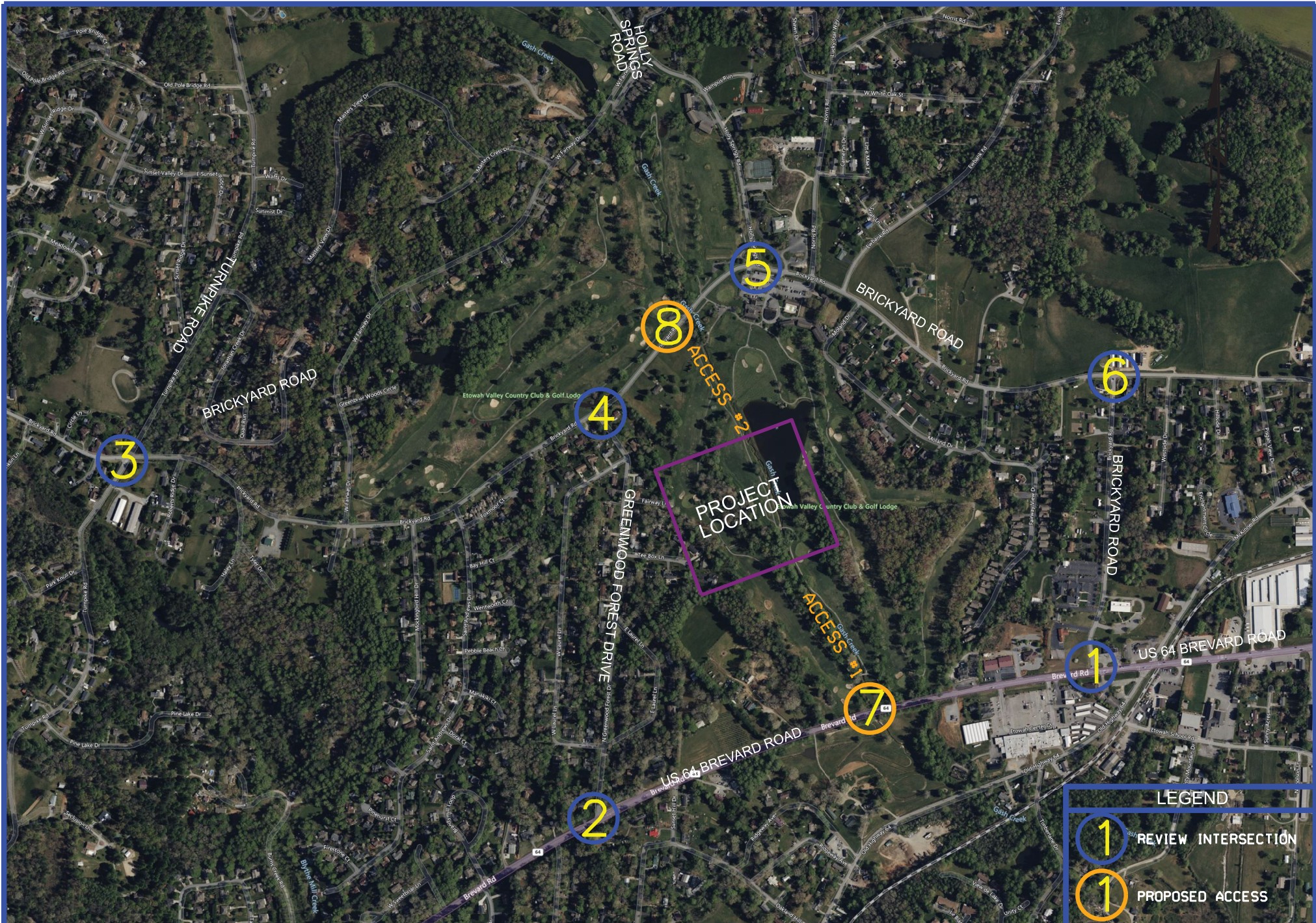
No approved projects are noted in the study area.

No planned NCDOT STIP projects are noted in the study area.

Directions of Approach and Departure

Traffic distribution is based on review of NCDOT AADT, and Gannett Fleming's local knowledge of the area. When Gannett Fleming obtains the existing traffic counts for the study area intersections, the directions of approach and departure will be reviewed and adjusted as necessary before submitting to Henderson County and NCDOT for concurrence. The proposed directions of approach and departure are illustrated in Figure 4.

This concludes the **Memorandum of Understanding**. If you have any questions, please feel free to contact me at or 828.674.0229.



PLANS PREPARED BY:



GANNETT FLEMING

Excellence Delivered As Promised

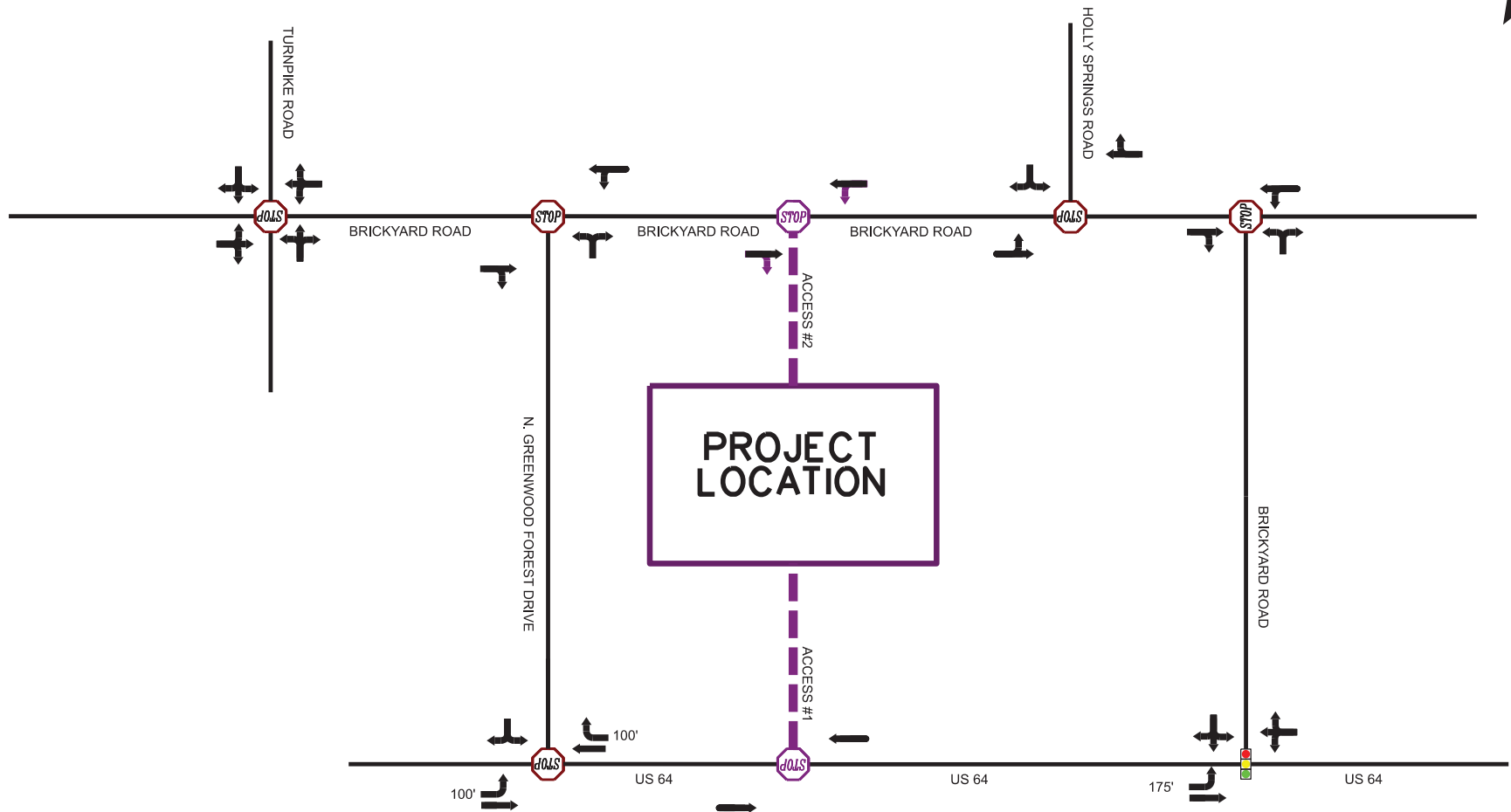
22 S. Pack Square
Suite 800
Asheville, NC 28801
(828) 209-7104
NC Lic. No. F-0270

TRAFFIC IMPACT ANALYSIS ETOWAH RESIDENTIAL ETOWAH, NC






FIGURE 1

SITE AND ACCESS
LOCATIONS

SCALE:
NONE



LEGEND

-  DIRECTIONAL MOVEMENT
-  PROPOSED LANE/MOVEMENT
-  EXISTING STOP SIGN
-  PROPOSED STOP SIGN
-  TRAFFIC SIGNAL

PLANS PREPARED BY:



GANNETT FLEMING

Excellence Delivered As Promised

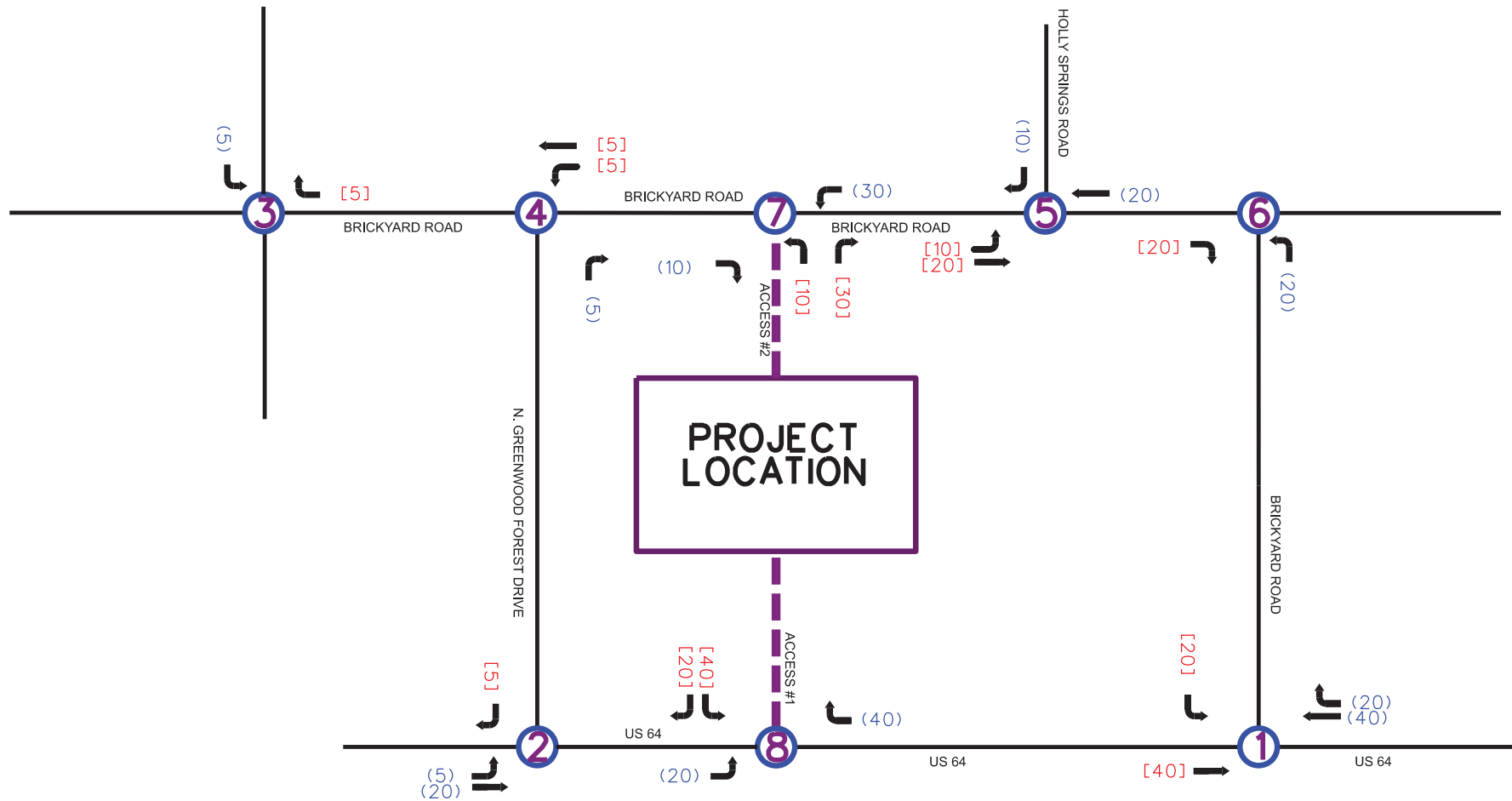
22 S. Pack Square
Suite 800
Asheville, NC 28801
(828) 209-7104
NC Lic. No. F-0270

TRAFFIC IMPACT ANALYSIS ETOWAH RESIDENTIAL ETOWAH, NC

FIGURE 3

EXISTING LANE
CONFIGURATION AND
TRAFFIC CONTROL

SCALE:
NONE



PLANS PREPARED BY:



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Suite 800
Asheville, NC 28801
(828) 209-7104
NC Lic. No. F-0270

TRAFFIC IMPACT ANALYSIS ETOWAH RESIDENTIAL ETOWAH, NC

FIGURE 4

LAND USE TRAFFIC
DISTRIBUTION

SCALE:
NONE

Appendix F: NCDOT Turn Lane Warrants

E

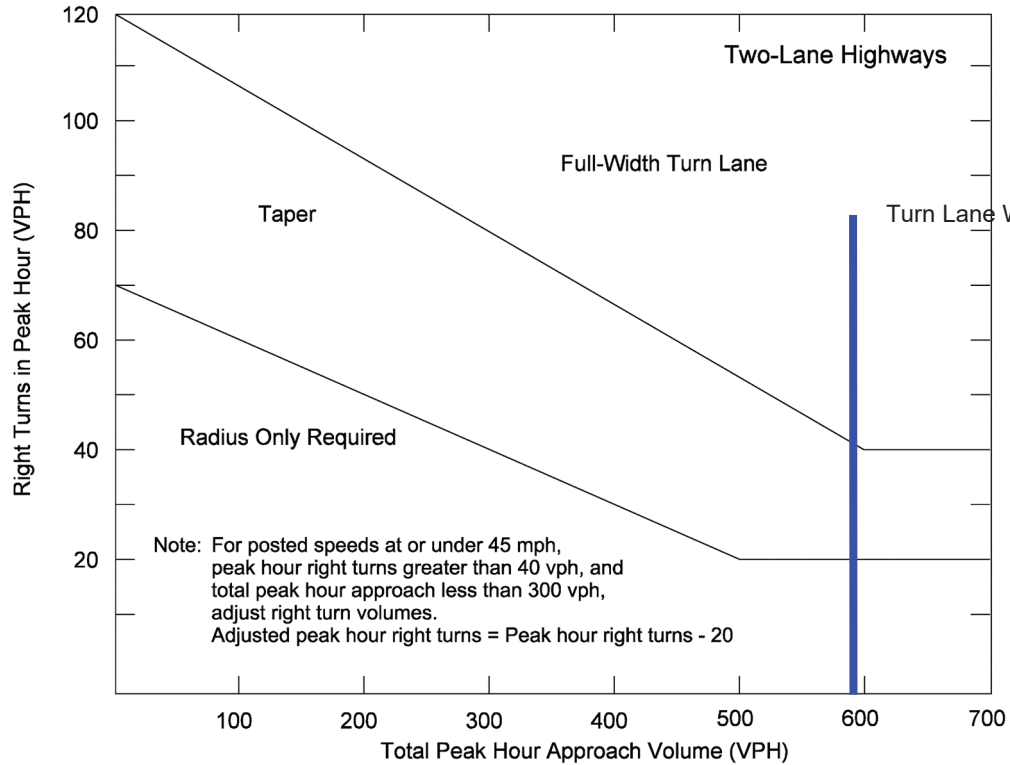


GANNETT FLEMING

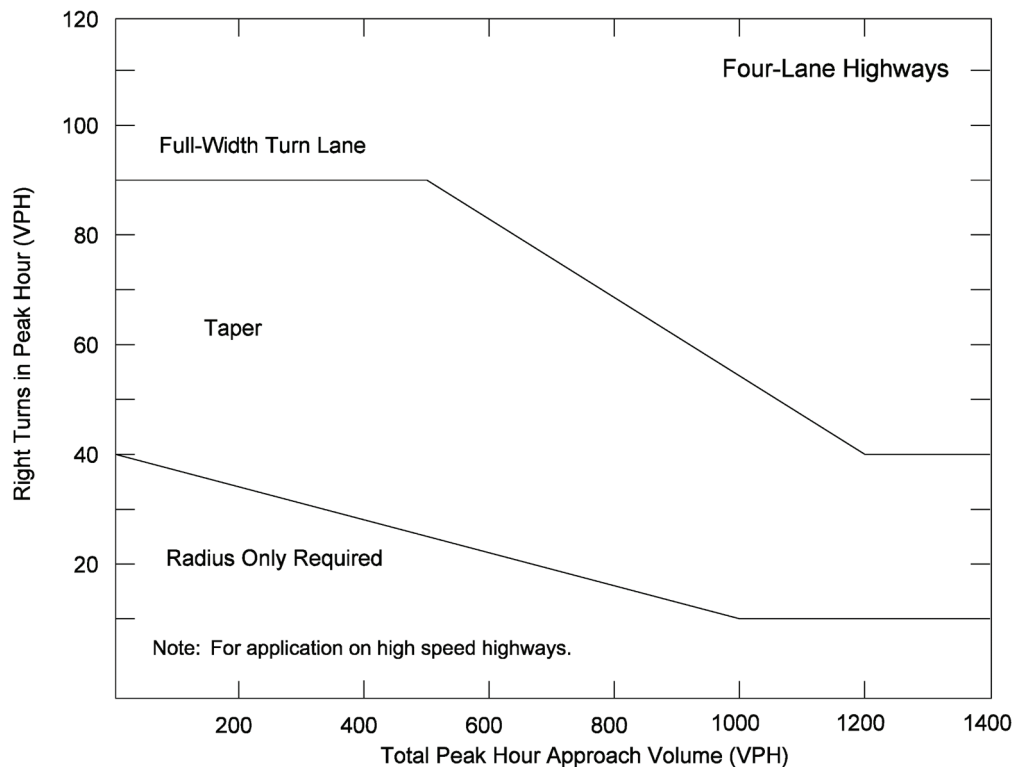
Excellence Delivered As Promised

Refer to TRB NCHRP *Report 707 Guidelines on the Use of Auxiliary Through Lanes at Signalized Intersections* for guidance on auxiliary through lanes that drop beyond signalized intersections.

Figure 8-8 Right Turn Lane Warrants

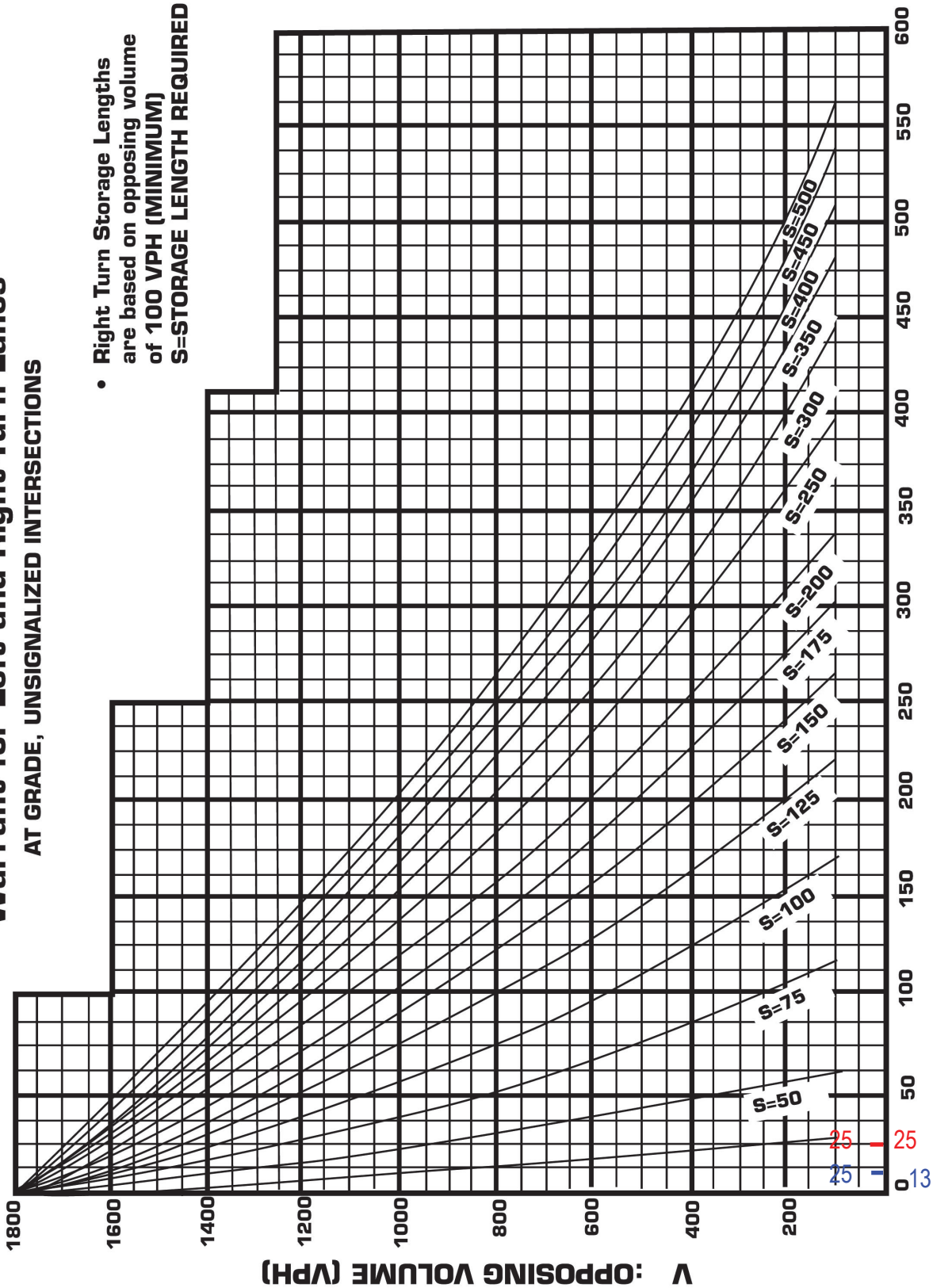


PM Peak is determining Time
Access #1:
84 Right Turns in Blue
590 Total Approach Volume



Warrant for Left and Right-Turn Lanes AT GRADE, UNSIGNALIZED INTERSECTIONS

- Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)
S=STORAGE LENGTH REQUIRED



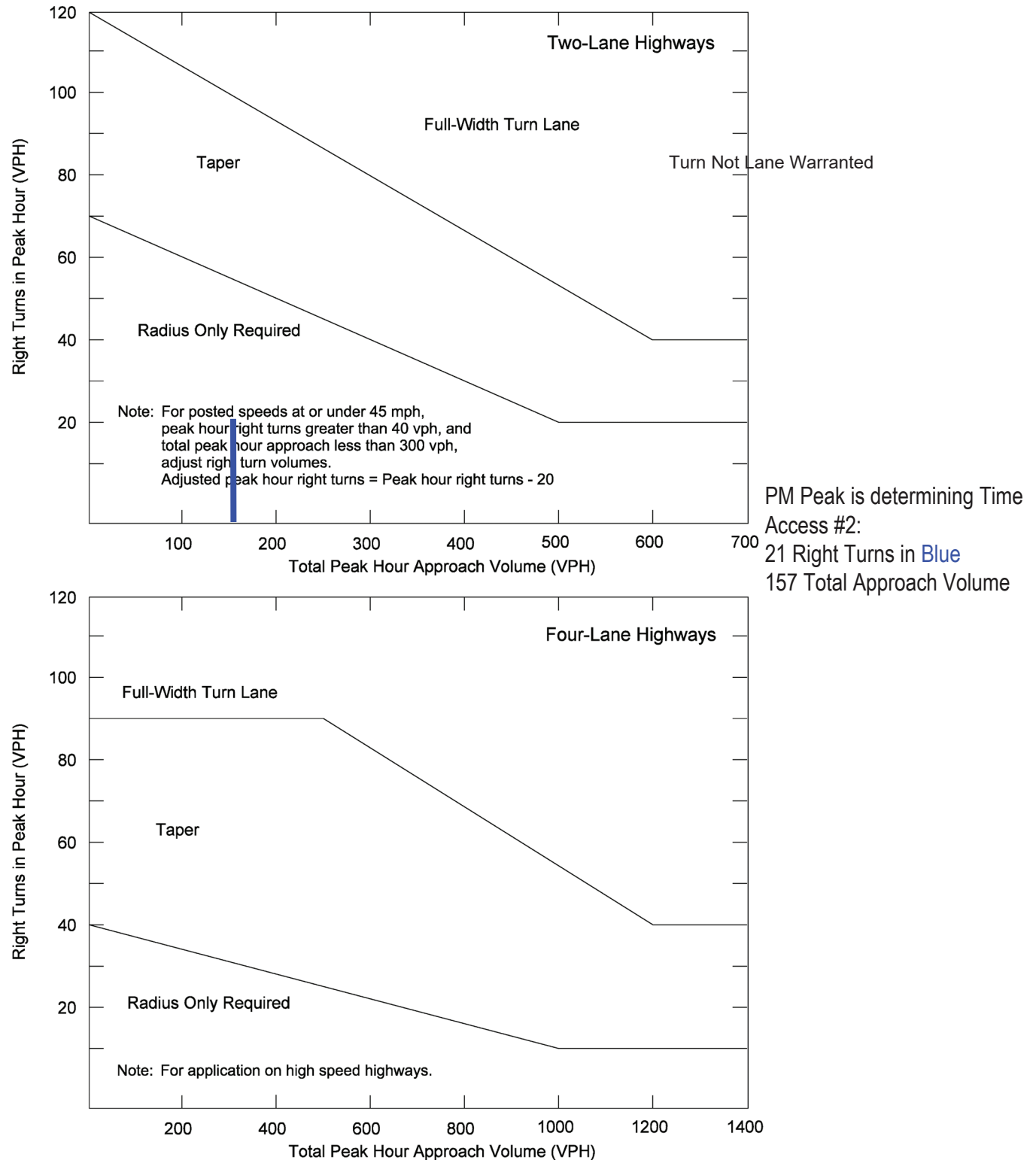
Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

V_L: LEFT TURNING VOLUME (VPH)
V_R: RIGHT TURNING VOLUME (VPH)

PM Peak is determining Time Period
Rathburn Place: 25 Left turns with 25 Opposing in Red
13 Right Turns in Blue with 25 Total Approach Volume

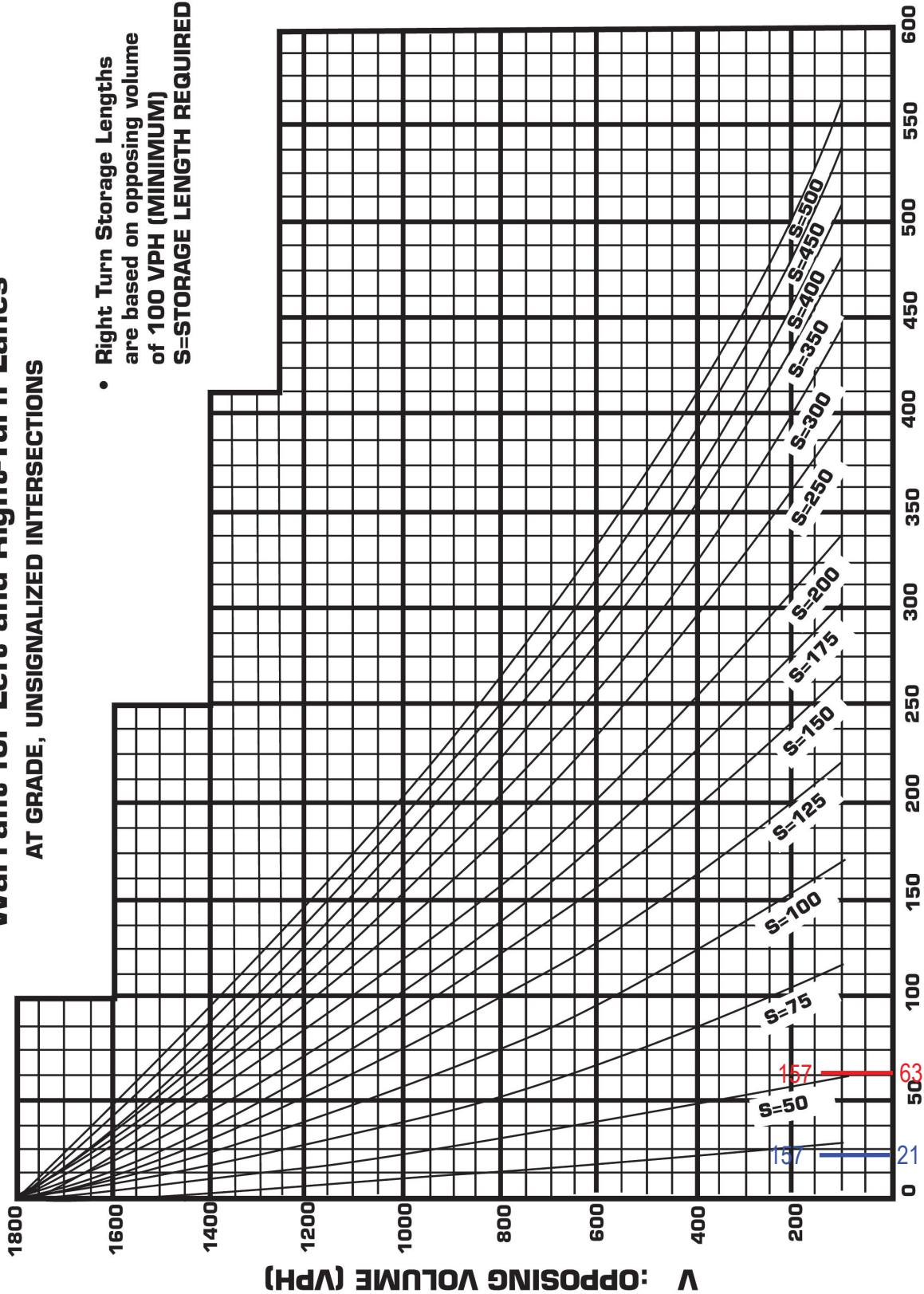
Refer to TRB NCHRP Report 707 *Guidelines on the Use of Auxiliary Through Lanes at Signalized Intersections* for guidance on auxiliary through lanes that drop beyond signalized intersections.

Figure 8-8 Right Turn Lane Warrants



Warrant for Left and Right-Turn Lanes AT GRADE, UNSIGNALIZED INTERSECTIONS

- Right Turn Storage Lengths are based on opposing volume of 100 VPH (MINIMUM)
S=STORAGE LENGTH REQUIRED



Note: Where adjacent signalization may provide opportunities for gaps in the traffic stream a reduction in the above storage values can be considered on a case by case basis.

V: LEFT TURNING VOLUME (VPH)
V_R: RIGHT TURNING VOLUME (VPH)