

TRAFFIC IMPACT STUDY

FOR

LEACH ROAD ASSEMBLAGE

HALL COUNTY, GA

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EXECUTIVE SUMMARY

The Leach Road development is a proposed residential development to be built on approximately 174 acres of undeveloped land in Hall County, GA. The development will be along the west side of Leach Road south of Willie Robinson Road and includes 307 single-family housing units. The development is split up into three pods and will have three new driveways, one for each pod, accessing Leach Road. The build-out of the development is planned for 2030. This study analyzed existing and future peak hour traffic operations and capacity analysis for the study intersections to determine if recommendations to the existing roadway network should be made to accommodate the new traffic and determine how the new driveways should be controlled.

This study analyzed the impacts the development's generated trips are expected to have on the surrounding roadway network and study intersections. The study intersections are listed below:

1. Leach Road at Willie Robinson Road
2. Leach Road at Chestatee Road
3. Willie Robinson Road at Ledan Extension
4. Willie Robinson Road at Cool Springs Road
5. Leach Road at Driveway A (*New Intersection*)
6. Leach Road at Driveway B (*New Intersection*)
7. Leach Road at Driveway C (*New Intersection*)

The ITE Trip Generation Manual, was referenced to estimate the trips generated by the land use to calculate the total gross trips expected to be generated from the residential development. The expected trips were added to the expected future volumes to analyze the delay and level of service at the study intersections in the build condition and compare to the existing and no-build conditions.

The existing study intersections are operating at an acceptable level of service in the existing and no-build conditions, prior to the addition of the development's traffic. The residential development is expected to have a nominal effect on the delay at the existing study intersections. The new driveways for the site are expected to operate at an acceptable level of service. The following is the recommended configuration and modifications to the driveway intersections:

Leach Road at Driveway A

- Driveway A should be two lanes, one entry and one exit lane.
- Driveway A should be full access and stop sign controlled.
- Provide a southbound right turn-lane on Leach Road.

Leach Road at Driveway B

- Driveway B should be two lanes, one entry and one exit lane.
- Driveway B should be full access and stop sign controlled.
- Provide a northbound left-turn lane on Leach Road.
- Provide a southbound right turn-lane on Leach Road.

Leach Road at Driveway C

- Driveway C should be two lanes, one entry and one exit lane.
- Driveway C should be full access and stop sign controlled.
- Provide a northbound left-turn lane on Leach Road.
- Provide a southbound right turn-lane on Leach Road.

No additional improvements to the existing roadway infrastructure are recommended.



INTRODUCTION

A traffic impact study was conducted by Southeastern Engineering, Inc. for the proposed Leach Road development located in Hall County, GA. The development will be built on approximately 174 acres of undeveloped land, located along the west side of Leach Road. The development will include 307 dwelling units and have three new driveways accessing Leach Road. The build-out of the development is planned for 2030. An overall location map of the area near the site location is shown in **Figure 1**.

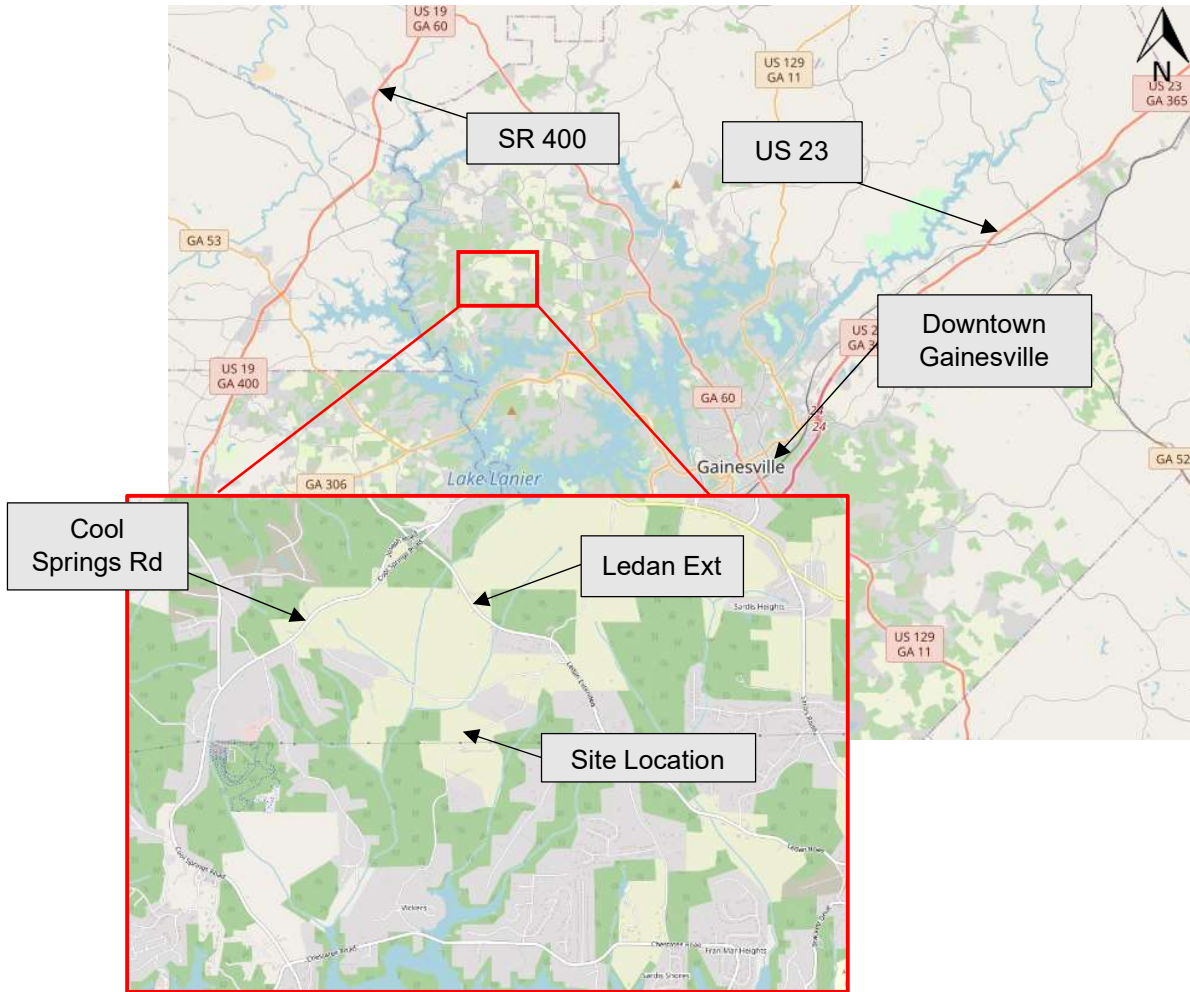


Figure 1 Location Map

This study will identify the potential impacts of the proposed development traffic on the surrounding roadway network. The study includes the existing and future peak hour traffic operations and capacity analysis for the study intersections. As necessary, operational improvements will be identified and analyzed to mitigate the traffic impacts caused by the development. Based on the results of the analysis for the study intersections, recommendations will be made for intersection geometry and control method.

PROJECT DESCRIPTION

The Leach Road residential development will include 307 single-family homes and three new driveways along Leach Road. The developments are split into three pods of houses, for this study they are identified as Pods A-C with corresponding driveway names. There is a driveway proposed



for a clubhouse that will align with Driveway C, which will not be analyzed as a part of this study. This study analyzes traffic impact upon the full built-out of the proposed development, which is planned for 2030. The site plan is attached in **Appendix A**.

Study Network

The traffic study analyzes the current traffic operations for the intersections in the vicinity of the proposed development. Capacity analysis and level of service evaluations of the study intersections were conducted for the existing, future no-build, and build scenarios. The study intersections and their control type are listed below:

1. Leach Road at Willie Robinson Road – Minor-Street Stop-Control
2. Leach Road at Chestatee Road – Minor-Street Stop-Control
3. Willie Robinson Road at Ledan Extension – Minor-Street Stop-Control
4. Willie Robinson Road at Cool Springs Road – Minor-Street Stop-Control
5. Leach Road at Driveway A (*New Intersection*)
6. Leach Road at Driveway B (*New Intersection*)
7. Leach Road at Driveway C (*New Intersection*)

Roadway Conditions

The roadway network adjacent to the development was examined for the existing roadway characteristics. An aerial of the study area is shown in **Figure 2**.

Leach Road

Leach Road is a two-lane facility with a posted speed limit of 40 miles per hour. It is classified by GDOT as a local road. It connects to Willie Robinson Road in the north and Chestatee Road to the south. There is no curb and gutter or sidewalk present along the road in the study area.

Willie Robinson Road

Willie Robinson Road is a two-lane facility with a posted speed limit of 35 mph. It is classified by GDOT as a local road. It connects to Cool Springs Road to the west and Ledan Extension to the east. There is no curb and gutter or sidewalk present along the road in the study area.

Chestatee Road

Chestatee Road is a two-lane facility with a posted speed limit of 45 mph. It is classified by GDOT as a local road. It connects to Sardis Road to the east and Cool Springs to the west. There is no curb and gutter or sidewalk present along the road in the study area.

Ledan Extension

Ledan Extension is a two-lane facility with a posted speed limit of 45 miles per hour. It is classified by GDOT as a minor collector. It connects to SR 60 to the southeast and Cool Springs Road to the north. There is no curb and gutter or sidewalk present along the road in the study area.

Cool Springs Road

Cool Springs Road is a two-lane facility with a posted speed limit of 50 miles per hour. It is classified by GDOT as a minor collector. It connects to SR 136 / Price Road to the north and ends near Latham Creek in the south. There is no curb and gutter or sidewalk present along the road in the study area.



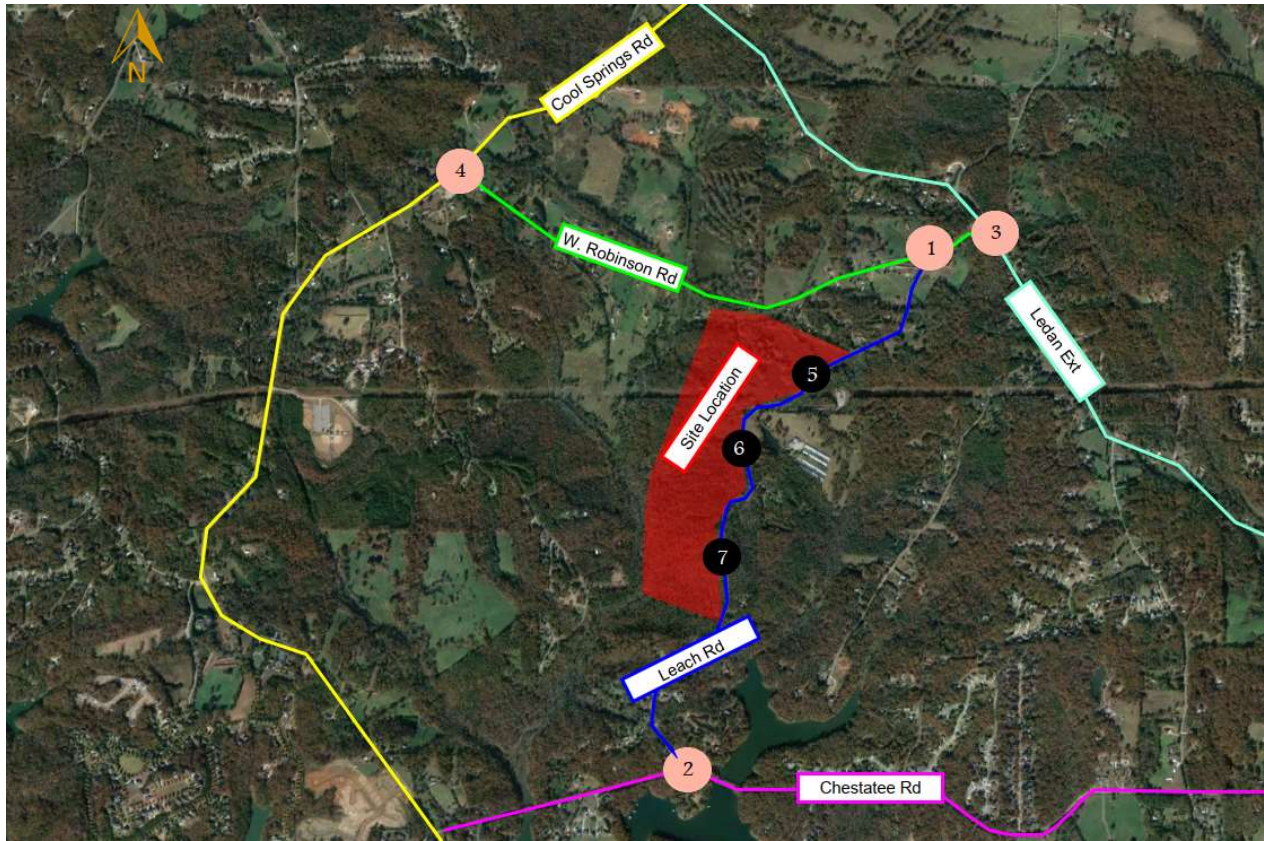


Figure 2 Aerial of Study Area

EXISTING TRAFFIC CONDITIONS

Existing traffic volumes at the study intersections were collected on Tuesday, August 15th, 2023. Peak hour turning movement counts were collected at the study intersections, and daily traffic volumes were collected on primary roadways near the development. Existing daily traffic volumes collected in the study area are summarized in **Table 1**, and the existing count data are attached in **Appendix B**. The existing AM and PM peak hour traffic volumes for the study area are shown in **Figure 3**.

Table 1: Existing Traffic Volume			
Location	Volume		Total
	Northbound/ Eastbound	Southbound /Westbound	
Leach Rd s/o Willie Robinson Rd	113	110	223
Willie Robinson Rd e/o Leach Rd	246	250	496

Historical Growth Rate

A growth rate for the study area was calculated using annual volume statistics from GDOT’s Traffic Analysis & Data Application and Hall County census data. The growth rate calculated using GDOT’s traffic data is summarized in **Table 2**. Historical counts and calculations from the stations are attached in **Appendix C**.



Table 2: GDOT Historical Growth Rate			
Station ID	Location	5-Year Growth Rate	10-Year Growth Rate
139-8021	Green Hill Road n/o Chestatee Road	-1.6%	2.5%
139-8165	Lawson Robison Road n/o Whelchel Mill Road	9.5%	5.9%
139-7378	Chestatee Road n/o Summer Lake Drive	-0.5%	2.2%
139-0336	Price Rd /o Elrod Rd	4.3%	2.8%
139-0509	Sardis Rd n/o Allison Rd	-0.2%	1.0%
5 - Year and 10 - Year Average		2.3%	2.9%
Average Growth Rate		2.6%	

Population projection data obtained from the Georgia Governor’s Office of Planning and Budget was used to calculate a growth rate for the study area. The Hall County data and estimated growth rate is shown in **Table 3**.

Table 3: Georgia Governor’s Office of Planning and Budget Annual Population Estimates							
Geographic Area	Average 5-Year Growth Rate from 2020 to 2050						
	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050	Average
Hall County	1.6%	1.4%	1.3%	1.1%	1.0%	1.0%	1.2%
	Average 10-Year Growth Rate from 2020 to 2050						
Geographic Area	2020-2030			2030-2040		2040-2050	Average
	1.3%			1.3%		1.1%	1.2%

Census data from the U.S. Census Bureau was used to calculate a growth rate for Hall County. The growth rate estimated using the U.S. Census Bureau data is shown in **Table 4**. Growth rate data from all sources is shown in **Appendix C**.

Table 4: U.S. Census Bureau Annual Estimates of the Resident Population			
Geographic Area	2010 Census	2020 Census	10-Year Growth Rate
Hall County	179,684	203,136	1.23%

The overall growth rate for this study was calculated averaging the source data, and an average, annual growth rate of 1.6% was calculated for this study to project future year (2030) traffic volumes.

Level of Service Methodology

Intersection capacity analyses were performed using the methodology outlined in the Highway Capacity Manual, 6th Edition (HCM). This methodology is the industry standard for the evaluation of intersection capacity and delay. To facilitate the analysis, computer software Synchro 11 was used. This software conforms to the methodology of the HCM.

An analysis of peak hour traffic conditions was performed to determine the level of service (LOS) at the study intersections. LOS for an intersection is based on vehicular delay at the intersection and is a typical measure of effectiveness used to evaluate intersection operations. The HCM provides



ranges of delay for each LOS definition, spanning from very minimal delays (LOS A) to high delays (LOS F). LOS F is considered unacceptable for most drivers.

For unsignalized intersections, where a stop sign controls side streets or minor streets, the criterion for evaluating traffic operations is the LOS for the controlled turning movements at the intersection. Methodology from the HCM to determine the delay and LOS for these turning movements is based on the following input data: intersection geometry, lane configuration, and turning movement volumes.

Table 5 below indicates the relationship between delay and LOS for unsignalized intersections.

Table 5: Level of Service for Unsignalized Intersections	
Level of Service	Control Delay Per Vehicle (sec)
A	≤10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	>50

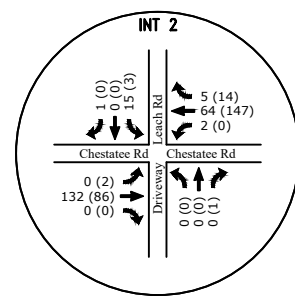
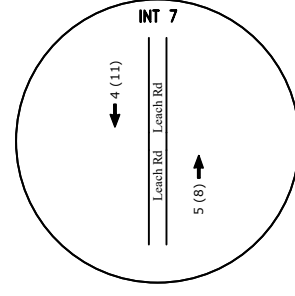
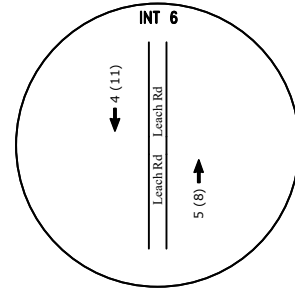
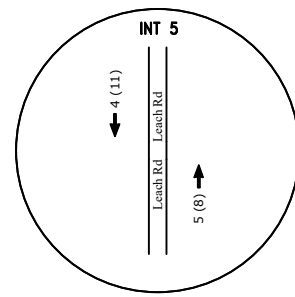
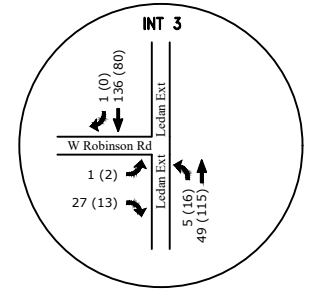
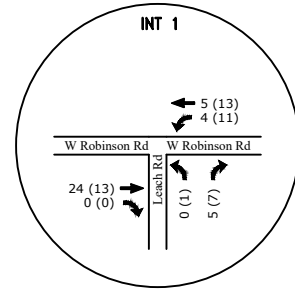
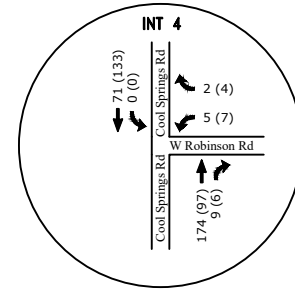
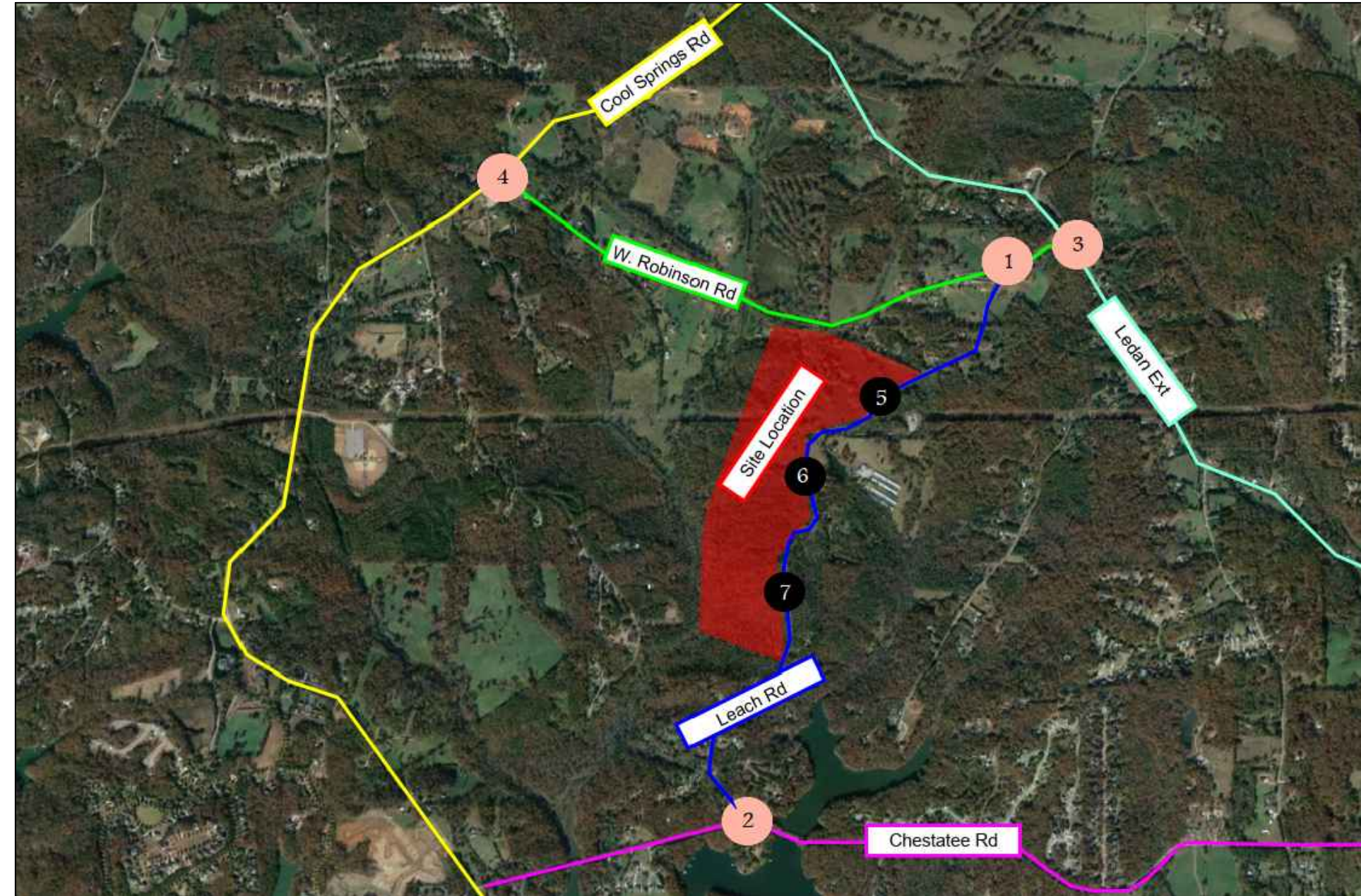
Existing Level of Service

The level of service for the existing conditions was determined using Synchro 11, which follows the HCM methodology. The existing geometric configurations and intersection controls were used for the analysis. The peak hours identified for analysis were 0700-0800 for the AM peak hour and 1700-1800 for the PM Peak hour.

All existing intersections operate acceptably in the existing conditions (LOS A-B). **Table 6** summarizes the results of the intersection capacity analysis for the existing conditions. Detailed Synchro reports are attached in **Appendix D**.

Table 6: Level of Service and Delay for Existing Year (2023)				
Intersection	Control Type	Approach	Delay (LOS)	
			AM	PM
Leach Road at Willie Robinson Road	Minor-Street Stop-Control	NB	9 (A)	9 (A)
Leach Road at Chestatee Road	Minor-Street Stop-Control	NB	0 (A)	8 (A)
		SB	10 (B)	10 (B)
Willie Robinson Road at Ledan Extension	Minor-Street Stop-Control	EB	9 (A)	9 (A)
Willie Robinson Road at Cool Springs Road	Minor-Street Stop-Control	WB	9 (A)	9 (A)





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FIGURE 3



EXISTING (2023)
PEAK HOUR
VOLUMES

REVISION DATES	

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LEACH ROAD
DEVELOPMENT

SHEET NO.

FUTURE CONDITIONS – WITHOUT THE PROPOSED DEVELOPMENT (NO - BUILD)

The impact of the proposed development on the roadway network was analyzed and evaluated in the future year (2030) without the proposed development (No-Build) to compare the future conditions with the proposed fully constructed development (Build).

Future No - Build Traffic Volumes

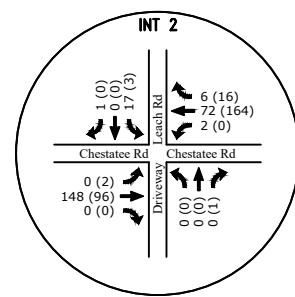
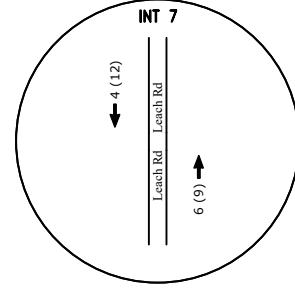
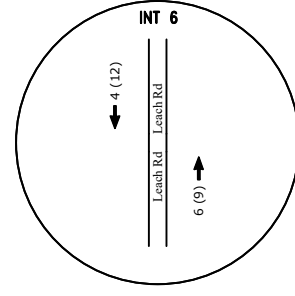
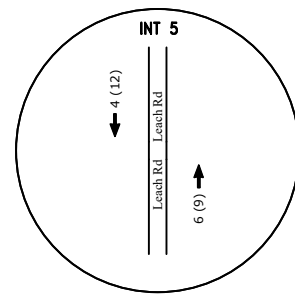
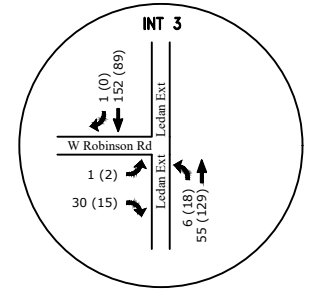
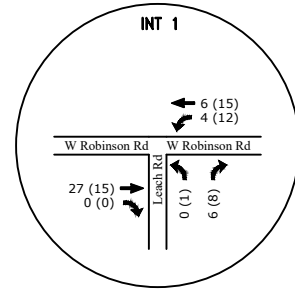
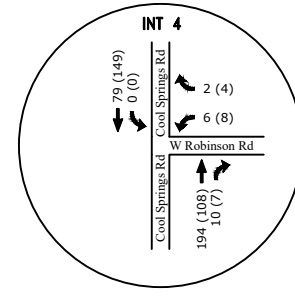
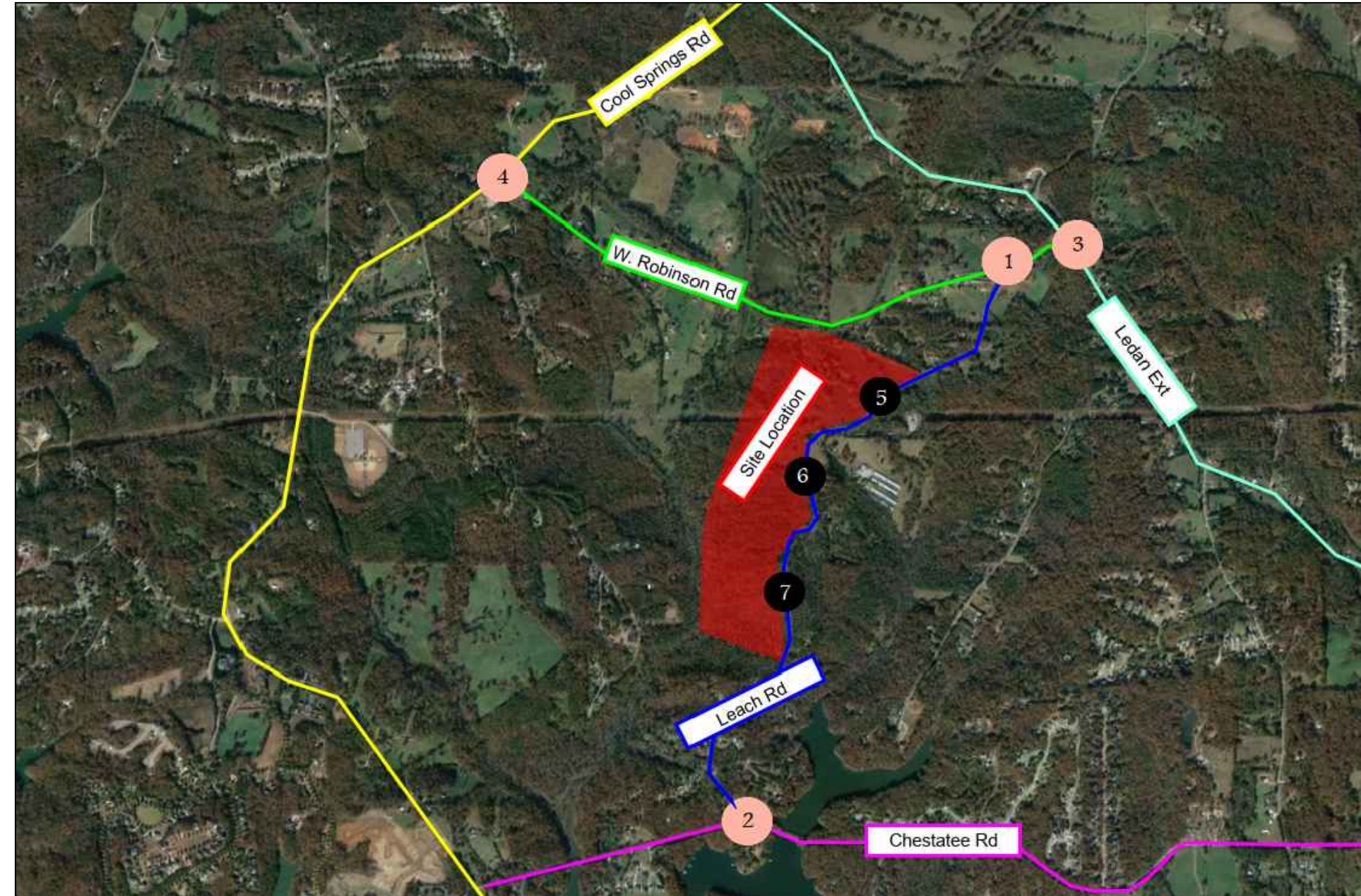
The future background traffic volumes (2030) were calculated by applying the annual exponential growth rate over seven years to the existing background traffic volumes (2023). Future background traffic volumes are shown in **Figure 4**.

Future No - Build Level of Service

The future 2030 background traffic volumes were used to analyze the future no-build level of service for the study intersections. The same LOS methodology discussed previously was applied to the 2030 background traffic to determine operations at the study intersection. **Table 7** summarizes the results of the intersection capacity analysis for the future no-build year. The study intersections continue to operate acceptably in the no-build scenario, LOS A-B. Detailed Synchro reports are attached in **Appendix D**.

Table 7: Future No - Build Level of Service (2030)				
Intersection	Control Type	Approach	Delay (LOS)	
			AM	PM
Leach Road at Willie Robinson Road	Minor-Street Stop-Control	NB	9 (A)	9 (A)
Leach Road at Chestatee Road	Minor-Street Stop-Control	NB	0 (A)	8 (A)
		SB	10 (B)	11 (B)
Willie Robinson Road at Ledan Extension	Minor-Street Stop-Control	EB	9 (A)	9 (A)
Willie Robinson Road at Cool Springs Road	Minor-Street Stop-Control	WB	10 (B)	9 (A)





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FIGURE 4



NO-BUILD (2024)
PEAK HOUR
VOLUMES

REVISION DATES	

DATE: _____

LEACH ROAD DEVELOPMENT

SHEET NO. _____

PROPOSED DEVELOPMENT

The development will include 307 single-family homes and three new driveways along Leach Road. The build-out of the development is planned for 2030. The development will be split into three pods, Pods A-C from north to south with corresponding driveway names.

Trip Generation

The number of trips expected to be generated from the development were estimated based on the method defined in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. Due to land use of the development no pass-by or internal capture trip reductions are expected. The trip generation for the proposed development is summarized in **Table 8**. The trip generation report is attached in **Appendix E**.

Table 8: Proposed Site Trip Generation										
Land Use (ITE Code)	Unit of Measure	Daily Traffic			AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Single-Family Residential (210)	307 Units	1,416	1,416	2,832	52	155	207	180	105	285

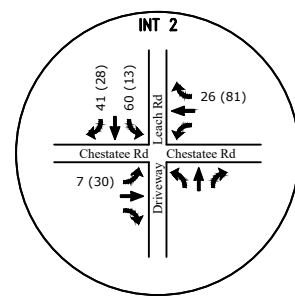
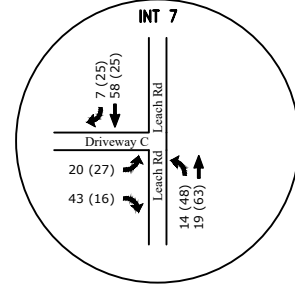
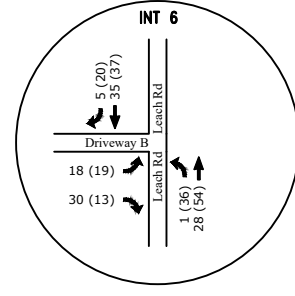
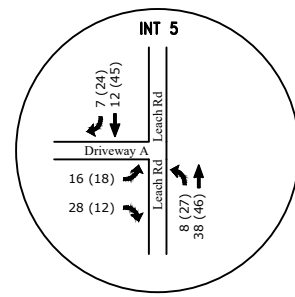
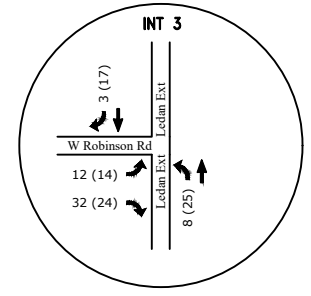
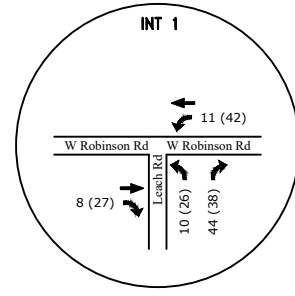
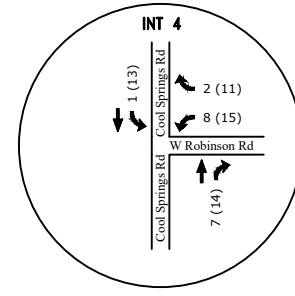
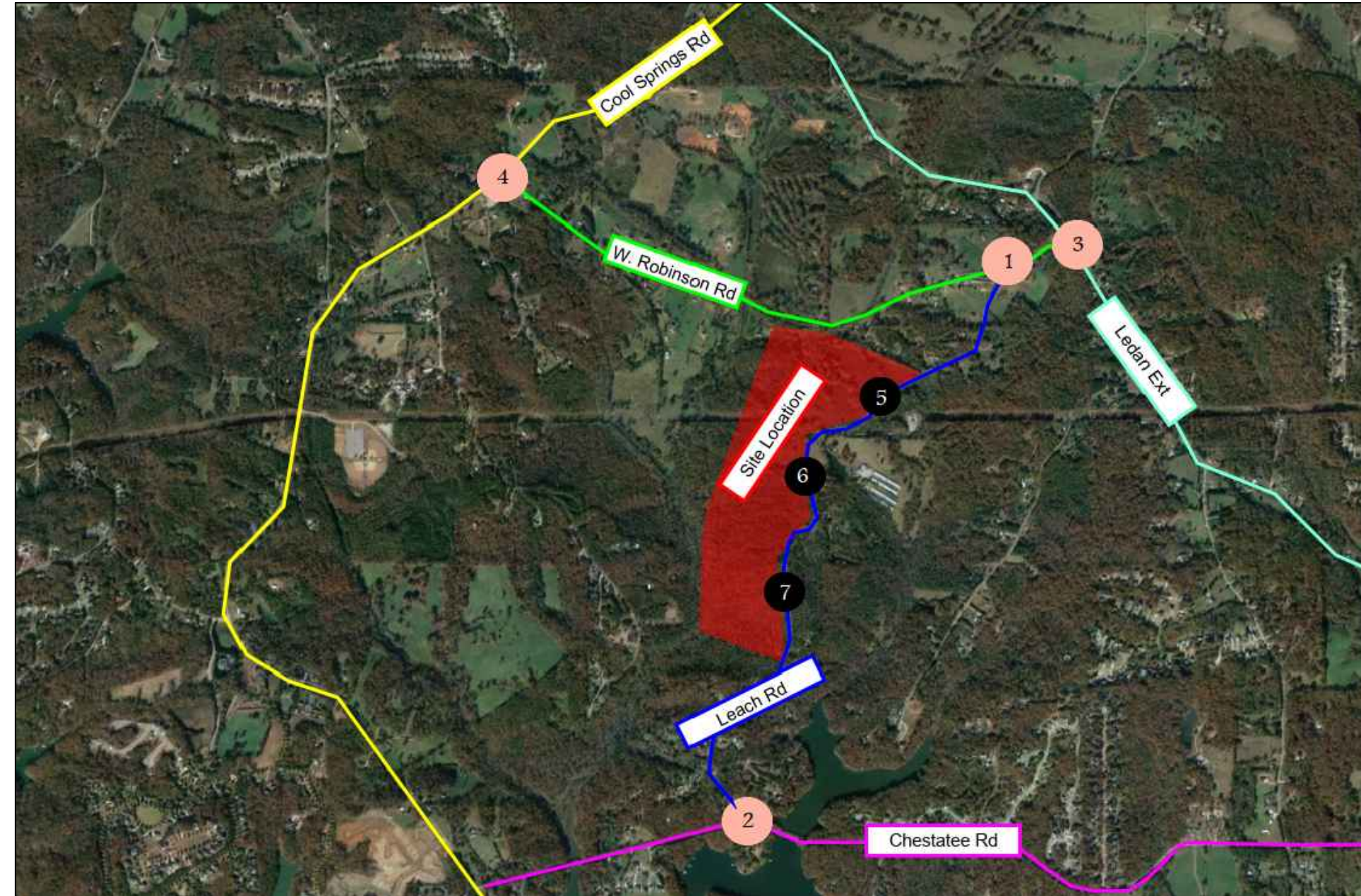
The generated trips were divided by pod to reflect the number of homes accessed by each driveway. The pods and driveways are labeled in the site plan attached in **Appendix A**. The trip generation by pod is shown in **Table 9**.

Table 9: Trip Generation by Development Pod										
Pod	Number of Houses	Daily Traffic			AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total	Enter	Exit	Total
Pod A	87	401	401	802	15	44	59	51	30	81
Pod B	95	438	438	876	16	48	64	56	32	88
Pod C	125	577	577	1,154	21	63	84	73	43	116

Trip Distribution and Assignment

The trips expected to be generated from the proposed development were distributed on the roadway network in the study area. The proposed distribution is based on historical counts and observed traffic patterns in the area. Generated trips assigned to the adjacent street network are shown in **Figure 5**.





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FIGURE 5



DEVELOPMENT
PEAK HOUR TRIPS

REVISION DATES	

DATE:

LEACH ROAD
DEVELOPMENT

SHEET NO.

Auxiliary Lane Analysis

The need for auxiliary lanes on Leach Road were evaluated at the new driveways based on the guidelines from GDOT’s *Regulations for Driveway and Encroachment Control*. Auxiliary lanes are used on approaches to intersections when the projected turning traffic volumes exceed minimum levels. If the left turning volume meets or exceeds volume thresholds defined in the GDOT manual, a left-turn lane is recommended at a study intersection. Based on the GDOT manual a left-turn lane is recommended at an intersection if the threshold values as shown in **Table 10** are met or exceeded.

Table 10: Left-Turn Lane Requirements				
Posted Speed	2 Lane Routes		More than 2 Lanes on Main Road	
	ADT		ADT	
	< 6,000	≥ 6,000	< 10,000	≥ 10,000
35 MPH or Less	300 LTV a day	200 LTV a day	400 LTV a day	300 LTV a day
40 to 50 MPH	250 LTV a day	175 LTV a day	325 LTV a day	250 LTV a day
≥ 55 MPH	200 LTV a day	150 LTV a day	250 LTV a day	200 LTV a day

Per the GDOT manual, a right-turn lane is warranted at an intersection approach if the daily right-turn volume meets or exceeds the values as shown in **Table 11**.

Table 11: Right-Turn Lane Requirements				
Posted Speed	2 Lane Routes		More than 2 Lanes on Main Road	
	ADT		ADT	
	< 6,000	≥6,000	<10,000	≥10,000
35 MPH or Less	200 RTV a day	100 RTV a day	200 RTV a day	100 RTV a day
40 to 50 MPH	150 RTV a day	75 RTV a day	150 RTV a day	75 RTV a day
55 to 60 MPH	100 RTV a day	50 RTV a day	100 RTV a day	50 RTV a day
≥65 MPH	Always	Always	Always	Always

Leach Road is a two-lane route, with an average daily traffic volume of approximately 496 vehicles per day (vpd) and has a posted speed limit of 40 miles per hour. Based on these characteristics the threshold for a left turn lane is set at 250 LTV per day, and the threshold for a right-turn lane is set at 150 RTV per day.

Based on the expected trip distribution, all auxiliary thresholds meet except for the left-turn threshold at Driveway A. The results of the analysis are shown in **Table 12**.

Table 12: Auxiliary Lane Analysis Daily Volumes				
Intersection	Turn Lane Thresholds		Expected Daily Turn Volume	
	LT	RT	LT	RT
Leach Road at Driveway A	250	150	215	185
Leach Road at Driveway B	250	150	275	165
Leach Road at Driveway C	250	150	380	200



FUTURE CONDITIONS- WITH THE PROPOSED DEVELOPMENT (BUILD)

To assess the traffic impact of the development, the site-generated trips were added to the future background traffic, and the combined volumes were analyzed.

Future Build Traffic Volumes

This future build analysis was conducted to determine any impacts to the study intersections resulting from traffic from the full build-out of the proposed development. The site-generated trips assigned to the adjacent roadway network were added to the background traffic volumes and are presented in **Figure 6**.

Future Build Level of Service

The level of service criteria discussed in the prior sections was applied to the study intersections to determine the impacts of 2030 background traffic volumes plus total site-generated volumes. All study intersections were analyzed with the existing geometry and intersection controls. The development driveways were modelled as full access stop sign controlled approaches, with one entry and one exit lane and turn lanes on Leach Road recommended as previously identified. The results of the intersection capacity analysis for the future year with the development are summarized in **Table 13**. Detailed Synchro reports are attached in **Appendix D**.

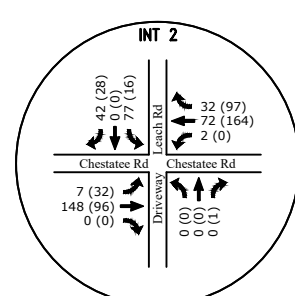
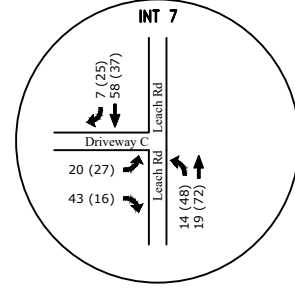
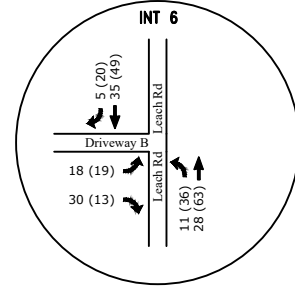
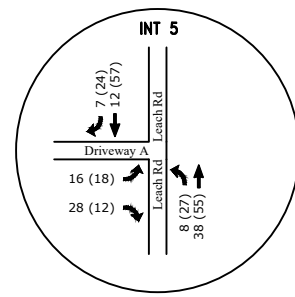
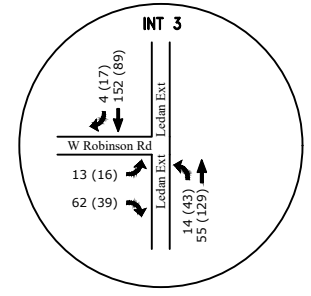
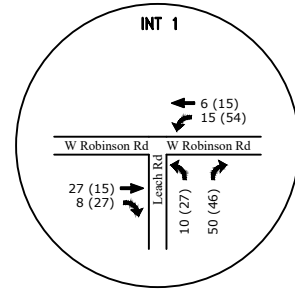
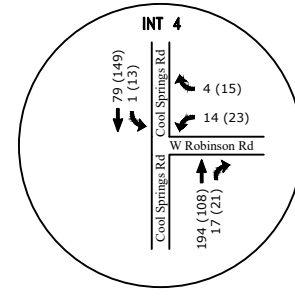
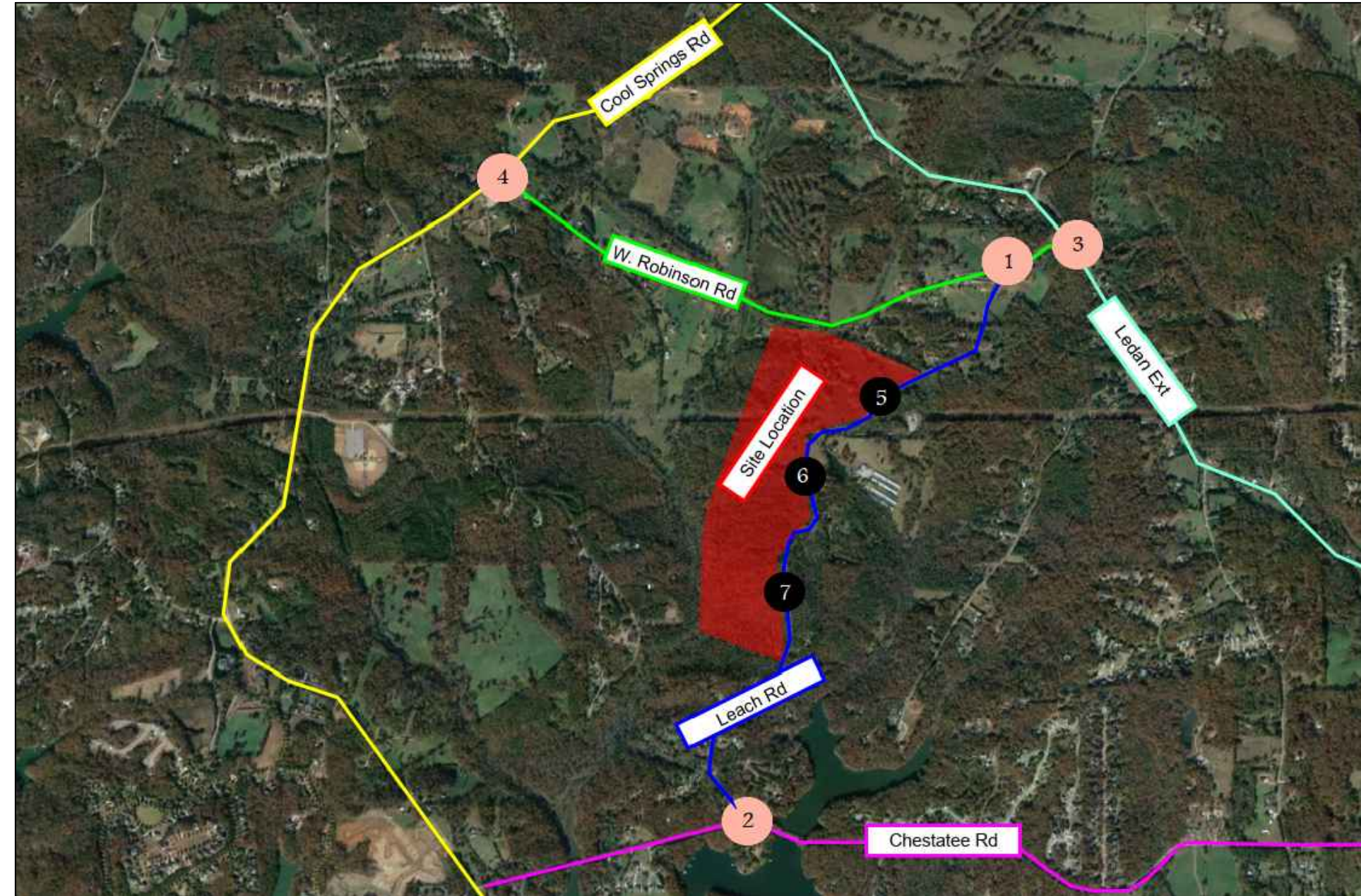
Table 13: Future Build Level of Service				
Intersection	Control Type	Approach	Delay (LOS)	
			AM	PM
Leach Road at Willie Robinson Road	Minor-Street Stop-Control	NB	9 (A)	9 (A)
Leach Road at Chestatee Road	Minor-Street Stop-Control	NB	0 (A)	9 (A)
		SB	11 (B)	11 (B)
Willie Robinson Road at Ledan Extension	Minor-Street Stop-Control	EB	9 (A)	9 (A)
Willie Robinson Road at Cool Springs Road	Minor-Street Stop-Control	WB	10 (B)	10 (B)
Leach Road at Driveway A	Minor-Street Stop-Control	EB	9 (A)	9 (A)
Leach Road at Driveway B	Minor-Street Stop-Control	EB	9 (A)	9 (A)
Leach Road at Driveway C	Minor-Street Stop-Control	EB	9 (A)	9 (A)



Table 14 shows a comparison of the delays in all scenarios for the study intersections. The proposed development has a nominal effect on the delays at the study intersections. The development driveways are expected to operate at an acceptable level of service upon completion of the development.

Table 14: LOS Comparison							
Intersection	Approach	Existing Delay		No-Build Delay		Build Delay	
		AM	PM	AM	PM	AM	PM
Leach Road at Willie Robinson Road	NB	9 (A)	9 (A)	9 (A)	9 (A)	9 (A)	9 (A)
Leach Road at Chestatee Road	NB	0 (A)	8 (A)	0 (A)	8 (A)	0 (A)	9 (A)
	SB	10 (B)	10 (B)	10 (B)	11 (B)	11 (B)	11 (B)
Willie Robinson Road at Ledan Extension	EB	9 (A)	9 (A)	9 (A)	9 (A)	9 (A)	9 (A)
Willie Robinson Road at Cool Springs Road	WB	9 (A)	9 (A)	10 (B)	9 (A)	10 (B)	10 (B)
Leach Road at Driveway A	EB					9 (A)	9 (A)
Leach Road at Driveway B	EB					9 (A)	9 (A)
Leach Road at Driveway C	EB					9 (A)	9 (A)





Legend: AM (PM)

DRAWING NAME: I:\CUSTOMERS_PROJECTS\1193 Cook Development\1193-23-163 Leach Rd Study\Traffic\DWG\Figures.dwg
DATE: 02/26/2023 10:38 AM
PRINTED BY: DYLAN FOX

FIGURE 6



BUILD (2024) PEAK HOUR VOLUMES

REVISION DATES	

DATE:

LEACH ROAD DEVELOPMENT

SHEET NO.

Conclusion and Recommendations

The Leach Road development is a proposed residential development to be built on approximately 174 acres of undeveloped land in Hall County, GA. The development will be along the west side of Leach Road south of Willie Robinson Road, and includes 307 single-family housing units split up into three pods, and will have three new driveways accessing Leach Road. The build-out of the development is planned for 2030. This study analyzed the impact of the development on the study intersections to determine feasible intersection controls to accommodate the development traffic along with growth of the Hall County.

Under existing conditions, all study intersections are operating at an acceptable level of service in the existing and no-build scenarios. The development will have a nominal effect on the delays at the existing intersections. The intersections will continue to operate at acceptable levels of service.

The new driveways for the site are expected to operate at an acceptable level of service upon completion of the development. Right-turn lanes should be provided on Leach Road at all of the driveways and left-turn lane are recommended at Driveways B and C.

The recommended driveway configuration and control types for the development driveways are listed below:

Leach Road at Driveway A

- Driveway A should be two lanes, one entry and one exit lane.
- Driveway A should be full access and stop sign controlled.
- Provide a southbound right turn-lane on Leach Road.

Leach Road at Driveway B

- Driveway B should be two lanes, one entry and one exit lane.
- Driveway B should be full access and stop sign controlled.
- Provide a northbound left-turn lane on Leach Road.
- Provide a southbound right turn-lane on Leach Road.

Leach Road at Driveway C

- Driveway C should be two lanes, one entry and one exit lane.
- Driveway C should be full access and stop sign controlled.
- Provide a northbound left-turn lane on Leach Road.
- Provide a southbound right turn-lane on Leach Road.

No additional improvements to the existing roadway infrastructure are recommended.



APPENDICES

- **Appendix A**
 - Site Plan
- **Appendix B**
 - Traffic Counts Summary Sheets
- **Appendix C**
 - Growth Rate Summary
- **Appendix D**
 - Synchro Reports
- **Appendix E**
 - Trip Generation Report



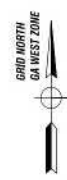
Appendix A
Site Plan

GENERAL NOTES

BOUNDARY PROVIDED BY:
 COOK AND COMPANY SERVICES LLC, L.S.F. 081320
 3120 FRONTAGE ROAD
 GAINESVILLE, GA 30504

TOPOGRAPHICAL INFORMATION SHOWN HEREON IS BASED ON HALL COUNTY COUNTY GIS PARCEL INFORMATION WITH SUPPLEMENTAL INFORMATION BY COOK AND COMPANY SERVICES LLC.

THIS PLAN IS CONCEPTUAL IN NATURE BASED ON PRELIMINARY COUNTY AND DEVELOPMENT INFORMATION AND RESEARCH. PLAN MAY CHANGE DURING PERMITTING AND GOVERNMENT APPROVAL PROCESS.



LOCATION MAP

SITE INFORMATION

PROPERTY ADDRESS: 4035 LEACH ROAD
 GAINESVILLE, GEORGIA 30504

PROPERTY AREA:
 TRACT 1 102.80 ACRES
 TRACT 2 3.86 ACRES
 TRACT 3 15.78 ACRES
 TOTAL SITE AREA 124.44 ACRES

PROPOSED ZONING: PFD (PLANNED RESIDENTIAL DEVELOPMENT)

PROPOSED RESIDENTIAL LOTS:
 TYPICAL LOT SIZE: 80' x 100' (7,200 S.F.)

PHASE I 87 LOTS
 PHASE II 96 LOTS
 PHASE III 125 LOTS
 TOTAL 307 LOTS

PROPOSED SETBACKS:
 FRONT 25 FEET
 SIDE 15 FEET
 REAR 80 FEET

PROPOSED SITE DENSITY: 307 LOTS / 124.44 ACRES
 1.76 LOTS / ACRE

MAXIMUM BUILDING HEIGHT: 30 FEET

THIS PROPERTY IS MOST LOCATED WITH A DESIGNATED FLOOD HAZARD AREA PER FEMA FIRM PANEL NO. 13050C024E DATED 09/20/2016 FOR HALL COUNTY COUNTY, GEORGIA AND INCORPORATED AREAS.

acuminis
 consulting group

PO Box 1074
 Grayson, Georgia 30017
 770.527.3450
 www.acuminisconsulting.com



No.	REVISION	DATE
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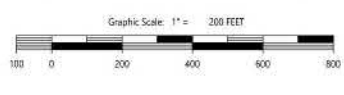
PREPARED FOR:
 SHADOW STONE PARTNERS, LLC
 3120 FRONTAGE ROAD
 GAINESVILLE, GA 30504
 24-HOUR CONTACT
 GEOFF COOK
 (678) 267-7153

PROJECT NAME:
 LEACH ROAD ASSEMBLAGE
 PLANNED RESIDENTIAL DEVELOPMENT
 4035 LEACH ROAD
 PARCEL 100-50-000008
 GAINESVILLE, GA 30506

TASK:
MASTER PLAN

OWNER / DEVELOPER:
 SHADOW STONE PARTNERS, LLC
 3120 FRONTAGE ROAD
 GAINESVILLE, GA 30504
 24 HR. CONTACT
 GEOFF COOK
 (678) 267-7153
 gcco@cook-residential.com

DESIGNER / ENGINEER:
 ACUMINIS CONSULTING GROUP, LLC
 CONTACT:
 ALEX NASH, P.E.
 (770) 527-3450
 anash@acuminisconsulting.com



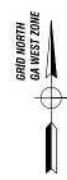
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KWB DRAWN	1 of 3
CAN CHECKED	SHEET
10/18/22 DATE	22094 PROJECT No.

GENERAL NOTES

BOUNDARY PROVIDED BY:
 COOK AND COMPANY SERVICES LLC, L.S.F. 081320
 3120 FRONTAGE ROAD
 GAINESVILLE, GA 30504

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THIS PLAN IS CONCEPTUAL IN NATURE BASED ON PRELIMINARY COUNTY AND DEVELOPMENT INFORMATION AND RESEARCH. PLAN MAY CHANGE DURING PERMITTING AND GOVERNMENT APPROVAL PROCESS.

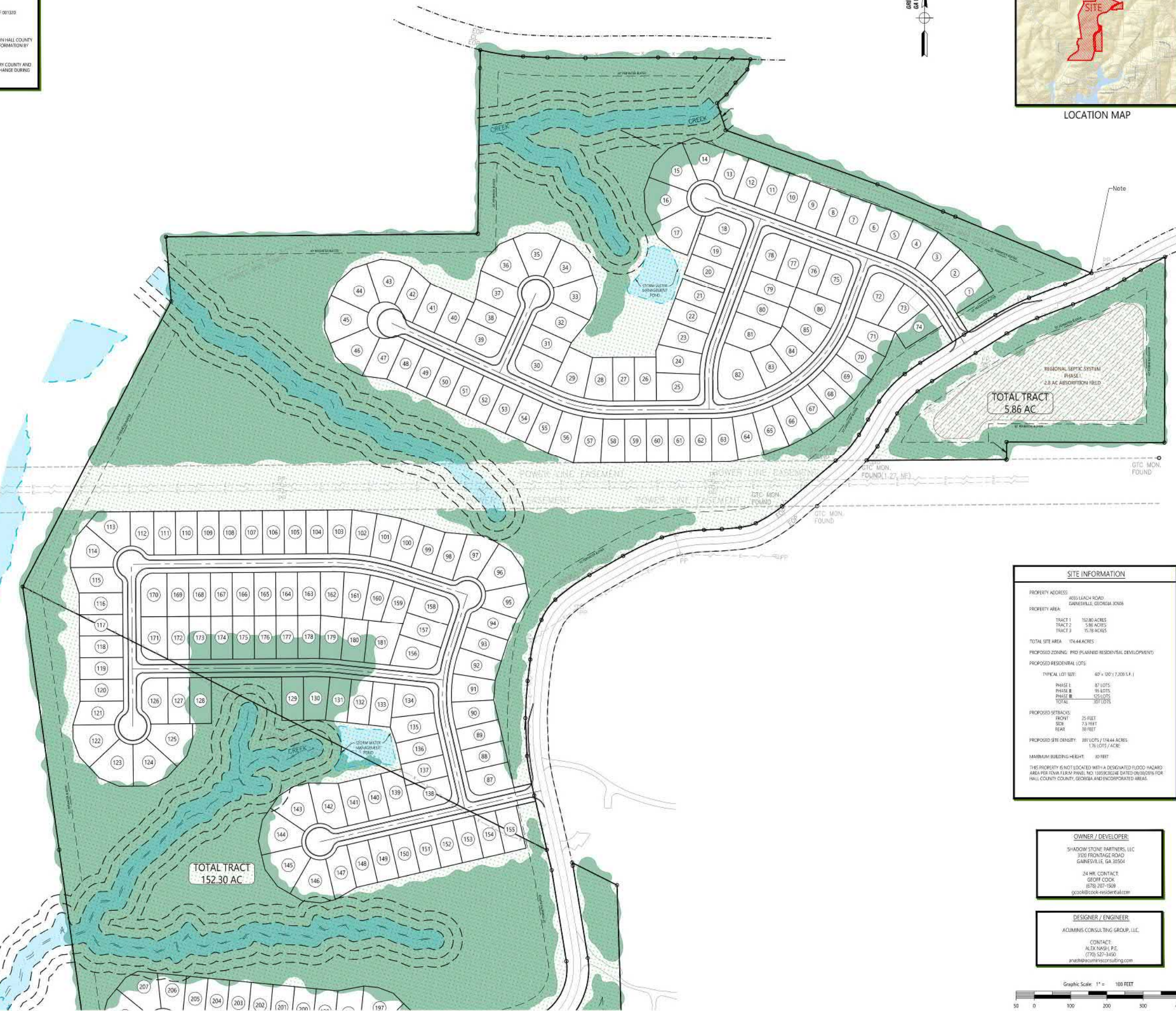


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No.	REVISION	DATE
1		10/18/22
2		
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4		
5		
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8		



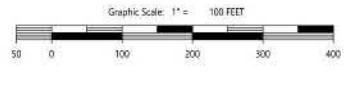
SITE INFORMATION	
PROPERTY ADDRESS:	4035 LEACH ROAD, GAINESVILLE, GEORGIA 30508
PROPERTY AREA:	TRACT 1 150.80 ACRES TRACT 2 5.86 ACRES TRACT 3 15.38 ACRES
TOTAL SITE AREA:	174.44 ACRES
PROPOSED ZONING:	PRD (PLANNED RESIDENTIAL DEVELOPMENT)
PROPOSED RESIDENTIAL LOTS:	TYPICAL LOT SIZE: 40' x 100' (3,000 S.F.)
	PHASE I 87 LOTS PHASE II 95 LOTS PHASE III 125 LOTS TOTAL 307 LOTS
PROPOSED SPACINGS:	FRONT 25 FEET SIDE 7.5 FEET REAR 30 FEET
PROPOSED SITE DENSITY:	307 LOTS / 174.44 ACRES 1.76 LOTS / ACRE
MAXIMUM BUILDING HEIGHT:	30 FEET
THIS PROPERTY IS NOT LOCATED WITH A DESIGNATED FLOOD HAZARD AREA PER FEMA FIRM PANEL NO. 130583024E DATED 09/30/2016 FOR HALL COUNTY, GEORGIA AND INCORPORATED AREAS.	

OWNER / DEVELOPER:
 SHADOW STONE PARTNERS, LLC
 3120 FRONTAGE ROAD
 GAINESVILLE, GA 30504

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DESIGNER / ENGINEER:
 ACUMINIS CONSULTING GROUP, LLC

CONTACT:
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 (770) 527-3450
 anash@acuminisconsulting.com



PREPARED FOR:
 SHADOW STONE PARTNERS, LLC
 3120 FRONTAGE ROAD
 GAINESVILLE, GA 30504

24-HOUR CONTACT:
 GEOFF COOK
 (678) 267-7153

PROJECT NAME:
 LEACH ROAD ASSEMBLAGE
 PLANNED RESIDENTIAL DEVELOPMENT

4035 LEACH ROAD
 PARCEL 100-50-000008
 GAINESVILLE, GA 30506

TASK:
 CONCEPT PLAN

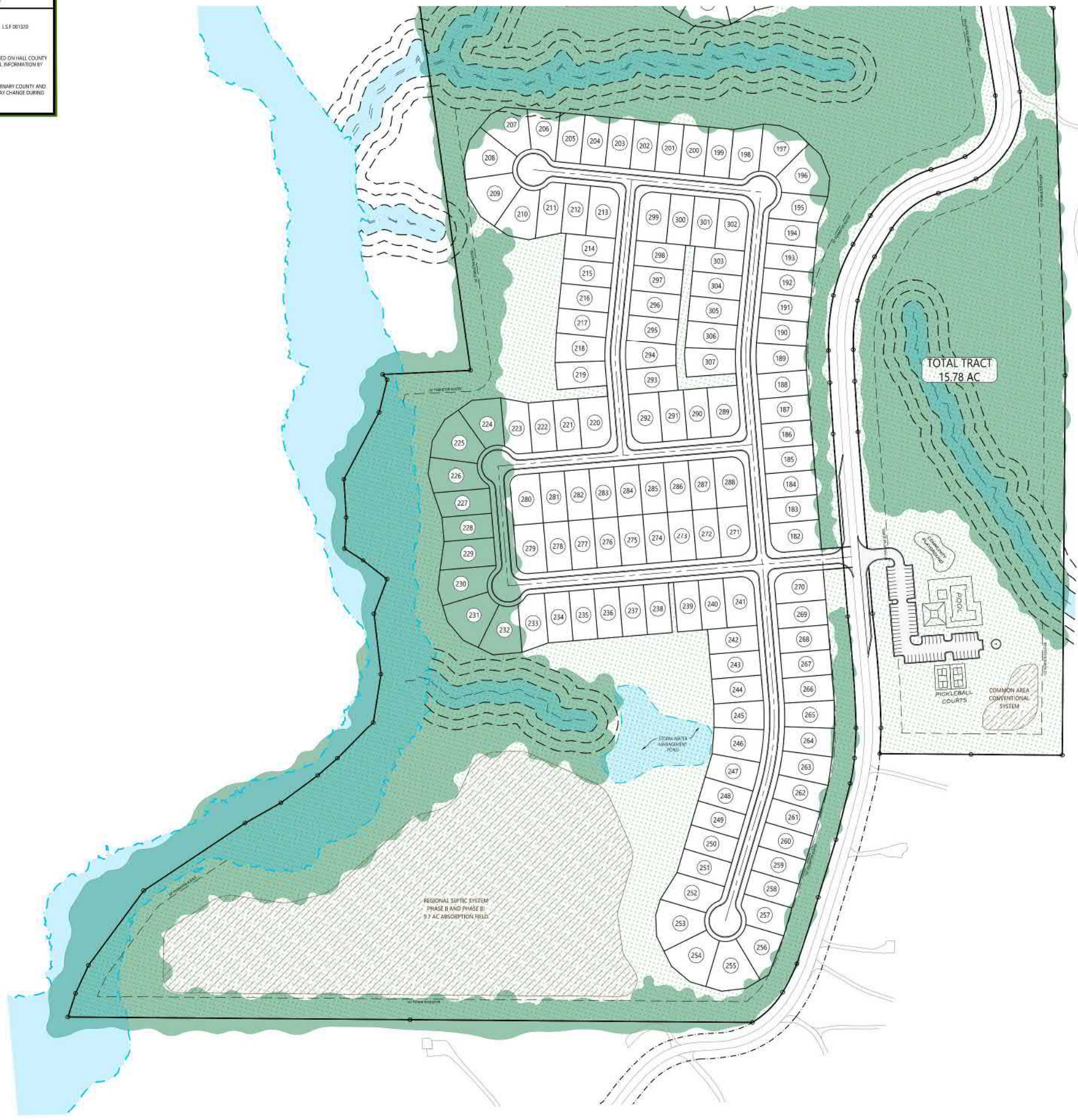
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 KWB DRAWN
 CAN SHEET 2 of 3
 CHECKED 22094 SHEET
 DATE 10/18/22 DATE PROJECT No.

GENERAL NOTES

BOUNDARY PROVIDED BY:
 COOK AND COMPANY SERVICES LLC, L.S.F. 081320
 3120 FRONTAGE ROAD
 GAINESVILLE, GA 30504

TOPOGRAPHICAL INFORMATION SHOWN HEREON IS BASED ON HALL COUNTY COUNTY GIS PARCEL INFORMATION WITH SUPPLEMENTAL INFORMATION BY COOK AND COMPANY SERVICES LLC.

THIS PLAN IS CONCEPTUAL IN NATURE BASED ON PRELIMINARY COUNTY AND DEVELOPMENT INFORMATION AND RESEARCH. PLAN MAY CHANGE DURING PERMITTING AND GOVERNMENT APPROVAL PROCESS.



SITE INFORMATION

PROPERTY ADDRESS: 4035 LEACH ROAD
 GAINESVILLE, GEORGIA 30506

PROPERTY AREA:
 TRACT 1: 10.280 ACRES
 TRACT 2: 3.86 ACRES
 TRACT 3: 15.78 ACRES

TOTAL SITE AREA: 174.44 ACRES

PROPOSED ZONING: PRD-PLANNED RESIDENTIAL DEVELOPMENT

PROPOSED RESIDENTIAL LOTS:
 TYPICAL LOT SIZE: 60' x 100' (7,200 S.F.)

PHASE I: 87 LOTS
 PHASE II: 95 LOTS
 PHASE III: 125 LOTS
 TOTAL: 307 LOTS

PROPOSED SETBACKS:
 FRONT: 20 FEET
 SIDE: 15 FEET
 REAR: 30 FEET

PROPOSED SITE DENSITY: 307 LOTS / 174.44 ACRES
 1.76 LOTS / ACRE

MAXIMUM BUILDING HEIGHT: 30 FEET

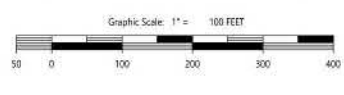
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OWNER / DEVELOPER:
 SHADOW STONE PARTNERS, LLC
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acuminis consulting group

PO Box 1074
 Grayson, Georgia 30017
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No.	REVISION	DATE
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8		10/18/22

PREPARED FOR:
 SHADOW STONE PARTNERS, LLC
 3120 FRONTAGE ROAD
 GAINESVILLE, GA 30504

24-HOUR CONTACT:
 GEOFF COOK
 (678) 267-7153

PROJECT NAME:
 LEACH ROAD ASSEMBLAGE
 PLANNED RESIDENTIAL DEVELOPMENT

4035 LEACH ROAD
 PARCEL 100-50-000008
 GAINESVILLE, GA 30506

TASK:
 CONCEPT PLAN

KWB DESIGN: AS SHOWN SCALE
 KWB DRAWN: 3 of 3
 CAN CHECKED: SHEET
 10/18/22 DATE: 22094
 PROJECT No.:

Appendix B
Traffic Counts Summary Sheets

Turning Movement Counts
Willie Robinson Road at Leach Road



[Click here for Map](#)

Peak Hour Turning Movement Count

Gainesville, GA



www.marrtraffic.com



Tuesday, August 15, 2023	
Period	0600 - 0800
Peak Hour	0700 - 0800

* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume





[Click here for Map](#)

Peak Hour Turning Movement Count

Gainesville, GA



www.marrtraffic.com



Tuesday, August 15, 2023	
Period	1600 - 1800
Peak Hour	1700 - 1800

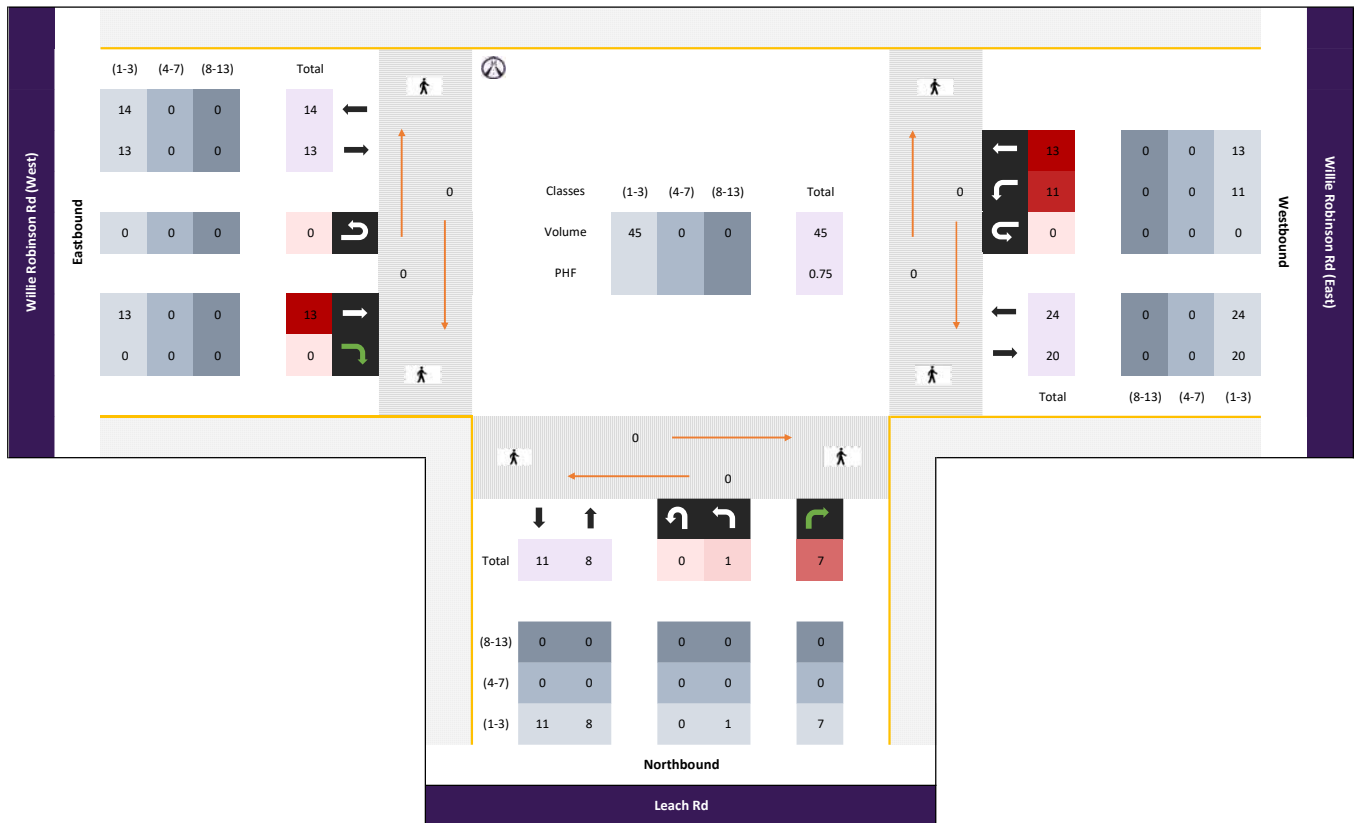
* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

1700 - 1800

Volume



Turning Movement Counts
Chestatee Road at Leach Road

Peak Hour Turning Movement Count

Gainesville, GA



www.marrtraffic.com

[Click here for Map](#)

Tuesday, August 15, 2023	
Period	0600 - 0800
Peak Hour	0700 - 0800

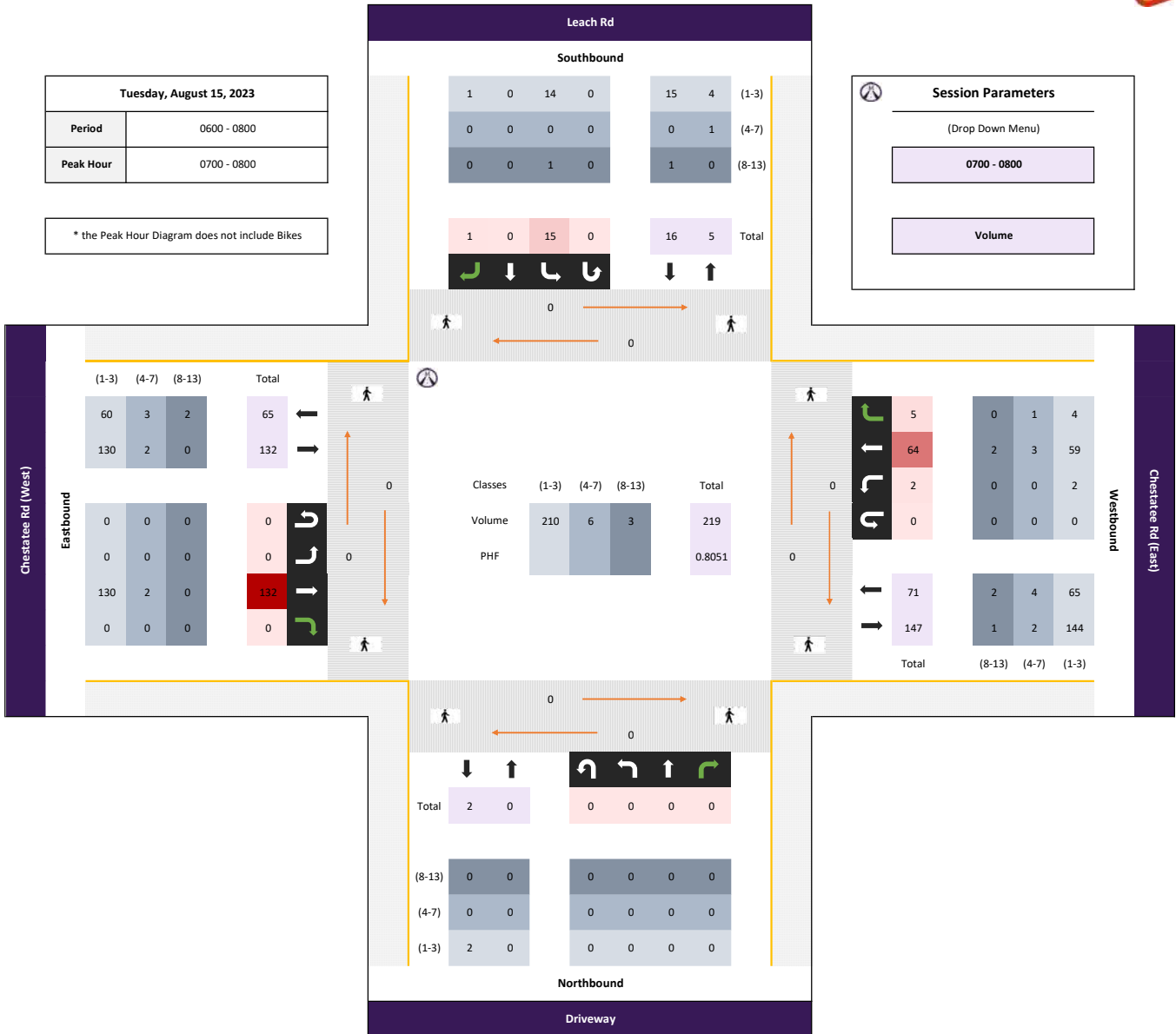
* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

0700 - 0800

Volume



Peak Hour Turning Movement Count

Gainesville, GA



[Click here for Map](#)

Tuesday, August 15, 2023	
Period	1600 - 1800
Peak Hour	1700 - 1800

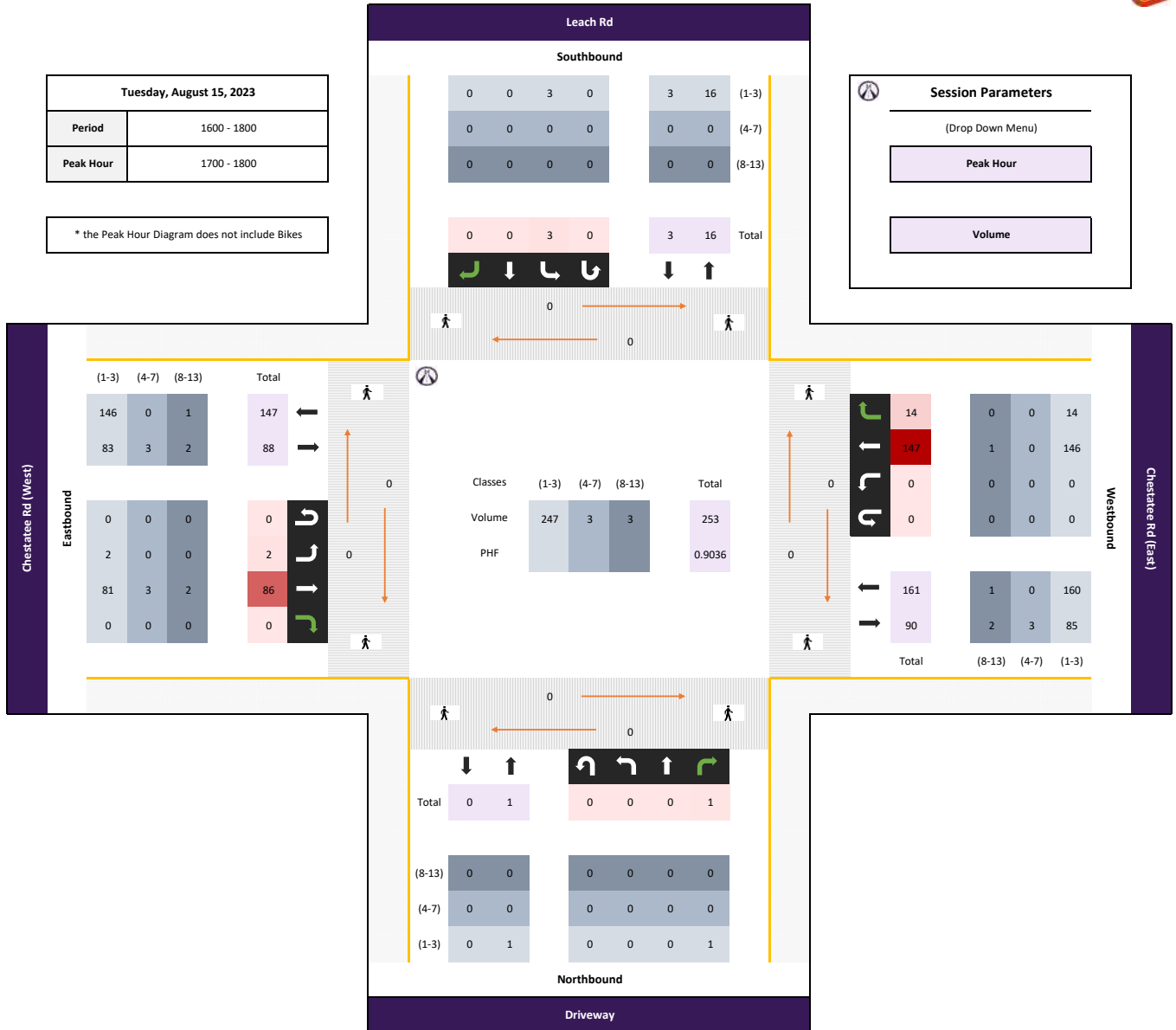
* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

Peak Hour

Volume



Turning Movement Counts
Ledan Ext at Willie Robinson Road

Peak Hour Turning Movement Count

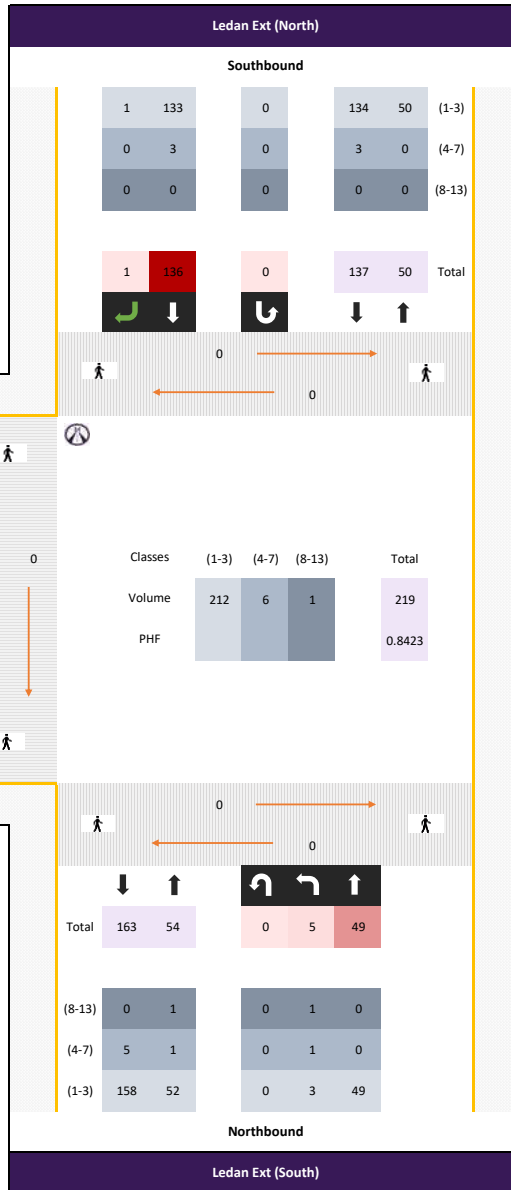
Gainesville, GA



[Click here for Map](#)

Tuesday, August 15, 2023	
Period	0600 - 0800
Peak Hour	0700 - 0800

* the Peak Hour Diagram does not include Bikes



Session Parameters

(Drop Down Menu)

Peak Hour

Volume

Willie Robinson Rd

Peak Hour Turning Movement Count

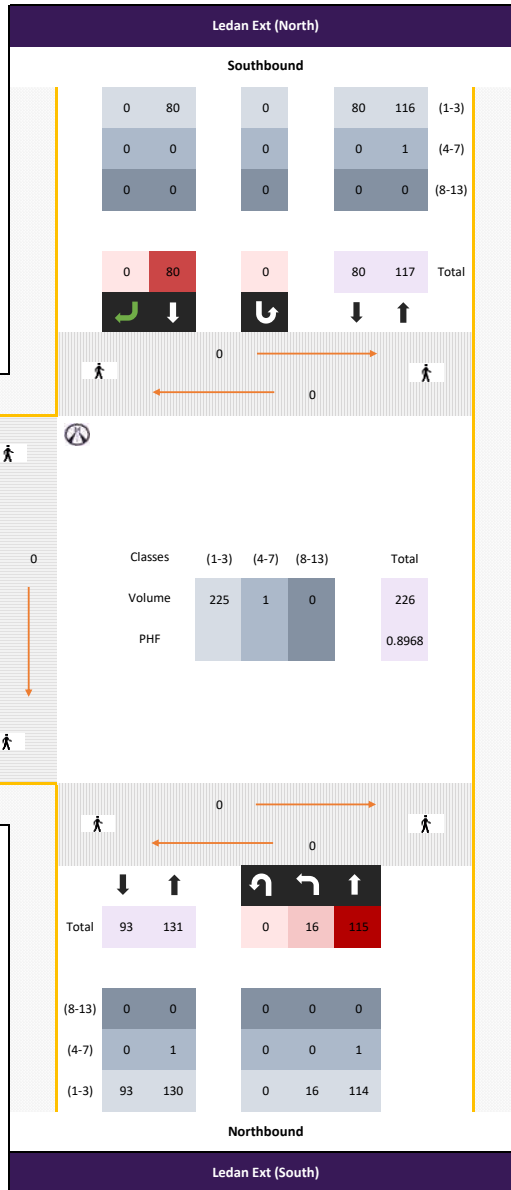
Gainesville, GA



[Click here for Map](#)

Tuesday, August 15, 2023	
Period	1600 - 1800
Peak Hour	1700 - 1800

* the Peak Hour Diagram does not include Bikes



Session Parameters

(Drop Down Menu)

Peak Hour

Volume

Willie Robinson Rd

Turning Movement Counts
Cool Springs Road at Willie Robinson Road



[Click here for Map](#)

Peak Hour Turning Movement Count

Gainesville, GA

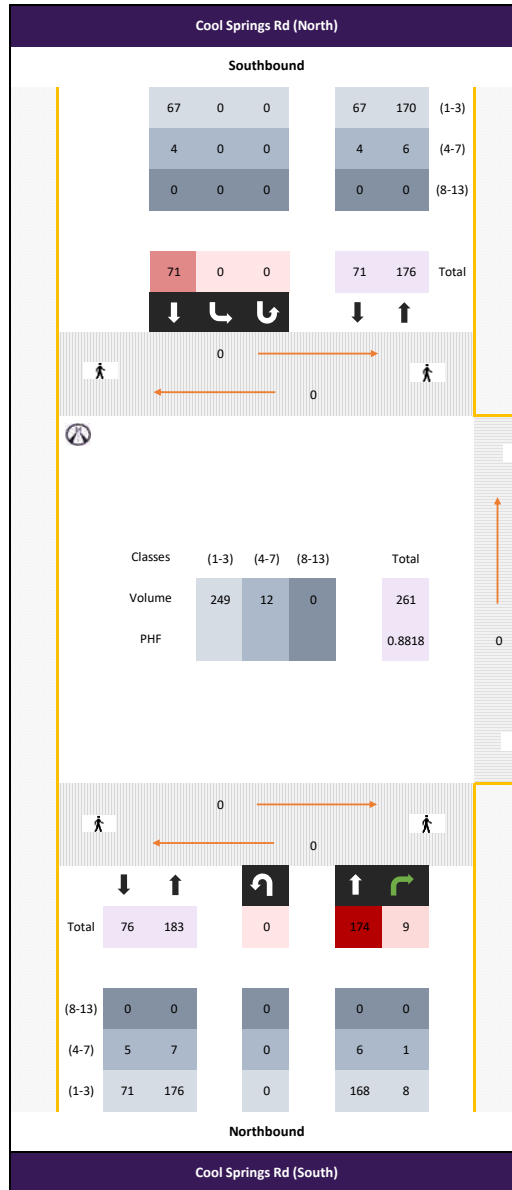


www.marrtraffic.com



Tuesday, August 15, 2023	
Period	0600 - 0800
Peak Hour	0700 - 0800

* the Peak Hour Diagram does not include Bikes



Session Parameters

(Drop Down Menu)

Peak Hour

Volume

Willie Robinson Rd



[Click here for Map](#)

Peak Hour Turning Movement Count

Gainesville, GA



www.marrtraffic.com

Tuesday, August 15, 2023	
Period	1600 - 1800
Peak Hour	1700 - 1800

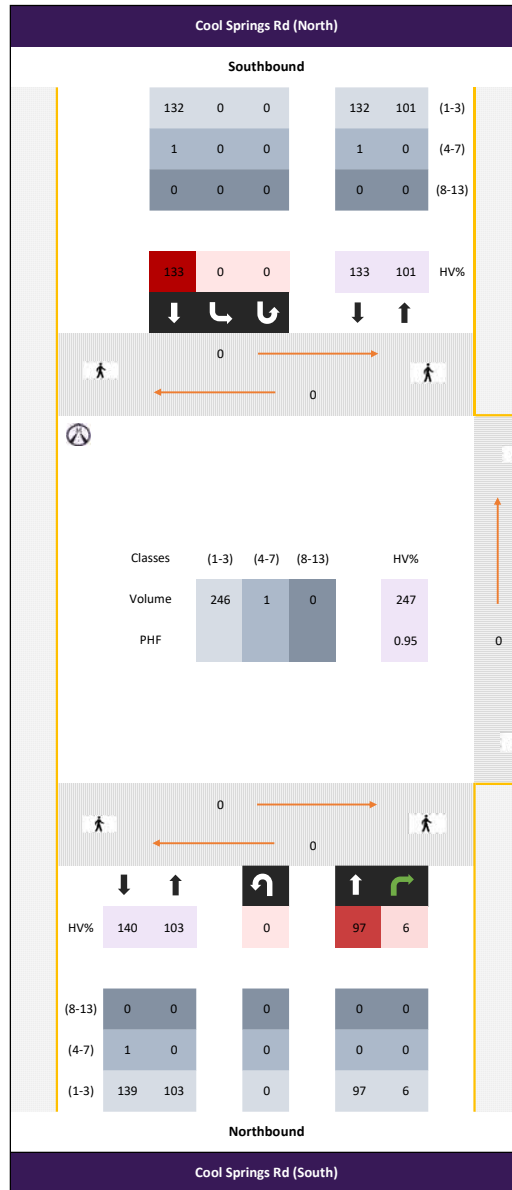
* the Peak Hour Diagram does not include Bikes

Session Parameters

(Drop Down Menu)

1700 - 1800

Volume



Willie Robinson Rd

24-Hour Classification Count
Leach Road south of Willie Robinson Road

Bi-Directional Class Count || SB WB 15min

Gainesville, GA



Site 1
Leach Rd,
south of Willie Robinson Rd

Date
Tuesday, August 15, 2023

Weather
Mostly Cloudy
80°F

Lat/Long
34.370315°, -83.925416°



0000 - 2400 (Weekday 24h Session) (08-15-2023)
SB WB 15min

Main data table with columns for Time, 1-13, 15min Total, and 60min Total. Rows list time intervals from 0000-0015 to 2345-0000.

Summary table with rows for Session Total, Session Average, Session Percentage, AM Peak Hour, AM Peak Volume, Noon Peak Hour, Noon Peak Volume, PM Peak Hour, and PM Peak Volume. Columns correspond to time intervals.

Bi-Directional Class Count || Volume Summary 15min



Gainesville, GA

Site 1
Leach Rd,
south of Willie Robinson Rd

Date
Tuesday, August 15, 2023

Weather
Mostly Cloudy
80°F

Lat/Long
34.370315°, -83.925416°

0000 - 2400 (Weekday 24h Session) (08-15-2023)

Volume Summary 15min

TIME	Volume Summary 15min		15min Total	60min Total
	NB	SB		
0000 - 0015	0	0	0	
0015 - 0030	0	1	1	
0030 - 0045	0	0	0	
0045 - 0100	0	0	0	1
0100 - 0115	0	0	0	
0115 - 0130	0	0	0	
0130 - 0145	0	0	0	
0145 - 0200	0	0	0	0
0200 - 0215	0	0	0	
0215 - 0230	0	0	0	
0230 - 0245	0	0	0	
0245 - 0300	0	0	0	0
0300 - 0315	0	0	0	
0315 - 0330	0	0	0	
0330 - 0345	0	0	0	
0345 - 0400	0	0	0	0
0400 - 0415	0	0	0	
0415 - 0430	0	0	0	
0430 - 0445	2	0	2	
0445 - 0500	1	1	2	4
0500 - 0515	0	0	0	
0515 - 0530	0	0	0	
0530 - 0545	1	2	3	
0545 - 0600	3	0	3	6
0600 - 0615	3	0	3	
0615 - 0630	5	0	5	
0630 - 0645	4	1	5	
0645 - 0700	2	0	2	15
0700 - 0715	1	1	2	
0715 - 0730	3	2	5	
0730 - 0745	0	1	1	
0745 - 0800	1	0	1	9
0800 - 0815	2	2	4	
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0930 - 0945	2	0	2	
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1015 - 1030	3	0	3	
1030 - 1045	0	0	0	
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1100 - 1115	0	0	0	
1115 - 1130	2	2	4	
1130 - 1145	2	0	2	
1145 - 1200	0	1	1	7

Time	Volume Summary 15min		15min Total	60min Total
	NB	SB		
1200 - 1215	1	0	1	
1215 - 1230	1	3	4	
1230 - 1245	0	1	1	
1245 - 1300	0	2	2	8
1300 - 1315	2	1	3	
1315 - 1330	2	1	3	
1330 - 1345	2	1	3	
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1530 - 1545	1	0	1	
1545 - 1600	1	2	3	16
1600 - 1615	3	1	4	
1615 - 1630	1	3	4	
1630 - 1645	2	5	7	
1645 - 1700	3	2	5	20
1700 - 1715	2	1	3	
1715 - 1730	1	1	2	
1730 - 1745	4	6	10	
1745 - 1800	1	3	4	19
1800 - 1815	2	4	6	
1815 - 1830	0	2	2	
1830 - 1845	0	2	2	
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1900 - 1915	1	2	3	
1915 - 1930	6	5	11	
1930 - 1945	3	1	4	
1945 - 2000	4	1	5	23
2000 - 2015	0	1	1	
2015 - 2030	0	1	1	
2030 - 2045	0	0	0	
2045 - 2100	1	0	1	3
2100 - 2115	0	1	1	
2115 - 2130	1	5	6	
2130 - 2145	2	1	3	
2145 - 2200	0	0	0	10
2200 - 2215	0	2	2	
2215 - 2230	1	2	3	
2230 - 2245	0	0	0	
2245 - 2300	0	0	0	5
2300 - 2315	0	1	1	
2315 - 2330	0	0	0	
2330 - 2345	0	1	1	
2345 - 0000	0	0	0	2

Session Total	113	110	223
Session Average	1.18	1.15	2.32
Session Percentage	50.67	49.33	

24-Hour Classification Count
Willie Robinson Road east of Leach Road

Bi-Directional Class Count || Volume Summary 15min



Gainesville, GA

Site 2
Willie Robinson Rd,
east of Leach Rd

Date
Tuesday, August 15, 2023

Weather
Mostly Cloudy
80°F

Lat/Long
34.371087°, -83.924362°

0000 - 2400 (Weekday 24h Session) (08-15-2023)

Volume Summary 15min

TIME	Volume Summary 15min		15min Total	60min Total
	EB	WB		
0000 - 0015	0	0	0	
0015 - 0030	0	1	1	
0030 - 0045	0	1	1	
0045 - 0100	0	0	0	2
0100 - 0115	0	0	0	
0115 - 0130	0	0	0	
0130 - 0145	0	1	1	
0145 - 0200	1	0	1	2
0200 - 0215	1	0	1	
0215 - 0230	0	1	1	
0230 - 0245	0	0	0	
0245 - 0300	0	0	0	2
0300 - 0315	0	0	0	
0315 - 0330	0	0	0	
0330 - 0345	0	0	0	
0345 - 0400	0	0	0	0
0400 - 0415	0	0	0	
0415 - 0430	0	0	0	
0430 - 0445	2	0	2	
0445 - 0500	2	1	3	5
0500 - 0515	1	0	1	
0515 - 0530	0	0	0	
0530 - 0545	2	2	4	
0545 - 0600	5	0	5	10
0600 - 0615	5	0	5	
0615 - 0630	7	1	8	
0630 - 0645	5	1	6	
0645 - 0700	7	0	7	26
0700 - 0715	6	2	8	
0715 - 0730	9	3	12	
0730 - 0745	3	4	7	
0745 - 0800	11	0	11	38
0800 - 0815	6	3	9	
0815 - 0830	4	4	8	
0830 - 0845	7	0	7	
0845 - 0900	5	4	9	33
0900 - 0915	2	1	3	
0915 - 0930	4	2	6	
0930 - 0945	2	0	2	
0945 - 1000	2	2	4	15
1000 - 1015	1	0	1	
1015 - 1030	6	1	7	
1030 - 1045	2	0	2	
1045 - 1100	3	2	5	15
1100 - 1115	1	1	2	
1115 - 1130	2	3	5	
1130 - 1145	4	3	7	
1145 - 1200	2	5	7	21

Time	Volume Summary 15min		15min Total	60min Total
	EB	WB		
1200 - 1215	2	2	4	
1215 - 1230	3	3	6	
1230 - 1245	2	5	7	
1245 - 1300	1	4	5	22
1300 - 1315	3	3	6	
1315 - 1330	4	3	7	
1330 - 1345	4	3	7	
1345 - 1400	5	5	10	30
1400 - 1415	6	8	14	
1415 - 1430	2	7	9	
1430 - 1445	1	3	4	
1445 - 1500	3	7	10	37
1500 - 1515	7	4	11	
1515 - 1530	3	5	8	
1530 - 1545	3	3	6	
1545 - 1600	2	7	9	34
1600 - 1615	5	5	10	
1615 - 1630	5	10	15	
1630 - 1645	4	8	12	
1645 - 1700	4	6	10	47
1700 - 1715	8	5	13	
1715 - 1730	2	4	6	
1730 - 1745	5	9	14	
1745 - 1800	5	6	11	44
1800 - 1815	2	12	14	
1815 - 1830	2	4	6	
1830 - 1845	1	5	6	
1845 - 1900	4	7	11	37
1900 - 1915	1	4	5	
1915 - 1930	7	7	14	
1930 - 1945	4	2	6	
1945 - 2000	5	2	7	32
2000 - 2015	1	2	3	
2015 - 2030	0	3	3	
2030 - 2045	0	0	0	
2045 - 2100	1	0	1	7
2100 - 2115	1	3	4	
2115 - 2130	2	10	12	
2130 - 2145	4	5	9	
2145 - 2200	1	0	1	26
2200 - 2215	0	3	3	
2215 - 2230	1	3	4	
2230 - 2245	0	1	1	
2245 - 2300	0	0	0	8
2300 - 2315	0	1	1	
2315 - 2330	0	0	0	
2330 - 2345	0	1	1	
2345 - 0000	0	1	1	3

Session Total	246	250	496
Session Average	2.56	2.60	5.17
Session Percentage	49.60	50.40	

Appendix C
Growth Rate Summary

Growth Rate Based on U.S Census Bureau			
Geographic Area	2010	2020	2010-2020
	Census	Census	Population % Change
Hall County	179,684	203,136	1.23%

GDOT Historical Growth Rate															
Location	Station ID	2022	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	5 year	10 year
Green Hill Road n/o Chestatee Road	139-8021	2378		2532				1950						-1.6%	2.5%
Lawson Robison Road n/o Whelchel Mill Road	139-8165		1266			965				848				9.5%	5.9%
Chestatee Road n/o Summer Lake Drive	139-7378	5652	5060	5586		5143			4663					-0.5%	2.2%
Price Rd /o Elrod Rd	139-0336		8760				7394		6932		7270	6840		4.3%	2.8%
Sardis Rd n/o Allison Rd	139-0509		8973			9014				8358				-0.2%	1.0%
5 & 10 - Year Average														2.3%	2.9%
Weighted Average														2.6%	

Growth Rate Based on Georgia Governor's Office of Planning and Budget Annual Population Projections								
Geographic Area	Average 5-Year Growth Rate From 2020-2050							
	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050		
Hall County	1.6%	1.4%	1.3%	1.1%	1.0%	1.0%		
	Average			1.2%				
	Average 10-Year Growth Rate From 2020-2050							
	2020-2030		2030-2040		2040-2050			
	1.3%		1.3%		1.1%			
Average				1.2%				
Average		1.6%						

Appendix D
Synchro Reports

Synchro Reports
Existing Year (2023)

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	24	0	4	5	0	5
Future Vol, veh/h	24	0	4	5	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	0	5	6	0	5

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	30	0	46 30
Stage 1	-	-	-	-	30 -
Stage 2	-	-	-	-	16 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1583	-	964 1044
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	1007 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1583	-	961 1044
Mov Cap-2 Maneuver	-	-	-	-	961 -
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	1004 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1044	-	-	1583	-
HCM Lane V/C Ratio	0.005	-	-	0.003	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	132	0	2	64	5	0	0	0	15	0	1
Future Vol, veh/h	0	132	0	2	64	5	0	0	0	15	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	8	2	2	2	2	2	2	2
Mvmt Flow	0	163	0	2	79	6	0	0	0	19	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	85	0	0	163	0	0	250	252	163	249	249	82
Stage 1	-	-	-	-	-	-	163	163	-	86	86	-
Stage 2	-	-	-	-	-	-	87	89	-	163	163	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1512	-	-	1416	-	-	703	651	882	705	654	978
Stage 1	-	-	-	-	-	-	839	763	-	922	824	-
Stage 2	-	-	-	-	-	-	921	821	-	839	763	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1512	-	-	1416	-	-	702	650	882	704	653	978
Mov Cap-2 Maneuver	-	-	-	-	-	-	702	650	-	704	653	-
Stage 1	-	-	-	-	-	-	839	763	-	922	823	-
Stage 2	-	-	-	-	-	-	919	820	-	839	763	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			0			10.2		
HCM LOS							A			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1512	-	-	1416	-	-	717
HCM Lane V/C Ratio	-	-	-	-	0.002	-	-	0.028
HCM Control Delay (s)	0	0	-	-	7.5	0	-	10.2
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	27	5	49	136	1
Future Vol, veh/h	1	27	5	49	136	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	1	32	6	58	162	1

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	233	163	163	0	-	0
Stage 1	163	-	-	-	-	-
Stage 2	70	-	-	-	-	-
Critical Hdwy	6.42	6.27	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.363	2.218	-	-	-
Pot Cap-1 Maneuver	755	869	1416	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	953	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	752	869	1416	-	-	-
Mov Cap-2 Maneuver	752	-	-	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	953	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1416	-	864	-	-
HCM Lane V/C Ratio	0.004	-	0.039	-	-
HCM Control Delay (s)	7.6	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	2	174	9	0	71
Future Vol, veh/h	5	2	174	9	0	71
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	3	2	2	6
Mvmt Flow	6	2	198	10	0	81

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	284	203	0	0	208
Stage 1	203	-	-	-	-
Stage 2	81	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	706	838	-	-	1363
Stage 1	831	-	-	-	-
Stage 2	942	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	706	838	-	-	1363
Mov Cap-2 Maneuver	706	-	-	-	-
Stage 1	831	-	-	-	-
Stage 2	942	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	739	1363
HCM Lane V/C Ratio	-	-	0.011	-
HCM Control Delay (s)	-	-	9.9	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	3.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	13	0	11	13	1	7
Future Vol, veh/h	13	0	11	13	1	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	0	14	16	1	9

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	16	0	60
Stage 1	-	-	-	-	16
Stage 2	-	-	-	-	44
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1602	-	947
Stage 1	-	-	-	-	1007
Stage 2	-	-	-	-	978
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1602	-	938
Mov Cap-2 Maneuver	-	-	-	-	938
Stage 1	-	-	-	-	1007
Stage 2	-	-	-	-	969

Approach	EB	WB	NB
HCM Control Delay, s	0	3.3	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1046	-	-	1602	-
HCM Lane V/C Ratio	0.01	-	-	0.009	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	86	0	0	147	14	0	0	1	3	0	0
Future Vol, veh/h	2	86	0	0	147	14	0	0	1	3	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	6	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	96	0	0	163	16	0	0	1	3	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	179	0	0	96	0	0	271	279	96	272	271	171
Stage 1	-	-	-	-	-	-	100	100	-	171	171	-
Stage 2	-	-	-	-	-	-	171	179	-	101	100	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1397	-	-	1498	-	-	682	629	960	680	636	873
Stage 1	-	-	-	-	-	-	906	812	-	831	757	-
Stage 2	-	-	-	-	-	-	831	751	-	905	812	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1397	-	-	1498	-	-	681	628	960	678	635	873
Mov Cap-2 Maneuver	-	-	-	-	-	-	681	628	-	678	635	-
Stage 1	-	-	-	-	-	-	904	810	-	829	757	-
Stage 2	-	-	-	-	-	-	831	751	-	902	810	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			8.8			10.3		
HCM LOS							A			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	960	1397	-	-	1498	-	-	678
HCM Lane V/C Ratio	0.001	0.002	-	-	-	-	-	0.005
HCM Control Delay (s)	8.8	7.6	0	-	0	-	-	10.3
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	13	16	115	80	0
Future Vol, veh/h	2	13	16	115	80	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	14	18	128	89	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	253	89	89	0	0
Stage 1	89	-	-	-	-
Stage 2	164	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	736	969	1506	-	-
Stage 1	934	-	-	-	-
Stage 2	865	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	726	969	1506	-	-
Mov Cap-2 Maneuver	726	-	-	-	-
Stage 1	922	-	-	-	-
Stage 2	865	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1506	-	928	-	-
HCM Lane V/C Ratio	0.012	-	0.018	-	-
HCM Control Delay (s)	7.4	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		T			T
Traffic Vol, veh/h	7	4	97	6	0	133
Future Vol, veh/h	7	4	97	6	0	133
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	4	102	6	0	140

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	245	105	0	0	108	0
Stage 1	105	-	-	-	-	-
Stage 2	140	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	743	949	-	-	1483	-
Stage 1	919	-	-	-	-	-
Stage 2	887	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	743	949	-	-	1483	-
Mov Cap-2 Maneuver	743	-	-	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	887	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	807	1483
HCM Lane V/C Ratio	-	-	0.014	-
HCM Control Delay (s)	-	-	9.5	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

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Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	0	4	6	0	6
Future Vol, veh/h	27	0	4	6	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	0	5	8	0	7

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	34	0	52
Stage 1	-	-	-	-	34
Stage 2	-	-	-	-	18
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1578	-	957
Stage 1	-	-	-	-	988
Stage 2	-	-	-	-	1005
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1578	-	954
Mov Cap-2 Maneuver	-	-	-	-	954
Stage 1	-	-	-	-	988
Stage 2	-	-	-	-	1002

Approach	EB	WB	NB
HCM Control Delay, s	0	2.9	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1039	-	-	1578	-
HCM Lane V/C Ratio	0.006	-	-	0.003	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	148	0	2	72	6	0	0	0	17	0	1
Future Vol, veh/h	0	148	0	2	72	6	0	0	0	17	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	8	2	2	2	2	2	2	2
Mvmt Flow	0	183	0	2	89	7	0	0	0	21	0	1

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	96	0	0	183	0	0	280	283	183	280	280	93
Stage 1	-	-	-	-	-	-	183	183	-	97	97	-
Stage 2	-	-	-	-	-	-	97	100	-	183	183	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1498	-	-	1392	-	-	672	626	859	672	628	964
Stage 1	-	-	-	-	-	-	819	748	-	910	815	-
Stage 2	-	-	-	-	-	-	910	812	-	819	748	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1498	-	-	1392	-	-	670	625	859	671	627	964
Mov Cap-2 Maneuver	-	-	-	-	-	-	670	625	-	671	627	-
Stage 1	-	-	-	-	-	-	819	748	-	910	813	-
Stage 2	-	-	-	-	-	-	907	810	-	819	748	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		0.2		0		10.4	
HCM LOS					A		B	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1498	-	-	1392	-	-	683
HCM Lane V/C Ratio	-	-	-	-	0.002	-	-	0.033
HCM Control Delay (s)	0	0	-	-	7.6	0	-	10.4
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	30	6	55	152	1
Future Vol, veh/h	1	30	6	55	152	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	1	36	7	65	181	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	261	182	182	0	0
Stage 1	182	-	-	-	-
Stage 2	79	-	-	-	-
Critical Hdwy	6.42	6.27	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.363	2.218	-	-
Pot Cap-1 Maneuver	728	848	1393	-	-
Stage 1	849	-	-	-	-
Stage 2	944	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	724	848	1393	-	-
Mov Cap-2 Maneuver	724	-	-	-	-
Stage 1	845	-	-	-	-
Stage 2	944	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1393	-	843	-	-
HCM Lane V/C Ratio	0.005	-	0.044	-	-
HCM Control Delay (s)	7.6	0	9.5	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	FF		FB			FB
Traffic Vol, veh/h	5	2	194	10	0	79
Future Vol, veh/h	5	2	194	10	0	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	3	2	2	6
Mvmt Flow	6	2	220	11	0	90

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	316	226	0	0	231
Stage 1	226	-	-	-	-
Stage 2	90	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	677	813	-	-	1337
Stage 1	812	-	-	-	-
Stage 2	934	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	677	813	-	-	1337
Mov Cap-2 Maneuver	677	-	-	-	-
Stage 1	812	-	-	-	-
Stage 2	934	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	711	1337
HCM Lane V/C Ratio	-	-	0.011	-
HCM Control Delay (s)	-	-	10.1	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection						
Int Delay, s/veh	3.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	15	0	12	15	1	8
Future Vol, veh/h	15	0	12	15	1	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	0	15	19	1	10

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	19	0	68 19
Stage 1	-	-	-	-	19 -
Stage 2	-	-	-	-	49 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1597	-	937 1059
Stage 1	-	-	-	-	1004 -
Stage 2	-	-	-	-	973 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1597	-	929 1059
Mov Cap-2 Maneuver	-	-	-	-	929 -
Stage 1	-	-	-	-	1004 -
Stage 2	-	-	-	-	964 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1043	-	-	1597	-
HCM Lane V/C Ratio	0.011	-	-	0.009	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	96	0	0	164	16	0	0	1	3	0	0
Future Vol, veh/h	2	96	0	0	164	16	0	0	1	3	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	6	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	107	0	0	182	18	0	0	1	3	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	200	0	0	107	0	0	302	311	107	303	302	191
Stage 1	-	-	-	-	-	-	111	111	-	191	191	-
Stage 2	-	-	-	-	-	-	191	200	-	112	111	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1372	-	-	1484	-	-	650	604	947	649	611	851
Stage 1	-	-	-	-	-	-	894	804	-	811	742	-
Stage 2	-	-	-	-	-	-	811	736	-	893	804	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1372	-	-	1484	-	-	649	603	947	647	610	851
Mov Cap-2 Maneuver	-	-	-	-	-	-	649	603	-	647	610	-
Stage 1	-	-	-	-	-	-	892	802	-	809	742	-
Stage 2	-	-	-	-	-	-	811	736	-	890	802	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0			8.8			10.6		
HCM LOS							A			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	947	1372	-	-	1484	-	-	647
HCM Lane V/C Ratio	0.001	0.002	-	-	-	-	-	0.005
HCM Control Delay (s)	8.8	7.6	0	-	0	-	-	10.6
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	15	18	129	89	0
Future Vol, veh/h	2	15	18	129	89	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	17	20	143	99	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	282	99	99	0	0
Stage 1	99	-	-	-	-
Stage 2	183	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	708	957	1494	-	-
Stage 1	925	-	-	-	-
Stage 2	848	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	697	957	1494	-	-
Mov Cap-2 Maneuver	697	-	-	-	-
Stage 1	911	-	-	-	-
Stage 2	848	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	0.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1494	-	917	-	-
HCM Lane V/C Ratio	0.013	-	0.021	-	-
HCM Control Delay (s)	7.4	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	4	108	7	0	149
Future Vol, veh/h	8	4	108	7	0	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	4	114	7	0	157

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	275	118	0	0	121	0
Stage 1	118	-	-	-	-	-
Stage 2	157	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	715	934	-	-	1467	-
Stage 1	907	-	-	-	-	-
Stage 2	871	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	715	934	-	-	1467	-
Mov Cap-2 Maneuver	715	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	871	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	776	1467
HCM Lane V/C Ratio	-	-	0.016	-
HCM Control Delay (s)	-	-	9.7	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

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Intersection						
Int Delay, s/veh	5.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	8	15	6	10	50
Future Vol, veh/h	27	8	15	6	10	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	34	10	19	8	13	54

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	44	0	85 39
Stage 1	-	-	-	-	39 -
Stage 2	-	-	-	-	46 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1564	-	916 1033
Stage 1	-	-	-	-	983 -
Stage 2	-	-	-	-	976 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1564	-	905 1033
Mov Cap-2 Maneuver	-	-	-	-	905 -
Stage 1	-	-	-	-	983 -
Stage 2	-	-	-	-	964 -

Approach	EB	WB	NB
HCM Control Delay, s	0	5.2	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1006	-	-	1564	-
HCM Lane V/C Ratio	0.066	-	-	0.012	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	148	0	2	72	32	0	0	0	77	0	42
Future Vol, veh/h	7	148	0	2	72	32	0	0	0	77	0	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	8	2	2	2	2	2	2	2
Mvmt Flow	9	183	0	2	89	40	0	0	0	95	0	52

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	129	0	0	183	0	0	340	334	183	314	314	109
Stage 1	-	-	-	-	-	-	201	201	-	113	113	-
Stage 2	-	-	-	-	-	-	139	133	-	201	201	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1457	-	-	1392	-	-	614	586	859	639	601	945
Stage 1	-	-	-	-	-	-	801	735	-	892	802	-
Stage 2	-	-	-	-	-	-	864	786	-	801	735	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1457	-	-	1392	-	-	577	581	859	635	596	945
Mov Cap-2 Maneuver	-	-	-	-	-	-	577	581	-	635	596	-
Stage 1	-	-	-	-	-	-	795	730	-	886	800	-
Stage 2	-	-	-	-	-	-	815	784	-	795	730	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			0			11.3		
HCM LOS							A			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1457	-	-	1392	-	-	718
HCM Lane V/C Ratio	-	0.006	-	-	0.002	-	-	0.205
HCM Control Delay (s)	0	7.5	0	-	7.6	0	-	11.3
HCM Lane LOS	A	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	0.8

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	62	14	55	152	1
Future Vol, veh/h	13	62	14	55	152	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	84	84	84	84	84	84
Heavy Vehicles, %	2	7	2	2	2	2
Mvmt Flow	15	74	17	65	181	1

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	281	182	182	0	0
Stage 1	182	-	-	-	-
Stage 2	99	-	-	-	-
Critical Hdwy	6.42	6.27	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.363	2.218	-	-
Pot Cap-1 Maneuver	709	848	1393	-	-
Stage 1	849	-	-	-	-
Stage 2	925	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	700	848	1393	-	-
Mov Cap-2 Maneuver	700	-	-	-	-
Stage 1	838	-	-	-	-
Stage 2	925	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	1.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1393	-	818	-	-
HCM Lane V/C Ratio	0.012	-	0.109	-	-
HCM Control Delay (s)	7.6	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		T			T
Traffic Vol, veh/h	14	4	194	17	0	79
Future Vol, veh/h	14	4	194	17	0	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	2	3	2	2	6
Mvmt Flow	16	5	220	19	0	90

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	320	230	0	0	239
Stage 1	230	-	-	-	-
Stage 2	90	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	673	809	-	-	1328
Stage 1	808	-	-	-	-
Stage 2	934	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	673	809	-	-	1328
Mov Cap-2 Maneuver	673	-	-	-	-
Stage 1	808	-	-	-	-
Stage 2	934	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	699	1328
HCM Lane V/C Ratio	-	-	0.029	-
HCM Control Delay (s)	-	-	10.3	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	3.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	28	8	44	16	7
Future Vol, veh/h	16	28	8	44	16	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	30	9	48	17	8

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	83	17	25	0	0
Stage 1	17	-	-	-	-
Stage 2	66	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	919	1062	1589	-	-
Stage 1	1006	-	-	-	-
Stage 2	957	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	913	1062	1589	-	-
Mov Cap-2 Maneuver	913	-	-	-	-
Stage 1	1000	-	-	-	-
Stage 2	957	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1589	-	1003	-	-
HCM Lane V/C Ratio	0.005	-	0.048	-	-
HCM Control Delay (s)	7.3	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	30	11	34	39	0
Future Vol, veh/h	18	30	11	34	39	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	33	12	37	42	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	103	42	42	0	-	0
Stage 1	42	-	-	-	-	-
Stage 2	61	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	895	1029	1567	-	-	-
Stage 1	980	-	-	-	-	-
Stage 2	962	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	888	1029	1567	-	-	-
Mov Cap-2 Maneuver	888	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	962	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.9	1.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1567	-	971	-	-
HCM Lane V/C Ratio	0.008	-	0.054	-	-
HCM Control Delay (s)	7.3	-	8.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	4.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	43	14	25	62	0
Future Vol, veh/h	20	43	14	25	62	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	47	15	27	67	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	124	67	67	0	-	0
Stage 1	67	-	-	-	-	-
Stage 2	57	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	871	997	1535	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	966	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	862	997	1535	-	-	-
Mov Cap-2 Maneuver	862	-	-	-	-	-
Stage 1	946	-	-	-	-	-
Stage 2	966	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	2.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1535	-	950	-	-
HCM Lane V/C Ratio	0.01	-	0.072	-	-
HCM Control Delay (s)	7.4	-	9.1	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	5.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	15	27	54	15	27	46
Future Vol, veh/h	15	27	54	15	27	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	19	34	68	19	34	58

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	53	0	191 36
Stage 1	-	-	-	-	36 -
Stage 2	-	-	-	-	155 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1553	-	798 1037
Stage 1	-	-	-	-	986 -
Stage 2	-	-	-	-	873 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1553	-	763 1037
Mov Cap-2 Maneuver	-	-	-	-	763 -
Stage 1	-	-	-	-	986 -
Stage 2	-	-	-	-	835 -

Approach	EB	WB	NB
HCM Control Delay, s	0	5.8	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	915	-	-	1553	-
HCM Lane V/C Ratio	0.1	-	-	0.043	-
HCM Control Delay (s)	9.4	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

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	32	96	0	0	164	97	0	0	1	16	0	28
Future Vol, veh/h	32	96	0	0	164	97	0	0	1	16	0	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	6	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	107	0	0	182	108	0	0	1	18	0	31

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	290	0	0	107	0	0	431	469	107	416	415	236
Stage 1	-	-	-	-	-	-	179	179	-	236	236	-
Stage 2	-	-	-	-	-	-	252	290	-	180	179	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1272	-	-	1484	-	-	535	492	947	547	528	803
Stage 1	-	-	-	-	-	-	823	751	-	767	710	-
Stage 2	-	-	-	-	-	-	752	672	-	822	751	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1272	-	-	1484	-	-	502	477	947	534	512	803
Mov Cap-2 Maneuver	-	-	-	-	-	-	502	477	-	534	512	-
Stage 1	-	-	-	-	-	-	798	728	-	744	710	-
Stage 2	-	-	-	-	-	-	723	672	-	796	728	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2			0			8.8			10.7		
HCM LOS							A			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	947	1272	-	-	1484	-	-	679
HCM Lane V/C Ratio	0.001	0.028	-	-	-	-	-	0.072
HCM Control Delay (s)	8.8	7.9	0	-	0	-	-	10.7
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.1	-	-	0	-	-	0.2

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	16	39	43	129	89	17
Future Vol, veh/h	16	39	43	129	89	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	43	48	143	99	19

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	348	109	118	0	0
Stage 1	109	-	-	-	-
Stage 2	239	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	649	945	1470	-	-
Stage 1	916	-	-	-	-
Stage 2	801	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	626	945	1470	-	-
Mov Cap-2 Maneuver	626	-	-	-	-
Stage 1	884	-	-	-	-
Stage 2	801	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	1.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1470	-	823	-	-
HCM Lane V/C Ratio	0.033	-	0.074	-	-
HCM Control Delay (s)	7.5	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	TT		T			T
Traffic Vol, veh/h	23	15	108	21	13	149
Future Vol, veh/h	23	15	108	21	13	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	16	114	22	14	157

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	310	125	0	0	136
Stage 1	125	-	-	-	-
Stage 2	185	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	682	926	-	-	1448
Stage 1	901	-	-	-	-
Stage 2	847	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	674	926	-	-	1448
Mov Cap-2 Maneuver	674	-	-	-	-
Stage 1	901	-	-	-	-
Stage 2	838	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	755	1448
HCM Lane V/C Ratio	-	-	0.053	0.009
HCM Control Delay (s)	-	-	10	7.5
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	12	27	55	57	24
Future Vol, veh/h	18	12	27	55	57	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	13	29	60	62	26

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	180	62	88	0	0
Stage 1	62	-	-	-	-
Stage 2	118	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	810	1003	1508	-	-
Stage 1	961	-	-	-	-
Stage 2	907	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	794	1003	1508	-	-
Mov Cap-2 Maneuver	794	-	-	-	-
Stage 1	942	-	-	-	-
Stage 2	907	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	2.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1508	-	866	-	-
HCM Lane V/C Ratio	0.019	-	0.038	-	-
HCM Control Delay (s)	7.4	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection						
Int Delay, s/veh	2.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	13	36	63	49	20
Future Vol, veh/h	18	13	36	63	49	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	14	39	68	53	22

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	199	53	75	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	146	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	790	1014	1524	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	881	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	769	1014	1524	-	-	-
Mov Cap-2 Maneuver	769	-	-	-	-	-
Stage 1	945	-	-	-	-	-
Stage 2	881	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	2.7	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1524	-	856	-	-
HCM Lane V/C Ratio	0.026	-	0.039	-	-
HCM Control Delay (s)	7.4	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	16	48	72	37	25
Future Vol, veh/h	27	16	48	72	37	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	250	-	-	250
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	17	52	78	40	27

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	222	40	67	0	0
Stage 1	40	-	-	-	-
Stage 2	182	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-
Pot Cap-1 Maneuver	766	1031	1535	-	-
Stage 1	982	-	-	-	-
Stage 2	849	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	740	1031	1535	-	-
Mov Cap-2 Maneuver	740	-	-	-	-
Stage 1	949	-	-	-	-
Stage 2	849	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1535	-	827	-	-
HCM Lane V/C Ratio	0.034	-	0.057	-	-
HCM Control Delay (s)	7.4	-	9.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Appendix E
Trip Generation Report

Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

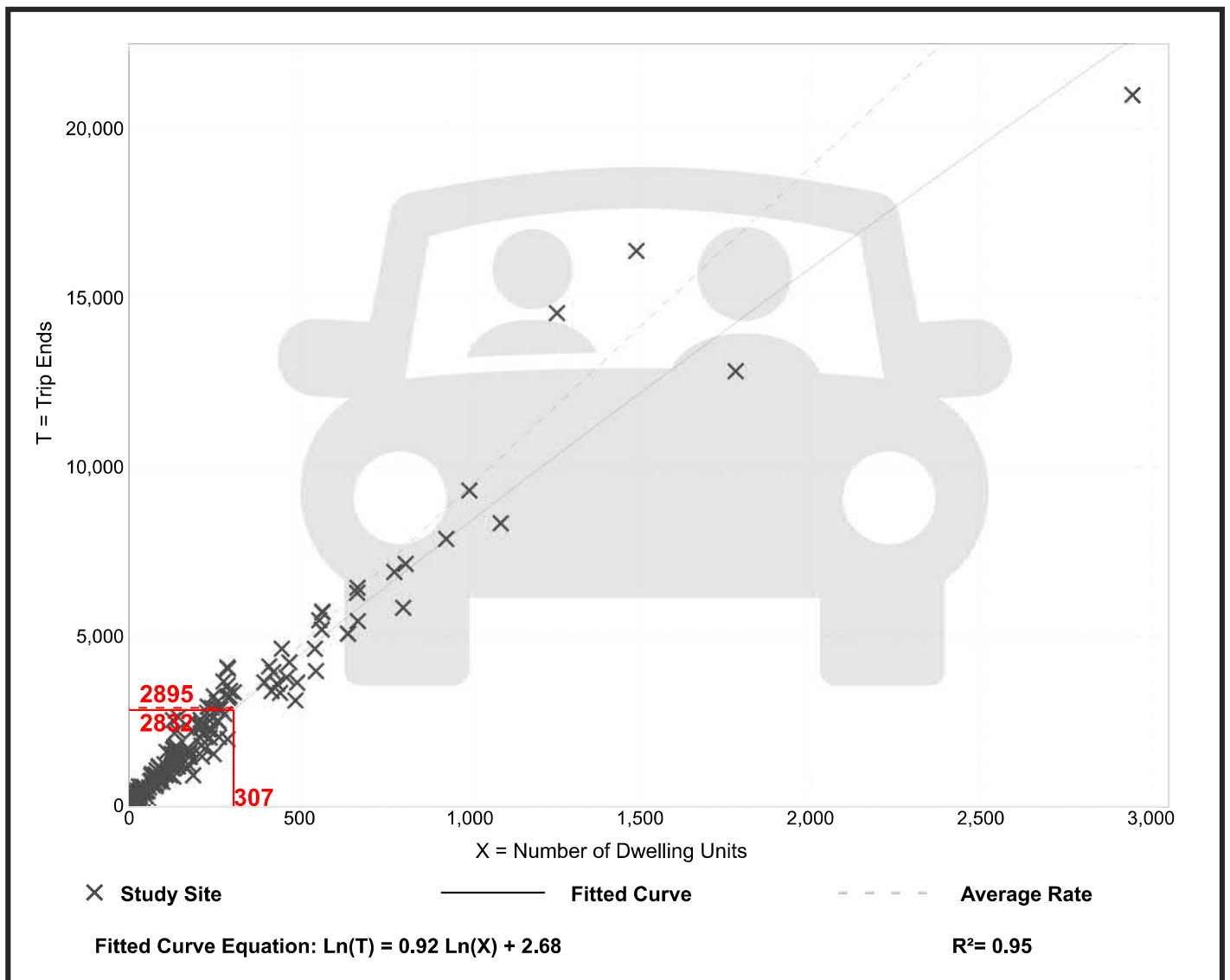
Setting/Location: General Urban/Suburban
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Enter	Exit	Total
1416	1416	2832

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 192

Avg. Num. of Dwelling Units: 226

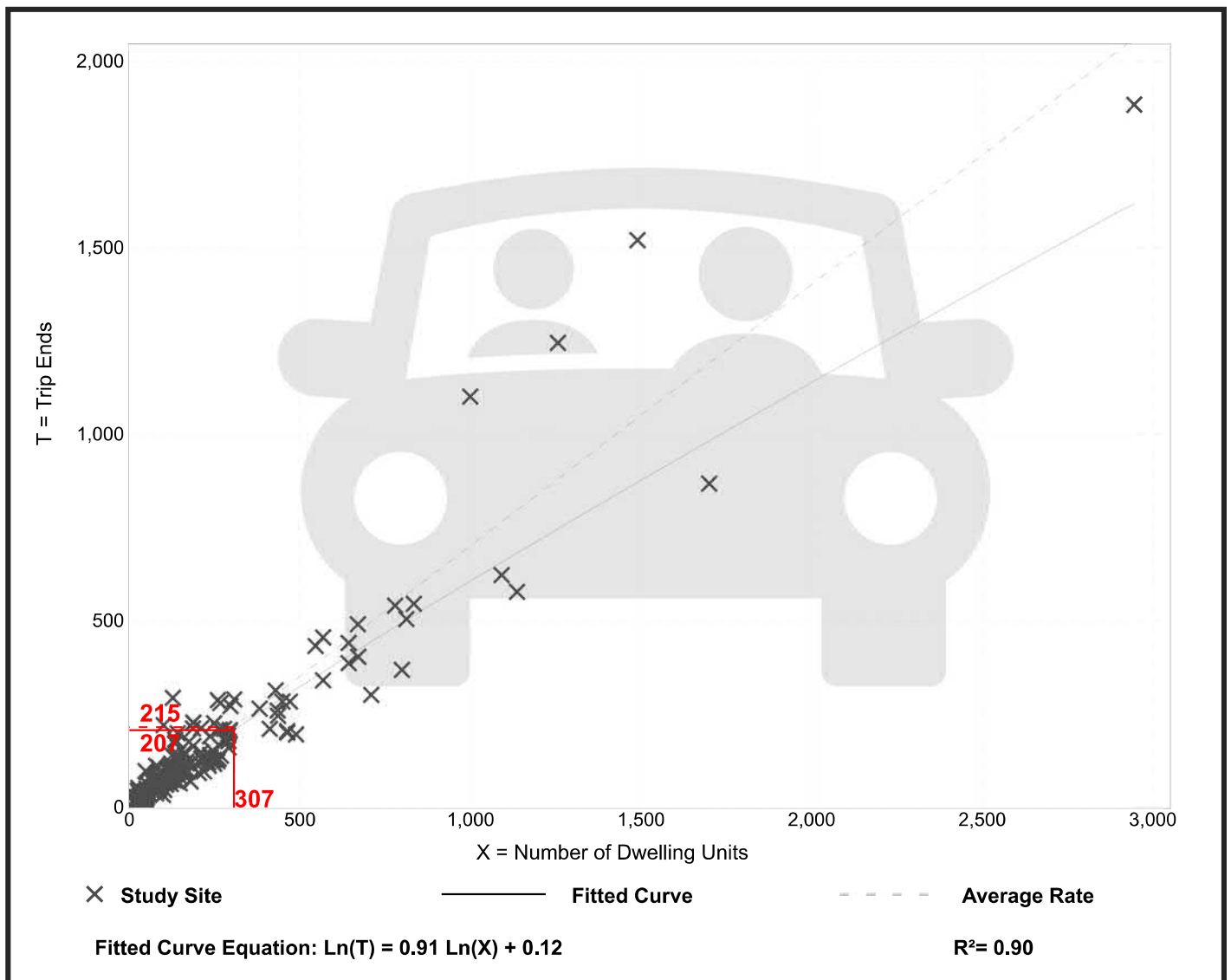
Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Enter	Exit	Total
52	155	207

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 208

Avg. Num. of Dwelling Units: 248

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Enter	Exit	Total
180	105	285

Data Plot and Equation

