7-K-26-DP
TIS Version 1
6/18/2026

Traffic Impact Study

The Home Depot at North Fork Station

June 2026

FOR SUBMITTAL TO:

Knox County, Tennessee

PREPARED FOR:

The Home Depot

PREPARED BY:

Kimley»Horn

537 Market Street, Suite 202
Chattanooga, TN 37402
423-266-3501
Project Number **015847326**

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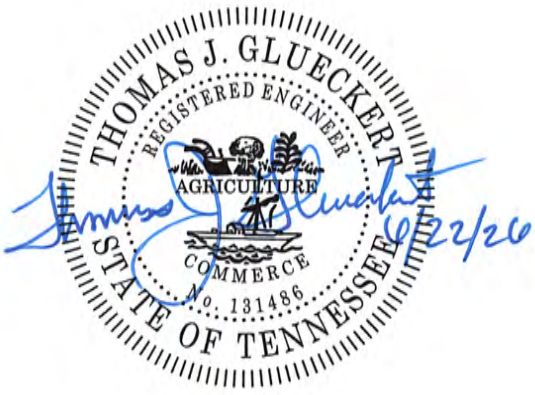

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1.0 EXECUTIVE SUMMARY

This traffic study evaluates the anticipated traffic impacts associated with **The Home Depot at North Fork Station** development. The site is approximately 13.47 acres and is located on Norris Freeway (US-441), 1,500 feet north of E. Emory Road (TN-131) and 560 feet south of Jessilee Drive in **Knox County, Tennessee**.

The proposed development is planned to consist of 136,343 sq. ft. and generate **4,179** daily trips, **205** AM peak hour trips and **311** PM peak hour trips.

The results of the analysis show that all study intersections, except for the intersection of Norris Freeway at E. Emory Road, currently operate at an acceptable level of service.

Under No-Build conditions, the analysis shows that all intersections, except for the intersection of Norris Freeway at E. Emory Road and the westbound through-right movement at the intersection of E. Emory Road at Andersonville Pike, are projected to operate at an acceptable level of service.

Under Build conditions, the analysis shows that all intersections, except for the intersection of Norris Freeway at E. Emory Road and the westbound through-right movement at the intersection of E. Emory Road at Andersonville Pike, are projected to operate at an acceptable level of service.

Under Improved Build conditions, the analysis shows that all intersections, except for the westbound through-right movement at the intersection of E. Emory Road at Andersonville Pike, are projected to operate at an acceptable level of service.

It should be noted that it is not uncommon for individual movements to experience higher delays while the intersection operates acceptably.

1.1 DEVELOPMENT IMPROVEMENT RECOMMENDATIONS

The Home Depot at North Fork Station development should contribute a proportional share of the cost of design and construction of the following improvements.

- Intersection 3 – Norris Freeway (US-441) at E. Emory Road
    - Convert the existing southbound right turn lane to a shared through-right turn lane with approximately 425 feet of storage and 340 feet of lane change and deceleration distance to meet queue storage needs in the Horizon PM Peak.
    - Convert the northbound right turn lane to a shared through-right turn lane with approximately 325 feet of storage and 340 feet of lane change and deceleration distance to meet queue storage needs in the Horizon PM Peak. Note that required storage, lane

change, and deceleration distance exceed the spacing between Intersection 3 and the retail driveway to the south.
    - Reconfigure northwest and southeast corners of the intersection to continue to allow for right turn channelization.
    - Modify traffic signal to allow for new lane configuration including, but not limited to, new span wire poles and pedestrian infrastructure on the northwest and southeast corners.
- Intersection 4 – E. Emory Road at Andersonville Pike
    - Adjust signal timing to reduce delay for overcapacity movements, including the westbound through-right movement.

2.0 INTRODUCTION

This traffic study evaluates the anticipated traffic impacts associated with The Home Depot at North Fork Station. The following scenarios are analyzed in this study:

- Existing **2026** Conditions
  - Existing traffic counts and lane configurations.
- Projected **2028** No-Build Conditions
  - Existing traffic counts grown to the build-out year at a standard growth rate plus traffic associated with nearby approved developments and proposed lane configurations incorporating improvements from other developments and/or the local agencies.
- Projected **2028** Build Conditions
  - Existing traffic counts grown to the build-out year at a standard growth rate plus traffic associated with nearby approved developments and the proposed development and proposed lane configurations incorporating improvements from other developments and/or the local agencies.

In addition to the build-out year analyses, 5-year horizon analyses were completed and are detailed in **Section 8.0**.

The network analyzed in this study consists of the intersections listed in **Table 1**. For the purposes of this traffic impact study, the roadways within the network are assumed to have the following orientations listed in **Table 2**. The study area and project site are shown in **Figure 1**. A site plan for the proposed development is included in **Appendix A.**

Table 1: Study Intersections

#	Intersection	Existing Control
1	Norris Freeway (US-441) at Jessilee Drive / Walmart Driveway	TWSC[1]
2	Norris Freeway (US-441) at Sam Walton Way / Driveway	Signal
3	Norris Freeway (US-441) at E. Emory Road (TN-131)	Signal
4	E. Emory Road (TN-131) at Andersonville Pike	Signal

[1]TWSC – Two-Way Stop-Control.

Table 2: Roadway Orientations

Roadway	Orientation
Norris Freeway (US-441)	North-South
E. Emory Road (TN-131) *	East-West
Sam Walton Way	East-West
Jessilee Drive	East-West
Walmart Driveway	East-West

**Note that E Emory Road does not carry a state route designation between Norris Freeway and Andersonville Pike.*

The Home Depot at North Fork Station Traffic Impact Study	Study Area	Figure 1

3.0 METHODOLOGY

3.1 DATA COLLECTION

Volume peak hour turning movement counts (TMCs) were performed at each study intersection. The TMCs were collected from 7:00 AM - 9:00 AM for the AM peak period and 4:00 PM - 6:00 PM for the PM peak period.

3.2 TRIP GENERATION

Traffic for the proposed development was calculated using equations contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, *12th Edition*, using equations where available. Internal capture (or mixed-use) reductions represent the concept that trips generated by individual land uses within a site may remain internal to the site. Mixed-use vehicle trip reductions are calculated using guidance from the *ITE Trip Generation Handbook, 3rd Edition*. Alternative modes of transportation include pedestrians, bicyclists, and transit users. Alternate mode reductions account for the notion that some site-generated trips will occur by a means other than automobile. A pass-by trip occurs when a proposed development diverts traffic that is already traveling on a street adjacent to the site. Pass-by reductions are calculated using guidance from the *(ITE) Trip Generation Manual, 12th Edition.*

3.3 CAPACITY ANALYSES

Level-of-service (LOS) determinations were made for the weekday AM and PM peak hours for the study network intersections using *Synchro, Version 12.0. Synchro* software uses methodologies contained in the *Highway Capacity Manual, 7th Edition* to determine the operating characteristics of an intersection. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a specified period under prevailing roadway, traffic, and control conditions.

LOS is used to describe the operating characteristics of a road segment or intersection in relation to its capacity. LOS is defined as a qualitative measure that describes operational conditions and motorists' perceptions of a traffic stream. The *Highway Capacity Manual* defines six levels of service, LOS A through LOS F, with A being the best and F the worst.

LOS for unsignalized intersections, with stop control on the minor street only, are reported for the side-street approaches and major street left-turns. Low levels-of-service for side street approaches are not uncommon, as vehicles may experience significant delay turning onto a major roadway.

LOS for signalized and all-way stop controlled (AWSC) intersections are reported for the intersection. One or more movements at an intersection may experience a low level-of-service, while the intersection may operate acceptably. The LOS criteria for signalized and unsignalized intersections is shown in Table 3.

Table 3: LOS Criteria for Intersections

LOS	Signalized Delay	Unsignalized Delay	Description
A	≤10.0	≤10.0	Operations with very low delays and most vehicles do not stop.
B	>10.0 and ≤20.0	>10.0 and ≤15.0	Operations with good progression but with some restricted movement.
C	>20.0 and ≤35.0	>15.0 and ≤25.0	Operations where a significant number of vehicles are stopping with some backup and light congestion.
D	>35.0 and ≤55.0	>25.0 and ≤35.0	Operations where congestion is noticeable, longer delays occur, and many vehicles stop. The proportion of vehicles not stopping declines
E	>55.0 and ≤80.0	>35.0 and ≤50.0	Operations where there are significant delays, extensive queuing, and poor progression.
F	>80.0	>50.0	Operations that are unacceptable to most drivers, when the arrival rates exceed the capacity of the intersection.

3.4 TURN LANE WARRANTS

TDOT HSAM Vol 3 Geometric Design Criteria was used to evaluate if turn lanes should be implemented along state routes at unsignalized site driveways. From the TDOT HSAM, the following methodologies were applied to perform these evaluations:

- “Exclusive right-turn lanes should be considered when the right-turn lane volumes exceed 300 veh/h and the adjacent through-lane volume also exceeds 300 vehicle per lane per hour”.

Per the TDOT HSAM, "The volume-based warrants indicate situations where turn lanes would help to mitigate traffic conflicts, not necessarily situations where a turn lane is required or must be constructed. Turning lanes can have adverse safety and operational effects for pedestrians and bicyclists. All existing and future users of the roadway should be considered when determining turn lane needs."

3.5 SIGNAL WARRANTS

Traffic signal warrant analyses were performed using the methodology provided in Chapter 4C of the *Manual on Uniform Traffic Control Devices (MUTCD), 2023 Edition* published by the Federal Highway Administration (FHWA). The *MUTCD* provides the following standard, among others, regarding justification for traffic control signals: “The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.” (Source: *MUTCD 2023*, Section 4C.01, Paragraph 03)

According to the *MUTCD*, the investigation of the need for a traffic control signal shall include an analysis of the applicable factors contained in the following traffic signal warrants and other factors related to existing operation and safety at the study location:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing
- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network
- Warrant 9, Intersection Near a Grade Crossing

Warrant 1 (Eight Hour Vehicular Volume) Condition 1A is intended for application at locations where a large volume of intersecting traffic is the principal reason to consider installing a traffic signal. Warrant 1 Condition 1B is intended for application where Condition 1A is not satisfied and where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street. If both Condition 1A and Condition 1B are 80% satisfied, Warrant 1C would be satisfied.

Warrant 2 (Four Hour Vehicular Volume) is intended to be applied at locations where the volume of intersecting traffic is the principal reason to consider installing a traffic signal.

Warrant 3 (Peak Hour) is intended for use at locations where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

Warrant 4 (Pedestrian Volume) is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

3.6 SIGHT DISTANCE

Intersection sight distance measurements and calculations were performed using methodology provided in *A Policy on Geometric Design of Highways and Streets, 7th Edition (2018)*, published by the American Association of State Highways and Transportation Officials (AASHTO).

3.7 SAFETY REVIEW

A safety review including 5-years of crash history at all study segments and intersections was conducted. Crash data was collected from AASHTOWare Safety. Crashes were summarized by manner of collision and by injury type. Crash rates were calculated for each intersection and segment using consistent methodology with TDOT's Yellow Sheets. The calculated crash rates were then compared to TDOT's statewide average crash rates from 2021-2023 for similar facility types.

4.0 EXISTING CONDITIONS

4.1 VEHICULAR NETWORK

Characteristics for the roadways within the study are summarized in **Table 4**. The existing road geometry is illustrated in **Figure 2.**

Table 4: Roadway Network

Roadway	Lanes	Posted Speed (MPH)	Classification	AADT (Station ID)
Norris Freeway (US-441)	4 + Turn Lanes	45	Urban Minor Arterial	14,232 (47000022)
E. Emory Road (TN-131)	4 + TWLTL / 2**	40	Urban Minor Arterial	19,914 (47000024)
Andersonville Pike	2	40	Urban Major Collector	N/A
Jessilee Drive	2	25*	Local Road	N/A
Sam Walton Way	2	25*	Driveway	N/A
Walmart Driveway	2	25*	Driveway	N/A

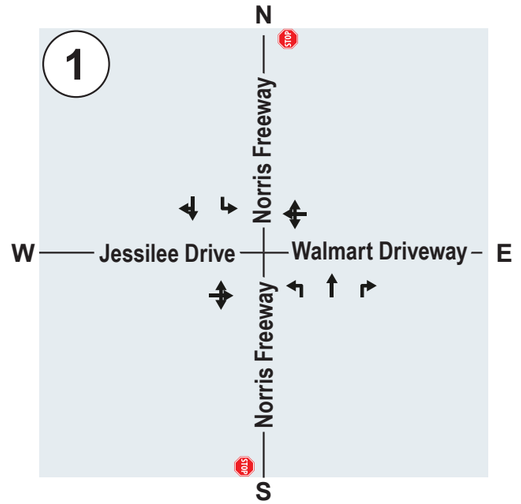
**Not posted – assumed speed. ** 4 + TWLTL cross section west of Norris Freeway.*

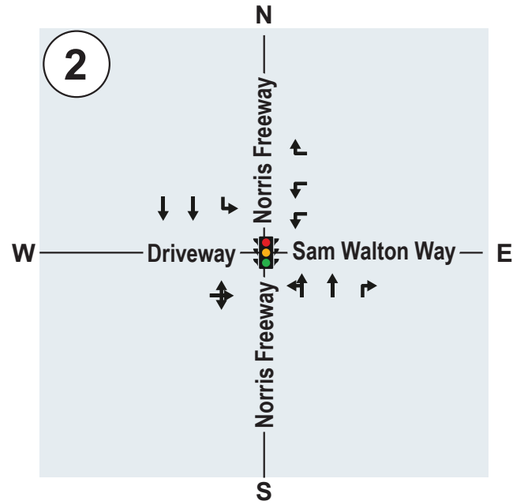
4.2 VEHICULAR VOLUMES

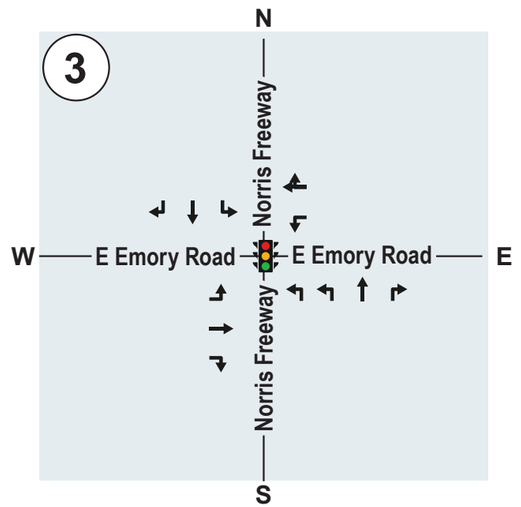
Vehicle peak hour turning movement counts (TMCs) were performed at each study intersection. Peak hours for the study intersections are shown in **Table 5**. The existing peak hour traffic volumes are shown in **Figure 3.** The complete traffic count data is provided in **Appendix B**.

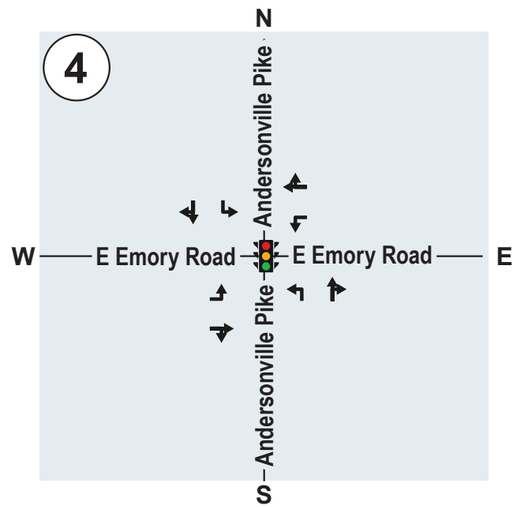
Table 5: Intersection of Peak Hours

#	Intersection	Date Collected	AM	PM
1	Norris Freeway (US-441) at Jessilee Drive / Walmart Driveway	5/14/2026	0715 - 0815	1630 - 1730
2	Norris Freeway (US-441) at Sam Walton Way / Driveway	5/14/2026	0715 - 0815	1645 - 1745
3	Norris Freeway (US-441) at E. Emory Road (TN-131)	5/14/2026	0730 - 0830	1645 - 1745
4	E. Emory Road (TN-131) at Andersonville Pike	5/14/2026	0730 - 0830	1630 - 1730









LEGEND

(X) Signalized Intersection ID

X Unsignalized Intersection ID

Existing Traffic Signal

STOP Existing Stop Sign

Existing Lane Configuration

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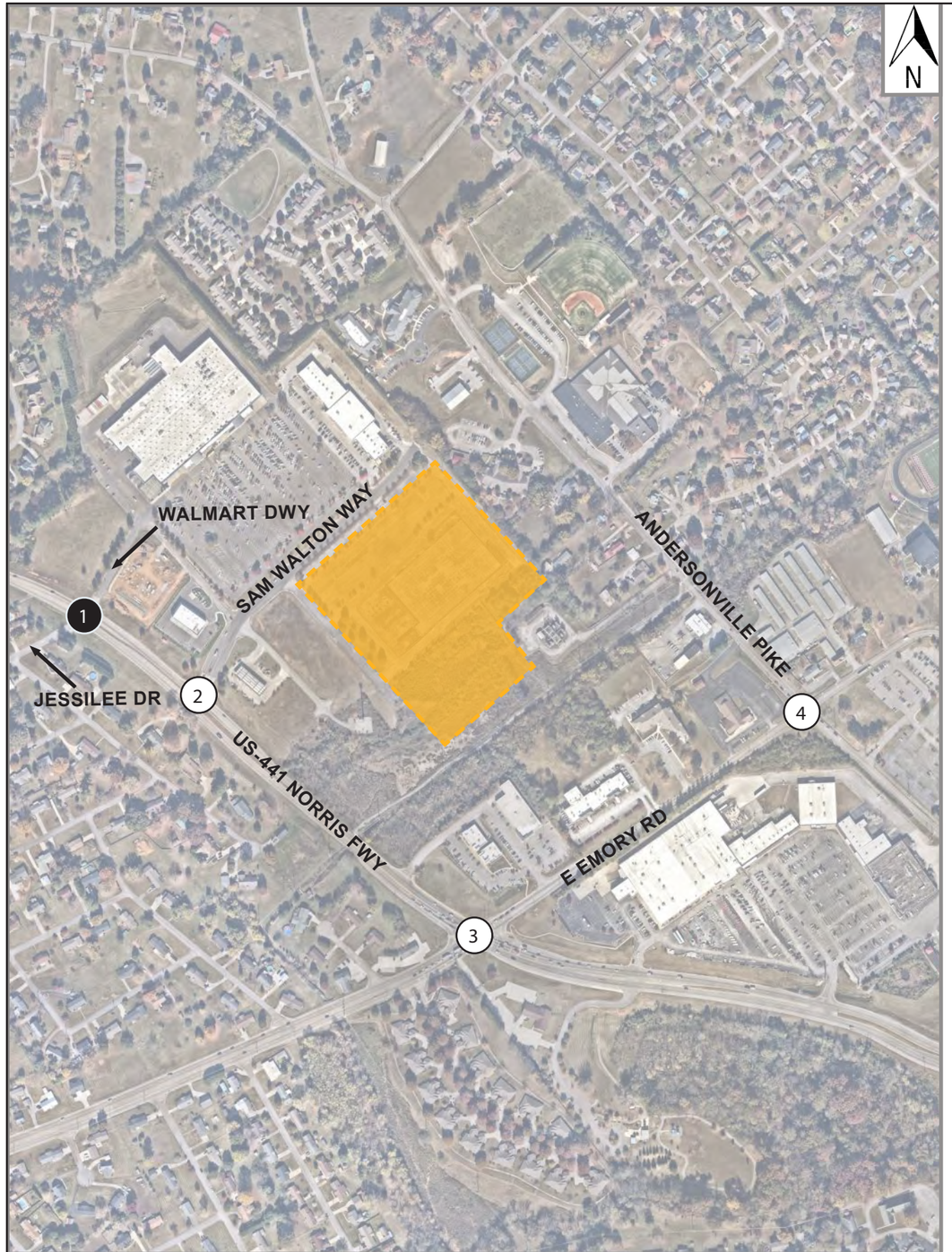
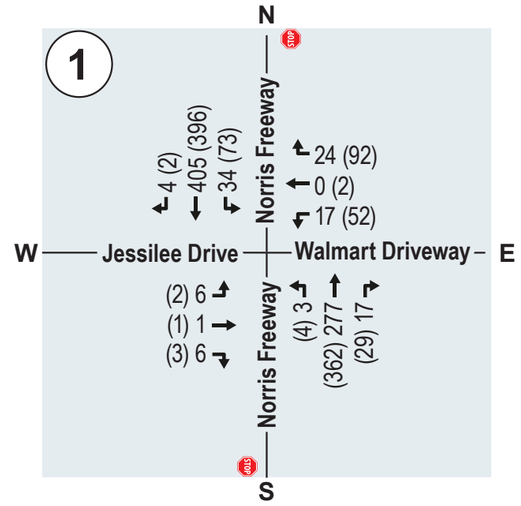
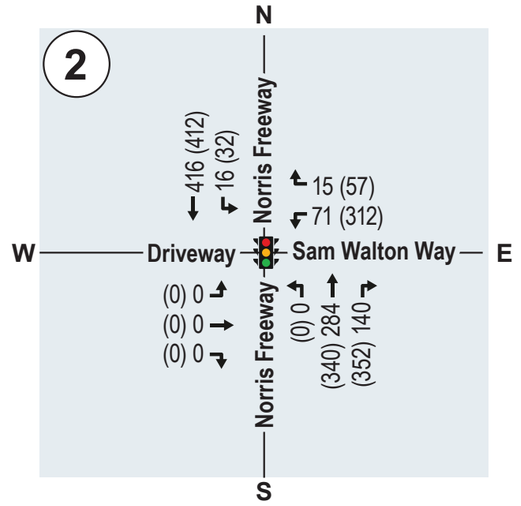
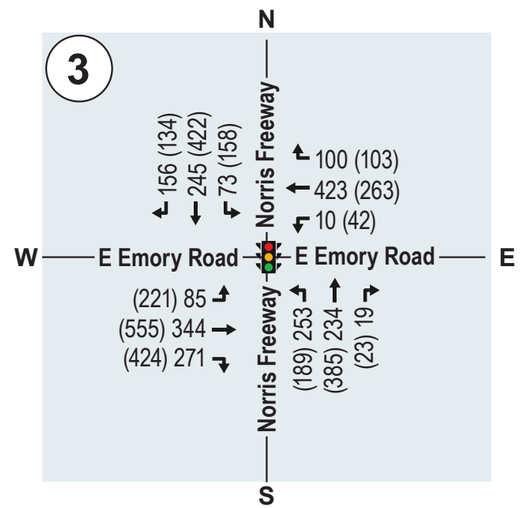
Existing Intersection Geometry

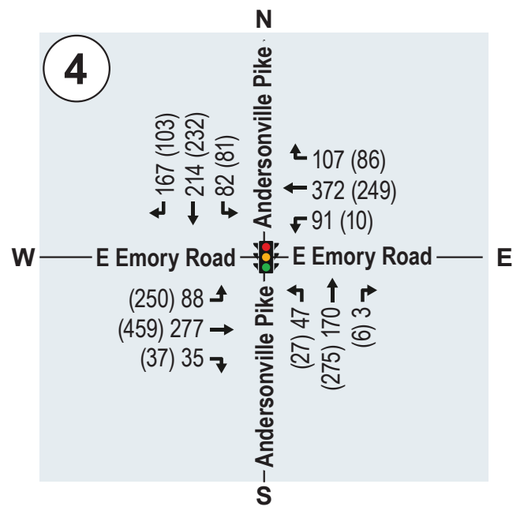
Figure 2











LEGEND

(X)	Signalized Intersection ID		Existing Traffic Signal	XX	AM Peak Hour Traffic Volumes
X	Unsignalized Intersection ID	STOP	Existing Stop Sign	(XX)	PM Peak Hour Traffic Volumes
→	Turning Movement				

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Existing Traffic Volumes

Figure 3

4.3 HISTORICAL TIS COMPARISON

The 2006 Traffic Impact Study evaluated proposed North Fork Station commercial development on the same site currently under review. The 2006 study is provided in **Appendix H**. Based on available documentation, the 2006 development program included land uses and development densities that differ substantially from what exists today. The 2006 study assumed a development size of approximately 412,760 sq.ft., compared to the 251,953 sq.ft., that was ultimately constructed. Additionally, several out-lot parcels have been developed within the North Fork Station development, including a car wash, tire store, and gas station. This significant difference in scale affects both projected trip generation and the mitigation measures that were recommended at that time.

The 2006 study evaluated future traffic operations under 2009 horizon-year conditions. As a result, its traffic forecasts, background growth assumptions, and recommended improvements were based on travel patterns and roadway conditions that existed nearly two decades ago. Since 2009, continued regional growth, changes in commercial development, and evolving travel demand along Norris Freeway and E. Emory Road have altered traffic conditions throughout the study area.

Accordingly, comparisons between the 2006 horizon-year LOS projections and the 2026 Existing LOS conditions should be interpreted within the context of broader regional traffic growth. Changes in intersection performance may reflect not only site-generated traffic but also long-term increases in background traffic volumes and changes in surrounding land use. This context is important when evaluating the continued relevance and effectiveness of the mitigation measures identified in the 2006 study.

The following sections compare the LOS projections from the 2006 Traffic Impact Study (2009 Horizon Year) with the Existing 2026 LOS conditions documented in the current study.

4.3.1 INTERSECTION 1 – NORRIS FREEWAY (US-441) AT JESSILEE DRIVE / WALMART DRIVEWAY (TWSC)

2006 LOS (2009 Horizon Year): The intersection was projected to operate at LOS B during the weekday PM peak hour under existing three-leg conditions. With the addition of a fourth leg serving the Walmart driveway, operations were projected to degrade to LOS D during the weekday PM peak hour.

2026 Existing LOS: The intersection currently operates at acceptable overall LOS during both the AM and PM peak hours with an intersection LOS of A and A respectively.

Discussion: The 2006 study recommended signalization based on satisfaction of MUTCD Signal Warrant 3. If a traffic signal was not ultimately installed, continued TWSC operation may contribute to movement-specific delays. Nevertheless, the intersection currently operates within acceptable overall LOS thresholds, indicating that traffic conditions have remained manageable despite increased regional traffic demand.

4.3.2 INTERSECTION 2 – NORRIS FREEWAY (US-441) AT ENTRANCE 2 / SAM WALTON WAY (SIGNALIZED)

2006 LOS (2009 Horizon Year): A traffic signal was proposed at this intersection, with projected traffic volumes satisfying all three volume warrants evaluated. The egress lane configuration of dual left turn lanes was implemented, along with the southbound left turn lane. The recommended lane configuration for the northbound approach was one through lane, one shared through-right lane, and one right turn lane. Under signalized conditions, the intersection was expected to operate at LOS B during the weekday PM peak hour.

2026 Existing LOS: The intersection currently operates at acceptable LOS during both the AM and PM peak hours with an intersection LOS of A and B respectively.

Discussion: No additional operational improvements were recommended beyond signalization and updated lane configuration in the 2006 study. All recommendations were applied except for the northbound approach lane configuration, which was ultimately configured as two through lanes and a dedicated right turn lane. The intersection continues to function acceptably under existing traffic conditions, suggesting that the original operational assumptions and improvements have remained effective over time.

4.3.3 INTERSECTION 3 – NORRIS FREEWAY (US-441) AT E. EMORY ROAD (TN-131) (SIGNALIZED)

2006 LOS (2009 Horizon Year): With optimized signal timing and the recommended geometric improvements including the additional northbound shared through-right lane and westbound right turn lane, the intersection was projected to operate at or near LOS C during the weekday PM peak hour.

2026 Existing LOS: The intersection currently experiences substantial delay during both AM and PM peak periods. Analysis indicates an intersection with LOS D in the AM peak hours and a LOS E in the PM peak hour with multiple failing movements.

Discussion: The 2006 study recommended construction of a shared through-right lane with approximately 350 feet of storage on the northbound approach and a westbound dedicated right turn lane to increase intersection capacity. These improvements were not implemented, the lack of additional capacity likely contributes to the operational deficiencies observed today. Consistent with the findings of the 2006 study, modeling performed as part of the current analysis indicates that the recommended lane additions significantly improve intersection performance and restore acceptable intersection LOS in the projected build year.

4.3.4 INTERSECTION 4 – E. EMORY ROAD (TN-131) AT ANDERSONVILLE PIKE (SIGNALIZED)

2006 LOS (2009 Horizon Year): A traffic signal was proposed at this intersection with protected permissive left turn movements on all approaches. Under signalized conditions, the intersection was expected to operate at LOS C during the weekday PM peak hour.

2026 Existing LOS: The intersection currently operates at acceptable overall LOS during both AM and PM peak periods with an intersection LOS of D and D respectively.

Discussion: With the installation of a traffic signal and proposed lane configuration, current analysis indicates that the intersection generally continues to function within acceptable operational thresholds, and no additional improvements appear warranted in the existing conditions.

Summary Findings

• Differences between the 2006 development program and the current land use and density of the North Fork Station development substantially influence projected trip generation and resulting LOS outcomes.

• The 2006 study evaluated 2009 horizon-year conditions. Continued regional growth since that time has increased traffic demand throughout the corridor beyond levels anticipated in the original analysis.

• Most study intersections currently operate at acceptable levels of service, generally consistent with the operational expectations identified in the 2006 study.

• E. Emory Road at Norris Freeway remains the primary operational constraint within the study area. The geometric improvements recommended in the 2006 study continue to demonstrate operational benefits when evaluated under current traffic conditions.

• Overall, the mitigation measures identified in the 2006 study remain generally consistent with long-term operational needs. However, differences between projected and actual development patterns, combined with regional traffic growth, have influenced current intersection performance and may indicate that some recommended improvements were not fully implemented.

4.4 HISTORICAL CRASH DATA

Crash data for the study network was collected based on methodology outlined in **Section 3.7**. Five years of crash data was collected from May 1st, 2021 to May 1st, 2026. The crash data is provided in **Appendix G**.

Table 6 provides the crash rate for each intersection and segment compared to the TDOT crash rates for their respective configuration. Intersections 1, 2, 3, and 4 are all above the TDOT crash rate. Segments A and B exceed the TDOT crash rate. **Table 7** provides the annual breakdown of crashes in the network by type. **Table 8** provides the annual breakdown of crashes in the network by severity. **Figure 4** provides a map of the location's color coded by severity. Additional map figures for each intersection are provided in **Appendix G**. Of the 250 crashes reported in the 5-year history, there was 1 fatal crash and 3 serious injury crashes reported.

Based on a review of network crashes, the primary crash type is rear-end and angle.

The following safety mitigations should be considered to reduce crashes within the study network.

- Advance signal warning sign.
- Install retroreflective signal backplates.
- Evaluate signal clearance intervals.
- Upgrade signal heads to flashing yellow arrow (FYA) heads.
    - This only applies where PM+PT 5-heads are currently located.
- Consider alternative intersection geometry configuration.

Table 6: Crash Rates

#	Reference Name	Crash Type					Manner of Collision						Total	Rates	
		Fatal	Serious Injury	Possible Injury	Minor Injury	PDO	Angle	No Vehicle Collision	Rear End	Sideswipe	Head On	Other		Crash Rate	TDOT Crash Rate
Intersections															
1	US-441 Norris Fwy at Walmart Dwy/Jessilee Dr	1	0	3	6	7	9	2	2	2	1	1	17	0.915	0.107
2	US-441 Norris Fwy at Sam Walton Way	0	1	1	3	17	13	0	7	2	0	0	22	0.801	0.620
3	US-441 Norris Fwy at E Emory Rd	0	1	12	8	108	33	3	75	9	3	6	129	2.420	0.620
4	E Emory Rd at Andersonville Pike	0	1	6	3	28	14	0	14	3	3	4	38	1.147	0.609
Segments															
A	Segment btwn 2 and 3	0	0	0	1	7	1	1	5	0	0	1	8	1.082	1.992
B	Segment btwn 3 and 4	0	0	1	3	32	7	1	25	2	0	1	36	7.582	2.306

Table 7: Network Crashes

Manner of First Collision	2021	2022	2023	2024	2025	2026	Total
Sideswipe, Opp Dir		2	1				**3**
Head-On		4	2	1			**7**
No Collision W/ Vehicle	2	2	3				**7**
Other	3	1	2	2	3	2	**13**
Sideswipe, Same Dir	3	5	3	2	2		**15**
Angle	14	11	16	11	21	4	**77**
Rear-End	16	28	25	26	21	12	**128**
Total	**38**	**53**	**52**	**42**	**47**	**18**	**250**

Table 8: Number of Crashes Each Year by Severity

Type of Crash	2021	2022	2023	2024	2025	2026	Total
(K) Fatal Injury			1				**1**
(A) Suspected Serious Injury		1		1	1		**3**
(C) Possible Injury	5	5	3	3	7		**23**
(B) Suspected Minor Injury	5	4	6	5	2	2	**24**
(O) Property-Damage Only	28	43	42	33	37	16	**199**
Total	**38**	**53**	**52**	**42**	**47**	**18**	**250**

Figure 4: Crash Locations (All Crashes)

5.0 NO-BUILD CONDITIONS

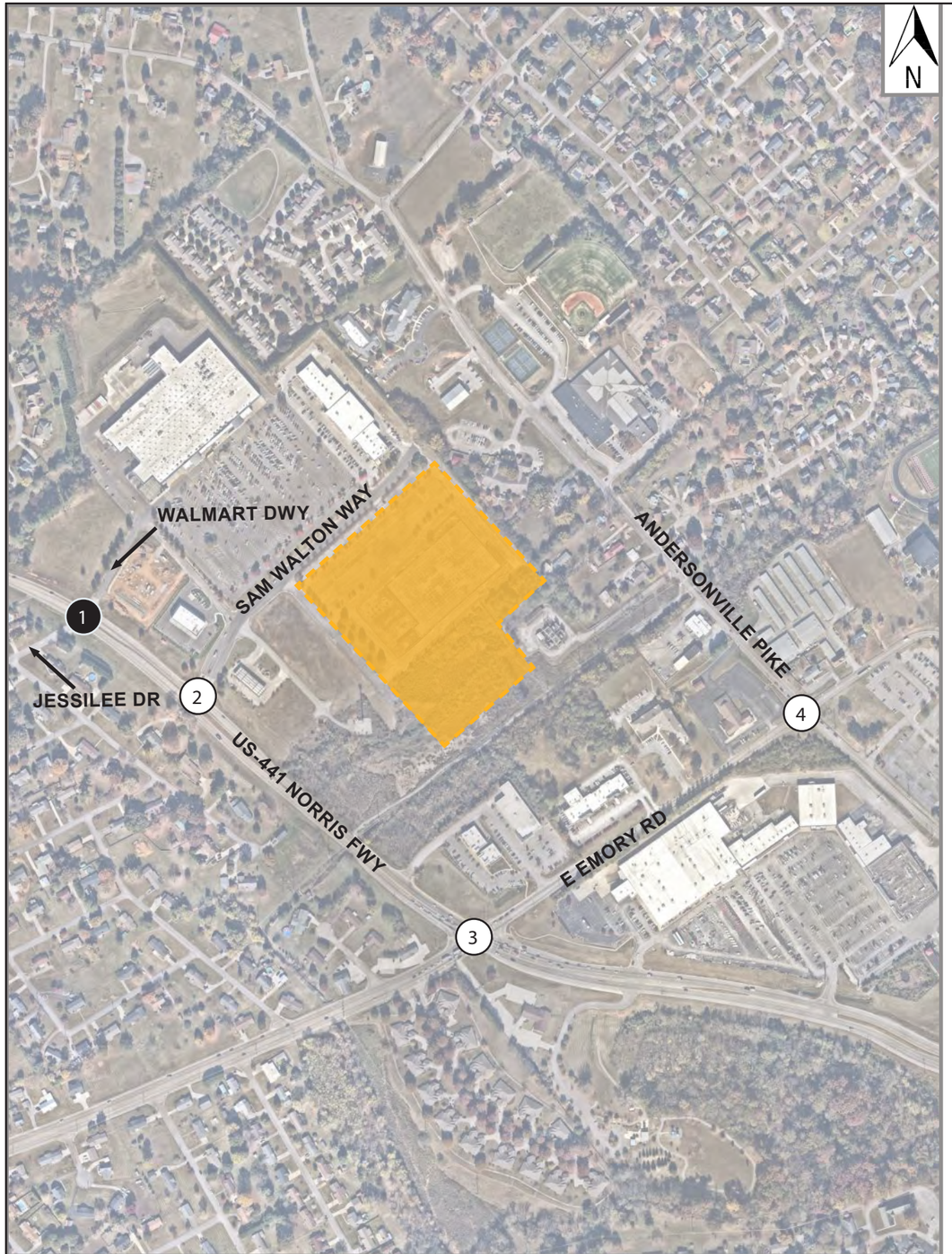
5.1 NO-BUILD VOLUMES

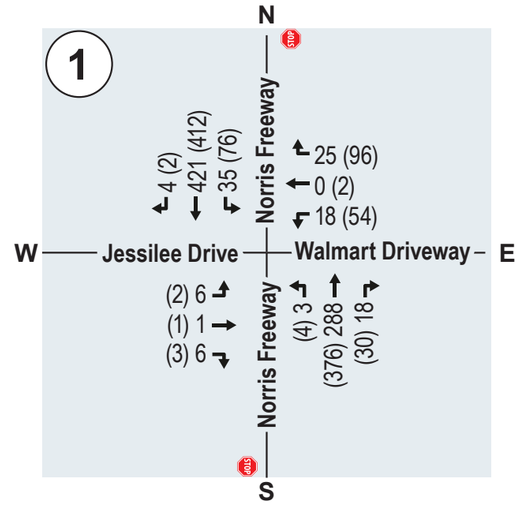
Background traffic is defined as expected traffic on the roadway in future year(s) absent the construction and opening of the proposed project. Background traffic can include a base growth rate based on historical count data as well as population growth data and estimates.

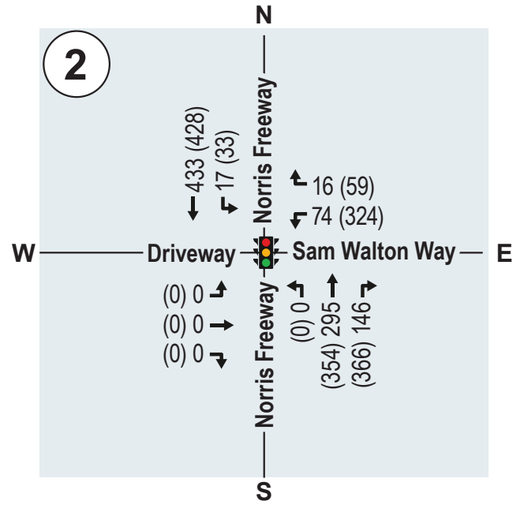
To account for background traffic, the existing traffic volumes were increased by **2%** per year to account for the expected background growth through the built-out year. No nearby approved developments were identified to be incorporated into the capacity analyses. The no-build volumes are shown in **Figure 5**.

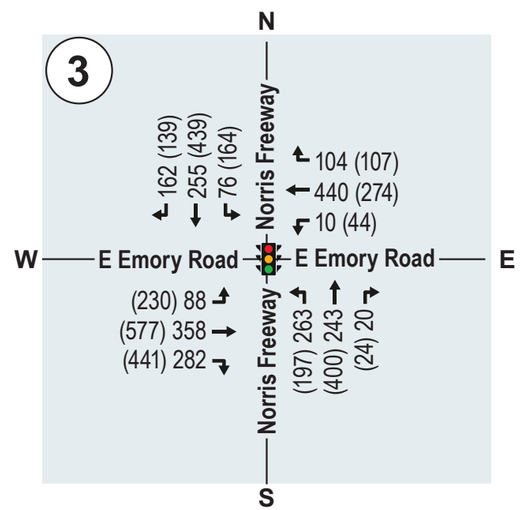
5.2 FUTURE TRANSPORTATION INFRASTRUCTURE IMPROVEMENTS

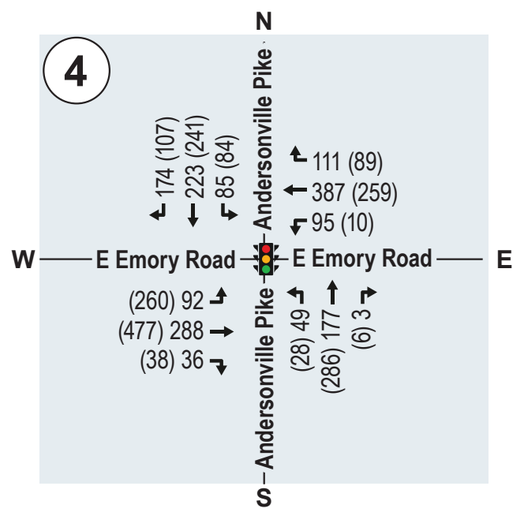
No improvements were identified to be incorporated into the capacity analyses. There may be other improvements planned. However, they will not impact on the number or characteristics of intersection lanes.











LEGEND

(X)	Signalized Intersection ID		Existing Traffic Signal	XX	AM Peak Hour Traffic Volumes
X	Unsignalized Intersection ID	STOP	Existing Stop Sign	(XX)	PM Peak Hour Traffic Volumes
→	Turning Movement				

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Traffic Impact Study

No-Build Traffic Volumes

Figure 5

6.0 BUILD CONDITIONS

6.1 SITE ACCESS

A brief description of each site access point is listed in **Table 9**.

Table 9: Site Access Details

#	Intersection	Control/Movement	Location
2	Norris Freeway (US-441) at Sam Walton Way / Driveway	Signal	~550 feet south of Jessilee Drive

6.2 PROJECT TRAFFIC

6.2.1 PROJECT TRIPS

Trip generation for the proposed development was calculated based on the methodology outlined in **Section 3.2**. The development was analyzed with the ITE Trip Generation Manual recommended 29% reduction of pass-by trips to daily and PM peak hour trips.

Table 10 summarizes the project trip generation. A detailed trip generation worksheet for the proposed development is provided in **Appendix C**.

6.2.2 TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution and assignment of new project trips was based on a review of land uses and population densities in the area as well as the existing peak hour turning movement counts.

Figure 6 provides the directional distribution and assignment of new project trips. **Figure 7** provides the directional distribution and assignment of pass-by trips. **Figure 8** illustrates the assignment of project trips to the study network. The projected build peak hour volumes are shown in **Figure 9**.

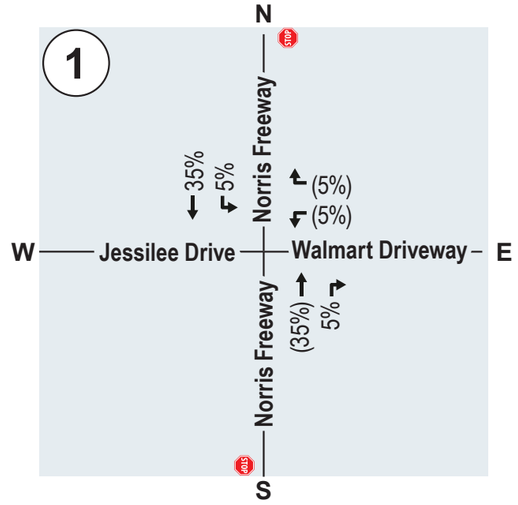
Intersection volume worksheets for all intersections and driveways within the study network are provided in **Appendix C**.

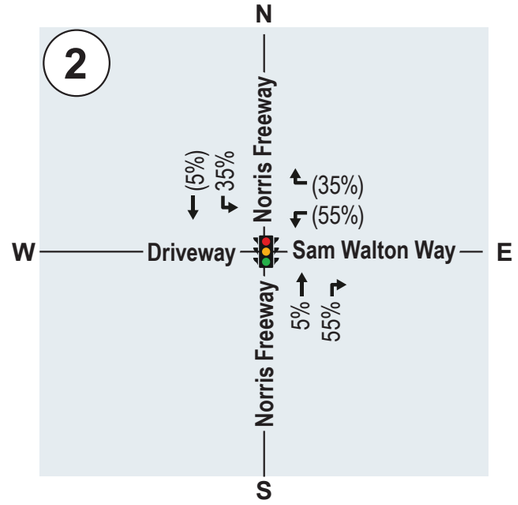
Table 10: Trip Generation

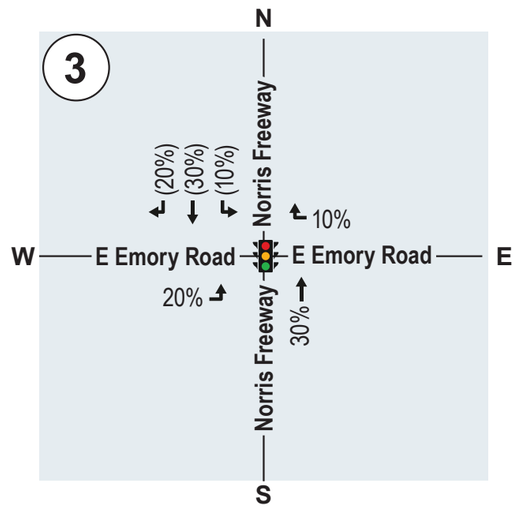
Proposed Trip Generation - THD Halls Crossroads

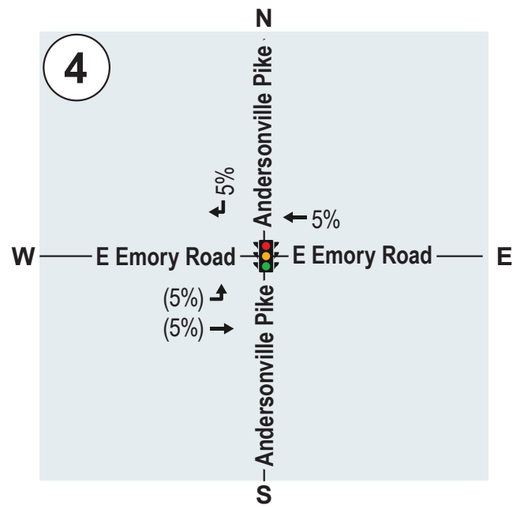
ITE Code	Land Use	Setting/Location	Density		Daily			AM Peak Hour			PM Peak Hour		
					Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
862	Home Improvement Superstore	General Urban/Suburban	136,343	s.f.	4,179	2,090	2,089	205	117	88	311	152	159
GROSS PROPOSED TRIPS					**4,179**	**2,090**	**2,089**	**205**	**117**	**88**	**311**	**152**	**159**
Gross Trips - Before Reductions					4,179	2,090	2,089	205	117	88	311	152	159
Retail					4,179	2,090	2,089	205	117	88	311	152	159
Reduction - Pass-By			AM	Daily/PM	-1,212	-606	-606	0	0	0	-90	-45	-45
862	Home Improvement Superstore	General Urban/Suburban	0%	29%	-1,212	-606	-606	0	0	0	-90	-45	-45
NET PROPOSED TRIPS					**2,967**	**1,484**	**1,483**	**205**	**117**	**88**	**221**	**107**	**114**
DRIVEWAY VOLUMES					**4,179**	**2,090**	**2,089**	**205**	**117**	**88**	**311**	**152**	**159**
NEW TRIPS (NET PROPOSED - NET EXISTING)					**2,967**	**1,484**	**1,483**	**205**	**117**	**88**	**221**	**107**	**114**

Notes:









LEGEND

(X)	Signalized Intersection ID		Existing Traffic Signal	XX%	% Entering Distribution
X	Unsignalized Intersection ID	STOP	Existing Stop Sign	(XX%)	% Exiting Distribution
→	Turning Movement	STOP	Proposed Stop Sign		

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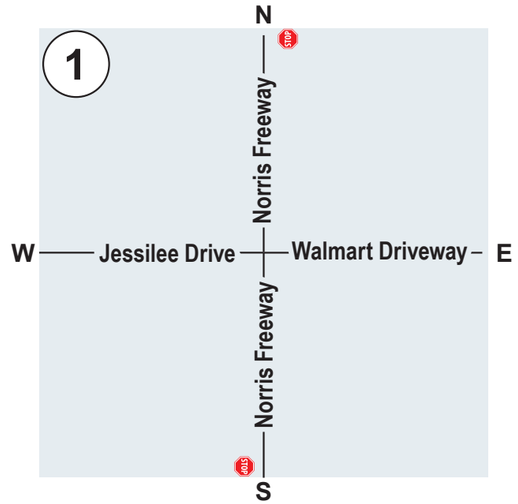
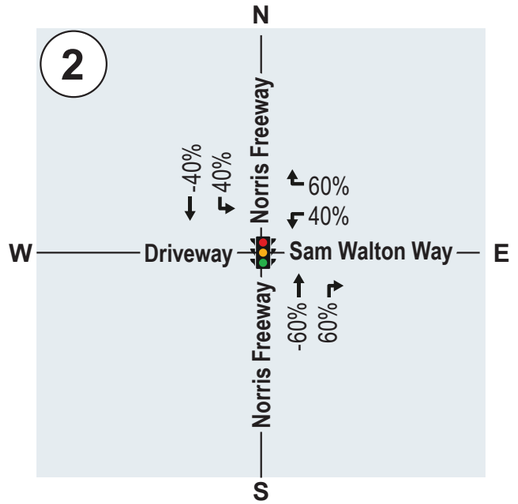
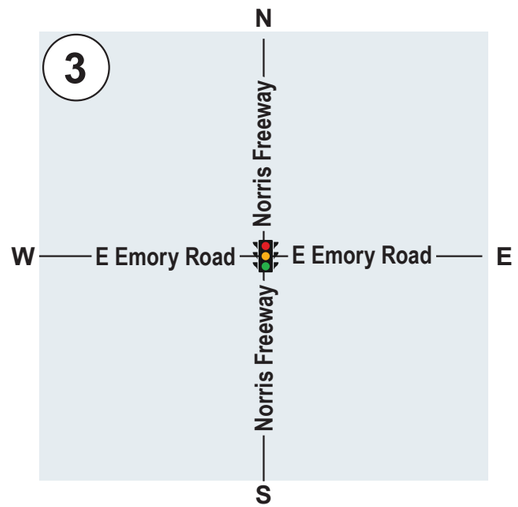
Traffic Impact Study

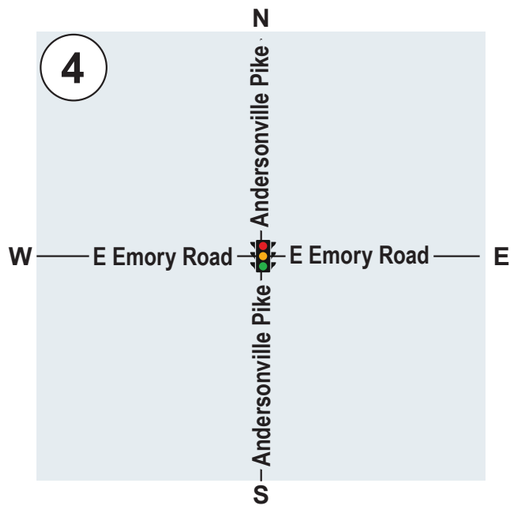
Trip Distribution & Assignment

Figure 6









LEGEND

(X)	Signalized Intersection ID		Existing Traffic Signal	XX%	% Entering Distribution
X	Unsignalized Intersection ID	STOP	Existing Stop Sign	(XX%)	% Exiting Distribution
→	Turning Movement	STOP	Proposed Stop Sign		

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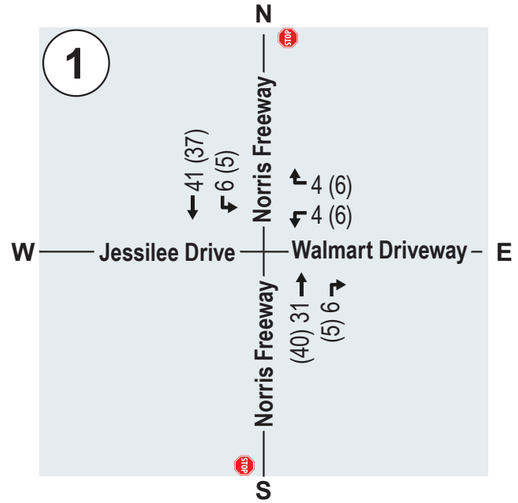
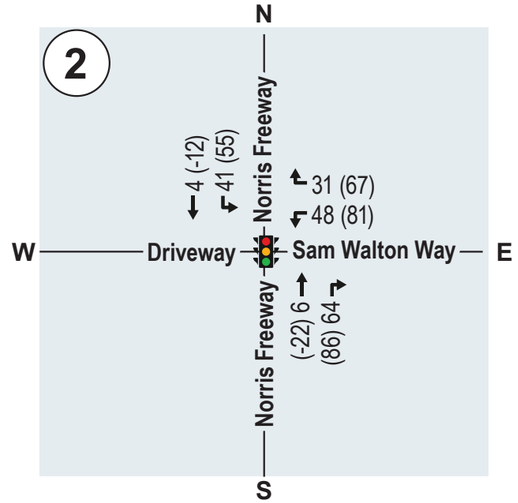
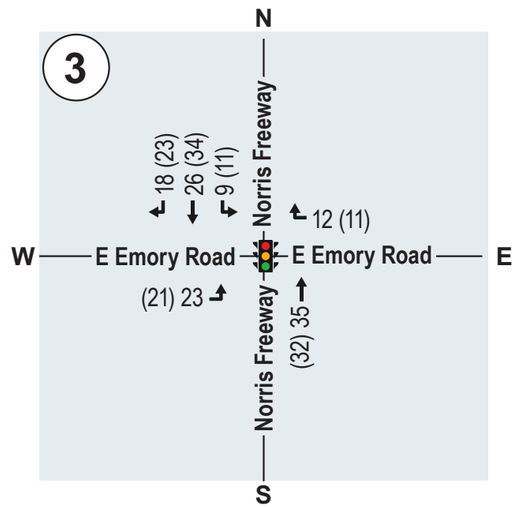
Traffic Impact Study

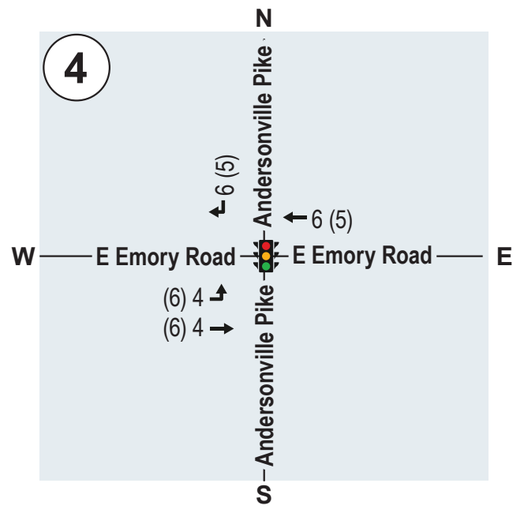
Pass-By Distribution & Assignment

Figure 7









LEGEND

(X)	Signalized Intersection ID		Existing Traffic Signal	XX	AM Peak Hour Traffic Volumes
X	Unsignalized Intersection ID	STOP	Existing Stop Sign	(XX)	PM Peak Hour Traffic Volumes
→	Turning Movement	STOP	Proposed Stop Sign		

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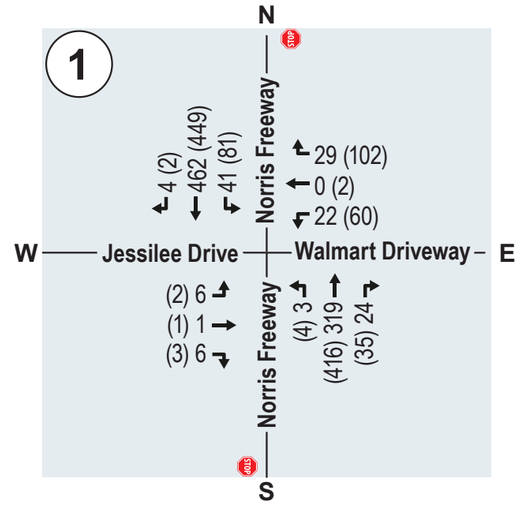
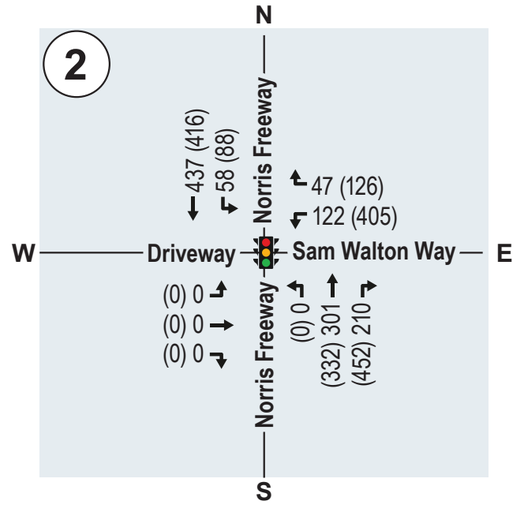
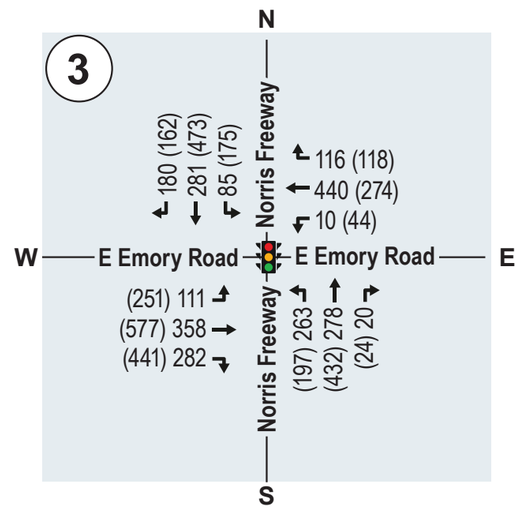
The Home Depot at North Fork Station
Traffic Impact Study

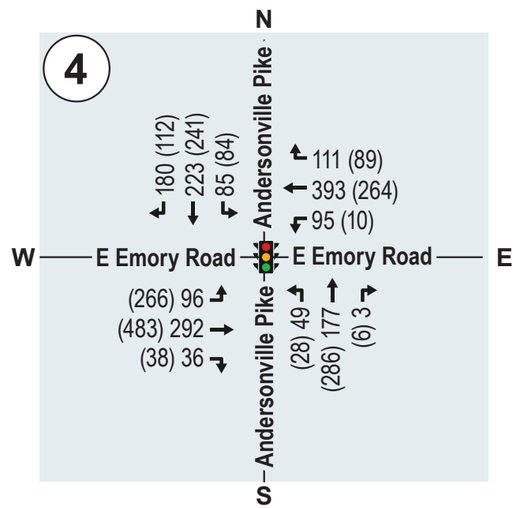
Project Trips

Figure 8









LEGEND

(X)	Signalized Intersection ID		Existing Traffic Signal	XX	AM Peak Hour Traffic Volumes
X	Unsignalized Intersection ID	STOP	Existing Stop Sign	(XX)	PM Peak Hour Traffic Volumes
→	Turning Movement	STOP	Proposed Stop Sign		

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The Home Depot at North Fork Station
Traffic Impact Study

Build Traffic Volumes

Figure 9

6.3 TURN LANE EVALUATION

The TDOT Highway System Access Manual recommends that exclusive right-turn lanes at signalized intersections should be considered when the right-turn volume exceeds 300 veh/hr and the adjacent through-lane volume also exceeds 300 veh/hr/ln or when the capacity analysis indicates that an exclusive right-turn lane will provide a benefit to the intersection level of service. The results of the turn lane warrants are summarized in **Table 11.**

Table 11: Turn Lane Warrants

#	Intersection	Movement	Scenario	AM	PM
3	Norris Freeway (US-441) at E Emory Rd	NBR	Build	✗	✗
		SBR			
3	Norris Freeway (US-441) at E Emory Rd	NBR	Horizon Build	✗	✗
		SBR			

6.4 TRAFFIC SIGNAL EVALUATION

The traffic signal evaluations were calculated based on methodology outlined in Section 3.5. The results of the signal warrants are summarized in **Table 12**. Detailed signal warrant calculations are provided in **Appendix E**.

Table 12: Signal Warrants

#	Intersection	Scenario	1A	1B	1C	2	3B
1	Norris Freeway (US-441) at Jessilee Dr / Walmart Driveway	No Build	✗	✗	✗	✗	✓
1	Norris Freeway (US-441) at Jessilee Dr / Walmart Driveway	Build	✗	✗	✗	✗	✓
1	Norris Freeway (US-441) at Jessilee Dr / Walmart Driveway	Horizon No Build	✗	✗	✗	✗	✓
1	Norris Freeway (US-441) at Jessilee Dr / Walmart Driveway	Horizon Build	✗	✗	✗	✗	✓

Based on the traffic signal analysis, the intersection of Norris Freeway (US-441) at Jessilee Dr / Walmart Driveway (Intersection 1) does not meet Warrants 1A, 1B, 1C, and 2 but does meet Warrant 3B under the Build, No Build, Horizon Build, and Horizon No Build conditions.

7.0 CAPACITY ANALYSIS

The capacity analyses were calculated based on methodology outlined in **Section 3.3**. The results of the capacity analysis are summarized in **Table 13** and **Table 14**. Detailed capacity reports are provided in **Appendix D**.

The results of the analysis show that all study intersections, except for the intersection of Norris Freeway at E. Emory Road, currently operate at an acceptable level of service.

Under No-Build conditions, the analysis shows that all intersections, except for the intersection of Norris Freeway at E. Emory Road and the westbound through-right movement at the intersection of E. Emory Road at Andersonville Pike, are projected to operate at an acceptable level of service.

Under Build conditions, the analysis shows that all intersections, except for the intersection of Norris Freeway at E. Emory Road and the westbound through-right movement at the intersection of E. Emory Road at Andersonville Pike, are projected to operate at an acceptable level of service.

Additional analysis was carried out to improve the operations at the intersection of the Norris Freeway at E. Emory Road. The following improvements were incorporated.

- Convert the existing southbound right turn lane to a shared through-right turn lane with approximately 425 feet of storage and 340 feet of lane change and deceleration distance to meet queue storage needs in the Horizon PM Peak.
- Convert the northbound right turn lane to a shared through-right turn lane with approximately 325 feet of storage and 340 feet of lane change and deceleration distance to meet queue storage needs in the Horizon PM Peak.

Under Improved Build conditions, the analysis shows that all intersections, except for the westbound through-right movement at the intersection of E. Emory Road at Andersonville Pike, are projected to operate at an acceptable level of service. The results of the Improved Build capacity analysis are summarized in **Table 15** and **Table 16.**

The build lane configuration is shown in **Figure 10**.

Table 13: LOS Summary

Intersection Num	Intersection Name	Movement/Approach/Intersection	Existing AM		Existing PM		No Build AM		No Build PM		Build AM		Build PM	
			LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1	Norris Freeway & Jessilee Dr/Walmart Driveway	NBL	A	8.2	A	8.2	A	8.3	A	8.3	A	8.4	A	8.4
		SBL	A	8	A	8.4	A	8	A	8.5	A	8.1	A	8.7
		EB	B	14.9	C	18	C	15.3	C	18.9	C	16.8	C	21.2
		WB	B	13.9	C	22.9	B	14.4	C	25.2	C	16.1	D	34.2
2	Norris Freeway & Driveway/Sam Walton Way	WBL	C	21.3	B	17.4	C	21	B	17.5	B	18.2	C	20.4
		WBR	C	20.8	B	15.8	C	20.5	B	15.9	B	17.6	B	18.1
		NBT	B	10.1	B	17.3	B	10.3	B	17.3	B	17.3	B	18.8
		NBR	A	9.6	B	16.9	A	9.9	B	17	B	16.5	B	19.1
		SBL	A	5.7	B	10.2	A	5.9	B	10.2	A	9.8	B	10
		SBT	A	6.1	B	11	A	6.3	B	11.1	B	10.4	B	10.3
		Intersection	A	9.2	B	15.3	A	9.4	B	15.4	B	14.3	B	16.8
3	Norris Freeway & E Emory Rd	EBL	C	24.2	C	28.4	C	25.9	C	30.6	C	28.8	C	34.6
		EBT	C	25.2	D	43.2	C	26.4	D	46.6	C	27.5	D	47.7
		EBR	C	24.8	D	40.5	C	26	D	43.2	C	27.1	D	44.1
		WBL	C	20.5	C	31.3	C	21.3	C	32.9	C	22.8	C	33.9
		WBTR	C	32.8	D	41.9	C	34.9	D	44.5	D	38.6	D	47.9
		NBL	E	78.9	E	78.8	E	80	E	80	E	80	E	80
		NBT	E	57.6	F	81.3	E	57.1	F	82.8	E	62.6	F	98
		SBL	E	75.2	F	110.7	E	74.9	F	120.2	E	74.9	F	138.4
		SBT	F	84.3	E	72.7	F	85.8	E	76.2	F	93.8	F	89.9
		Intersection	D	46.3	E	57.4	D	47.5	E	60.4	D	51	E	67.3
4	Andersonville Pike & E Emory Rd	EBL	C	30.4	C	27.3	C	31.5	C	28.3	C	31.9	C	28.9
		EBTR	D	36.8	D	35.5	D	37.4	D	36.3	D	37.6	D	36.4
		WBL	C	26	C	30.3	C	26.3	C	30.7	C	26.3	C	30.9
		WBTR	D	53.1	D	41.9	E	57.1	D	43.1	E	58.8	D	43.6
		NBL	C	27.1	C	29.4	C	27.6	C	29.9	C	27.8	C	30.1
		NBTR	C	31.3	D	38.6	C	31.5	D	39.4	C	31.6	D	39.6
		SBL	C	24.5	C	28.6	C	24.6	C	29.1	C	24.6	C	29.2
		SBTR	D	42.4	D	40.2	D	44	D	41.4	D	44.7	D	41.9
		Intersection	D	40.4	D	36.5	D	42.2	D	37.4	D	42.9	D	37.8

Table 14: Queue Summary

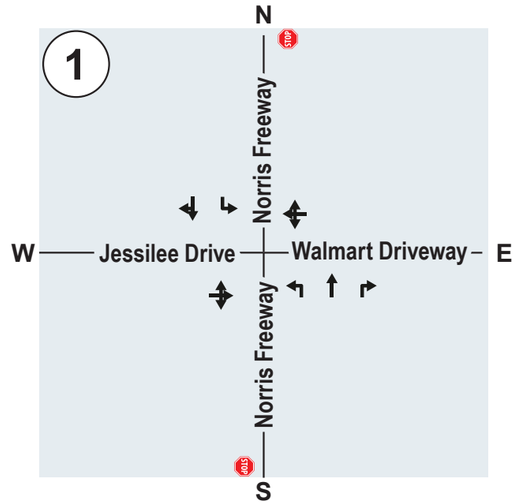
			Existing AM		Existing PM		No Build AM		No Build PM		Build AM		Build PM	
Intersection Num	Intersection Name	Movement/Approach/Intersection	Queue	Storage	Queue	Storage	Queue	Storage	Queue	Storage	Queue	Storage	Queue	Storage
1	Norris Freeway & Jessilee Dr/Walmart Driveway	NBL	0	115	0	115	0	115	0	115	0	115	0	115
		SBL	2.5	270	5	270	2.5	270	5	270	2.5	270	7.5	270
2	Norris Freeway & Driveway/Sam Walton Way	WBL	26	145	94	145	26	145	98	145	40	145	132	145
		NBT	77		97		81		99		88		96	
		NBR	30	190	56	190	32	190	56	190	46	190	61	190
		SBL	11	220	19	220	11	220	19	220	29	220	40	220
		SBT	74		78		77		81		83		77	
3	Norris Freeway & E Emory Rd	EBL	71	210	174	210	73	210	180	210	89	210	197	210
		EBT	349		666		360		701		360		701	
		EBR	56		162		57		175		57		175	
		WBL	15	55	42	55	15	55	43	55	15	55	43	55
		WBTR	621		407		647		423		671		435	
		NBL	135	195	87	195	139	195	90	195	139	195	90	195
		NBT	395		592		416		619		513		687	
		SBL	94		193		96		211		106		237	
		SBT	396		579		413		608		474		679	
		SBR	52	220	13	220	57	220	16	220	73	220	37	220
4	Andersonville Pike & E Emory Rd	EBL	86	205	210	205	90	205	220	205	95	205	225	205
		EBTR	366		546		385		578		390		586	
		WBL	87	150	16	150	92	150	16	150	92	150	16	150
		WBTR	665		386		714		405		734		411	
		NBL	52	155	36	155	55	155	37	155	55	155	37	155
		NBTR	198		323		209		337		209		337	
		SBL	82	70	84	70	85	70	86	70	85	70	86	70
		SBTR	441		367		467		384		476		391	

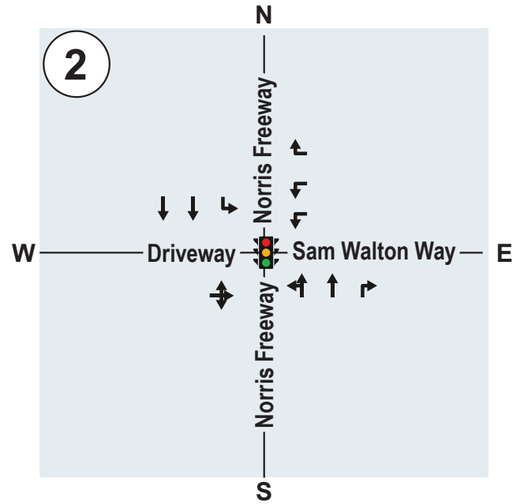
Table 15: Improved LOS Summary

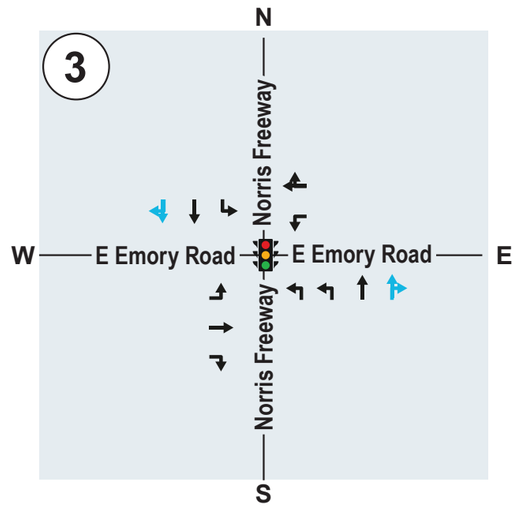
Intersection Num	Intersection Name	Movement/Approach/Intersection	Build AM Improved		Build PM Improved	
			LOS	Delay	LOS	Delay
3	Norris Freeway & E Emory Rd	EBL	C	22.1	D	24.5
		EBT	C	21.5	D	35.4
		EBR	C	21.2	D	33.4
		WBL	B	17.7	D	26
		WBTR	C	31	D	35.9
		NBL	E	76.3	E	69.5
		NBT	D	49.1	E	58.5
		SBL	E	63.9	E	77.6
		SBT	D	53.6	D	50.5
		Intersection	D	39.5	D	44.6
4	Andersonville Pike & E Emory Rd	EBL	C	32.2	C	25.7
		EBTR	D	37.1	C	33.2
		WBL	C	26.9	C	28.8
		WBTR	D	49.7	D	39.5
		NBL	C	33.9	C	34.3
		NBTR	D	37.8	D	45
		SBL	C	30.2	C	33.5
		SBTR	D	52.7	D	48.3
		Intersection	D	43.2	D	37.9

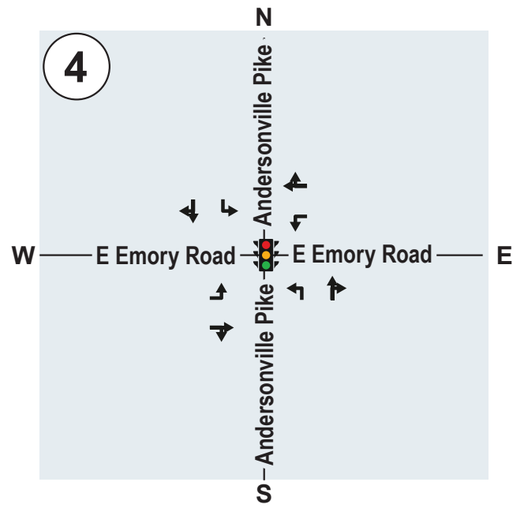
Table 16: Improved Queue Summary

Intersection Num	Intersection Name	Movement/Approach/Intersection	Build AM Improved		Build PM Improved	
			Queue	Storage	Queue	Storage
3	Norris Freeway & E Emory Rd	EBL	87	210	202	210
		EBT	359		752	
		EBR	60		187	
		WBL	15	55	44	55
		WBT	727		469	
		NBL	199	195	129	195
		NBT	171		247	
		SBL	128		244	
		SBT	218		316	
4	Andersonville Pike & E Emory Rd	EBL	98	205	214	205
		EBT	389		564	
		WBL	96	150	15	150
		WBT	661		412	
		NBL	61	155	41	155
		NBT	230		362	
		SBL	95	70	96	70
		SBT	523		432	









LEGEND

(X) Signalized Intersection ID	Existing Traffic Signal	Existing Lane Configuration
X Unsignalized Intersection ID	STOP Existing Stop Sign	Build Lane Configuration
	STOP Proposed Stop Sign	

Kimley»Horn	The Home Depot at North Fork Station Traffic Impact Study	Build Intersection Geometry	Figure 10

8.0 HORIZON YEAR ANALYSES

In addition to the built-out year analyses, horizon year analyses were completed to evaluate traffic 5 years after the opening of the project. The horizon year analyses considered the following scenarios:

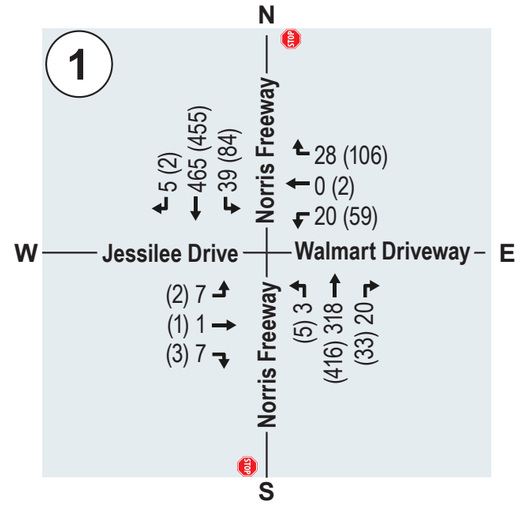
- Projected 2033 Horizon Year No-Build Conditions
  - Existing traffic counts grown to the horizon year at a standard growth rate plus traffic associated with nearby approved developments and proposed lane configurations incorporating improvements from other developments and/or the local agencies.

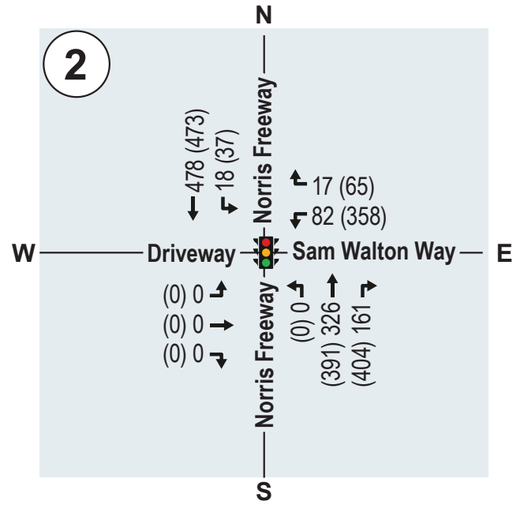
- Projected 2033 Horizon Year Build Conditions
  - Existing traffic counts grown to the horizon year at a standard growth rate plus traffic associated with nearby approved developments and the proposed development and proposed lane configurations incorporating improvements from other developments and/or the local agencies.

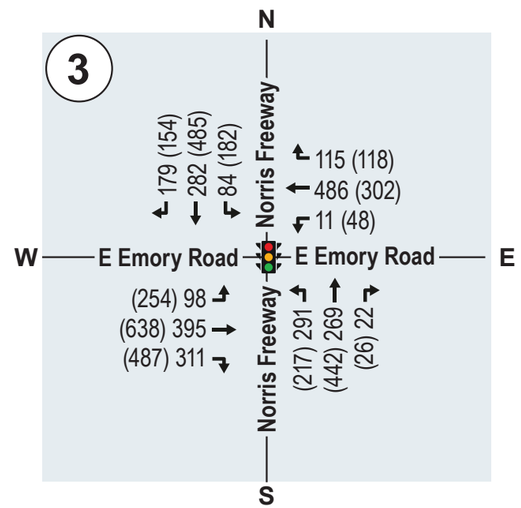
To account for background traffic, the existing traffic volumes were increased by **2%** per year to account for the expected background growth through the horizon year. In addition to standard background growth, trips associated with approved developments detailed in Section 5.1 were also incorporated into the volume projections.

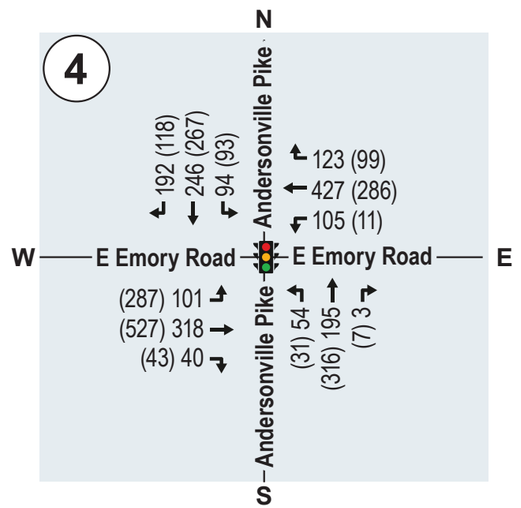
Figure 11 shows No Build Horizon volumes and **Figure 12** shows Build Horizon volumes. The results of the horizon year analyses are summarized in **Table 17** and **Table 18**.

Capacity results of the horizon year analyses are summarized in **Appendix F**.









LEGEND

(X)	Signalized Intersection ID		Existing Traffic Signal	XX	AM Peak Hour Traffic Volumes
X	Unsignalized Intersection ID	STOP	Existing Stop Sign	(XX)	PM Peak Hour Traffic Volumes
→	Turning Movement				

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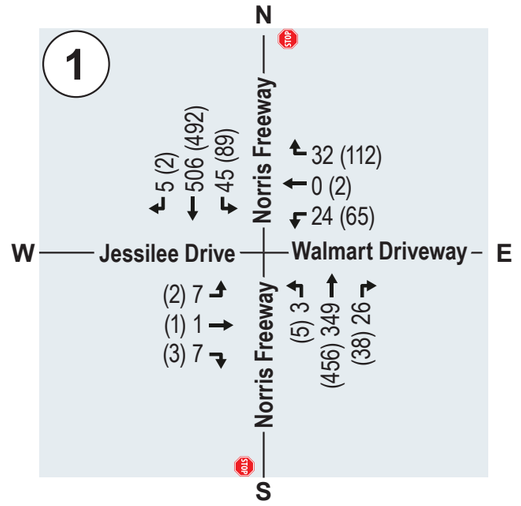
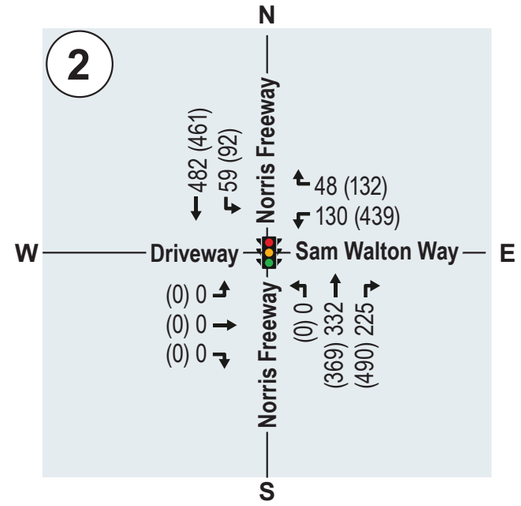
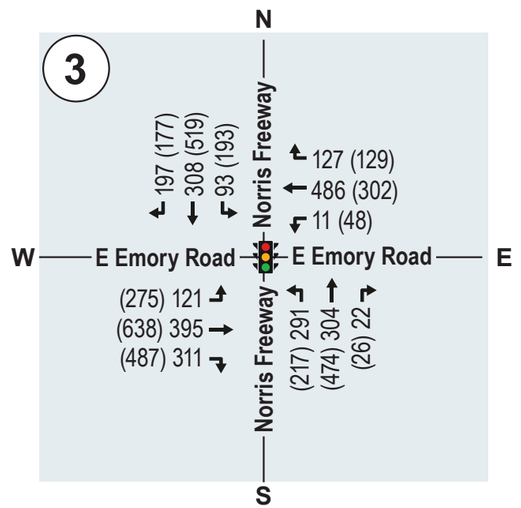
The Home Depot at North Fork Station
Traffic Impact Study

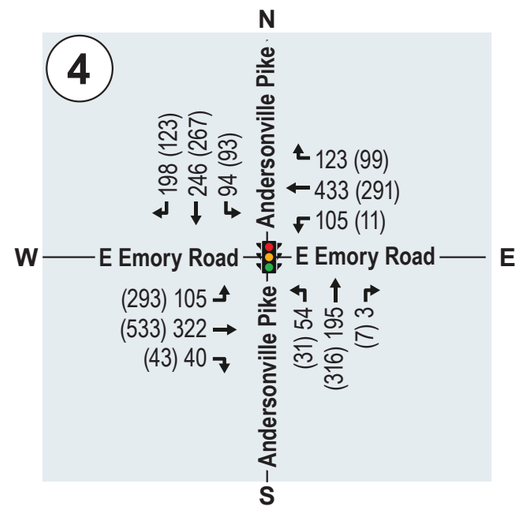
No-Build Horizon Traffic Volumes

Figure 11









LEGEND

(X)	Signalized Intersection ID		Existing Traffic Signal	XX	AM Peak Hour Traffic Volumes
X	Unsignalized Intersection ID	STOP	Existing Stop Sign	(XX)	PM Peak Hour Traffic Volumes
→	Turning Movement	STOP	Proposed Stop Sign		

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The Home Depot at North Fork Station
Traffic Impact Study

Build Horizon Traffic Volumes

Figure 12

Table 17: Horizon LOS Summary

			Horizon No Build AM		Horizon No Build PM		Horizon Build AM		Horizon Build PM		Horizon Build AM Improved		Horizon Build PM Improved	
Intersection Num	Intersection Name	Movement/Approach/Intersection	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1	Norris Freeway & Jessilee Dr/Walmart Driveway	NBL	A	8.4	A	8.4	A	8.5	A	8.5				
		SBL	A	8.1	A	8.7	A	8.2	A	8.9				
		EB	C	16.8	C	21.7	C	18.5	C	24.6				
		WB	C	15.7	E	35	C	17.8	F	53.7				
2	Norris Freeway & Driveway/Sam Walton Way	WBL	C	20.4	B	18.9	B	18.2	C	21.1				
		WBR	C	19.9	B	16.9	B	17.6	B	18.5				
		NBT	B	11	B	18	B	17.5	B	18.8				
		NBR	B	10.4	B	17.6	B	16.6	B	19.1				
		SBL	A	6.2	A	9.9	A	9.8	A	9.9				
		SBT	A	6.8	B	10.9	B	10.6	B	10.4				
		Intersection	A	9.8	B	16	B	14.5	B	17				
3	Norris Freeway & E Emory Rd	EBL	C	31.3	D	38	D	36.7	D	45.4	D	28.7	C	32.5
		EBT	C	29.3	E	56.2	C	29.3	E	56.2	C	24.7	D	43.3
		EBR	C	28.8	D	49.3	C	28.8	D	49.3	C	24.3	D	39.4
		WBL	C	23.3	D	35.9	C	23.8	D	36.4	C	19.8	C	29.5
		WBTR	D	40	D	49.8	D	42.4	D	53.1	D	40.1	D	41.1
		NBL	F	86.9	F	85.4	F	86.9	F	85.4	E	66.5	E	65.5
		NBT	E	58.1	F	104.1	E	71.3	F	127.9	D	47..6	E	68.1
		SBL	E	74.5	F	150.4	E	78.2	F	170.9	E	64.3	E	76.2
		SBT	F	94.6	F	101.3	F	118.9	F	124.1	D	53	D	52.4
		Intersection	D	52	E	73.5	E	58.1	F	83.4	D	41.6	D	49.8
4	Andersonville Pike & E Emory Rd	EBL	C	34.4	C	33	C	34.7	C	34.1	C	34.9	C	30.7
		EBTR	D	39.8	D	39	D	40	D	39.2	D	37.5	D	38
		WBL	C	27	C	31.9	C	27.1	C	32.1	C	26.7	C	32.1
		WBTR	E	75.3	D	46.8	F	79.4	D	47.5	D	53.9	D	45.9
		NBL	C	29.1	C	31.2	C	29.4	C	31.4	D	37.9	C	34.9
		NBTR	C	32.5	D	41.9	C	32.5	D	42.1	D	41.2	D	46.2
		SBL	C	25.1	C	30.4	C	25.1	C	30.6	C	32.3	C	34
		SBTR	D	49.9	D	45.2	D	51	D	45.9	E	64.4	D	50.6
		Intersection	D	49.6	D	40.7	D	51.2	D	41.2	D	47.9	D	41.8

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Table 18: Horizon Queue Summary

			Horizon No Build AM		Horizon No Build PM		Horizon Build AM		Horizon Build PM		Horizon Build AM Improved		Horizon Build PM Improved	
Intersection Num	Intersection Name	Movement/Approach/Intersection	95th Percentile Queue	Storage	95th Percentile Queue	Storage	95th Percentile Queue	Storage	95th Percentile Queue	Storage	95th Percentile Queue	Storage	95th Percentile Queue	Storage
1	Norris Freeway & Jessilee Dr/Walmart Driveway	NBL	0	115	0	115	0	115	0	115				
		SBL	2.5	270	7.5	270	2.5	270	7.5	270				
2	Norris Freeway & Driveway/Sam Walton Way	WBL	28		109		42		144					
		NBT	88		106		94		104					
		NBR	38		57		47		62					
		SBL	13		20		30		41					
		SBT	87		87		90		83					
3	Norris Freeway & E Emory Rd	EBL	77		193		94		211		90		83	
		EBT	395		789		395		789		105		220	
		EBR	58		217		58		217		347		714	
		WBL	16		46		16		46		58		166	
		WBT	769		461		798		475		14		39	
		NBL	149		96		154		96		694		383	
		NBT	472		688		566		757		134		80	
		SBL	103		239		112		264		171		229	
		SBT	459		677		522		748		95		177	
		SBR	70		27		89		47		243		313	
4	Andersonville Pike & E Emory Rd	EBL	105		236		110		242		110		242	
		EBT	418		633		421		642		421		642	
		WBL	97		17		97		17		97		17	
		WBT	798		438		819		444		819		444	
		NBL	57		39		58		39		58		39	
		NBT	224		362		225		362		225		362	
		SBL	87		88		87		88		87		88	
		SBT	466		393		476		398		476		398	

9.0 RECOMMENDATIONS

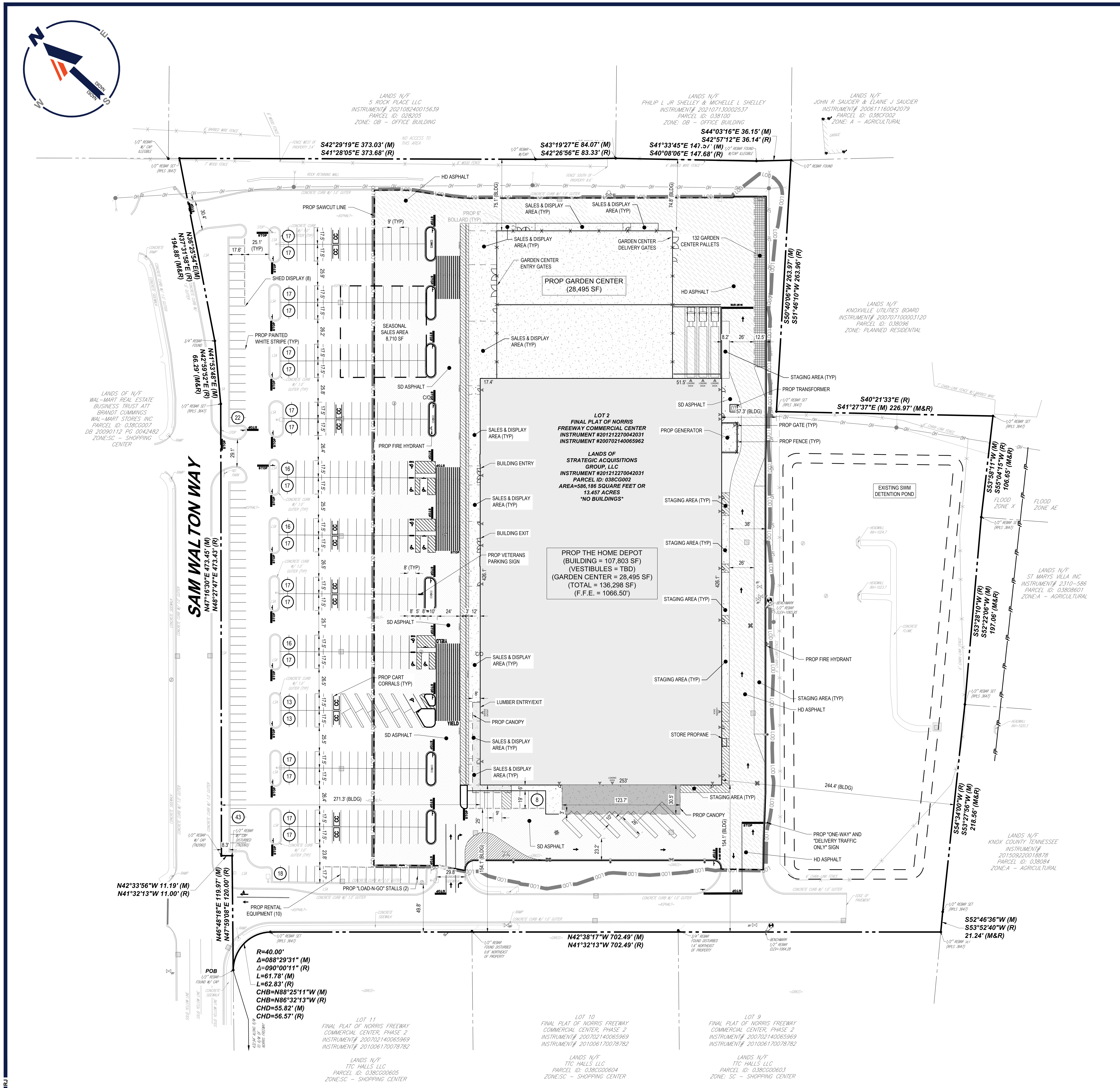
9.1 DEVELOPMENT IMPROVEMENT RECOMMENDATIONS

The **Home Depot at North Fork Station** development should contribute a proportional share of the cost of design and construction of the following improvements.

- Intersection 3 – Norris Freeway (US-441) at E. Emory Road
    - Convert the existing southbound right turn lane to a shared through-right turn lane with approximately 425 feet of storage and 340 feet of lane change and deceleration distance to meet queue storage needs in the Horizon PM Peak.
    - Convert the northbound right turn lane to a shared through-right turn lane with approximately 325 feet of storage and 340 feet of lane change and deceleration distance to meet queue storage needs in the Horizon PM Peak. Note that required storage, lane change, and deceleration distance exceed the spacing between Intersection 3 and the retail driveway to the south.
    - Reconfigure northwest and southeast corners of the intersection to continue to allow for right turn channelization.
    - Modify traffic signal to allow for new lane configuration including, but not limited to, new span wire poles and pedestrian infrastructure on the northwest and southeast corners.
- Intersection 4 – E. Emory Road at Andersonville Pike
    - Adjust signal timing to reduce delay for overcapacity movements, including the westbound through-right movement.

APPENDIX A

Site Plan



ZONING TABLE

ZONE: SC - SHOPPING CENTER ZONE
USE: HARDWARE STORE
PARCEL I.D. #: 038CG002

APPLICANT / OWNER INFORMATION

APPLICANT:	THE HOME DEPOT 2455 PACES FERRY ROAD ATLANTA, GEORGIA 30339
PROPERTY OWNER:	STRATEGIC ACQUISITIONS GROUP, LLC 6480 KINGSTON PIKE KNOXVILLE, TN 37919

BULK REQUIREMENTS

ITEM	CODE	PERMITTED	EXISTING	PROPOSED
MIN YARD SETBACKS				
FRONT YARD	§ 5.34.05. A	60.0' FROM STREET R/W	---	271.3'
SIDE YARD	§ 5.34.05. A	50.0' FROM SIDE LOT LINE	---	74.8'
REAR YARD	§ 5.34.05. A	50.0' FROM REAR LOT LINE	---	57.3'
MAX PERMITTED HEIGHT	§ 5.34.04.	40.0'	---	N/A

PARKING REQUIREMENTS

ITEM	CODE	PERMITTED	EXISTING	PROPOSED
MIN STALL SIZE	§ 3.51.01	17.5'	18'	17.5'
AISLE WIDTH	§ 3.51.01	26.0'	25.0'	26.0'
MIN FRONT YARD PARKING SETBACK	§ 3.51.03.	10.0' FROM FRONT YARD	8.3'	EXISTING TO REMAIN
MIN SIDE YARD PARKING SETBACK	§ 3.51.03.	10.0' FROM SIDE OF RESIDENTIAL ZONE	49.8'	EXISTING TO REMAIN
MIN REAR YARD PARKING SETBACK	§ 3.51.03.	5.0' FROM REAR OF RESIDENTIAL ZONE	364.1'	EXISTING TO REMAIN
MIN ACCESS DRIVEWAY WIDTH	§ 3.51.02.	40.0'	29.0'	EXISTING TO REMAIN
MAX ACCESS DRIVEWAY WIDTH	§ 3.51.02.	60.0'	44.3'	EXISTING TO REMAIN
MIN ACCESS DRIVEWAY RADIUS	§ 3.51.02.	25'	22.1'	EXISTING TO REMAIN
MAX ACCESS DRIVEWAY RADIUS	§ 3.51.02.	50'	30.6'	EXISTING TO REMAIN
MIN NUMBER OF STALLS	§ 3.50.10	682 STALLS	407 STALLS (INCL. 10 ADA STALLS)	454 STALLS (INCL. 10 ADA STALLS)

REQUIRED: SHOPPING CENTER
REQUIRED = 5 SPACES FOR EVERY 1,000 SF OF GROSS LEASABLE FLOOR AREA
REQUIRED = (136,298 SF / 1,000 SF) * 5 = 681.49 SPACES= 682 SPACES

PROVIDED = 454 SPACES (INCL. 10 ADA STALLS)

VARIANCE REQUIRED

PAVEMENT HATCH LEGEND:

- PROPOSED STANDARD DUTY ASPHALT
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED STANDARD DUTY CONCRETE

THIS PLAN TO BE UTILIZED FOR SITE LAYOUT PURPOSES ONLY

SCALE: 1" = 50'

BOHLER™
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY / CHECKED BY

TENNESSEE
YOU MUST CALL 811 BEFORE ANY EXCAVATION WHETHER IT'S ON PRIVATE OR PUBLIC LAND.
1-800-351-1111
www.tenn811.org

PRELIMINARY

THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. IT IS NOT INTENDED AS A CONSTRUCTION DOCUMENT UNLESS INDICATED OTHERWISE.

PROJECT No.:	TNA250032.00-0A
DRAWN BY:	RJ/LG
CHECKED BY:	MG/KE
DATE:	5/18/2026
CAD I.D.:	P-PCVL-PROP

PROJECT:

PRELIMINARY CIVIL PLANS

FOR

PROPOSED DEVELOPMENT

7550 NORRIS FWY
KNOXVILLE, TN 37938
PARCEL I.D. #: 038CG002

BOHLER
209 10TH AVENUE S, SUITE 534
NASHVILLE, TN 37203
Phone: (629) 235-4040
www.BohlerEngineering.com

SHEET TITLE:

SITE PLAN

SHEET NUMBER:

C-301

ORG. DATE - 5/18/2026

APPENDIX B

Traffic Counts

Peak Hour Turning Movement Count

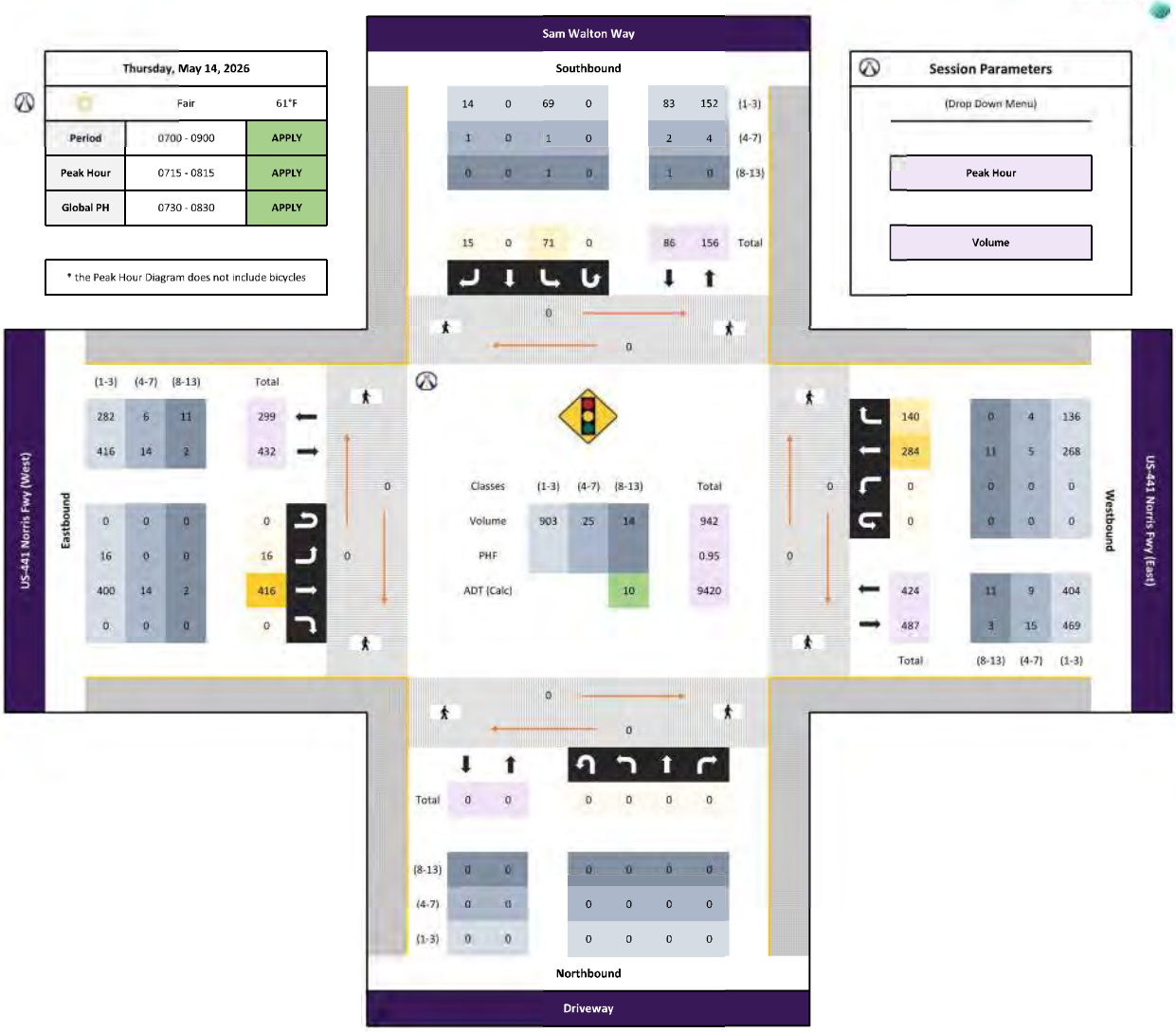
Knox County, TN

Click here for Map

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Thursday, May 14, 2026		
Fair		61°F
Period	0700 - 0900	APPLY
Peak Hour	0715 - 0815	APPLY
Global PH	0730 - 0830	APPLY

* the Peak Hour Diagram does not include bicycles



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Sam Walton Way						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	0	0	-	0	0	15	0	0	-	0	15	1	120	0	-	0	121	0	64	19	-	0	83	219
0730 - 0745	0	0	0	-	0	0	11	0	4	-	0	15	4	99	0	-	0	103	0	87	41	-	0	128	246
0745 - 0800	0	0	0	-	0	0	19	0	7	-	0	26	6	116	0	-	0	122	0	60	40	-	0	100	248
0800 - 0815	0	0	0	-	0	0	26	0	4	-	0	30	5	81	0	-	0	86	0	73	40	-	0	113	229
Total	0	0	0	0	0	0	71	0	15	0	0	86	16	416	0	0	0	432	0	284	140	0	0	424	942
Approach %	0.00	0.00	0.00	0.00	0.00	-	82.56	0.00	17.44	0.00	0.00	-	3.70	96.30	0.00	0.00	0.00	-	0.00	66.98	33.02	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.68	0.00	0.54	0.00	0.00	**0.72**	0.67	0.87	0.00	0.00	0.00	**0.89**	0.00	0.82	0.85	0.00	0.00	**0.83**	**0.95**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Sam Walton Way						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	0	0	-	0	0	15	0	0	-	0	15	1	116	0	-	0	117	0	62	19	-	0	81	213
0730 - 0745	0	0	0	-	0	0	10	0	3	-	0	13	4	95	0	-	0	99	0	80	38	-	0	118	230
0745 - 0800	0	0	0	-	0	0	19	0	7	-	0	26	6	112	0	-	0	118	0	57	39	-	0	96	240
0800 - 0815	0	0	0	-	0	0	25	0	4	-	0	29	5	77	0	-	0	82	0	69	40	-	0	109	220
Total	0	0	0	0	0	0	69	0	14	0	0	83	16	400	0	0	0	416	0	268	136	0	0	404	903
Approach %	0.00	0.00	0.00	0.00	0.00	-	83.13	0.00	16.87	0.00	0.00	-	3.85	96.15	0.00	0.00	0.00	-	0.00	66.34	33.66	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.69	0.00	0.50	0.00	0.00	**0.72**	0.67	0.86	0.00	0.00	0.00	**0.88**	0.00	0.84	0.85	0.00	0.00	**0.86**	**0.94**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Sam Walton Way						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	4	0	-	0	4	0	1	0	-	0	1	5
0730 - 0745	0	0	0	-	0	0	1	0	1	-	0	2	0	3	0	-	0	3	0	2	3	-	0	5	10
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	0	3	0	0	1	-	0	1	4
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	4	0	-	0	4	0	2	0	-	0	2	6
Total	0	0	0	0	0	0	1	0	1	0	0	2	0	14	0	0	0	14	0	5	4	0	0	9	25
Approach %	0.00	0.00	0.00	0.00	0.00	-	50.00	0.00	50.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	55.56	44.44	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.25	0.00	0.00	**0.25**	0.00	0.88	0.00	0.00	0.00	**0.88**	0.00	0.63	0.33	0.00	0.00	**0.45**	**0.63**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Sam Walton Way						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	1
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	5	0	-	0	5	6
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	3	0	-	0	3	4
0800 - 0815	0	0	0	-	0	0	1	0	0	-	0	1	0	0	0	-	0	0	0	2	0	-	0	2	3
Total	0	0	0	0	0	0	1	0	0	0	0	1	0	2	0	0	0	2	0	11	0	0	0	11	14
Approach %	0.00	0.00	0.00	0.00	0.00	-	100.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.25	0.00	0.00	0.00	0.00	**0.25**	0.00	0.50	0.00	0.00	0.00	**0.50**	0.00	0.55	0.00	0.00	0.00	**0.55**	**0.58**

Bicycles

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Sam Walton Way						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0800 - 0815	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

Knox County, TN

Marr Traffic DATA COLLECTION
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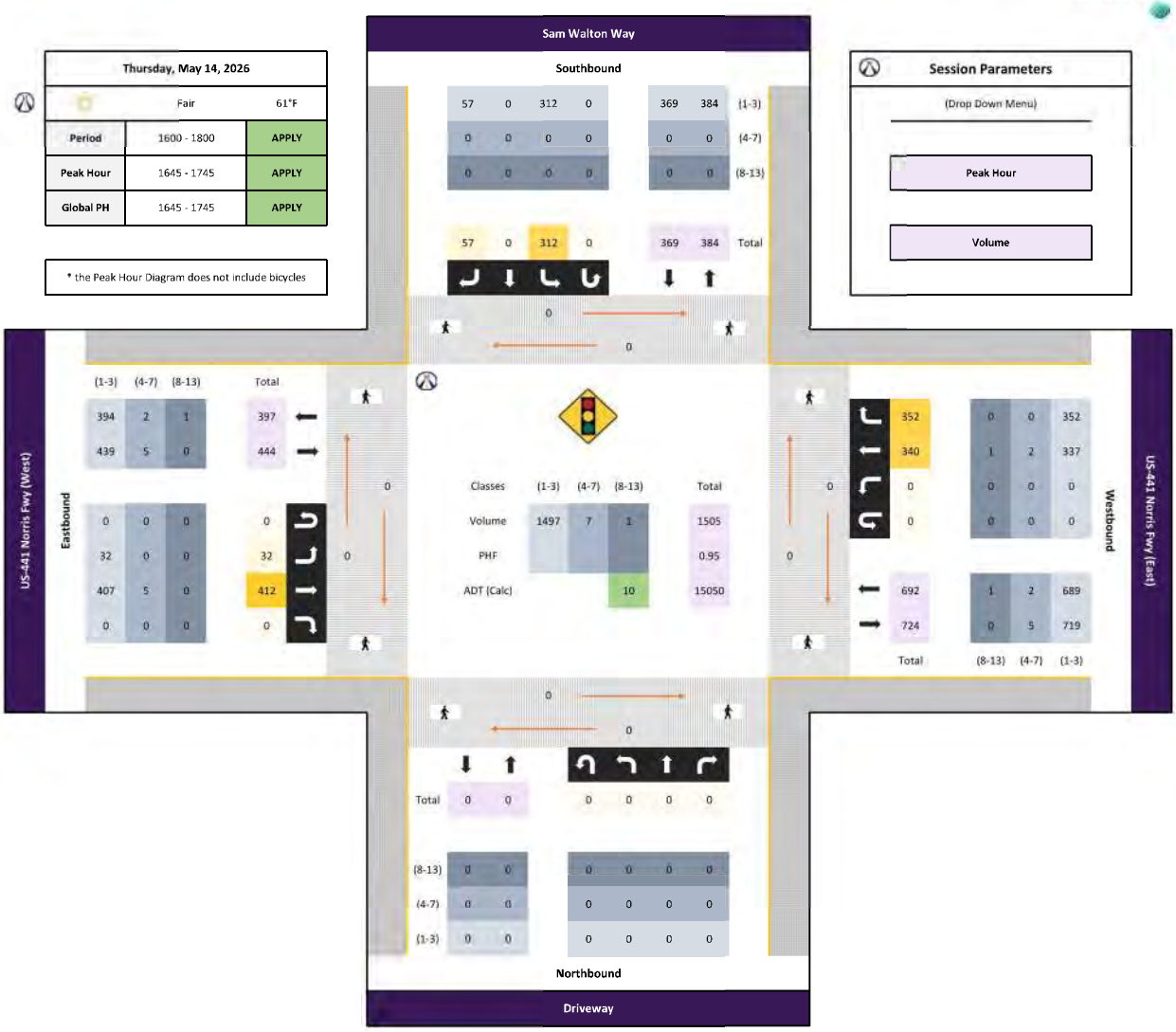
Thursday, May 14, 2026		
Fair		61°F
Period	1600 - 1800	APPLY
Peak Hour	1645 - 1745	APPLY
Global PH	1645 - 1745	APPLY

* the Peak Hour Diagram does not include bicycles



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Sam Walton Way						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1645 - 1700	0	0	0	-	0	0	87	0	10	-	0	97	9	94	0	-	0	103	0	88	91	-	0	179	379
1700 - 1715	0	0	0	-	0	0	72	0	16	-	0	88	4	108	0	-	0	112	0	79	81	-	0	160	360
1715 - 1730	0	0	0	-	0	0	77	0	14	-	0	91	11	121	0	-	0	132	0	84	89	-	0	173	396
1730 - 1745	0	0	0	-	0	0	76	0	17	-	0	93	8	89	0	-	0	97	0	89	91	-	0	180	370
Total	0	0	0	0	0	0	312	0	57	0	0	369	32	412	0	0	0	444	0	340	352	0	0	692	1505
Approach %	0.00	0.00	0.00	0.00	0.00	-	84.55	0.00	15.45	0.00	0.00	-	7.21	92.79	0.00	0.00	0.00	-	0.00	49.13	50.87	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.90	0.00	0.84	0.00	0.00	**0.95**	0.73	0.85	0.00	0.00	0.00	**0.84**	0.00	0.96	0.97	0.00	0.00	**0.96**	**0.95**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Sam Walton Way						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1645 - 1700	0	0	0	-	0	0	87	0	10	-	0	97	9	91	0	-	0	100	0	88	91	-	0	179	376
1700 - 1715	0	0	0	-	0	0	72	0	16	-	0	88	4	108	0	-	0	112	0	78	81	-	0	159	359
1715 - 1730	0	0	0	-	0	0	77	0	14	-	0	91	11	121	0	-	0	132	0	84	89	-	0	173	396
1730 - 1745	0	0	0	-	0	0	76	0	17	-	0	93	8	87	0	-	0	95	0	87	91	-	0	178	366
Total	0	0	0	0	0	0	312	0	57	0	0	369	32	407	0	0	0	439	0	337	352	0	0	689	1497
Approach %	0.00	0.00	0.00	0.00	0.00	-	84.55	0.00	15.45	0.00	0.00	-	7.29	92.71	0.00	0.00	0.00	-	0.00	48.91	51.09	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.90	0.00	0.84	0.00	0.00	**0.95**	0.73	0.84	0.00	0.00	0.00	**0.83**	0.00	0.96	0.97	0.00	0.00	**0.96**	**0.95**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Sam Walton Way						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	0	3	0	0	0	-	0	0	3
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	1
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1730 - 1745	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	0	2	0	1	0	-	0	1	3
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	2	0	0	0	2	7
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.42	0.00	0.00	0.00	**0.42**	0.00	0.50	0.00	0.00	0.00	**0.50**	**0.58**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Sam Walton Way						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1730 - 1745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.25	0.00	0.00	0.00	**0.25**	**0.25**

Bicycles

	Northbound						Southbound						Eastbound						Westbound						
	Driveway						Sam Walton Way						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	1.1	1.2	1.3		1.4	Total	1.5	1.6	1.7		1.8	Total	1.9	1.10	1.11		1.12	Total	1.13	1.14	1.15		1.16	Total	Total
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1730 - 1745	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION
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Knox County, TN

Site 1
Driveway
Sam Walton Way
US-441 Norris Fwy (West)
US-441 Norris Fwy (East)

Date
Thursday, May 14, 2026

Lat/Long
36.085716°, -83.938514°
Click here for Map

Weather
Fair
61°F
Click here for Detailed Weather

0700 - 0900 (Weekday 2h Session) (05-14-2026)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Driveway					Sam Walton Way					US-441 Norris Fwy (West)					US-441 Norris Fwy (East)					
TIME	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
0700 - 0715	0	0	0	0	0	18	0	1	0	19	2	88	0	0	90	0	49	26	0	75	184
0715 - 0730	0	0	0	0	0	15	0	0	0	15	1	120	0	0	121	0	64	19	0	83	219
0730 - 0745	0	0	0	0	0	11	0	4	0	15	4	99	0	0	103	0	87	41	0	128	246
0745 - 0800	0	0	0	0	0	19	0	7	0	26	6	116	0	0	122	0	60	40	0	100	248
Hourly Total	0	0	0	0	**0**	63	0	12	0	**75**	13	423	0	0	**436**	0	260	126	0	**386**	**897**
0800 - 0815	0	0	0	0	0	26	0	4	0	30	5	81	0	0	86	0	73	40	0	113	229
0815 - 0830	0	0	0	0	0	26	0	3	0	29	6	91	0	0	97	0	42	45	0	87	213
0830 - 0845	0	0	3	0	3	32	0	5	0	37	3	85	0	0	88	0	49	31	0	80	208
0845 - 0900	0	0	0	0	0	25	0	4	0	29	6	77	0	0	83	0	66	56	0	122	234
Hourly Total	0	0	3	0	**3**	109	0	16	0	**125**	20	334	0	0	**354**	0	230	172	0	**402**	**884**
Grand Total	0	0	3	0	**3**	172	0	28	0	**200**	33	757	0	0	**790**	0	490	298	0	**788**	**1781**
Approach %	0.00	0.00	100.00	0.00	-	86.00	0.00	14.00	0.00	-	4.18	95.82	0.00	0.00	-	0.00	62.18	37.82	0.00	-	
Intersection %	0.00	0.00	0.17	0.00	0.17	9.66	0.00	1.57	0.00	11.23	1.85	42.50	0.00	0.00	44.36	0.00	27.51	16.73	0.00	44.24	
Heavy Vehicle %	-	-	0	-	**0**	2	-	4	-	**2**	3	4	-	-	**4**	-	7	1	-	**5**	**4**
PHF	0.00	0.00	0.00	0.00	**0.00**	0.68	0.00	0.54	0.00	**0.72**	0.67	0.87	0.00	0.00	**0.89**	0.00	0.82	0.85	0.00	**0.83**	**0.95**
Peak Hour Total	0	0	0	0	**0**	71	0	15	0	**86**	16	416	0	0	**432**	0	284	140	0	**424**	**942**
Peak Hour HV %	0	0	0	0	**0**	3	0	7	0	**3**	0	4	0	0	**4**	0	6	3	0	**5**	**4**

1600 - 1800 (Weekday 2h Session) (05-14-2026)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Driveway					Sam Walton Way					US-441 Norris Fwy (West)					US-441 Norris Fwy (East)					
TIME	Left 1.1	Thru 1.2	Right 1.3	U-Turn 1.4	App Total	Left 1.5	Thru 1.6	Right 1.7	U-Turn 1.8	App Total	Left 1.9	Thru 1.10	Right 1.11	U-Turn 1.12	App Total	Left 1.13	Thru 1.14	Right 1.15	U-Turn 1.16	App Total	Int Total
1600 - 1615	0	0	0	0	0	82	0	14	0	96	6	104	0	0	110	0	58	102	0	160	366
1615 - 1630	0	0	0	0	0	82	0	9	0	91	1	86	0	0	87	0	88	95	0	183	361
1630 - 1645	0	0	0	0	0	82	0	16	0	98	2	98	0	0	100	0	84	81	0	165	363
1645 - 1700	0	0	0	0	0	87	0	10	0	97	9	94	0	0	103	0	88	91	0	179	379
Hourly Total	0	0	0	0	**0**	333	0	49	0	**382**	18	382	0	0	**400**	0	318	369	0	**687**	**1469**
1700 - 1715	0	0	0	0	0	72	0	16	0	88	4	108	0	0	112	0	79	81	0	160	360
1715 - 1730	0	0	0	0	0	77	0	14	0	91	11	121	0	0	132	0	84	89	0	173	396
1730 - 1745	0	0	0	0	0	76	0	17	0	93	8	89	0	0	97	0	89	91	0	180	370
1745 - 1800	0	0	0	0	0	71	0	16	0	87	6	106	0	0	112	0	72	74	0	146	345
Hourly Total	0	0	0	0	**0**	296	0	63	0	**359**	29	424	0	0	**453**	0	324	335	0	**659**	**1471**
Grand Total	0	0	0	0	**0**	629	0	112	0	**741**	47	806	0	0	**853**	0	642	704	0	**1346**	**2940**
Approach %	0.00	0.00	0.00	0.00	-	84.89	0.00	15.11	0.00	-	5.51	94.49	0.00	0.00	-	0.00	47.70	52.30	0.00	-	
Intersection %	0.00	0.00	0.00	0.00	0.00	21.39	0.00	3.81	0.00	25.20	1.60	27.41	0.00	0.00	29.01	0.00	21.84	23.95	0.00	45.78	
Heavy Vehicle %	-	-	-	-	-	0	-	0	-	**0**	0	2	-	-	**2**	-	1	0	-	**0**	**1**
PHF	0.00	0.00	0.00	0.00	**0.00**	0.90	0.00	0.84	0.00	**0.95**	0.73	0.85	0.00	0.00	**0.84**	0.00	0.96	0.97	0.00	**0.96**	**0.95**
Peak Hour Total	0	0	0	0	**0**	312	0	57	0	**369**	32	412	0	0	**444**	0	340	352	0	**692**	**1505**
Peak Hour HV %	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	0	1	0	0	**0**	**1**

Peak Hour Turning Movement Count

Click here for Map

Knox County, TN

Marr Traffic DATA COLLECTION

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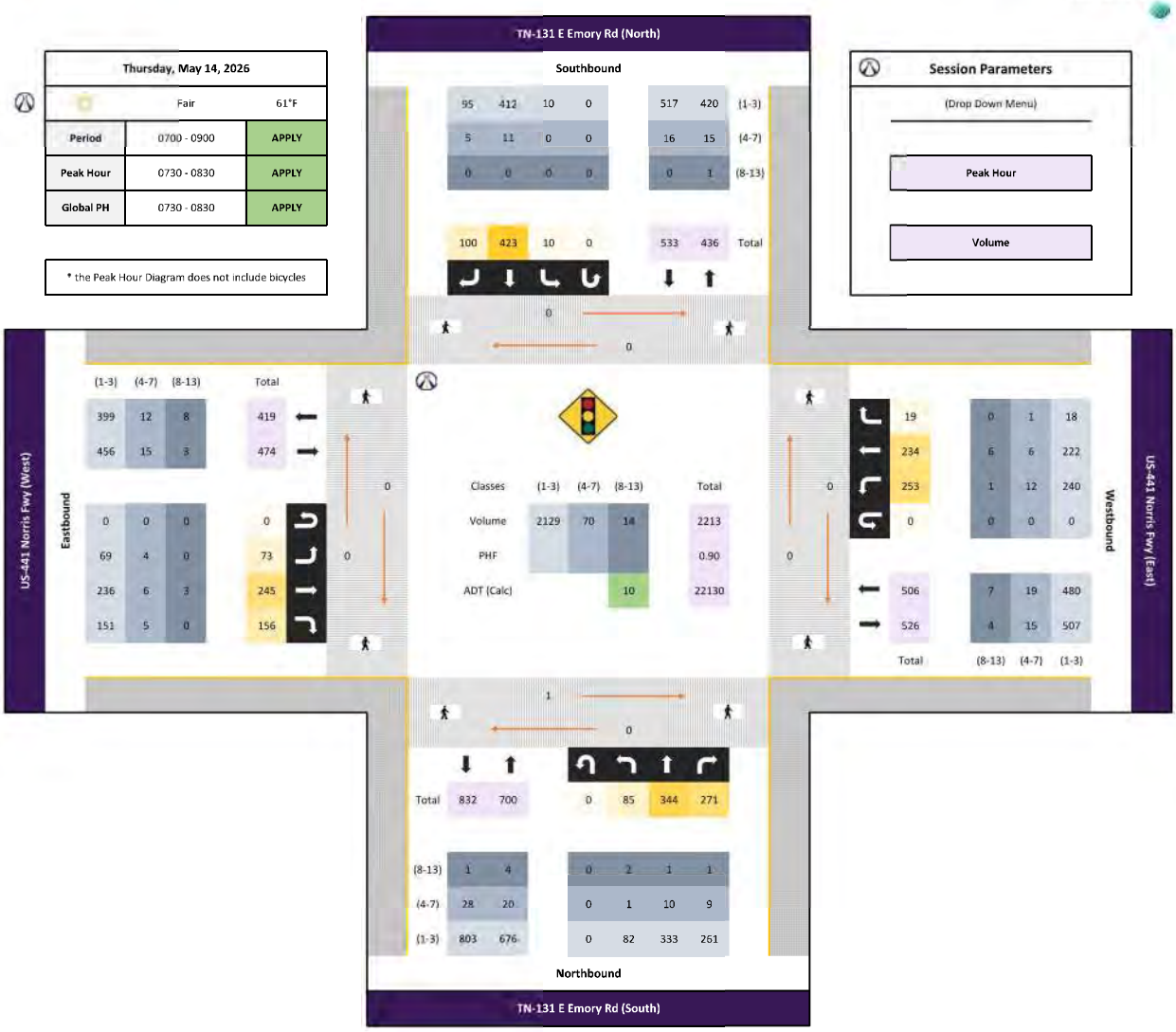
Thursday, May 14, 2026		
	Fair	61°F
Period	0700 - 0900	APPLY
Peak Hour	0730 - 0830	APPLY
Global PH	0730 - 0830	APPLY

* the Peak Hour Diagram does not include bicycles



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	2.1	2.2	2.3		2.4	Total	2.5	2.6	2.7		2.8	Total	2.9	2.10	2.11		2.12	Total	2.13	2.14	2.15		2.16	Total	Total
0730 - 0745	27	64	78	-	0	169	1	80	33	-	0	114	16	60	38	-	0	114	51	65	6	-	0	122	519
0745 - 0800	29	97	74	-	0	200	2	110	22	-	0	134	24	65	37	-	0	126	64	44	4	-	0	112	572
0800 - 0815	20	107	67	-	0	194	3	118	22	-	0	143	22	63	38	-	0	123	77	71	4	-	0	152	612
0815 - 0830	9	76	52	-	0	137	4	115	23	-	0	142	11	57	43	-	0	111	61	54	5	-	0	120	510
Total	85	344	271	0	0	700	10	423	100	0	0	533	73	245	156	0	0	474	253	234	19	0	0	506	2213
Approach %	12.14	49.14	38.71	0.00	0.00	-	1.88	79.36	18.76	0.00	0.00	-	15.40	51.69	32.91	0.00	0.00	-	50.00	46.25	3.75	0.00	0.00	-	
PHF	0.73	0.80	0.87	0.00	0.00	**0.88**	0.63	0.90	0.76	0.00	0.00	**0.93**	0.76	0.94	0.91	0.00	0.00	**0.94**	0.82	0.82	0.79	0.00	0.00	**0.83**	**0.90**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	2.1	2.2	2.3		2.4	Total	2.5	2.6	2.7		2.8	Total	2.9	2.10	2.11		2.12	Total	2.13	2.14	2.15		2.16	Total	Total
0730 - 0745	25	62	77	-	0	164	1	77	32	-	0	110	15	57	38	-	0	110	51	60	6	-	0	117	501
0745 - 0800	28	95	69	-	0	192	2	108	22	-	0	132	23	63	36	-	0	122	62	41	4	-	0	107	553
0800 - 0815	20	104	64	-	0	188	3	115	21	-	0	139	20	61	36	-	0	117	69	69	4	-	0	142	586
0815 - 0830	9	72	51	-	0	132	4	112	20	-	0	136	11	55	41	-	0	107	58	52	4	-	0	114	489
Total	82	333	261	0	0	676	10	412	95	0	0	517	69	236	151	0	0	456	240	222	18	0	0	480	2129
Approach %	12.13	49.26	38.61	0.00	0.00	-	1.93	79.69	18.38	0.00	0.00	-	15.13	51.75	33.11	0.00	0.00	-	50.00	46.25	3.75	0.00	0.00	-	
PHF	0.73	0.80	0.85	0.00	0.00	**0.88**	0.63	0.90	0.74	0.00	0.00	**0.93**	0.75	0.94	0.92	0.00	0.00	**0.93**	0.87	0.80	0.75	0.00	0.00	**0.85**	**0.91**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	2.1	2.2	2.3		2.4	Total	2.5	2.6	2.7		2.8	Total	2.9	2.10	2.11		2.12	Total	2.13	2.14	2.15		2.16	Total	Total
0730 - 0745	0	2	1	-	0	3	0	3	1	-	0	4	1	2	0	-	0	3	0	3	0	-	0	3	13
0745 - 0800	1	1	5	-	0	7	0	2	0	-	0	2	1	2	1	-	0	4	2	1	0	-	0	3	16
0800 - 0815	0	3	2	-	0	5	0	3	1	-	0	4	2	1	2	-	0	5	7	1	0	-	0	8	22
0815 - 0830	0	4	1	-	0	5	0	3	3	-	0	6	0	1	2	-	0	3	3	1	1	-	0	5	19
Total	1	10	9	0	0	20	0	11	5	0	0	16	4	6	5	0	0	15	12	6	1	0	0	19	70
Approach %	5.00	50.00	45.00	0.00	0.00	-	0.00	68.75	31.25	0.00	0.00	-	26.67	40.00	33.33	0.00	0.00	-	63.16	31.58	5.26	0.00	0.00	-	
PHF	0.25	0.63	0.45	0.00	0.00	**0.71**	0.00	0.92	0.42	0.00	0.00	**0.67**	0.50	0.75	0.63	0.00	0.00	**0.75**	0.43	0.50	0.25	0.00	0.00	**0.59**	**0.80**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	2.1	2.2	2.3		2.4	Total	2.5	2.6	2.7		2.8	Total	2.9	2.10	2.11		2.12	Total	2.13	2.14	2.15		2.16	Total	Total
0730 - 0745	2	0	0	-	0	2	0	0	0	-	0	0	0	1	0	-	0	1	0	2	0	-	0	2	5
0745 - 0800	0	1	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	0	2	3
0800 - 0815	0	0	1	-	0	1	0	0	0	-	0	0	0	1	0	-	0	1	1	1	0	-	0	2	4
0815 - 0830	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	1	0	-	0	1	2
Total	2	1	1	0	0	4	0	0	0	0	0	0	0	3	0	0	0	3	1	6	0	0	0	7	14
Approach %	50.00	25.00	25.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	14.29	85.71	0.00	0.00	0.00	-	
PHF	0.25	0.25	0.25	0.00	0.00	**0.50**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.75	0.00	0.00	0.00	**0.75**	0.25	0.75	0.00	0.00	0.00	**0.88**	**0.70**

Bicycles

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	2.1	2.2	2.3		2.4	Total	2.5	2.6	2.7		2.8	Total	2.9	2.10	2.11		2.12	Total	2.13	2.14	2.15		2.16	Total	Total
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0815 - 0830	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

Knox County, TN

Click here for Map

Marr Traffic DATA COLLECTION
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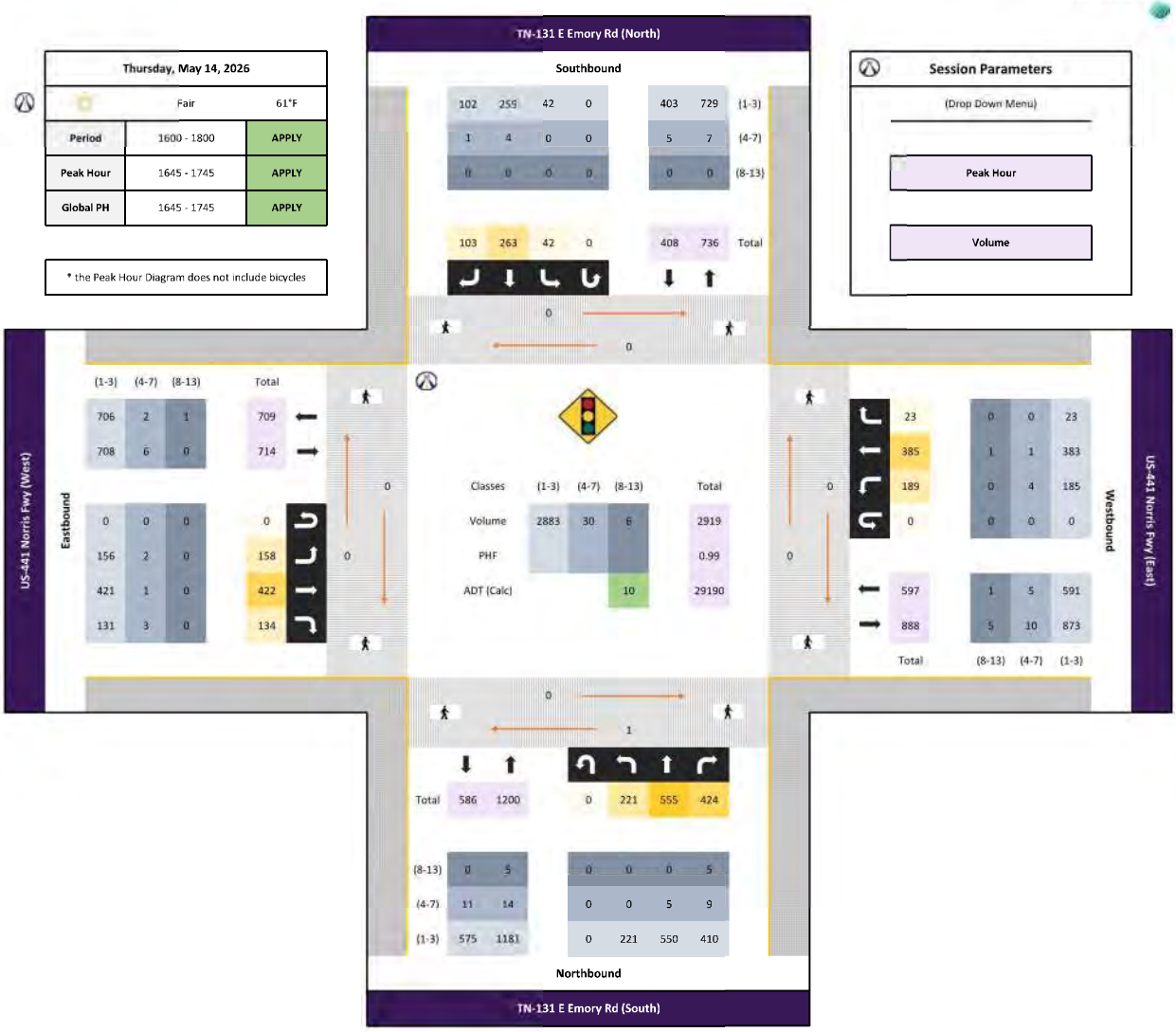
Thursday, May 14, 2026		
	Fair	61°F
Period	1600 - 1800	APPLY
Peak Hour	1645 - 1745	APPLY
Global PH	1645 - 1745	APPLY

* the Peak Hour Diagram does not include bicycles



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	2.1	2.2	2.3		2.4	Total	2.5	2.6	2.7		2.8	Total	2.9	2.10	2.11		2.12	Total	2.13	2.14	2.15		2.16	Total	Total
1645 - 1700	64	126	114	-	0	304	11	50	18	-	0	79	34	111	32	-	0	177	44	109	4	-	0	157	717
1700 - 1715	46	156	108	-	0	310	14	77	33	-	0	124	38	94	28	-	0	160	41	85	6	-	0	132	726
1715 - 1730	40	125	98	-	0	263	5	65	29	-	0	99	46	119	37	-	0	202	59	107	8	-	0	174	738
1730 - 1745	71	148	104	-	0	323	12	71	23	-	0	106	40	98	37	-	0	175	45	84	5	-	0	134	738
Total	221	555	424	0	0	1200	42	263	103	0	0	408	158	422	134	0	0	714	189	385	23	0	0	597	2919
Approach %	18.42	46.25	35.33	0.00	0.00	-	10.29	64.46	25.25	0.00	0.00	-	22.13	59.10	18.77	0.00	0.00	-	31.66	64.49	3.85	0.00	0.00	-	
PHF	0.78	0.89	0.93	0.00	0.00	**0.93**	0.75	0.85	0.78	0.00	0.00	**0.82**	0.86	0.89	0.91	0.00	0.00	**0.88**	0.80	0.88	0.72	0.00	0.00	**0.86**	**0.99**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	2.1	2.2	2.3		2.4	Total	2.5	2.6	2.7		2.8	Total	2.9	2.10	2.11		2.12	Total	2.13	2.14	2.15		2.16	Total	Total
1645 - 1700	64	125	109	-	0	298	11	50	18	-	0	79	34	110	30	-	0	174	44	109	4	-	0	157	708
1700 - 1715	46	154	104	-	0	304	14	74	32	-	0	120	37	94	28	-	0	159	40	84	6	-	0	130	713
1715 - 1730	40	124	95	-	0	259	5	65	29	-	0	99	45	119	36	-	0	200	57	107	8	-	0	172	730
1730 - 1745	71	147	102	-	0	320	12	70	23	-	0	105	40	98	37	-	0	175	44	83	5	-	0	132	732
Total	221	550	410	0	0	1181	42	259	102	0	0	403	156	421	131	0	0	708	185	383	23	0	0	591	2883
Approach %	18.71	46.57	34.72	0.00	0.00	-	10.42	64.27	25.31	0.00	0.00	-	22.03	59.46	18.50	0.00	0.00	-	31.30	64.81	3.89	0.00	0.00	-	
PHF	0.78	0.89	0.94	0.00	0.00	**0.92**	0.75	0.88	0.80	0.00	0.00	**0.84**	0.87	0.88	0.89	0.00	0.00	**0.89**	0.81	0.88	0.72	0.00	0.00	**0.86**	**0.98**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	2.1	2.2	2.3		2.4	Total	2.5	2.6	2.7		2.8	Total	2.9	2.10	2.11		2.12	Total	2.13	2.14	2.15		2.16	Total	Total
1645 - 1700	0	1	2	-	0	3	0	0	0	-	0	0	0	1	2	-	0	3	0	0	0	-	0	0	6
1700 - 1715	0	2	2	-	0	4	0	3	1	-	0	4	1	0	0	-	0	1	1	1	0	-	0	2	11
1715 - 1730	0	1	3	-	0	4	0	0	0	-	0	0	1	0	1	-	0	2	2	0	0	-	0	2	8
1730 - 1745	0	1	2	-	0	3	0	1	0	-	0	1	0	0	0	-	0	0	1	0	0	-	0	1	5
Total	0	5	9	0	0	14	0	4	1	0	0	5	2	1	3	0	0	6	4	1	0	0	0	5	30
Approach %	0.00	35.71	64.29	0.00	0.00	-	0.00	80.00	20.00	0.00	0.00	-	33.33	16.67	50.00	0.00	0.00	-	80.00	20.00	0.00	0.00	0.00	-	
PHF	0.00	0.63	0.75	0.00	0.00	**0.88**	0.00	0.33	0.25	0.00	0.00	**0.31**	0.50	0.25	0.38	0.00	0.00	**0.50**	0.50	0.25	0.00	0.00	0.00	**0.63**	**0.68**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	2.1	2.2	2.3		2.4	Total	2.5	2.6	2.7		2.8	Total	2.9	2.10	2.11		2.12	Total	2.13	2.14	2.15		2.16	Total	Total
1645 - 1700	0	0	3	-	0	3	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	3
1700 - 1715	0	0	2	-	0	2	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	2
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1730 - 1745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	1
Total	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	6
Approach %	0.00	0.00	100.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.42	0.00	0.00	**0.42**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.25	0.00	0.00	0.00	**0.25**	**0.50**

Bicycles

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	2.1	2.2	2.3		2.4	Total	2.5	2.6	2.7		2.8	Total	2.9	2.10	2.11		2.12	Total	2.13	2.14	2.15		2.16	Total	Total
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1730 - 1745	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Classified Turn Movement Count || All vehicles

Knox County, TN

Marr Traffic DATA COLLECTION
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Site 2
TN-131 E Emory Rd (South)
TN-131 E Emory Rd (North)
US-441 Norris Fwy (West)
US-441 Norris Fwy (East)

Date
Thursday, May 14, 2026

Lat/Long
36.083149°, -83.934692°
Click here for Map

Weather
Fair
61°F
Click here for Detailed Weather

0700 - 0900 (Weekday 2h Session) (05-14-2026)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	TN-131 E Emory Rd (South)					TN-131 E Emory Rd (North)					US-441 Norris Fwy (West)					US-441 Norris Fwy (East)					
TIME	Left 2.1	Thru 2.2	Right 2.3	U-Turn 2.4	App Total	Left 2.5	Thru 2.6	Right 2.7	U-Turn 2.8	App Total	Left 2.9	Thru 2.10	Right 2.11	U-Turn 2.12	App Total	Left 2.13	Thru 2.14	Right 2.15	U-Turn 2.16	App Total	Int Total
0700 - 0715	11	61	32	0	104	0	95	20	0	115	11	46	46	0	103	26	42	0	0	68	390
0715 - 0730	15	66	53	0	134	1	95	20	0	116	20	57	54	0	131	41	48	2	0	91	472
0730 - 0745	27	64	78	0	169	1	80	33	0	114	16	60	38	0	114	51	65	6	0	122	519
0745 - 0800	29	97	74	0	200	2	110	22	0	134	24	65	37	0	126	64	44	4	0	112	572
Hourly Total	82	288	237	0	**607**	4	380	95	0	**479**	71	228	175	0	**474**	182	199	12	0	**393**	**1953**
0800 - 0815	20	107	67	0	194	3	118	22	0	143	22	63	38	0	123	77	71	4	0	152	612
0815 - 0830	9	76	52	0	137	4	115	23	0	142	11	57	43	0	111	61	54	5	0	120	510
0830 - 0845	19	49	42	0	110	6	93	18	0	117	22	77	28	0	127	77	58	0	0	135	489
0845 - 0900	32	64	49	0	145	6	74	23	0	103	19	56	21	0	96	43	63	6	0	112	456
Hourly Total	80	296	210	0	**586**	19	400	86	0	**505**	74	253	130	0	**457**	258	246	15	0	**519**	**2067**
Grand Total	162	584	447	0	**1193**	23	780	181	0	**984**	145	481	305	0	**931**	440	445	27	0	**912**	**4020**
Approach %	13.58	48.95	37.47	0.00	-	2.34	79.27	18.39	0.00	-	15.57	51.66	32.76	0.00	-	48.25	48.79	2.96	0.00	-	
Intersection %	4.03	14.53	11.12	0.00	29.68	0.57	19.40	4.50	0.00	24.48	3.61	11.97	7.59	0.00	23.16	10.95	11.07	0.67	0.00	22.69	
Heavy Vehicle %	4	3	4	-	**4**	0	3	5	-	**3**	4	3	4	-	**4**	6	5	7	-	**6**	**4**
PHF	0.73	0.80	0.87	0.00	**0.88**	0.63	0.90	0.76	0.00	**0.93**	0.76	0.94	0.91	0.00	**0.94**	0.82	0.82	0.79	0.00	**0.83**	**0.90**
Peak Hour Total	85	344	271	0	**700**	10	423	100	0	**533**	73	245	156	0	**474**	253	234	19	0	**506**	**2213**
Peak Hour HV %	4	3	4	0	**3**	0	3	5	0	**3**	5	4	3	0	**4**	5	5	5	0	**5**	**4**

1600 - 1800 (Weekday 2h Session) (05-14-2026)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	TN-131 E Emory Rd (South)					TN-131 E Emory Rd (North)					US-441 Norris Fwy (West)					US-441 Norris Fwy (East)					
TIME	Left 2.1	Thru 2.2	Right 2.3	U-Turn 2.4	App Total	Left 2.5	Thru 2.6	Right 2.7	U-Turn 2.8	App Total	Left 2.9	Thru 2.10	Right 2.11	U-Turn 2.12	App Total	Left 2.13	Thru 2.14	Right 2.15	U-Turn 2.16	App Total	Int Total
1600 - 1615	48	117	81	0	246	7	75	27	0	109	40	113	35	0	188	68	86	4	0	158	701
1615 - 1630	51	133	86	0	270	12	89	30	0	131	33	92	42	0	167	46	93	3	0	142	710
1630 - 1645	42	145	91	0	278	13	64	24	0	101	44	86	40	0	170	54	87	3	0	144	693
1645 - 1700	64	126	114	0	304	11	50	18	0	79	34	111	32	0	177	44	109	4	0	157	717
Hourly Total	205	521	372	0	**1098**	43	278	99	0	**420**	151	402	149	0	**702**	212	375	14	0	**601**	**2821**
1700 - 1715	46	156	108	0	310	14	77	33	0	124	38	94	28	0	160	41	85	6	0	132	726
1715 - 1730	40	125	98	0	263	5	65	29	0	99	46	119	37	0	202	59	107	8	0	174	738
1730 - 1745	71	148	104	0	323	12	71	23	0	106	40	98	37	0	175	45	84	5	0	134	738
1745 - 1800	42	110	86	0	238	6	52	19	0	77	44	109	27	0	180	59	75	3	0	137	632
Hourly Total	199	539	396	0	**1134**	37	265	104	0	**406**	168	420	129	0	**717**	204	351	22	0	**577**	**2834**
Grand Total	404	1060	768	0	**2232**	80	543	203	0	**826**	319	822	278	0	**1419**	416	726	36	0	**1178**	**5655**
Approach %	18.10	47.49	34.41	0.00	-	9.69	65.74	24.58	0.00	-	22.48	57.93	19.59	0.00	-	35.31	61.63	3.06	0.00	-	
Intersection %	7.14	18.74	13.58	0.00	39.47	1.41	9.60	3.59	0.00	14.61	5.64	14.54	4.92	0.00	25.09	7.36	12.84	0.64	0.00	20.83	
Heavy Vehicle %	0	2	3	-	**2**	0	2	1	-	**1**	1	1	2	-	**1**	2	0	0	-	**1**	**2**
PHF	0.78	0.89	0.93	0.00	**0.93**	0.75	0.85	0.78	0.00	**0.82**	0.86	0.89	0.91	0.00	**0.88**	0.80	0.88	0.72	0.00	**0.86**	**0.99**
Peak Hour Total	221	555	424	0	**1200**	42	263	103	0	**408**	158	422	134	0	**714**	189	385	23	0	**597**	**2919**
Peak Hour HV %	0	1	3	0	**2**	0	2	1	0	**1**	1	0	2	0	**1**	2	1	0	0	**1**	**1**

Peak Hour Turning Movement Count

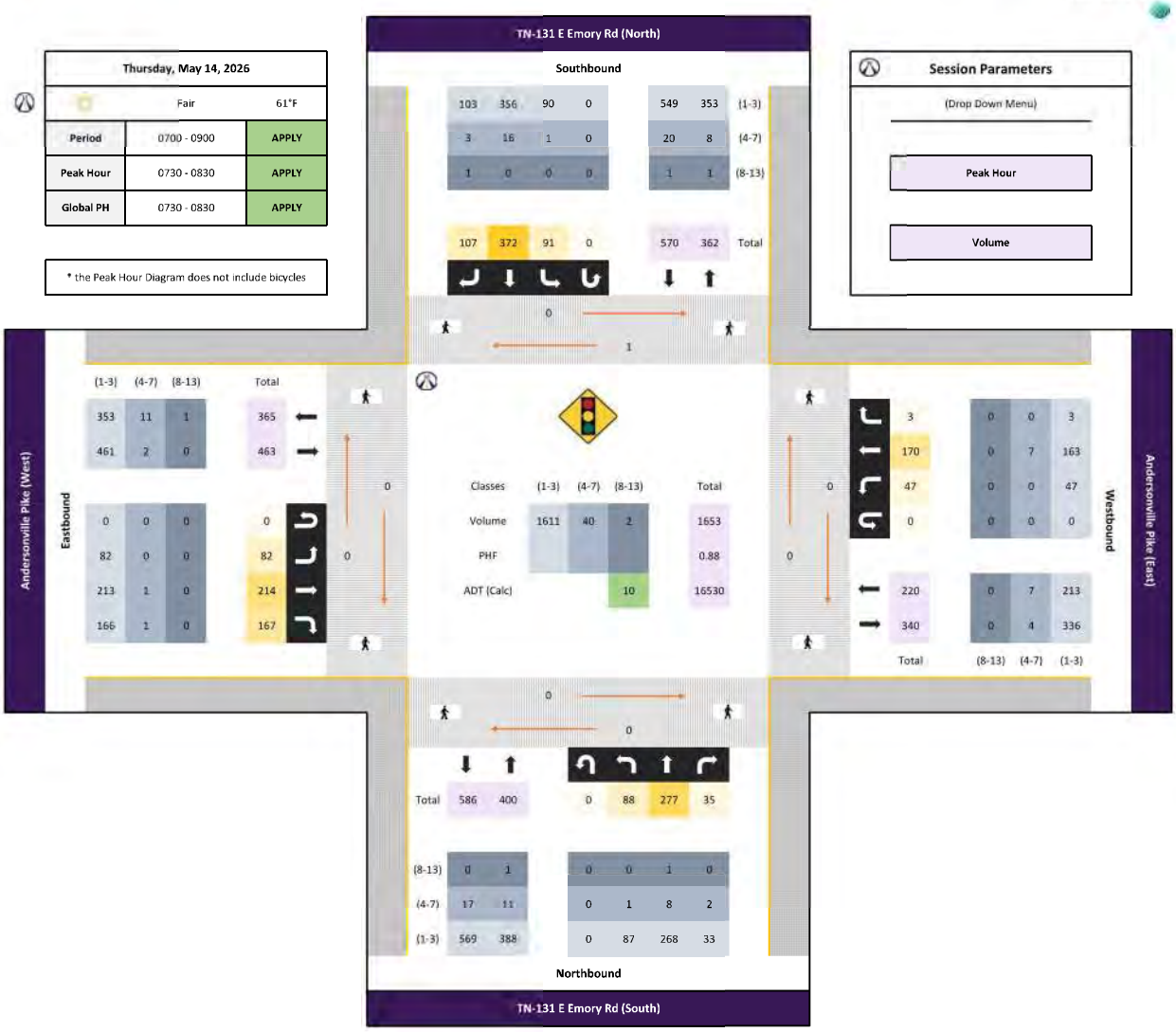
Knox County, TN

Click here for Map

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Thursday, May 14, 2026		
	Fair	61°F
Period	0700 - 0900	APPLY
Peak Hour	0730 - 0830	APPLY
Global PH	0730 - 0830	APPLY

* the Peak Hour Diagram does not include bicycles



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						Andersonville Pike (West)						Andersonville Pike (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
0730 - 0745	14	56	7	-	0	77	6	91	28	-	0	125	17	69	36	-	0	122	11	43	1	-	0	55	379
0745 - 0800	20	73	15	-	0	108	13	90	18	-	0	121	25	61	42	-	0	128	12	48	0	-	0	60	417
0800 - 0815	35	89	11	-	0	135	36	103	29	-	0	168	27	42	42	-	0	111	18	39	1	-	0	58	472
0815 - 0830	19	59	2	-	0	80	36	88	32	-	0	156	13	42	47	-	0	102	6	40	1	-	0	47	385
Total	88	277	35	0	0	400	91	372	107	0	0	570	82	214	167	0	0	463	47	170	3	0	0	220	1653
Approach %	22.00	69.25	8.75	0.00	0.00	-	15.96	65.26	18.77	0.00	0.00	-	17.71	46.22	36.07	0.00	0.00	-	21.36	77.27	1.36	0.00	0.00	-	
PHF	0.63	0.78	0.58	0.00	0.00	**0.74**	0.63	0.90	0.84	0.00	0.00	**0.85**	0.76	0.78	0.89	0.00	0.00	**0.90**	0.65	0.89	0.75	0.00	0.00	**0.92**	**0.88**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						Andersonville Pike (West)						Andersonville Pike (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
0730 - 0745	14	55	7	-	0	76	6	86	25	-	0	117	17	69	36	-	0	122	11	41	1	-	0	53	368
0745 - 0800	20	71	14	-	0	105	13	87	18	-	0	118	25	60	42	-	0	127	12	48	0	-	0	60	410
0800 - 0815	35	85	10	-	0	130	36	99	29	-	0	164	27	42	42	-	0	111	18	35	1	-	0	54	459
0815 - 0830	18	57	2	-	0	77	35	84	31	-	0	150	13	42	46	-	0	101	6	39	1	-	0	46	374
Total	87	268	33	0	0	388	90	356	103	0	0	549	82	213	166	0	0	461	47	163	3	0	0	213	1611
Approach %	22.42	69.07	8.51	0.00	0.00	-	16.39	64.85	18.76	0.00	0.00	-	17.79	46.20	36.01	0.00	0.00	-	22.07	76.53	1.41	0.00	0.00	-	
PHF	0.62	0.79	0.59	0.00	0.00	**0.75**	0.63	0.90	0.83	0.00	0.00	**0.84**	0.76	0.77	0.90	0.00	0.00	**0.91**	0.65	0.85	0.75	0.00	0.00	**0.89**	**0.88**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						Andersonville Pike (West)						Andersonville Pike (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
0730 - 0745	0	1	0	-	0	1	0	5	2	-	0	7	0	0	0	-	0	0	0	2	0	-	0	2	10
0745 - 0800	0	1	1	-	0	2	0	3	0	-	0	3	0	1	0	-	0	1	0	0	0	-	0	0	6
0800 - 0815	0	4	1	-	0	5	0	4	0	-	0	4	0	0	0	-	0	0	0	4	0	-	0	4	13
0815 - 0830	1	2	0	-	0	3	1	4	1	-	0	6	0	0	1	-	0	1	0	1	0	-	0	1	11
Total	1	8	2	0	0	11	1	16	3	0	0	20	0	1	1	0	0	2	0	7	0	0	0	7	40
Approach %	9.09	72.73	18.18	0.00	0.00	-	5.00	80.00	15.00	0.00	0.00	-	0.00	50.00	50.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.25	0.50	0.50	0.00	0.00	**0.55**	0.25	0.80	0.38	0.00	0.00	**0.71**	0.00	0.25	0.25	0.00	0.00	**0.50**	0.00	0.44	0.00	0.00	0.00	**0.44**	**0.77**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						Andersonville Pike (West)						Andersonville Pike (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
0730 - 0745	0	0	0	-	0	0	0	0	1	-	0	1	0	0	0	-	0	0	0	0	0	-	0	0	1
0745 - 0800	0	1	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0815 - 0830	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	1	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
Approach %	0.00	100.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.25	0.00	0.00	0.00	**0.25**	0.00	0.00	0.25	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.50**

Bicycles

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						Andersonville Pike (West)						Andersonville Pike (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0815 - 0830	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

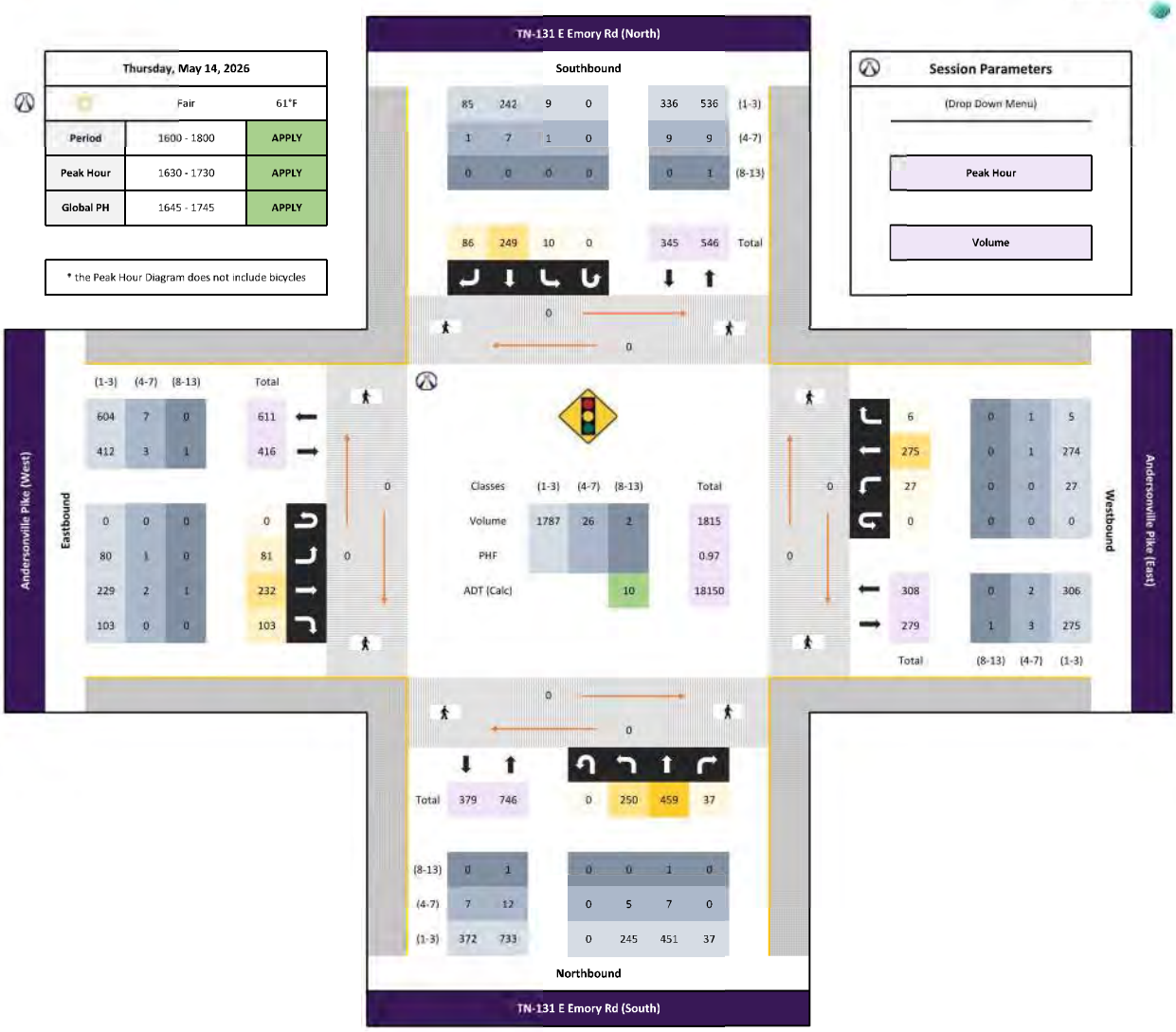
Knox County, TN

Click here for Map

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Thursday, May 14, 2026		
	Fair	61°F
Period	1600 - 1800	APPLY
Peak Hour	1630 - 1730	APPLY
Global PH	1645 - 1745	APPLY

* the Peak Hour Diagram does not include bicycles



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						Andersonville Pike (West)						Andersonville Pike (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
1630 - 1645	64	112	8	-	0	184	2	56	14	-	0	72	26	52	24	-	0	102	5	78	0	-	0	83	441
1645 - 1700	59	131	11	-	0	201	2	57	25	-	0	84	14	54	25	-	0	93	1	67	2	-	0	70	448
1700 - 1715	64	107	8	-	0	179	3	70	27	-	0	100	22	60	29	-	0	111	8	65	3	-	0	76	466
1715 - 1730	63	109	10	-	0	182	3	66	20	-	0	89	19	66	25	-	0	110	13	65	1	-	0	79	460
Total	250	459	37	0	0	746	10	249	86	0	0	345	81	232	103	0	0	416	27	275	6	0	0	308	1815
Approach %	33.51	61.53	4.96	0.00	0.00	-	2.90	72.17	24.93	0.00	0.00	-	19.47	55.77	24.76	0.00	0.00	-	8.77	89.29	1.95	0.00	0.00	-	
PHF	0.98	0.88	0.84	0.00	0.00	**0.93**	0.83	0.89	0.80	0.00	0.00	**0.86**	0.78	0.88	0.89	0.00	0.00	**0.94**	0.52	0.88	0.50	0.00	0.00	**0.93**	**0.97**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						Andersonville Pike (West)						Andersonville Pike (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
1630 - 1645	62	109	8	-	0	179	1	55	13	-	0	69	26	52	24	-	0	102	5	78	0	-	0	83	433
1645 - 1700	57	129	11	-	0	197	2	55	25	-	0	82	14	53	25	-	0	92	1	67	2	-	0	70	441
1700 - 1715	63	106	8	-	0	177	3	67	27	-	0	97	22	59	29	-	0	110	8	65	2	-	0	75	459
1715 - 1730	63	107	10	-	0	180	3	65	20	-	0	88	18	65	25	-	0	108	13	64	1	-	0	78	454
Total	245	451	37	0	0	733	9	242	85	0	0	336	80	229	103	0	0	412	27	274	5	0	0	306	1787
Approach %	33.42	61.53	5.05	0.00	0.00	-	2.68	72.02	25.30	0.00	0.00	-	19.42	55.58	25.00	0.00	0.00	-	8.82	89.54	1.63	0.00	0.00	-	
PHF	0.97	0.87	0.84	0.00	0.00	**0.93**	0.75	0.90	0.79	0.00	0.00	**0.87**	0.77	0.88	0.89	0.00	0.00	**0.94**	0.52	0.88	0.63	0.00	0.00	**0.92**	**0.97**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						Andersonville Pike (West)						Andersonville Pike (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
1630 - 1645	2	2	0	-	0	4	1	1	1	-	0	3	0	0	0	-	0	0	0	0	0	-	0	0	7
1645 - 1700	2	2	0	-	0	4	0	2	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	0	6
1700 - 1715	1	1	0	-	0	2	0	3	0	-	0	3	0	1	0	-	0	1	0	0	1	-	0	1	7
1715 - 1730	0	2	0	-	0	2	0	1	0	-	0	1	1	1	0	-	0	2	0	1	0	-	0	1	6
Total	5	7	0	0	0	12	1	7	1	0	0	9	1	2	0	0	0	3	0	1	1	0	0	2	26
Approach %	41.67	58.33	0.00	0.00	0.00	-	11.11	77.78	11.11	0.00	0.00	-	33.33	66.67	0.00	0.00	0.00	-	0.00	50.00	50.00	0.00	0.00	-	
PHF	0.63	0.88	0.00	0.00	0.00	**0.75**	0.25	0.58	0.25	0.00	0.00	**0.75**	0.25	0.50	0.00	0.00	0.00	**0.38**	0.00	0.25	0.25	0.00	0.00	**0.50**	**0.93**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						Andersonville Pike (West)						Andersonville Pike (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
1630 - 1645	0	1	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	0	0	-	0	0	1
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1715 - 1730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
Total	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
Approach %	0.00	100.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.25	0.00	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.25	0.00	0.00	0.00	**0.25**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.50**

Bicycles

	Northbound						Southbound						Eastbound						Westbound						
	TN-131 E Emory Rd (South)						TN-131 E Emory Rd (North)						Andersonville Pike (West)						Andersonville Pike (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	3.1	3.2	3.3		3.4	Total	3.5	3.6	3.7		3.8	Total	3.9	3.10	3.11		3.12	Total	3.13	3.14	3.15		3.16	Total	Total
1630 - 1645	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1715 - 1730	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION
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Knox County, TN

Site 3
TN-131 E Emory Rd (South)
TN-131 E Emory Rd (North)
Andersonville Pike (West)
Andersonville Pike (East)

Date
Thursday, May 14, 2026

Lat/Long
36.085646°, -83.930248°
Click here for Map

Weather
Fair
61°F
Click here for Detailed Weather

0700 - 0900 (Weekday 2h Session) (05-14-2026)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	TN-131 E Emory Rd (South)					TN-131 E Emory Rd (North)					Andersonville Pike (West)					Andersonville Pike (East)					
TIME	Left 3.1	Thru 3.2	Right 3.3	U-Turn 3.4	App Total	Left 3.5	Thru 3.6	Right 3.7	U-Turn 3.8	App Total	Left 3.9	Thru 3.10	Right 3.11	U-Turn 3.12	App Total	Left 3.13	Thru 3.14	Right 3.15	U-Turn 3.16	App Total	Int Total
0700 - 0715	16	45	1	0	62	1	66	17	0	84	7	68	41	0	116	1	26	0	0	27	289
0715 - 0730	37	43	7	0	87	2	75	41	0	118	8	60	46	0	114	4	48	0	0	52	371
0730 - 0745	14	56	7	0	77	6	91	28	0	125	17	69	36	0	122	11	43	1	0	55	379
0745 - 0800	20	73	15	0	108	13	90	18	0	121	25	61	42	0	128	12	48	0	0	60	417
Hourly Total	87	217	30	0	**334**	22	322	104	0	**448**	57	258	165	0	**480**	28	165	1	0	**194**	**1456**
0800 - 0815	35	89	11	0	135	36	103	29	0	168	27	42	42	0	111	18	39	1	0	58	472
0815 - 0830	19	59	2	0	80	36	88	32	0	156	13	42	47	0	102	6	40	1	0	47	385
0830 - 0845	27	43	4	0	74	18	89	20	0	127	10	51	36	0	97	6	38	0	0	44	342
0845 - 0900	21	39	11	0	71	2	65	15	0	82	7	38	27	0	72	8	27	1	0	36	261
Hourly Total	102	230	28	0	**360**	92	345	96	0	**533**	57	173	152	0	**382**	38	144	3	0	**185**	**1460**
Grand Total	189	447	58	0	**694**	114	667	200	0	**981**	114	431	317	0	**862**	66	309	4	0	**379**	**2916**
Approach %	27.23	64.41	8.36	0.00	-	11.62	67.99	20.39	0.00	-	13.23	50.00	36.77	0.00	-	17.41	81.53	1.06	0.00	-	
Intersection %	6.48	15.33	1.99	0.00	23.80	3.91	22.87	6.86	0.00	33.64	3.91	14.78	10.87	0.00	29.56	2.26	10.60	0.14	0.00	13.00	
Heavy Vehicle %	3	4	3	-	**3**	1	5	2	-	**4**	0	1	1	-	**1**	0	4	0	-	**3**	**3**
PHF	0.63	0.78	0.58	0.00	**0.74**	0.63	0.90	0.84	0.00	**0.85**	0.76	0.78	0.89	0.00	**0.90**	0.65	0.89	0.75	0.00	**0.92**	**0.88**
Peak Hour Total	88	277	35	0	**400**	91	372	107	0	**570**	82	214	167	0	**463**	47	170	3	0	**220**	**1653**
Peak Hour HV %	1	3	6	0	**3**	1	4	4	0	**4**	0	0	1	0	**0**	0	4	0	0	**3**	**3**

1600 - 1800 (Weekday 2h Session) (05-14-2026)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	TN-131 E Emory Rd (South)					TN-131 E Emory Rd (North)					Andersonville Pike (West)					Andersonville Pike (East)					
TIME	Left 3.1	Thru 3.2	Right 3.3	U-Turn 3.4	App Total	Left 3.5	Thru 3.6	Right 3.7	U-Turn 3.8	App Total	Left 3.9	Thru 3.10	Right 3.11	U-Turn 3.12	App Total	Left 3.13	Thru 3.14	Right 3.15	U-Turn 3.16	App Total	Int Total
1600 - 1615	61	87	9	0	157	2	72	20	0	94	18	46	33	0	97	4	55	1	0	60	408
1615 - 1630	62	105	7	0	174	2	72	17	0	91	15	54	32	0	101	8	55	2	0	65	431
1630 - 1645	64	112	8	0	184	2	56	14	0	72	26	52	24	0	102	5	78	0	0	83	441
1645 - 1700	59	131	11	0	201	2	57	25	0	84	14	54	25	0	93	1	67	2	0	70	448
Hourly Total	246	435	35	0	**716**	8	257	76	0	**341**	73	206	114	0	**393**	18	255	5	0	**278**	**1728**
1700 - 1715	64	107	8	0	179	3	70	27	0	100	22	60	29	0	111	8	65	3	0	76	466
1715 - 1730	63	109	10	0	182	3	66	20	0	89	19	66	25	0	110	13	65	1	0	79	460
1730 - 1745	64	123	6	0	193	0	54	18	0	72	23	55	30	0	108	6	62	0	0	68	441
1745 - 1800	61	102	2	0	165	4	52	7	0	63	21	63	21	0	105	8	70	0	0	78	411
Hourly Total	252	441	26	0	**719**	10	242	72	0	**324**	85	244	105	0	**434**	35	262	4	0	**301**	**1778**
Grand Total	498	876	61	0	**1435**	18	499	148	0	**665**	158	450	219	0	**827**	53	517	9	0	**579**	**3506**
Approach %	34.70	61.05	4.25	0.00	-	2.71	75.04	22.26	0.00	-	19.11	54.41	26.48	0.00	-	9.15	89.29	1.55	0.00	-	
Intersection %	14.20	24.99	1.74	0.00	40.93	0.51	14.23	4.22	0.00	18.97	4.51	12.84	6.25	0.00	23.59	1.51	14.75	0.26	0.00	16.51	
Heavy Vehicle %	2	2	0	-	**2**	6	2	1	-	**2**	3	2	0	-	**2**	0	1	11	-	**1**	**2**
PHF	0.98	0.88	0.84	0.00	**0.93**	0.83	0.89	0.80	0.00	**0.86**	0.78	0.88	0.89	0.00	**0.94**	0.52	0.88	0.50	0.00	**0.93**	**0.97**
Peak Hour Total	250	459	37	0	**746**	10	249	86	0	**345**	81	232	103	0	**416**	27	275	6	0	**308**	**1815**
Peak Hour HV %	2	2	0	0	**2**	10	3	1	0	**3**	1	1	0	0	**1**	0	0	17	0	**1**	**2**

Peak Hour Turning Movement Count

Knox County, TN

Click here for Map

Marr Traffic DATA COLLECTION
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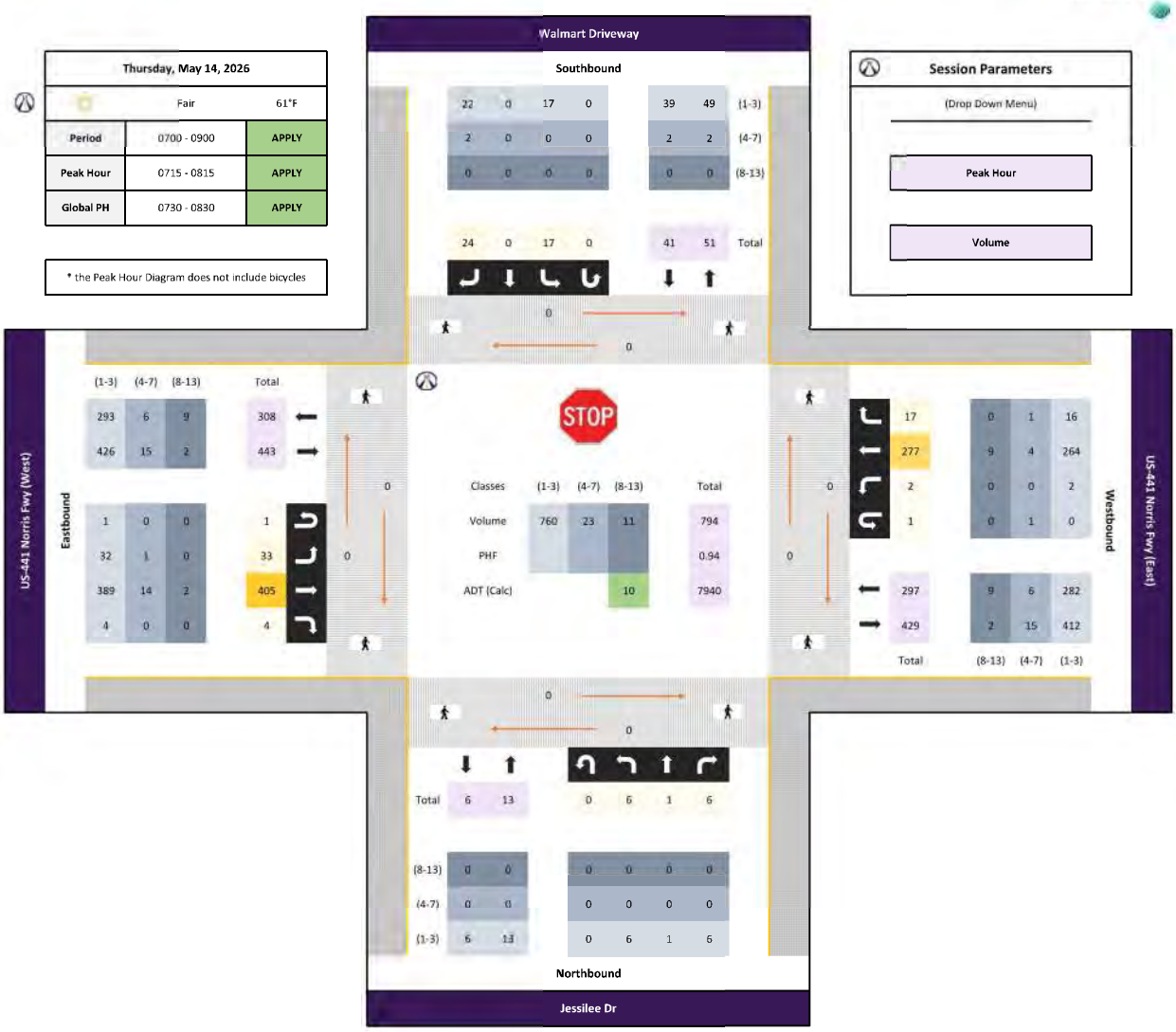
Thursday, May 14, 2026		
	Fair	61°F
Period	0700 - 0900	APPLY
Peak Hour	0715 - 0815	APPLY
Global PH	0730 - 0830	APPLY

* the Peak Hour Diagram does not include bicycles



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	Jessilee Dr						Walmart Driveway						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
0715 - 0730	2	0	3	-	0	5	3	0	5	-	0	8	9	113	0	-	0	122	0	61	3	-	0	64	199
0730 - 0745	2	0	0	-	0	2	3	0	6	-	0	9	9	100	3	-	0	112	0	83	4	-	1	88	211
0745 - 0800	1	1	3	-	0	5	6	0	8	-	0	14	7	112	0	-	1	120	2	64	3	-	0	69	208
0800 - 0815	1	0	0	-	0	1	5	0	5	-	0	10	8	80	1	-	0	89	0	69	7	-	0	76	176
Total	6	1	6	0	0	13	17	0	24	0	0	41	33	405	4	0	1	443	2	277	17	0	1	297	794
Approach %	46.15	7.69	46.15	0.00	0.00	-	41.46	0.00	58.54	0.00	0.00	-	7.45	91.42	0.90	0.00	0.23	-	0.67	93.27	5.72	0.00	0.34	-	
PHF	0.75	0.25	0.50	0.00	0.00	**0.65**	0.71	0.00	0.75	0.00	0.00	**0.73**	0.92	0.90	0.33	0.00	0.25	**0.91**	0.25	0.83	0.61	0.00	0.25	**0.84**	**0.94**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	Jessilee Dr						Walmart Driveway						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
0715 - 0730	2	0	3	-	0	5	3	0	5	-	0	8	9	108	0	-	0	117	0	57	3	-	0	60	190
0730 - 0745	2	0	0	-	0	2	3	0	6	-	0	9	9	97	3	-	0	109	0	81	3	-	0	84	204
0745 - 0800	1	1	3	-	0	5	6	0	6	-	0	12	7	108	0	-	1	116	2	61	3	-	0	66	199
0800 - 0815	1	0	0	-	0	1	5	0	5	-	0	10	7	76	1	-	0	84	0	65	7	-	0	72	167
Total	6	1	6	0	0	13	17	0	22	0	0	39	32	389	4	0	1	426	2	264	16	0	0	282	760
Approach %	46.15	7.69	46.15	0.00	0.00	-	43.59	0.00	56.41	0.00	0.00	-	7.51	91.31	0.94	0.00	0.23	-	0.71	93.62	5.67	0.00	0.00	-	
PHF	0.75	0.25	0.50	0.00	0.00	**0.65**	0.71	0.00	0.92	0.00	0.00	**0.81**	0.89	0.90	0.33	0.00	0.25	**0.91**	0.25	0.81	0.57	0.00	0.00	**0.84**	**0.93**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	Jessilee Dr						Walmart Driveway						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	4	0	-	0	4	0	1	0	-	0	1	5
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	0	3	0	0	1	-	1	2	5
0745 - 0800	0	0	0	-	0	0	0	0	2	-	0	2	0	3	0	-	0	3	0	1	0	-	0	1	6
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	1	4	0	-	0	5	0	2	0	-	0	2	7
Total	0	0	0	0	0	0	0	0	2	0	0	2	1	14	0	0	0	15	0	4	1	0	1	6	23
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	100.00	0.00	0.00	-	6.67	93.33	0.00	0.00	0.00	-	0.00	66.67	16.67	0.00	16.67	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.25	0.00	0.00	**0.25**	0.25	0.88	0.00	0.00	0.00	**0.75**	0.00	0.50	0.25	0.00	0.25	**0.75**	**0.82**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	Jessilee Dr						Walmart Driveway						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	3	0	-	0	3	4
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	0	2	2
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	0	2	0	-	0	2	3
0800 - 0815	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	0	2	2
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	9	0	0	0	9	11
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.50	0.00	0.00	0.00	**0.50**	0.00	0.75	0.00	0.00	0.00	**0.75**	**0.69**

Bicycles

	Northbound						Southbound						Eastbound						Westbound						
	Jessilee Dr						Walmart Driveway						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
0715 - 0730	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0730 - 0745	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0745 - 0800	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
0800 - 0815	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Peak Hour Turning Movement Count

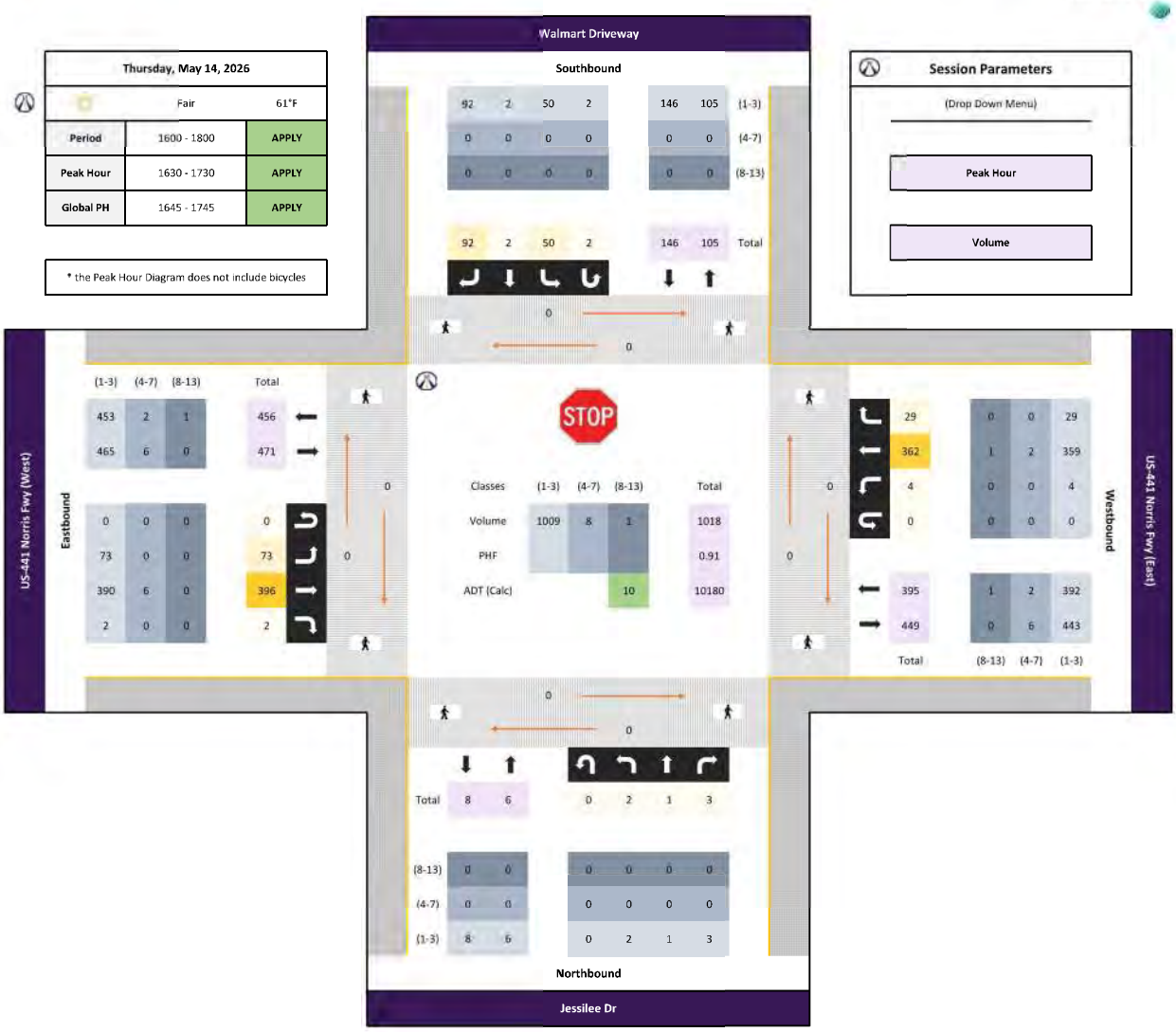
Knox County, TN

Click here for Map

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Thursday, May 14, 2026		
Fair		61°F
Period	1600 - 1800	APPLY
Peak Hour	1630 - 1730	APPLY
Global PH	1645 - 1745	APPLY

* the Peak Hour Diagram does not include bicycles



All vehicles

	Northbound						Southbound						Eastbound						Westbound						
	Jessilee Dr						Walmart Driveway						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
1630 - 1645	1	0	1	-	0	2	10	1	31	-	0	42	19	89	1	-	0	109	0	95	9	-	0	104	257
1645 - 1700	1	0	1	-	0	2	12	0	17	-	0	29	17	90	0	-	0	107	2	86	8	-	0	96	234
1700 - 1715	0	0	1	-	0	1	11	1	16	-	0	28	15	102	1	-	0	118	1	92	6	-	0	99	246
1715 - 1730	0	1	0	-	0	1	17	0	28	-	2	47	22	115	0	-	0	137	1	89	6	-	0	96	281
Total	2	1	3	0	0	6	50	2	92	0	2	146	73	396	2	0	0	471	4	362	29	0	0	395	1018
Approach %	33.33	16.67	50.00	0.00	0.00	-	34.25	1.37	63.01	0.00	1.37	-	15.50	84.08	0.42	0.00	0.00	-	1.01	91.65	7.34	0.00	0.00	-	
PHF	0.50	0.25	0.75	0.00	0.00	**0.75**	0.74	0.50	0.74	0.00	0.25	**0.78**	0.83	0.86	0.50	0.00	0.00	**0.86**	0.50	0.95	0.81	0.00	0.00	**0.95**	**0.91**

Passenger Vehicles (1-3)

	Northbound						Southbound						Eastbound						Westbound						
	Jessilee Dr						Walmart Driveway						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
1630 - 1645	1	0	1	-	0	2	10	1	31	-	0	42	19	86	1	-	0	106	0	93	9	-	0	102	252
1645 - 1700	1	0	1	-	0	2	12	0	17	-	0	29	17	87	0	-	0	104	2	86	8	-	0	96	231
1700 - 1715	0	0	1	-	0	1	11	1	16	-	0	28	15	102	1	-	0	118	1	91	6	-	0	98	245
1715 - 1730	0	1	0	-	0	1	17	0	28	-	2	47	22	115	0	-	0	137	1	89	6	-	0	96	281
Total	2	1	3	0	0	6	50	2	92	0	2	146	73	390	2	0	0	465	4	359	29	0	0	392	1009
Approach %	33.33	16.67	50.00	0.00	0.00	-	34.25	1.37	63.01	0.00	1.37	-	15.70	83.87	0.43	0.00	0.00	-	1.02	91.58	7.40	0.00	0.00	-	
PHF	0.50	0.25	0.75	0.00	0.00	**0.75**	0.74	0.50	0.74	0.00	0.25	**0.78**	0.83	0.85	0.50	0.00	0.00	**0.85**	0.50	0.97	0.81	0.00	0.00	**0.96**	**0.90**

Single Unit Trucks (4-7)

	Northbound						Southbound						Eastbound						Westbound						
	Jessilee Dr						Walmart Driveway						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
1630 - 1645	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	0	3	0	2	0	-	0	2	5
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	3	0	-	0	3	0	0	0	-	0	0	3
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1715 - 1730	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	0	0	0	0	0	0	0	6	0	0	0	6	0	2	0	0	0	2	8
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.50	0.00	0.00	0.00	**0.50**	0.00	0.25	0.00	0.00	0.00	**0.25**	**0.40**

Combination Trucks (8-13)

	Northbound						Southbound						Eastbound						Westbound						
	Jessilee Dr						Walmart Driveway						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
1630 - 1645	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	0	1	1
1715 - 1730	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	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	100.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.25	0.00	0.00	0.00	**0.25**	**0.25**

Bicycles

	Northbound						Southbound						Eastbound						Westbound						
	Jessilee Dr						Walmart Driveway						US-441 Norris Fwy (West)						US-441 Norris Fwy (East)						
	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Left	Thru	Right		U-Turn	App	Int
Time	4.1	4.2	4.3		4.4	Total	4.5	4.6	4.7		4.8	Total	4.9	4.10	4.11		4.12	Total	4.13	4.14	4.15		4.16	Total	Total
1630 - 1645	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1645 - 1700	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1700 - 1715	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0
1715 - 1730	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	0.00	0.00	0.00	0.00	0.00	-	
PHF	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**

Classified Turn Movement Count || All vehicles

Knox County, TN

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Site 4
Jessilee Dr
Walmart Driveway
US-441 Norris Fwy (West)
US-441 Norris Fwy (East)

Date
Thursday, May 14, 2026

Lat/Long
36.086657°, -83.940027°
Click here for Map

Weather
Fair
61°F
Click here for Detailed Weather

0700 - 0900 (Weekday 2h Session) (05-14-2026)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Jessilee Dr					Walmart Driveway					US-441 Norris Fwy (West)					US-441 Norris Fwy (East)					
TIME	Left 4.1	Thru 4.2	Right 4.3	U-Turn 4.4	App Total	Left 4.5	Thru 4.6	Right 4.7	U-Turn 4.8	App Total	Left 4.9	Thru 4.10	Right 4.11	U-Turn 4.12	App Total	Left 4.13	Thru 4.14	Right 4.15	U-Turn 4.16	App Total	Int Total
0700 - 0715	2	0	2	0	4	0	0	4	0	4	4	91	0	0	95	1	45	4	0	50	153
0715 - 0730	2	0	3	0	5	3	0	5	0	8	9	113	0	0	122	0	61	3	0	64	199
0730 - 0745	2	0	0	0	2	3	0	6	0	9	9	100	3	0	112	0	83	4	1	88	211
0745 - 0800	1	1	3	0	5	6	0	8	0	14	7	112	0	1	120	2	64	3	0	69	208
Hourly Total	7	1	8	0	**16**	12	0	23	0	**35**	29	416	3	1	**449**	3	253	14	1	**271**	**771**
0800 - 0815	1	0	0	0	1	5	0	5	0	10	8	80	1	0	89	0	69	7	0	76	176
0815 - 0830	0	1	1	0	2	4	0	10	0	14	7	91	1	0	99	1	38	6	0	45	160
0830 - 0845	0	1	0	0	1	7	0	2	0	9	4	82	0	0	86	0	49	7	0	56	152
0845 - 0900	0	0	4	0	4	10	1	6	0	17	8	69	0	0	77	1	61	8	0	70	168
Hourly Total	1	2	5	0	**8**	26	1	23	0	**50**	27	322	2	0	**351**	2	217	28	0	**247**	**656**
Grand Total	8	3	13	0	**24**	38	1	46	0	**85**	56	738	5	1	**800**	5	470	42	1	**518**	**1427**
Approach %	33.33	12.50	54.17	0.00	-	44.71	1.18	54.12	0.00	-	7.00	92.25	0.63	0.13	-	0.97	90.73	8.11	0.13	-	
Intersection %	0.56	0.21	0.91	0.00	1.68	2.66	0.07	3.22	0.00	5.96	3.92	51.72	0.35	0.07	56.06	0.35	32.94	2.94	0.07	36.30	
Heavy Vehicle %	0	0	0	-	**0**	0	0	4	-	**2**	2	4	0	0	**4**	20	7	7	100	**7**	**5**
PHF	0.75	0.25	0.50	0.00	**0.65**	0.71	0.00	0.75	0.00	**0.73**	0.92	0.90	0.33	0.25	**0.91**	0.25	0.83	0.61	0.25	**0.84**	**0.94**
Peak Hour Total	6	1	6	0	**13**	17	0	24	0	**41**	33	405	4	1	**443**	2	277	17	1	**297**	**794**
Peak Hour HV %	0	0	0	0	**0**	0	0	8	0	**5**	3	4	0	0	**4**	0	5	6	100	**5**	**4**

1600 - 1800 (Weekday 2h Session) (05-14-2026)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	Jessilee Dr					Walmart Driveway					US-441 Norris Fwy (West)					US-441 Norris Fwy (East)					
TIME	Left 4.1	Thru 4.2	Right 4.3	U-Turn 4.4	App Total	Left 4.5	Thru 4.6	Right 4.7	U-Turn 4.8	App Total	Left 4.9	Thru 4.10	Right 4.11	U-Turn 4.12	App Total	Left 4.13	Thru 4.14	Right 4.15	U-Turn 4.16	App Total	Int Total
1600 - 1615	2	2	0	0	4	19	1	26	0	46	21	89	2	0	112	0	71	3	0	74	236
1615 - 1630	0	0	2	0	2	5	0	22	0	27	11	78	1	0	90	1	82	8	0	91	210
1630 - 1645	1	0	1	0	2	10	1	31	0	42	19	89	1	0	109	0	95	9	0	104	257
1645 - 1700	1	0	1	0	2	12	0	17	0	29	17	90	0	0	107	2	86	8	0	96	234
Hourly Total	4	2	4	0	**10**	46	2	96	0	**144**	68	346	4	0	**418**	3	334	28	0	**365**	**937**
1700 - 1715	0	0	1	0	1	11	1	16	0	28	15	102	1	0	118	1	92	6	0	99	246
1715 - 1730	0	1	0	0	1	17	0	28	2	47	22	115	0	0	137	1	89	6	0	96	281
1730 - 1745	1	1	2	0	4	16	1	22	0	39	18	80	0	0	98	3	99	4	0	106	247
1745 - 1800	1	1	1	0	3	9	2	17	0	28	17	103	1	0	121	1	79	8	0	88	240
Hourly Total	2	3	4	0	**9**	53	4	83	2	**142**	72	400	2	0	**474**	6	359	24	0	**389**	**1014**
Grand Total	6	5	8	0	**19**	99	6	179	2	**286**	140	746	6	0	**892**	9	693	52	0	**754**	**1951**
Approach %	31.58	26.32	42.11	0.00	-	34.62	2.10	62.59	0.70	-	15.70	83.63	0.67	0.00	-	1.19	91.91	6.90	0.00	-	
Intersection %	0.31	0.26	0.41	0.00	0.97	5.07	0.31	9.17	0.10	14.66	7.18	38.24	0.31	0.00	45.72	0.46	35.52	2.67	0.00	38.65	
Heavy Vehicle %	0	0	0	-	**0**	0	0	0	0	**0**	0	2	0	-	**2**	0	1	0	-	**1**	**1**
PHF	0.50	0.25	0.75	0.00	**0.75**	0.74	0.50	0.74	0.25	**0.78**	0.83	0.86	0.50	0.00	**0.86**	0.50	0.95	0.81	0.00	**0.95**	**0.91**
Peak Hour Total	2	1	3	0	**6**	50	2	92	2	**146**	73	396	2	0	**471**	4	362	29	0	**395**	**1018**
Peak Hour HV %	0	0	0	0	**0**	0	0	0	0	**0**	0	2	0	0	**1**	0	1	0	0	**1**	**1**

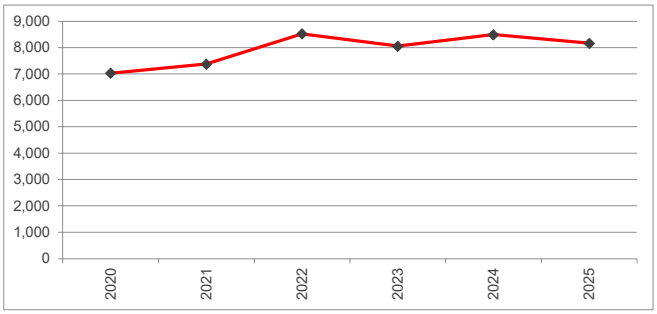
APPENDIX C

Volume Development

Growth Rate Calculations - THD Halls Crossroads

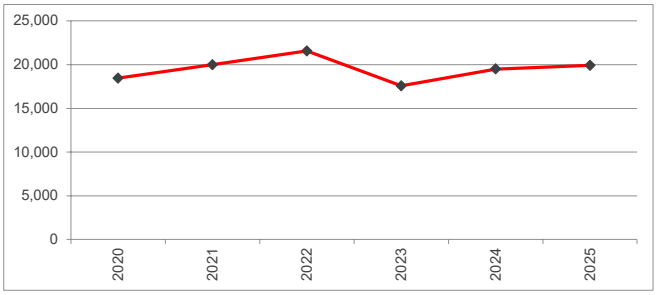
Station	47000023		
Route	Norris Fwy, North of Sam Walton Way		
Location	SR071 NW HALLS CROSS ROADS		
Count Type	Count Year	AADT	Annual Growth Rate
Actual	2020	7,028	
Estimate	2021	7,379	5.0%
Actual	2022	8,527	15.6%
Actual	2023	8,058	-5.5%
Estimate	2024	8,493	5.4%
Actual	2025	8,166	-3.9%

	AADT
5 Year Growth Rate	3.0%
Average 1 Year Growth Rate	3.3%
Most Recent Actual Count Growth Rate	0.7%



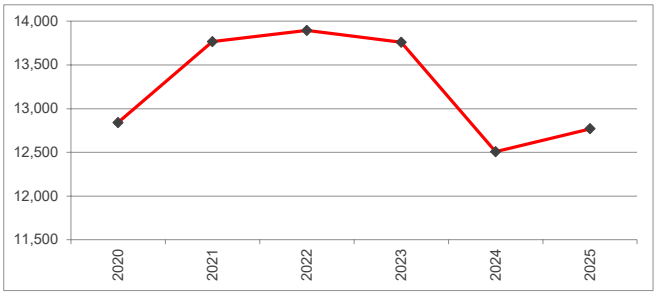
Station	47000024		
Route	E Emory Rd, West of Norris Fwy		
Location	SR131 SW HALLS CROSS ROADS		
Count Type	Count Year	AADT	Annual Growth Rate
Actual	2020	18,447	
Actual	2021	19,981	8.3%
Actual	2022	21,550	7.9%
Actual	2023	17,548	-18.6%
Actual	2024	19,504	11.1%
Estimate	2025	19,914	2.1%

	AADT
5 Year Growth Rate	1.5%
Average 1 Year Growth Rate	2.2%
Most Recent Actual Count Growth Rate	11.1%



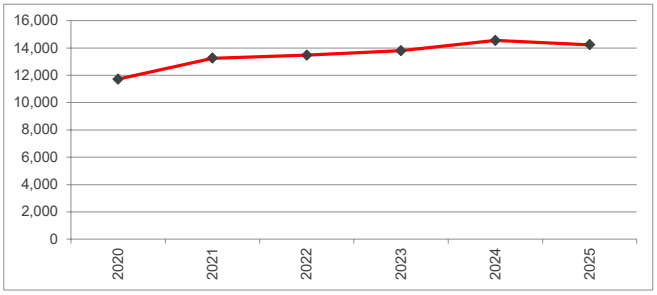
Station	47000477		
Route	E Emory Rd, East of Norris Fwy		
Location	05636 KNOXVILLE SE		
Count Type	Count Year	AADT	Annual Growth Rate
Actual	2020	12,840	
Actual	2021	13,767	7.2%
Actual	2022	13,892	0.9%
Actual	2023	13,758	-1.0%
Actual	2024	12,505	-9.1%
Estimate	2025	12,768	2.1%

	AADT
5 Year Growth Rate	-0.1%
Average 1 Year Growth Rate	0.0%
Most Recent Actual Count Growth Rate	-9.1%



Station	47000022		
Route	Norris Fwy, South of Emory Road		
Location	SR071 NEAR HALLS CROSS RDS		
Count Type	Count Year	AADT	Annual Growth Rate
Actual	2020	11,712	
Actual	2021	13,249	13.1%
Actual	2022	13,476	1.7%
Actual	2023	13,799	2.4%
Estimate	2024	14,544	5.4%
Actual	2025	14,232	-2.1%

	AADT
5 Year Growth Rate	4.0%
Average 1 Year Growth Rate	4.1%
Most Recent Actual Count Growth Rate	1.6%



Average of Sites

	AADT
5 Year Growth Rate	2.1%
Average 1 Year Growth Rate	2.4%
Most Recent Actual Count Growth Rate	1.1%

INTERSECTION VOLUME WORKSHEET
INTERSECTION 1
Jessilee Dr/Walmart Driveway at US-441 Norris Fwy

AM PEAK HOUR

	Jessilee Dr Eastbound				Walmart Driveway Westbound				US-441 Norris Fwy Northbound				US-441 Norris Fwy Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2026 AM Volumes	**0**	**6**	**1**	**6**	**0**	**17**	**0**	**24**	**1**	**2**	**277**	**17**	**1**	**33**	**405**	**4**	**794**
Existing Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Build-Out)	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	
Growth Trips (Build-Out)	0	0	0	0	0	1	0	1	0	0	11	1	0	1	16	0	31
Annual Growth Rate (Horizon)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Horizon)	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	
Growth Trips (Horizon)	0	1	0	1	0	3	0	4	0	0	41	3	0	5	60	1	119
No-Build 2028 AM Volumes	**0**	**6**	**1**	**6**	**0**	**18**	**0**	**25**	**1**	**2**	**288**	**18**	**1**	**34**	**421**	**4**	**825**
No-Build 2033 AM Volumes	**0**	**7**	**1**	**7**	**0**	**20**	**0**	**28**	**1**	**2**	**318**	**20**	**1**	**38**	**465**	**5**	**913**
Project Traffic																	
Trip Distribution IN												5%		5%	35%		
Trip Distribution OUT						(5%)		(5%)			(35%)						
Project Trips	0	0	0	0	0	4	0	4	0	0	31	6	0	6	41	0	92
Build 2028 AM Volumes	**0**	**6**	**1**	**6**	**0**	**22**	**0**	**29**	**1**	**2**	**319**	**24**	**1**	**40**	**462**	**4**	**917**
Build 2033 AM Volumes	**0**	**7**	**1**	**7**	**0**	**24**	**0**	**32**	**1**	**2**	**349**	**26**	**1**	**44**	**506**	**5**	**1005**

PM PEAK HOUR

	Jessilee Dr Eastbound				Walmart Driveway Westbound				US-441 Norris Fwy Northbound				US-441 Norris Fwy Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2026 PM Volumes	**0**	**2**	**1**	**3**	**2**	**50**	**2**	**92**	**0**	**4**	**362**	**29**	**0**	**73**	**396**	**2**	**1018**
Existing Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	
Growth Trips	0	0	0	0	0	2	0	4	0	0	14	1	0	3	16	0	40
Annual Growth Rate (Horizon)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Horizon)	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	
Growth Trips (Horizon)	0	0	0	0	0	7	0	14	0	1	54	4	0	11	59	0	150
No-Build 2028 PM Volumes	**0**	**2**	**1**	**3**	**2**	**52**	**2**	**96**	**0**	**4**	**376**	**30**	**0**	**76**	**412**	**2**	**1058**
No-Build 2033 PM Volumes	**0**	**2**	**1**	**3**	**2**	**57**	**2**	**106**	**0**	**5**	**416**	**33**	**0**	**84**	**455**	**2**	**1168**
Project Traffic																	
Trip Distribution IN												5%		5%	35%		
Trip Distribution OUT						(5%)		(5%)			(35%)						
Project Trips	0	0	0	0	0	6	0	6	0	0	40	5	0	5	37	0	99
Build 2028 PM Volumes	**0**	**2**	**1**	**3**	**2**	**58**	**2**	**102**	**0**	**4**	**416**	**35**	**0**	**81**	**449**	**2**	**1157**
Build 2033 PM Volumes	**0**	**2**	**1**	**3**	**2**	**63**	**2**	**112**	**0**	**5**	**456**	**38**	**0**	**89**	**492**	**2**	**1267**

INTERSECTION VOLUME WORKSHEET
INTERSECTION 2
Driveway/Sam Walton Way at US-441 Norris Pwy(South)/US-441 Norris Fwy(North)

AM PEAK HOUR

	Driveway Eastbound				Sam Walton Way Westbound				US-441 Norris Pwy(South) Northbound				US-441 Norris Fwy(North) Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2026 AM Volumes	**0**	**0**	**0**	**0**	**0**	**71**	**0**	**15**	**0**	**0**	**284**	**140**	**0**	**16**	**416**	**0**	**942**
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Build-Out)	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	
Growth Trips (Build-Out)	0	0	0	0	0	3	0	1	0	0	11	6	0	1	17	0	39
Annual Growth Rate (Horizon)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Horizon)	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	
Growth Trips (Horizon)	0	0	0	0	0	11	0	2	0	0	42	21	0	2	62	0	140
No-Build 2028 AM Volumes	**0**	**0**	**0**	**0**	**0**	**74**	**0**	**16**	**0**	**0**	**295**	**146**	**0**	**17**	**433**	**0**	**981**
No-Build 2033 AM Volumes	**0**	**0**	**0**	**0**	**0**	**82**	**0**	**17**	**0**	**0**	**326**	**161**	**0**	**18**	**478**	**0**	**1082**
Project Traffic																	
Trip Distribution IN											5%	55%		35%			
Trip Distribution OUT						(55%)		(35%)							(5%)		
Project Trips	0	0	0	0	0	48	0	31	0	0	6	64	0	41	4	0	194
Build 2028 AM Volumes	**0**	**0**	**0**	**0**	**0**	**122**	**0**	**47**	**0**	**0**	**301**	**210**	**0**	**58**	**437**	**0**	**1175**
Build 2033 AM Volumes	**0**	**0**	**0**	**0**	**0**	**130**	**0**	**48**	**0**	**0**	**332**	**225**	**0**	**59**	**482**	**0**	**1276**

PM PEAK HOUR

	Driveway Eastbound				Sam Walton Way Westbound				US-441 Norris Pwy(South) Northbound				US-441 Norris Fwy(North) Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2026 PM Volumes	**0**	**0**	**0**	**0**	**0**	**312**	**0**	**57**	**0**	**0**	**340**	**352**	**0**	**32**	**412**	**0**	**1505**
Existing Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	
Growth Trips	0	0	0	0	0	12	0	2	0	0	14	14	0	1	16	0	59
Annual Growth Rate (Horizon)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Horizon)	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	
Growth Trips (Horizon)	0	0	0	0	0	46	0	8	0	0	51	52	0	5	61	0	223
No-Build 2028 PM Volumes	**0**	**0**	**0**	**0**	**0**	**324**	**0**	**59**	**0**	**0**	**354**	**366**	**0**	**33**	**428**	**0**	**1564**
No-Build 2033 PM Volumes	**0**	**0**	**0**	**0**	**0**	**358**	**0**	**65**	**0**	**0**	**391**	**404**	**0**	**37**	**473**	**0**	**1728**
Project Traffic																	
Trip Distribution IN											5%	55%		35%			
Trip Distribution OUT						(55%)		(35%)							(5%)		
Project Trips	0	0	0	0	0	63	0	40	0	0	5	59	0	37	6	0	210
Build 2028 PM Volumes	**0**	**0**	**0**	**0**	**0**	**405**	**0**	**126**	**0**	**0**	**332**	**452**	**0**	**88**	**416**	**0**	**1819**
Build 2033 PM Volumes	**0**	**0**	**0**	**0**	**0**	**439**	**0**	**132**	**0**	**0**	**369**	**490**	**0**	**92**	**461**	**0**	**1983**

INTERSECTION VOLUME WORKSHEET

INTERSECTION 3

TN-131 E Emory Rd(West)/TN-131 E Emory Rd(East) at US-441 Norris Fwy(South)/US-441 Norris Fwy(North)

AM PEAK HOUR

	TN-131 E Emory Rd(West) Eastbound				TN-131 E Emory Rd(East) Westbound				US-441 Norris Fwy(South) Northbound				US-441 Norris Fwy(North) Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2026 AM Volumes	**0**	**85**	**344**	**271**	**0**	**10**	**423**	**100**	**0**	**253**	**234**	**19**	**0**	**73**	**245**	**156**	**2213**
Existing Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Build-Out)	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	
Growth Trips (Build-Out)	0	3	14	11	0	0	17	4	0	10	9	1	0	3	10	6	88
Annual Growth Rate (Horizon)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Horizon)	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	
Growth Trips (Horizon)	0	13	51	40	0	1	63	15	0	38	35	3	0	11	37	23	330
No-Build 2028 AM Volumes	**0**	**88**	**358**	**282**	**0**	**10**	**440**	**104**	**0**	**263**	**243**	**20**	**0**	**76**	**255**	**162**	**2301**
No-Build 2033 AM Volumes	**0**	**98**	**395**	**311**	**0**	**11**	**486**	**115**	**0**	**291**	**269**	**22**	**0**	**84**	**282**	**179**	**2543**
Project Traffic																	
Trip Distribution IN		20%						10%			30%						
Trip Distribution OUT														(10%)	(30%)	(20%)	
Project Trips	0	23	0	0	0	0	0	12	0	0	35	0	0	9	26	18	123
Build 2028 AM Volumes	**0**	**111**	**358**	**282**	**0**	**10**	**440**	**116**	**0**	**263**	**278**	**20**	**0**	**85**	**281**	**180**	**2424**
Build 2033 AM Volumes	**0**	**121**	**395**	**311**	**0**	**11**	**486**	**127**	**0**	**291**	**304**	**22**	**0**	**93**	**308**	**197**	**2666**

PM PEAK HOUR

	TN-131 E Emory Rd(West) Eastbound				TN-131 E Emory Rd(East) Westbound				US-441 Norris Fwy(South) Northbound				US-441 Norris Fwy(North) Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2026 PM Volumes	**0**	**221**	**555**	**424**	**0**	**42**	**263**	**103**	**0**	**189**	**385**	**23**	**0**	**158**	**422**	**134**	**2919**
Existing Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	
Growth Trips	0	9	22	17	0	2	11	4	0	8	15	1	0	6	17	5	117
Annual Growth Rate (Horizon)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Horizon)	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	
Growth Trips (Horizon)	0	33	83	63	0	6	39	15	0	28	57	3	0	24	63	20	434
No-Build 2028 PM Volumes	**0**	**230**	**577**	**441**	**0**	**44**	**274**	**107**	**0**	**197**	**400**	**24**	**0**	**164**	**439**	**139**	**3036**
No-Build 2033 PM Volumes	**0**	**254**	**638**	**487**	**0**	**48**	**302**	**118**	**0**	**217**	**442**	**26**	**0**	**182**	**485**	**154**	**3353**
Project Traffic																	
Trip Distribution IN		20%						10%			30%						
Trip Distribution OUT														(10%)	(30%)	(20%)	
Project Trips	0	21	0	0	0	0	0	11	0	0	32	0	0	11	34	23	132
Build 2028 PM Volumes	**0**	**251**	**577**	**441**	**0**	**44**	**274**	**118**	**0**	**197**	**432**	**24**	**0**	**175**	**473**	**162**	**3168**
Build 2033 PM Volumes	**0**	**275**	**638**	**487**	**0**	**48**	**302**	**129**	**0**	**217**	**474**	**26**	**0**	**193**	**519**	**177**	**3485**

INTERSECTION VOLUME WORKSHEET

INTERSECTION 4

E Emory Rd(West)/E Emory Rd(East) at Andersonville Pike(South)/Andersonville Pike(North)

AM PEAK HOUR

	E Emory Rd(West) Eastbound				E Emory Rd(East) Westbound				Andersonville Pike(South) Northbound				Andersonville Pike(North) Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2026 AM Volumes	**0**	**88**	**277**	**35**	**0**	**91**	**372**	**107**	**0**	**47**	**170**	**3**	**0**	**82**	**214**	**167**	**1653**
Existing Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate (Build-Out)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Build-Out)	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	
Growth Trips (Build-Out)	0	4	11	1	0	4	15	4	0	2	7	0	0	3	9	7	67
Annual Growth Rate (Horizon)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Horizon)	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	
Growth Trips (Horizon)	0	13	41	5	0	14	55	16	0	7	25	0	0	12	32	25	245
No-Build 2028 AM Volumes	**0**	**92**	**288**	**36**	**0**	**95**	**387**	**111**	**0**	**49**	**177**	**3**	**0**	**85**	**223**	**174**	**1720**
No-Build 2033 AM Volumes	**0**	**101**	**318**	**40**	**0**	**105**	**427**	**123**	**0**	**54**	**195**	**3**	**0**	**94**	**246**	**192**	**1898**
Project Traffic																	
Trip Distribution IN							5%									5%	
Trip Distribution OUT		(5%)	(5%)														
Project Trips	0	4	4	0	0	0	6	0	0	0	0	0	0	0	0	6	20
Build 2028 AM Volumes	**0**	**96**	**292**	**36**	**0**	**95**	**393**	**111**	**0**	**49**	**177**	**3**	**0**	**85**	**223**	**180**	**1740**
Build 2033 AM Volumes	**0**	**105**	**322**	**40**	**0**	**105**	**433**	**123**	**0**	**54**	**195**	**3**	**0**	**94**	**246**	**198**	**1918**

PM PEAK HOUR

	E Emory Rd(West) Eastbound				E Emory Rd(East) Westbound				Andersonville Pike(South) Northbound				Andersonville Pike(North) Southbound				Total Intersection
	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	U-Turn	Left	Through	Right	
Existing Traffic																	
Existing 2026 PM Volumes	**0**	**250**	**459**	**37**	**0**	**10**	**249**	**86**	**0**	**27**	**275**	**6**	**0**	**81**	**232**	**103**	**1815**
Existing Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Heavy Vehicle %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Background Traffic																	
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	
Growth Trips	0	10	18	1	0	0	10	3	0	1	11	0	0	3	9	4	70
Annual Growth Rate (Horizon)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	
Growth Factor (Horizon)	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	1.149	
Growth Trips (Horizon)	0	37	68	6	0	1	37	13	0	4	41	1	0	12	35	15	270
No-Build 2028 PM Volumes	**0**	**260**	**477**	**38**	**0**	**10**	**259**	**89**	**0**	**28**	**286**	**6**	**0**	**84**	**241**	**107**	**1885**
No-Build 2033 PM Volumes	**0**	**287**	**527**	**43**	**0**	**11**	**286**	**99**	**0**	**31**	**316**	**7**	**0**	**93**	**267**	**118**	**2085**
Project Traffic																	
Trip Distribution IN							5%									5%	
Trip Distribution OUT		(5%)	(5%)														
Project Trips	0	6	6	0	0	0	5	0	0	0	0	0	0	0	0	5	22
Build 2028 PM Volumes	**0**	**266**	**483**	**38**	**0**	**10**	**264**	**89**	**0**	**28**	**286**	**6**	**0**	**84**	**241**	**112**	**1907**
Build 2033 PM Volumes	**0**	**293**	**533**	**43**	**0**	**11**	**291**	**99**	**0**	**31**	**316**	**7**	**0**	**93**	**267**	**123**	**2107**

APPENDIX D

Capacity Reports

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	6	17	0	24	3	277	17	34	405	4
Future Vol, veh/h	6	1	6	17	0	24	3	277	17	34	405	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1	6	18	0	26	3	295	18	36	431	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	806	824	433	805	809	295	435	0	0	313	0	0
Stage 1	505	505	-	301	301	-	-	-	-	-	-	-
Stage 2	301	319	-	504	507	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	300	308	623	301	315	745	1125	-	-	1248	-	-
Stage 1	549	540	-	708	665	-	-	-	-	-	-	-
Stage 2	708	653	-	550	539	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	281	298	623	287	305	745	1125	-	-	1248	-	-
Mov Cap-2 Maneuver	281	298	-	287	305	-	-	-	-	-	-	-
Stage 1	533	524	-	706	663	-	-	-	-	-	-	-
Stage 2	682	651	-	528	523	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	14.88	13.89	0.08	0.61
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1125	-	-	378	449	1248	-	-
HCM Lane V/C Ratio	0.003	-	-	0.037	0.097	0.029	-	-
HCM Ctrl Dly (s/v)	8.2	-	-	14.9	13.9	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	71	0	15	0	284	140	16	416	0
Future Volume (vph)	0	0	0	71	0	15	0	284	140	16	416	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.45	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	841	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	75	0	16	0	299	147	17	438	0
RTOR Reduction (vph)	0	0	0	0	0	13	0	0	81	0	0	0
Lane Group Flow (vph)	0	0	0	75	0	3	0	299	66	17	438	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				10.1		10.1		26.9	26.9	34.9	34.9	
Effective Green, g (s)				10.1		10.1		26.9	26.9	34.9	34.9	
Actuated g/C Ratio				0.17		0.17		0.45	0.45	0.58	0.58	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				577		266		1586	709	504	2058	
v/s Ratio Prot								0.08		0.00	c0.12	
v/s Ratio Perm				c0.02		0.00			0.04	0.02		
v/c Ratio				0.13		0.01		0.19	0.09	0.03	0.21	
Uniform Delay, d1				21.2		20.8		10.0	9.5	5.7	6.0	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.1		0.0		0.1	0.1	0.0	0.1	
Delay (s)				21.3		20.8		10.1	9.6	5.7	6.1	
Level of Service				C		C		B	A	A	A	
Approach Delay (s/veh)		0.0			21.2			9.9			6.1	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	29.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	344	271	10	423	100	253	234	19	73	245	156
Future Volume (veh/h)	85	344	271	10	423	100	253	234	19	73	245	156
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	382	301	11	470	111	281	260	0	81	272	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	293	900	762	342	669	158	329	369		102	297	
Arrive On Green	0.04	0.48	0.48	0.01	0.46	0.46	0.10	0.20	0.00	0.06	0.16	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1463	345	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	94	382	301	11	0	581	281	260	0	81	272	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1808	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	3.9	18.6	17.0	0.5	0.0	35.9	11.2	18.1	0.0	6.3	20.0	0.0
Cycle Q Clear(g_c), s	3.9	18.6	17.0	0.5	0.0	35.9	11.2	18.1	0.0	6.3	20.0	0.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	293	900	762	342	0	828	329	369		102	297	
V/C Ratio(X)	0.32	0.42	0.40	0.03	0.00	0.70	0.85	0.71		0.80	0.91	
Avail Cap(c_a), veh/h	346	900	762	423	0	828	358	369		184	327	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.49	0.00	0.49	1.00	1.00	0.00	0.99	0.99	0.00
Uniform Delay (d), s/veh	23.7	23.7	23.3	20.4	0.0	30.3	62.4	52.4	0.0	65.2	57.9	0.0
Incr Delay (d2), s/veh	0.5	1.5	1.5	0.0	0.0	2.5	16.5	5.2	0.0	10.0	26.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	8.5	6.5	0.2	0.0	15.8	5.6	8.9	0.0	3.1	11.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.2	25.2	24.8	20.5	0.0	32.8	78.9	57.6	0.0	75.2	84.3	0.0
LnGrp LOS	C	C	C	C		C	E	E		E	F	
Approach Vol, veh/h		777			592			541			353	
Approach Delay, s/veh		24.9			32.6			68.6			82.2	
Approach LOS		C			C			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.8	73.6	17.5	35.1	10.6	76.8	22.8	29.8
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	10.0	56.5	14.5	24.5	8.5	57.5	14.5	24.5
Max Q Clear Time (g_c+I1), s	5.9	37.9	8.3	20.1	2.5	20.6	13.2	22.0
Green Ext Time (p_c), s	0.0	2.2	0.1	0.3	0.0	1.9	0.1	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	46.3
HCM 7th LOS	D

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	277	35	91	372	107	47	170	3	82	214	167
Future Volume (veh/h)	88	277	35	91	372	107	47	170	3	82	214	167
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	100	315	40	103	423	122	53	193	3	93	243	190
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	571	73	352	490	141	271	645	10	477	344	269
Arrive On Green	0.05	0.35	0.35	0.05	0.35	0.35	0.05	0.35	0.35	0.05	0.35	0.35
Sat Flow, veh/h	1781	1626	207	1781	1395	402	1781	1837	29	1781	973	761
Grp Volume(v), veh/h	100	0	355	103	0	545	53	0	196	93	0	433
Grp Sat Flow(s),veh/h/ln	1781	0	1833	1781	0	1797	1781	0	1865	1781	0	1733
Q Serve(g_s), s	4.5	0.0	20.0	4.7	0.0	36.1	2.4	0.0	9.8	4.2	0.0	27.6
Cycle Q Clear(g_c), s	4.5	0.0	20.0	4.7	0.0	36.1	2.4	0.0	9.8	4.2	0.0	27.6
Prop In Lane	1.00		0.11	1.00		0.22	1.00		0.02	1.00		0.44
Lane Grp Cap(c), veh/h	211	0	644	352	0	632	271	0	655	477	0	613
V/C Ratio(X)	0.48	0.00	0.55	0.29	0.00	0.86	0.20	0.00	0.30	0.20	0.00	0.71
Avail Cap(c_a), veh/h	394	0	644	535	0	632	467	0	655	661	0	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.8	0.0	33.4	25.8	0.0	38.6	27.0	0.0	30.1	24.4	0.0	35.6
Incr Delay (d2), s/veh	0.6	0.0	3.4	0.2	0.0	14.5	0.1	0.0	1.2	0.1	0.0	6.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	9.3	2.0	0.0	18.0	1.0	0.0	4.5	1.8	0.0	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.4	0.0	36.8	26.0	0.0	53.1	27.1	0.0	31.3	24.5	0.0	42.4
LnGrp LOS	C		D	C		D	C		C	C		D
Approach Vol, veh/h		455			648			249			526	
Approach Delay, s/veh		35.4			48.8			30.4			39.2	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	52.0	11.7	51.5	12.8	52.0	11.4	51.8
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	20.0	* 45	20.0	45.0	20.0	45.0	20.0	45.0
Max Q Clear Time (g_c+I1), s	6.5	38.1	6.2	11.8	6.7	22.0	4.4	29.6
Green Ext Time (p_c), s	0.1	1.3	0.1	0.6	0.1	1.2	0.0	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	40.4
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1	3	52	2	92	4	362	29	73	396	2
Future Vol, veh/h	2	1	3	52	2	92	4	362	29	73	396	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1	3	57	2	101	4	398	32	80	435	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1004	1035	436	1003	1004	398	437	0	0	430	0	0
Stage 1	597	597	-	407	407	-	-	-	-	-	-	-
Stage 2	408	438	-	596	598	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	220	232	620	221	242	652	1122	-	-	1130	-	-
Stage 1	490	492	-	621	598	-	-	-	-	-	-	-
Stage 2	620	578	-	490	491	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	171	214	620	202	224	652	1122	-	-	1130	-	-
Mov Cap-2 Maneuver	171	214	-	202	224	-	-	-	-	-	-	-
Stage 1	455	457	-	619	595	-	-	-	-	-	-	-
Stage 2	520	576	-	452	456	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	18.03	22.91	0.08	1.31
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1122	-	-	283	359	1130	-	-
HCM Lane V/C Ratio	0.004	-	-	0.023	0.447	0.071	-	-
HCM Ctrl Dly (s/v)	8.2	-	-	18	22.9	8.4	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	2.2	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	312	0	57	0	340	352	32	412	0
Future Volume (vph)	0	0	0	312	0	57	0	340	352	32	412	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.40	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	750	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	328	0	60	0	358	371	34	434	0
RTOR Reduction (vph)	0	0	0	0	0	41	0	0	253	0	0	0
Lane Group Flow (vph)	0	0	0	328	0	19	0	358	118	34	434	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.3		20.3		20.8	20.8	30.1	30.1	
Effective Green, g (s)				20.3		20.3		20.8	20.8	30.1	30.1	
Actuated g/C Ratio				0.31		0.31		0.32	0.32	0.46	0.46	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				1065		491		1125	503	381	1628	
v/s Ratio Prot								c0.10		0.00	c0.12	
v/s Ratio Perm				c0.10		0.01			0.07	0.04		
v/c Ratio				0.31		0.04		0.32	0.23	0.09	0.27	
Uniform Delay, d1				17.2		15.7		16.9	16.4	10.1	10.9	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.2		0.0		0.3	0.5	0.1	0.2	
Delay (s)				17.4		15.8		17.3	16.9	10.2	11.0	
Level of Service				B		B		B	B	B	B	
Approach Delay (s/veh)		0.0			17.1			17.1			11.0	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	29.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	221	555	424	42	263	103	189	385	23	158	422	134
Future Volume (veh/h)	221	555	424	42	263	103	189	385	23	158	422	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	223	561	428	42	266	104	191	389	0	160	426	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	391	745	631	193	438	171	238	413		172	464	
Arrive On Green	0.09	0.40	0.40	0.03	0.34	0.34	0.07	0.22	0.00	0.10	0.25	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1280	500	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	223	561	428	42	0	370	191	389	0	160	426	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1780	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	11.0	36.1	31.2	2.1	0.0	24.2	7.6	28.6	0.0	12.5	31.0	0.0
Cycle Q Clear(g_c), s	11.0	36.1	31.2	2.1	0.0	24.2	7.6	28.6	0.0	12.5	31.0	0.0
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	391	745	631	193	0	609	238	413		172	464	
V/C Ratio(X)	0.57	0.75	0.68	0.22	0.00	0.61	0.80	0.94		0.93	0.92	
Avail Cap(c_a), veh/h	439	745	631	239	0	609	259	434		172	474	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.82	0.00	0.82	1.00	1.00	0.00	0.97	0.97	0.00
Uniform Delay (d), s/veh	27.3	36.2	34.7	30.9	0.0	38.3	64.2	53.7	0.0	62.8	51.2	0.0
Incr Delay (d2), s/veh	1.1	6.9	5.8	0.3	0.0	3.7	14.6	27.7	0.0	47.9	21.5	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	17.5	12.6	0.9	0.0	11.0	3.8	16.3	0.0	7.8	16.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.4	43.2	40.5	31.3	0.0	41.9	78.8	81.3	0.0	110.7	72.7	0.0
LnGrp LOS	C	D	D	C		D	E	F		F	E	
Approach Vol, veh/h		1212			412			580			586	
Approach Delay, s/veh		39.5			40.9			80.5			83.1	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.2	57.4	23.0	38.4	13.3	65.3	19.2	42.3
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	17.0	42.5	13.5	32.5	8.5	50.5	10.5	35.5
Max Q Clear Time (g_c+I1), s	13.0	26.2	14.5	30.6	4.1	38.1	9.6	33.0
Green Ext Time (p_c), s	0.2	1.2	0.0	0.3	0.0	2.5	0.0	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	57.4
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	459	37	10	249	86	27	275	6	81	232	103
Future Volume (veh/h)	250	459	37	10	249	86	27	275	6	81	232	103
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	258	473	38	10	257	89	28	284	6	84	239	106
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	423	723	58	262	439	152	304	604	13	367	421	187
Arrive On Green	0.11	0.42	0.42	0.02	0.33	0.33	0.03	0.33	0.33	0.05	0.34	0.34
Sat Flow, veh/h	1781	1708	137	1781	1328	460	1781	1825	39	1781	1228	545
Grp Volume(v), veh/h	258	0	511	10	0	346	28	0	290	84	0	345
Grp Sat Flow(s),veh/h/ln	1781	0	1846	1781	0	1788	1781	0	1863	1781	0	1772
Q Serve(g_s), s	12.6	0.0	30.0	0.5	0.0	21.8	1.4	0.0	16.8	4.2	0.0	21.6
Cycle Q Clear(g_c), s	12.6	0.0	30.0	0.5	0.0	21.8	1.4	0.0	16.8	4.2	0.0	21.6
Prop In Lane	1.00		0.07	1.00		0.26	1.00		0.02	1.00		0.31
Lane Grp Cap(c), veh/h	423	0	781	262	0	592	304	0	617	367	0	608
V/C Ratio(X)	0.61	0.00	0.65	0.04	0.00	0.58	0.09	0.00	0.47	0.23	0.00	0.57
Avail Cap(c_a), veh/h	491	0	781	495	0	592	506	0	617	541	0	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.5	0.0	31.3	30.3	0.0	37.7	29.4	0.0	36.0	28.5	0.0	36.4
Incr Delay (d2), s/veh	0.8	0.0	4.2	0.0	0.0	4.2	0.0	0.0	2.6	0.1	0.0	3.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	14.0	0.2	0.0	10.1	0.6	0.0	8.0	1.8	0.0	9.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	27.3	0.0	35.5	30.3	0.0	41.9	29.4	0.0	38.6	28.6	0.0	40.2
LnGrp LOS	C		D	C		D	C		D	C		D
Approach Vol, veh/h		769			356			318			429	
Approach Delay, s/veh		32.8			41.6			37.8			38.0	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.8	52.0	11.7	51.5	8.2	64.5	10.1	53.1
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	20.0	* 45	20.0	45.0	20.0	45.0	20.0	45.0
Max Q Clear Time (g_c+I1), s	14.6	23.8	6.2	18.8	2.5	32.0	3.4	23.6
Green Ext Time (p_c), s	0.2	1.2	0.1	1.0	0.0	1.6	0.0	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	36.5
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	6	18	0	25	3	288	18	35	421	4
Future Vol, veh/h	6	1	6	18	0	25	3	288	18	35	421	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1	6	19	0	27	3	306	19	37	448	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	837	856	450	836	839	306	452	0	0	326	0	0
Stage 1	524	524	-	313	313	-	-	-	-	-	-	-
Stage 2	313	332	-	523	527	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	286	295	609	287	302	734	1108	-	-	1234	-	-
Stage 1	536	530	-	698	657	-	-	-	-	-	-	-
Stage 2	698	645	-	537	528	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	267	285	609	273	292	734	1108	-	-	1234	-	-
Mov Cap-2 Maneuver	267	285	-	273	292	-	-	-	-	-	-	-
Stage 1	520	514	-	696	655	-	-	-	-	-	-	-
Stage 2	671	643	-	515	513	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	15.32	14.36	0.08	0.61
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1108	-	-	363	430	1234	-	-
HCM Lane V/C Ratio	0.003	-	-	0.038	0.106	0.03	-	-
HCM Ctrl Dly (s/v)	8.3	-	-	15.3	14.4	8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	74	0	16	0	295	146	17	433	0
Future Volume (vph)	0	0	0	74	0	16	0	295	146	17	433	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.45	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	829	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	78	0	17	0	311	154	18	456	0
RTOR Reduction (vph)	0	0	0	0	0	14	0	0	86	0	0	0
Lane Group Flow (vph)	0	0	0	78	0	3	0	311	68	18	456	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				10.4		10.4		26.5	26.5	34.5	34.5	
Effective Green, g (s)				10.4		10.4		26.5	26.5	34.5	34.5	
Actuated g/C Ratio				0.17		0.17		0.44	0.44	0.58	0.58	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				596		274		1565	700	493	2038	
v/s Ratio Prot								0.09		0.00	c0.13	
v/s Ratio Perm				c0.02		0.00			0.04	0.02		
v/c Ratio				0.13		0.01		0.20	0.10	0.04	0.22	
Uniform Delay, d1				20.9		20.5		10.2	9.7	5.9	6.2	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.1		0.0		0.1	0.1	0.0	0.1	
Delay (s)				21.0		20.5		10.3	9.9	5.9	6.3	
Level of Service				C		C		B	A	A	A	
Approach Delay (s/veh)		0.0			20.9			10.2			6.3	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	29.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	358	282	10	440	104	263	243	20	76	255	162
Future Volume (veh/h)	88	358	282	10	440	104	263	243	20	76	255	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	98	398	313	11	489	116	292	270	0	84	283	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	267	884	749	322	654	155	339	381		105	307	
Arrive On Green	0.04	0.47	0.47	0.01	0.45	0.45	0.10	0.20	0.00	0.06	0.16	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1461	347	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	98	398	313	11	0	605	292	270	0	84	283	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1808	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.1	20.0	18.2	0.5	0.0	38.9	11.7	18.8	0.0	6.5	20.9	0.0
Cycle Q Clear(g_c), s	4.1	20.0	18.2	0.5	0.0	38.9	11.7	18.8	0.0	6.5	20.9	0.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	267	884	749	322	0	810	339	381		105	307	
V/C Ratio(X)	0.37	0.45	0.42	0.03	0.00	0.75	0.86	0.71		0.80	0.92	
Avail Cap(c_a), veh/h	317	884	749	403	0	810	358	381		184	327	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.43	0.00	0.43	1.00	1.00	0.00	0.99	0.99	0.00
Uniform Delay (d), s/veh	25.3	24.7	24.3	21.3	0.0	32.1	62.2	51.9	0.0	65.1	57.6	0.0
Incr Delay (d2), s/veh	0.6	1.7	1.7	0.0	0.0	2.8	17.8	5.2	0.0	9.9	28.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	9.1	7.0	0.2	0.0	17.1	5.9	9.2	0.0	3.2	12.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.9	26.4	26.0	21.3	0.0	34.8	80.0	57.1	0.0	74.9	85.8	0.0
LnGrp LOS	C	C	C	C		C	E	E		E	F	
Approach Vol, veh/h		809			616			562			367	
Approach Delay, s/veh		26.2			34.6			69.0			83.3	
Approach LOS		C			C			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	72.2	17.7	36.0	10.6	75.7	23.2	30.5
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	10.0	56.5	14.5	24.5	8.5	57.5	14.5	24.5
Max Q Clear Time (g_c+I1), s	6.1	40.9	8.5	20.8	2.5	22.0	13.7	22.9
Green Ext Time (p_c), s	0.0	2.2	0.1	0.3	0.0	2.0	0.1	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	47.5
HCM 7th LOS	D

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	288	36	95	387	111	49	177	3	85	223	174
Future Volume (veh/h)	92	288	36	95	387	111	49	177	3	85	223	174
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	105	327	41	108	440	126	56	201	3	97	253	198
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	572	72	342	491	141	258	645	10	470	343	269
Arrive On Green	0.05	0.35	0.35	0.05	0.35	0.35	0.05	0.35	0.35	0.05	0.35	0.35
Sat Flow, veh/h	1781	1629	204	1781	1397	400	1781	1838	27	1781	972	761
Grp Volume(v), veh/h	105	0	368	108	0	566	56	0	204	97	0	451
Grp Sat Flow(s),veh/h/ln	1781	0	1833	1781	0	1798	1781	0	1865	1781	0	1733
Q Serve(g_s), s	4.8	0.0	20.9	4.9	0.0	38.2	2.5	0.0	10.2	4.4	0.0	29.2
Cycle Q Clear(g_c), s	4.8	0.0	20.9	4.9	0.0	38.2	2.5	0.0	10.2	4.4	0.0	29.2
Prop In Lane	1.00		0.11	1.00		0.22	1.00		0.01	1.00		0.44
Lane Grp Cap(c), veh/h	196	0	644	342	0	632	258	0	655	470	0	612
V/C Ratio(X)	0.54	0.00	0.57	0.32	0.00	0.90	0.22	0.00	0.31	0.21	0.00	0.74
Avail Cap(c_a), veh/h	379	0	644	525	0	632	452	0	655	654	0	612
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.6	0.0	33.7	26.1	0.0	39.3	27.4	0.0	30.3	24.5	0.0	36.3
Incr Delay (d2), s/veh	0.8	0.0	3.7	0.2	0.0	17.8	0.2	0.0	1.2	0.1	0.0	7.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	9.7	2.1	0.0	19.4	1.1	0.0	4.7	1.8	0.0	13.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.5	0.0	37.4	26.3	0.0	57.1	27.6	0.0	31.5	24.6	0.0	44.0
LnGrp LOS	C		D	C		E	C		C	C		D
Approach Vol, veh/h		473			674			260			548	
Approach Delay, s/veh		36.1			52.2			30.7			40.6	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	52.0	11.8	51.5	12.9	52.0	11.5	51.7
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	20.0	* 45	20.0	45.0	20.0	45.0	20.0	45.0
Max Q Clear Time (g_c+I1), s	6.8	40.2	6.4	12.2	6.9	22.9	4.5	31.2
Green Ext Time (p_c), s	0.1	1.1	0.1	0.7	0.1	1.3	0.0	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	42.2
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1	3	54	2	96	4	376	30	76	412	2
Future Vol, veh/h	2	1	3	54	2	96	4	376	30	76	412	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1	3	59	2	105	4	413	33	84	453	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1044	1076	454	1042	1044	413	455	0	0	446	0	0
Stage 1	621	621	-	422	422	-	-	-	-	-	-	-
Stage 2	423	455	-	620	622	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	207	219	606	208	229	639	1106	-	-	1114	-	-
Stage 1	475	479	-	609	588	-	-	-	-	-	-	-
Stage 2	609	569	-	475	479	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	158	202	606	189	211	639	1106	-	-	1114	-	-
Mov Cap-2 Maneuver	158	202	-	189	211	-	-	-	-	-	-	-
Stage 1	439	443	-	607	586	-	-	-	-	-	-	-
Stage 2	504	567	-	436	443	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	18.89	25.22	0.08	1.32
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1106	-	-	266	342	1114	-	-
HCM Lane V/C Ratio	0.004	-	-	0.025	0.489	0.075	-	-
HCM Ctrl Dly (s/v)	8.3	-	-	18.9	25.2	8.5	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	2.6	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	324	0	59	0	354	366	33	428	0
Future Volume (vph)	0	0	0	324	0	59	0	354	366	33	428	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.40	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	741	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	341	0	62	0	373	385	35	451	0
RTOR Reduction (vph)	0	0	0	0	0	43	0	0	262	0	0	0
Lane Group Flow (vph)	0	0	0	341	0	19	0	373	123	35	451	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.3		20.3		21.0	21.0	30.3	30.3	
Effective Green, g (s)				20.3		20.3		21.0	21.0	30.3	30.3	
Actuated g/C Ratio				0.31		0.31		0.32	0.32	0.46	0.46	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				1062		489		1132	506	378	1634	
v/s Ratio Prot								c0.11		0.00	c0.13	
v/s Ratio Perm				c0.10		0.01			0.08	0.04		
v/c Ratio				0.32		0.04		0.33	0.24	0.09	0.28	
Uniform Delay, d1				17.4		15.8		16.9	16.4	10.1	10.9	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.2		0.0		0.4	0.5	0.1	0.2	
Delay (s)				17.5		15.9		17.3	17.0	10.2	11.1	
Level of Service				B		B		B	B	B	B	
Approach Delay (s/veh)		0.0			17.3			17.1			11.0	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	65.6	Sum of lost time (s)	29.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	577	441	44	274	107	197	400	24	164	439	139
Future Volume (veh/h)	230	577	441	44	274	107	197	400	24	164	439	139
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	232	583	445	44	277	108	199	404	0	166	443	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	373	731	619	177	423	165	246	426		172	473	
Arrive On Green	0.10	0.39	0.39	0.04	0.33	0.33	0.07	0.23	0.00	0.10	0.25	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1281	499	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	232	583	445	44	0	385	199	404	0	166	443	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1780	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	11.7	38.6	33.3	2.2	0.0	25.9	7.9	29.8	0.0	13.0	32.5	0.0
Cycle Q Clear(g_c), s	11.7	38.6	33.3	2.2	0.0	25.9	7.9	29.8	0.0	13.0	32.5	0.0
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	373	731	619	177	0	588	246	426		172	473	
V/C Ratio(X)	0.62	0.80	0.72	0.25	0.00	0.65	0.81	0.95		0.97	0.94	
Avail Cap(c_a), veh/h	413	731	619	222	0	588	259	434		172	474	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.00	0.80	1.00	1.00	0.00	0.96	0.96	0.00
Uniform Delay (d), s/veh	28.5	37.8	36.2	32.4	0.0	40.0	64.1	53.2	0.0	63.0	51.2	0.0
Incr Delay (d2), s/veh	2.1	8.9	7.1	0.4	0.0	4.5	15.9	29.6	0.0	57.1	25.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	19.1	13.7	1.0	0.0	11.9	4.0	17.1	0.0	8.5	18.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.6	46.6	43.2	32.9	0.0	44.5	80.0	82.8	0.0	120.2	76.2	0.0
LnGrp LOS	C	D	D	C		D	E	F		F	E	
Approach Vol, veh/h		1260			429			603			609	
Approach Delay, s/veh		42.5			43.3			81.9			88.2	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.8	55.8	23.0	39.4	13.4	64.2	19.5	42.9
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	17.0	42.5	13.5	32.5	8.5	50.5	10.5	35.5
Max Q Clear Time (g_c+I1), s	13.7	27.9	15.0	31.8	4.2	40.6	9.9	34.5
Green Ext Time (p_c), s	0.2	1.2	0.0	0.1	0.0	2.4	0.0	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	60.4
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	477	38	10	259	89	28	286	6	84	241	107
Future Volume (veh/h)	260	477	38	10	259	89	28	286	6	84	241	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	268	492	39	10	267	92	29	295	6	87	248	110
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	417	728	58	250	438	151	292	602	12	357	419	186
Arrive On Green	0.11	0.43	0.43	0.02	0.33	0.33	0.03	0.33	0.33	0.05	0.34	0.34
Sat Flow, veh/h	1781	1710	136	1781	1330	458	1781	1827	37	1781	1228	545
Grp Volume(v), veh/h	268	0	531	10	0	359	29	0	301	87	0	358
Grp Sat Flow(s),veh/h/ln	1781	0	1846	1781	0	1788	1781	0	1864	1781	0	1772
Q Serve(g_s), s	13.1	0.0	31.7	0.5	0.0	23.0	1.4	0.0	17.6	4.4	0.0	22.8
Cycle Q Clear(g_c), s	13.1	0.0	31.7	0.5	0.0	23.0	1.4	0.0	17.6	4.4	0.0	22.8
Prop In Lane	1.00		0.07	1.00		0.26	1.00		0.02	1.00		0.31
Lane Grp Cap(c), veh/h	417	0	786	250	0	589	292	0	614	357	0	604
V/C Ratio(X)	0.64	0.00	0.68	0.04	0.00	0.61	0.10	0.00	0.49	0.24	0.00	0.59
Avail Cap(c_a), veh/h	478	0	786	483	0	589	492	0	614	530	0	604
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.9	0.0	31.6	30.7	0.0	38.4	29.8	0.0	36.6	28.9	0.0	37.2
Incr Delay (d2), s/veh	1.5	0.0	4.6	0.0	0.0	4.6	0.1	0.0	2.8	0.1	0.0	4.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	14.8	0.2	0.0	10.7	0.6	0.0	8.4	1.9	0.0	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.3	0.0	36.3	30.7	0.0	43.1	29.9	0.0	39.4	29.1	0.0	41.4
LnGrp LOS	C		D	C		D	C		D	C		D
Approach Vol, veh/h		799			369			330			445	
Approach Delay, s/veh		33.6			42.7			38.6			39.0	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.3	52.0	11.7	51.5	8.2	65.1	10.2	53.1
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	20.0	* 45	20.0	45.0	20.0	45.0	20.0	45.0
Max Q Clear Time (g_c+I1), s	15.1	25.0	6.4	19.6	2.5	33.7	3.4	24.8
Green Ext Time (p_c), s	0.2	1.2	0.1	1.0	0.0	1.6	0.0	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	37.4
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	6	22	0	29	3	319	24	41	462	4
Future Vol, veh/h	6	1	6	22	0	29	3	319	24	41	462	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1	6	23	0	31	3	339	26	44	491	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	927	952	494	925	929	339	496	0	0	365	0	0
Stage 1	581	581	-	346	346	-	-	-	-	-	-	-
Stage 2	346	371	-	579	583	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	249	259	576	250	268	703	1068	-	-	1194	-	-
Stage 1	500	500	-	670	636	-	-	-	-	-	-	-
Stage 2	670	619	-	501	499	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	229	249	576	236	257	703	1068	-	-	1194	-	-
Mov Cap-2 Maneuver	229	249	-	236	257	-	-	-	-	-	-	-
Stage 1	481	481	-	668	634	-	-	-	-	-	-	-
Stage 2	639	617	-	476	480	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	16.78	16.07	0.07	0.66
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1068	-	-	320	379	1194	-	-
HCM Lane V/C Ratio	0.003	-	-	0.043	0.143	0.037	-	-
HCM Ctrl Dly (s/v)	8.4	-	-	16.8	16.1	8.1	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	122	0	47	0	301	210	58	437	0
Future Volume (vph)	0	0	0	122	0	47	0	301	210	58	437	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.43	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	799	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	128	0	49	0	317	221	61	460	0
RTOR Reduction (vph)	0	0	0	0	0	35	0	0	148	0	0	0
Lane Group Flow (vph)	0	0	0	128	0	14	0	317	73	61	460	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.2		20.2		23.0	23.0	34.2	34.2	
Effective Green, g (s)				20.2		20.2		23.0	23.0	34.2	34.2	
Actuated g/C Ratio				0.29		0.29		0.33	0.33	0.49	0.49	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				999		460		1172	524	452	1744	
v/s Ratio Prot								0.09		0.01	c0.13	
v/s Ratio Perm				c0.04		0.01			0.05	0.06		
v/c Ratio				0.13		0.03		0.27	0.14	0.13	0.26	
Uniform Delay, d1				18.1		17.6		17.0	16.3	9.6	10.3	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.1		0.0		0.3	0.3	0.1	0.2	
Delay (s)				18.2		17.6		17.3	16.5	9.8	10.4	
Level of Service				B		B		B	B	A	B	
Approach Delay (s/veh)		0.0			18.0			17.0			10.4	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	69.4	Sum of lost time (s)	29.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	358	282	10	440	116	263	278	20	85	281	180
Future Volume (veh/h)	111	358	282	10	440	116	263	278	20	85	281	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	123	398	313	11	489	129	292	309	0	94	312	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	864	732	312	610	161	339	389		116	327	
Arrive On Green	0.05	0.46	0.46	0.01	0.43	0.43	0.10	0.21	0.00	0.07	0.17	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1426	376	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	123	398	313	11	0	618	292	309	0	94	312	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1802	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	5.4	20.4	18.5	0.5	0.0	41.8	11.7	21.9	0.0	7.3	23.1	0.0
Cycle Q Clear(g_c), s	5.4	20.4	18.5	0.5	0.0	41.8	11.7	21.9	0.0	7.3	23.1	0.0
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	249	864	732	312	0	771	339	389		116	327	
V/C Ratio(X)	0.49	0.46	0.43	0.04	0.00	0.80	0.86	0.79		0.81	0.95	
Avail Cap(c_a), veh/h	283	864	732	393	0	771	358	389		184	327	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.40	0.00	0.40	1.00	1.00	0.00	0.98	0.98	0.00
Uniform Delay (d), s/veh	27.7	25.7	25.2	22.8	0.0	34.9	62.2	52.6	0.0	64.6	57.2	0.0
Incr Delay (d2), s/veh	1.1	1.8	1.8	0.0	0.0	3.6	17.8	10.0	0.0	10.3	36.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	9.3	7.1	0.2	0.0	18.6	5.9	11.2	0.0	3.6	14.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.8	27.5	27.1	22.8	0.0	38.5	80.0	62.6	0.0	74.9	93.8	0.0
LnGrp LOS	C	C	C	C		D	E	E		E	F	
Approach Vol, veh/h		834			629			601			406	
Approach Delay, s/veh		27.5			38.2			71.1			89.4	
Approach LOS		C			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.4	69.4	18.6	36.6	10.6	74.2	23.2	32.0
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	10.0	56.5	14.5	24.5	8.5	57.5	14.5	24.5
Max Q Clear Time (g_c+I1), s	7.4	43.8	9.3	23.9	2.5	22.4	13.7	25.1
Green Ext Time (p_c), s	0.0	2.1	0.1	0.1	0.0	2.0	0.1	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	51.0
HCM 7th LOS	D

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	292	36	95	393	111	49	177	3	85	223	180
Future Volume (veh/h)	96	292	36	95	393	111	49	177	3	85	223	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	109	332	41	108	447	126	56	201	3	97	253	205
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	574	71	339	492	139	252	645	10	470	337	273
Arrive On Green	0.05	0.35	0.35	0.05	0.35	0.35	0.05	0.35	0.35	0.05	0.35	0.35
Sat Flow, veh/h	1781	1632	202	1781	1403	395	1781	1838	27	1781	956	775
Grp Volume(v), veh/h	109	0	373	108	0	573	56	0	204	97	0	458
Grp Sat Flow(s),veh/h/ln	1781	0	1834	1781	0	1799	1781	0	1865	1781	0	1731
Q Serve(g_s), s	5.0	0.0	21.2	4.9	0.0	38.9	2.5	0.0	10.2	4.4	0.0	29.9
Cycle Q Clear(g_c), s	5.0	0.0	21.2	4.9	0.0	38.9	2.5	0.0	10.2	4.4	0.0	29.9
Prop In Lane	1.00		0.11	1.00		0.22	1.00		0.01	1.00		0.45
Lane Grp Cap(c), veh/h	192	0	644	339	0	631	252	0	655	470	0	611
V/C Ratio(X)	0.57	0.00	0.58	0.32	0.00	0.91	0.22	0.00	0.31	0.21	0.00	0.75
Avail Cap(c_a), veh/h	374	0	644	521	0	631	446	0	655	654	0	611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.0	0.0	33.8	26.1	0.0	39.6	27.6	0.0	30.3	24.5	0.0	36.5
Incr Delay (d2), s/veh	1.0	0.0	3.8	0.2	0.0	19.2	0.2	0.0	1.2	0.1	0.0	8.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	9.9	2.1	0.0	20.0	1.1	0.0	4.8	1.8	0.0	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.9	0.0	37.6	26.3	0.0	58.8	27.8	0.0	31.6	24.6	0.0	44.7
LnGrp LOS	C		D	C		E	C		C	C		D
Approach Vol, veh/h		482			681			260			555	
Approach Delay, s/veh		36.3			53.6			30.7			41.2	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.9	52.0	11.8	51.5	12.9	52.1	11.5	51.7
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	20.0	* 45	20.0	45.0	20.0	45.0	20.0	45.0
Max Q Clear Time (g_c+I1), s	7.0	40.9	6.4	12.2	6.9	23.2	4.5	31.9
Green Ext Time (p_c), s	0.1	1.0	0.1	0.7	0.1	1.3	0.0	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	42.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1	3	60	2	102	4	416	35	81	449	2
Future Vol, veh/h	2	1	3	60	2	102	4	416	35	81	449	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1	3	66	2	112	4	457	38	89	493	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1140	1177	495	1138	1140	457	496	0	0	496	0	0
Stage 1	673	673	-	466	466	-	-	-	-	-	-	-
Stage 2	467	504	-	672	674	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	178	191	575	179	201	604	1068	-	-	1068	-	-
Stage 1	445	454	-	577	562	-	-	-	-	-	-	-
Stage 2	576	541	-	445	454	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	131	174	575	161	184	604	1068	-	-	1068	-	-
Mov Cap-2 Maneuver	131	174	-	161	184	-	-	-	-	-	-	-
Stage 1	408	416	-	575	560	-	-	-	-	-	-	-
Stage 2	465	538	-	405	416	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	21.2	34.18	0.07	1.32
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1068	-	-	229	297	1068	-	-
HCM Lane V/C Ratio	0.004	-	-	0.029	0.607	0.083	-	-
HCM Ctrl Dly (s/v)	8.4	-	-	21.2	34.2	8.7	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	3.7	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	405	0	126	0	332	452	88	416	0
Future Volume (vph)	0	0	0	405	0	126	0	332	452	88	416	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.41	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	764	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	426	0	133	0	349	476	93	438	0
RTOR Reduction (vph)	0	0	0	0	0	94	0	0	328	0	0	0
Lane Group Flow (vph)	0	0	0	426	0	39	0	349	148	93	438	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.3		20.3		21.7	21.7	34.6	34.6	
Effective Green, g (s)				20.3		20.3		21.7	21.7	34.6	34.6	
Actuated g/C Ratio				0.29		0.29		0.31	0.31	0.49	0.49	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				996		459		1098	491	463	1751	
v/s Ratio Prot								c0.10		0.02	c0.12	
v/s Ratio Perm				c0.12		0.02			0.09	0.08		
v/c Ratio				0.43		0.08		0.32	0.30	0.20	0.25	
Uniform Delay, d1				20.1		18.0		18.4	18.3	9.8	10.2	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.3		0.1		0.4	0.7	0.2	0.2	
Delay (s)				20.4		18.1		18.8	19.1	10.0	10.3	
Level of Service				C		B		B	B	B	B	
Approach Delay (s/veh)		0.0			19.8			18.9			10.3	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	29.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	577	441	44	274	118	197	432	24	175	473	162
Future Volume (veh/h)	251	577	441	44	274	118	197	432	24	175	473	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	254	583	445	44	277	119	199	436	0	177	478	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	363	723	612	173	393	169	246	434		172	481	
Arrive On Green	0.11	0.39	0.39	0.04	0.32	0.32	0.07	0.23	0.00	0.10	0.26	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1241	533	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	254	583	445	44	0	396	199	436	0	177	478	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1774	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	13.1	38.9	33.6	2.3	0.0	27.5	7.9	32.5	0.0	13.5	35.7	0.0
Cycle Q Clear(g_c), s	13.1	38.9	33.6	2.3	0.0	27.5	7.9	32.5	0.0	13.5	35.7	0.0
Prop In Lane	1.00		1.00	1.00		0.30	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	363	723	612	173	0	562	246	434		172	481	
V/C Ratio(X)	0.70	0.81	0.73	0.25	0.00	0.70	0.81	1.00		1.03	0.99	
Avail Cap(c_a), veh/h	387	723	612	219	0	562	259	434		172	481	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.79	0.00	0.79	1.00	1.00	0.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	29.8	38.3	36.7	33.5	0.0	42.1	64.1	53.7	0.0	63.2	51.9	0.0
Incr Delay (d2), s/veh	4.7	9.4	7.4	0.4	0.0	5.8	15.9	44.2	0.0	75.1	38.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	19.3	13.8	1.0	0.0	12.7	4.0	20.2	0.0	9.6	21.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.6	47.7	44.1	33.9	0.0	47.9	80.0	98.0	0.0	138.4	89.9	0.0
LnGrp LOS	C	D	D	C		D	E	F		F	F	
Approach Vol, veh/h		1282			440			635			655	
Approach Delay, s/veh		43.8			46.5			92.3			103.0	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.2	53.8	23.0	40.0	13.4	63.6	19.5	43.5
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	17.0	42.5	13.5	32.5	8.5	50.5	10.5	35.5
Max Q Clear Time (g_c+I1), s	15.1	29.5	15.5	34.5	4.3	40.9	9.9	37.7
Green Ext Time (p_c), s	0.1	1.2	0.0	0.0	0.0	2.4	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	67.3
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	266	483	38	10	264	89	28	286	6	84	241	112
Future Volume (veh/h)	266	483	38	10	264	89	28	286	6	84	241	112
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	274	498	39	10	272	92	29	295	6	87	248	115
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	416	731	57	248	439	149	286	600	12	355	411	191
Arrive On Green	0.11	0.43	0.43	0.02	0.33	0.33	0.03	0.33	0.33	0.05	0.34	0.34
Sat Flow, veh/h	1781	1712	134	1781	1337	452	1781	1827	37	1781	1209	561
Grp Volume(v), veh/h	274	0	537	10	0	364	29	0	301	87	0	363
Grp Sat Flow(s),veh/h/ln	1781	0	1846	1781	0	1789	1781	0	1864	1781	0	1769
Q Serve(g_s), s	13.5	0.0	32.2	0.5	0.0	23.5	1.4	0.0	17.7	4.4	0.0	23.3
Cycle Q Clear(g_c), s	13.5	0.0	32.2	0.5	0.0	23.5	1.4	0.0	17.7	4.4	0.0	23.3
Prop In Lane	1.00		0.07	1.00		0.25	1.00		0.02	1.00		0.32
Lane Grp Cap(c), veh/h	416	0	788	248	0	588	286	0	613	355	0	602
V/C Ratio(X)	0.66	0.00	0.68	0.04	0.00	0.62	0.10	0.00	0.49	0.24	0.00	0.60
Avail Cap(c_a), veh/h	473	0	788	479	0	588	486	0	613	528	0	602
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	0.0	31.7	30.8	0.0	38.7	30.0	0.0	36.8	29.1	0.0	37.5
Incr Delay (d2), s/veh	1.9	0.0	4.7	0.0	0.0	4.8	0.1	0.0	2.8	0.1	0.0	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	15.0	0.2	0.0	10.9	0.6	0.0	8.4	1.9	0.0	10.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.9	0.0	36.4	30.9	0.0	43.6	30.1	0.0	39.6	29.2	0.0	41.9
LnGrp LOS	C		D	C		D	C		D	C		D
Approach Vol, veh/h		811			374			330			450	
Approach Delay, s/veh		33.9			43.2			38.8			39.5	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.7	52.0	11.7	51.5	8.2	65.5	10.2	53.1
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	20.0	* 45	20.0	45.0	20.0	45.0	20.0	45.0
Max Q Clear Time (g_c+I1), s	15.5	25.5	6.4	19.7	2.5	34.2	3.4	25.3
Green Ext Time (p_c), s	0.2	1.3	0.1	1.0	0.0	1.6	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	37.8
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	1	6	22	0	29	3	319	24	41	462	4
Future Vol, veh/h	6	1	6	22	0	29	3	319	24	41	462	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	1	6	23	0	31	3	339	26	44	491	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	927	952	494	925	929	339	496	0	0	365	0	0
Stage 1	581	581	-	346	346	-	-	-	-	-	-	-
Stage 2	346	371	-	579	583	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	249	259	576	250	268	703	1068	-	-	1194	-	-
Stage 1	500	500	-	670	636	-	-	-	-	-	-	-
Stage 2	670	619	-	501	499	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	229	249	576	236	257	703	1068	-	-	1194	-	-
Mov Cap-2 Maneuver	229	249	-	236	257	-	-	-	-	-	-	-
Stage 1	481	481	-	668	634	-	-	-	-	-	-	-
Stage 2	639	617	-	476	480	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	16.78	16.07	0.07	0.66
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1068	-	-	320	379	1194	-	-
HCM Lane V/C Ratio	0.003	-	-	0.043	0.143	0.037	-	-
HCM Ctrl Dly (s/v)	8.4	-	-	16.8	16.1	8.1	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	122	0	47	0	301	210	58	437	0
Future Volume (vph)	0	0	0	122	0	47	0	301	210	58	437	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.43	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	799	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	128	0	49	0	317	221	61	460	0
RTOR Reduction (vph)	0	0	0	0	0	35	0	0	148	0	0	0
Lane Group Flow (vph)	0	0	0	128	0	14	0	317	73	61	460	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.2		20.2		23.0	23.0	34.2	34.2	
Effective Green, g (s)				20.2		20.2		23.0	23.0	34.2	34.2	
Actuated g/C Ratio				0.29		0.29		0.33	0.33	0.49	0.49	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				999		460		1172	524	452	1744	
v/s Ratio Prot								0.09		0.01	c0.13	
v/s Ratio Perm				c0.04		0.01			0.05	0.06		
v/c Ratio				0.13		0.03		0.27	0.14	0.13	0.26	
Uniform Delay, d1				18.1		17.6		17.0	16.3	9.6	10.3	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.1		0.0		0.3	0.3	0.1	0.2	
Delay (s)				18.2		17.6		17.3	16.5	9.8	10.4	
Level of Service				B		B		B	B	A	B	
Approach Delay (s/veh)		0.0			18.0			17.0			10.4	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	69.4	Sum of lost time (s)	29.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	358	282	10	440	116	263	278	20	85	281	180
Future Volume (veh/h)	111	358	282	10	440	116	263	278	20	85	281	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	123	398	313	11	489	129	292	309	0	94	312	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	290	912	772	345	648	171	331	496		118	390	
Arrive On Green	0.05	0.49	0.49	0.02	0.45	0.45	0.10	0.14	0.00	0.07	0.11	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1426	376	3456	3647	0	1781	3647	0
Grp Volume(v), veh/h	123	398	313	11	0	618	292	309	0	94	312	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1802	1728	1777	0	1781	1777	0
Q Serve(g_s), s	4.4	16.6	15.1	0.4	0.0	34.2	10.0	9.8	0.0	6.2	10.3	0.0
Cycle Q Clear(g_c), s	4.4	16.6	15.1	0.4	0.0	34.2	10.0	9.8	0.0	6.2	10.3	0.0
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	290	912	772	345	0	819	331	496		118	390	
V/C Ratio(X)	0.42	0.44	0.41	0.03	0.00	0.75	0.88	0.62		0.80	0.80	
Avail Cap(c_a), veh/h	330	912	772	444	0	819	331	669		191	711	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.58	0.00	0.58	1.00	1.00	0.00	0.98	0.98	0.00
Uniform Delay (d), s/veh	21.4	20.0	19.6	17.7	0.0	27.2	53.6	48.7	0.0	55.2	52.1	0.0
Incr Delay (d2), s/veh	0.7	1.5	1.6	0.0	0.0	3.8	22.7	0.5	0.0	8.7	1.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	7.3	5.6	0.2	0.0	14.8	5.3	4.3	0.0	3.0	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.1	21.5	21.2	17.7	0.0	31.0	76.3	49.1	0.0	63.9	53.6	0.0
LnGrp LOS	C	C	C	B		C	E	D		E	D	
Approach Vol, veh/h		834			629			601			406	
Approach Delay, s/veh		21.5			30.8			62.3			56.0	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	64.0	17.4	24.2	10.3	68.0	21.0	20.7
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	9.0	41.0	12.9	22.6	8.5	41.0	11.5	24.0
Max Q Clear Time (g_c+I1), s	6.4	36.2	8.2	11.8	2.4	18.6	12.0	12.3
Green Ext Time (p_c), s	0.0	1.2	0.1	0.8	0.0	1.9	0.0	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	39.5
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	292	36	95	393	111	49	177	3	85	223	180
Future Volume (veh/h)	96	292	36	95	393	111	49	177	3	85	223	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	109	332	41	108	447	126	56	201	3	97	253	205
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	648	80	379	557	157	227	633	9	444	332	269
Arrive On Green	0.05	0.40	0.40	0.05	0.40	0.40	0.04	0.34	0.34	0.05	0.35	0.35
Sat Flow, veh/h	1781	1632	202	1781	1403	395	1781	1838	27	1781	956	775
Grp Volume(v), veh/h	109	0	373	108	0	573	56	0	204	97	0	458
Grp Sat Flow(s),veh/h/ln	1781	0	1834	1781	0	1799	1781	0	1865	1781	0	1731
Q Serve(g_s), s	5.5	0.0	23.3	5.4	0.0	42.7	3.0	0.0	12.2	5.3	0.0	35.5
Cycle Q Clear(g_c), s	5.5	0.0	23.3	5.4	0.0	42.7	3.0	0.0	12.2	5.3	0.0	35.5
Prop In Lane	1.00		0.11	1.00		0.22	1.00		0.01	1.00		0.45
Lane Grp Cap(c), veh/h	231	0	728	379	0	714	227	0	643	444	0	601
V/C Ratio(X)	0.47	0.00	0.51	0.28	0.00	0.80	0.25	0.00	0.32	0.22	0.00	0.76
Avail Cap(c_a), veh/h	250	0	728	399	0	714	264	0	643	517	0	601
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.7	0.0	34.5	26.8	0.0	40.4	33.7	0.0	36.5	30.1	0.0	43.8
Incr Delay (d2), s/veh	0.6	0.0	2.6	0.2	0.0	9.3	0.2	0.0	1.3	0.1	0.0	8.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	10.8	2.3	0.0	20.3	1.3	0.0	5.8	2.3	0.0	16.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.2	0.0	37.1	26.9	0.0	49.7	33.9	0.0	37.8	30.2	0.0	52.7
LnGrp LOS	C		D	C		D	C		D	C		D
Approach Vol, veh/h		482			681			260			555	
Approach Delay, s/veh		36.0			46.1			36.9			48.8	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.4	67.0	12.2	58.6	13.4	67.1	11.8	59.0
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	9.0	* 60	13.4	49.1	9.0	59.0	9.5	52.5
Max Q Clear Time (g_c+I1), s	7.5	44.7	7.3	14.2	7.4	25.3	5.0	37.5
Green Ext Time (p_c), s	0.0	2.1	0.0	0.7	0.0	1.4	0.0	1.6

Intersection Summary	
HCM 7th Control Delay, s/veh	43.2
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1	3	60	2	102	4	416	35	81	449	2
Future Vol, veh/h	2	1	3	60	2	102	4	416	35	81	449	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1	3	66	2	112	4	457	38	89	493	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1140	1177	495	1138	1140	457	496	0	0	496	0	0
Stage 1	673	673	-	466	466	-	-	-	-	-	-	-
Stage 2	467	504	-	672	674	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	178	191	575	179	201	604	1068	-	-	1068	-	-
Stage 1	445	454	-	577	562	-	-	-	-	-	-	-
Stage 2	576	541	-	445	454	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	131	174	575	161	184	604	1068	-	-	1068	-	-
Mov Cap-2 Maneuver	131	174	-	161	184	-	-	-	-	-	-	-
Stage 1	408	416	-	575	560	-	-	-	-	-	-	-
Stage 2	465	538	-	405	416	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	21.2	34.18	0.07	1.32
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1068	-	-	229	297	1068	-	-
HCM Lane V/C Ratio	0.004	-	-	0.029	0.607	0.083	-	-
HCM Ctrl Dly (s/v)	8.4	-	-	21.2	34.2	8.7	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	3.7	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	405	0	126	0	332	452	88	416	0
Future Volume (vph)	0	0	0	405	0	126	0	332	452	88	416	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.41	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	764	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	426	0	133	0	349	476	93	438	0
RTOR Reduction (vph)	0	0	0	0	0	94	0	0	328	0	0	0
Lane Group Flow (vph)	0	0	0	426	0	39	0	349	148	93	438	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.3		20.3		21.7	21.7	34.6	34.6	
Effective Green, g (s)				20.3		20.3		21.7	21.7	34.6	34.6	
Actuated g/C Ratio				0.29		0.29		0.31	0.31	0.49	0.49	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				996		459		1098	491	463	1751	
v/s Ratio Prot								c0.10		0.02	c0.12	
v/s Ratio Perm				c0.12		0.02			0.09	0.08		
v/c Ratio				0.43		0.08		0.32	0.30	0.20	0.25	
Uniform Delay, d1				20.1		18.0		18.4	18.3	9.8	10.2	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.3		0.1		0.4	0.7	0.2	0.2	
Delay (s)				20.4		18.1		18.8	19.1	10.0	10.3	
Level of Service				C		B		B	B	B	B	
Approach Delay (s/veh)		0.0			19.8			18.9			10.3	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	69.9	Sum of lost time (s)	29.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	577	441	44	274	118	197	432	24	175	473	162
Future Volume (veh/h)	251	577	441	44	274	118	197	432	24	175	473	162
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	254	583	445	44	277	119	199	436	0	177	478	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	429	815	690	220	466	200	251	513		203	659	
Arrive On Green	0.10	0.44	0.44	0.04	0.38	0.38	0.07	0.14	0.00	0.11	0.19	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1241	533	3456	3647	0	1781	3647	0
Grp Volume(v), veh/h	254	583	445	44	0	396	199	436	0	177	478	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1774	1728	1777	0	1781	1777	0
Q Serve(g_s), s	11.0	33.2	28.7	1.9	0.0	23.3	7.4	15.6	0.0	12.7	16.5	0.0
Cycle Q Clear(g_c), s	11.0	33.2	28.7	1.9	0.0	23.3	7.4	15.6	0.0	12.7	16.5	0.0
Prop In Lane	1.00		1.00	1.00		0.30	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	429	815	690	220	0	666	251	513		203	659	
V/C Ratio(X)	0.59	0.72	0.64	0.20	0.00	0.59	0.79	0.85		0.87	0.72	
Avail Cap(c_a), veh/h	454	815	690	271	0	666	306	752		253	943	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.83	0.00	0.83	1.00	1.00	0.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	23.0	30.1	28.8	25.7	0.0	32.7	59.3	54.2	0.0	56.7	49.8	0.0
Incr Delay (d2), s/veh	1.6	5.3	4.6	0.3	0.0	3.2	10.2	4.2	0.0	20.9	0.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	15.7	11.3	0.8	0.0	10.4	3.5	7.1	0.0	6.8	7.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.5	35.4	33.4	26.0	0.0	35.9	69.5	58.5	0.0	77.6	50.5	0.0
LnGrp LOS	C	D	C	C		D	E	E		E	D	
Approach Vol, veh/h		1282			440			635			655	
Approach Delay, s/veh		32.5			34.9			61.9			57.8	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.1	58.3	24.3	26.3	13.3	66.1	19.0	31.6
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	15.0	34.5	18.5	27.5	8.5	40.5	11.5	34.5
Max Q Clear Time (g_c+I1), s	13.0	25.3	14.7	17.6	3.9	35.2	9.4	18.5
Green Ext Time (p_c), s	0.1	1.0	0.1	1.2	0.0	1.7	0.1	1.7

Intersection Summary	
HCM 7th Control Delay, s/veh	44.6
HCM 7th LOS	D

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	266	483	38	10	264	89	28	286	6	84	241	112
Future Volume (veh/h)	266	483	38	10	264	89	28	286	6	84	241	112
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	274	498	39	10	272	92	29	295	6	87	248	115
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	455	791	62	287	494	167	252	560	11	320	383	178
Arrive On Green	0.11	0.46	0.46	0.02	0.37	0.37	0.03	0.31	0.31	0.05	0.32	0.32
Sat Flow, veh/h	1781	1712	134	1781	1337	452	1781	1827	37	1781	1209	561
Grp Volume(v), veh/h	274	0	537	10	0	364	29	0	301	87	0	363
Grp Sat Flow(s),veh/h/ln	1781	0	1846	1781	0	1789	1781	0	1864	1781	0	1769
Q Serve(g_s), s	13.4	0.0	32.0	0.5	0.0	23.4	1.6	0.0	19.4	4.8	0.0	25.6
Cycle Q Clear(g_c), s	13.4	0.0	32.0	0.5	0.0	23.4	1.6	0.0	19.4	4.8	0.0	25.6
Prop In Lane	1.00		0.07	1.00		0.25	1.00		0.02	1.00		0.32
Lane Grp Cap(c), veh/h	455	0	852	287	0	661	252	0	572	320	0	560
V/C Ratio(X)	0.60	0.00	0.63	0.03	0.00	0.55	0.12	0.00	0.53	0.27	0.00	0.65
Avail Cap(c_a), veh/h	593	0	852	369	0	661	309	0	572	359	0	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.2	0.0	29.6	28.8	0.0	36.2	34.2	0.0	41.6	33.3	0.0	42.6
Incr Delay (d2), s/veh	0.5	0.0	3.5	0.0	0.0	3.3	0.1	0.0	3.4	0.2	0.0	5.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	14.7	0.2	0.0	10.7	0.7	0.0	9.4	2.1	0.0	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.7	0.0	33.2	28.8	0.0	39.5	34.3	0.0	45.0	33.5	0.0	48.3
LnGrp LOS	C		C	C		D	C		D	C		D
Approach Vol, veh/h		811			374			330			450	
Approach Delay, s/veh		30.6			39.2			44.1			45.4	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.7	60.6	11.8	51.0	8.3	74.0	10.3	52.5
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	27.0	* 50	10.0	44.5	9.0	67.0	9.5	44.5
Max Q Clear Time (g_c+I1), s	15.4	25.4	6.8	21.4	2.5	34.0	3.6	27.6
Green Ext Time (p_c), s	0.3	1.3	0.0	1.0	0.0	2.1	0.0	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	37.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX E

Signal Warrants

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

Scenario: No Build (2026)

	Included?	Warrant Satisfied?	Notes and Comments:
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**	
Warrant 2, Four-Hour Vehicular Volume	Yes	**No**	
Warrant 3, Peak Hour	Yes	**Yes**	Signals installed under Warrant 3 alone should be traffic actuated. Signals installed under Warrant 3 alone may be operated in the flashing mode during the hours that the volume criteria of this warrant are not met.Figure 4C-3 (100%). Figure 4C-4 (70% Factor).
Warrant 4, Pedestrian Volume	No		
Warrant 5, School Crossing	No		
Warrant 6, Coordinated Signal System	No		
Warrant 7, Crash Experience	No		
Warrant 8, Roadway Network	No		
Warrant 9, Intersection Near a Grade Crossing	No		

Conclusion:

Notes:

Results by Scenario

Scenario	W1	W2	W3	W4	W5	W6	W7	W8	W9
No Build (2026)	No	No	Yes						
Build (2026)	No	No	Yes						
Horizon No Build (202	No	No	Yes						
Horizon Build (2026)	No	No	Yes						

WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: No Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Notes:

Lanes	Adjusted Volumes			Condition A						Condition B						Combination A/B											
																Cond. A			Cond. B			Cond. A			Cond. B		
Major/Minor	Major Street (NB/SB)	Minor Street 1 (EB)	Minor Street 2 (WB)	100%			70%			100%			70%			80%			80%			56%			56%		
				Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2
1 / 1				500	150	150	350	105	105	750	75	75	525	53	53	400	120	120	600	60	60	280	84	84	420	42	42
2+ / 1	X			600	150	150	420	105	105	900	75	75	630	53	53	480	120	120	720	60	60	336	84	84	504	42	42
2+ / 2+	X	X	X	600	200	200	420	140	140	900	100	100	630	70	70	480	160	160	720	80	80	336	112	112	504	56	56
1 / 2+				500	200	200	350	140	140	750	100	100	525	70	70	400	160	160	600	80	80	280	112	112	420	56	56
HOURS MET				**4**	**0**		**4**	**2**		**2**	**2**		**4**	**3**		**4**	**0**		**4**	**3**		**5**	**2**		**4**	**3**	
WARRANT SATISFIED (8+ Hours)?				**NO**			**NO**			**NO**			**NO**			**NO**						**NO**					
12:00 AM	0	0	0																								
12:15 AM	0	0	0																								
12:30 AM	0	0	0																								
12:45 AM	0	0	0																								
1:00 AM	0	0	0																								
1:15 AM	0	0	0																								
1:30 AM	0	0	0																								
1:45 AM	0	0	0																								
2:00 AM	0	0	0																								
2:15 AM	0	0	0																								
2:30 AM	0	0	0																								
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5:15 AM	0	0	0																								
5:30 AM	0	0	0																								
5:45 AM	0	0	0																								
6:00 AM	1	0	0																								
6:15 AM	147	4	4																								
6:30 AM	333	9	12																								
6:45 AM	533	11	21				X									X						X			X		
7:00 AM	720	16	35	X									X						X								
7:15 AM	2367	155	41							X	X		X														
7:30 AM	2325	152	47																								
7:45 AM	2267	151	47				X	X		X						X						X	X		X	X		X
8:00 AM	2226	150	50	X									X	X		X			X	X		X						
8:15 AM	433	7	40																								
8:30 AM	289	5	26																								
8:45 AM	148	4	17																								
9:00 AM	3	0	0																								
9:15 AM	3	0	0																								
9:30 AM	3	0	0																								
9:45 AM	2	0	0																								
10:00 AM	0	0	0																								
10:15 AM	0	0	0																								
10:30 AM	1	0	0																								
10:45 AM	1	0	0																								
11:00 AM	2	0	0																								
11:15 AM	2	0	0																								
11:30 AM	1	0	0																								
11:45 AM	1	0	0																								

WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: No Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Notes:

Lanes	Adjusted Volumes			Condition A						Condition B						Combination A/B											
																Cond. A			Cond. B			Cond. A			Cond. B		
Major/Minor	Major Street (NB/SB)	Minor Street 1 (EB)	Minor Street 2 (WB)	100%			70%			100%			70%			80%			80%			56%			56%		
				Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2
1 / 1				500	150	150	350	105	105	750	75	75	525	53	53	400	120	120	600	60	60	280	84	84	420	42	42
2+ / 1	X			600	150	150	420	105	105	900	75	75	630	53	53	480	120	120	720	60	60	336	84	84	504	42	42
2+ / 2+	X	X	X	600	200	200	420	140	140	900	100	100	630	70	70	480	160	160	720	80	80	336	112	112	504	56	56
1 / 2+				500	200	200	350	140	140	750	100	100	525	70	70	400	160	160	600	80	80	280	112	112	420	56	56
HOURS MET				4	0		4	2		2	2		4	3		4	0		4	3		5	2		4	3	
WARRANT SATISFIED (8+ Hours)?				NO			NO			NO			NO			NO						NO					
12:00 PM	1	0	0																								
12:15 PM	1	0	0																								
12:30 PM	1	0	0																								
12:45 PM	1	0	0																								
1:00 PM	0	0	0																								
1:15 PM	0	0	0																								
1:30 PM	1	0	0																								
1:45 PM	2	0	0																								
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2:30 PM	1	0	0																								
2:45 PM	0	0	0																								
3:00 PM	1	0	0																								
3:15 PM	188	4	46																								
3:30 PM	369	6	73																			X					
3:45 PM	582	8	115				X									X									X		X X
4:00 PM	784	10	144	X									X		X X				X		X X						
4:15 PM	2973	85	126							X		X X															
4:30 PM	3025	84	144																			X		X X			
4:45 PM	3016	86	141				X		X X							X									X	X	X X
5:00 PM	3022	87	140	X									X	X	X X				X	X	X X						
5:15 PM	646	8	112																								
5:30 PM	413	7	67																			X					
5:45 PM	209	3	28																								
6:00 PM	0	0	0																								
6:15 PM	0	0	0																								
6:30 PM	0	0	0																								
6:45 PM	0	0	0																								
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10:30 PM	0	0	0																								
10:45 PM	0	0	0																								
11:00 PM	0	0	0																								
11:15 PM	0	0	0																								
11:30 PM	0	0	0																								
11:45 PM	0	0	0																								

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: No Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

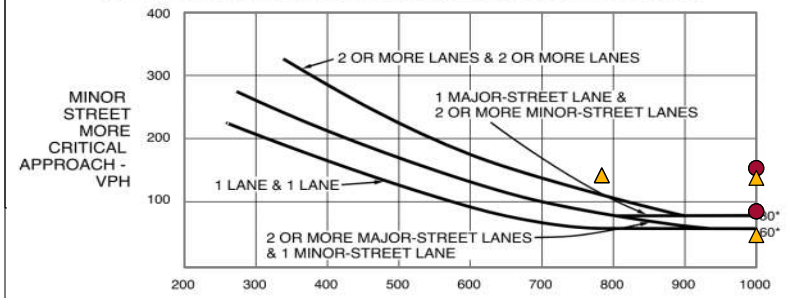
Total Number of Unique Hours Met on Figure 4C-1	2
Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	3

1:00 AM	0	0	0	0	0		
1:15 AM	0	0	0	0	0		
1:30 AM	0	0	0	0	0		
1:45 AM	0	0	0	0	0		
2:00 AM	0	0	0	0	0		
4:15 AM	0	0	0	0	0		
4:30 AM	0	0	0	0	0		
6:15 AM	95	52	4	4	147		
6:30 AM	217	116	9	12	333		
6:45 AM	329	204	11	21	533		
7:00 AM	448	272	16	35	720		
7:15 AM	916	1451	155	41	2367	Min. 1 Met	Min. 1 Met
9:00 AM	0	3	0	0	3		
9:15 AM	0	3	0	0	3		
9:30 AM	0	3	0	0	3		
9:45 AM	0	2	0	0	2		
10:00 AM	0	0	0	0	0		
11:30 AM	0	1	0	0	1		
11:45 AM	0	1	0	0	1		
12:00 PM	0	1	0	0	1		
12:15 PM	0	1	0	0	1		
12:30 PM	0	1	0	0	1		
12:45 PM	0	1	0	0	1		
1:00 PM	0	0	0	0	0		
1:15 PM	0	0	0	0	0		
1:30 PM	0	1	0	0	1		
1:45 PM	0	2	0	0	2		
2:00 PM	0	2	0	0	2		
2:15 PM	0	2	0	0	2		
2:30 PM	0	1	0	0	1		
2:45 PM	0	0	0	0	0		
3:00 PM	0	1	0	0	1		
3:15 PM	112	76	4	46	188		
3:30 PM	202	167	6	73	369		
3:45 PM	311	271	8	115	582		
4:00 PM	418	366	10	144	784		Min. 2 Met
4:15 PM	1782	1191	85	126	2973	Min. 2 Met	
4:30 PM	1829	1196	84	144	3025		
4:45 PM	1818	1198	86	141	3016		
5:00 PM	1832	1190	87	140	3022		Min. 1 Met
5:15 PM	356	290	8	112	646		
5:30 PM	219	194	7	67	413		
5:45 PM	121	88	3	28	209		
6:00 PM	0	0	0	0	0		
6:15 PM	0	0	0	0	0		
6:30 PM	0	0	0	0	0		
6:45 PM	0	0	0	0	0		
7:00 PM	0	0	0	0	0		
7:15 PM	0	0	0	0	0		
7:30 PM	0	0	0	0	0		
7:45 PM	0	0	0	0	0		
8:00 PM	0	0	0	0	0		
8:15 PM	0	0	0	0	0		
8:30 PM	0	0	0	0	0		
8:45 PM	0	0	0	0	0		
9:00 PM	0	0	0	0	0		
9:15 PM	0	0	0	0	0		
9:30 PM	0	0	0	0	0		
9:45 PM	0	0	0	0	0		
10:00 PM	0	0	0	0	0		

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane

4th Highest Hour	8:15 AM	9:15 AM	433	7
Top Hours for Figure 4C-2 (70% Factor) - Minor Street 1 (EB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	7:15 AM	8:15 AM	2367	155
2nd Highest Hour	5:00 PM	6:00 PM	3022	87
3rd Highest Hour	7:15 AM	8:15 AM	2367	155
4th Highest Hour	5:00 PM	6:00 PM	3022	87
Top Hours for Figure 4C-1 - Minor Street 2 (WB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:15 PM	5:15 PM	2973	126
2nd Highest Hour	8:00 AM	9:00 AM	2226	50
3rd Highest Hour	5:15 PM	6:15 PM	646	112
4th Highest Hour	7:00 AM	8:00 AM	720	35
Top Hours for Figure 4C-2 (70% Factor) - Minor Street 2 (WB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:00 PM	5:00 PM	784	144
2nd Highest Hour	5:00 PM	6:00 PM	3022	140
3rd Highest Hour	4:00 PM	5:00 PM	784	144
4th Highest Hour	8:00 AM	9:00 AM	2226	50

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: No Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Total Number of Unique Hours Met on Figure 4C-1	2
Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	3

10:15 PM	0	0	0	0	0		
10:30 PM	0	0	0	0	0		
10:45 PM	0	0	0	0	0		
11:00 PM	0	0	0	0	0		
11:15 PM	0	0	0	0	0		
11:30 PM	0	0	0	0	0		
11:45 PM	0	0	0	0	0		

WARRANT 3, PEAK HOUR

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: No Build (2026)

Warrant Met: Yes

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Is traffic at this intersection generated by office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time? **Yes**

Apply 70% Reduction to Warrant Thresholds? **Yes**

:Peak Hour :Conditions A2 and A3 meet

Hour Interval Beginning At	Major Street (NB/SB) Combined Vehicles Per Hour (VPH)	Minor Street 1 (EB) Vehicles Per Hour (VPH)	Minor Street 2 (WB) Vehicles Per Hour (VPH)	A2	A3
12:00 AM	0	0	0		
12:15 AM	0	0	0		
12:30 AM	0	0	0		
12:45 AM	0	0	0		
1:00 AM	0	0	0		
1:15 AM	0	0	0		
1:30 AM	0	0	0		
1:45 AM	0	0	0		
2:00 AM	0	0	0		
2:15 AM	0	0	0		
2:30 AM	0	0	0		
2:45 AM	0	0	0		
3:00 AM	0	0	0		
3:15 AM	0	0	0		
3:30 AM	0	0	0		
3:45 AM	0	0	0		
4:00 AM	0	0	0		
4:15 AM	0	0	0		
4:30 AM	0	0	0		
4:45 AM	0	0	0		
5:00 AM	0	0	0		
5:15 AM	0	0	0		
5:30 AM	0	0	0		
5:45 AM	0	0	0		
6:00 AM	1	0	0		
6:15 AM	147	4	4		
6:30 AM	333	9	12		
6:45 AM	533	11	21		
7:00 AM	720	16	35		
7:15 AM	2367	155	41	Y	Y
7:30 AM	2325	152	47	Y	Y
7:45 AM	2267	151	47	Y	Y
8:00 AM	2226	150	50		Y
8:15 AM	433	7	40		
8:30 AM	289	5	26		
8:45 AM	148	4	17		
9:00 AM	3	0	0		
9:15 AM	3	0	0		
9:30 AM	3	0	0		
9:45 AM	2	0	0		
10:00 AM	0	0	0		
10:15 AM	0	0	0		
10:30 AM	1	0	0		
10:45 AM	1	0	0		
11:00 AM	2	0	0		
11:15 AM	2	0	0		
11:30 AM	1	0	0		
11:45 AM	1	0	0		

Category A: If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:

A1: The total stopped-time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach

A2: The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes

A3: The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches

or

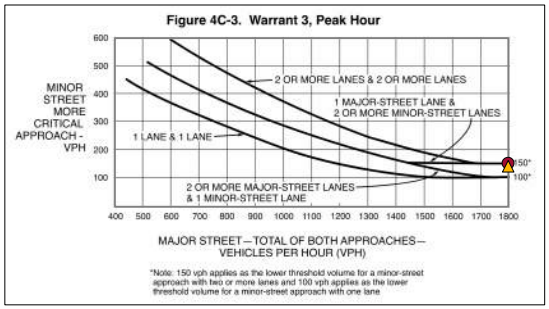
Category B: The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the more critical minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 or 4 for the existing combination of approach lanes.

Category B:

Figure	Peak Hour Start Time	Peak Hour End Time	Major Traffic Volume	Minor Traffic Volume	Threshold Minor Traffic Volume	Met?
Minor Street 1 (EB)						
4C-3	7:15 AM	8:15 AM	2367	155	150	Met
4C-4 (70% Factor)	7:15 AM	8:15 AM	2367	155	100	Met
Minor Street 2 (WB)						
4C-3	4:30 PM	5:30 PM	3025	144	150	Not Met
4C-4 (70% Factor)	4:30 PM	5:30 PM	3025	144	100.00	Met

Note: The hours plotted may not always be the "peak" hour. The hours plotted are the hours that most dramatically meet the threshold.

Legend
- Minor Street 1 (EB)
- Minor Street 2 (WB)



WARRANT 3, PEAK HOUR

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: No Build (2026)

Warrant Met: Yes

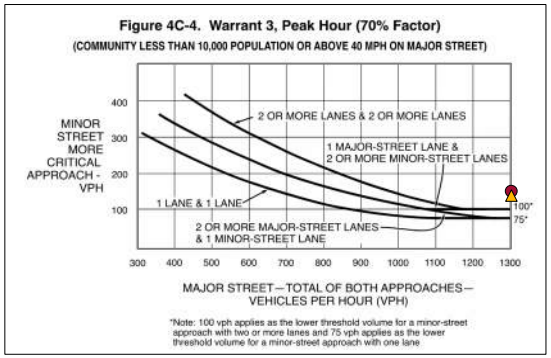
Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Is traffic at this intersection generated by office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time? **Yes**

Apply 70% Reduction to Warrant Thresholds? **Yes**

:Peak Hour :Conditions A2 and A3 meet

Hour Interval Beginning At	Major Street (NB/SB) Combined Vehicles Per Hour (VPH)	Minor Street 1 (EB) Vehicles Per Hour (VPH)	Minor Street 2 (WB) Vehicles Per Hour (VPH)	A2	A3
12:00 PM	1	0	0		
12:15 PM	1	0	0		
12:30 PM	1	0	0		
12:45 PM	1	0	0		
1:00 PM	0	0	0		
1:15 PM	0	0	0		
1:30 PM	1	0	0		
1:45 PM	2	0	0		
2:00 PM	2	0	0		
2:15 PM	2	0	0		
2:30 PM	1	0	0		
2:45 PM	0	0	0		
3:00 PM	1	0	0		
3:15 PM	188	4	46		
3:30 PM	369	6	73		
3:45 PM	582	8	115		
4:00 PM	784	10	144		Y
4:15 PM	2973	85	126		Y
4:30 PM	3025	84	144		Y
4:45 PM	3016	86	141		Y
5:00 PM	3022	87	140		Y
5:15 PM	646	8	112		
5:30 PM	413	7	67		
5:45 PM	209	3	28		
6:00 PM	0	0	0		
6:15 PM	0	0	0		
6:30 PM	0	0	0		
6:45 PM	0	0	0		
7:00 PM	0	0	0		
7:15 PM	0	0	0		
7:30 PM	0	0	0		
7:45 PM	0	0	0		
8:00 PM	0	0	0		
8:15 PM	0	0	0		
8:30 PM	0	0	0		
8:45 PM	0	0	0		
9:00 PM	0	0	0		
9:15 PM	0	0	0		
9:30 PM	0	0	0		
9:45 PM	0	0	0		
10:00 PM	0	0	0		
10:15 PM	0	0	0		
10:30 PM	0	0	0		
10:45 PM	0	0	0		
11:00 PM	0	0	0		
11:15 PM	0	0	0		
11:30 PM	0	0	0		
11:45 PM	0	0	0		



TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

Scenario: Build (2026)

	Included?	Warrant Satisfied?	Notes and Comments:
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**	
Warrant 2, Four-Hour Vehicular Volume	Yes	**No**	
Warrant 3, Peak Hour	Yes	**Yes**	Signals installed under Warrant 3 alone should be traffic actuated. Signals installed under Warrant 3 alone may be operated in the flashing mode during the hours that the volume criteria of this warrant are not met.Figure 4C-3 (100%). Figure 4C-4 (70% Factor).
Warrant 4, Pedestrian Volume	No		
Warrant 5, School Crossing	No		
Warrant 6, Coordinated Signal System	No		
Warrant 7, Crash Experience	No		
Warrant 8, Roadway Network	No		
Warrant 9, Intersection Near a Grade Crossing	No		

Conclusion:

Notes:

Results by Scenario									
Scenario	W1	W2	W3	W4	W5	W6	W7	W8	W9
No Build (2026)	No	No	Yes						
Build (2026)	No	No	Yes						
Horizon No Build (202	No	No	Yes						
Horizon Build (2026)	No	No	Yes						

WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Notes:

Lanes	Adjusted Volumes			Condition A						Condition B						Combination A/B											
																Cond. A			Cond. B			Cond. A			Cond. B		
Major/Minor	Major Street (NB/SB)	Minor Street 1 (EB)	Minor Street 2 (WB)	100%			70%			100%			70%			80%			80%			56%			56%		
				Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2
1 / 1				500	150	150	350	105	105	750	75	75	525	53	53	400	120	120	600	60	60	280	84	84	420	42	42
2+ / 1	X			600	150	150	420	105	105	900	75	75	630	53	53	480	120	120	720	60	60	336	84	84	504	42	42
2+ / 2+	X	X	X	600	200	200	420	140	140	900	100	100	630	70	70	480	160	160	720	80	80	336	112	112	504	56	56
1 / 2+				500	200	200	350	140	140	750	100	100	525	70	70	400	160	160	600	80	80	280	112	112	420	56	56
HOURS MET				4	0		5	2		3	3		4	3		5	1		4	3		6	2		4	3	
WARRANT SATISFIED (8+ Hours)?				NO			NO			NO			NO			NO						NO					
12:00 AM	0	0	0																								
12:15 AM	0	0	0																								
12:30 AM	0	0	0																								
12:45 AM	0	0	0																								
1:00 AM	0	0	0																								
1:15 AM	0	0	0																								
1:30 AM	0	0	0																								
1:45 AM	0	0	0																								
2:00 AM	0	0	0																								
2:15 AM	0	0	0																								
2:30 AM	0	0	0																								
2:45 AM	0	0	0																								
3:00 AM	0	0	0																								
3:15 AM	0	0	0																								
3:30 AM	0	0	0																								
3:45 AM	0	0	0																								
4:00 AM	0	0	0																								
4:15 AM	0	0	0																								
4:30 AM	0	0	0																								
4:45 AM	0	0	0																								
5:00 AM	0	0	0																								
5:15 AM	6	0	1																								
5:30 AM	12	0	2																								
5:45 AM	18	0	3																								
6:00 AM	25	0	4																								
6:15 AM	180	4	8																								
6:30 AM	375	9	16																			X					
6:45 AM	584	11	25				X									X									X		
7:00 AM	780	16	39	X									X						X								
7:15 AM	2436	155	47							X	X		X														
7:30 AM	2403	152	55																			X	X		X		
7:45 AM	2354	151	57				X	X		X						X									X	X	X	X
8:00 AM	2322	150	62	X									X	X		X			X	X		X					
8:15 AM	534	7	52																								
8:30 AM	395	5	38																			X					
8:45 AM	259	4	29																								
9:00 AM	119	0	12																								
9:15 AM	122	0	13																								
9:30 AM	125	0	14																								
9:45 AM	127	0	15																								
10:00 AM	128	0	16																								
10:15 AM	130	0	16																								
10:30 AM	133	0	16																								
10:45 AM	135	0	16																								
11:00 AM	138	0	16																								
11:15 AM	140	0	16																								
11:30 AM	141	0	16																								
11:45 AM	143	0	16																								

WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Notes:

Lanes	Adjusted Volumes			Condition A						Condition B						Combination A/B											
																Cond. A			Cond. B			Cond. A			Cond. B		
Major/Minor	Major Street (NB/SB)	Minor Street 1 (EB)	Minor Street 2 (WB)	100%			70%			100%			70%			80%			80%			56%			56%		
				Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2
1 / 1				500	150	150	350	105	105	750	75	75	525	53	53	400	120	120	600	60	60	280	84	84	420	42	42
2+ / 1	X			600	150	150	420	105	105	900	75	75	630	53	53	480	120	120	720	60	60	336	84	84	504	42	42
2+ / 2+	X	X	X	600	200	200	420	140	140	900	100	100	630	70	70	480	160	160	720	80	80	336	112	112	504	56	56
1 / 2+				500	200	200	350	140	140	750	100	100	525	70	70	400	160	160	600	80	80	280	112	112	420	56	56
HOURS MET				4	0		5	2		3	3		4	3		5	1		4	3		6	2		4	3	
WARRANT SATISFIED (8+ Hours)?				NO			NO			NO			NO			NO						NO					
12:00 PM	145	0	16																								
12:15 PM	144	0	17																								
12:30 PM	143	0	18																								
12:45 PM	142	0	19																								
1:00 PM	140	0	20																								
1:15 PM	136	0	19																								
1:30 PM	133	0	18																								
1:45 PM	130	0	17																								
2:00 PM	126	0	16																								
2:15 PM	126	0	16																								
2:30 PM	125	0	16																								
2:45 PM	124	0	16																								
3:00 PM	125	0	16																								
3:15 PM	310	4	62																								
3:30 PM	489	6	89				X									X						X					
3:45 PM	700	8	131	X									X		X	X									X		X
4:00 PM	900	10	160							X		X	X						X		X	X					
4:15 PM	3088	85	142																								
4:30 PM	3139	84	160				X		X	X						X		X	X			X		X	X		
4:45 PM	3129	86	157	X									X	X	X	X									X	X	X
5:00 PM	3134	87	156							X		X	X						X	X	X	X					
5:15 PM	757	8	128																								
5:30 PM	523	7	83				X									X						X					
5:45 PM	318	3	44																								
6:00 PM	108	0	16																								
6:15 PM	107	0	16																								
6:30 PM	106	0	16																								
6:45 PM	105	0	16																								
7:00 PM	104	0	16																								
7:15 PM	99	0	15																								
7:30 PM	94	0	14																								
7:45 PM	89	0	13																								
8:00 PM	84	0	12																								
8:15 PM	76	0	11																								
8:30 PM	68	0	10																								
8:45 PM	60	0	9																								
9:00 PM	52	0	8																								
9:15 PM	39	0	6																								
9:30 PM	26	0	4																								
9:45 PM	13	0	2																								
10:00 PM	0	0	0																								
10:15 PM	0	0	0																								
10:30 PM	0	0	0																								
10:45 PM	0	0	0																								
11:00 PM	0	0	0																								
11:15 PM	0	0	0																								
11:30 PM	0	0	0																								
11:45 PM	0	0	0																								

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

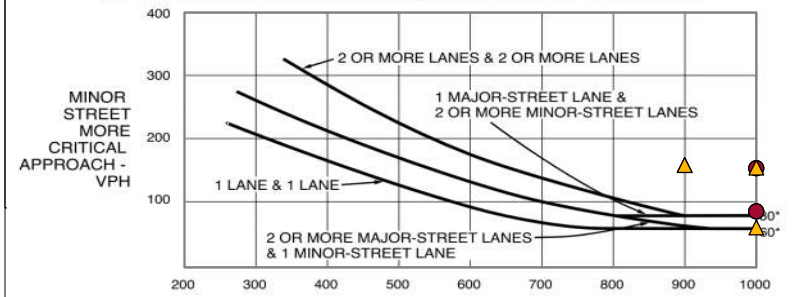
Total Number of Unique Hours Met on Figure 4C-1	2
Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	3

1:00 AM	0	0	0	0	0		
1:15 AM	0	0	0	0	0		
1:30 AM	0	0	0	0	0		
1:45 AM	0	0	0	0	0		
2:00 AM	0	0	0	0	0		
4:15 AM	0	0	0	0	0		
4:30 AM	0	0	0	0	0		
6:15 AM	110	70	4	8	180		
6:30 AM	235	140	9	16	375		
6:45 AM	350	234	11	25	584		
7:00 AM	472	308	16	39	780		
7:15 AM	945	1491	155	47	2436	Min. 1 Met	Min. 1 Met
9:00 AM	56	63	0	12	119		
9:15 AM	58	64	0	13	122		
9:30 AM	60	65	0	14	125		
9:45 AM	62	65	0	15	127		
10:00 AM	64	64	0	16	128		
11:30 AM	66	75	0	16	141		
11:45 AM	67	76	0	16	143		
12:00 PM	68	77	0	16	145		
12:15 PM	69	75	0	17	144		
12:30 PM	70	73	0	18	143		
12:45 PM	71	71	0	19	142		
1:00 PM	72	68	0	20	140		
1:15 PM	70	66	0	19	136		
1:30 PM	68	65	0	18	133		
1:45 PM	66	64	0	17	130		
2:00 PM	64	62	0	16	126		
2:15 PM	63	63	0	16	126		
2:30 PM	62	63	0	16	125		
2:45 PM	61	63	0	16	124		
3:00 PM	60	65	0	16	125		
3:15 PM	172	138	4	62	310		
3:30 PM	262	227	6	89	489		
3:45 PM	371	329	8	131	700		
4:00 PM	478	422	10	160	900		Min. 2 Met
4:15 PM	1842	1246	85	142	3088	Min. 2 Met	
4:30 PM	1889	1250	84	160	3139		
4:45 PM	1878	1251	86	157	3129		
5:00 PM	1892	1242	87	156	3134		Min. 1 Met
5:15 PM	415	342	8	128	757		
5:30 PM	277	246	7	83	523		
5:45 PM	178	140	3	44	318		
6:00 PM	56	52	0	16	108		
6:15 PM	56	51	0	16	107		
6:30 PM	56	50	0	16	106		
6:45 PM	56	49	0	16	105		
7:00 PM	56	48	0	16	104		
7:15 PM	53	46	0	15	99		
7:30 PM	50	44	0	14	94		
7:45 PM	47	42	0	13	89		
8:00 PM	44	40	0	12	84		
8:15 PM	41	35	0	11	76		
8:30 PM	38	30	0	10	68		
8:45 PM	35	25	0	9	60		
9:00 PM	32	20	0	8	52		
9:15 PM	24	15	0	6	39		
9:30 PM	16	10	0	4	26		
9:45 PM	8	5	0	2	13		
10:00 PM	0	0	0	0	0		

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane

4th Highest Hour	8:15 AM	9:15 AM	534	7
Top Hours for Figure 4C-2 (70% Factor) - Minor Street 1 (EB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	7:15 AM	8:15 AM	2436	155
2nd Highest Hour	5:00 PM	6:00 PM	3134	87
3rd Highest Hour	7:15 AM	8:15 AM	2436	155
4th Highest Hour	5:00 PM	6:00 PM	3134	87
Top Hours for Figure 4C-1 - Minor Street 2 (WB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:15 PM	5:15 PM	3088	142
2nd Highest Hour	8:00 AM	9:00 AM	2322	62
3rd Highest Hour	5:15 PM	6:15 PM	757	128
4th Highest Hour	7:00 AM	8:00 AM	780	39
Top Hours for Figure 4C-2 (70% Factor) - Minor Street 2 (WB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:00 PM	5:00 PM	900	160
2nd Highest Hour	4:00 PM	5:00 PM	900	160
3rd Highest Hour	5:00 PM	6:00 PM	3134	156
4th Highest Hour	8:00 AM	9:00 AM	2322	62

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Total Number of Unique Hours Met on Figure 4C-1	2
Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	3

10:15 PM	0	0	0	0	0		
10:30 PM	0	0	0	0	0		
10:45 PM	0	0	0	0	0		
11:00 PM	0	0	0	0	0		
11:15 PM	0	0	0	0	0		
11:30 PM	0	0	0	0	0		
11:45 PM	0	0	0	0	0		

WARRANT 3, PEAK HOUR

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Build (2026)

Warrant Met: Yes

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Is traffic at this intersection generated by office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time? **Yes**

Apply 70% Reduction to Warrant Thresholds? **Yes**

:Peak Hour :Conditions A2 and A3 meet

Hour Interval Beginning At	Major Street (NB/SB) Combined Vehicles Per Hour (VPH)	Minor Street 1 (EB) Vehicles Per Hour (VPH)	Minor Street 2 (WB) Vehicles Per Hour (VPH)	A2	A3
12:00 AM	0	0	0		
12:15 AM	0	0	0		
12:30 AM	0	0	0		
12:45 AM	0	0	0		
1:00 AM	0	0	0		
1:15 AM	0	0	0		
1:30 AM	0	0	0		
1:45 AM	0	0	0		
2:00 AM	0	0	0		
2:15 AM	0	0	0		
2:30 AM	0	0	0		
2:45 AM	0	0	0		
3:00 AM	0	0	0		
3:15 AM	0	0	0		
3:30 AM	0	0	0		
3:45 AM	0	0	0		
4:00 AM	0	0	0		
4:15 AM	0	0	0		
4:30 AM	0	0	0		
4:45 AM	0	0	0		
5:00 AM	0	0	0		
5:15 AM	6	0	1		
5:30 AM	12	0	2		
5:45 AM	18	0	3		
6:00 AM	25	0	4		
6:15 AM	180	4	8		
6:30 AM	375	9	16		
6:45 AM	584	11	25		
7:00 AM	780	16	39		Y
7:15 AM	2436	155	47	Y	Y
7:30 AM	2403	152	55	Y	Y
7:45 AM	2354	151	57	Y	Y
8:00 AM	2322	150	62		Y
8:15 AM	534	7	52		
8:30 AM	395	5	38		
8:45 AM	259	4	29		
9:00 AM	119	0	12		
9:15 AM	122	0	13		
9:30 AM	125	0	14		
9:45 AM	127	0	15		
10:00 AM	128	0	16		
10:15 AM	130	0	16		
10:30 AM	133	0	16		
10:45 AM	135	0	16		
11:00 AM	138	0	16		
11:15 AM	140	0	16		
11:30 AM	141	0	16		
11:45 AM	143	0	16		

Category A: If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:

A1: The total stopped-time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach

A2: The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes

A3: The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches

or

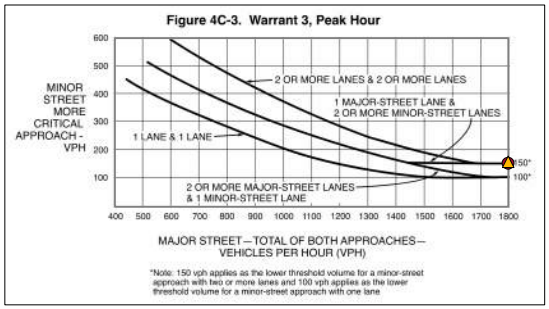
Category B: The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the more critical minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 or 4 for the existing combination of approach lanes.

Category B:

Figure	Peak Hour Start Time	Peak Hour End Time	Major Traffic Volume	Minor Traffic Volume	Threshold Minor Traffic Volume	Met?
Minor Street 1 (EB)						
4C-3	7:15 AM	8:15 AM	2436	155	150	Met
4C-4 (70% Factor)	7:15 AM	8:15 AM	2436	155	100	Met
Minor Street 2 (WB)						
4C-3	4:30 PM	5:30 PM	3139	160	150	Met
4C-4 (70% Factor)	4:30 PM	5:30 PM	3139	160	100.00	Met

Note: The hours plotted may not always be the "peak" hour. The hours plotted are the hours that most dramatically meet the threshold.

Legend
● Minor Street 1 (EB)
▲ Minor Street 2 (WB)



WARRANT 3, PEAK HOUR

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Build (2026)

Warrant Met: Yes

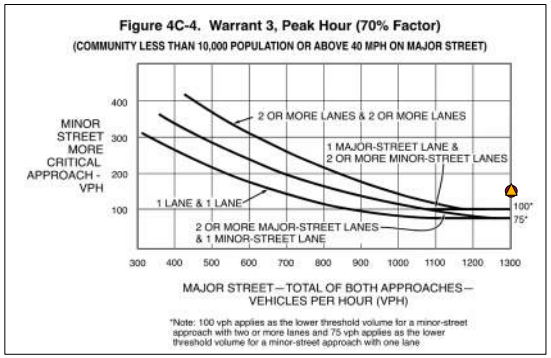
Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Is traffic at this intersection generated by office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time? **Yes**

Apply 70% Reduction to Warrant Thresholds? **Yes**

:Peak Hour :Conditions A2 and A3 meet

Hour Interval Beginning At	Major Street (NB/SB) Combined Vehicles Per Hour (VPH)	Minor Street 1 (EB) Vehicles Per Hour (VPH)	Minor Street 2 (WB) Vehicles Per Hour (VPH)	A2	A3
12:00 PM	145	0	16		
12:15 PM	144	0	17		
12:30 PM	143	0	18		
12:45 PM	142	0	19		
1:00 PM	140	0	20		
1:15 PM	136	0	19		
1:30 PM	133	0	18		
1:45 PM	130	0	17		
2:00 PM	126	0	16		
2:15 PM	126	0	16		
2:30 PM	125	0	16		
2:45 PM	124	0	16		
3:00 PM	125	0	16		
3:15 PM	310	4	62		
3:30 PM	489	6	89		
3:45 PM	700	8	131		Y
4:00 PM	900	10	160	Y	Y
4:15 PM	3088	85	142		Y
4:30 PM	3139	84	160	Y	Y
4:45 PM	3129	86	157	Y	Y
5:00 PM	3134	87	156	Y	Y
5:15 PM	757	8	128		Y
5:30 PM	523	7	83		
5:45 PM	318	3	44		
6:00 PM	108	0	16		
6:15 PM	107	0	16		
6:30 PM	106	0	16		
6:45 PM	105	0	16		
7:00 PM	104	0	16		
7:15 PM	99	0	15		
7:30 PM	94	0	14		
7:45 PM	89	0	13		
8:00 PM	84	0	12		
8:15 PM	76	0	11		
8:30 PM	68	0	10		
8:45 PM	60	0	9		
9:00 PM	52	0	8		
9:15 PM	39	0	6		
9:30 PM	26	0	4		
9:45 PM	13	0	2		
10:00 PM	0	0	0		
10:15 PM	0	0	0		
10:30 PM	0	0	0		
10:45 PM	0	0	0		
11:00 PM	0	0	0		
11:15 PM	0	0	0		
11:30 PM	0	0	0		
11:45 PM	0	0	0		



TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

Scenario: Horizon No Build (2026)

	Included?	Warrant Satisfied?	Notes and Comments:
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**	
Warrant 2, Four-Hour Vehicular Volume	Yes	**No**	
Warrant 3, Peak Hour	Yes	**Yes**	Signals installed under Warrant 3 alone should be traffic actuated. Signals installed under Warrant 3 alone may be operated in the flashing mode during the hours that the volume criteria of this warrant are not met.Figure 4C-3 (100%). Figure 4C-4 (70% Factor).
Warrant 4, Pedestrian Volume	No		
Warrant 5, School Crossing	No		
Warrant 6, Coordinated Signal System	No		
Warrant 7, Crash Experience	No		
Warrant 8, Roadway Network	No		
Warrant 9, Intersection Near a Grade Crossing	No		

Conclusion:

Notes:

Results by Scenario									
Scenario	W1	W2	W3	W4	W5	W6	W7	W8	W9
No Build (2026)	No	No	Yes						
Build (2026)	No	No	Yes						
Horizon No Build (202	No	No	Yes						
Horizon Build (2026)	No	No	Yes						

WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon No Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Notes:

Lanes	Adjusted Volumes			Condition A						Condition B						Combination A/B											
																Cond. A			Cond. B			Cond. A			Cond. B		
Major/Minor	Major Street (NB/SB)	Minor Street 1 (EB)	Minor Street 2 (WB)	100%			70%			100%			70%			80%			80%			56%			56%		
				Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2
1 / 1				500	150	150	350	105	105	750	75	75	525	53	53	400	120	120	600	60	60	280	84	84	420	42	42
2+ / 1	X			600	150	150	420	105	105	900	75	75	630	53	53	480	120	120	720	60	60	336	84	84	504	42	42
2+ / 2+	X	X	X	600	200	200	420	140	140	900	100	100	630	70	70	480	160	160	720	80	80	336	112	112	504	56	56
1 / 2+				500	200	200	350	140	140	750	100	100	525	70	70	400	160	160	600	80	80	280	112	112	420	56	56
HOURS MET				**4**	**0**		**4**	**2**		**2**	**2**		**4**	**3**		**4**	**0**		**4**	**3**		**5**	**2**		**4**	**3**	
WARRANT SATISFIED (8+ Hours)?				**NO**			**NO**			**NO**			**NO**			**NO**						**NO**					
12:00 AM	0	0	0																								
12:15 AM	0	0	0																								
12:30 AM	0	0	0																								
12:45 AM	0	0	0																								
1:00 AM	0	0	0																								
1:15 AM	0	0	0																								
1:30 AM	0	0	0																								
1:45 AM	0	0	0																								
2:00 AM	0	0	0																								
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5:00 AM	0	0	0																								
5:15 AM	0	0	0																								
5:30 AM	0	0	0																								
5:45 AM	0	0	0																								
6:00 AM	1	0	0																								
6:15 AM	147	4	4																								
6:30 AM	333	9	12																								
6:45 AM	533	11	21				X									X						X			X		
7:00 AM	720	16	35	X									X						X								
7:15 AM	2367	155	41							X	X		X														
7:30 AM	2325	152	47																								
7:45 AM	2267	151	47				X	X		X						X						X	X		X	X		X
8:00 AM	2226	150	50	X									X	X		X			X	X		X						
8:15 AM	433	7	40																								
8:30 AM	289	5	26																								
8:45 AM	148	4	17																								
9:00 AM	3	0	0																								
9:15 AM	3	0	0																								
9:30 AM	3	0	0																								
9:45 AM	2	0	0																								
10:00 AM	0	0	0																								
10:15 AM	0	0	0																								
10:30 AM	1	0	0																								
10:45 AM	1	0	0																								
11:00 AM	2	0	0																								
11:15 AM	2	0	0																								
11:30 AM	1	0	0																								
11:45 AM	1	0	0																								

WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon No Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Notes:

Lanes	Adjusted Volumes			Condition A						Condition B						Combination A/B											
																Cond. A			Cond. B			Cond. A			Cond. B		
Major/Minor	Major Street (NB/SB)	Minor Street 1 (EB)	Minor Street 2 (WB)	100%			70%			100%			70%			80%			80%			56%			56%		
				Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2
1 / 1				500	150	150	350	105	105	750	75	75	525	53	53	400	120	120	600	60	60	280	84	84	420	42	42
2+ / 1	X			600	150	150	420	105	105	900	75	75	630	53	53	480	120	120	720	60	60	336	84	84	504	42	42
2+ / 2+	X	X	X	600	200	200	420	140	140	900	100	100	630	70	70	480	160	160	720	80	80	336	112	112	504	56	56
1 / 2+				500	200	200	350	140	140	750	100	100	525	70	70	400	160	160	600	80	80	280	112	112	420	56	56
HOURS MET				4	0		4	2		2	2		4	3		4	0		4	3		5	2		4	3	
WARRANT SATISFIED (8+ Hours)?				NO			NO			NO			NO			NO						NO					
12:00 PM	1	0	0																								
12:15 PM	1	0	0																								
12:30 PM	1	0	0																								
12:45 PM	1	0	0																								
1:00 PM	0	0	0																								
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2:30 PM	1	0	0																								
2:45 PM	0	0	0																								
3:00 PM	1	0	0																								
3:15 PM	188	4	46																								
3:30 PM	369	6	73																			X					
3:45 PM	582	8	115				X									X									X		X	X
4:00 PM	784	10	144	X									X		X	X			X		X	X						
4:15 PM	2973	85	126							X		X	X															
4:30 PM	3025	84	144																			X		X	X			
4:45 PM	3016	86	141				X		X	X						X									X	X	X	X
5:00 PM	3022	87	140	X									X	X	X	X			X	X	X	X						
5:15 PM	646	8	112																								
5:30 PM	413	7	67																			X					
5:45 PM	209	3	28																								
6:00 PM	0	0	0																								
6:15 PM	0	0	0																								
6:30 PM	0	0	0																								
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10:45 PM	0	0	0																								
11:00 PM	0	0	0																								
11:15 PM	0	0	0																								
11:30 PM	0	0	0																								
11:45 PM	0	0	0																								

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon No Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

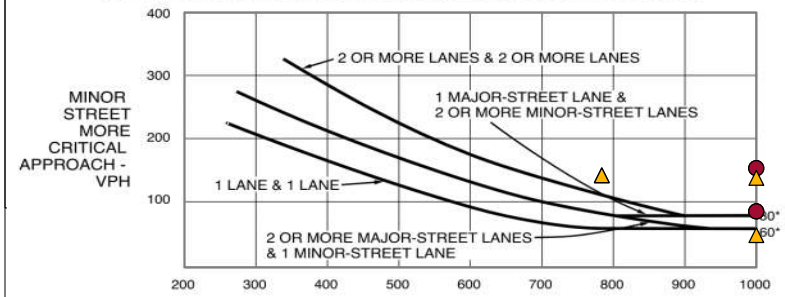
Total Number of Unique Hours Met on Figure 4C-1	2
Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	3

1:00 AM	0	0	0	0	0		
1:15 AM	0	0	0	0	0		
1:30 AM	0	0	0	0	0		
1:45 AM	0	0	0	0	0		
2:00 AM	0	0	0	0	0		
4:15 AM	0	0	0	0	0		
4:30 AM	0	0	0	0	0		
6:15 AM	95	52	4	4	147		
6:30 AM	217	116	9	12	333		
6:45 AM	329	204	11	21	533		
7:00 AM	448	272	16	35	720		
7:15 AM	916	1451	155	41	2367	Min. 1 Met	Min. 1 Met
9:00 AM	0	3	0	0	3		
9:15 AM	0	3	0	0	3		
9:30 AM	0	3	0	0	3		
9:45 AM	0	2	0	0	2		
10:00 AM	0	0	0	0	0		
11:30 AM	0	1	0	0	1		
11:45 AM	0	1	0	0	1		
12:00 PM	0	1	0	0	1		
12:15 PM	0	1	0	0	1		
12:30 PM	0	1	0	0	1		
12:45 PM	0	1	0	0	1		
1:00 PM	0	0	0	0	0		
1:15 PM	0	0	0	0	0		
1:30 PM	0	1	0	0	1		
1:45 PM	0	2	0	0	2		
2:00 PM	0	2	0	0	2		
2:15 PM	0	2	0	0	2		
2:30 PM	0	1	0	0	1		
2:45 PM	0	0	0	0	0		
3:00 PM	0	1	0	0	1		
3:15 PM	112	76	4	46	188		
3:30 PM	202	167	6	73	369		
3:45 PM	311	271	8	115	582		
4:00 PM	418	366	10	144	784		Min. 2 Met
4:15 PM	1782	1191	85	126	2973	Min. 2 Met	
4:30 PM	1829	1196	84	144	3025		
4:45 PM	1818	1198	86	141	3016		
5:00 PM	1832	1190	87	140	3022		Min. 1 Met
5:15 PM	356	290	8	112	646		
5:30 PM	219	194	7	67	413		
5:45 PM	121	88	3	28	209		
6:00 PM	0	0	0	0	0		
6:15 PM	0	0	0	0	0		
6:30 PM	0	0	0	0	0		
6:45 PM	0	0	0	0	0		
7:00 PM	0	0	0	0	0		
7:15 PM	0	0	0	0	0		
7:30 PM	0	0	0	0	0		
7:45 PM	0	0	0	0	0		
8:00 PM	0	0	0	0	0		
8:15 PM	0	0	0	0	0		
8:30 PM	0	0	0	0	0		
8:45 PM	0	0	0	0	0		
9:00 PM	0	0	0	0	0		
9:15 PM	0	0	0	0	0		
9:30 PM	0	0	0	0	0		
9:45 PM	0	0	0	0	0		
10:00 PM	0	0	0	0	0		

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane

4th Highest Hour	8:15 AM	9:15 AM	433	7
Top Hours for Figure 4C-2 (70% Factor) - Minor Street 1 (EB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	7:15 AM	8:15 AM	2367	155
2nd Highest Hour	5:00 PM	6:00 PM	3022	87
3rd Highest Hour	7:15 AM	8:15 AM	2367	155
4th Highest Hour	5:00 PM	6:00 PM	3022	87
Top Hours for Figure 4C-1 - Minor Street 2 (WB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:15 PM	5:15 PM	2973	126
2nd Highest Hour	8:00 AM	9:00 AM	2226	50
3rd Highest Hour	5:15 PM	6:15 PM	646	112
4th Highest Hour	7:00 AM	8:00 AM	720	35
Top Hours for Figure 4C-2 (70% Factor) - Minor Street 2 (WB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:00 PM	5:00 PM	784	144
2nd Highest Hour	5:00 PM	6:00 PM	3022	140
3rd Highest Hour	4:00 PM	5:00 PM	784	144
4th Highest Hour	8:00 AM	9:00 AM	2226	50

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon No Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Total Number of Unique Hours Met on Figure 4C-1	2
Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	3

10:15 PM	0	0	0	0	0		
10:30 PM	0	0	0	0	0		
10:45 PM	0	0	0	0	0		
11:00 PM	0	0	0	0	0		
11:15 PM	0	0	0	0	0		
11:30 PM	0	0	0	0	0		
11:45 PM	0	0	0	0	0		

WARRANT 3, PEAK HOUR

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon No Build (2026)

Warrant Met: Yes

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Is traffic at this intersection generated by office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time? **Yes**

Apply 70% Reduction to Warrant Thresholds? **Yes**

:Peak Hour :Conditions A2 and A3 meet

Hour Interval Beginning At	Major Street (NB/SB) Combined Vehicles Per Hour (VPH)	Minor Street 1 (EB) Vehicles Per Hour (VPH)	Minor Street 2 (WB) Vehicles Per Hour (VPH)	A2	A3
12:00 AM	0	0	0		
12:15 AM	0	0	0		
12:30 AM	0	0	0		
12:45 AM	0	0	0		
1:00 AM	0	0	0		
1:15 AM	0	0	0		
1:30 AM	0	0	0		
1:45 AM	0	0	0		
2:00 AM	0	0	0		
2:15 AM	0	0	0		
2:30 AM	0	0	0		
2:45 AM	0	0	0		
3:00 AM	0	0	0		
3:15 AM	0	0	0		
3:30 AM	0	0	0		
3:45 AM	0	0	0		
4:00 AM	0	0	0		
4:15 AM	0	0	0		
4:30 AM	0	0	0		
4:45 AM	0	0	0		
5:00 AM	0	0	0		
5:15 AM	0	0	0		
5:30 AM	0	0	0		
5:45 AM	0	0	0		
6:00 AM	1	0	0		
6:15 AM	147	4	4		
6:30 AM	333	9	12		
6:45 AM	533	11	21		
7:00 AM	720	16	35		
7:15 AM	2367	155	41	Y	Y
7:30 AM	2325	152	47	Y	Y
7:45 AM	2267	151	47	Y	Y
8:00 AM	2226	150	50		Y
8:15 AM	433	7	40		
8:30 AM	289	5	26		
8:45 AM	148	4	17		
9:00 AM	3	0	0		
9:15 AM	3	0	0		
9:30 AM	3	0	0		
9:45 AM	2	0	0		
10:00 AM	0	0	0		
10:15 AM	0	0	0		
10:30 AM	1	0	0		
10:45 AM	1	0	0		
11:00 AM	2	0	0		
11:15 AM	2	0	0		
11:30 AM	1	0	0		
11:45 AM	1	0	0		

Category A: If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:

A1: The total stopped-time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach

A2: The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes

A3: The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches

or

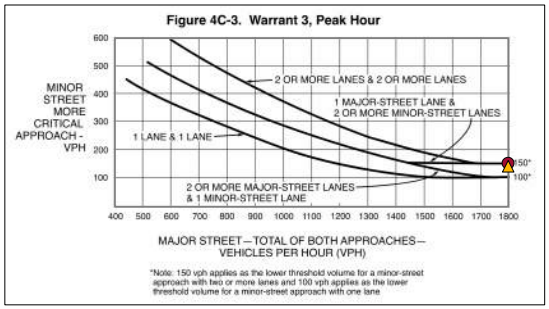
Category B: The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the more critical minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 or 4 for the existing combination of approach lanes.

Category B:

Figure	Peak Hour Start Time	Peak Hour End Time	Major Traffic Volume	Minor Traffic Volume	Threshold Minor Traffic Volume	Met?
Minor Street 1 (EB)						
4C-3	7:15 AM	8:15 AM	2367	155	150	Met
4C-4 (70% Factor)	7:15 AM	8:15 AM	2367	155	100	Met
Minor Street 2 (WB)						
4C-3	4:30 PM	5:30 PM	3025	144	150	Not Met
4C-4 (70% Factor)	4:30 PM	5:30 PM	3025	144	100.00	Met

Note: The hours plotted may not always be the "peak" hour. The hours plotted are the hours that most dramatically meet the threshold.

Legend
- Minor Street 1 (EB)
- Minor Street 2 (WB)



WARRANT 3, PEAK HOUR

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon No Build (2026)

Warrant Met: Yes

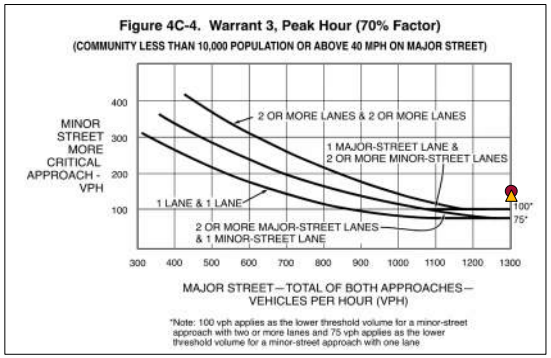
Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Is traffic at this intersection generated by office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time? **Yes**

Apply 70% Reduction to Warrant Thresholds? **Yes**

:Peak Hour :Conditions A2 and A3 meet

Hour Interval Beginning At	Major Street (NB/SB) Combined Vehicles Per Hour (VPH)	Minor Street 1 (EB) Vehicles Per Hour (VPH)	Minor Street 2 (WB) Vehicles Per Hour (VPH)	A2	A3
12:00 PM	1	0	0		
12:15 PM	1	0	0		
12:30 PM	1	0	0		
12:45 PM	1	0	0		
1:00 PM	0	0	0		
1:15 PM	0	0	0		
1:30 PM	1	0	0		
1:45 PM	2	0	0		
2:00 PM	2	0	0		
2:15 PM	2	0	0		
2:30 PM	1	0	0		
2:45 PM	0	0	0		
3:00 PM	1	0	0		
3:15 PM	188	4	46		
3:30 PM	369	6	73		
3:45 PM	582	8	115		
4:00 PM	784	10	144		Y
4:15 PM	2973	85	126		Y
4:30 PM	3025	84	144		Y
4:45 PM	3016	86	141		Y
5:00 PM	3022	87	140		Y
5:15 PM	646	8	112		
5:30 PM	413	7	67		
5:45 PM	209	3	28		
6:00 PM	0	0	0		
6:15 PM	0	0	0		
6:30 PM	0	0	0		
6:45 PM	0	0	0		
7:00 PM	0	0	0		
7:15 PM	0	0	0		
7:30 PM	0	0	0		
7:45 PM	0	0	0		
8:00 PM	0	0	0		
8:15 PM	0	0	0		
8:30 PM	0	0	0		
8:45 PM	0	0	0		
9:00 PM	0	0	0		
9:15 PM	0	0	0		
9:30 PM	0	0	0		
9:45 PM	0	0	0		
10:00 PM	0	0	0		
10:15 PM	0	0	0		
10:30 PM	0	0	0		
10:45 PM	0	0	0		
11:00 PM	0	0	0		
11:15 PM	0	0	0		
11:30 PM	0	0	0		
11:45 PM	0	0	0		



TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

Scenario: Horizon Build (2026)

	Included?	Warrant Satisfied?	Notes and Comments:
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**	
Warrant 2, Four-Hour Vehicular Volume	Yes	**No**	
Warrant 3, Peak Hour	Yes	**Yes**	Signals installed under Warrant 3 alone should be traffic actuated. Signals installed under Warrant 3 alone may be operated in the flashing mode during the hours that the volume criteria of this warrant are not met.Figure 4C-3 (100%). Figure 4C-4 (70% Factor).
Warrant 4, Pedestrian Volume	No		
Warrant 5, School Crossing	No		
Warrant 6, Coordinated Signal System	No		
Warrant 7, Crash Experience	No		
Warrant 8, Roadway Network	No		
Warrant 9, Intersection Near a Grade Crossing	No		

Conclusion:

Notes:

Results by Scenario

Scenario	W1	W2	W3	W4	W5	W6	W7	W8	W9
No Build (2026)	No	No	Yes						
Build (2026)	No	No	Yes						
Horizon No Build (202	No	No	Yes						
Horizon Build (2026)	No	No	Yes						

WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Notes:

Lanes	Adjusted Volumes			Condition A						Condition B						Combination A/B											
																Cond. A			Cond. B			Cond. A			Cond. B		
Major/Minor	Major Street (NB/SB)	Minor Street 1 (EB)	Minor Street 2 (WB)	100%			70%			100%			70%			80%			80%			56%			56%		
				Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2
1 / 1				500	150	150	350	105	105	750	75	75	525	53	53	400	120	120	600	60	60	280	84	84	420	42	42
2+ / 1	X			600	150	150	420	105	105	900	75	75	630	53	53	480	120	120	720	60	60	336	84	84	504	42	42
2+ / 2+	X	X	X	600	200	200	420	140	140	900	100	100	630	70	70	480	160	160	720	80	80	336	112	112	504	56	56
1 / 2+				500	200	200	350	140	140	750	100	100	525	70	70	400	160	160	600	80	80	280	112	112	420	56	56
HOURS MET				4	0		5	2		3	3		4	3		5	1		4	3		6	2		4	3	
WARRANT SATISFIED (8+ Hours)?				NO			NO			NO			NO			NO						NO					
12:00 AM	0	0	0																								
12:15 AM	0	0	0																								
12:30 AM	0	0	0																								
12:45 AM	0	0	0																								
1:00 AM	0	0	0																								
1:15 AM	0	0	0																								
1:30 AM	0	0	0																								
1:45 AM	0	0	0																								
2:00 AM	0	0	0																								
2:15 AM	0	0	0																								
2:30 AM	0	0	0																								
2:45 AM	0	0	0																								
3:00 AM	0	0	0																								
3:15 AM	0	0	0																								
3:30 AM	0	0	0																								
3:45 AM	0	0	0																								
4:00 AM	0	0	0																								
4:15 AM	0	0	0																								
4:30 AM	0	0	0																								
4:45 AM	0	0	0																								
5:00 AM	0	0	0																								
5:15 AM	6	0	1																								
5:30 AM	12	0	2																								
5:45 AM	18	0	3																								
6:00 AM	25	0	4																								
6:15 AM	180	4	8																								
6:30 AM	375	9	16																			X					
6:45 AM	584	11	25				X									X									X		
7:00 AM	780	16	39	X									X						X								
7:15 AM	2436	155	47							X	X		X														
7:30 AM	2403	152	55																			X	X		X		
7:45 AM	2354	151	57				X	X		X						X									X	X	X	X
8:00 AM	2322	150	62	X									X	X		X			X	X		X					
8:15 AM	534	7	52																								
8:30 AM	395	5	38																			X					
8:45 AM	259	4	29																								
9:00 AM	119	0	12																								
9:15 AM	122	0	13																								
9:30 AM	125	0	14																								
9:45 AM	127	0	15																								
10:00 AM	128	0	16																								
10:15 AM	130	0	16																								
10:30 AM	133	0	16																								
10:45 AM	135	0	16																								
11:00 AM	138	0	16																								
11:15 AM	140	0	16																								
11:30 AM	141	0	16																								
11:45 AM	143	0	16																								

WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Notes:

Lanes	Adjusted Volumes			Condition A						Condition B						Combination A/B											
																Cond. A			Cond. B			Cond. A			Cond. B		
Major/Minor	Major Street (NB/SB)	Minor Street 1 (EB)	Minor Street 2 (WB)	100%			70%			100%			70%			80%			80%			56%			56%		
				Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2	Maj.	Min. 1	Min. 2
1 / 1				500	150	150	350	105	105	750	75	75	525	53	53	400	120	120	600	60	60	280	84	84	420	42	42
2+ / 1	X			600	150	150	420	105	105	900	75	75	630	53	53	480	120	120	720	60	60	336	84	84	504	42	42
2+ / 2+	X	X	X	600	200	200	420	140	140	900	100	100	630	70	70	480	160	160	720	80	80	336	112	112	504	56	56
1 / 2+				500	200	200	350	140	140	750	100	100	525	70	70	400	160	160	600	80	80	280	112	112	420	56	56
HOURS MET				4	0		5	2		3	3		4	3		5	1		4	3		6	2		4	3	
WARRANT SATISFIED (8+ Hours)?				NO			NO			NO			NO			NO						NO					
12:00 PM	145	0	16																								
12:15 PM	144	0	17																								
12:30 PM	143	0	18																								
12:45 PM	142	0	19																								
1:00 PM	140	0	20																								
1:15 PM	136	0	19																								
1:30 PM	133	0	18																								
1:45 PM	130	0	17																								
2:00 PM	126	0	16																								
2:15 PM	126	0	16																								
2:30 PM	125	0	16																								
2:45 PM	124	0	16																								
3:00 PM	125	0	16																								
3:15 PM	310	4	62																								
3:30 PM	489	6	89				X									X						X					
3:45 PM	700	8	131	X									X		X	X									X		X	X
4:00 PM	900	10	160							X		X	X						X		X	X						
4:15 PM	3088	85	142																								
4:30 PM	3139	84	160				X		X	X						X		X	X				X		X	X		
4:45 PM	3129	86	157	X									X	X	X	X									X	X	X	X
5:00 PM	3134	87	156							X		X	X						X	X	X	X						
5:15 PM	757	8	128																								
5:30 PM	523	7	83				X									X						X					
5:45 PM	318	3	44																								
6:00 PM	108	0	16																								
6:15 PM	107	0	16																								
6:30 PM	106	0	16																								
6:45 PM	105	0	16																								
7:00 PM	104	0	16																								
7:15 PM	99	0	15																								
7:30 PM	94	0	14																								
7:45 PM	89	0	13																								
8:00 PM	84	0	12																								
8:15 PM	76	0	11																								
8:30 PM	68	0	10																								
8:45 PM	60	0	9																								
9:00 PM	52	0	8																								
9:15 PM	39	0	6																								
9:30 PM	26	0	4																								
9:45 PM	13	0	2																								
10:00 PM	0	0	0																								
10:15 PM	0	0	0																								
10:30 PM	0	0	0																								
10:45 PM	0	0	0																								
11:00 PM	0	0	0																								
11:15 PM	0	0	0																								
11:30 PM	0	0	0																								
11:45 PM	0	0	0																								

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Total Number of Unique Hours Met on Figure 4C-1	2
Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	3

1:00 AM	0	0	0	0	0		
1:15 AM	0	0	0	0	0		
1:30 AM	0	0	0	0	0		
1:45 AM	0	0	0	0	0		
2:00 AM	0	0	0	0	0		
4:15 AM	0	0	0	0	0		
4:30 AM	0	0	0	0	0		
6:15 AM	110	70	4	8	180		
6:30 AM	235	140	9	16	375		
6:45 AM	350	234	11	25	584		
7:00 AM	472	308	16	39	780		
7:15 AM	945	1491	155	47	2436	Min. 1 Met	Min. 1 Met
9:00 AM	56	63	0	12	119		
9:15 AM	58	64	0	13	122		
9:30 AM	60	65	0	14	125		
9:45 AM	62	65	0	15	127		
10:00 AM	64	64	0	16	128		
11:30 AM	66	75	0	16	141		
11:45 AM	67	76	0	16	143		
12:00 PM	68	77	0	16	145		
12:15 PM	69	75	0	17	144		
12:30 PM	70	73	0	18	143		
12:45 PM	71	71	0	19	142		
1:00 PM	72	68	0	20	140		
1:15 PM	70	66	0	19	136		
1:30 PM	68	65	0	18	133		
1:45 PM	66	64	0	17	130		
2:00 PM	64	62	0	16	126		
2:15 PM	63	63	0	16	126		
2:30 PM	62	63	0	16	125		
2:45 PM	61	63	0	16	124		
3:00 PM	60	65	0	16	125		
3:15 PM	172	138	4	62	310		
3:30 PM	262	227	6	89	489		
3:45 PM	371	329	8	131	700		
4:00 PM	478	422	10	160	900		Min. 2 Met
4:15 PM	1842	1246	85	142	3088	Min. 2 Met	
4:30 PM	1889	1250	84	160	3139		
4:45 PM	1878	1251	86	157	3129		
5:00 PM	1892	1242	87	156	3134		Min. 1 Met
5:15 PM	415	342	8	128	757		
5:30 PM	277	246	7	83	523		
5:45 PM	178	140	3	44	318		
6:00 PM	56	52	0	16	108		
6:15 PM	56	51	0	16	107		
6:30 PM	56	50	0	16	106		
6:45 PM	56	49	0	16	105		
7:00 PM	56	48	0	16	104		
7:15 PM	53	46	0	15	99		
7:30 PM	50	44	0	14	94		
7:45 PM	47	42	0	13	89		
8:00 PM	44	40	0	12	84		
8:15 PM	41	35	0	11	76		
8:30 PM	38	30	0	10	68		
8:45 PM	35	25	0	9	60		
9:00 PM	32	20	0	8	52		
9:15 PM	24	15	0	6	39		
9:30 PM	16	10	0	4	26		
9:45 PM	8	5	0	2	13		
10:00 PM	0	0	0	0	0		

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

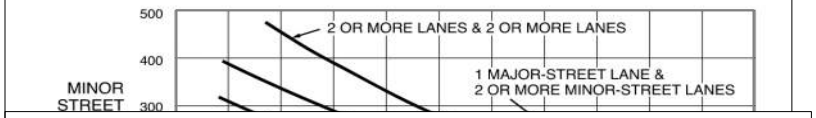
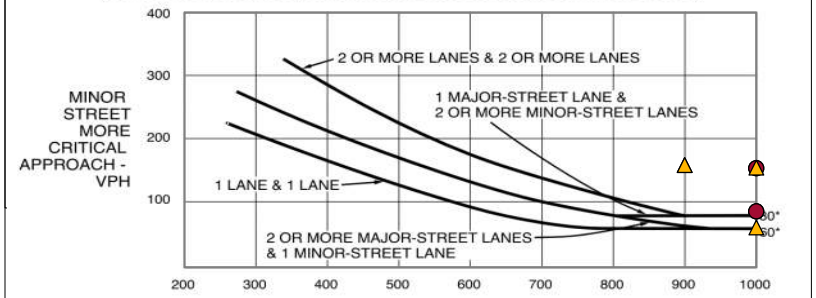


Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 80 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor-street approach with one lane

4th Highest Hour	8:15 AM	9:15 AM	534	7
Top Hours for Figure 4C-2 (70% Factor) - Minor Street 1 (EB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	7:15 AM	8:15 AM	2436	155
2nd Highest Hour	5:00 PM	6:00 PM	3134	87
3rd Highest Hour	7:15 AM	8:15 AM	2436	155
4th Highest Hour	5:00 PM	6:00 PM	3134	87
Top Hours for Figure 4C-1 - Minor Street 2 (WB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:15 PM	5:15 PM	3088	142
2nd Highest Hour	8:00 AM	9:00 AM	2322	62
3rd Highest Hour	5:15 PM	6:15 PM	757	128
4th Highest Hour	7:00 AM	8:00 AM	780	39
Top Hours for Figure 4C-2 (70% Factor) - Minor Street 2 (WB)				
	Start Time	End Time	Major Street	Minor Street
Top Hour	4:00 PM	5:00 PM	900	160
2nd Highest Hour	4:00 PM	5:00 PM	900	160
3rd Highest Hour	5:00 PM	6:00 PM	3134	156
4th Highest Hour	8:00 AM	9:00 AM	2322	62

WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon Build (2026)

Warrant Met: No

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Apply 70% Reduction to Warrant Thresholds? Yes

Total Number of Unique Hours Met on Figure 4C-1	2
Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	3

10:15 PM	0	0	0	0	0		
10:30 PM	0	0	0	0	0		
10:45 PM	0	0	0	0	0		
11:00 PM	0	0	0	0	0		
11:15 PM	0	0	0	0	0		
11:30 PM	0	0	0	0	0		
11:45 PM	0	0	0	0	0		

WARRANT 3, PEAK HOUR

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon Build (2026)

Warrant Met: Yes

Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Is traffic at this intersection generated by office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time? **Yes**

Apply 70% Reduction to Warrant Thresholds? **Yes**

:Peak Hour :Conditions A2 and A3 meet

Hour Interval Beginning At	Major Street (NB/SB) Combined Vehicles Per Hour (VPH)	Minor Street 1 (EB) Vehicles Per Hour (VPH)	Minor Street 2 (WB) Vehicles Per Hour (VPH)	A2	A3
12:00 AM	0	0	0		
12:15 AM	0	0	0		
12:30 AM	0	0	0		
12:45 AM	0	0	0		
1:00 AM	0	0	0		
1:15 AM	0	0	0		
1:30 AM	0	0	0		
1:45 AM	0	0	0		
2:00 AM	0	0	0		
2:15 AM	0	0	0		
2:30 AM	0	0	0		
2:45 AM	0	0	0		
3:00 AM	0	0	0		
3:15 AM	0	0	0		
3:30 AM	0	0	0		
3:45 AM	0	0	0		
4:00 AM	0	0	0		
4:15 AM	0	0	0		
4:30 AM	0	0	0		
4:45 AM	0	0	0		
5:00 AM	0	0	0		
5:15 AM	6	0	1		
5:30 AM	12	0	2		
5:45 AM	18	0	3		
6:00 AM	25	0	4		
6:15 AM	180	4	8		
6:30 AM	375	9	16		
6:45 AM	584	11	25		
7:00 AM	780	16	39		Y
7:15 AM	2436	155	47	Y	Y
7:30 AM	2403	152	55	Y	Y
7:45 AM	2354	151	57	Y	Y
8:00 AM	2322	150	62		Y
8:15 AM	534	7	52		
8:30 AM	395	5	38		
8:45 AM	259	4	29		
9:00 AM	119	0	12		
9:15 AM	122	0	13		
9:30 AM	125	0	14		
9:45 AM	127	0	15		
10:00 AM	128	0	16		
10:15 AM	130	0	16		
10:30 AM	133	0	16		
10:45 AM	135	0	16		
11:00 AM	138	0	16		
11:15 AM	140	0	16		
11:30 AM	141	0	16		
11:45 AM	143	0	16		

Category A: If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:

A1: The total stopped-time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach

A2: The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes

A3: The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches

or

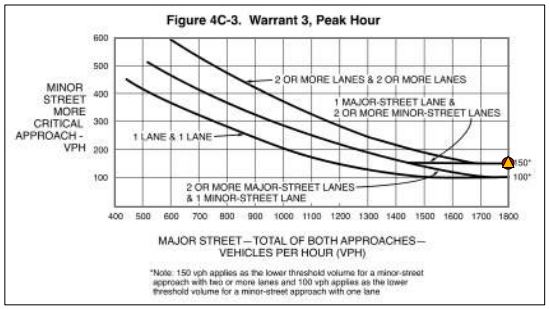
Category B: The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the more critical minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 or 4 for the existing combination of approach lanes.

Category B:

Figure	Peak Hour Start Time	Peak Hour End Time	Major Traffic Volume	Minor Traffic Volume	Threshold Minor Traffic Volume	Met?
Minor Street 1 (EB)						
4C-3	7:15 AM	8:15 AM	2436	155	150	Met
4C-4 (70% Factor)	7:15 AM	8:15 AM	2436	155	100	Met
Minor Street 2 (WB)						
4C-3	4:30 PM	5:30 PM	3139	160	150	Met
4C-4 (70% Factor)	4:30 PM	5:30 PM	3139	160	100.00	Met

Note: The hours plotted may not always be the "peak" hour. The hours plotted are the hours that most dramatically meet the threshold.

Legend
● Minor Street 1 (EB)
▲ Minor Street 2 (WB)



WARRANT 3, PEAK HOUR

Intersection Name: Norris Freeway at Jessilee Dr / Walmart Driveway
Jurisdiction: Knox County, Tennessee
Scenario: Horizon Build (2026)

Warrant Met: Yes

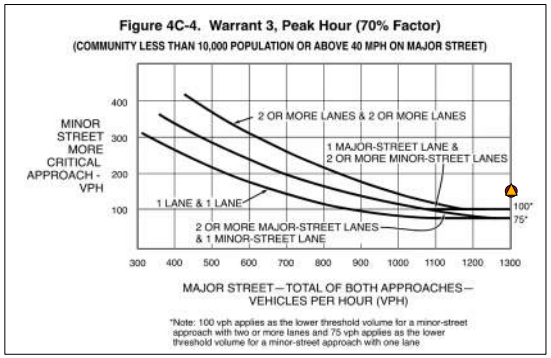
Number of Lanes for Moving Traffic on Each Approach	
Major Street (NB/SB)	2 or More Lanes
Minor Street 1 (EB)	2 or More Lanes
Minor Street 2 (WB)	2 or More Lanes

Is traffic at this intersection generated by office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time? **Yes**

Apply 70% Reduction to Warrant Thresholds? **Yes**

:Peak Hour :Conditions A2 and A3 meet

Hour Interval Beginning At	Major Street (NB/SB) Combined Vehicles Per Hour (VPH)	Minor Street 1 (EB) Vehicles Per Hour (VPH)	Minor Street 2 (WB) Vehicles Per Hour (VPH)	A2	A3
12:00 PM	145	0	16		
12:15 PM	144	0	17		
12:30 PM	143	0	18		
12:45 PM	142	0	19		
1:00 PM	140	0	20		
1:15 PM	136	0	19		
1:30 PM	133	0	18		
1:45 PM	130	0	17		
2:00 PM	126	0	16		
2:15 PM	126	0	16		
2:30 PM	125	0	16		
2:45 PM	124	0	16		
3:00 PM	125	0	16		
3:15 PM	310	4	62		
3:30 PM	489	6	89		
3:45 PM	700	8	131		Y
4:00 PM	900	10	160	Y	Y
4:15 PM	3088	85	142		Y
4:30 PM	3139	84	160	Y	Y
4:45 PM	3129	86	157	Y	Y
5:00 PM	3134	87	156	Y	Y
5:15 PM	757	8	128		Y
5:30 PM	523	7	83		
5:45 PM	318	3	44		
6:00 PM	108	0	16		
6:15 PM	107	0	16		
6:30 PM	106	0	16		
6:45 PM	105	0	16		
7:00 PM	104	0	16		
7:15 PM	99	0	15		
7:30 PM	94	0	14		
7:45 PM	89	0	13		
8:00 PM	84	0	12		
8:15 PM	76	0	11		
8:30 PM	68	0	10		
8:45 PM	60	0	9		
9:00 PM	52	0	8		
9:15 PM	39	0	6		
9:30 PM	26	0	4		
9:45 PM	13	0	2		
10:00 PM	0	0	0		
10:15 PM	0	0	0		
10:30 PM	0	0	0		
10:45 PM	0	0	0		
11:00 PM	0	0	0		
11:15 PM	0	0	0		
11:30 PM	0	0	0		
11:45 PM	0	0	0		



Appendix F

Horizon Year Analyses

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	1	7	20	0	28	3	318	20	39	465	5
Future Vol, veh/h	7	1	7	20	0	28	3	318	20	39	465	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	7	21	0	30	3	338	21	41	495	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	925	946	497	923	928	338	500	0	0	360	0	0
Stage 1	580	580	-	345	345	-	-	-	-	-	-	-
Stage 2	345	366	-	578	583	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	250	261	573	250	268	704	1064	-	-	1199	-	-
Stage 1	500	500	-	671	636	-	-	-	-	-	-	-
Stage 2	671	623	-	501	499	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	230	252	573	237	258	704	1064	-	-	1199	-	-
Mov Cap-2 Maneuver	230	252	-	237	258	-	-	-	-	-	-	-
Stage 1	483	483	-	669	634	-	-	-	-	-	-	-
Stage 2	641	621	-	477	481	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	16.77	15.73	0.07	0.62
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1064	-	-	322	386	1199	-	-
HCM Lane V/C Ratio	0.003	-	-	0.05	0.132	0.035	-	-
HCM Ctrl Dly (s/v)	8.4	-	-	16.8	15.7	8.1	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.5	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	82	0	17	0	326	161	18	478	0
Future Volume (vph)	0	0	0	82	0	17	0	326	161	18	478	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.43	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	799	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	86	0	18	0	343	169	19	503	0
RTOR Reduction (vph)	0	0	0	0	0	15	0	0	96	0	0	0
Lane Group Flow (vph)	0	0	0	86	0	3	0	343	73	19	503	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				11.2		11.2		25.7	25.7	33.7	33.7	
Effective Green, g (s)				11.2		11.2		25.7	25.7	33.7	33.7	
Actuated g/C Ratio				0.19		0.19		0.43	0.43	0.56	0.56	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				641		295		1518	679	465	1991	
v/s Ratio Prot								0.10		0.00	c0.14	
v/s Ratio Perm				c0.03		0.00			0.05	0.02		
v/c Ratio				0.13		0.01		0.23	0.11	0.04	0.25	
Uniform Delay, d1				20.3		19.8		10.8	10.2	6.2	6.7	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.1		0.0		0.2	0.1	0.0	0.1	
Delay (s)				20.4		19.9		11.0	10.4	6.2	6.8	
Level of Service				C		B		B	B	A	A	
Approach Delay (s/veh)		0.0			20.3			10.8			6.8	
Approach LOS		A			C			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	29.0
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	395	311	11	486	115	291	269	22	84	282	179
Future Volume (veh/h)	98	395	311	11	486	115	291	269	22	84	282	179
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	109	439	346	12	540	128	323	299	0	93	313	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	852	721	279	624	148	358	401		115	327	
Arrive On Green	0.05	0.46	0.46	0.02	0.43	0.43	0.10	0.21	0.00	0.06	0.17	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1461	346	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	109	439	346	12	0	668	323	299	0	93	313	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1808	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.8	23.4	21.3	0.5	0.0	47.0	12.9	20.9	0.0	7.2	23.2	0.0
Cycle Q Clear(g_c), s	4.8	23.4	21.3	0.5	0.0	47.0	12.9	20.9	0.0	7.2	23.2	0.0
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	207	852	721	279	0	772	358	401		115	327	
V/C Ratio(X)	0.53	0.52	0.48	0.04	0.00	0.87	0.90	0.75		0.81	0.96	
Avail Cap(c_a), veh/h	249	852	721	358	0	772	358	401		184	327	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.24	0.00	0.24	1.00	1.00	0.00	0.98	0.98	0.00
Uniform Delay (d), s/veh	29.8	27.1	26.6	23.2	0.0	36.5	62.1	51.5	0.0	64.6	57.2	0.0
Incr Delay (d2), s/veh	1.5	2.2	2.3	0.0	0.0	3.4	24.8	6.7	0.0	9.8	37.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	10.8	8.3	0.2	0.0	20.8	6.8	10.4	0.0	3.5	14.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.3	29.3	28.8	23.3	0.0	39.9	86.9	58.1	0.0	74.5	94.6	0.0
LnGrp LOS	C	C	C	C		D	F	E		E	F	
Approach Vol, veh/h		894			680			622			406	
Approach Delay, s/veh		29.4			39.6			73.1			90.0	
Approach LOS		C			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.7	69.3	18.5	37.5	10.7	73.3	24.0	32.0
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	10.0	56.5	14.5	24.5	8.5	57.5	14.5	24.5
Max Q Clear Time (g_c+I1), s	6.8	49.0	9.2	22.9	2.5	25.4	14.9	25.2
Green Ext Time (p_c), s	0.0	1.8	0.1	0.2	0.0	2.2	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	52.0
HCM 7th LOS	D

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	318	40	105	427	123	54	195	3	94	246	192
Future Volume (veh/h)	101	318	40	105	427	123	54	195	3	94	246	192
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	115	361	45	119	485	140	61	222	3	107	280	218
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	569	71	320	489	141	222	643	9	451	342	266
Arrive On Green	0.06	0.35	0.35	0.06	0.35	0.35	0.05	0.35	0.35	0.05	0.35	0.35
Sat Flow, veh/h	1781	1630	203	1781	1395	403	1781	1841	25	1781	975	759
Grp Volume(v), veh/h	115	0	406	119	0	625	61	0	225	107	0	498
Grp Sat Flow(s),veh/h/ln	1781	0	1833	1781	0	1797	1781	0	1866	1781	0	1734
Q Serve(g_s), s	5.3	0.0	23.8	5.5	0.0	44.6	2.8	0.0	11.5	4.9	0.0	33.7
Cycle Q Clear(g_c), s	5.3	0.0	23.8	5.5	0.0	44.6	2.8	0.0	11.5	4.9	0.0	33.7
Prop In Lane	1.00		0.11	1.00		0.22	1.00		0.01	1.00		0.44
Lane Grp Cap(c), veh/h	160	0	640	320	0	631	222	0	652	451	0	608
V/C Ratio(X)	0.72	0.00	0.63	0.37	0.00	0.99	0.28	0.00	0.35	0.24	0.00	0.82
Avail Cap(c_a), veh/h	336	0	640	493	0	631	412	0	652	633	0	608
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.2	0.0	35.0	26.8	0.0	41.6	28.9	0.0	31.0	25.0	0.0	38.1
Incr Delay (d2), s/veh	2.3	0.0	4.7	0.3	0.0	33.7	0.2	0.0	1.4	0.1	0.0	11.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	11.2	2.3	0.0	25.0	1.2	0.0	5.4	2.1	0.0	15.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.4	0.0	39.8	27.0	0.0	75.3	29.1	0.0	32.5	25.1	0.0	49.9
LnGrp LOS	C		D	C		E	C		C	C		D
Approach Vol, veh/h		521			744			286			605	
Approach Delay, s/veh		38.6			67.6			31.8			45.5	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.3	52.2	11.9	51.5	13.5	52.0	11.7	51.6
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	20.0	* 45	20.0	45.0	20.0	45.0	20.0	45.0
Max Q Clear Time (g_c+I1), s	7.3	46.6	6.9	13.5	7.5	25.8	4.8	35.7
Green Ext Time (p_c), s	0.1	0.0	0.1	0.7	0.1	1.4	0.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	49.6
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1	3	59	2	106	5	416	33	84	455	2
Future Vol, veh/h	2	1	3	59	2	106	5	416	33	84	455	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1	3	65	2	116	5	457	36	92	500	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1155	1190	501	1153	1155	457	502	0	0	493	0	0
Stage 1	686	686	-	468	468	-	-	-	-	-	-	-
Stage 2	469	504	-	685	687	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	174	188	570	174	197	604	1062	-	-	1070	-	-
Stage 1	438	448	-	575	561	-	-	-	-	-	-	-
Stage 2	575	541	-	438	448	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	126	171	570	157	179	604	1062	-	-	1070	-	-
Mov Cap-2 Maneuver	126	171	-	157	179	-	-	-	-	-	-	-
Stage 1	400	409	-	572	558	-	-	-	-	-	-	-
Stage 2	459	538	-	397	409	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	21.69	35.03	0.09	1.35
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1062	-	-	222	296	1070	-	-
HCM Lane V/C Ratio	0.005	-	-	0.03	0.619	0.086	-	-
HCM Ctrl Dly (s/v)	8.4	-	-	21.7	35	8.7	-	-
HCM Lane LOS	A	-	-	C	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	3.8	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	358	0	65	0	391	404	37	473	0
Future Volume (vph)	0	0	0	358	0	65	0	391	404	37	473	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.39	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	721	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	377	0	68	0	412	425	39	498	0
RTOR Reduction (vph)	0	0	0	0	0	48	0	0	288	0	0	0
Lane Group Flow (vph)	0	0	0	377	0	20	0	412	138	39	498	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.4		20.4		22.0	22.0	32.6	32.6	
Effective Green, g (s)				20.4		20.4		22.0	22.0	32.6	32.6	
Actuated g/C Ratio				0.30		0.30		0.32	0.32	0.48	0.48	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				1029		474		1144	512	401	1696	
v/s Ratio Prot								c0.12		0.01	c0.14	
v/s Ratio Perm				c0.11		0.01			0.09	0.04		
v/c Ratio				0.37		0.04		0.36	0.27	0.10	0.29	
Uniform Delay, d1				18.7		16.9		17.6	17.0	9.8	10.7	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.2		0.0		0.4	0.6	0.1	0.2	
Delay (s)				18.9		16.9		18.0	17.6	9.9	10.9	
Level of Service				B		B		B	B	A	B	
Approach Delay (s/veh)		0.0			18.6			17.8			10.9	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	29.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	254	638	487	48	302	118	217	442	26	182	485	154
Future Volume (veh/h)	254	638	487	48	302	118	217	442	26	182	485	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	257	644	492	48	305	119	219	446	0	184	490	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	344	720	610	147	404	158	259	434		172	474	
Arrive On Green	0.11	0.39	0.39	0.04	0.32	0.32	0.08	0.23	0.00	0.10	0.25	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1280	500	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	257	644	492	48	0	424	219	446	0	184	490	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1780	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	13.2	45.2	38.8	2.5	0.0	30.0	8.8	32.5	0.0	13.5	35.5	0.0
Cycle Q Clear(g_c), s	13.2	45.2	38.8	2.5	0.0	30.0	8.8	32.5	0.0	13.5	35.5	0.0
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	344	720	610	147	0	561	259	434		172	474	
V/C Ratio(X)	0.75	0.89	0.81	0.33	0.00	0.76	0.84	1.03		1.07	1.03	
Avail Cap(c_a), veh/h	365	720	610	190	0	561	259	434		172	474	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.72	0.00	0.72	1.00	1.00	0.00	0.95	0.95	0.00
Uniform Delay (d), s/veh	30.7	40.4	38.4	35.2	0.0	43.1	63.9	53.7	0.0	63.2	52.2	0.0
Incr Delay (d2), s/veh	7.3	15.8	10.9	0.7	0.0	6.7	21.4	50.3	0.0	87.1	49.1	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	23.4	16.4	1.1	0.0	14.0	4.6	20.9	0.0	10.2	22.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	38.0	56.2	49.3	35.9	0.0	49.8	85.4	104.1	0.0	150.4	101.3	0.0
LnGrp LOS	D	E	D	D		D	F	F		F	F	
Approach Vol, veh/h		1393			472			665			674	
Approach Delay, s/veh		50.4			48.4			97.9			114.7	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.3	53.7	23.0	40.0	13.6	63.4	20.0	43.0
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	17.0	42.5	13.5	32.5	8.5	50.5	10.5	35.5
Max Q Clear Time (g_c+I1), s	15.2	32.0	15.5	34.5	4.5	47.2	10.8	37.5
Green Ext Time (p_c), s	0.1	1.2	0.0	0.0	0.0	1.4	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	73.5
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	287	527	43	11	286	99	31	316	7	93	267	118
Future Volume (veh/h)	287	527	43	11	286	99	31	316	7	93	267	118
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	296	543	44	11	295	102	32	326	7	96	275	122
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	402	735	60	220	432	149	258	594	13	327	412	183
Arrive On Green	0.12	0.43	0.43	0.02	0.33	0.33	0.04	0.33	0.33	0.05	0.34	0.34
Sat Flow, veh/h	1781	1707	138	1781	1328	459	1781	1824	39	1781	1228	545
Grp Volume(v), veh/h	296	0	587	11	0	397	32	0	333	96	0	397
Grp Sat Flow(s),veh/h/ln	1781	0	1845	1781	0	1788	1781	0	1863	1781	0	1772
Q Serve(g_s), s	14.8	0.0	36.7	0.6	0.0	26.6	1.6	0.0	20.3	4.9	0.0	26.5
Cycle Q Clear(g_c), s	14.8	0.0	36.7	0.6	0.0	26.6	1.6	0.0	20.3	4.9	0.0	26.5
Prop In Lane	1.00		0.07	1.00		0.26	1.00		0.02	1.00		0.31
Lane Grp Cap(c), veh/h	402	0	795	220	0	582	258	0	606	327	0	594
V/C Ratio(X)	0.74	0.00	0.74	0.05	0.00	0.68	0.12	0.00	0.55	0.29	0.00	0.67
Avail Cap(c_a), veh/h	441	0	795	446	0	582	451	0	606	497	0	594
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	32.9	31.8	0.0	40.5	31.1	0.0	38.3	30.2	0.0	39.4
Incr Delay (d2), s/veh	4.8	0.0	6.1	0.0	0.0	6.4	0.1	0.0	3.6	0.2	0.0	5.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	17.3	0.2	0.0	12.6	0.7	0.0	9.7	2.1	0.0	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.0	0.0	39.0	31.9	0.0	46.8	31.2	0.0	41.9	30.4	0.0	45.2
LnGrp LOS	C		D	C		D	C		D	C		D
Approach Vol, veh/h		883			408			365			493	
Approach Delay, s/veh		36.9			46.4			40.9			42.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.0	52.0	11.8	51.5	8.4	66.6	10.5	52.9
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	20.0	* 45	20.0	45.0	20.0	45.0	20.0	45.0
Max Q Clear Time (g_c+I1), s	16.8	28.6	6.9	22.3	2.6	38.7	3.6	28.5
Green Ext Time (p_c), s	0.2	1.3	0.1	1.1	0.0	1.3	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	40.7
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	1	7	24	0	32	3	349	26	45	506	5
Future Vol, veh/h	7	1	7	24	0	32	3	349	26	45	506	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	7	26	0	34	3	371	28	48	538	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1014	1042	541	1012	1017	371	544	0	0	399	0	0
Stage 1	637	637	-	378	378	-	-	-	-	-	-	-
Stage 2	378	405	-	635	639	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	217	230	541	218	238	675	1025	-	-	1160	-	-
Stage 1	466	472	-	644	615	-	-	-	-	-	-	-
Stage 2	644	598	-	467	470	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	197	219	541	204	227	675	1025	-	-	1160	-	-
Mov Cap-2 Maneuver	197	219	-	204	227	-	-	-	-	-	-	-
Stage 1	446	452	-	642	613	-	-	-	-	-	-	-
Stage 2	610	596	-	440	451	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	18.49	17.85	0.07	0.67
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1025	-	-	283	339	1160	-	-
HCM Lane V/C Ratio	0.003	-	-	0.056	0.175	0.041	-	-
HCM Ctrl Dly (s/v)	8.5	-	-	18.5	17.8	8.2	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.6	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	130	0	48	0	332	225	59	482	0
Future Volume (vph)	0	0	0	130	0	48	0	332	225	59	482	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.42	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	775	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	137	0	51	0	349	237	62	507	0
RTOR Reduction (vph)	0	0	0	0	0	36	0	0	158	0	0	0
Lane Group Flow (vph)	0	0	0	137	0	15	0	349	79	62	507	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.2		20.2		23.0	23.0	34.2	34.2	
Effective Green, g (s)				20.2		20.2		23.0	23.0	34.2	34.2	
Actuated g/C Ratio				0.29		0.29		0.33	0.33	0.49	0.49	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				999		460		1172	524	442	1744	
v/s Ratio Prot								0.10		0.01	c0.14	
v/s Ratio Perm				c0.04		0.01			0.05	0.06		
v/c Ratio				0.14		0.03		0.30	0.15	0.14	0.29	
Uniform Delay, d1				18.2		17.6		17.2	16.3	9.6	10.4	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.1		0.0		0.3	0.3	0.1	0.2	
Delay (s)				18.2		17.6		17.5	16.6	9.8	10.6	
Level of Service				B		B		B	B	A	B	
Approach Delay (s/veh)		0.0			18.1			17.1			10.5	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	69.4	Sum of lost time (s)	29.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	395	311	11	486	127	291	304	22	93	308	197
Future Volume (veh/h)	121	395	311	11	486	127	291	304	22	93	308	197
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	134	439	346	12	540	141	323	338	0	103	342	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	202	852	721	279	598	156	358	389		125	327	
Arrive On Green	0.06	0.46	0.46	0.02	0.42	0.42	0.10	0.21	0.00	0.07	0.17	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1430	373	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	134	439	346	12	0	681	323	338	0	103	342	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1803	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.0	23.4	21.3	0.5	0.0	49.5	12.9	24.5	0.0	8.0	24.5	0.0
Cycle Q Clear(g_c), s	6.0	23.4	21.3	0.5	0.0	49.5	12.9	24.5	0.0	8.0	24.5	0.0
Prop In Lane	1.00		1.00	1.00		0.21	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	202	852	721	279	0	754	358	389		125	327	
V/C Ratio(X)	0.66	0.52	0.48	0.04	0.00	0.90	0.90	0.87		0.82	1.04	
Avail Cap(c_a), veh/h	228	852	721	358	0	754	358	389		184	327	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.20	0.00	0.20	1.00	1.00	0.00	0.97	0.97	0.00
Uniform Delay (d), s/veh	31.4	27.1	26.6	23.8	0.0	38.1	62.1	53.6	0.0	64.2	57.7	0.0
Incr Delay (d2), s/veh	5.2	2.2	2.3	0.0	0.0	4.1	24.8	17.8	0.0	14.0	61.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	10.8	8.3	0.2	0.0	22.0	6.8	13.2	0.0	4.1	16.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	36.7	29.3	28.8	23.8	0.0	42.2	86.9	71.3	0.0	78.2	118.9	0.0
LnGrp LOS	D	C	C	C		D	F	E		E	F	
Approach Vol, veh/h		919			693			661			445	
Approach Delay, s/veh		30.2			41.9			78.9			109.5	
Approach LOS		C			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	68.0	19.4	36.6	10.7	73.3	24.0	32.0
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	10.0	56.5	14.5	24.5	8.5	57.5	14.5	24.5
Max Q Clear Time (g_c+I1), s	8.0	51.5	10.0	26.5	2.5	25.4	14.9	26.5
Green Ext Time (p_c), s	0.0	1.4	0.1	0.0	0.0	2.2	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	58.0
HCM 7th LOS	E

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	322	40	105	433	123	54	195	3	94	246	198
Future Volume (veh/h)	105	322	40	105	433	123	54	195	3	94	246	198
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	119	366	45	119	492	140	61	222	3	107	280	225
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	159	570	70	316	489	139	216	643	9	451	336	270
Arrive On Green	0.06	0.35	0.35	0.06	0.35	0.35	0.05	0.35	0.35	0.05	0.35	0.35
Sat Flow, veh/h	1781	1633	201	1781	1400	398	1781	1841	25	1781	960	771
Grp Volume(v), veh/h	119	0	411	119	0	632	61	0	225	107	0	505
Grp Sat Flow(s),veh/h/ln	1781	0	1834	1781	0	1798	1781	0	1866	1781	0	1731
Q Serve(g_s), s	5.5	0.0	24.2	5.5	0.0	45.0	2.8	0.0	11.5	4.9	0.0	34.5
Cycle Q Clear(g_c), s	5.5	0.0	24.2	5.5	0.0	45.0	2.8	0.0	11.5	4.9	0.0	34.5
Prop In Lane	1.00		0.11	1.00		0.22	1.00		0.01	1.00		0.45
Lane Grp Cap(c), veh/h	159	0	641	316	0	628	216	0	652	451	0	607
V/C Ratio(X)	0.75	0.00	0.64	0.38	0.00	1.01	0.28	0.00	0.35	0.24	0.00	0.83
Avail Cap(c_a), veh/h	332	0	641	490	0	628	407	0	652	633	0	607
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.1	0.0	35.1	26.8	0.0	41.9	29.1	0.0	31.0	25.0	0.0	38.4
Incr Delay (d2), s/veh	2.6	0.0	4.9	0.3	0.0	37.5	0.3	0.0	1.4	0.1	0.0	12.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	11.4	2.3	0.0	25.8	1.2	0.0	5.4	2.1	0.0	16.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.7	0.0	40.0	27.1	0.0	79.4	29.4	0.0	32.5	25.1	0.0	51.0
LnGrp LOS	C		D	C		F	C		C	C		D
Approach Vol, veh/h		530			751			286			612	
Approach Delay, s/veh		38.8			71.1			31.8			46.5	
Approach LOS		D			E			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.5	52.0	11.9	51.5	13.5	52.0	11.7	51.6
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	20.0	* 45	20.0	45.0	20.0	45.0	20.0	45.0
Max Q Clear Time (g_c+I1), s	7.5	47.0	6.9	13.5	7.5	26.2	4.8	36.5
Green Ext Time (p_c), s	0.1	0.0	0.1	0.7	0.1	1.4	0.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	51.2
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1	3	65	2	112	5	456	38	89	492	2
Future Vol, veh/h	2	1	3	65	2	112	5	456	38	89	492	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1	3	71	2	123	5	501	42	98	541	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1251	1291	542	1249	1251	501	543	0	0	543	0	0
Stage 1	737	737	-	512	512	-	-	-	-	-	-	-
Stage 2	513	554	-	737	738	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	149	163	541	150	173	570	1026	-	-	1026	-	-
Stage 1	410	424	-	545	536	-	-	-	-	-	-	-
Stage 2	544	514	-	410	424	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	104	147	541	133	155	570	1026	-	-	1026	-	-
Mov Cap-2 Maneuver	104	147	-	133	155	-	-	-	-	-	-	-
Stage 1	371	384	-	542	534	-	-	-	-	-	-	-
Stage 2	422	511	-	368	384	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	24.62	53.69	0.09	1.36
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1026	-	-	190	257	1026	-	-
HCM Lane V/C Ratio	0.005	-	-	0.035	0.767	0.095	-	-
HCM Ctrl Dly (s/v)	8.5	-	-	24.6	53.7	8.9	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	5.6	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	439	0	132	0	369	490	92	461	0
Future Volume (vph)	0	0	0	439	0	132	0	369	490	92	461	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.40	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	742	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	462	0	139	0	388	516	97	485	0
RTOR Reduction (vph)	0	0	0	0	0	99	0	0	352	0	0	0
Lane Group Flow (vph)	0	0	0	462	0	40	0	388	164	97	485	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.3		20.3		22.5	22.5	35.4	35.4	
Effective Green, g (s)				20.3		20.3		22.5	22.5	35.4	35.4	
Actuated g/C Ratio				0.29		0.29		0.32	0.32	0.50	0.50	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				985		454		1126	503	457	1772	
v/s Ratio Prot								c0.11		0.02	c0.14	
v/s Ratio Perm				c0.13		0.03			0.10	0.09		
v/c Ratio				0.47		0.09		0.34	0.33	0.21	0.27	
Uniform Delay, d1				20.8		18.4		18.5	18.3	9.7	10.2	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.4		0.1		0.4	0.8	0.2	0.2	
Delay (s)				21.1		18.5		18.8	19.1	9.9	10.4	
Level of Service				C		B		B	B	A	B	
Approach Delay (s/veh)		0.0			20.5			19.0			10.3	
Approach LOS		A			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.7	Sum of lost time (s)	29.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	638	487	48	302	129	217	474	26	193	519	177
Future Volume (veh/h)	275	638	487	48	302	129	217	474	26	193	519	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	278	644	492	48	305	130	219	479	0	195	524	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	720	610	147	382	163	259	434		172	474	
Arrive On Green	0.12	0.39	0.39	0.04	0.31	0.31	0.08	0.23	0.00	0.10	0.25	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1244	530	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	278	644	492	48	0	435	219	479	0	195	524	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1774	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	14.5	45.2	38.8	2.5	0.0	31.5	8.8	32.5	0.0	13.5	35.5	0.0
Cycle Q Clear(g_c), s	14.5	45.2	38.8	2.5	0.0	31.5	8.8	32.5	0.0	13.5	35.5	0.0
Prop In Lane	1.00		1.00	1.00		0.30	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	340	720	610	147	0	544	259	434		172	474	
V/C Ratio(X)	0.82	0.89	0.81	0.33	0.00	0.80	0.84	1.10		1.14	1.10	
Avail Cap(c_a), veh/h	346	720	610	190	0	544	259	434		172	474	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.71	0.00	0.71	1.00	1.00	0.00	0.94	0.94	0.00
Uniform Delay (d), s/veh	31.7	40.4	38.4	35.7	0.0	44.6	63.9	53.7	0.0	63.2	52.2	0.0
Incr Delay (d2), s/veh	13.7	15.8	10.9	0.7	0.0	8.5	21.4	74.2	0.0	107.6	71.9	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	23.4	16.4	1.1	0.0	14.9	4.6	23.8	0.0	11.1	25.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.4	56.2	49.3	36.4	0.0	53.1	85.4	127.9	0.0	170.9	124.1	0.0
LnGrp LOS	D	E	D	D		D	F	F		F	F	
Approach Vol, veh/h		1414			483			698			719	
Approach Delay, s/veh		51.7			51.4			114.6			136.8	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.6	52.4	23.0	40.0	13.6	63.4	20.0	43.0
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	17.0	42.5	13.5	32.5	8.5	50.5	10.5	35.5
Max Q Clear Time (g_c+I1), s	16.5	33.5	15.5	34.5	4.5	47.2	10.8	37.5
Green Ext Time (p_c), s	0.0	1.2	0.0	0.0	0.0	1.4	0.0	0.0

Intersection Summary	
HCM 7th Control Delay, s/veh	83.4
HCM 7th LOS	F

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	533	43	11	291	99	31	316	7	93	267	123
Future Volume (veh/h)	293	533	43	11	291	99	31	316	7	93	267	123
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	302	549	44	11	300	102	32	326	7	96	275	127
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	401	738	59	217	433	147	252	592	13	326	405	187
Arrive On Green	0.12	0.43	0.43	0.02	0.32	0.32	0.04	0.32	0.32	0.05	0.33	0.33
Sat Flow, veh/h	1781	1709	137	1781	1335	454	1781	1824	39	1781	1211	559
Grp Volume(v), veh/h	302	0	593	11	0	402	32	0	333	96	0	402
Grp Sat Flow(s),veh/h/ln	1781	0	1846	1781	0	1789	1781	0	1863	1781	0	1770
Q Serve(g_s), s	15.2	0.0	37.3	0.6	0.0	27.2	1.6	0.0	20.4	4.9	0.0	27.1
Cycle Q Clear(g_c), s	15.2	0.0	37.3	0.6	0.0	27.2	1.6	0.0	20.4	4.9	0.0	27.1
Prop In Lane	1.00		0.07	1.00		0.25	1.00		0.02	1.00		0.32
Lane Grp Cap(c), veh/h	401	0	797	217	0	580	252	0	605	326	0	592
V/C Ratio(X)	0.75	0.00	0.74	0.05	0.00	0.69	0.13	0.00	0.55	0.29	0.00	0.68
Avail Cap(c_a), veh/h	435	0	797	443	0	580	445	0	605	495	0	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.4	0.0	33.0	32.0	0.0	40.8	31.4	0.0	38.5	30.4	0.0	39.7
Incr Delay (d2), s/veh	5.7	0.0	6.2	0.0	0.0	6.7	0.1	0.0	3.6	0.2	0.0	6.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	0.0	17.6	0.2	0.0	12.8	0.7	0.0	9.8	2.1	0.0	12.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.1	0.0	39.2	32.1	0.0	47.5	31.4	0.0	42.1	30.6	0.0	45.9
LnGrp LOS	C		D	C		D	C		D	C		D
Approach Vol, veh/h		895			413			365			498	
Approach Delay, s/veh		37.5			47.1			41.2			42.9	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.3	52.0	11.8	51.5	8.4	66.9	10.5	52.9
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	20.0	* 45	20.0	45.0	20.0	45.0	20.0	45.0
Max Q Clear Time (g_c+I1), s	17.2	29.2	6.9	22.4	2.6	39.3	3.6	29.1
Green Ext Time (p_c), s	0.1	1.3	0.1	1.1	0.0	1.3	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	41.2
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	1	7	24	0	32	3	349	26	45	506	5
Future Vol, veh/h	7	1	7	24	0	32	3	349	26	45	506	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	1	7	26	0	34	3	371	28	48	538	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1014	1042	541	1012	1017	371	544	0	0	399	0	0
Stage 1	637	637	-	378	378	-	-	-	-	-	-	-
Stage 2	378	405	-	635	639	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	217	230	541	218	238	675	1025	-	-	1160	-	-
Stage 1	466	472	-	644	615	-	-	-	-	-	-	-
Stage 2	644	598	-	467	470	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	197	219	541	204	227	675	1025	-	-	1160	-	-
Mov Cap-2 Maneuver	197	219	-	204	227	-	-	-	-	-	-	-
Stage 1	446	452	-	642	613	-	-	-	-	-	-	-
Stage 2	610	596	-	440	451	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	18.49	17.85	0.07	0.67
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1025	-	-	283	339	1160	-	-
HCM Lane V/C Ratio	0.003	-	-	0.056	0.175	0.041	-	-
HCM Ctrl Dly (s/v)	8.5	-	-	18.5	17.8	8.2	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.6	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	130	0	48	0	332	225	59	482	0
Future Volume (vph)	0	0	0	130	0	48	0	332	225	59	482	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.42	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	775	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	137	0	51	0	349	237	62	507	0
RTOR Reduction (vph)	0	0	0	0	0	36	0	0	158	0	0	0
Lane Group Flow (vph)	0	0	0	137	0	15	0	349	79	62	507	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.2		20.2		23.0	23.0	34.2	34.2	
Effective Green, g (s)				20.2		20.2		23.0	23.0	34.2	34.2	
Actuated g/C Ratio				0.29		0.29		0.33	0.33	0.49	0.49	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				999		460		1172	524	442	1744	
v/s Ratio Prot								0.10		0.01	c0.14	
v/s Ratio Perm				c0.04		0.01			0.05	0.06		
v/c Ratio				0.14		0.03		0.30	0.15	0.14	0.29	
Uniform Delay, d1				18.2		17.6		17.2	16.3	9.6	10.4	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.1		0.0		0.3	0.3	0.1	0.2	
Delay (s)				18.2		17.6		17.5	16.6	9.8	10.6	
Level of Service				B		B		B	B	A	B	
Approach Delay (s/veh)		0.0			18.1			17.1			10.5	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	69.4	Sum of lost time (s)	29.0
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	121	395	311	11	486	127	291	304	22	93	308	197
Future Volume (veh/h)	121	395	311	11	486	127	291	304	22	93	308	197
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	134	439	346	12	540	141	323	338	0	103	342	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	867	734	295	609	159	379	556		128	422	
Arrive On Green	0.06	0.46	0.46	0.02	0.43	0.43	0.11	0.16	0.00	0.07	0.12	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1430	373	3456	3647	0	1781	3647	0
Grp Volume(v), veh/h	134	439	346	12	0	681	323	338	0	103	342	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1803	1728	1777	0	1781	1777	0
Q Serve(g_s), s	5.0	19.7	18.0	0.5	0.0	41.8	11.0	10.6	0.0	6.8	11.3	0.0
Cycle Q Clear(g_c), s	5.0	19.7	18.0	0.5	0.0	41.8	11.0	10.6	0.0	6.8	11.3	0.0
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	223	867	734	295	0	768	379	556		128	422	
V/C Ratio(X)	0.60	0.51	0.47	0.04	0.00	0.89	0.85	0.61		0.81	0.81	
Avail Cap(c_a), veh/h	252	867	734	392	0	768	418	755		200	726	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.49	0.00	0.49	1.00	1.00	0.00	0.97	0.97	0.00
Uniform Delay (d), s/veh	26.1	22.6	22.1	19.8	0.0	31.8	52.5	47.2	0.0	54.9	51.6	0.0
Incr Delay (d2), s/veh	2.6	2.1	2.2	0.0	0.0	7.8	14.0	0.4	0.0	9.4	1.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	8.8	6.8	0.2	0.0	19.0	5.4	4.6	0.0	3.3	5.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.7	24.7	24.3	19.8	0.0	39.6	66.5	47.6	0.0	64.3	53.0	0.0
LnGrp LOS	C	C	C	B		D	E	D		E	D	
Approach Vol, veh/h		919			693			661			445	
Approach Delay, s/veh		25.1			39.2			56.8			55.6	
Approach LOS		C			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	60.6	18.1	26.3	10.5	65.1	22.7	21.7
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	9.0	37.5	13.5	25.5	8.5	37.5	14.5	24.5
Max Q Clear Time (g_c+I1), s	7.0	43.8	8.8	12.6	2.5	21.7	13.0	13.3
Green Ext Time (p_c), s	0.0	0.0	0.1	1.0	0.0	2.0	0.1	1.0

Intersection Summary	
HCM 7th Control Delay, s/veh	41.4
HCM 7th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	105	322	40	105	433	123	54	195	3	94	246	198
Future Volume (veh/h)	105	322	40	105	433	123	54	195	3	94	246	198
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	119	366	45	119	492	140	61	222	3	107	280	225
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	669	82	371	573	163	176	604	8	412	321	258
Arrive On Green	0.05	0.41	0.41	0.05	0.41	0.41	0.04	0.33	0.33	0.05	0.33	0.33
Sat Flow, veh/h	1781	1633	201	1781	1400	398	1781	1841	25	1781	960	771
Grp Volume(v), veh/h	119	0	411	119	0	632	61	0	225	107	0	505
Grp Sat Flow(s),veh/h/ln	1781	0	1834	1781	0	1798	1781	0	1866	1781	0	1731
Q Serve(g_s), s	5.9	0.0	26.3	5.9	0.0	49.3	3.4	0.0	14.2	6.1	0.0	42.2
Cycle Q Clear(g_c), s	5.9	0.0	26.3	5.9	0.0	49.3	3.4	0.0	14.2	6.1	0.0	42.2
Prop In Lane	1.00		0.11	1.00		0.22	1.00		0.01	1.00		0.45
Lane Grp Cap(c), veh/h	209	0	751	371	0	736	176	0	612	412	0	580
V/C Ratio(X)	0.57	0.00	0.55	0.32	0.00	0.86	0.35	0.00	0.37	0.26	0.00	0.87
Avail Cap(c_a), veh/h	222	0	751	372	0	736	200	0	612	424	0	580
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.3	0.0	34.6	26.5	0.0	41.4	37.5	0.0	39.5	32.2	0.0	48.1
Incr Delay (d2), s/veh	1.7	0.0	2.9	0.2	0.0	12.4	0.4	0.0	1.7	0.1	0.0	16.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	12.2	2.5	0.0	23.9	1.5	0.0	6.8	2.6	0.0	20.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	34.9	0.0	37.5	26.7	0.0	53.9	37.9	0.0	41.2	32.3	0.0	64.4
LnGrp LOS	C		D	C		D	D		D	C		E
Approach Vol, veh/h		530			751			286			612	
Approach Delay, s/veh		36.9			49.6			40.5			58.8	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.9	70.0	13.0	57.0	13.9	70.0	12.0	58.0
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	9.0	* 63	9.0	50.5	8.0	63.0	8.5	50.5
Max Q Clear Time (g_c+I1), s	7.9	51.3	8.1	16.2	7.9	28.3	5.4	44.2
Green Ext Time (p_c), s	0.0	2.1	0.0	0.8	0.0	1.5	0.0	1.2

Intersection Summary	
HCM 7th Control Delay, s/veh	47.9
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	1	3	65	2	112	5	456	38	89	492	2
Future Vol, veh/h	2	1	3	65	2	112	5	456	38	89	492	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	115	-	0	270	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1	3	71	2	123	5	501	42	98	541	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1251	1291	542	1249	1251	501	543	0	0	543	0	0
Stage 1	737	737	-	512	512	-	-	-	-	-	-	-
Stage 2	513	554	-	737	738	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
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	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	149	163	541	150	173	570	1026	-	-	1026	-	-
Stage 1	410	424	-	545	536	-	-	-	-	-	-	-
Stage 2	544	514	-	410	424	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	104	147	541	133	155	570	1026	-	-	1026	-	-
Mov Cap-2 Maneuver	104	147	-	133	155	-	-	-	-	-	-	-
Stage 1	371	384	-	542	534	-	-	-	-	-	-	-
Stage 2	422	511	-	368	384	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	24.62	53.69	0.09	1.36
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1026	-	-	190	257	1026	-	-
HCM Lane V/C Ratio	0.005	-	-	0.035	0.767	0.095	-	-
HCM Ctrl Dly (s/v)	8.5	-	-	24.6	53.7	8.9	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	5.6	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	439	0	132	0	369	490	92	461	0
Future Volume (vph)	0	0	0	439	0	132	0	369	490	92	461	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Lane Util. Factor				0.97		1.00		0.95	1.00	1.00	0.95	
Frt				1.00		0.85		1.00	0.85	1.00	1.00	
Flt Protected				0.95		1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)				3433		1583		3539	1583	1770	3539	
Flt Permitted				0.95		1.00		1.00	1.00	0.40	1.00	
Satd. Flow (perm)				3433		1583		3539	1583	742	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	462	0	139	0	388	516	97	485	0
RTOR Reduction (vph)	0	0	0	0	0	99	0	0	352	0	0	0
Lane Group Flow (vph)	0	0	0	462	0	40	0	388	164	97	485	0
Turn Type				Perm		Perm		NA	Perm	pm+pt	NA	
Protected Phases	4	4						2		1	6	
Permitted Phases				3		3	2		2	6		
Actuated Green, G (s)				20.3		20.3		22.5	22.5	35.4	35.4	
Effective Green, g (s)				20.3		20.3		22.5	22.5	35.4	35.4	
Actuated g/C Ratio				0.29		0.29		0.32	0.32	0.50	0.50	
Clearance Time (s)				7.0		7.0		8.0	8.0	7.0	8.0	
Vehicle Extension (s)				3.0		3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)				985		454		1126	503	457	1772	
v/s Ratio Prot								c0.11		0.02	c0.14	
v/s Ratio Perm				c0.13		0.03			0.10	0.09		
v/c Ratio				0.47		0.09		0.34	0.33	0.21	0.27	
Uniform Delay, d1				20.8		18.4		18.5	18.3	9.7	10.2	
Progression Factor				1.00		1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2				0.4		0.1		0.4	0.8	0.2	0.2	
Delay (s)				21.1		18.5		18.8	19.1	9.9	10.4	
Level of Service				C		B		B	B	A	B	
Approach Delay (s/veh)		0.0			20.5			19.0			10.3	
Approach LOS		A			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.7	Sum of lost time (s)	29.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	638	487	48	302	129	217	474	26	193	519	177
Future Volume (veh/h)	275	638	487	48	302	129	217	474	26	193	519	177
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	278	644	492	48	305	130	219	479	0	195	524	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	382	781	661	178	437	186	274	538		221	697	
Arrive On Green	0.11	0.42	0.42	0.04	0.35	0.35	0.08	0.15	0.00	0.12	0.20	0.00
Sat Flow, veh/h	1781	1870	1584	1781	1244	530	3456	3647	0	1781	3647	0
Grp Volume(v), veh/h	278	644	492	48	0	435	219	479	0	195	524	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1584	1781	0	1774	1728	1777	0	1781	1777	0
Q Serve(g_s), s	12.6	39.8	34.1	2.2	0.0	27.4	8.1	17.2	0.0	14.0	18.1	0.0
Cycle Q Clear(g_c), s	12.6	39.8	34.1	2.2	0.0	27.4	8.1	17.2	0.0	14.0	18.1	0.0
Prop In Lane	1.00		1.00	1.00		0.30	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	382	781	661	178	0	624	274	538		221	697	
V/C Ratio(X)	0.73	0.82	0.74	0.27	0.00	0.70	0.80	0.89		0.88	0.75	
Avail Cap(c_a), veh/h	382	781	661	227	0	624	385	588		281	752	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.76	0.00	0.76	1.00	1.00	0.00	0.94	0.94	0.00
Uniform Delay (d), s/veh	25.9	33.7	32.0	29.0	0.0	36.2	58.8	54.1	0.0	56.0	49.3	0.0
Incr Delay (d2), s/veh	6.5	9.7	7.4	0.5	0.0	4.9	6.7	14.0	0.0	20.2	3.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	19.5	13.8	0.9	0.0	12.4	3.7	8.6	0.0	7.4	8.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.5	43.3	39.4	29.5	0.0	41.1	65.5	68.1	0.0	76.2	52.4	0.0
LnGrp LOS	C	D	D	C		D	E	E		E	D	
Approach Vol, veh/h		1414			483			698			719	
Approach Delay, s/veh		39.8			39.9			67.3			58.9	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	55.2	25.6	27.2	13.4	63.8	19.8	33.0
Change Period (Y+Rc), s	8.0	9.5	9.5	7.5	8.5	9.5	9.5	7.5
Max Green Setting (Gmax), s	14.0	39.5	20.5	21.5	8.5	44.5	14.5	27.5
Max Q Clear Time (g_c+I1), s	14.6	29.4	16.0	19.2	4.2	41.8	10.1	20.1
Green Ext Time (p_c), s	0.0	1.2	0.1	0.5	0.0	1.2	0.2	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	49.8
HCM 7th LOS	D

Notes

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	533	43	11	291	99	31	316	7	93	267	123
Future Volume (veh/h)	293	533	43	11	291	99	31	316	7	93	267	123
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	302	549	44	11	300	102	32	326	7	96	275	127
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	422	776	62	240	468	159	238	583	13	310	397	184
Arrive On Green	0.12	0.45	0.45	0.02	0.35	0.35	0.03	0.32	0.32	0.05	0.33	0.33
Sat Flow, veh/h	1781	1709	137	1781	1335	454	1781	1824	39	1781	1211	559
Grp Volume(v), veh/h	302	0	593	11	0	402	32	0	333	96	0	402
Grp Sat Flow(s),veh/h/ln	1781	0	1846	1781	0	1789	1781	0	1863	1781	0	1770
Q Serve(g_s), s	15.8	0.0	38.9	0.6	0.0	28.3	1.8	0.0	22.3	5.4	0.0	29.7
Cycle Q Clear(g_c), s	15.8	0.0	38.9	0.6	0.0	28.3	1.8	0.0	22.3	5.4	0.0	29.7
Prop In Lane	1.00		0.07	1.00		0.25	1.00		0.02	1.00		0.32
Lane Grp Cap(c), veh/h	422	0	838	240	0	628	238	0	595	310	0	581
V/C Ratio(X)	0.71	0.00	0.71	0.05	0.00	0.64	0.13	0.00	0.56	0.31	0.00	0.69
Avail Cap(c_a), veh/h	527	0	838	292	0	628	260	0	595	310	0	581
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.5	0.0	33.0	32.1	0.0	40.9	34.8	0.0	42.5	33.8	0.0	44.0
Incr Delay (d2), s/veh	2.3	0.0	5.0	0.0	0.0	5.0	0.1	0.0	3.8	0.2	0.0	6.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	0.0	18.2	0.3	0.0	13.2	0.8	0.0	10.8	2.4	0.0	14.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.7	0.0	38.0	32.1	0.0	45.9	34.9	0.0	46.2	34.0	0.0	50.6
LnGrp LOS	C		D	C		D	C		D	C		D
Approach Vol, veh/h		895			413			365			498	
Approach Delay, s/veh		35.6			45.5			45.2			47.4	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.1	59.8	12.0	54.6	8.6	75.4	10.7	55.9
Change Period (Y+Rc), s	6.0	* 7	5.0	6.5	6.0	7.0	5.5	6.5
Max Green Setting (Gmax), s	27.0	* 49	7.0	48.1	7.0	68.4	7.1	47.5
Max Q Clear Time (g_c+I1), s	17.8	30.3	7.4	24.3	2.6	40.9	3.8	31.7
Green Ext Time (p_c), s	0.3	1.4	0.0	1.1	0.0	2.4	0.0	1.3

Intersection Summary	
HCM 7th Control Delay, s/veh	41.8
HCM 7th LOS	D

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX G

Crash Data

Crash Locations at Intersection 1

Crash Locations at Intersection 2

Crash Locations at Segment A between Intersection 2 and 3

Crash Locations at Intersection 3

Crash Locations at Segment B between Intersection 3 and 4

Crash Locations at Intersection 4

Case Number	Route	Log Mile	Date of Crash	Type of Crash	Total Fatalities	Total Suspect	Total Other	Total Vehicle	Vehicle Most Harmful Event	Driver Actions	Vehicle Going on Direction	Relation to First Roadway	Weather Conditions	Light Conditions	Gps Coordinate Latitude	Gps Coordinate Longitude
103464910	0E460	0.011	10/31/2022 15:32	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["South","South"]		Cloudy	Daylight	36.08657	-83.94011
103085308	SR071	8.94	9/9/2021 17:20	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","Swerved or Avoided"]	["East","North"]	On Roadway	Clear	Daylight	36.08663	-83.93998
103453092	SR071	8.94	10/20/2022 12:17	(C) Possible Injury	0	0	2	2	e in Transport in other Roadway","Vehicle in Transport in other Ro	["No Contributing Actions","Failure to Yield Right of Way"]	["North","West"]	On Roadway	Clear	Daylight	36.08663	-83.93998
103630294	SR071	8.943	4/19/2023 12:32	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","Failure to Yield Right of Way"]	["North","West"]	On Roadway	Clear	Daylight	36.08664	-83.94001
400122748	SR071	8.926	7/25/2024 19:12	(B) Suspected Minor Injury	0	0	5	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["West","North"]	On Roadway	Clear	Daylight	36.08668	-83.94006
400030195	SR071	8.937	11/29/2023 16:43	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["South","South"]		Clear	Daylight	36.08656	-83.93997
103413622	SR071	8.94	9/10/2022 17:19	(B) Suspected Minor Injury	0	0	1	2	["Other Post, Pole, Supports","Parked Motor Vehicle"]	Lane Departure	["South","West"]	Roadside -- Right	Clear	Daylight	36.08658	-83.94009
103428558	SR071	8.944	9/25/2022 20:21	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["South","North"]	On Roadway	Fog	Dark-Not Lighted	36.08665	-83.94003
103061361	SR071	8.932	8/13/2021 13:19	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["West","West"]	On Roadway	Clear	Daylight	36.08667	-83.94005
103200913	SR071	8.938	1/25/2022 14:16	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]	On Roadway	Clear	Daylight	36.08671	-83.94015
103653306	SR071	8.926	5/10/2023 19:19	(K) Fatal Injury	1	0	0	1	Overturn	Improper Passing	North	On Roadway	Clear	Daylight	36.08663	-83.93998
400014712	SR071	8.926	10/8/2023 18:32	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["South","South"]		Clear	Daylight	36.08668	-83.94008
400240536	SR071	8.926	4/3/2025 17:18	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["South","West"]	On Roadway	Cloudy		36.08664	-83.93994
400220678	SR071	8.926	2/14/2025 12:07	(C) Possible Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["South","North"]	On Roadway	Clear	Daylight	36.08668	-83.94008
400402710	SR071	8.926	11/25/2025 10:06	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["South","South"]		Rain	Daylight	36.08657	-83.93998
400414145	SR071	8.963	12/16/2025 7:00	(C) Possible Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["East","North"]	On Roadway	Clear	Daylight	36.08675	-83.94034
400259487	SR071	8.942	5/14/2025 15:42	(O) Property-Damage Only	0	0	0	2		No Contributing Actions					36.08659	-83.94004
400391734	0A102	0.001	45968.61042	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Over Correcting","No Contributing Actions"]	["East","East"]		Clear	Daylight	36.08573	-83.93864
400201461	0A102	0.031	45655.75139	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Other (Narrative)","No Contributing Actions"]	["West","West"]	On Roadway	Rain	Dark-Not Lighted	36.08609	-83.93834
400196894	0A102	0.025	45644.81944	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Improper Turn","No Contributing Actions"]	["West","South"]		Rain	Dark-Lighted	36.08601	-83.93836
400286549	0A102	0	45853.39444	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["South","South"]		Clear	Daylight	36.08571	-83.93866
400462782	0A102	0	46084.43819	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Other (Narrative)","Other (Narrative)"]	["South","South"]		Cloudy	Daylight	36.08571	-83.93866
103424120	SR071	8.838	44825.46319	(O) Property-Damage Only	0	0	0	2	e in Transport in other Roadway","Vehicle in Transport in other Ro	["No Contributing Actions","No Contributing Actions"]	["North","West"]	On Roadway	Clear	Daylight	36.0857	-83.93854
103139618	SR071	8.823	44512.77361	(O) Property-Damage Only	0	0	0	2	e in Transport in other Roadway","Vehicle in Transport in other Ro	["No Contributing Actions","Failure to Yield Right of Way"]	["East","North"]	On Roadway	Clear	Dark-Lighted	36.0857	-83.93854
103148930	SR071	8.836	44521.44861	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","Careless Erratic Driving"]	["South","South"]		Clear	Daylight	36.0858	-83.93874
103179888	SR071	8.828	44558.81319	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Improper Lane Changing","No Contributing Actions"]	["West","West"]		Cloudy	Dark-Not Lighted	36.08592	-83.93841
103188874	SR071	8.821	44568.68472	(B) Suspected Minor Injury	0	0	4	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["South","North"]	On Roadway	Clear	Daylight	36.08569	-83.93851
400036226	SR071	8.841	45276.66875	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["South","East"]		Clear	Daylight	36.08568	-83.93862
400077206	SR071	8.856	45397.88958	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["South","South"]	On Roadway	Clear	Dark-Not Lighted	36.08582	-83.93883
400000789	SR071	8.845	45103.73125	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Improper Lane Changing","Improper Turn"]	["North","North"]	On Roadway	Clear	Daylight	36.08581	-83.93857
103110381	SR071	8.823	44478.6375	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["West","North"]	On Roadway	Clear	Daylight	36.0857	-83.93854
102976793	SR071	8.823	44328.5125	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["South","South"]		Cloudy	Daylight	36.0857	-83.93854
400389656	SR071	8.841	45965.51597	(C) Possible Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["North","South"]	On Roadway	Clear	Daylight	36.08567	-83.93864
400228908	SR071	8.821	45723.40139	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]		Clear	Daylight	36.08557	-83.93827
400394469	SR071	8.827	45970.52153	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Other (Narrative)","No Contributing Actions"]	["North","North"]		Clear	Daylight	36.08562	-83.93836
400417814	SR071	8.848	46013.74028	(O) Property-Damage Only	0	0	0	3	Vehicle in Transport","Vehicle in Transport","Vehicle in Transport	owing Improperly","No Contributing Actions","No Contributing Acti	["South","South","South"]	On Roadway	Clear	Dusk	36.08575	-83.93872
400293053	SR071	8.843	45861.70833	(A) Suspected Serious Injury	0	1	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["East","East"]	On Roadway	Clear	Daylight	36.08568	-83.93868
400167842	SR071	8.855	45590.27847	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]		Clear	Dark-Lighted	36.08581	-83.93882
400429517	SR071	8.838	46037.62014	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["South","South"]		Clear	Daylight	36.08565	-83.93859
103380973	5636	0.042	44781.52014	(C) Possible Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]	On Roadway	Clear	Daylight	36.08348	-83.93401
400035039	5636	0.03	45273.65972	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["West","West"]		Clear	Dusk	36.08334	-83.93427
400146746	5636	0.005	45548.71597	(O) Property-Damage Only	0	0	0	3	Vehicle in Transport","Vehicle in Transport","Vehicle in Transport	owing Improperly","Following Improperly","No Contributing Actio	["East","East","East"]		Clear	Daylight	36.08313	-83.93463
400180026	5636	0	45611.5	(C) Possible Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","East"]	On Roadway	Clear	Daylight	36.0831	-83.93471
103293941	SR071	8.555	44683.74653	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Other (Narrative)","No Contributing Actions"]	["West","West"]		Clear	Daylight	36.08311	-83.93465
103091757	SR071	8.555	44452.80139	(O) Property-Damage Only	0	0	0	2		["No Contributing Actions","Following Improperly"]					36.08311	-83.93465
103212512	SR071	8.576	44601.45208	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["South","South"]		Clear	Daylight	36.08337	-83.93521
103397332	SR071	8.555	44793.65278	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Other (Narrative)","No Contributing Actions"]	["East","East"]		Clear	Daylight	36.08311	-83.93465
103190583	SR071	8.555	44571.70556	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]		Clear	Daylight	36.08311	-83.93465
103374898	SR071	8.555	44775.40486	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["East","South"]	On Roadway	Cloudy	Daylight	36.08311	-83.93465
103390132	SR071	8.511	44790.54583	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","Lane Departure"]	["North","North"]		Clear	Daylight	36.08293	-83.93412
103218330	SR071	8.555	44606.38403	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","No Contributing Actions"]	["North","South"]	Roadside -- Right	Clear	Daylight	36.08311	-83.93465
103118489	SR071	8.521	44487.47292	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Careless Erratic Driving","No Contributing Actions"]	["North","North"]		Clear	Daylight	36.08299	-83.93431
102995456	SR071	8.555	44348.55556	(C) Possible Injury	0	0	5	2	["Vehicle in Transport","Vehicle in Transport"]	["Unknown Action","Unknown Action"]	["West","South"]	On Roadway	Clear	Daylight	36.08311	-83.93465
103460448	SR071	8.527	44861.65278	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]		Clear	Daylight	36.08296	-83.93422
103506831	SR071	8.54	44905.61875	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","Failure to Yield Right of Way"]	["North","North"]		Cloudy	Daylight	36.08311	-83.93465
103135081	SR071	8.555	44504.55417	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]		Cloudy	Daylight	36.08311	-83.93465
103160558	SR071	8.555	44534.65	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["West","West"]		Clear	Daylight	36.08311	-83.93465
103256009	SR071	8.561	44646.74375	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Unknown Action","No Contributing Actions"]	["South","South"]		Clear	Daylight	36.08327	-83.93498
103088393	SR071	8.555	44450.35486	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	attentive (Eating, Reading, Talking, Etc.)","No Contributing Actior	["South","South"]		Clear	Daylight	36.08311	-83.93465
103164225	SR071	8.554	44539.79375	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["South","South"]		Clear	Dark-Not Lighted	36.08321	-83.93487
103366767	SR071	8.555	44766.5	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Other (Narrative)","No Contributing Actions"]	["West","West"]		Clear	Daylight	36.08311	-83.93465
103038467	SR071	8.555	44396.73542	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]		Cloudy	Daylight	36.08311	-83.93465
103254177	SR071	8.555	44641.36528	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Unknown Action","Unknown Action"]	["South","North"]	On Roadway	Clear	Daylight	36.08311	-83.93465
103308850	SR071	8.555	44696.97014	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Reckless Negligent Driving","No Contributing Actions"]	["East","East"]	On Roadway	Clear	Dark-Unknown Lighting	36.08311	-83.93465
102979973	SR071	8.555	44331.52778	(O) Property-Damage Only	0	0	0	2		["Inattentive (Eating, Reading, Talking, Etc.)","No Contributing Actions"]					36.08311	-83.93465
103245552	SR071	8.555	44635.30278	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]		Cloudy	Dawn	36.08311	-83.93465
103408673	SR071	8.555	44809.76806	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["West","West"]		Rain	Dusk	36.08311	-83.93465
103272588	SR071	8.555	44664.72847	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Improper Turn","No Contributing Actions"]	["East","North"]	On Roadway	Clear	Daylight	36.08311	-83.93465
103525000	SR071	8.575	44925.53681	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]		Clear	Daylight	36.08327	-83.93499
103170156	SR071	8.516	44546.42431	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","Following Improperly"]	["North","North"]		Clear	Daylight	36.08296	-83.93422
103029119	SR071	8.555	44386.57292	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","No Contributing Actions"]	["West","West"]		Clear	Daylight	36.08311	-83.93465
103271441	SR071	8.555	44662.65	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Other (Narrative)","No Contributing Actions"]	["South","South"]		Clear	Daylight	36.08311	-83.93465
103071454	SR071	8.573	44432.4625	(C) Possible Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["South","South"]	On Roadway	Clear	Daylight	36.08335	-83.93517
103237094	SR071	8.555	44626.92639	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["North","South"]	On Roadway	Clear	Dark-Not Lighted	36.08311	-83.93465
103288729	SR071	8.542	44681.81806	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Unknown Action","No Contributing Actions"]	["North","North"]			Daylight	36.08313	-83.93469
103490182	SR071	8.564	44887.67014	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Improper Backing","No Contributing Actions"]	["South","South"]		Cloudy	Daylight	36.08318	-83.93483
103520798	SR071	8.54	44910.51042	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Improper Passing","No Contributing Actions"]	["East","East"]		Clear	Daylight	36.08311	-83.93465
103246203	SR071	8.555	44636.90278	(C) Possible Injury	0	0	2	2	["Vehicle in Transport","Vehicle in Transport"]	["Other (Narrative)","Other (Narrative)"]	["East","West"]	On Roadway	Cloudy	Dark-Unknown Lighting	36.08311	-83.93465
103003082	SR071	8.555	44357.54653	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["North","North"]		Cloudy	Daylight	36.08311	-83.93465
103575698	SR071	8.54	44979.71736	(C) Possible Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]	On Roadway	Clear	Daylight	36.08311	-83.93465
103226667	SR071	8.555	44616.29306	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["South","North"]		Cloudy	Daylight	36.08311	-83.93465
103066005	SR071	8.555	44426.73194	(C) Possible Injury	0	0	1	1	Other Fixed Object		West	Other		Daylight	36.08311	-83.93465
400031029	SR071	8.54	45262.475	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	No Contributing Actions	["North","South"]		Rain	Daylight	36.08312	-83.93464
400031479	SR071	8.54	45263.72569	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["South","South"]		Clear	Daylight	36.08316	-83.935
400065967	SR071	8.54	45365.85972	(O) Property-Damage Only	0	0	0	3	Vehicle in Transport","Vehicle in Transport","Vehicle in Transport	ontributing Actions","Following Improperly","No Contributing Acti	["North","North","North"]		Clear	Dark-Lighted	36.08298	-83.93404
400067116	SR071	8.54	45368.72708	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]	On Roadway	Clear	Daylight	36.08311	-83.93468
400019383	SR071	8.568	45228.87431	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]		Clear	Dark-Lighted	36.08322	-83.9349
400001404	SR071	8.54	45121.31597	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Racing","No Contributing Actions"]	["South","South"]		Clear	Daylight	36.08301	-83.93501
400001585	SR071	8.526	45126.58819	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]		Rain	Daylight	36.08296	-83.9342
400001675	SR071	8.586	45128.39028	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]		Clear	Daylight	36.08335	-83.93515
400002131	SR071	8.6	45136.63264	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	No Contributing Actions	["South","South"]		Cloudy	Daylight	36.08346	-83.93535
103746658	SR071	8.54	45150.66667	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]		Cloudy	Daylight	36.08311	-83.93465
400026897	SR071	8.54	45250.59514	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["East","West"]	On Roadway	Clear	Daylight	36.08311	-83.93469
400027515	SR071	8.54	45251.62569	(O) Property-Damage Only	0	0	0	2	e in Transport in other Roadway","Vehicle in Transport in other Ro	["Speed Too Fast for Conditions","No Contributing Actions"]	["East","East"]		Rain	Daylight	36.08308	-83.93461
400029447	SR071	8.583	45258.53264	(B) Suspected Minor Injury	0	0	1	3	Vehicle in Transport","Vehicle in Transport","Vehicle in Transport	o Contributing Actions","Lane Departure","No Contributing Actior	["South","North","South"]	On Roadway	Clear	Daylight	36.08333	-83.93511
400026944	SR071	8.54	45253.81111	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["North","East"]	On Roadway	Clear	Dark-Lighted	36.08311	-83.93469
400039183	SR071	8.54	45286.46528	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["South","North"]		Rain	Daylight	36.08305	-83.9348
400051129	SR071	8.54	45323.82708	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","Failure to Yield Right of Way"]	["West","West"]	On Roadway	Clear	Dark-Lighted	36.08312	-83.93471

Case Number	Route	Log Mile	Date of Crash	Type of Crash	Total Fatalities	Total Suspect	Total Other	Total Vehicle	Vehicle Most Harmful Event	Driver Actions	Vehicle Going on Direction	Relation to First Roadway	Weather Conditions	Light Conditions	Gps Coordinate Latitude	Gps Coordinate Longitude
400051962	SR071	8.54	45322.29861	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["North","South"]	On Roadway	Clear	Daylight	36.08314	-83.93475
400092960	SR071	8.54	45432.61111	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["South","South"]	On Roadway	Clear	Daylight	36.08313	-83.93471
400096414	SR071	8.541	45440.54722	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["South","South"]		Clear	Daylight	36.08304	-83.93446
400094837	SR071	8.553	45436.56528	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport in other Roadway"]	["Following Improperly","No Contributing Actions"]	["North","North"]		Clear	Daylight	36.0831	-83.93466
400000415	SR071	8.597	45091.54931	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Improper Backing","No Contributing Actions"]	["East","East"]		Clear	Daylight	36.08344	-83.93532
103137780	SR071	8.555	44510.36736	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Unknown Action","Unknown Action"]	["North","North"]	On Roadway	Clear	Daylight	36.08311	-83.93465
103040099	SR071	8.555	44396.35139	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Unknown Action","Unknown Action"]	["South","West"]	On Roadway	Clear	Daylight	36.08311	-83.93465
103056674	SR071	8.555	44417.20694	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Yield Right of Way","No Contributing Actions"]	["North","West"]	On Roadway	Clear	Dark-Unknown Lighting	36.08311	-83.93465
102996707	SR071	8.555	44349.93542	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","Failure to Yield Right of Way"]	["West","North"]	On Roadway	Clear	Dark-Not Lighted	36.08311	-83.93465
103436722	SR071	8.547	44837.45	(O) Property-Damage Only	0	0	0	4	Transport","Vehicle in Transport","Vehicle in Transport","Vehicle i	nproperly","No Contributing Actions","No Contributing Actions","Un	north","North","North","North"]		Clear	Daylight	36.08308	-83.93455
103579790	SR071	8.54	44983.73264	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["North","South"]	On Roadway	Cloudy	Daylight	36.08311	-83.93465
103611467	SR071	8.54	45014.70903	(O) Property-Damage Only	0	0	0	1	Utility Pole		East	Separator	Clear	Daylight	36.08311	-83.93465
103617824	SR071	8.54	45021.79167	(C) Possible Injury	0	0	2	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","Failure to Obey Traffic Controls"]	["South","North"]	On Roadway	Smog/Smoke	Daylight	36.08311	-83.93465
103648993	SR071	8.514	45054.49653	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]		Cloudy	Daylight	36.0829	-83.934
103625235	SR071	8.54	45030.61319	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","No Contributing Actions"]	["East","North"]	On Roadway	Rain	Daylight	36.08311	-83.93465
103631711	SR071	8.54	45037.74444	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","Following Improperly"]	["North","North"]		Cloudy	Daylight	36.08311	-83.93465
103449909	SR071	8.58	44850.76597	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Improper Lane Changing","No Contributing Actions"]	["North","North"]		Cloudy	Daylight	36.08331	-83.93506
103009226	SR071	8.555	44362.70417	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]		Clear	Daylight	36.08311	-83.93465
103262095	SR071	8.555	44653.57847	(O) Property-Damage Only	0	0	0	2		["Other (Narrative)","No Contributing Actions"]					36.08311	-83.93465
103564451	SR071	8.594	44967.7125	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]		Clear	Daylight	36.0834	-83.93528
400143750	SR071	8.54	45543.70069	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["East","East"]		Clear	Daylight	36.08326	-83.93508
400155769	SR071	8.579	45561.75972	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]		Clear	Daylight	36.0833	-83.93505
400249410	SR071	8.54	45770.225	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["No Contributing Actions","No Contributing Actions"]	["West","East"]		Clear	Dark-Not Lighted	36.08325	-83.93443
400245002	SR071	8.54	45760.65278	(C) Possible Injury	0	0	2	2	["Vehicle in Transport","Vehicle in Transport"]	["Following Improperly","No Contributing Actions"]	["North","North"]	On Roadway	Cloudy	Daylight	36.08299	-83.93499
400251850	SR071	8.54	45775.425	(B) Suspected Minor Injury	0	0	1	2	["Vehicle in Transport","Vehicle in Transport"]	["Lane Departure","No Contributing Actions"]	["North","North"]	On Roadway	Clear	Daylight	36.08312	-83.9347
400375381	SR071	8.54	45939.85139	(O) Property-Damage Only	0	0	0	2	["Vehicle in Transport","Vehicle in Transport"]	["Failure to Obey Traffic Controls","No Contributing Actions"]	["North","South"]	On Roadway	Clear	Dark-Lighted	36.08322	-83.9349

Appendix H: Excerpts from Historical TIS

KNOXVILLE/KNOX COUNTY METROPOLITAN PLANNING COMMISSION
SUBDIVISION REPORT - CONCEPT/USE ON REVIEW

FILE #: 7-SJ-06-C **AGENDA ITEM #:** 27

7-K-06-UR **AGENDA DATE:** 7/13/2006

SUBDIVISION: **NORRIS FREEWAY COMMERCIAL CENTER**

APPLICANT/DEVELOPER: **CROSSROADS GENERAL PARTNERSHIP**

OWNER(S): BUDD CULLOM CULLOM PROPERTIES

TAX IDENTIFICATION: 28 205, 205.02, 205.03 AND 205.04 AND 038CE001-037

JURISDICTION: County Commission District 7

LOCATION: **Northeast side of Norris Freeway, north of E. Emory Rd., south of Whitworth Dr.**

SECTOR PLAN: North County

GROWTH POLICY PLAN: Planned Growth Area

APPROXIMATE ACREAGE: **53.41 acres**

ZONING: **SC (Shopping Center)**

EXISTING LAND USE: **Vacant land**

PROPOSED USE: **Commercial subdivision**

SURROUNDING LAND USE AND ZONING: North: Residences / PR (Planned Residential) & A (Agricultural)
South: Vacant land / A (Agricultural) & F (Floodway)
East: Hospice and assited living facilities / OB (Office, Medical, and Related Services)
West: Residences and Norris Freeway / RAE (Single Family Exclusive) & A (Agricultural)

NUMBER OF LOTS: **6**

SURVEYOR/ENGINEER: Site, Inc.

ACCESSIBILITY: Access is via Norris Freeway, a minor arterial street that presently has a 25' wide two lane section within a 200'+ right-of-way.

SUBDIVISION VARIANCES REQUIRED: **1. Variance for the reduction of the right-of-way radius at the intersection of Road A and Norris Freeway, from 75' to 0'.**
2. Variance from the access requirements to allow the use of permanent cross access easements for those lots that do not have direct access to a public street due to access restrictions.

STAFF RECOMMENDATION:

APPROVE variances 1 & 2 because the site conditions and use restricts compliance with the Subdivision Regulations, and the proposed variances will not create a traffic hazard.

APPROVE the Concept Plan subject to 13 conditions:

1. Connection to sanitary sewer and meeting any other relevant requirements of the Knox County Health Department.
2. Provision of a street name which is consistent with the Uniform Street Naming and Addressing System

within Knox County (County Ord. 91-1-102).
3. Conducting compaction testing in all fill areas associated with street construction and building sites per the requirements of the Knox County Department of Engineering and Public Works.
4. Meeting all applicable requirements of the Knox County Department of Engineering and Public Works.
5. Meeting all applicable requirements and obtaining all required permits from the Tennessee Department of Environment and Conservation.
6. Implementation of the road improvements as recommended in the Traffic Impact Study for the intersections of Emory Rd. with Andersonville Pike and Norris Freeway and Norris Freeway up to and including the two entrances for the proposed commercial subdivision. The applicant shall be responsible for all improvements that will not be implemented by the Tennessee Department of Transportation in their scheduled improvements to Emory Rd. and Norris Freeway.
7. Obtaining street connection permits from the Tennessee Department of Transportation.
8. Any requests for extension of the public street (Road A) to Andersonville Pike will require an update of the Traffic Impact Study and a new concept plan review.
9. Obtaining approval from Knox County Commission on the closure of the rights-of-way for the streets within Autumn Springs Subdivision and recording a final plat that eliminates all lot and right-of-way lines for the subdivision.
10. Placing a note on the final plat that states that except for the two approved access points to Norris Freeway as designated on the approved concept plan, all other access shall be to the internal street and driveways.
11. Prior to final plat certification, recording the permanent cross access easements that provide access for those lots that do not have direct access to a public street due to access restrictions.
12. Meeting all requirements of the approved use on review development plan.
13. A final plat application based on this concept plan will not be accepted for review by the MPC until certification of design plan approval has been submitted to the MPC staff.

- **APPROVE the development plan for up to 358,500 sq. ft. of retail space on three lots within the SC zoning district, subject to 5 conditions.**

1. Meeting all applicable requirements of the approved concept subdivision plan.
2. Meeting all applicable requirements of the Knox County Zoning Ordinance.
3. Installing all landscaping, as shown on the landscape plan, within six months of issuance of a building permit, or posting a bond with the Knox County Department of Engineering and Public Works, to guarantee such installation.
4. Use-on-Review approval is required for any development on outlots 1 and 2 and the future development tract.
5. Required parking spaces within the development can not be used for the display or storage of materials or products.

With the conditions noted, this plan meets the requirements for approval within an SC (Shopping Center) district and the criteria for approval of a Concept Plan and a Use-on-Review.

COMMENTS:

The applicant is proposing a commercial subdivision with five lots for commercial development under the SC (Shopping Center) district. This site was rezoned to SC (Shopping Center) in 2000. The Planning Commission had recommended denial of the request at that time. The rezoning was approved on appeal to the Knox County Commission on November 20, 2000.

The total area of the subdivision is 53.41 acres. Approximately 7 acres of the site is designated as future development and will require approval from the Planning Commission for any further subdivision or development. The development under consideration at this time includes a Wal-Mart Supercenter with 207,803 square feet, a Home Depot with 106,278 square feet and a retail shops area with 44,150 square feet. Access to the property is from a proposed public street (Road A) off of Norris Freeway. A second access to Norris freeway is proposed at the northern end of the Wal-Mart site. There is no access proposed to Andersonville Pike. Any requests for extension of the public street to Andersonville Pike will require an update of the Traffic Impact Study and a new concept plan review.

A Traffic Impact Study was prepared for the proposed commercial development. Staff has recommended a condition that the applicant implement the road improvements as recommended in the Traffic Impact Study for the intersections of Emory Rd. with Andersonville Pike and Norris Freeway and Norris Freeway up to and including the two entrances for the proposed commercial subdivision. The applicant shall be responsible for all improvements that will not be implemented by the Tennessee Department of Transportation in their scheduled

improvements to Emory Rd. and Norris Freeway.

The applicant has obtained approval from the Knox County Board of Zoning Appeals for variances of the size of each parking space (9' x 18' approved), and for the total number of spaces required for the center. With the reduction in the number of required spaces, Staff is recommending a condition that required parking spaces can not be used for the display or storage of materials or products.

EFFECT OF THE PROPOSAL ON THE SUBJECT PROPERTY, SURROUNDING PROPERTY AND THE COMMUNITY AS A WHOLE

1. The proposed subdivision will have minimal impact on local services. All utilities are readily available to the site..
2. With the recommended road improvements as identified in the Traffic Impact Study, there will be adequate road capacity to support this proposed development.
3. Storm drainage will be directed into the existing drainageways on this site. Stormwater detention, grading and drainage plans will be required that meet the Knox County's regulations.

CONFORMITY OF THE PROPOSAL TO CRITERIA ESTABLISHED BY THE KNOX COUNTY ZONING ORDINANCE

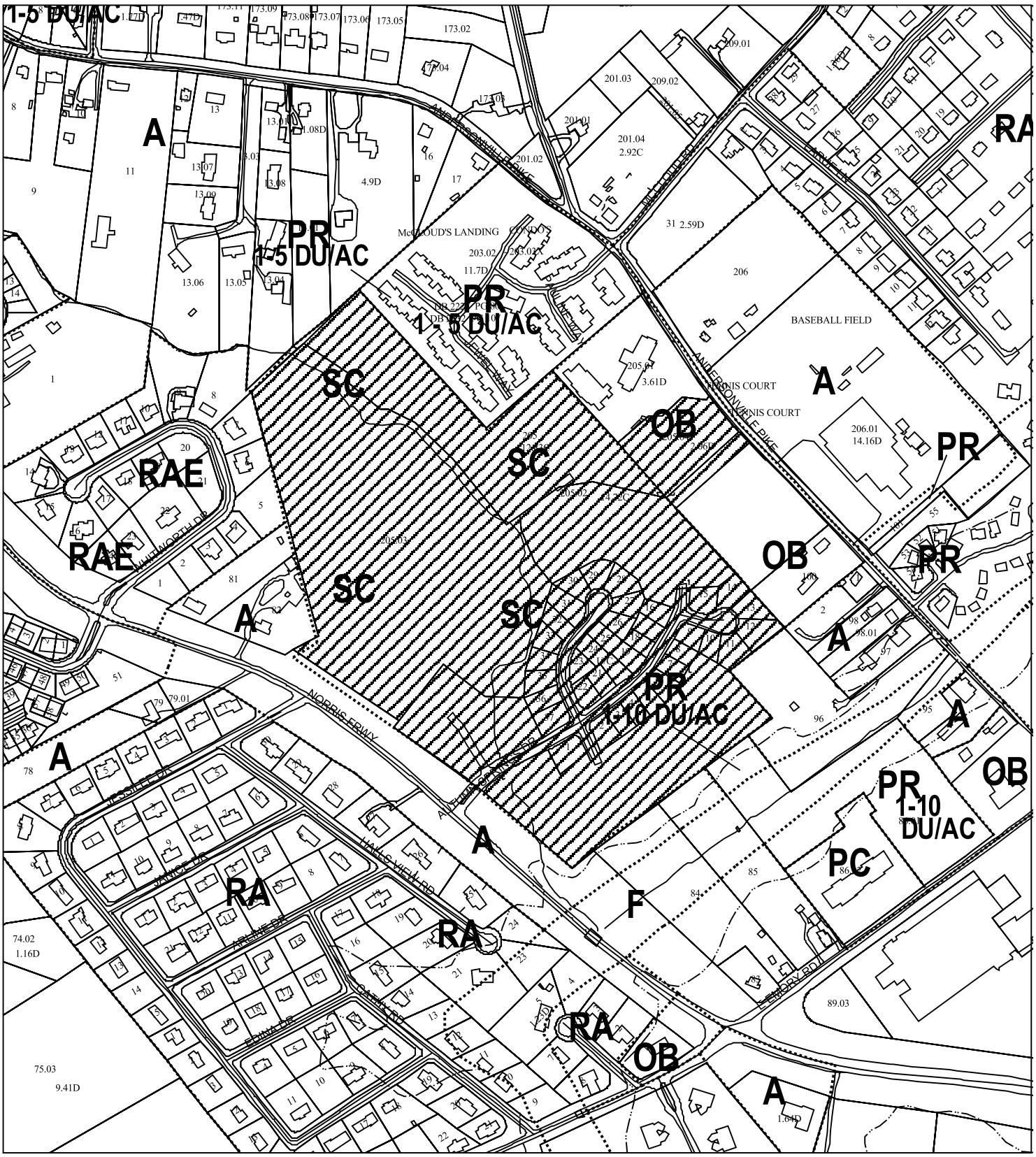
1. With the recommended conditions, the proposed commercial development meets the standards for development within the SC (Shopping Center) Zone and all other requirements of the Zoning Ordinance.
2. The proposed development and subdivision is consistent with the general standards for uses permitted on review: The use is in harmony with the general purpose and intent of the Zoning Ordinance. The proposed development complies with all the height, bulk and area requirements of the Knox County Zoning Ordinance.
3. The use will not draw additional non-residential traffic through residential areas since access to the site is from Norris Freeway, a minor arterial street. Minor arterial streets are designed to carry trips of moderate length and moves through traffic between activity centers.
4. While the use may not be compatible with the character of the residential neighborhoods in the area, with direct access to a minor arterial street along with the recommended road improvements for the area and proposed landscape screening along adjacent residential properties, the impact on adjacent property should be reduced.

CONFORMITY OF THE PROPOSAL TO ADOPTED PLANS

1. The North County Sector Plan identifies this property for low density residential use. At the time that the rezoning request was reviewed by the Planning Commission individual sector plan amendments were not considered with the rezoning requests.
2. The site is identified as being within the Planned Growth Area on the Knoxville-Knox County-Farragut Growth Policy Plan

MPC's approval or denial of this concept plan request is final, unless the action is appealed to Knox County Chancery Court. The date of the Knox County Chancery Court hearing will depend on when the appeal application is filed.

MPC's approval or denial of this use on review request is final, unless the action is appealed to the Knox County Board of Zoning Appeals. The date of the Knox County Board of Zoning Appeals hearing will depend on when the appeal application is filed.



7-SJ-06-C/7-K-06-UR
CONCEPT PLAN/USE ON REVIEW

Petitioner: Norris Freeway Commercial Center Crossroads General Partnership

Map No: 28

Jurisdiction: County

Commercial Subdivision in SC (Shopping Center)

0' 500'

N

Original Print Date: 06/21/06 Revised:

Metropolitan Planning Commission * City / County Building * Knoxville, TN 37902

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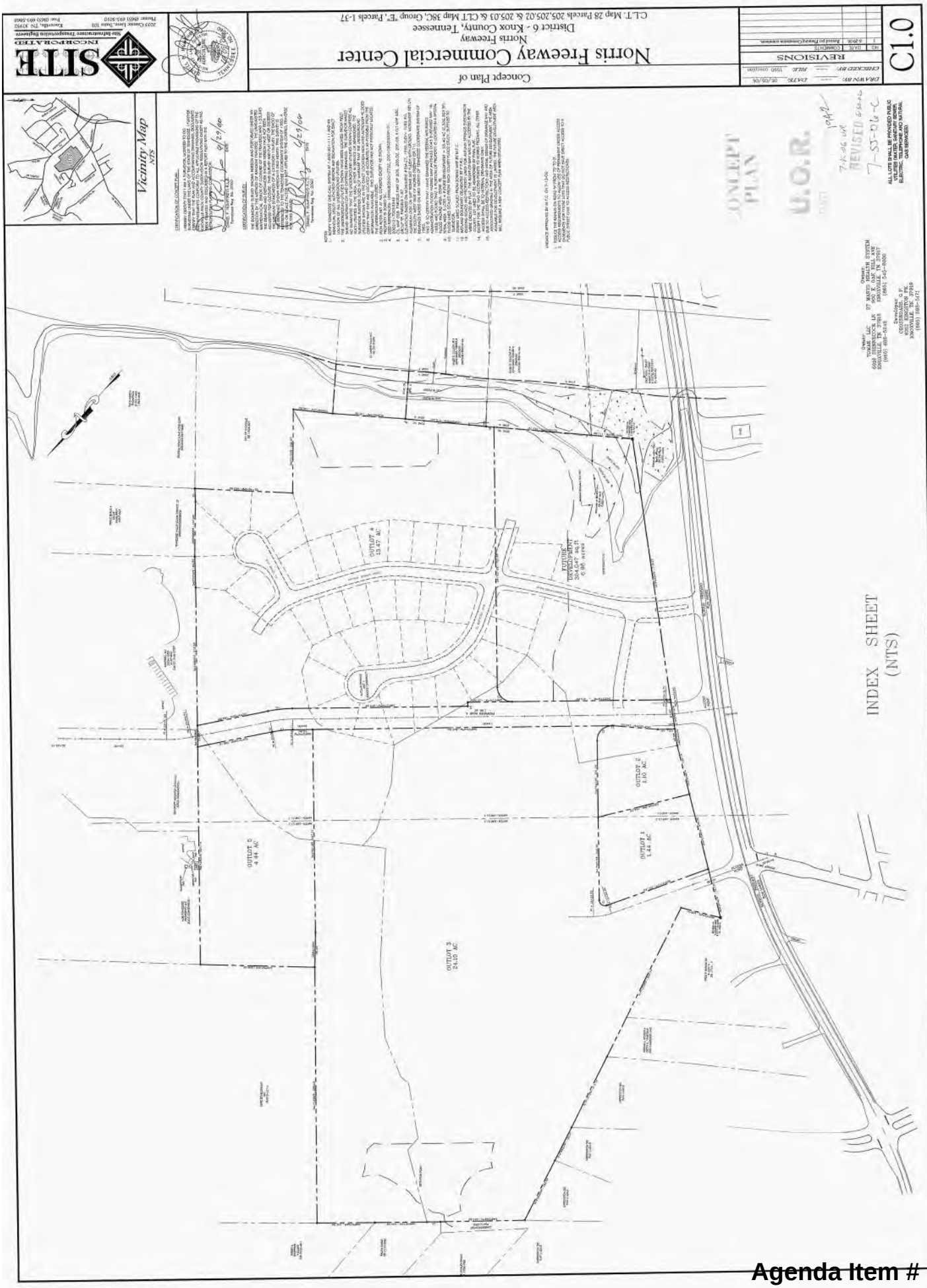

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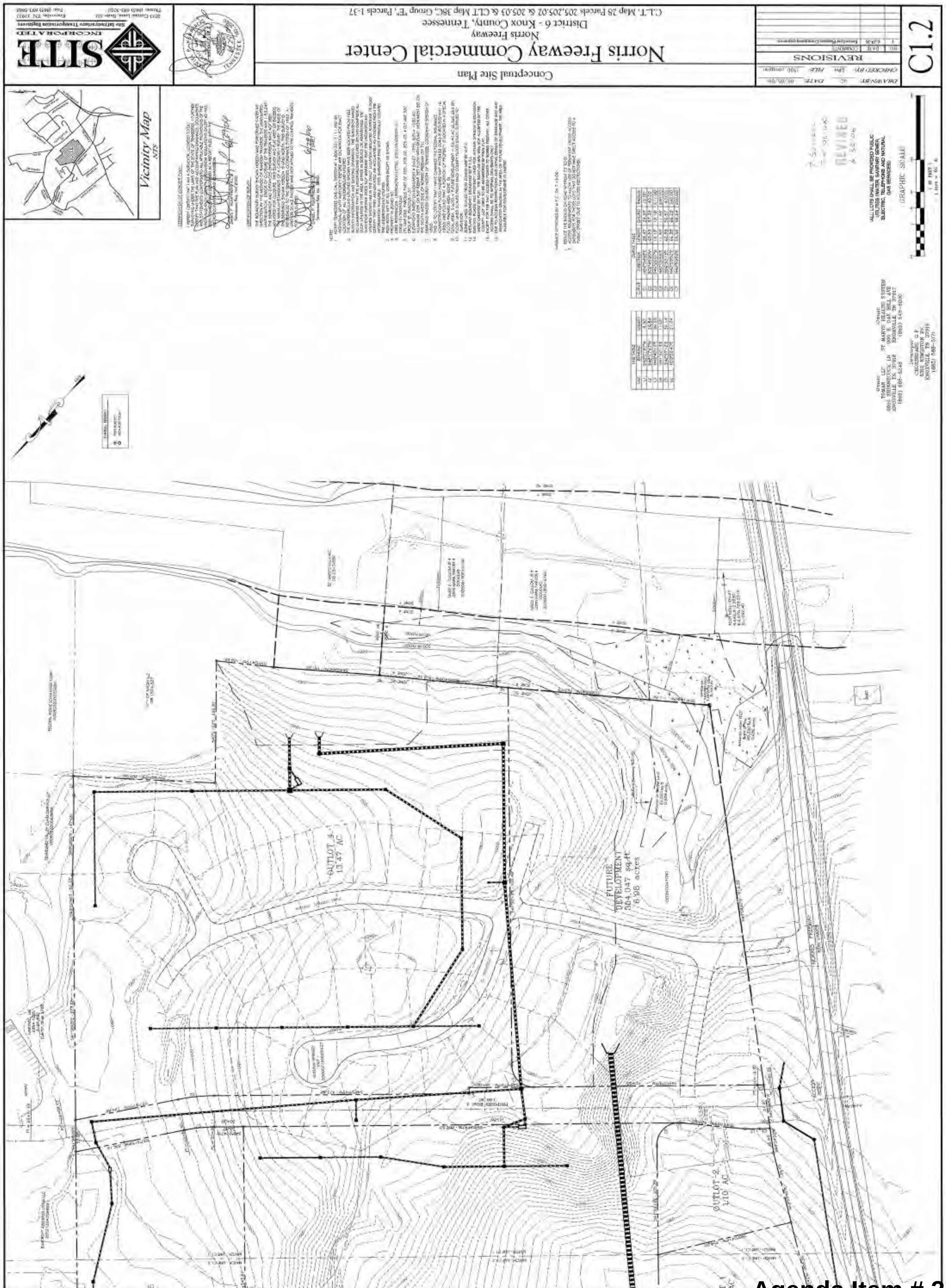

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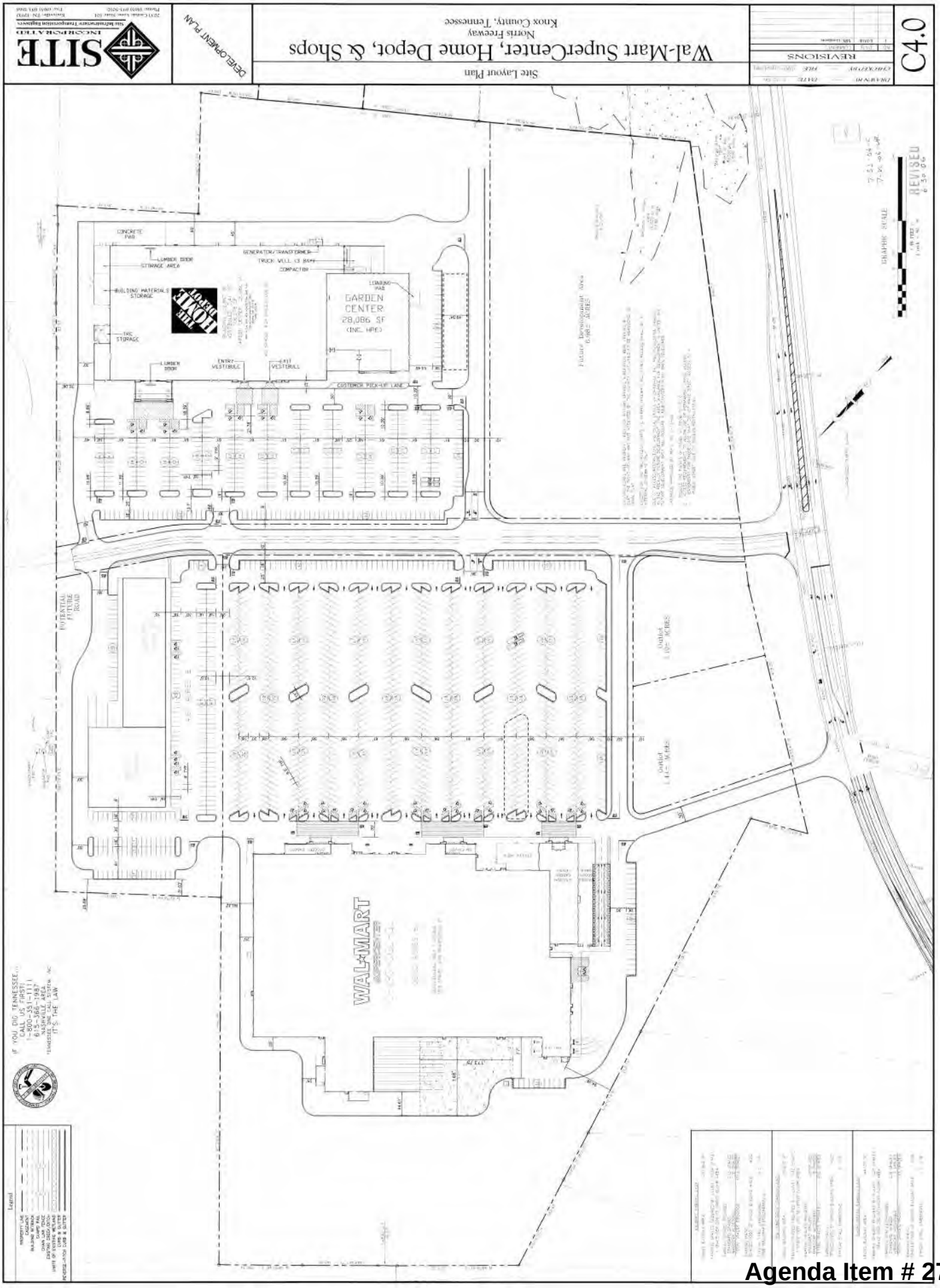
SITE
DEVELOPMENT PLAN
Site Layout Plan
Wal-Mart SuperCenter, Home Depot, & Shops
Norris Freeway
Knox County, Tennessee
REVISIONS
C4.0
GARDEN CENTER
28,086 SF
(INC. HPE)
CONCRETE PAD
LUMBER DOOR STORAGE AREA
GENERATOR/TRANSFORMER
TRUCK WELL (3 BAY) COMPACTOR
BUILDING MATERIALS STORAGE
TIRE STORAGE
LUMBER DOOR
ENTRY VESTIBULE
EXIT VESTIBULE
LOADING PAD
CUSTOMER PICK-UP LANE
Future Development Area
6.96± ACRES
POTENTIAL FUTURE ROAD
Outlot
1.05± ACRES
Outlot
1.47± ACRES
WAL-MART
IF YOU DIG TENNESSEE
CALL US FIRST!
(800) 351-1111
OR (615) 366-1100
NASHVILLE AREA
TENNESSEE ONE CALL SYSTEM, INC.
IT'S THE LAW
Legend
REVISED
8-30-06
7-21-06
7-26-06

SITE
DEVELOPMENT PLAN
Norris Freeway Commercial Center
Norris Freeway
Knox County, Tennessee
Preliminary Landscape Plan
REVISIONS
PL-1
GARDEN CENTER
28,086 SF
(INC. HPE)
WAL*MART
TREE PROTECTION FENCING, TYP
LEYLAND CYPRESS IN SINGLE ROW
MULCH ISLANDS, TYP
CHINESE ELM, TYP
WILLOW OAK, TYP*
SOD/GRASS CANOE ISLANDS, TYP
CHINESE PISTACHIO, TYP
RED SUNSET MAPLE, TYP
GOLDEN RAINTREE TYP. IN SPECIALTY SHRUB BED
NATURALIZED TREE GROUPS WITHIN ROW TYP - OAKS AND DOGWOODS
OPAQUE SCREEN FENCE TYP
LEYLAND CYPRESS IN DOUBLE STAGGERED ROW
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7-SJ-06-C
7-K-06-UR

TRAFFIC IMPACT STUDY

for

Proposed Commercial Development

Norris Freeway at Emory Road

Knox County, Tennessee

Prepared For:

Cullom Properties

Knoxville, Tennessee

Prepared By:

SITE
INCORPORATED
Civil Infrastructure Transportation Engineers

2033 Castaic Lane, Suite 101

Knoxville, Tennessee

June 2006

Agenda Item # 27

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7-SJ-06-C
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I. Introduction

Cullom Properties proposes to develop a shopping center in the northeast corner of the intersection of Norris Freeway and Emory Road. The proposed development will provide approximately 412,760 square feet of commercial space. This area includes the out lots. Build-out for the development is anticipated for 2009. Figure 1 shows the general location of the site.

The proposed development has two entrances on Norris Freeway. The northernmost entrance on Norris Freeway (referred to as Entrance 1) will be located at the existing intersection of Norris Freeway and Jessilee Drive. Entrance 2 is located approximately 400' southeast of Entrance 1. All entrances shown are located at the "approved" stations according to a Tennessee Valley Authority deed prepared when Norris Freeway was built. Third and fourth "rights to access at or near" entrance points have not been shown but one of these will be requested at a later date. The location is nearer to Emory Road. The proposed site plan is shown in Figure 2.

The purpose of this report is to document the analysis which has been undertaken to determine the impact of the proposed development on traffic operations on Norris Freeway, Emory Road, and Andersonville Pike. The Level-of-Service which can be anticipated will be determined and necessary or desirable geometric improvements will be recommended

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Table 3: Signalized Intersection Analysis	Intersection			
	Delay / LOS	Lanes	Delay (sec) / LOS	Queue (ft)
Emory Road @ Andersonville Pike (Recommended Lanes and Future 2009 Volumes – with permissive only left-turns)				
Weekday PM	23.6 / C	EB L	28.8 / C	71
		EB TR	35.3 / D	278
		WB L	17.3 / B	23
		WB TR	19.0 / B	177
		NB L	13.3 / B	44
		NB TR	18.6 / B	33
		SB L	16.6 / B	89
		SB TR	16.4 / B	232
Saturday Midday	26.6 / C	EB L	38.1 / D	130
		EB TR	50.3 / D	427
		WB L	21.7 / C	11
		WB TR	25.1 / C	173
		NB L	9.1 / A	51
		NB TR	9.6 / A	14
		SB L	8.4 / A	37
		SB TR	11.4 / B	235

VIII. Other Roadway Improvements

The Tennessee Department of Transportation is currently widening Emory Road (SR 131) from Bishop Road to Norris Freeway from two lanes to five. The intersection of Emory Road and Norris Freeway will be improved to include a right turn lane on southbound Norris Freeway. The widening of Norris Freeway begins at the bridge over Beaver Creek. This widening is expected to be completed around 2009. Figure 9 shows a copy of the TDOT intersection improvement plan.

IX. Transit Operations

The Knoxville Area Transit currently does not run to the site, however, future connection is not unlikely. The site should be designed to accommodate these vehicles. Turning radii will be designed such that a 40-foot bus will be able to access the development.

X. Conclusions and Recommendations

The proposed commercial development is expected to generate approximately 17,724 trips per day, with 1,548 occurring during the weekday PM peak hour and 2,051

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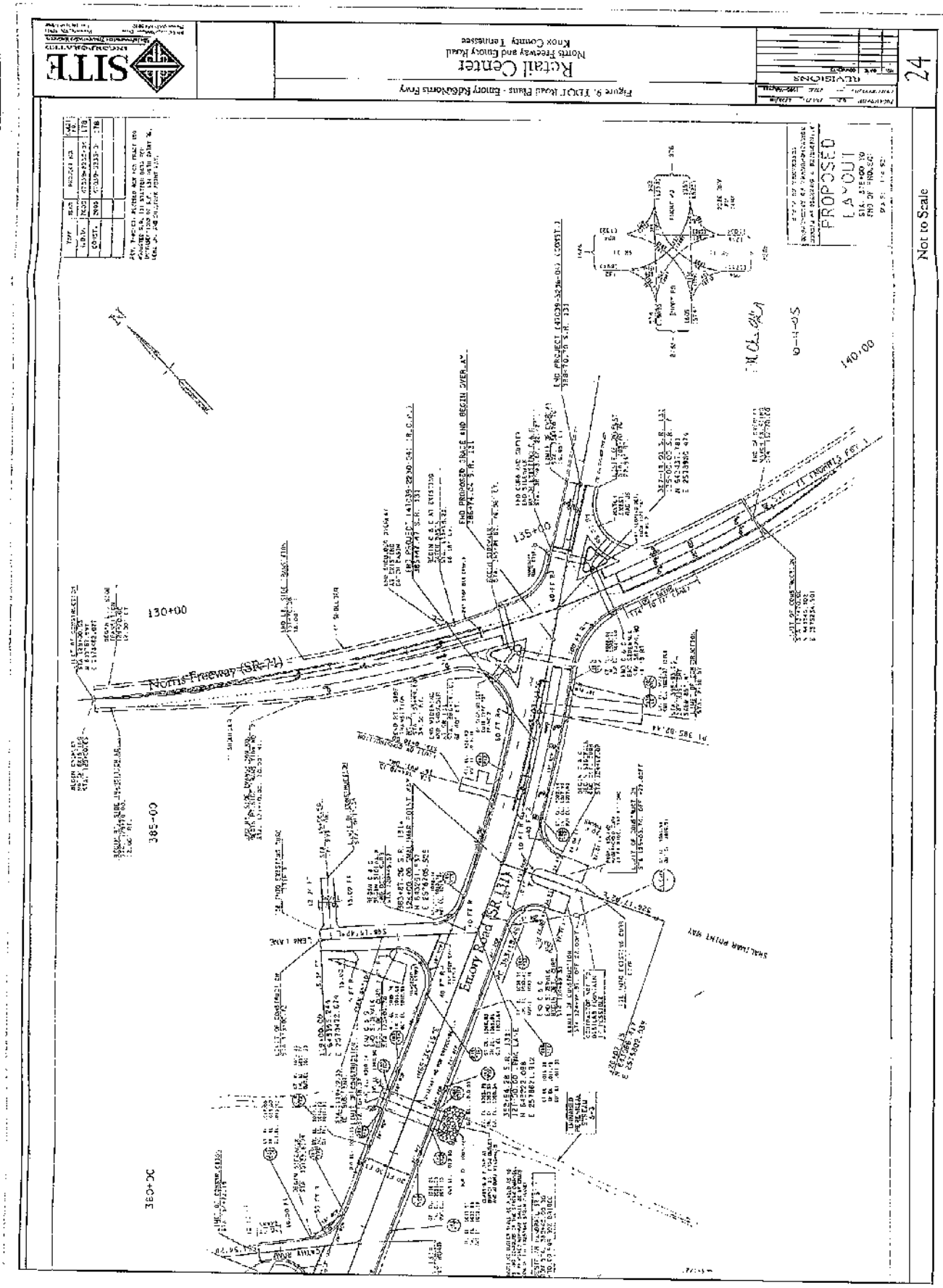

occurring during the midday peak hour on a Saturday. Traffic along Norris Freeway, Emory Road, and Andersonville Pike was estimated from turning movement counts completed in 2006.

Emory Road is scheduled for widening to a five-lane section west of Norris Freeway by TDOT. In order to maintain or improve the level-of-service for each of the intersections studied, several improvements are recommended.

Emory Road @ Norris Freeway

This intersection is currently signalized. TDOT proposes to widen the eastbound leg of Emory Road to a five-lane section (a proposed layout is shown in Figure 9). It is recommended that a northbound through lane and a westbound right-turn be added to Norris Freeway. With optimized signal timing, the intersection should operate at or near LOS C for both peak hours. Figure 10 shows recommendations for the intersection on the TDOT plans. It is recommended that these turn lanes be incorporated into the TDOT construction plans, if possible. Adding the second northbound through lane would require adding a second northbound through lane north of the intersection. This will also require widening the culvert. The intersection should not be under construction twice within one year.

Norris Freeway @ Jessilee Drive / Entrance 1

This T-intersection is currently unsignalized and serves the Freeway Subdivision. During the both the weekday PM and Saturday midday peak hours the exiting traffic operates at an LOS B. In 2009 with growth only the exiting traffic will continue to operate at LOS B. However, with the fourth leg added to the intersection and with the site-generated traffic, the exiting traffic will be D and E during the weekday PM and Saturday midday peak hours, respectively. It is recommended that northbound left-turn and right-turn lanes be added as part of this project. The lengths of the turn lanes should be maximized based on the available frontage. It is possible to begin widening at the Carrington Place subdivision

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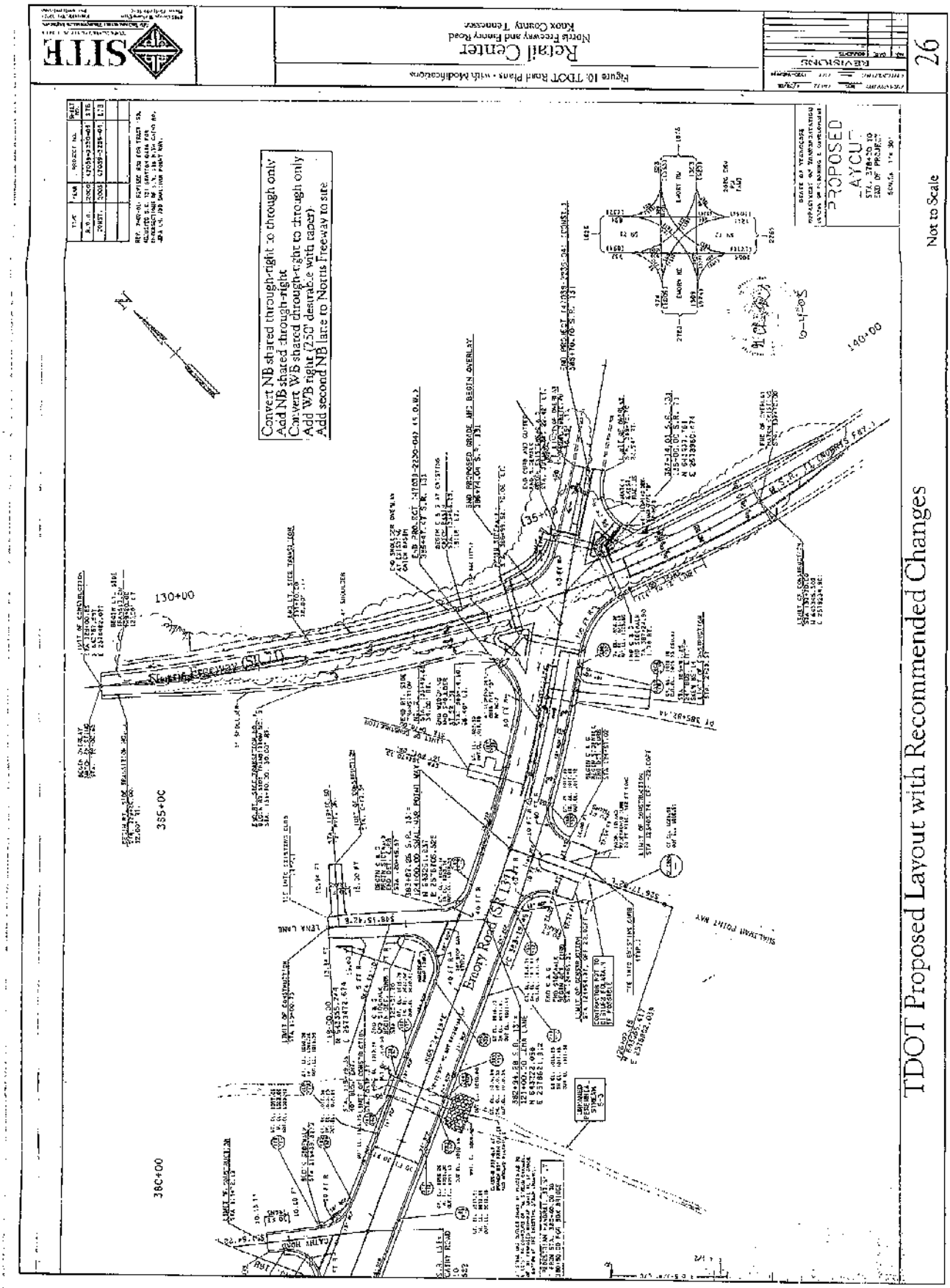

to provide left-turn lanes In addition two exiting lanes from the site should be constructed.

Figure 11 shows recommended improvements along Norris Freeway from Jessilee Drive to Emory Road

Norris Freeway @ Entrance 2

A signal is proposed for this intersection. The projected volumes meet minimums for 3 of the 3 volume warrants evaluated. The future LOS for the intersection are expected to be B for both peak hours. Two exiting left-turn lanes and one exiting right-turn lane should be provided to accommodate future traffic. The length of the southbound left-turn lane should be maximized Several scenarios were studied in the capacity analysis It is recommended that the northbound lanes should be configured as one through lane, one shared through and right-turn lane, and one exclusive right-turn lane. The exclusive right turn should be at least 200' with a 12:1 taper. The traffic signal should be designed to accommodate all exiting left-turns

Emory Road @ Andersonville Pike

This intersection operates as a four-way stop controlled intersection. During the PM peak hours during the weekday, the movements operate at LOS E or F Based on visual observations the traffic on the eastbound Emory Road backs up around 500'. In 2009 without the development, all movements are expected to operate at LOS F. The traffic volumes at the intersection currently meet Warrants 2 (four hour) and 3 (peak hour) listed in the MUTCD A signal is recommended for this intersection. The projected volumes for the intersection meet 3 of the 3 warrants examined. All legs of the intersection should have a left-turn lane constructed so that protective/permissive left-turn phasing can be accomplished without split phases. It appears from KGIS that right-of-way is available that can accommodate 200' left turn lanes with 10:1 tapers for each of the legs of the intersection. The existing lanes are approximately 10' wide. It is desirable to have 12'

turn lanes; however, if right-of-way is not available then 10' lanes are satisfactory. Under optimized signal timing, the intersection should operate at a LOS of C during the peak hours with the suggested lane configuration. Figure 12 shows the recommended layout of the intersection.

Emory Road from Norris Freeway to Andersonville Pike

The analysis shows that the turn lanes on Emory Road will provide acceptable levels-of-service at the Norris Freeway and Andersonville Pike intersections. The addition of a third lane, which would provide left-turn lanes into the existing businesses along Emory Road, would increase the capacity of the road in general. The addition of the traffic signal and turn lanes at the Andersonville Pike intersection should enable patrons of the existing businesses better access because the queues will not be as long and gaps in traffic will be created. Widening the entire road is not specifically recommended, however, it would beneficial.

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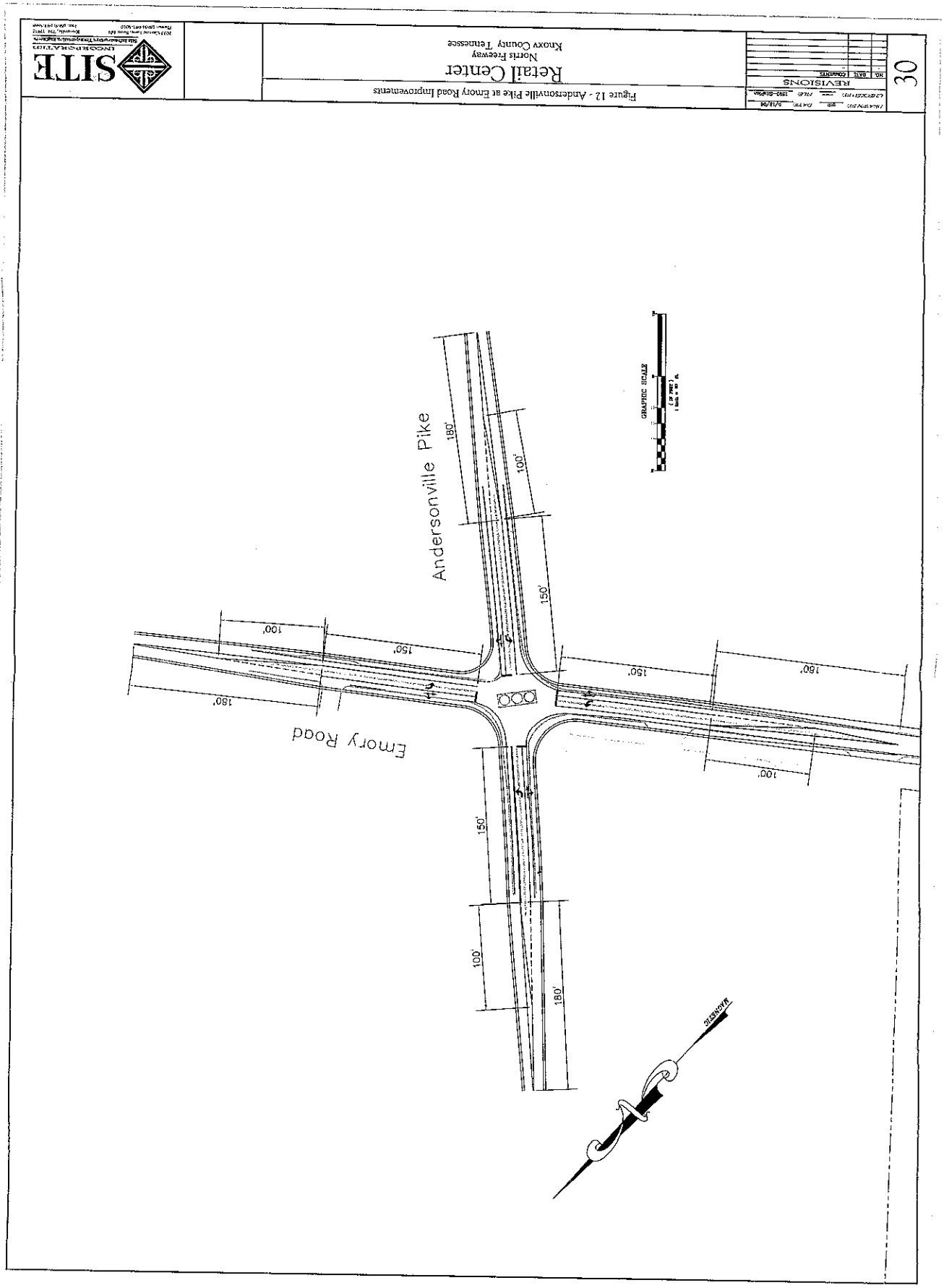

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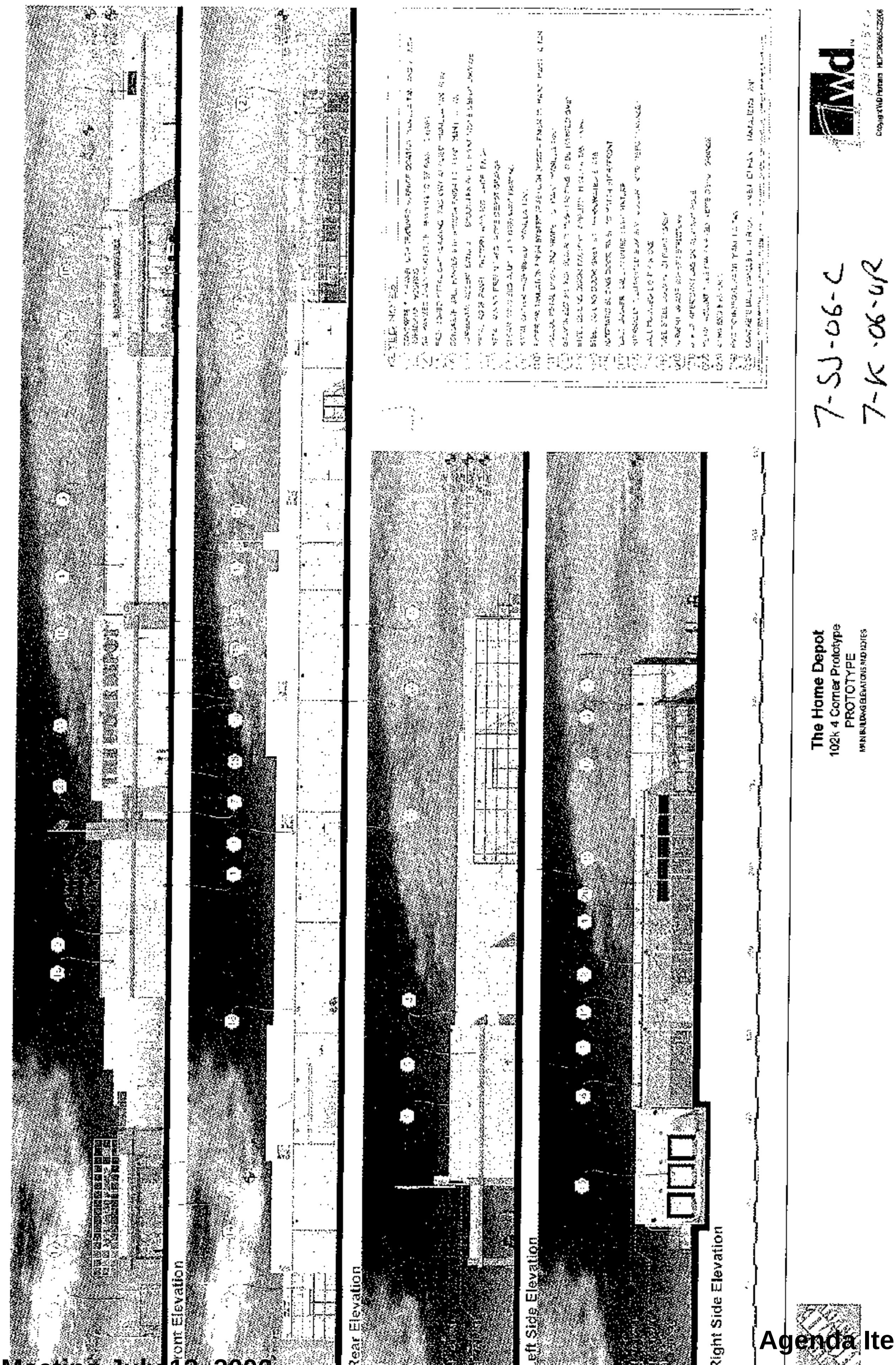

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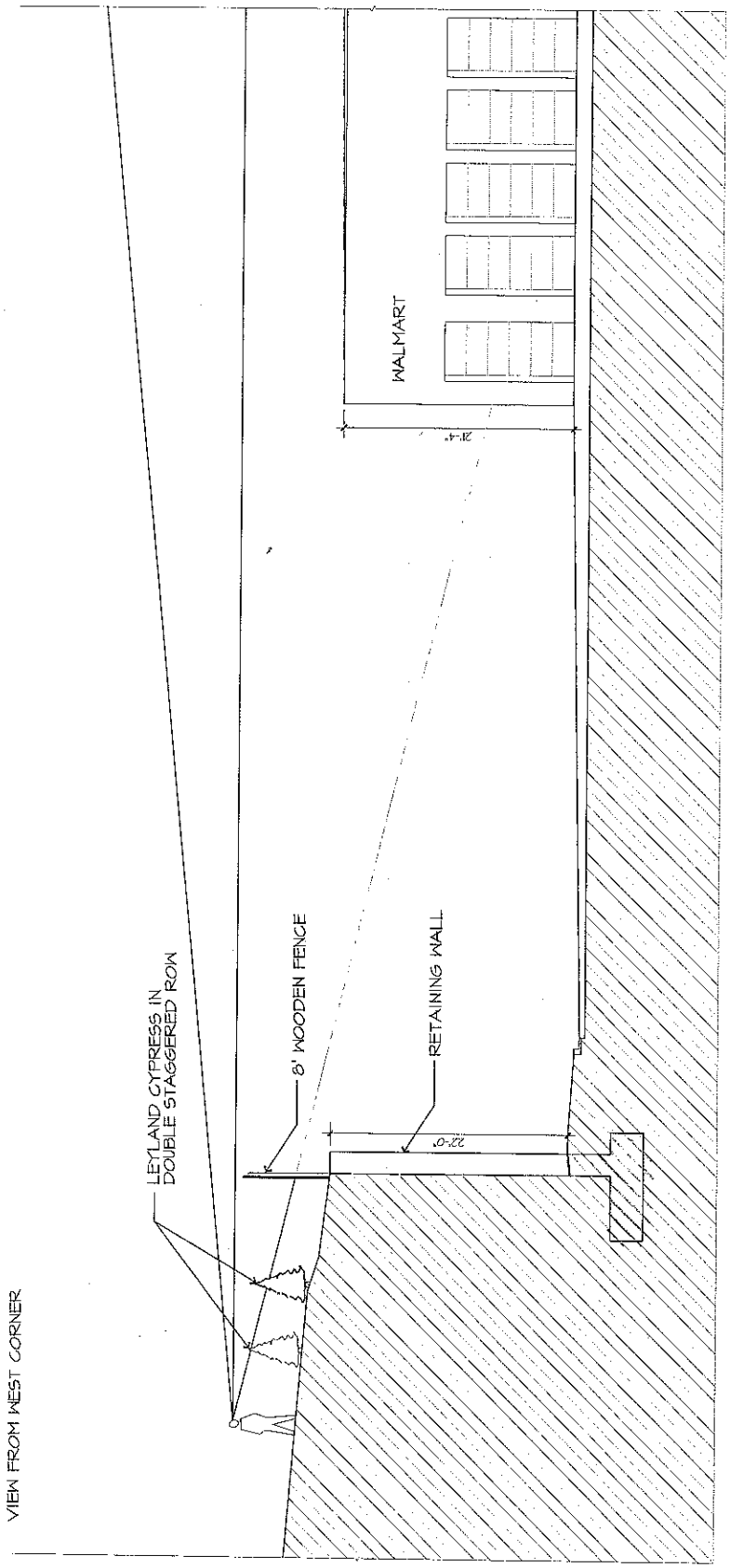

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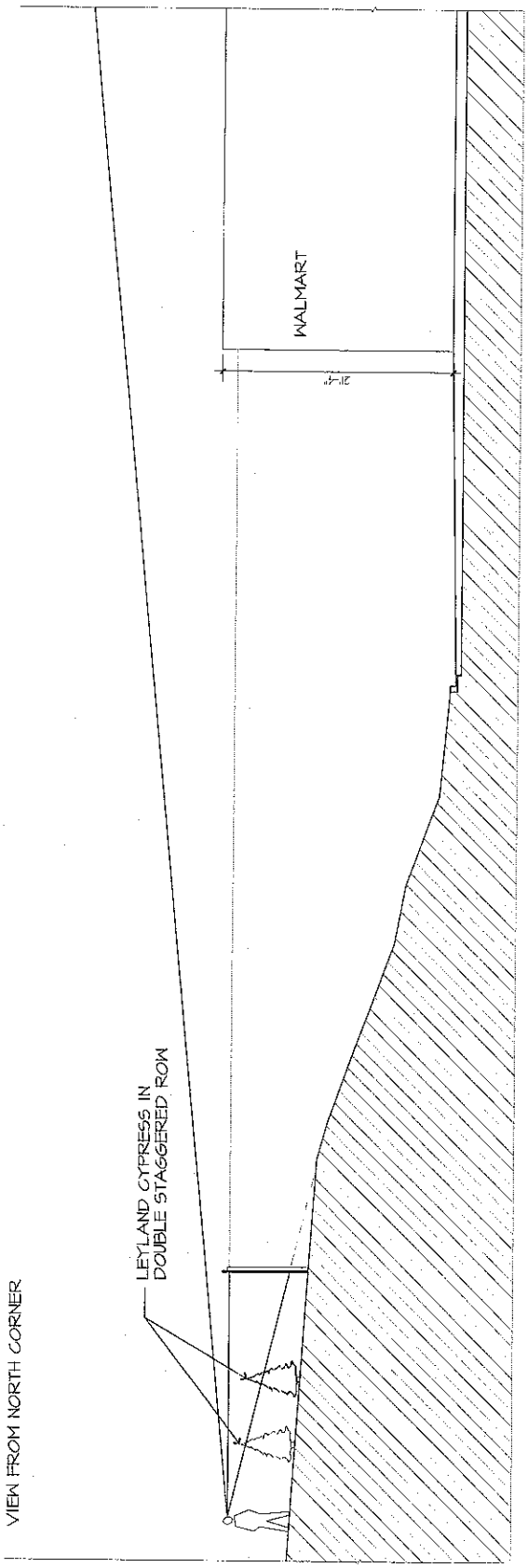

Agenda Item # 27

MPC Meeting July 13, 2006

From: Mike Carberry
To: Kara Wilson
Date: 7/5/2006 1:13:16 PM
Subject: Re: Please help the Thorngrove Community!

I am passing your correspondence on to our Development Services staff. It will be included in the packet to MPC for their consideration at the upcoming meeting.

>>> "Kara Wilson" <KWilson_mwflm@hotmail.com> 7/5/2006 11:59:43 AM >>>
Mr Carberry,

I am a resident of the Thorngrove Community in far East Knox County. I am sure you are aware to the issue brewing out here, Knox County Development Corp has received approval for $11 million dollars to pursue an Industrial Park at the 402 Exit off I-40 and the Thorngrove Pike area. I have been born and raised in the Thorngrove Community, we are a simple farming area with a beautiful landscape. We do not want this Industrial park! We have also been told that there will be a sewage treatment center as a part of this park, most of the community are on wells. What is this going to do to our water supply? KCDC is wanting to purchase this property with no traffic studies, water supply studies or any kind of enviromental studies, I don't understand spending this much money without any research. I understand that their property options expire in August, but that is no reason to push this through the MPC without any research on the area. These properties are covered with underground caves, sink holes (some filled in over the years as with Donnie Fox's poperty and some not filled in). Our community would much rather see this $11 million dollars go to the school systems, ie: a new school to replace the aged and molding Carter Elementary or school improvements overall, teacher raises, or even the pension plan for the Sheriff's dept. There are much better way the county can use this money than an Industrial Park where it is not wanted. Our community is totally against a Heavy Industrial park, please help preserve our community! We are the only true farm land left in the County! Please vote against this rezoning on July 13th!

Thank you for your time, and any help you can give would be greatly appreciated.

Kara Wilson
KWilson_mwflm@hotmail.com

7-SJ-06-C/7-K-06-UR

July 2,2006

To; MPC Commissioners
From: Oakie R. and Carolyn H. Triplett
3900 Edina Drive
Knoxville, TN 37938
Phone: 922-7170
Subject: Wal-Mart project on Norris Freeway in North Knoxville

This matter will come before the MPC Commission on July 13, at 1:30 pm. We respectfully oppose approving the new designated site plan. This project was denied by MPC in the beginning but the developer appealed to County Commission. They won a zoning approval by one vote in a questionable decision.

Now that they have the zone change from single family to commercial, they are trying to make the site fit the project rather than have the project fit the site. All we are asking for is Justice in this matter.

Please vote NO on the new revised site plan

Copy sent to:

C Randy Massey, Chairman	Richard Graf
Ray Evans Vice-Chair	Kimberly Henry, AICP
Robert Anders	Stan Johnson
Trey Benefield	Chester Kilgore
Susan Brown	Robert M. Lobetti
Art Clancy, III	Jack Sharp
Herbert Donaldson, Sr.	Mary Parker Slack
Philip French	

Thank you for you consideration in this matter,

Carolyn H. Triplett Oakie R. Triplett

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