DEVELOPMENT OF REGIONAL IMPACT
(DRI #3603)

TRAFFIC STUDY
FOR
EMBLEM RIVERSIDE PHASE II

CITY OF DOUGLASVILLE, GEORGIA

Prepared for:

Planners and Engineers Collaborative
48 Atlanta Street SE
Marietta, Georgia 30060

Prepared By:

A&R Engineering Inc.
2160 Kingston Court, Suite O
Marietta, GA 30067
Tel: (770) 690-9255 Fax: (770) 690-9210
www.areng.com

May 25, 2022
A & R Project # 22-048

EXECUTIVE SUMMARY

Traffic impacts were evaluated for the proposed residential development that will be located to the northwest of Riverside Parkway and Summer Lake Road in the City of Douglasville, Georgia. The development will consist of 280 units of Multifamily Housing (Mid Rise) and 145 units of Multifamily Housing (Low Rise) land uses.

The development proposes site accesses at the following locations:

- Site Driveway 1: Full-access (northern) driveway 1 on Riverside Parkway
- Site Driveway 2: Full-access (southern) driveway 2 on Riverside Parkway
- Site Driveway 3: Exit only driveway 3 on Summer Lake Road

Traffic Operations

Existing and future operations during the AM peak hour (7:00 AM – 9:00 AM) and PM peak hour (4:00 PM – 6:00 PM) before and after completion of the project were analyzed at the following intersections:

1. SR 6 (Thornton Road) at Riverside Parkway
2. Riverside Parkway at Rock House Road
3. Riverside Parkway at Summer Lake Road
4. Riverside Parkway at Site Driveway (N)
5. Riverside Parkway at Site Driveway (S)
6. Summer Lake Road at Exit Only Driveway

Traffic Summary Operations

The analysis included the evaluation of Future operations for "No-Build" and "Build" conditions, both of which account for increases in annual growth of through traffic. The results of future traffic operations analysis indicate that all the signalized intersections are operating at overall level-of-service "D" or better during the AM and PM peak hours and the un-signalized intersection approach are operating at level of-service "D" or better in both the AM and PM peak hours. There are insignificant differences in traffic operations between the "No-Build" and "Build" conditions.

Site Access Configuration

All the site driveway intersections are recommended to be un-signalized with a STOP sign at the driveway approaches. Driveway 1 and driveway 2 are recommended to have one entering lane and one exiting lane. Driveway 3 is recommended to have one exiting lane only.

Site Mitigation Improvements

- <u>Riverside Parkway at Site Driveway 1 (N)</u>
    - Construction of a left turn lane and a deceleration lane on site driveway 1 (N) on Riverside Parkway for entering traffic
- <u>Riverside Parkway at Site Driveway 2 (S)</u>
    - Construction of a left turn lane and a deceleration lane for site Driveway 2 (S) on Riverside Parkway for entering traffic

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INTRODUCTION

The purpose of this study is to determine the traffic impact from the proposed residential development that will be located to the northwest of Riverside Parkway and Summer Lake Road in the City of Douglasville, Georgia. The traffic analysis evaluates the current operations and the future conditions with the traffic generated by the development. The development will consist of 280 units of midrise and 145 units of low rise multifamily homes.

The development proposes access at the following locations:

- Site Driveway 1: Full-access (Northern) driveway 1 on Riverside Parkway
- Site Driveway 2: Full-access (Southern) driveway 2 on Riverside Parkway
- Site Driveway 3: Exit only driveway 3 on Summer Lake Road

This study includes the evaluation of traffic operations for the AM and PM peak hours at the intersections of:

1. SR 6 (Thornton Road) at Riverside Parkway
2. Riverside Parkway at Rock House Road

3. Riverside Parkway at Summer Lake Road

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report.

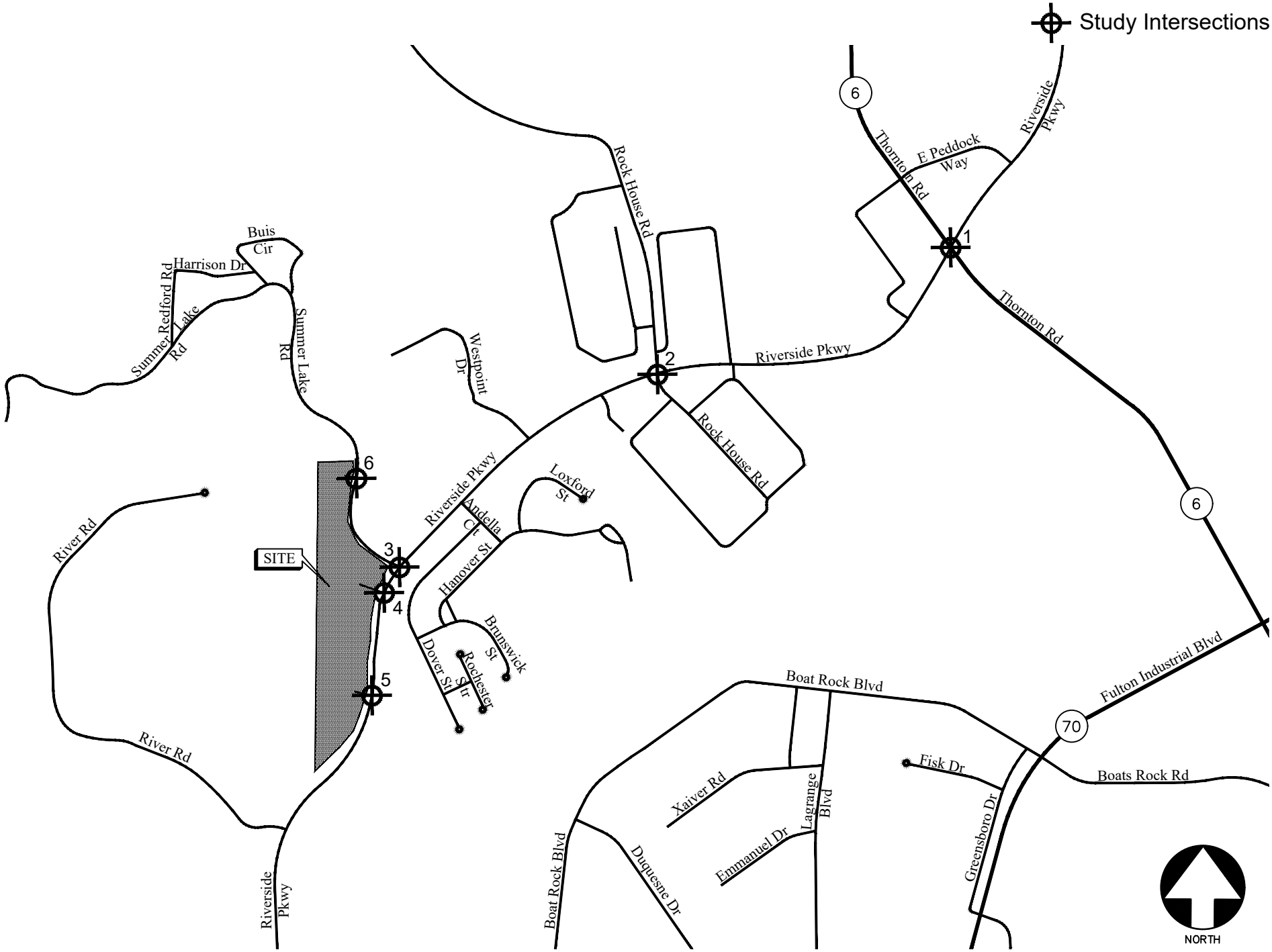
STUDY NETWORK DETERMINATION

The study network was determined by evaluating the amount of traffic that the proposed development will add to each roadway segment in the area. According to GRTA requirements, a roadway segment carries a "significant" amount of traffic if the project contributes 7% or more trips to the two-way daily service volumes of the roadway at the appropriate level of service standard. Upon agreement with GRTA a level of service standard of "D" was used for determining the study area network, unless the level of service standard "E" is allowable as detailed in GRTA's Policies and Procedures (April 2021).

The traffic generated by the proposed project was then assigned to the area roadways using the trip distribution to determine the site-generated traffic on each roadway segment. The boundaries of the study network extend to the most distant intersections where at least 7% of the service volumes on the segment are attributed to project traffic. The following study intersections fell within the 7% rule and/or have been selected as being suitable for evaluation in discussions with ARC, GRTA, GDOT, and the City of Douglasville:

1. SR 6 (Thornton Road) at Riverside Parkway
2. Riverside Parkway at Rock House Road
3. Riverside Parkway at Summer Lake Road

The location of the development and the surrounding study network is shown in Figure 1. Other intersections within this corridor, such as unsignalized side streets, right-in / right-out driveways or private driveways have not been included in the study network.



LOCATION MAP AND STUDY INTERSECTIONS

FIGURE 1

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EXISTING ROADWAY FACILITIES

The following is a brief description of each of the roadway facilities located in proximity to the site:

SR 6 (Thornton Road)

SR 6 (Thornton Road) is a north-south, four-lane, median divided roadway with a posted speed limit of 55 mph in the vicinity of the site. GDOT traffic counts (Station ID's 097-0321 & 097-0323) indicate that the daily traffic volume on SR 6 (Thornton Road) in 2019 was 39,800 vehicles per day south of Riverside Parkway and 34,100 vehicles per day south of Douglas Hill Rd. GDOT classifies SR 6 (Thornton Road) as an Urban Principal Arterial roadway.

Riverside Parkway

Riverside Parkway is an east-west, two-lane, undivided roadway with a posted speed limit of 45 mph in the vicinity of the site. South of Summer Lake Road, Riverside Parkway is a north-south roadway. GDOT traffic counts (Station ID 097-0167) east of Rock House Road indicate that the daily traffic volume on Riverside Parkway in 2019 was 6,030 vehicles per day. GDOT classifies Riverside Parkway as an Urban Minor Arterial roadway.

Rock House Road

Rock House Road is a north-south, two-lane, undivided roadway with a posted speed limit of 35 mph to the north of Riverside Parkway and 25 mph to the south of Riverside Parkway.

Summer Lake Road

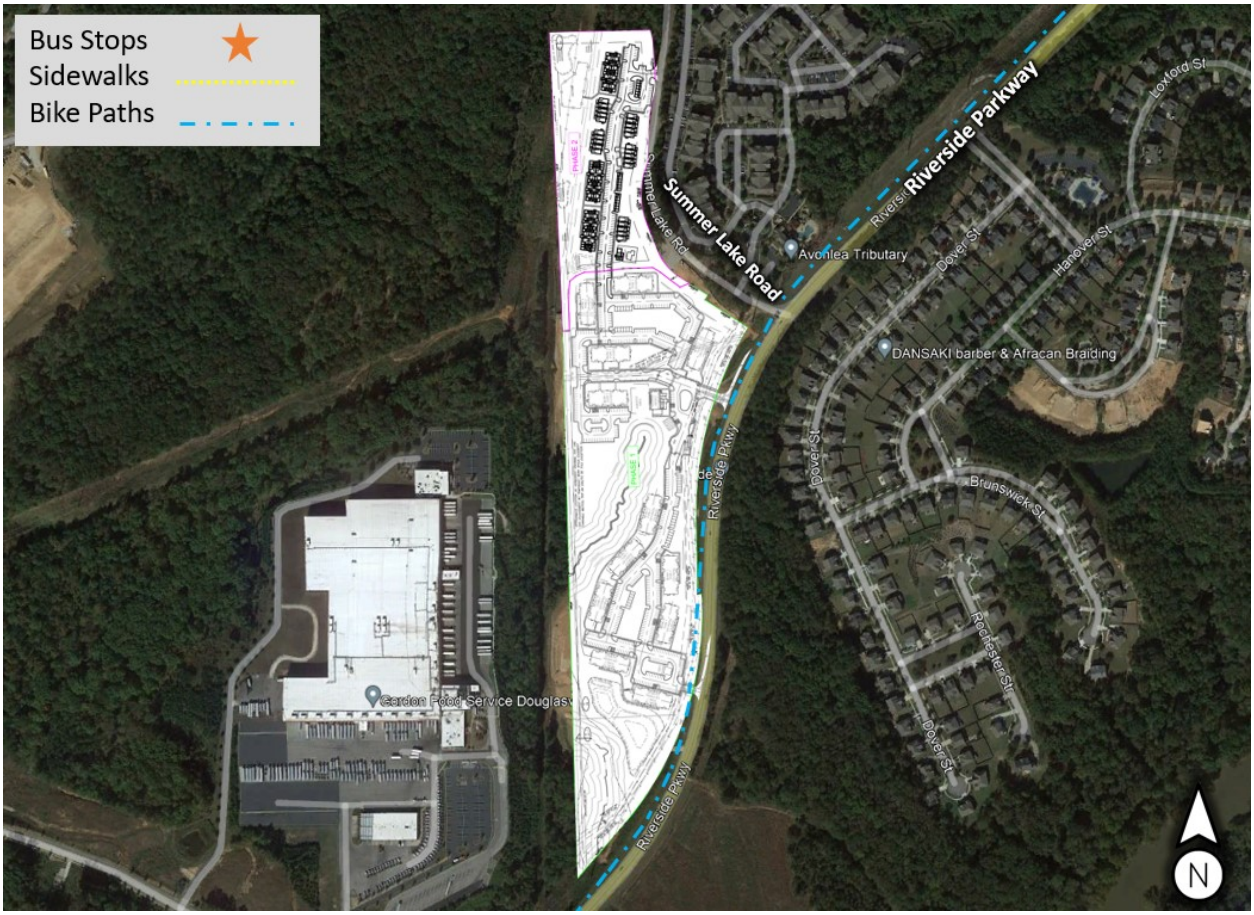
Rock House Road is an east-west, two-lane, undivided roadway with a posted speed limit of 25 mph.

Existing Bicycle and Pedestrian Facilities

- No sidewalks along Riverside Parkway or Summer Lake Road
- Bike paths are present along this segment of Riverside Parkway
- No existing bike lane along Summer Lake Road

Alternative Modes of Access

No transit stations or bust stops were identified in the vicinity of the proposed development.



STUDY METHODOLOGY

In this study, the methodology used for evaluating traffic operations at each of the subject intersections is based on the criteria set forth in the Transportation Research Board's Highway Capacity Manual, 6th edition (HCM 6). Synchro software, which utilizes the HCM methodology, was used for the analysis. The following is a description of the methodology employed for the analysis of unsignalized and signalized intersections.

Unsignalized Intersections

For unsignalized intersections controlled by a stop sign on minor streets, the level-of-service (LOS) for motor vehicles with controlled movements is determined by the computed control delay according to the thresholds stated in Table 1 below. LOS is determined for each minor street movement (or shared movement), as well as major street left turns. LOS is not defined for the intersection as a whole or for major street approaches. The LOS of any controlled movement which experiences a volume to capacity ratio greater than 1 is designed as "F" regardless of the control delay.

Control delay for unsignalized intersections includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Several factors affect the control delay for unsignalized intersections, such as the availability and distribution of gaps in the conflicting traffic stream, critical gaps and follow-up time for a vehicle in the queue.

Level-of-service is assigned a letter designation from "A" through "F". Level-of-service "A" indicates excellent operations with little delay to motorists, while level-of-service "F" exists when there are insufficient gaps of acceptable size to allow vehicles on the side street to cross the main road without experiencing long total delays.

TABLE 1 – LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Control Delay (sec/vehicle)	LOS by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	**v/c ≥ 1.0**
≤ 10	A	F
> 10 and ≤ 15	B	F
> 15 and ≤ 25	C	F
> 25 and ≤ 35	D	F
> 35 and ≤ 50	E	F
> 50	F	F

*The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection.

Source: Highway Capacity Manual, 6th edition, Exhibit 20-2 *LOS Criteria: Motorized Vehicle Mode*

Signalized Intersections

According to HCM procedures, LOS can be calculated for the entire intersection, each intersection approach, and each lane group. HCM uses control delay alone to characterize LOS for the entire intersection or an approach. Control delay per vehicle is composed of initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Both control delay and volume-to-capacity ratio are used to characterize LOS for a lane group. A volume-to-capacity ratio of 1.0 or more for a lane group indicates failure from capacity perspective. Therefore, such a lane group is assigned LOS F regardless of the amount of control delay.

Table 2 below summarizes the LOS criteria from HCM for motorized vehicles at signalized intersections.

TABLE 2 – LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Control Delay (sec/vehicle)*	LOS for Lane Group by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	**v/c ≥ 1.0**
≤ 10	A	F
> 10 and ≤ 20	B	F
> 20 and ≤ 35	C	F
> 35 and ≤ 55	D	F
> 55 and ≤ 80	E	F
> 80	F	F

*For approach-based and intersection wide assessments, LOS is defined solely by control delay

Source: Highway Capacity Manual, 6th edition, Exhibit 19-8 *LOS Criteria: Motorized Vehicle Mode*

LOS A is typically assigned when the volume-to-capacity (v/c) ratio is low and either progression is exceptionally favorable, or the cycle length is very short. LOS B is typically assigned when the v/c ratio is low and either progression is highly favorable, or the cycle length is short. However, more vehicles are stopped than with LOS A. LOS C is typically assigned when progression is favorable, or the cycle length is moderate. Individual cycle failures (one or more queued vehicles are not able to depart because of insufficient capacity during the cycle) may begin to appear at this level. Many vehicles still pass through the intersection without stopping, but the number of vehicles stopping is significant. LOS D is typically assigned when the v/c ratio is high and either progression is ineffective, or the cycle length is long. There are many vehicle-stops and individual cycle failures are noticeable. LOS E is typically assigned when the v/c ratio is high, progression is very poor, the cycle length is long, and individual cycle failures are frequent. LOS F is typically assigned when the v/c ratio is very high, progression is very poor, the cycle length is long, and most cycles fail to clear the queue.

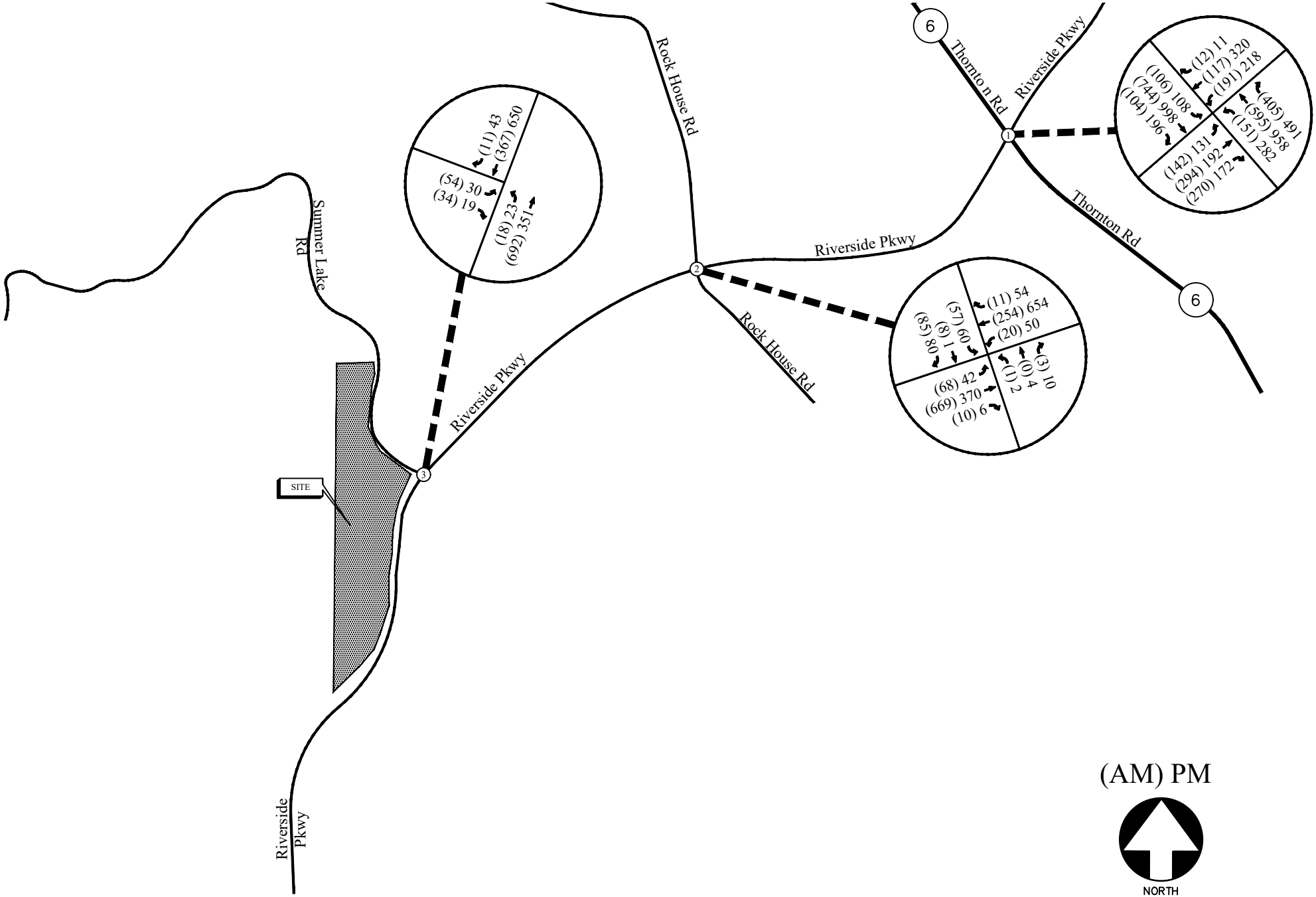
EXISTING 2022 TRAFFIC ANALYSIS

Existing Traffic Volumes

Existing traffic counts were obtained at the following study intersections:

1. SR 6 (Thornton Road) at Riverside Parkway
2. Riverside Parkway at Rock House Road
3. Riverside Parkway at Summer Lake Road

Turning movement counts were collected on Thursday, April 21, 2022. Heavy trucks and buses were included separately in the counts. All turning movement counts were recorded during the AM and PM peak hours between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2.



EXISTING WEEKDAY PEAK-HOUR VOLUMES

FIGURE 2

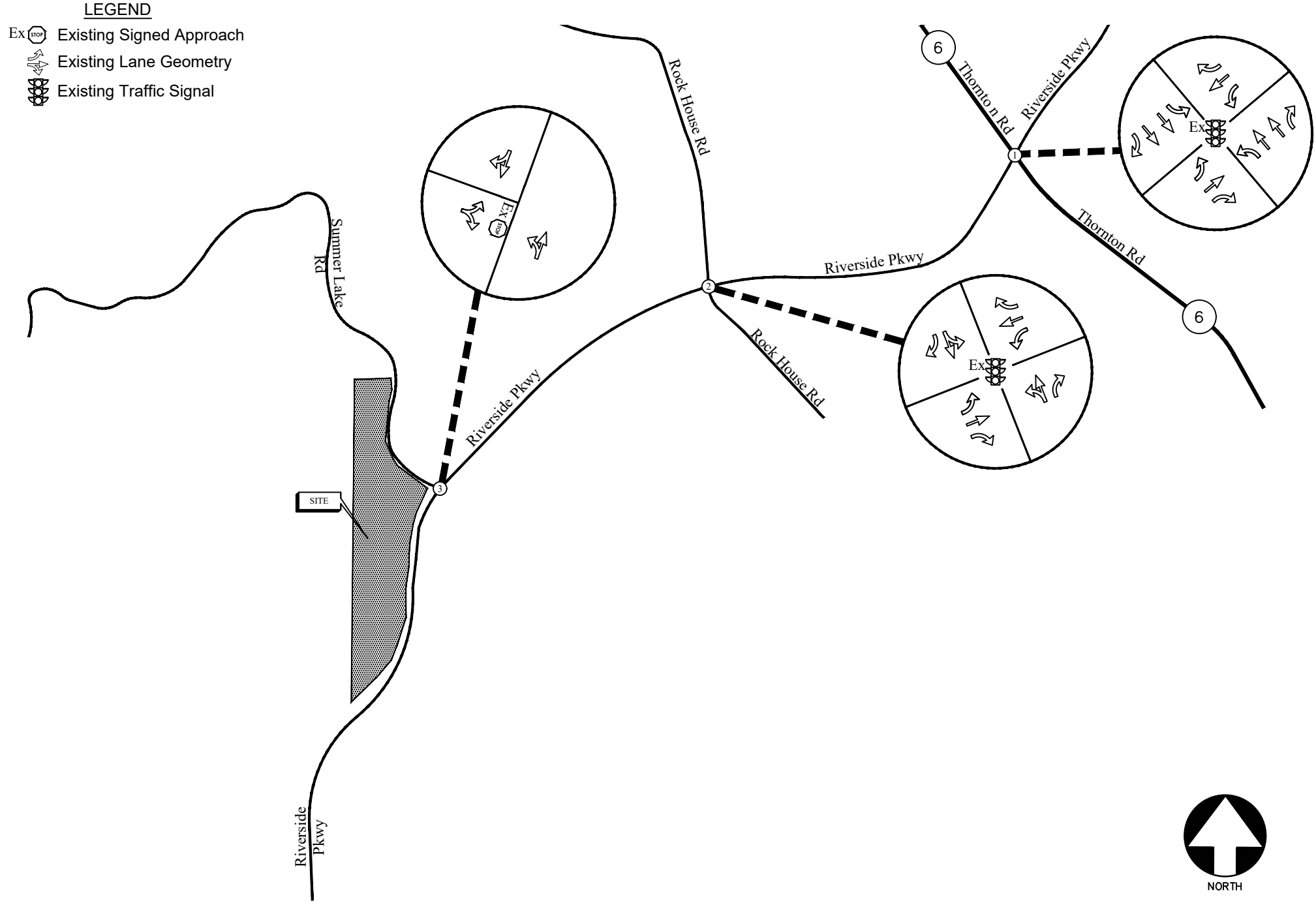
A&R Engineering Inc.

Existing Traffic Operations

Existing 2022 traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analyses are shown in Table 3.

TABLE 3 – EXISTING INTERSECTION OPERATIONS					
	Intersection	Traffic Control	AM Peak	PM Peak	LOS Standard
1	**SR 6 (Thornton Road) @ Riverside Parkway** -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	**D (39.2)** D (52.7) D (49.3) C (34.0) C (33.1)	**D (46.9)** D (48.9) D (53.6) D (43.0) D (47.5)	**D / D** D / D D / D D / D D / D
2	**Riverside Parkway @ Rock House Road** -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	**A (6.0)** A (3.3) A (2.1) D (48.5) D (53.2)	**A (5.5)** A (2.2) A (2.9) D (49.3) D (53.3)	**D / D** D / D D / D D / D D / D
3	**Riverside Parkway @ Summer Lake Road** -Eastbound Approach -Northbound Left	Stop Controlled on EB Approach	C (24.1) A (8.2)	C (22.2) A (9.3)	D / D -

The results of existing traffic operations analysis indicate that all the signalized intersections are operating at overall level-of-service "D" or better during the AM and PM peak hours and the un-signalized intersection approach are operating at level of-service "C" or better in both the AM and PM peak hours. The existing traffic control and lane geometry for the intersections are shown in Figure 3.



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 3

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PROJECT DESCRIPTION

The proposed residential development will be located to the northwest of Riverside Parkway and Summer Lake Road in the City of Douglasville, Georgia. The development will consist of:

- Multifamily Housing (Mid Rise): 280 units
- Multifamily Housing (Low Rise): 145 unit

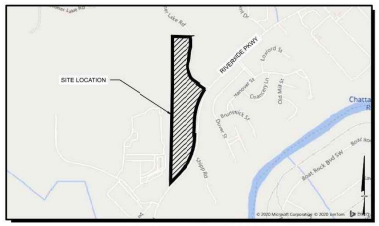
The development proposes access at the following locations:

- Site Driveway 1: Full-access (Northern) driveway 1 on Riverside Parkway
- Site Driveway 2: Full-access (Southern) driveway 2 on Riverside Parkway
- Site Driveway 3: Exit only driveway 3 on Summer Lake Road

Site Plan

A site plan is shown in Figure 4.

TRAFFIC CONSULTANT CONTACT INFORMATION:
A&R ENGINEERING INC.
2160 KINGSTON COURT, SUITE O
MARIETTA, GA 30067
PHONE: (770) 690-9255



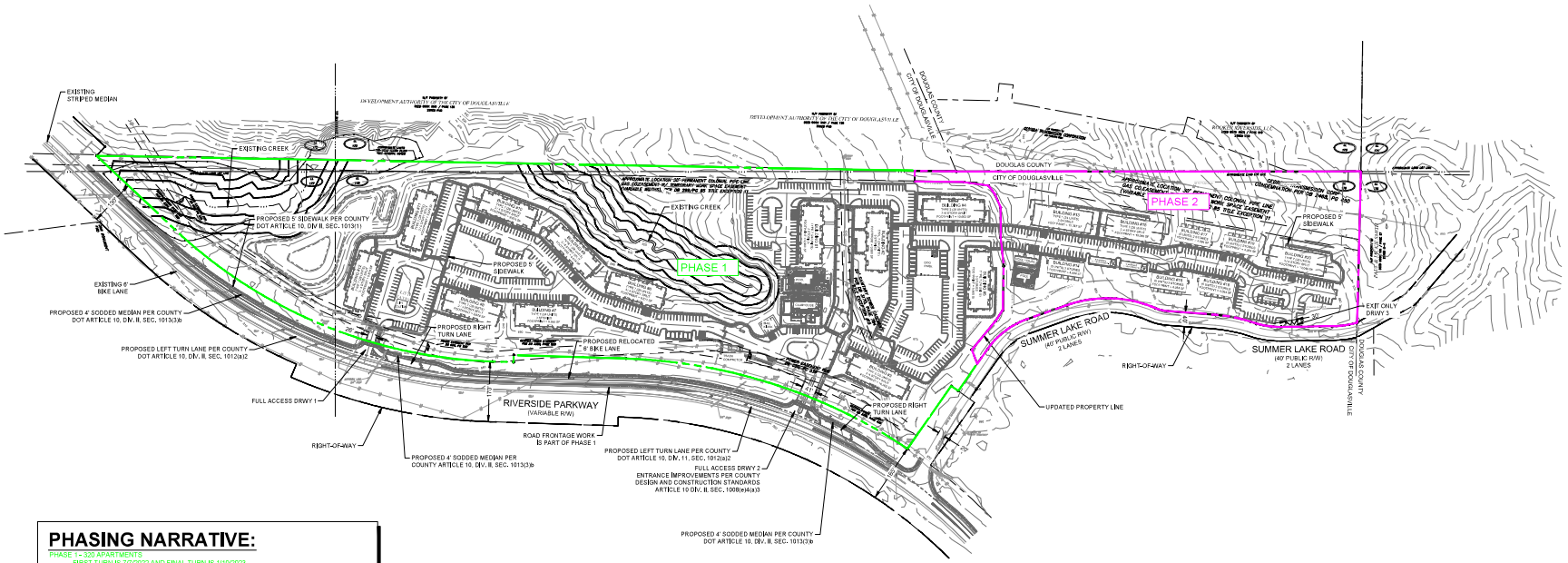
SITE LOCATION MAP
NOT TO SCALE

SITE DATA:

ADDRESS	RIVERSIDE PARKWAY @ SUMMER LAKE ROAD DOUGLASVILLE, GA 30122
SITE AREA	38.782 ACRES
ZONING	
ZONING	PRD
ZONING JURISDICTION	CITY OF DOUGLASVILLE
DEVELOPMENT STANDARDS	
TOTAL UNITS	425 UNITS
SLAB APARTMENT BLDG	10 APARTMENT BUILDINGS (145 UNITS)
3 / 4 SPLIT APARTMENT BLDG	10 APARTMENT BUILDINGS (280 UNITS)
RESIDENTIAL UNIT DENSITY	10.96 UNITS/AC
FRONT YARD	50 FEET
SIDE YARD	30 FEET
REAR YARD	30 FEET
TOTAL BUILDING FOOTPRINT AREA	171,193 SQ FT
SITE SQ FT EXCLUDING FOOTPRINTS	1,518,151 SQ FT
PARKING	
REQUIRED PARKING	795 SPACES (1.87 SP. PER UNIT)
TOTAL SPACES PROVIDED	795 SPACES
OPEN SPACE	
DOG PARK AREA	4,700 SQ FT

PARKING REQUIREMENT NOTE:

PARKING REQUIREMENT PER CITY OF DOUGLASVILLE UDO SPECIFIES 2.25 SPACES PER UNIT. AN ALTERNATIVE PARKING PLAN WAS APPROVED 10/26/2020 WHICH REDUCED PARKING COUNT TO 1.87 SPACES/UNIT.



PHASING NARRATIVE:

PHASE 1 - 320 APARTMENTS
- FIRST TURN IS 7/7/2022 AND FINAL TURN IS 1/10/2023
- DENSITY IS 11 DU/ACRE

PHASE 2 - 105 APARTMENTS
- FIRST TURN IS ESTIMATED TO OCCUR IN JUNE 2023 AND COMPLETION IN OCTOBER 2023
- DENSITY IS 11 DU/ACRE

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PROJECT
EMBLEM RIVERSIDE
A MASTER PLANNED RESIDENTIAL DEVELOPMENT

AT

RIVERSIDE PKWY @ SUMMER LAKE RD
DOUGLASVILLE, GA 30122

FOR
LENNAR MULTIFAMILY COMMUNITY
6285 BARFIELD ROAD , SUITE 300
ATLANTA, GA 30328
P: 404.819.9765

DRI #3603

REVISIONS

NO.	DATE	BY	DESCRIPTION

THIS SEAL IS ONLY VALID IF COUNTER SIGNED AND DATED WITH AN ORIGINAL SIGNATURE.

GEORGIA REGISTERED No. 37096 PROFESSIONAL ENGINEER MATTHEW E KRUCZKOWSKI

GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000066476 EXP. 06/27/2024

DRI MASTER SITE PLAN

0 75 150 300 450

SCALE: 1" = 150'
DATE: 05/20/2022
PROJECT: 20186.01

1
SHEET

Figure 4 – Site Plan

Planned Bicycle and Pedestrian Facilities

Sidewalks will be provided throughout the development.

Potential Pedestrian and Bicycle Destinations

Potential pedestrian and bicycle destinations in the vicinity of the proposed development include Sweetwater Creek and Chattahoochee River.

Planned and Programmed Improvements in Study Area

TABLE 5 – PLANNED AND PROGRAMMED IMPROVEMENTS

Item #	Project Name	From / To Points:	Sponsor	GDOT PI #	ARC ID # (TIP)	Design FY	ROW / UTL FY	CST FY
1	CHC Regional Greenway Trail - Douglas County Extension	From boundary of Waters Park to Sweetwater Creek State Park	Douglas County	0012877	DO-298	2014	2023	2025
2	Rehabilitating the 280-foot-long Riverside Parkway Bridge	From Riverside Parkway Bridge at Sweetwater Creek	Douglas County	0015072	DO-300	2017	-	2021

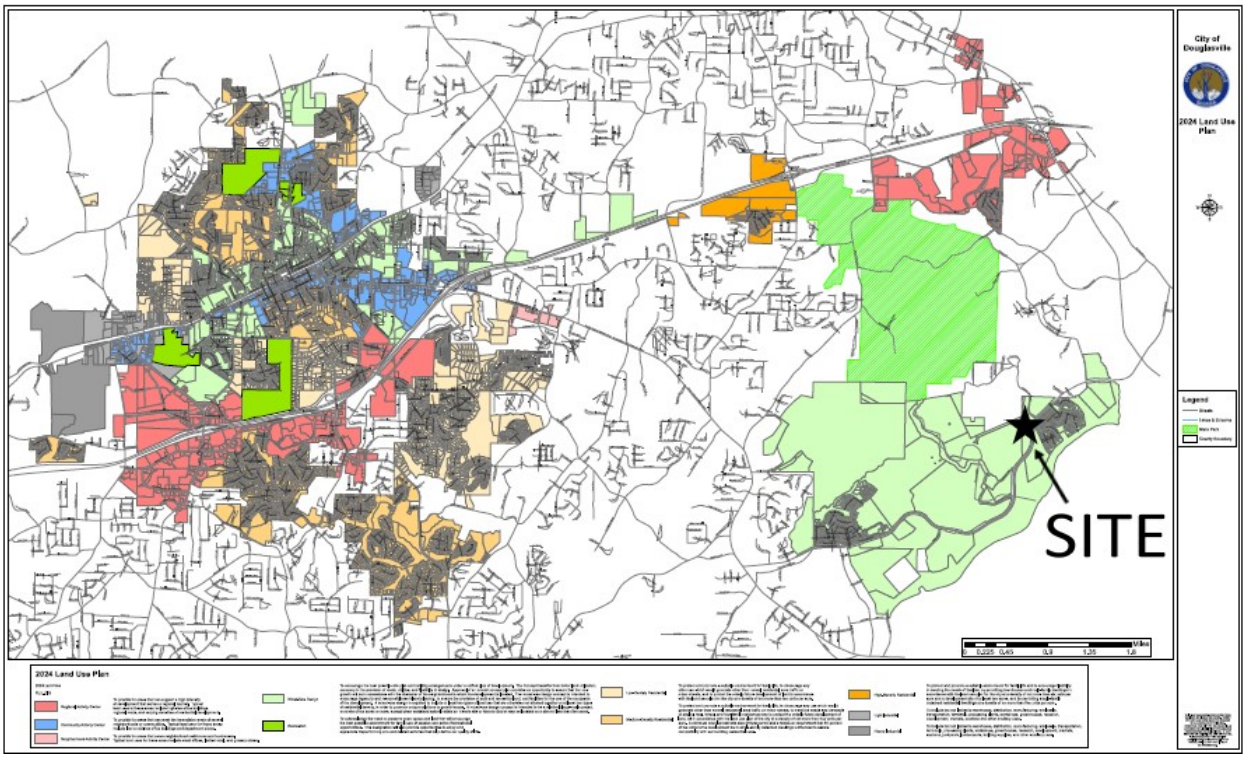
All items listed in the table above are planned to be completed by the proposed build out year (2025) of the development.

Consistency with Adopted Comprehensive Plan

The proposed development will include 425 multifamily units on 38.782 acres of land in the City of Douglasville. The site has frontage on Riverside Parkway and Summer Lake Road. Two full access driveways are proposed on Riverside Parkway and one exit only driveway is proposed on Summer Lake Road. The property has already been rezoned to Planned Residential development (PRD) land use designation.

Future Land Use Map

Future Land Use Map Zoning	Mixed Use Design (graphic included on next page; higher resolution map is included in the Appendix)
Land Use Definition for City of Douglasville	*"The mixed-use design concept is intended to encourage ingenuity and resourcefulness inland planning, to ensure the provision of park and recreation land, and facilities for the use of the occupants of the development. A mixed-use design is required to include at least two types of land use that are otherwise not allowed together or at least two types of residential density, to promote unique solutions to growth issues. A mixed-use design concept is intended to be a relatively large-scale project on a site of ten acres or more, except when contained entirely within an historic site or historic district may be located on a site not less than five acres."*
Relation to Existing Land Use Plans	The proposed residential land use development is consistent with the goals of the vision and goals listed above.
Chattahoochee River/Metropolitan River Protection Act	N/A



Project Phasing

This project has been evaluated for the complete build-out of the development in 2023.

Trip Generation

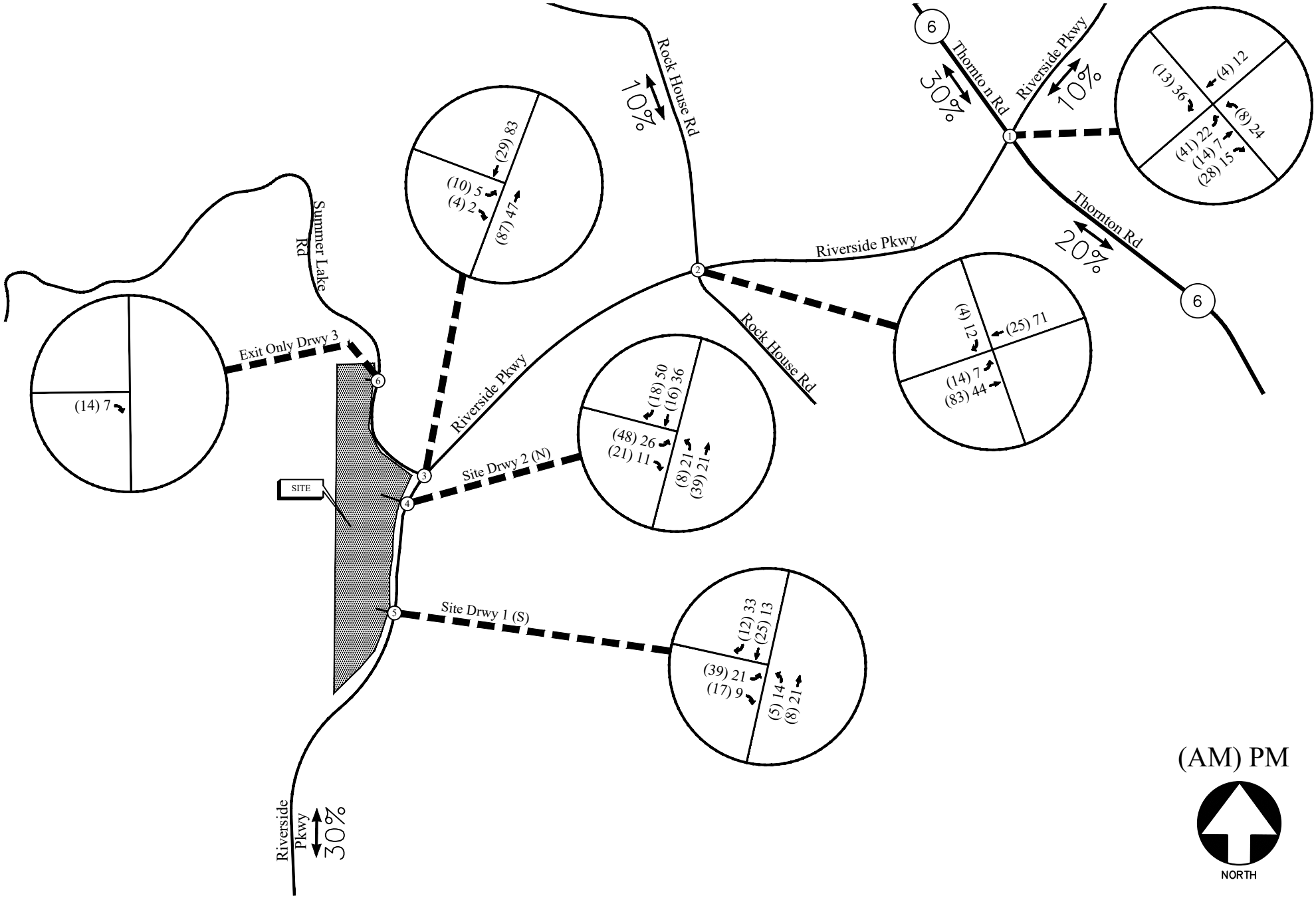
Trip generation estimates for the project were based on the rates and equations published in the 11th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Uses: *220 – Multifamily Housing (Low-Rise) - Not Close to Rail Transit* and *221 – Multifamily Housing (Mid-Rise) - Not Close to Rail Transit.* The calculated total trip generation for the proposed development is shown in Table 4.

TABLE 4 – TRIP GENERATION

Land Use	Size	AM Peak Hour			PM Peak Hour			24-Hour
		Enter	Exit	Total	Enter	Exit	Total	2-way
220 – Multifamily Housing (Low-Rise) - Not Close to Rail Transit	145 units	16	52	68	52	31	83	1,005
221 – Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	280 units	26	86	112	67	43	110	1,289
Total Site Trips		**42**	**138**	**180**	**119**	**74**	**193**	**2,294**

Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of GDOT ADT volumes and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 4, were assigned to the study area intersections based on this distribution. The outer leg trip distribution and the AM and PM peak hour new traffic generated by the site is shown in Figure 5.



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES
(PROPOSED DEVELOPMENT)

FIGURE 5
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FUTURE 2023 TRAFFIC ANALYSIS

The future 2023 traffic operations are analyzed for the "Build" and "No-Build" conditions. This provides a basis of reference for determining both the contribution of the site to overall traffic conditions and the additional improvements needed to provide sufficient site access and capacity for passing traffic. Note that survey and construction drawings would be needed to verify the feasibility and extent of additional right-of-way required for any recommended improvements.

Improvements that are identified as "System Improvements" address deficiencies that are found within the existing road network prior to any impacts from the proposed development's added traffic. Improvements that are identified as "Site Mitigation Improvements" address further impacts that are a result of the proposed development's added traffic.

Future "No-Build" Conditions

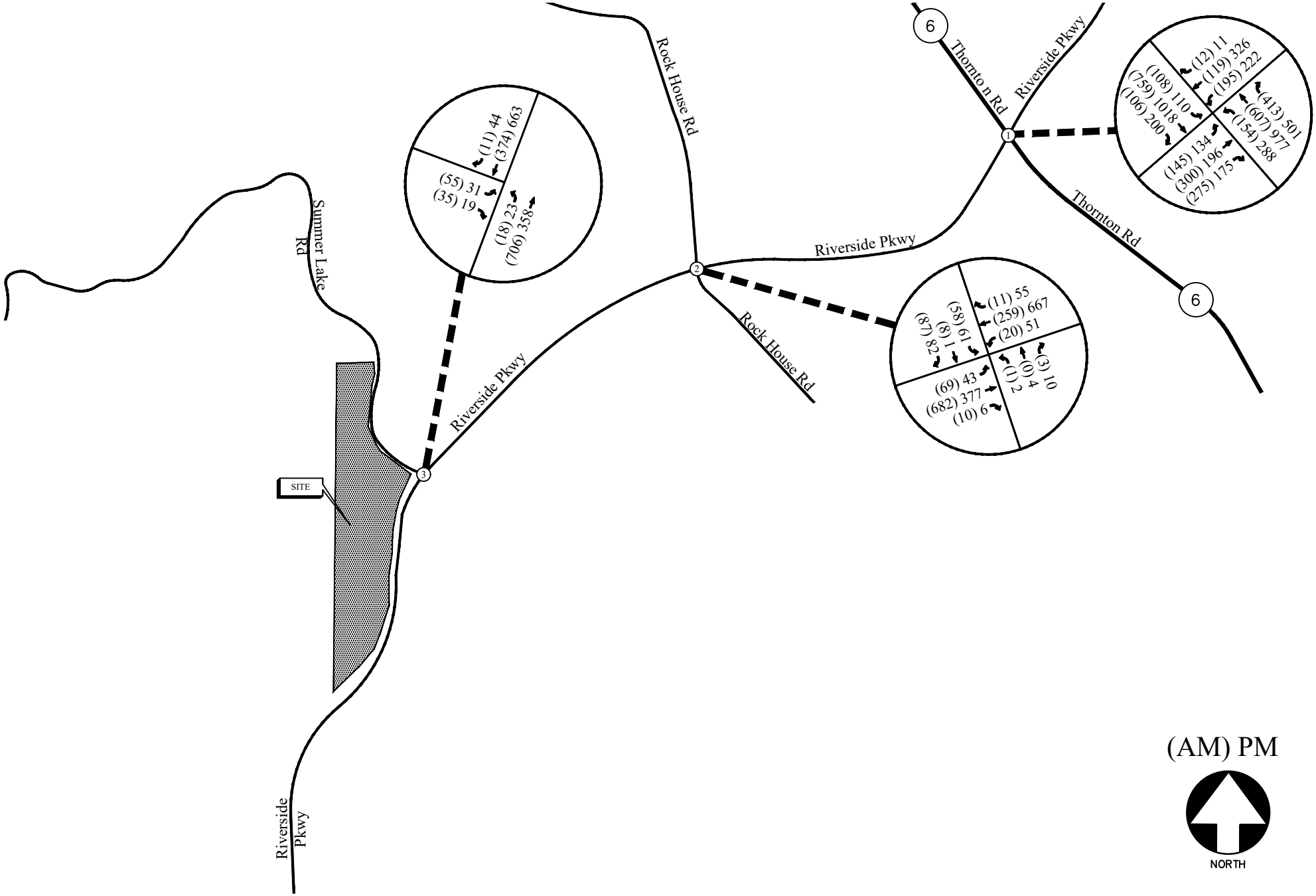
The "No-Build" (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth. The Future "No-Build" volumes consist of the existing traffic volumes (Figure 2) plus increases for annual growth of traffic.

Annual Traffic Growth

In order to evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last three (2017-2019) years revealed growth of approximately 2% in the area. This growth factor was applied to the existing traffic volumes to estimate the future year traffic volumes prior to the addition of site-generated traffic. The resulting Future "No-Build" volumes on the roadway are shown in Figure 6.

Future "Build" Conditions

The "Build" or development conditions include the estimated background traffic from the "No-Build" conditions plus the added traffic from the proposed development. In order to evaluate future traffic operations in this area, the additional traffic volumes from the site (Figure 5) were added to base traffic volumes (Figure 6) to calculate the future traffic volumes after the construction of the development. These total future traffic volumes are shown in Figure 7.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 6

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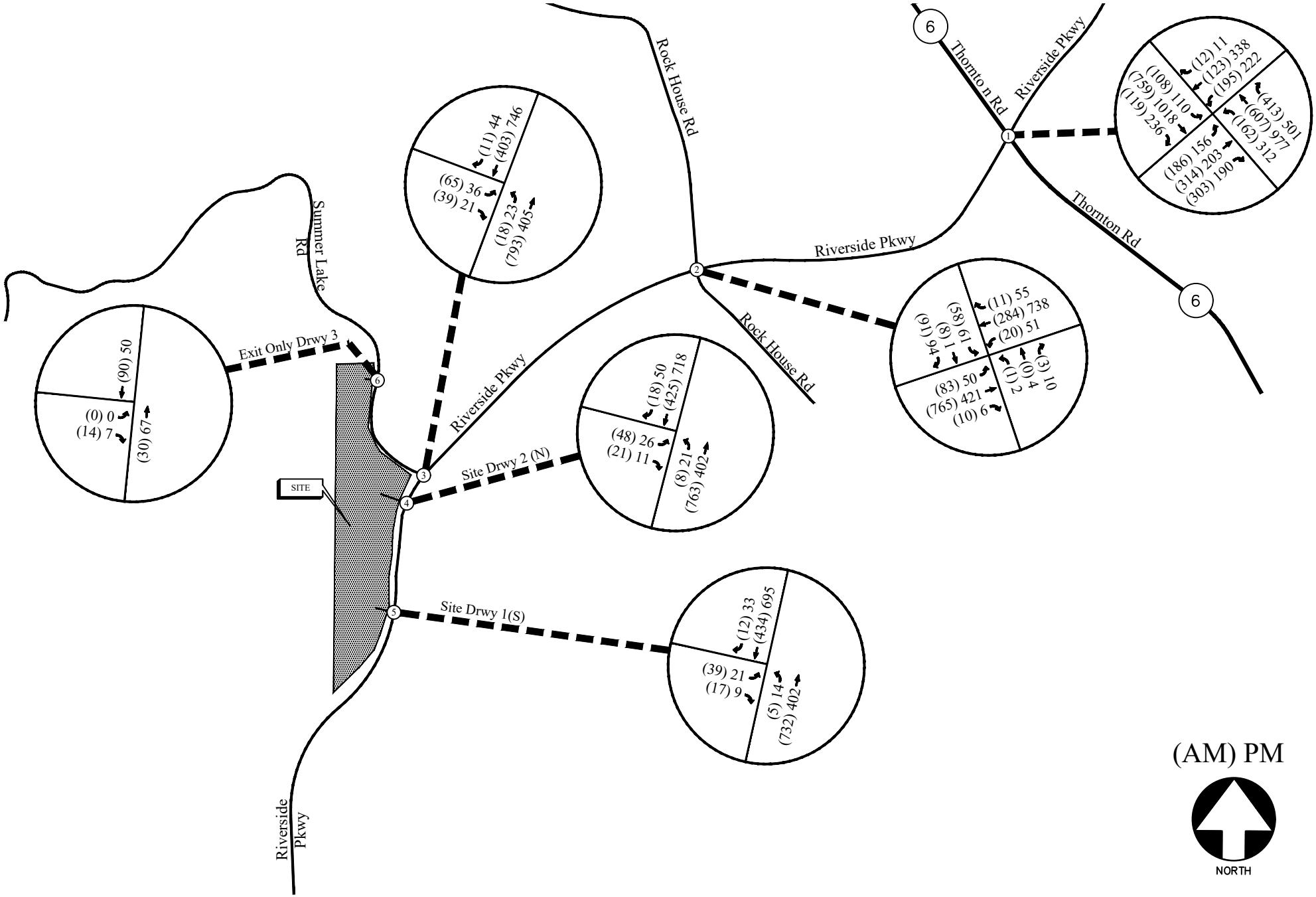


FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 7

A&R Engineering Inc.

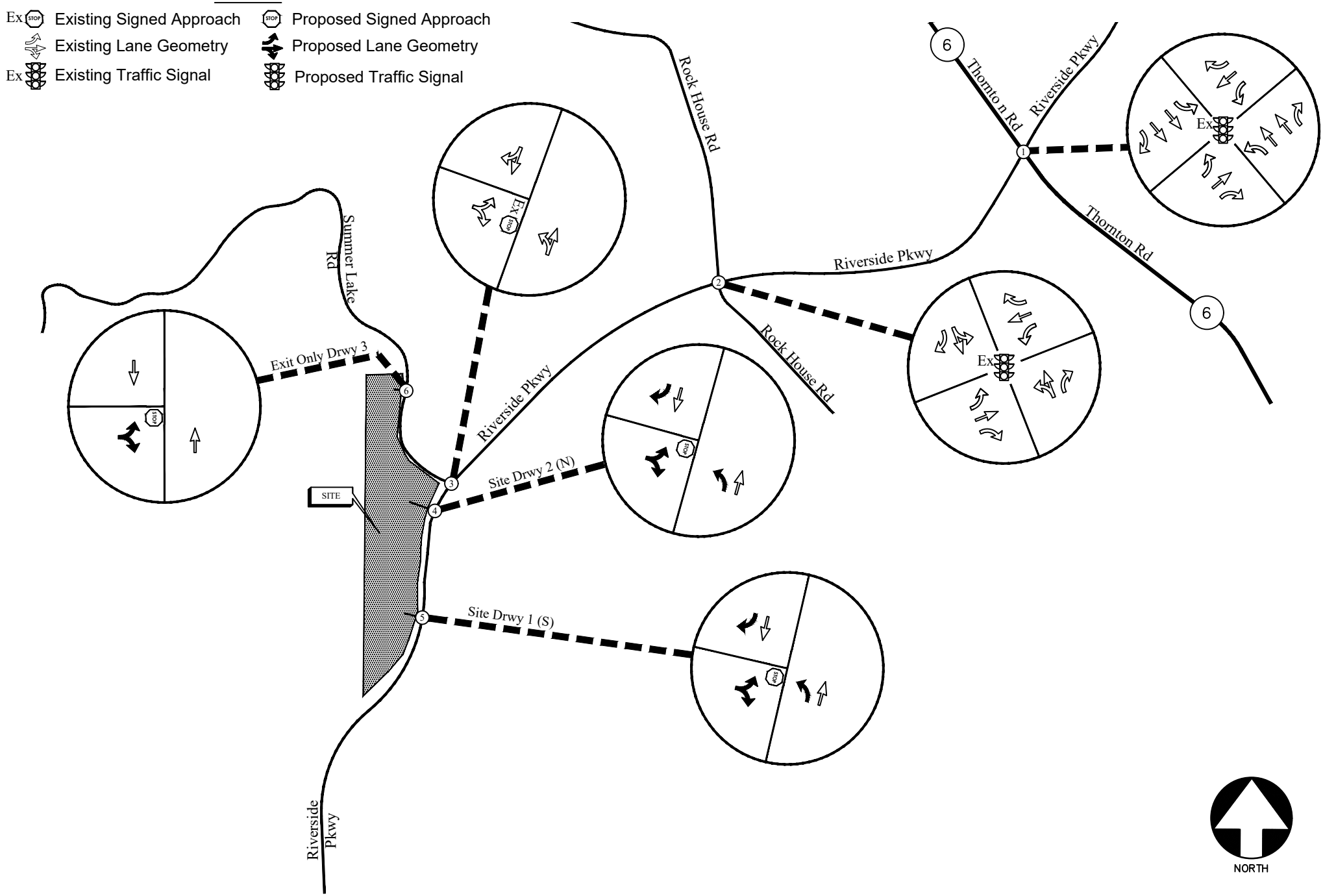
Future Traffic Operations

The future 2023 "No-Build" and "Build" traffic operations were analyzed using the volumes in Figure 7 and Figure 8, respectively. The results of the future traffic operations analysis are shown in Table 5.

TABLE 5 – FUTURE INTERSECTION OPERATIONS

	Intersection	Future Condition: LOS (Delay)				
		NO-BUILD		BUILD		LOS Standards
		AM Peak	PM Peak	AM Peak	PM Peak	
1	**SR 6 (Thornton Road) @ Riverside Parkway**	**D (39.1)**	**D (46.9)**	**D (40.9)**	**D (52.7)**	**D / D**
	-Eastbound Approach	D (52.8)	D (48.9)	D (52.0)	D (51.7)	D / D
	-Westbound Approach	D (50.5)	D (53.6)	D (51.4)	D (54.1)	D / D
	-Northbound Approach	C (32.4)	D (43.0)	D (35.8)	D (52.6)	D / D
	-Southbound Approach	C (33.9)	D (47.5)	D (35.1)	D (52.5)	D / D
2	**Riverside Parkway @ Rock House Road**	**A (6.1)**	**A (5.5)**	**A (6.2)**	**A (5.5)**	**D / D**
	-Eastbound Approach	A (3.4)	A (2.2)	A (3.9)	A (2.4)	D / D
	-Westbound Approach	A (2.1)	A (2.9)	A (2.2)	A (3.3)	D / D
	-Northbound Approach	D (48.4)	D (49.3)	D (48.4)	D (49.2)	D / D
	-Southbound Approach	D (53.1)	D (53.3)	D (53.1)	D (53.2)	D / D
3	**Riverside Parkway @ Summer Lake Road**					
	-Eastbound Approach	D (25.1)	C (22.9)	D (34.1)	D (28.9)	D / D
	-Northbound Left	A (8.2)	A (9.3)	A (8.3)	A (9.7)	-
4	**Riverside Parkway @ Site Driveway 1 (N)**	-	-	D (29.1)	D (25.3)	D / D
	-Eastbound Approach			A (8.4)	A (9.6)	-
	-Northbound Left					
5	**Riverside Parkway @ Site Driveway 2 (S)**	-	-	D (26.2)	C (23.3)	D / D
	-Eastbound Approach			A (8.4)	A (9.4)	-
	-Northbound Left					
6	**Riverside Parkway @ Exit Only Driveway**	-	-			
	-Eastbound Approach			A (8.8)	A (8.6)	D / D

The results of future traffic operations analysis indicate that all the signalized intersections are operating at overall level-of-service "D" or better during the AM and PM peak hours and the un-signalized intersection approach are operating at level of-service "D" or better in both the AM and PM peak hours. There are insignificant differences in traffic operations between the "No-Build" and "Build" conditions. Recommendations for future traffic control and lane geometry are shown in Figure 8.



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 8

A&R Engineering Inc.

CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the proposed residential development located to the northwest of Riverside Parkway and Summer Lake Road in the City of Douglasville, Georgia. The development will consist of 280 units of Multifamily Housing (Mid Rise) and 145 units of Multifamily Housing (Low Rise) land uses.

The development proposes site accesses at the following locations:

- Site Driveway 1: Full-access (northern) driveway on Riverside Parkway
- Site Driveway 2: Full-access (southern) driveway on Riverside Parkway
- Site Driveway 3: Exit only driveway on Summer Lake Road

Traffic Operations

Existing and future operations during the AM peak hour (7:00 AM – 9:00 AM) and PM peak hour (4:00 PM – 6:00 PM) before and after completion of the project were analyzed at the following intersections:

1. SR 6 (Thornton Road) at Riverside Parkway
2. Riverside Parkway at Rock House Road
3. Riverside Parkway at Summer Lake Road
4. Riverside Parkway at Site Driveway (N)
5. Riverside Parkway at Site Driveway (S)
6. Summer Lake Road at Exit Only Driveway

The analysis included the evaluation of Future operations for "No-Build" and "Build" conditions, both of which account for increases in annual growth of through traffic. The results of future traffic operations analysis indicate that all the signalized intersections are operating at overall level-of-service "D" or better during the AM and PM peak hours and the un-signalized intersection approach are operating at level of-service "D" or better in both the AM and PM peak hours. There are insignificant differences in traffic operations between the "No-Build" and "Build" conditions.

Site Access Configuration

All the site driveway intersections are recommended to be un-signalized with a STOP sign at the driveway approaches. Driveway 1 and driveway 2 are recommended to have one entering lane and one exiting lane. Driveway 3 is recommended to have one exiting lane only.

Site Mitigation Improvements

- Riverside Parkway at Site Driveway 1 (N)
    - Construction of a left turn lane and a deceleration lane on site driveway 1 (N) on Riverside Parkway for entering traffic
- Riverside Parkway at Site Driveway 2 (S)
    - Construction of a left turn lane and a deceleration lane for site driveway 2 (S) on Riverside Parkway for entering traffic

Appendix

Existing Intersection Traffic Counts

A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA
Riverside Pkwy @ SR 6 (Thornton Rd)
7-9 am | 4-6 pm

File Name : 20220176
Site Code : 20220176
Start Date : 4/21/2022
Page No : 1

Groups Printed- Cars,Buses - Trucks

	SR 6 (Thornton Rd) Northbound				SR 6 (Thornton Rd) Southbound				Riverside Pkwy Eastbound				Riverside Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	46	132	82	260	33	178	27	238	36	63	50	149	36	27	2	65	712
07:15 AM	33	155	106	294	39	180	20	239	33	67	63	163	27	25	3	55	751
07:30 AM	37	127	87	251	35	191	25	251	37	69	68	174	18	26	2	46	722
07:45 AM	44	139	98	281	27	170	32	229	37	76	83	196	58	31	4	93	799
Total	160	553	373	1086	134	719	104	957	143	275	264	682	139	109	11	259	2984
08:00 AM	39	160	93	292	20	201	24	245	41	81	68	190	74	32	3	109	836
08:15 AM	31	169	127	327	24	182	23	229	27	68	51	146	41	28	3	72	774
08:30 AM	30	149	118	297	25	169	17	211	21	64	45	130	34	31	3	68	706
08:45 AM	30	119	97	246	24	164	22	210	15	67	32	114	50	28	3	81	651
Total	130	597	435	1162	93	716	86	895	104	280	196	580	199	119	12	330	2967
*** BREAK ***																	
04:00 PM	105	194	112	411	25	236	61	322	12	35	27	74	35	79	5	119	926
04:15 PM	69	177	118	364	24	218	58	300	16	52	34	102	36	68	2	106	872
04:30 PM	70	228	114	412	17	240	49	306	27	40	37	104	47	81	1	129	951
04:45 PM	67	241	124	432	30	250	44	324	32	44	40	116	55	78	4	137	1009
Total	311	840	468	1619	96	944	212	1252	87	171	138	396	173	306	12	491	3758
05:00 PM	76	250	137	463	34	264	49	347	40	50	45	135	56	83	3	142	1087
05:15 PM	69	239	116	424	27	244	54	325	32	58	50	140	60	78	3	141	1030
05:30 PM	67	207	109	383	22	216	43	281	24	45	36	105	45	77	2	124	893
05:45 PM	63	190	100	353	18	214	41	273	20	34	26	80	35	70	1	106	812
Total	275	886	462	1623	101	938	187	1226	116	187	157	460	196	308	9	513	3822
Grand Total	876	2876	1738	5490	424	3317	589	4330	450	913	755	2118	707	842	44	1593	13531
Apprch %	16	52.4	31.7		9.8	76.6	13.6		21.2	43.1	35.6		44.4	52.9	2.8		
Total %	6.5	21.3	12.8	40.6	3.1	24.5	4.4	32	3.3	6.7	5.6	15.7	5.2	6.2	0.3	11.8	
Cars,Buses	800	2643	1616	5059	404	3044	521	3969	434	871	697	2002	661	796	37	1494	12524
% Cars,Buses	91.3	91.9	93	92.1	95.3	91.8	88.5	91.7	96.4	95.4	92.3	94.5	93.5	94.5	84.1	93.8	92.6
Trucks	76	233	122	431	20	273	68	361	16	42	58	116	46	46	7	99	1007
% Trucks	8.7	8.1	7	7.9	4.7	8.2	11.5	8.3	3.6	4.6	7.7	5.5	6.5	5.5	15.9	6.2	7.4

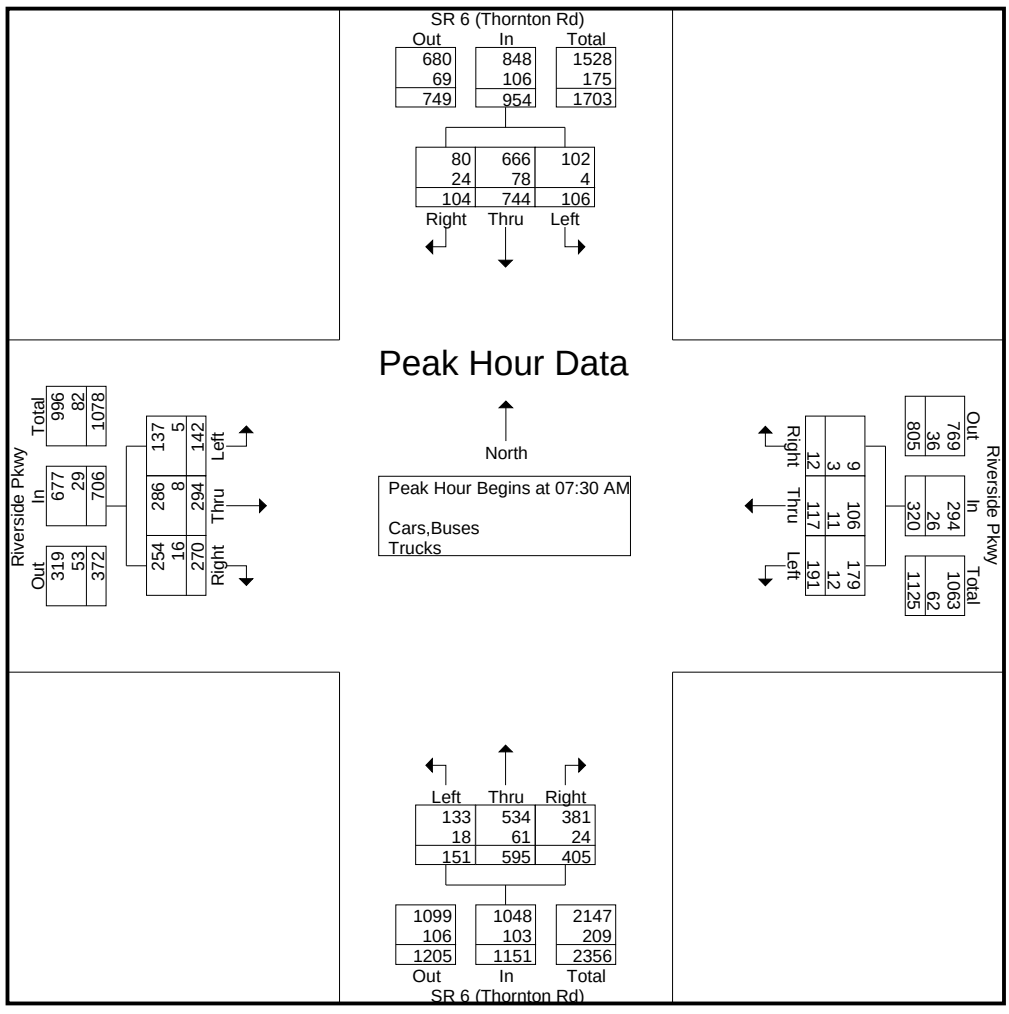
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA
Riverside Pkwy @ SR 6 (Thornton Rd)
7-9 am | 4-6 pm

File Name : 20220176
Site Code : 20220176
Start Date : 4/21/2022
Page No : 2

	SR 6 (Thornton Rd) Northbound				SR 6 (Thornton Rd) Southbound				Riverside Pkwy Eastbound				Riverside Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	37	127	87	251	**35**	191	25	**251**	37	69	68	174	18	26	2	46	722
07:45 AM	**44**	139	98	281	27	170	**32**	229	37	76	**83**	**196**	58	31	**4**	93	799
08:00 AM	39	160	93	292	20	**201**	24	245	**41**	**81**	68	190	**74**	**32**	3	**109**	**836**
08:15 AM	31	**169**	**127**	**327**	24	182	23	229	27	68	51	146	41	28	3	72	774
Total Volume	151	595	405	1151	106	744	104	954	142	294	270	706	191	117	12	320	3131
% App. Total	13.1	51.7	35.2		11.1	78	10.9		20.1	41.6	38.2		59.7	36.6	3.8		
PHF	.858	.880	.797	.880	.757	.925	.813	.950	.866	.907	.813	.901	.645	.914	.750	.734	.936
Cars,Buses	133	534	381	1048	102	666	80	848	137	286	254	677	179	106	9	294	2867
% Cars,Buses	88.1	89.7	94.1	91.1	96.2	89.5	76.9	88.9	96.5	97.3	94.1	95.9	93.7	90.6	75.0	91.9	91.6
Trucks	18	61	24	103	4	78	24	106	5	8	16	29	12	11	3	26	264
% Trucks	11.9	10.3	5.9	8.9	3.8	10.5	23.1	11.1	3.5	2.7	5.9	4.1	6.3	9.4	25.0	8.1	8.4



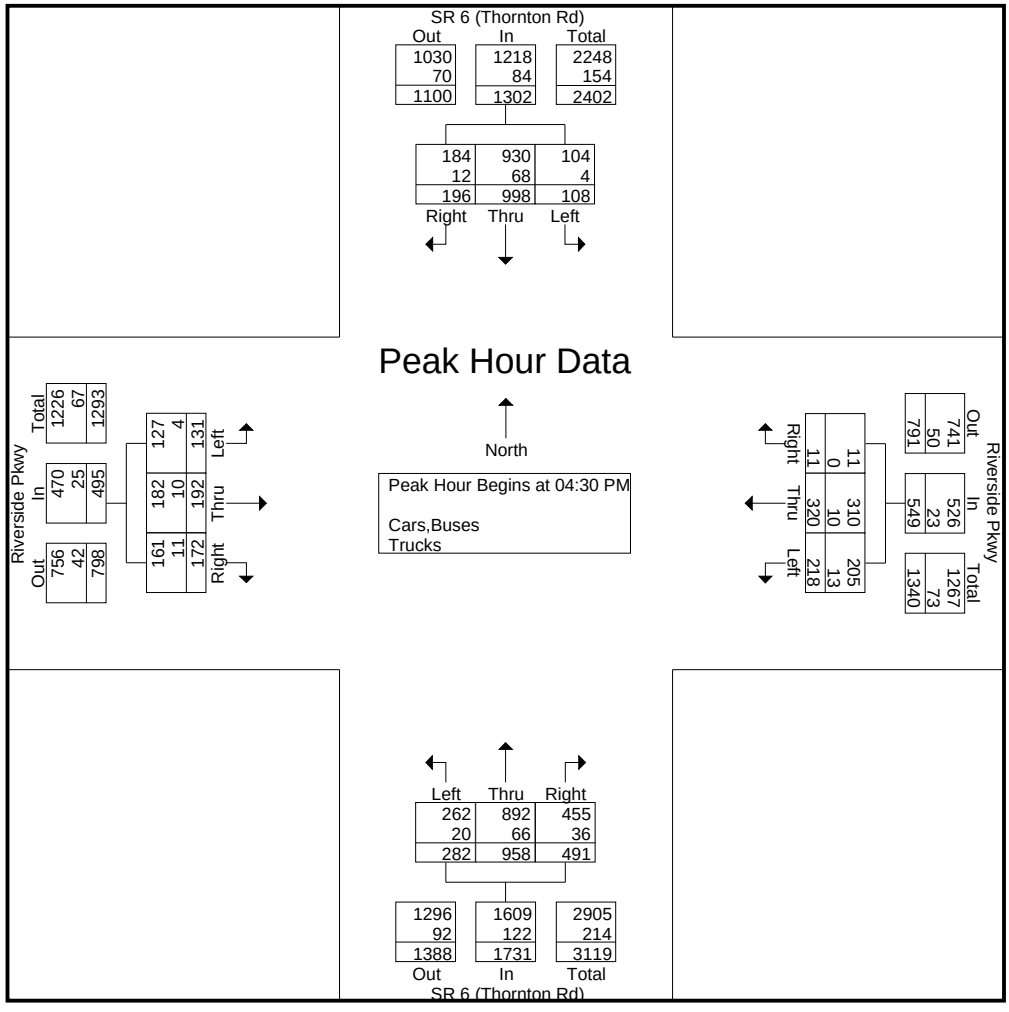
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC DATA
Riverside Pkwy @ SR 6 (Thornton Rd)
7-9 am | 4-6 pm

File Name : 20220176
Site Code : 20220176
Start Date : 4/21/2022
Page No : 3

	SR 6 (Thornton Rd) Northbound				SR 6 (Thornton Rd) Southbound				Riverside Pkwy Eastbound				Riverside Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	70	228	114	412	17	240	49	306	27	40	37	104	47	81	1	129	951
04:45 PM	67	241	124	432	30	250	44	324	32	44	40	116	55	78	**4**	137	1009
05:00 PM	**76**	**250**	**137**	**463**	**34**	**264**	49	**347**	**40**	50	45	135	56	**83**	3	**142**	**1087**
05:15 PM	69	239	116	424	27	244	**54**	325	32	**58**	**50**	**140**	**60**	78	3	141	1030
Total Volume	282	958	491	1731	108	998	196	1302	131	192	172	495	218	320	11	549	4077
% App. Total	16.3	55.3	28.4		8.3	76.7	15.1		26.5	38.8	34.7		39.7	58.3	2		
PHF	.928	.958	.896	.935	.794	.945	.907	.938	.819	.828	.860	.884	.908	.964	.688	.967	.938
Cars,Buses	262	892	455	1609	104	930	184	1218	127	182	161	470	205	310	11	526	3823
% Cars,Buses	92.9	93.1	92.7	93.0	96.3	93.2	93.9	93.5	96.9	94.8	93.6	94.9	94.0	96.9	100	95.8	93.8
Trucks	20	66	36	122	4	68	12	84	4	10	11	25	13	10	0	23	254
% Trucks	7.1	6.9	7.3	7.0	3.7	6.8	6.1	6.5	3.1	5.2	6.4	5.1	6.0	3.1	0	4.2	6.2



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2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Riverside Pkwy @ W Summer Lake Rd
7-9 am I 4-6 pm

File Name : 20220177
Site Code : 20220177
Start Date : 4/21/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Riverside Pkwy Northbound				Riverside Pkwy Southound				Summer Lake Rd Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	161	0	165	0	88	2	90	17	0	4	21	0	0	0	0	276
07:15 AM	4	140	0	144	0	104	2	106	11	0	16	27	0	0	0	0	277
07:30 AM	5	195	0	200	0	91	3	94	12	0	6	18	0	0	0	0	312
07:45 AM	5	196	0	201	0	84	4	88	14	0	8	22	0	0	0	0	311
Total	18	692	0	710	0	367	11	378	54	0	34	88	0	0	0	0	1176
08:00 AM	4	147	0	151	0	71	5	76	13	0	11	24	0	0	0	0	251
08:15 AM	5	99	0	104	0	74	4	78	9	0	4	13	0	0	0	0	195
08:30 AM	7	93	0	100	0	47	3	50	6	0	2	8	0	0	0	0	158
08:45 AM	2	78	0	80	0	54	6	60	8	0	2	10	0	0	0	0	150
Total	18	417	0	435	0	246	18	264	36	0	19	55	0	0	0	0	754
*** BREAK ***																	
04:00 PM	2	58	0	60	0	182	7	189	9	0	7	16	0	0	0	0	265
04:15 PM	7	83	0	90	0	167	12	179	7	0	3	10	0	0	0	0	279
04:30 PM	3	84	0	87	0	164	10	174	6	0	4	10	0	0	0	0	271
04:45 PM	4	90	0	94	0	175	14	189	11	0	5	16	0	0	0	0	299
Total	16	315	0	331	0	688	43	731	33	0	19	52	0	0	0	0	1114
05:00 PM	9	94	0	103	0	144	7	151	6	0	7	13	0	0	0	0	267
05:15 PM	2	84	0	86	0	143	19	162	10	0	6	16	0	0	0	0	264
05:30 PM	6	79	0	85	0	138	10	148	9	0	8	17	0	0	0	0	250
05:45 PM	5	75	0	80	0	135	11	146	8	0	5	13	0	0	0	0	239
Total	22	332	0	354	0	560	47	607	33	0	26	59	0	0	0	0	1020
Grand Total	74	1756	0	1830	0	1861	119	1980	156	0	98	254	0	0	0	0	4064
Apprch %	4	96	0		0	94	6		61.4	0	38.6		0	0	0		
Total %	1.8	43.2	0	45	0	45.8	2.9	48.7	3.8	0	2.4	6.2	0	0	0	0	

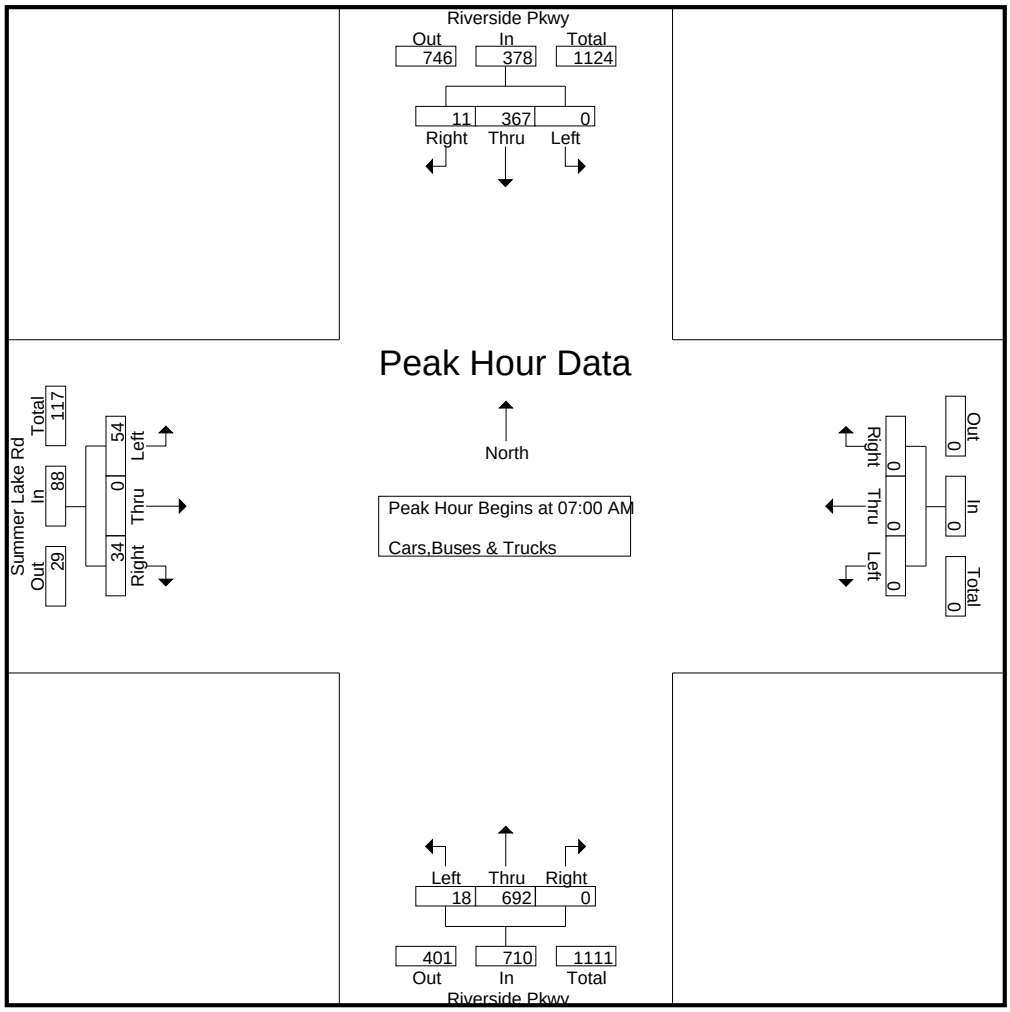
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Riverside Pkwy @ W Summer Lake Rd
7-9 am I 4-6 pm

File Name : 20220177
Site Code : 20220177
Start Date : 4/21/2022
Page No : 2

	Riverside Pkwy Northbound				Riverside Pkwy Southbound				Summer Lake Rd Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	4	161	0	165	0	88	2	90	**17**	0	4	21	0	0	0	0	276
07:15 AM	4	140	0	144	0	**104**	2	**106**	11	0	**16**	**27**	0	0	0	0	277
07:30 AM	**5**	195	0	200	0	91	3	94	12	0	6	18	0	0	0	0	**312**
07:45 AM	5	**196**	0	**201**	0	84	**4**	88	14	0	8	22	0	0	0	0	311
Total Volume	18	692	0	710	0	367	11	378	54	0	34	88	0	0	0	0	1176
% App. Total	2.5	97.5	0		0	97.1	2.9		61.4	0	38.6		0	0	0		
PHF	.900	.883	.000	.883	.000	.882	.688	.892	.794	.000	.531	.815	.000	.000	.000	.000	.942



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
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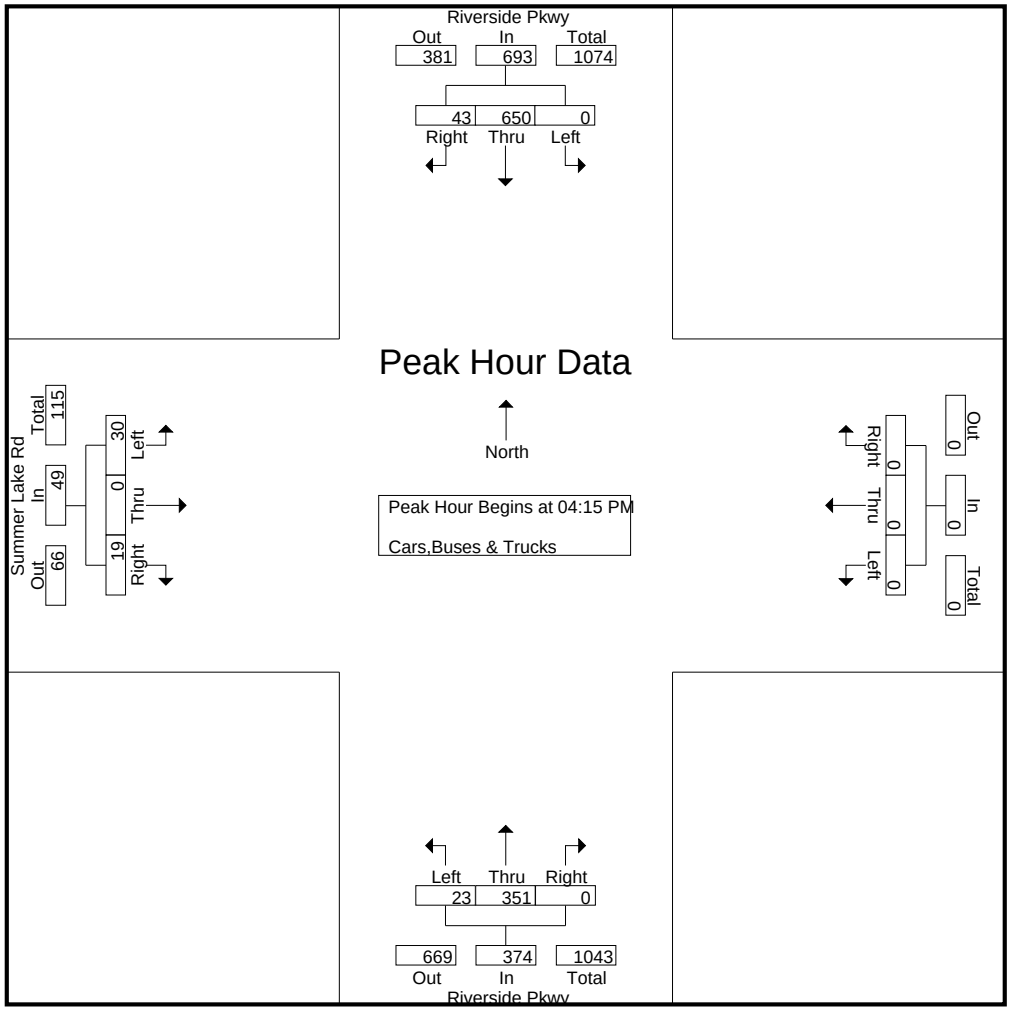
TMC Data
Riverside Pkwy @ W Summer Lake Rd
7-9 am I 4-6 pm

File Name : 20220177
Site Code : 20220177
Start Date : 4/21/2022
Page No : 3

	Riverside Pkwy Northbound				Riverside Pkwy Southbound				Summer Lake Rd Eastbound				Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	7	83	0	90	0	167	12	179	7	0	3	10	0	0	0	0	279
04:30 PM	3	84	0	87	0	164	10	174	6	0	4	10	0	0	0	0	271
04:45 PM	4	90	0	94	0	**175**	**14**	**189**	**11**	0	5	**16**	0	0	0	0	**299**
05:00 PM	**9**	**94**	0	**103**	0	144	7	151	6	0	**7**	13	0	0	0	0	267
Total Volume	23	351	0	374	0	650	43	693	30	0	19	49	0	0	0	0	1116
% App. Total	6.1	93.9	0		0	93.8	6.2		61.2	0	38.8		0	0	0		
PHF	.639	.934	.000	.908	.000	.929	.768	.917	.682	.000	.679	.766	.000	.000	.000	.000	.933



A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Riverside Pkwy @ Rock House Rd
7-9 am I 4-6 pm

File Name : 20220178
Site Code : 20220178
Start Date : 4/21/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Rock House Rd Northbound				Rock House Rd Southbound				Riverside Pkwy Eastbound				Riverside Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	4	4	7	1	11	19	3	136	1	140	2	72	6	80	243
07:15 AM	0	0	2	2	13	1	34	48	17	145	2	164	4	51	2	57	271
07:30 AM	1	0	0	1	20	4	17	41	16	159	4	179	6	61	1	68	289
07:45 AM	0	0	0	0	11	2	19	32	21	187	4	212	9	74	3	86	330
Total	1	0	6	7	51	8	81	140	57	627	11	695	21	258	12	291	1133
08:00 AM	0	0	1	1	13	1	15	29	14	178	0	192	1	68	5	74	296
08:15 AM	0	0	2	2	4	0	9	13	7	126	0	133	1	69	5	75	223
08:30 AM	0	0	0	0	6	1	12	19	5	99	0	104	2	57	5	64	187
08:45 AM	0	0	0	0	9	0	9	18	8	90	0	98	1	64	2	67	183
Total	0	0	3	3	32	2	45	79	34	493	0	527	5	258	17	280	889
*** BREAK ***																	
04:00 PM	4	1	3	8	5	0	14	19	11	78	0	89	2	195	41	238	354
04:15 PM	1	0	5	6	6	0	13	19	3	86	0	89	0	158	22	180	294
04:30 PM	0	0	3	3	10	0	21	31	14	86	1	101	1	175	20	196	331
04:45 PM	2	1	1	4	22	1	23	46	12	91	0	103	3	168	14	185	338
Total	7	2	12	21	43	1	71	115	40	341	1	382	6	696	97	799	1317
05:00 PM	0	1	2	3	17	0	18	35	8	102	2	112	22	162	9	193	343
05:15 PM	0	2	4	6	11	0	18	29	8	91	3	102	24	149	11	184	321
05:30 PM	0	0	4	4	10	3	16	29	7	88	9	104	30	141	10	181	318
05:45 PM	0	0	3	3	9	1	13	23	5	85	8	98	26	138	8	172	296
Total	0	3	13	16	47	4	65	116	28	366	22	416	102	590	38	730	1278
Grand Total	8	5	34	47	173	15	262	450	159	1827	34	2020	134	1802	164	2100	4617
Apprch %	17	10.6	72.3		38.4	3.3	58.2		7.9	90.4	1.7		6.4	85.8	7.8		
Total %	0.2	0.1	0.7	1	3.7	0.3	5.7	9.7	3.4	39.6	0.7	43.8	2.9	39	3.6	45.5	

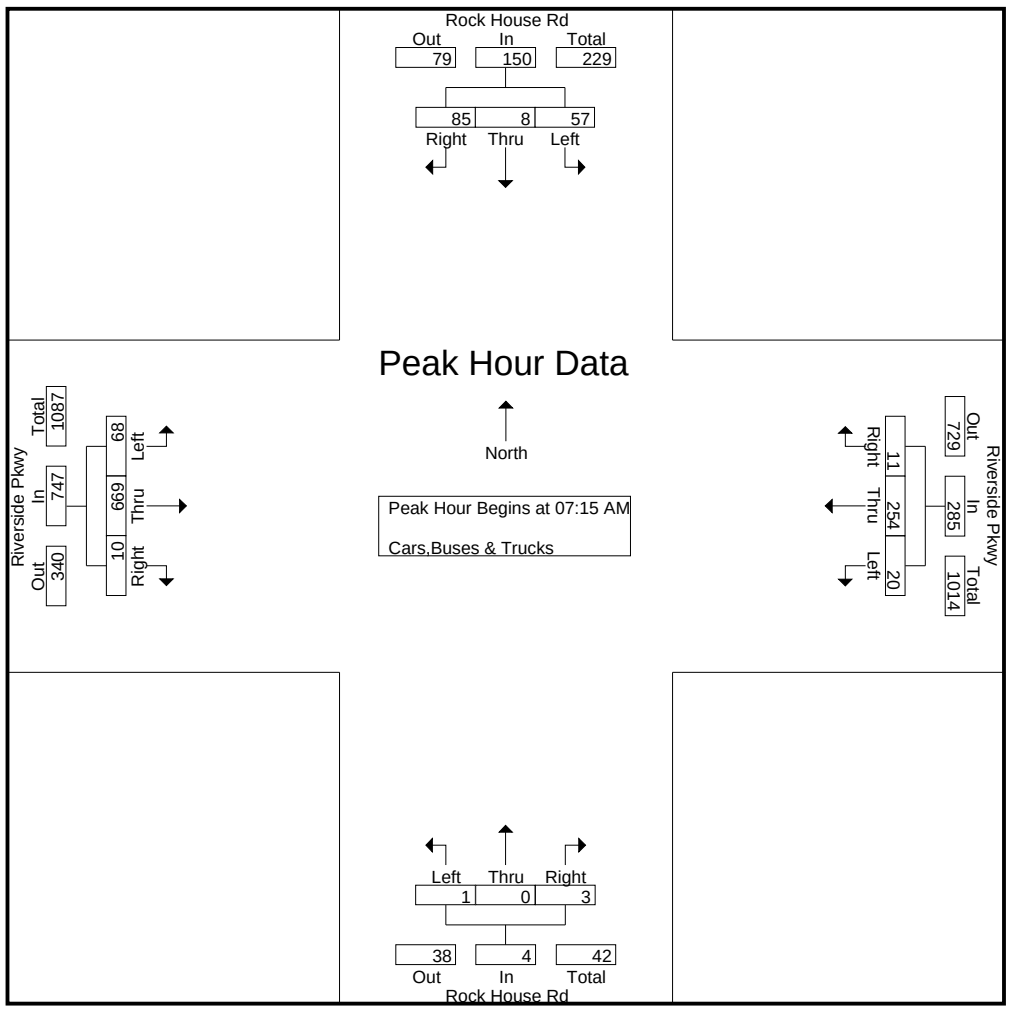
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Riverside Pkwy @ Rock House Rd
7-9 am I 4-6 pm

File Name : 20220178
Site Code : 20220178
Start Date : 4/21/2022
Page No : 2

	Rock House Rd Northbound				Rock House Rd Southbound				Riverside Pkwy Eastbound				Riverside Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	**2**	**2**	13	1	**34**	**48**	17	145	2	164	4	51	2	57	271
07:30 AM	**1**	0	0	1	**20**	**4**	17	41	16	159	**4**	179	6	61	1	68	289
07:45 AM	0	0	0	0	11	2	19	32	**21**	**187**	4	**212**	**9**	**74**	3	**86**	**330**
08:00 AM	0	0	1	1	13	1	15	29	14	178	0	192	1	68	**5**	74	296
Total Volume	1	0	3	4	57	8	85	150	68	669	10	747	20	254	11	285	1186
% App. Total	25	0	75		38	5.3	56.7		9.1	89.6	1.3		7	89.1	3.9		
PHF	.250	.000	.375	.500	.713	.500	.625	.781	.810	.894	.625	.881	.556	.858	.550	.828	.898



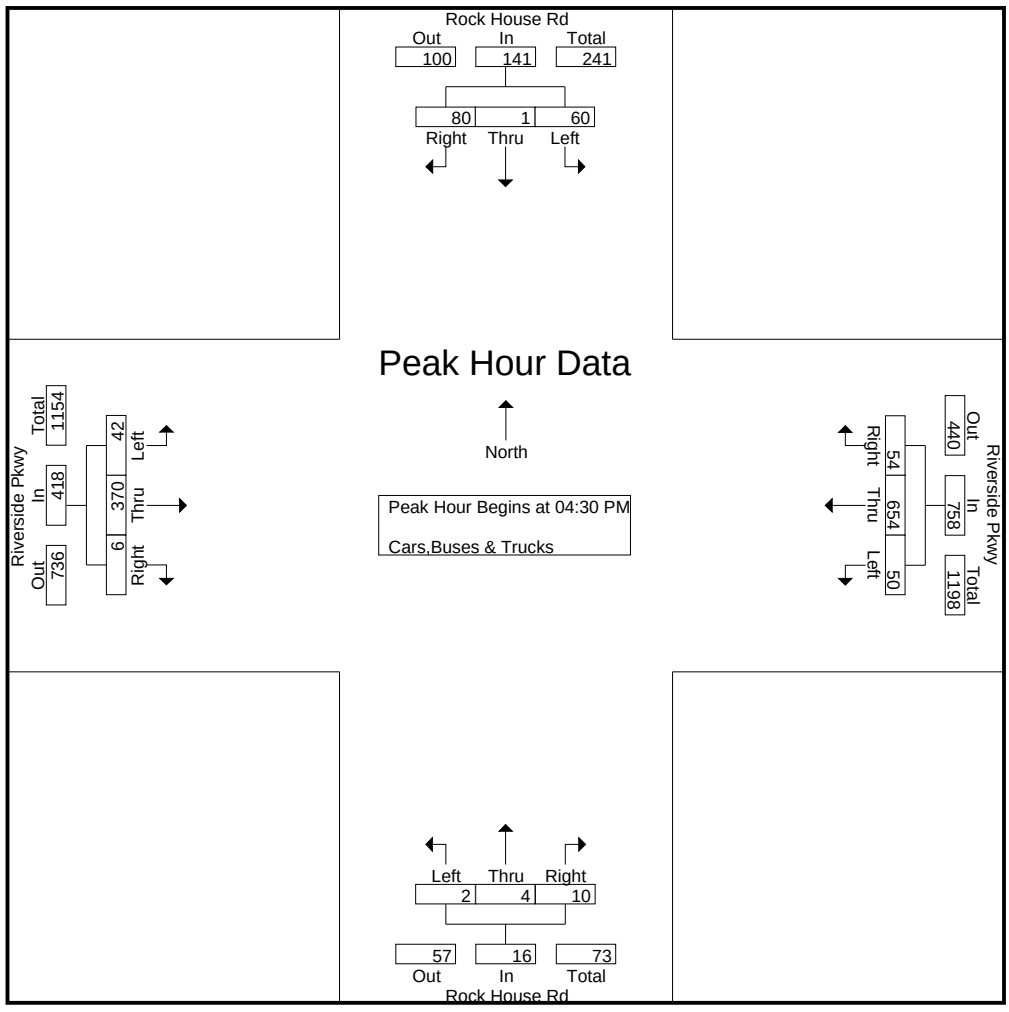
A & R Engineering, Inc.

2160 Kingston Court, Suite 'O',
Marietta, GA 30067

TMC Data
Riverside Pkwy @ Rock House Rd
7-9 am I 4-6 pm

File Name : 20220178
Site Code : 20220178
Start Date : 4/21/2022
Page No : 3

	Rock House Rd Northbound				Rock House Rd Southbound				Riverside Pkwy Eastbound				Riverside Pkwy Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	3	3	10	0	21	31	**14**	86	1	101	1	**175**	**20**	**196**	331
04:45 PM	**2**	1	1	4	**22**	**1**	**23**	**46**	12	91	0	103	3	168	14	185	338
05:00 PM	0	1	2	3	17	0	18	35	8	**102**	2	**112**	22	162	9	193	**343**
05:15 PM	0	**2**	**4**	**6**	11	0	18	29	8	91	**3**	102	**24**	149	11	184	321
Total Volume	2	4	10	16	60	1	80	141	42	370	6	418	50	654	54	758	1333
% App. Total	12.5	25	62.5		42.6	0.7	56.7		10	88.5	1.4		6.6	86.3	7.1		
PHF	.250	.500	.625	.667	.682	.250	.870	.766	.750	.907	.500	.933	.521	.934	.675	.967	.972



GRTA Letter of Understanding

LETTER OF UNDERSTANDING

April 12, 2022

Taylor Harper
LMC
6285 Barfield Road, Suite 300
Atlanta, GA 30328

RE: **Emblem Riverside, Phase II DRI (#3603)**

Dear Taylor Harper:

The purpose of this Letter of Understanding is to document the discussions during the Methodology Meeting held virtually on April 4, 2022, regarding **Emblem Riverside, Phase II DRI (#3603)** Development of Regional Impact (DRI). The *GRTA DRI Review Procedures*, as well as the inputs and parameters documented in this Letter of Understanding and the revised Methodology Meeting Packet, shall be adhered to in preparing the GRTA required Transportation Study.

PROJECT OVERVIEW

- The proposed site is located to the northwest of the intersection of Riverside Parkway and Summer Lake Road.
- The proposed development includes 425 multifamily units on 38.782 acres.
- The projected build-out is one phase to be completed by 2023.
- The proposed development includes (3) site accesses along Riverside Parkway and Summer Lake Road.
- The DRI trigger for this development is a Land Disturbance Permit (LDP).
- The vehicular trip generation is estimated to be 2,294 net daily trips based on the *ITE Trip Generation Manual 11th edition.*
- The applicant is applying for approval under GRTA's expedited Traffic Impact Study review process.

STUDY NETWORK

1. Riverside Parkway and Summer Lake Road
2. Riverside Parkway and Rock House Road
3. Riverside Parkway and SR 6 (Thornton Road)

METHODOLOGY MEETING PACKET INPUTS & PARAMETERS

- The Site Plan shall meet all the applicable requirements in Section 7.1 of the *GRTA DRI Review Procedures*.
- All Study Network intersections shall be analyzed during the AM and PM peak hours for (1) existing conditions, (2) future "no-build" conditions, and (3) future "build" conditions as specified in the *GRTA DRI Review Procedures*.
- This DRI shall be modeled and reviewed in one phase to be completed by 2023.
- The Level of Service (LOS) standard for all analysis shall be LOS D unless specified otherwise in Section 3.2.2.1. For example, a LOS E standard is allowed if the existing LOS for the intersection or approach is a LOS F.

- Default values should not be assumed in the traffic modeling. Existing conditions shall be taken into account as required in Section 3.2.2.

- The trip generation calculations in the revised Methodology Meeting Packet shall be used in the Transportation Study. Mixed-use and pass-by reductions are not allowed for this site. Pass-by reductions shall not exceed 15% of a roadway's traffic volume standard established in Appendix 7.2.

- The trip assignment approach in the revised Methodology Meeting Packet shall be utilized for all Study Network intersection movements.

- The applicant shall research TIP, STIP, RTP and GDOT's construction work program, as well as any local government and transit operator plans (SPLOST, CIP, etc.), to determine the open date, sponsor, cost of the project, funding source(s), for future roadway projects in the project vicinity. Programmed transportation projects anticipated to open on or before the Build Out year of the DRI Project shall be modeled as completed in the No-Build and Build conditions unless approved otherwise.

- A 2.0% annual traffic Background Growth Rate shall be used for all roadways.

- Capacity analysis shall be based on turning movement counts collected not more than 12-months prior to the date of the actual DRI submittal to GRTA, unless specified otherwise. As specified in Section 2.3, turning movement counts shall be collected while local schools are in session, on a Tuesday, Wednesday or Thursday (unless approved otherwise) and not during holiday periods (weeks of July 4th, Thanksgiving and +/- 5 days of Christmas).

- COVID-19: The transportation analysis shall utilize existing turning movement count data when available during COVID. All counts older than a year shall be grown by the Background Growth Rate unless approved otherwise. If new counts are required, a control count location where existing count data is available shall be used for developing traffic growth extrapolation rates. The traffic engineer shall submit the proposed growth rates to GRTA, GDOT and local government stakeholders for input and GRTA approval before submitting the Transportation Study.

ADDITIONAL REQUIREMENTS

All applicable requirements of the *GRTA DRI Review Procedures* must be met for the Transportation Study to be considered complete. The *GRTA DRI Review Procedures* are located on GRTA's DRI website: https://www.srta.ga.gov/programs-projects/dev-of-regional-impact/ Contact GRTA staff if you have any questions on these requirements.

The Transportation Study shall also include as attachments the native LOS modeling file (i.e., Synchro modeling files) as well as the modeling reports (PDFs) for all Study Network intersections for the Existing, No-Build and Build conditions for all phases. The PDF reports shall be numbered (in page headers) and organized in order according to the Study Network numbering sequence in this Letter of Understanding. The reports shall also be organized in the following sequence: *Existing condition AM, Existing condition PM, No-build condition AM, No-Build condition PM, Build condition AM, Build condition PM*. If improvements are modeled, those PDFs shall be labeled as such and follow the appropriate condition's applicable peak period.

The Transportation Study appendices shall also include all turning movement count data, regardless of if using historic data or newly collected turning movement counts.

When documenting any Queue Length impacts required in Section 3.2.3.6, the TIS Executive Summary shall also note any individual *movements* not meeting the LOS standard where the DRI Project adds trips in the Build condition and exceeds available storage capacity for that movement.

When identifying mitigations in the existing, no-build and build conditions, the mitigations identified in preceding conditions shall not be modeled as complete when conducting the LOS analysis. The same mitigation may still be proposed as mitigation in the subsequent condition but it shall not be included as completed in the default analysis. For example, a turn lane may be identified as a needed improvement in the no-build condition. The turn lane should

not be modeled as completed in the build condition. The turn lane should only be modeled as complete in the no-build with improvements condition and the build with improvements condition.

DRI REVIEW PACKAGE SUBMITTAL

GRTA will begin reviewing the DRI once the DRI Review Package is submitted and deemed complete. The DRI Review Package includes: the permitting Local Government inputting both Department of Community Affairs (DCA) forms into the DCA DRI website; and the **Traffic Engineer submittal of the GRTA Transportation Study (including LOS appendices, traffic count data and any other required attachments) and Site Plan to GRTA staff and ALL stakeholders included in the CC list of this Letter of Understanding**.

All DRI Review Packages shall be submitted electronically via email to all stakeholders in the CC list of the Letter of Understanding. If the DRI Review Package total file size is greater than 10 MB, the DRI Review Package shall be submitted via email with a FTP link provided for downloading the files.

Please contact me if you have any questions about the Letter of Understanding or the *GRTA DRI Review Procedures*.

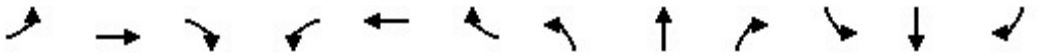
Sincerely,

Elizabeth Davis
Senior Transit and Transportation Planner

Cc:

Donald Shockey, ARC
Aries Little, ARC
December Weir, ATL/GRTA
Shayla Reed, City of Douglasville
Amy Diaz, Cobb County
Philip Shafer, Douglas County
Joshua Higgins, GDOT
Joshua M Montefusco, GDOT
Abdul Amer, A&R Engineering
Cameron Palm, LMC
Bryan McCranie, PEC
Devon Bullock, PEC

Existing Intersection Analysis



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	142	294	270	191	117	12	151	595	405	106	744	104
Future Volume (veh/h)	142	294	270	191	117	12	151	595	405	106	744	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1856	1811	1811	1767	1530	1722	1752	1811	1841	1737	1559
Adj Flow Rate, veh/h	151	313	0	203	124	0	161	633	0	113	791	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	3	6	6	9	25	12	10	6	4	11	23
Cap, veh/h	385	353		252	353		186	1503		139	1377	
Arrive On Green	0.09	0.19	0.00	0.10	0.20	0.00	0.11	0.45	0.00	0.08	0.42	0.00
Sat Flow, veh/h	1753	1856	1535	1725	1767	1296	1640	3328	1535	1753	3300	1321
Grp Volume(v), veh/h	151	313	0	203	124	0	161	633	0	113	791	0
Grp Sat Flow(s),veh/h/ln	1753	1856	1535	1725	1767	1296	1640	1664	1535	1753	1650	1321
Q Serve(g_s), s	8.2	19.7	0.0	11.4	7.2	0.0	11.6	15.5	0.0	7.6	22.0	0.0
Cycle Q Clear(g_c), s	8.2	19.7	0.0	11.4	7.2	0.0	11.6	15.5	0.0	7.6	22.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	385	353		252	353		186	1503		139	1377	
V/C Ratio(X)	0.39	0.89		0.81	0.35		0.86	0.42		0.81	0.57	
Avail Cap(c_a), veh/h	490	487		252	375		226	1503		226	1377	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.6	47.3	0.0	36.6	41.3	0.0	52.3	22.3	0.0	54.4	26.8	0.0
Incr Delay (d2), s/veh	0.7	13.8	0.0	17.2	0.6	0.0	24.4	0.9	0.0	10.9	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	10.2	0.0	5.8	3.1	0.0	5.8	5.8	0.0	3.6	8.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.2	61.1	0.0	53.8	41.9	0.0	76.7	23.2	0.0	65.3	28.6	0.0
LnGrp LOS	D	E		D	D		E	C		E	C	
Approach Vol, veh/h		464	A		327	A		794	A		904	A
Approach Delay, s/veh		52.7			49.3			34.0			33.1	
Approach LOS		D			D			C			C	

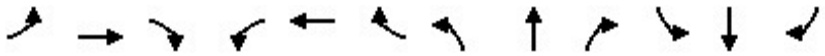
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.1	55.6	17.0	28.3	15.0	59.7	15.8	29.5
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	16.5	38.5	11.5	31.5	15.5	39.5	17.5	25.5
Max Q Clear Time (g_c+I1), s	13.6	24.0	13.4	21.7	9.6	17.5	10.2	9.2
Green Ext Time (p_c), s	0.1	6.9	0.0	1.1	0.1	6.9	0.2	0.4

Intersection Summary	
HCM 6th Ctrl Delay	39.2
HCM 6th LOS	D

Notes

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	669	10	20	254	11	1	0	3	57	8	85
Future Volume (veh/h)	68	669	10	20	254	11	1	0	3	57	8	85
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	76	743	0	22	282	0	1	0	0	63	9	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	954	1568		590	1568		167	0		141	11	
Arrive On Green	0.84	0.84	0.00	0.84	0.84	0.00	0.06	0.00	0.00	0.06	0.06	0.00
Sat Flow, veh/h	1097	1870	1585	717	1870	1585	1649	0	1585	1282	183	1585
Grp Volume(v), veh/h	76	743	0	22	282	0	1	0	0	72	0	0
Grp Sat Flow(s),veh/h/ln	1097	1870	1585	717	1870	1585	1649	0	1585	1465	0	1585
Q Serve(g_s), s	1.6	11.7	0.0	0.9	3.2	0.0	0.0	0.0	0.0	5.3	0.0	0.0
Cycle Q Clear(g_c), s	4.7	11.7	0.0	12.7	3.2	0.0	0.1	0.0	0.0	5.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.87		1.00
Lane Grp Cap(c), veh/h	954	1568		590	1568		167	0		152	0	
V/C Ratio(X)	0.08	0.47		0.04	0.18		0.01	0.00		0.47	0.00	
Avail Cap(c_a), veh/h	954	1568		590	1568		464	0		460	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.1	2.4	0.0	4.1	1.7	0.0	48.4	0.0	0.0	50.9	0.0	0.0
Incr Delay (d2), s/veh	0.2	1.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.1	0.0	0.1	0.6	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.3	3.4	0.0	4.2	1.9	0.0	48.5	0.0	0.0	53.2	0.0	0.0
LnGrp LOS	A	A		A	A		D	A		D	A	
Approach Vol, veh/h		819	A		304	A		1	A		72	A
Approach Delay, s/veh		3.3			2.1			48.5			53.2	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	97.7	12.3	97.7	12.3
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	69.0	30.0	69.0	30.0
Max Q Clear Time (g_c+I1), s	14.7	7.3	13.7	2.1
Green Ext Time (p_c), s	3.8	0.3	13.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	6.0
HCM 6th LOS	A

Notes

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

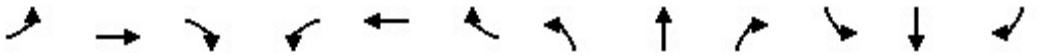
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	54	34	18	692	367	11
Future Vol, veh/h	54	34	18	692	367	11
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	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	36	19	736	390	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1170	396	402	0	-	0
Stage 1	396	-	-	-	-	-
Stage 2	774	-	-	-	-	-
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	213	653	1157	-	-	-
Stage 1	680	-	-	-	-	-
Stage 2	455	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	207	653	1157	-	-	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	661	-	-	-	-	-
Stage 2	455	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.1	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1157	-	281	-	-
HCM Lane V/C Ratio	0.017	-	0.333	-	-
HCM Control Delay (s)	8.2	0	24.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	192	172	218	320	11	282	958	491	108	998	196
Future Volume (veh/h)	131	192	172	218	320	11	282	958	491	108	998	196
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1826	1811	1811	1856	1870	1796	1796	1796	1841	1796	1811
Adj Flow Rate, veh/h	139	204	0	232	340	0	300	1019	0	115	1062	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	5	6	6	3	2	7	7	7	4	7	6
Cap, veh/h	227	287		336	379		307	1545		141	1208	
Arrive On Green	0.08	0.16	0.00	0.13	0.20	0.00	0.18	0.45	0.00	0.08	0.35	0.00
Sat Flow, veh/h	1767	1826	1535	1725	1856	1585	1711	3413	1522	1753	3413	1535
Grp Volume(v), veh/h	139	204	0	232	340	0	300	1019	0	115	1062	0
Grp Sat Flow(s),veh/h/ln	1767	1826	1535	1725	1856	1585	1711	1706	1522	1753	1706	1535
Q Serve(g_s), s	7.8	12.7	0.0	13.1	21.4	0.0	20.9	28.0	0.0	7.7	35.0	0.0
Cycle Q Clear(g_c), s	7.8	12.7	0.0	13.1	21.4	0.0	20.9	28.0	0.0	7.7	35.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	287		336	379		307	1545		141	1208	
V/C Ratio(X)	0.61	0.71		0.69	0.90		0.98	0.66		0.82	0.88	
Avail Cap(c_a), veh/h	227	373		356	487		307	1545		241	1208	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.2	48.0	0.0	35.1	46.5	0.0	49.0	25.6	0.0	54.3	36.3	0.0
Incr Delay (d2), s/veh	4.8	4.3	0.0	5.2	16.1	0.0	45.5	2.2	0.0	10.8	9.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	6.0	0.0	5.8	11.2	0.0	12.4	10.8	0.0	3.7	15.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.0	52.3	0.0	40.3	62.7	0.0	94.5	27.8	0.0	65.1	45.6	0.0
LnGrp LOS	D	D		D	E		F	C		E	D	
Approach Vol, veh/h		343	A		572	A		1319	A		1177	A
Approach Delay, s/veh		48.9			53.6			43.0			47.5	
Approach LOS		D			D			D			D	

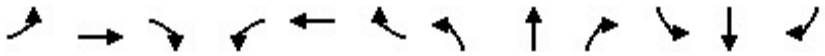
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	48.0	20.6	24.4	15.2	59.8	15.0	30.0
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	21.5	35.5	16.5	24.5	16.5	40.5	9.5	31.5
Max Q Clear Time (g_c+I1), s	22.9	37.0	15.1	14.7	9.7	30.0	9.8	23.4
Green Ext Time (p_c), s	0.0	0.0	0.1	0.6	0.1	6.8	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	46.9
HCM 6th LOS	D

Notes

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	370	6	50	654	54	2	4	10	60	1	80
Future Volume (veh/h)	42	370	6	50	654	54	2	4	10	60	1	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	381	0	52	674	0	2	4	0	62	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	644	1579		872	1579		61	84		144	1	
Arrive On Green	0.84	0.84	0.00	0.84	0.84	0.00	0.06	0.06	0.00	0.06	0.06	0.00
Sat Flow, veh/h	764	1870	1585	1002	1870	1585	317	1503	1585	1415	23	1585
Grp Volume(v), veh/h	43	381	0	52	674	0	6	0	0	63	0	0
Grp Sat Flow(s),veh/h/ln	764	1870	1585	1002	1870	1585	1820	0	1585	1438	0	1585
Q Serve(g_s), s	1.6	4.4	0.0	1.2	9.6	0.0	0.0	0.0	0.0	4.4	0.0	0.0
Cycle Q Clear(g_c), s	11.2	4.4	0.0	5.6	9.6	0.0	0.3	0.0	0.0	4.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.33		1.00	0.98		1.00
Lane Grp Cap(c), veh/h	644	1579		872	1579		145	0		145	0	
V/C Ratio(X)	0.07	0.24		0.06	0.43		0.04	0.00		0.43	0.00	
Avail Cap(c_a), veh/h	644	1579		872	1579		504	0		446	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.5	1.7	0.0	2.2	2.1	0.0	49.2	0.0	0.0	51.2	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.4	0.0	0.1	0.8	0.0	0.1	0.0	0.0	2.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.7	0.0	0.2	1.6	0.0	0.2	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.7	2.0	0.0	2.3	2.9	0.0	49.3	0.0	0.0	53.3	0.0	0.0
LnGrp LOS	A	A		A	A		D	A		D	A	
Approach Vol, veh/h		424	A		726	A		6	A		63	A
Approach Delay, s/veh		2.2			2.9			49.3			53.3	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	98.4	11.6	98.4	11.6
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	69.5	29.5	69.5	29.5
Max Q Clear Time (g_c+I1), s	11.6	6.7	13.2	2.3
Green Ext Time (p_c), s	11.8	0.2	5.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	5.5
HCM 6th LOS	A

Notes

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

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

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	19	23	351	650	43
Future Vol, veh/h	30	19	23	351	650	43
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	20	25	377	699	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1149	722	745	0	-	0
Stage 1	722	-	-	-	-	-
Stage 2	427	-	-	-	-	-
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	219	427	863	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	658	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	211	427	863	-	-	-
Mov Cap-2 Maneuver	211	-	-	-	-	-
Stage 1	463	-	-	-	-	-
Stage 2	658	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.2	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	863	-	262	-	-
HCM Lane V/C Ratio	0.029	-	0.201	-	-
HCM Control Delay (s)	9.3	0	22.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Future “No-Build” Intersection Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	145	300	275	195	119	12	154	607	413	108	759	106
Future Volume (veh/h)	145	300	275	195	119	12	154	607	413	108	759	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1856	1811	1811	1767	1530	1722	1752	1811	1841	1737	1559
Adj Flow Rate, veh/h	154	319	0	207	127	0	164	646	0	115	807	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	3	6	6	9	25	12	10	6	4	11	23
Cap, veh/h	387	359		252	357		191	1487		142	1357	
Arrive On Green	0.09	0.19	0.00	0.10	0.20	0.00	0.12	0.45	0.00	0.08	0.41	0.00
Sat Flow, veh/h	1753	1856	1535	1725	1767	1296	1640	3328	1535	1753	3300	1321
Grp Volume(v), veh/h	154	319	0	207	127	0	164	646	0	115	807	0
Grp Sat Flow(s),veh/h/ln	1753	1856	1535	1725	1767	1296	1640	1664	1535	1753	1650	1321
Q Serve(g_s), s	8.3	20.1	0.0	11.5	7.4	0.0	11.8	16.0	0.0	7.7	22.9	0.0
Cycle Q Clear(g_c), s	8.3	20.1	0.0	11.5	7.4	0.0	11.8	16.0	0.0	7.7	22.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	387	359		252	357		191	1487		142	1357	
V/C Ratio(X)	0.40	0.89		0.82	0.36		0.86	0.43		0.81	0.59	
Avail Cap(c_a), veh/h	490	487		252	375		294	1487		299	1357	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	34.2	47.1	0.0	36.7	41.2	0.0	52.1	22.8	0.0	54.3	27.5	0.0
Incr Delay (d2), s/veh	0.7	14.3	0.0	19.2	0.6	0.0	14.5	0.9	0.0	10.5	1.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	10.4	0.0	6.1	3.2	0.0	5.4	6.0	0.0	3.7	8.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.9	61.5	0.0	55.8	41.8	0.0	66.6	23.7	0.0	64.8	29.5	0.0
LnGrp LOS	C	E		E	D		E	C		E	C	
Approach Vol, veh/h		473	A		334	A		810	A		922	A
Approach Delay, s/veh		52.8			50.5			32.4			33.9	
Approach LOS		D			D			C			C	

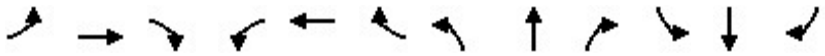
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.5	54.8	17.0	28.7	15.2	59.1	16.0	29.7
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	21.5	33.5	11.5	31.5	20.5	34.5	17.5	25.5
Max Q Clear Time (g_c+I1), s	13.8	24.9	13.5	22.1	9.7	18.0	10.3	9.4
Green Ext Time (p_c), s	0.2	4.8	0.0	1.1	0.2	6.1	0.2	0.5

Intersection Summary	
HCM 6th Ctrl Delay	39.1
HCM 6th LOS	D

Notes

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	682	10	20	259	11	1	0	3	58	8	87
Future Volume (veh/h)	69	682	10	20	259	11	1	0	3	58	8	87
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	77	758	0	22	288	0	1	0	0	64	9	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	947	1566		579	1566		169	0		142	11	
Arrive On Green	0.84	0.84	0.00	0.84	0.84	0.00	0.06	0.00	0.00	0.06	0.06	0.00
Sat Flow, veh/h	1091	1870	1585	707	1870	1585	1647	0	1585	1284	180	1585
Grp Volume(v), veh/h	77	758	0	22	288	0	1	0	0	73	0	0
Grp Sat Flow(s),veh/h/ln	1091	1870	1585	707	1870	1585	1647	0	1585	1464	0	1585
Q Serve(g_s), s	1.6	12.2	0.0	1.0	3.3	0.0	0.0	0.0	0.0	5.3	0.0	0.0
Cycle Q Clear(g_c), s	4.9	12.2	0.0	13.2	3.3	0.0	0.1	0.0	0.0	5.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.88		1.00
Lane Grp Cap(c), veh/h	947	1566		579	1566		169	0		153	0	
V/C Ratio(X)	0.08	0.48		0.04	0.18		0.01	0.00		0.48	0.00	
Avail Cap(c_a), veh/h	947	1566		579	1566		464	0		460	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.2	2.4	0.0	4.2	1.7	0.0	48.4	0.0	0.0	50.9	0.0	0.0
Incr Delay (d2), s/veh	0.2	1.1	0.0	0.1	0.3	0.0	0.0	0.0	0.0	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.2	0.0	0.1	0.6	0.0	0.0	0.0	0.0	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.4	3.5	0.0	4.4	2.0	0.0	48.4	0.0	0.0	53.1	0.0	0.0
LnGrp LOS	A	A		A	A		D	A		D	A	
Approach Vol, veh/h		835	A		310	A		1	A		73	A
Approach Delay, s/veh		3.4			2.1			48.4			53.1	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	97.6	12.4	97.6	12.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	69.0	30.0	69.0	30.0
Max Q Clear Time (g_c+I1), s	15.2	7.4	14.2	2.1
Green Ext Time (p_c), s	3.9	0.3	14.4	0.0

Intersection Summary	
HCM 6th Ctrl Delay	6.1
HCM 6th LOS	A

Notes

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

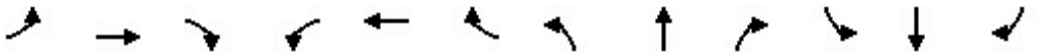
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	55	35	18	706	374	11
Future Vol, veh/h	55	35	18	706	374	11
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	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	59	37	19	751	398	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1193	404	410	0	-	0
Stage 1	404	-	-	-	-	-
Stage 2	789	-	-	-	-	-
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	206	647	1149	-	-	-
Stage 1	674	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	200	647	1149	-	-	-
Mov Cap-2 Maneuver	200	-	-	-	-	-
Stage 1	655	-	-	-	-	-
Stage 2	448	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.1	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1149	-	273	-	-
HCM Lane V/C Ratio	0.017	-	0.351	-	-
HCM Control Delay (s)	8.2	0	25.1	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.5	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	196	175	222	326	11	288	977	501	110	1018	200
Future Volume (veh/h)	134	196	175	222	326	11	288	977	501	110	1018	200
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1826	1811	1811	1856	1870	1796	1796	1796	1841	1796	1811
Adj Flow Rate, veh/h	143	209	0	236	347	0	306	1039	0	117	1083	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	5	6	6	3	2	7	7	7	4	7	6
Cap, veh/h	226	290		338	386		307	1529		143	1196	
Arrive On Green	0.08	0.16	0.00	0.13	0.21	0.00	0.18	0.45	0.00	0.08	0.35	0.00
Sat Flow, veh/h	1767	1826	1535	1725	1856	1585	1711	3413	1522	1753	3413	1535
Grp Volume(v), veh/h	143	209	0	236	347	0	306	1039	0	117	1083	0
Grp Sat Flow(s),veh/h/ln	1767	1826	1535	1725	1856	1585	1711	1706	1522	1753	1706	1535
Q Serve(g_s), s	8.1	13.0	0.0	13.2	21.9	0.0	21.5	29.0	0.0	7.9	36.2	0.0
Cycle Q Clear(g_c), s	8.1	13.0	0.0	13.2	21.9	0.0	21.5	29.0	0.0	7.9	36.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	290		338	386		307	1529		143	1196	
V/C Ratio(X)	0.63	0.72		0.70	0.90		1.00	0.68		0.82	0.91	
Avail Cap(c_a), veh/h	226	358		368	487		307	1529		241	1196	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.1	47.9	0.0	34.9	46.3	0.0	49.2	26.3	0.0	54.2	37.1	0.0
Incr Delay (d2), s/veh	5.6	5.4	0.0	5.2	16.7	0.0	50.9	2.5	0.0	10.7	11.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	6.2	0.0	5.9	11.5	0.0	13.0	11.3	0.0	3.8	15.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.7	53.3	0.0	40.1	63.1	0.0	100.2	28.7	0.0	64.9	48.5	0.0
LnGrp LOS	D	D		D	E		F	C		E	D	
Approach Vol, veh/h		352	A		583	A		1345	A		1200	A
Approach Delay, s/veh		49.8			53.7			45.0			50.1	
Approach LOS		D			D			D			D	

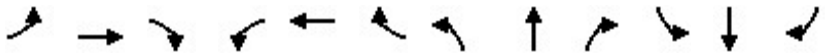
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	47.6	20.9	24.6	15.3	59.3	15.0	30.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	21.5	35.5	17.5	23.5	16.5	40.5	9.5	31.5
Max Q Clear Time (g_c+I1), s	23.5	38.2	15.2	15.0	9.9	31.0	10.1	23.9
Green Ext Time (p_c), s	0.0	0.0	0.1	0.6	0.1	6.4	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	48.7
HCM 6th LOS	D

Notes

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	377	6	51	667	55	2	4	10	61	1	82
Future Volume (veh/h)	43	377	6	51	667	55	2	4	10	61	1	82
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	389	0	53	688	0	2	4	0	63	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	633	1578		864	1578		62	85		145	1	
Arrive On Green	0.84	0.84	0.00	0.84	0.84	0.00	0.06	0.06	0.00	0.06	0.06	0.00
Sat Flow, veh/h	755	1870	1585	995	1870	1585	319	1501	1585	1415	22	1585
Grp Volume(v), veh/h	44	389	0	53	688	0	6	0	0	64	0	0
Grp Sat Flow(s),veh/h/ln	755	1870	1585	995	1870	1585	1820	0	1585	1437	0	1585
Q Serve(g_s), s	1.7	4.5	0.0	1.2	10.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0
Cycle Q Clear(g_c), s	11.7	4.5	0.0	5.7	10.0	0.0	0.3	0.0	0.0	4.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.33		1.00	0.98		1.00
Lane Grp Cap(c), veh/h	633	1578		864	1578		147	0		146	0	
V/C Ratio(X)	0.07	0.25		0.06	0.44		0.04	0.00		0.44	0.00	
Avail Cap(c_a), veh/h	633	1578		864	1578		504	0		446	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	3.6	1.7	0.0	2.3	2.1	0.0	49.1	0.0	0.0	51.2	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.4	0.0	0.1	0.9	0.0	0.1	0.0	0.0	2.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.8	0.0	0.2	1.7	0.0	0.2	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	3.8	2.1	0.0	2.4	3.0	0.0	49.2	0.0	0.0	53.2	0.0	0.0
LnGrp LOS	A	A		A	A		D	A		D	A	
Approach Vol, veh/h		433	A		741	A		6	A		64	A
Approach Delay, s/veh		2.3			3.0			49.2			53.2	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	98.3	11.7	98.3	11.7
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	69.5	29.5	69.5	29.5
Max Q Clear Time (g_c+I1), s	12.0	6.8	13.7	2.3
Green Ext Time (p_c), s	12.2	0.2	5.8	0.0

Intersection Summary	
HCM 6th Ctrl Delay	5.5
HCM 6th LOS	A

Notes

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

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

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	19	23	358	663	44
Future Vol, veh/h	31	19	23	358	663	44
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	33	20	25	385	713	47

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1172	737	760	0	-	0
Stage 1	737	-	-	-	-	-
Stage 2	435	-	-	-	-	-
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	213	418	852	-	-	-
Stage 1	473	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	205	418	852	-	-	-
Mov Cap-2 Maneuver	205	-	-	-	-	-
Stage 1	455	-	-	-	-	-
Stage 2	653	-	-	-	-	-

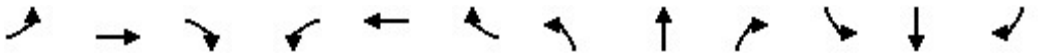
Approach	EB	NB	SB
HCM Control Delay, s	22.9	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	852	-	254	-	-
HCM Lane V/C Ratio	0.029	-	0.212	-	-
HCM Control Delay (s)	9.4	0	22.9	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

Future “Build” Intersections Analysis

HCM 6th Signalized Intersection Summary
1: SR 6 (Thornton Rd) & Riverside Pkwy

05/25/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	314	303	195	123	12	162	607	413	108	759	119
Future Volume (veh/h)	186	314	303	195	123	12	162	607	413	108	759	119
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1856	1811	1811	1767	1530	1722	1752	1811	1841	1737	1559
Adj Flow Rate, veh/h	198	334	0	207	131	0	172	646	0	115	807	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	3	6	6	9	25	12	10	6	4	11	23
Cap, veh/h	403	373		251	334		197	1462		141	1319	
Arrive On Green	0.11	0.20	0.00	0.10	0.19	0.00	0.12	0.44	0.00	0.08	0.40	0.00
Sat Flow, veh/h	1753	1856	1535	1725	1767	1296	1640	3328	1535	1753	3300	1321
Grp Volume(v), veh/h	198	334	0	207	131	0	172	646	0	115	807	0
Grp Sat Flow(s),veh/h/ln	1753	1856	1535	1725	1767	1296	1640	1664	1535	1753	1650	1321
Q Serve(g_s), s	10.7	21.0	0.0	11.5	7.8	0.0	12.4	16.2	0.0	7.7	23.3	0.0
Cycle Q Clear(g_c), s	10.7	21.0	0.0	11.5	7.8	0.0	12.4	16.2	0.0	7.7	23.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	403	373		251	334		197	1462		141	1319	
V/C Ratio(X)	0.49	0.89		0.82	0.39		0.87	0.44		0.82	0.61	
Avail Cap(c_a), veh/h	470	487		251	375		226	1462		226	1319	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.7	46.7	0.0	37.1	42.6	0.0	51.9	23.4	0.0	54.3	28.6	0.0
Incr Delay (d2), s/veh	0.9	15.6	0.0	19.4	0.7	0.0	26.9	1.0	0.0	11.4	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	11.0	0.0	6.1	3.4	0.0	6.3	6.1	0.0	3.7	8.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	62.3	0.0	56.4	43.3	0.0	78.8	24.4	0.0	65.7	30.8	0.0
LnGrp LOS	C	E		E	D		E	C		E	C	
Approach Vol, veh/h		532	A		338	A		818	A		922	A
Approach Delay, s/veh		52.0			51.4			35.8			35.1	
Approach LOS		D			D			D			D	

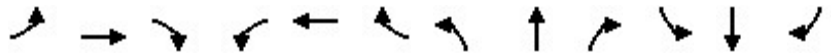
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.9	53.4	17.0	29.6	15.1	58.2	18.4	28.2
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	16.5	38.5	11.5	31.5	15.5	39.5	17.5	25.5
Max Q Clear Time (g_c+I1), s	14.4	25.3	13.5	23.0	9.7	18.2	12.7	9.8
Green Ext Time (p_c), s	0.1	6.6	0.0	1.1	0.1	6.9	0.2	0.5

Intersection Summary	
HCM 6th Ctrl Delay	40.9
HCM 6th LOS	D

Notes

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	765	10	20	284	11	1	0	3	58	8	91
Future Volume (veh/h)	83	765	10	20	284	11	1	0	3	58	8	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	92	850	0	22	316	0	1	0	0	64	9	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	921	1566		521	1566		169	0		142	11	
Arrive On Green	0.84	0.84	0.00	0.84	0.84	0.00	0.06	0.00	0.00	0.06	0.06	0.00
Sat Flow, veh/h	1064	1870	1585	649	1870	1585	1647	0	1585	1284	180	1585
Grp Volume(v), veh/h	92	850	0	22	316	0	1	0	0	73	0	0
Grp Sat Flow(s),veh/h/ln	1064	1870	1585	649	1870	1585	1647	0	1585	1464	0	1585
Q Serve(g_s), s	2.0	14.9	0.0	1.2	3.6	0.0	0.0	0.0	0.0	5.3	0.0	0.0
Cycle Q Clear(g_c), s	5.7	14.9	0.0	16.1	3.6	0.0	0.1	0.0	0.0	5.4	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	0.88		1.00
Lane Grp Cap(c), veh/h	921	1566		521	1566		169	0		153	0	
V/C Ratio(X)	0.10	0.54		0.04	0.20		0.01	0.00		0.48	0.00	
Avail Cap(c_a), veh/h	921	1566		521	1566		464	0		460	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	2.3	2.7	0.0	5.1	1.8	0.0	48.4	0.0	0.0	50.9	0.0	0.0
Incr Delay (d2), s/veh	0.2	1.4	0.0	0.2	0.3	0.0	0.0	0.0	0.0	2.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.8	0.0	0.1	0.7	0.0	0.0	0.0	0.0	2.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.5	4.0	0.0	5.2	2.0	0.0	48.4	0.0	0.0	53.1	0.0	0.0
LnGrp LOS	A	A		A	A		D	A		D	A	
Approach Vol, veh/h		942	A		338	A		1	A		73	A
Approach Delay, s/veh		3.9			2.2			48.4			53.1	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	97.6	12.4	97.6	12.4
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	69.0	30.0	69.0	30.0
Max Q Clear Time (g_c+I1), s	18.1	7.4	16.9	2.1
Green Ext Time (p_c), s	4.3	0.3	17.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	6.2
HCM 6th LOS	A

Notes

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

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

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	65	39	18	793	403	11
Future Vol, veh/h	65	39	18	793	403	11
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	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	41	19	844	429	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1317	435	441	0	-	0
Stage 1	435	-	-	-	-	-
Stage 2	882	-	-	-	-	-
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	174	621	1119	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	405	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	168	621	1119	-	-	-
Mov Cap-2 Maneuver	168	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	405	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.1	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1119	-	231	-	-
HCM Lane V/C Ratio	0.017	-	0.479	-	-
HCM Control Delay (s)	8.3	0	34.1	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	2.4	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	21	8	763	425	18
Future Vol, veh/h	48	21	8	763	425	18
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	-	235	-	-	175
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	52	23	9	829	462	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1309	462	482	0	-	0
Stage 1	462	-	-	-	-	-
Stage 2	847	-	-	-	-	-
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	176	600	1081	-	-	-
Stage 1	634	-	-	-	-	-
Stage 2	420	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	175	600	1081	-	-	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	420	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.1	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1081	-	223	-	-
HCM Lane V/C Ratio	0.008	-	0.336	-	-
HCM Control Delay (s)	8.4	-	29.1	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0	-	1.4	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	39	17	5	732	434	12
Future Vol, veh/h	39	17	5	732	434	12
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	-	-	-	-	175
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	42	18	5	796	472	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1278	472	485	0	-	0
Stage 1	472	-	-	-	-	-
Stage 2	806	-	-	-	-	-
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	183	592	1078	-	-	-
Stage 1	628	-	-	-	-	-
Stage 2	439	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	182	592	1078	-	-	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	623	-	-	-	-	-
Stage 2	439	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.2	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1078	-	230	-	-
HCM Lane V/C Ratio	0.005	-	0.265	-	-
HCM Control Delay (s)	8.4	0	26.2	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0	-	1	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	0	30	90	0
Future Vol, veh/h	0	14	0	30	90	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	0	33	98	0

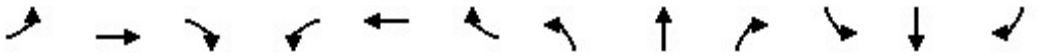
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	131	98	-	0	-	0
Stage 1	98	-	-	-	-	-
Stage 2	33	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	863	958	0	-	-	0
Stage 1	926	-	0	-	-	0
Stage 2	989	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	863	958	-	-	-	-
Mov Cap-2 Maneuver	863	-	-	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	989	-	-	-	-	-

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

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	958	-
HCM Lane V/C Ratio	-	0.016	-
HCM Control Delay (s)	-	8.8	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

HCM 6th Signalized Intersection Summary
1: SR 6 (Thornton Rd) & Riverside Pkwy

05/25/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	156	203	190	222	338	11	312	977	501	110	1018	236
Future Volume (veh/h)	156	203	190	222	338	11	312	977	501	110	1018	236
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1826	1811	1811	1856	1870	1796	1796	1796	1841	1796	1811
Adj Flow Rate, veh/h	166	216	0	236	360	0	332	1039	0	117	1083	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	5	6	6	3	2	7	7	7	4	7	6
Cap, veh/h	226	304		341	398		307	1506		143	1173	
Arrive On Green	0.08	0.17	0.00	0.13	0.21	0.00	0.18	0.44	0.00	0.08	0.34	0.00
Sat Flow, veh/h	1767	1826	1535	1725	1856	1585	1711	3413	1522	1753	3413	1535
Grp Volume(v), veh/h	166	216	0	236	360	0	332	1039	0	117	1083	0
Grp Sat Flow(s),veh/h/ln	1767	1826	1535	1725	1856	1585	1711	1706	1522	1753	1706	1535
Q Serve(g_s), s	9.4	13.4	0.0	13.1	22.7	0.0	21.5	29.3	0.0	7.9	36.6	0.0
Cycle Q Clear(g_c), s	9.4	13.4	0.0	13.1	22.7	0.0	21.5	29.3	0.0	7.9	36.6	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	304		341	398		307	1506		143	1173	
V/C Ratio(X)	0.74	0.71		0.69	0.90		1.08	0.69		0.82	0.92	
Avail Cap(c_a), veh/h	226	365		366	487		307	1506		241	1173	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.1	47.3	0.0	34.3	45.9	0.0	49.2	26.9	0.0	54.2	37.8	0.0
Incr Delay (d2), s/veh	11.8	5.0	0.0	5.1	17.9	0.0	75.4	2.6	0.0	10.7	13.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	6.4	0.0	5.8	12.1	0.0	15.1	11.5	0.0	3.8	16.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	52.3	0.0	39.4	63.8	0.0	124.6	29.5	0.0	64.9	51.1	0.0
LnGrp LOS	D	D		D	E		F	C		E	D	
Approach Vol, veh/h		382	A		596	A		1371	A		1200	A
Approach Delay, s/veh		51.7			54.1			52.6			52.5	
Approach LOS		D			D			D			D	

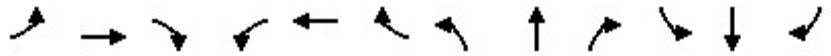
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	46.8	20.7	25.5	15.3	58.5	15.0	31.2
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	21.5	35.5	17.0	24.0	16.5	40.5	9.5	31.5
Max Q Clear Time (g_c+I1), s	23.5	38.6	15.1	15.4	9.9	31.3	11.4	24.7
Green Ext Time (p_c), s	0.0	0.0	0.1	0.6	0.1	6.2	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	52.7
HCM 6th LOS	D

Notes

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	421	6	51	738	55	2	4	10	61	1	94
Future Volume (veh/h)	50	421	6	51	738	55	2	4	10	61	1	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	52	434	0	53	761	0	2	4	0	63	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	584	1577		825	1577		62	85		145	1	
Arrive On Green	0.84	0.84	0.00	0.84	0.84	0.00	0.06	0.06	0.00	0.06	0.06	0.00
Sat Flow, veh/h	705	1870	1585	954	1870	1585	319	1500	1585	1415	22	1585
Grp Volume(v), veh/h	52	434	0	53	761	0	6	0	0	64	0	0
Grp Sat Flow(s),veh/h/ln	705	1870	1585	954	1870	1585	1820	0	1585	1437	0	1585
Q Serve(g_s), s	2.3	5.2	0.0	1.3	11.8	0.0	0.0	0.0	0.0	4.5	0.0	0.0
Cycle Q Clear(g_c), s	14.1	5.2	0.0	6.5	11.8	0.0	0.3	0.0	0.0	4.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.33		1.00	0.98		1.00
Lane Grp Cap(c), veh/h	584	1577		825	1577		147	0		146	0	
V/C Ratio(X)	0.09	0.28		0.06	0.48		0.04	0.00		0.44	0.00	
Avail Cap(c_a), veh/h	584	1577		825	1577		512	0		453	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.1	1.8	0.0	2.4	2.3	0.0	49.1	0.0	0.0	51.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.4	0.0	0.1	1.1	0.0	0.1	0.0	0.0	2.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.9	0.0	0.2	2.0	0.0	0.2	0.0	0.0	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.4	2.2	0.0	2.6	3.3	0.0	49.2	0.0	0.0	53.2	0.0	0.0
LnGrp LOS	A	A		A	A		D	A		D	A	
Approach Vol, veh/h		486	A		814	A		6	A		64	A
Approach Delay, s/veh		2.4			3.3			49.2			53.2	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	98.3	11.7	98.3	11.7
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5
Max Green Setting (Gmax), s	69.0	30.0	69.0	30.0
Max Q Clear Time (g_c+I1), s	13.8	6.8	16.1	2.3
Green Ext Time (p_c), s	14.3	0.2	6.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	5.5
HCM 6th LOS	A

Notes

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

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	36	21	23	405	746	44
Future Vol, veh/h	36	21	23	405	746	44
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	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	23	25	435	802	47

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1311	826	849	0	-	0
Stage 1	826	-	-	-	-	-
Stage 2	485	-	-	-	-	-
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	175	372	789	-	-	-
Stage 1	430	-	-	-	-	-
Stage 2	619	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	168	372	789	-	-	-
Mov Cap-2 Maneuver	168	-	-	-	-	-
Stage 1	412	-	-	-	-	-
Stage 2	619	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.9	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	789	-	211	-	-
HCM Lane V/C Ratio	0.031	-	0.29	-	-
HCM Control Delay (s)	9.7	0	28.9	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.1	-	1.2	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	11	21	402	718	50
Future Vol, veh/h	26	11	21	402	718	50
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	-	235	-	-	175
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	28	12	23	437	780	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1263	780	834	0	-	0
Stage 1	780	-	-	-	-	-
Stage 2	483	-	-	-	-	-
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	187	395	799	-	-	-
Stage 1	452	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	182	395	799	-	-	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	439	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.3	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	799	-	217	-	-
HCM Lane V/C Ratio	0.029	-	0.185	-	-
HCM Control Delay (s)	9.6	-	25.3	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	9	14	402	695	33
Future Vol, veh/h	21	9	14	402	695	33
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	-	-	-	-	175
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	23	10	15	437	755	36

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1222	755	791	0	-	0
Stage 1	755	-	-	-	-	-
Stage 2	467	-	-	-	-	-
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	198	409	829	-	-	-
Stage 1	464	-	-	-	-	-
Stage 2	631	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	193	409	829	-	-	-
Mov Cap-2 Maneuver	193	-	-	-	-	-
Stage 1	453	-	-	-	-	-
Stage 2	631	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.3	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	829	-	229	-	-
HCM Lane V/C Ratio	0.018	-	0.142	-	-
HCM Control Delay (s)	9.4	0	23.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	7	0	67	50	0
Future Vol, veh/h	0	7	0	67	50	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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	8	0	73	54	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	127	54	-	0	-	0
Stage 1	54	-	-	-	-	-
Stage 2	73	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	-	-
Pot Cap-1 Maneuver	868	1013	0	-	-	0
Stage 1	969	-	0	-	-	0
Stage 2	950	-	0	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	868	1013	-	-	-	-
Mov Cap-2 Maneuver	868	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	950	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT
Capacity (veh/h)	-	1013	-
HCM Lane V/C Ratio	-	0.008	-
HCM Control Delay (s)	-	8.6	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0	-

Traffic Volume Worksheets

22-048 Emblem Phase II, Riverside Parkway, City of Douglasville DRI

Traffic Volumes

A&R Engineering
May 2022

1. SR 6 @ Riverside Pkwy

A.M. Peak Hour

Condition	SR 6 (Thornton Road) Northbound				SR 6 (Thornton Road) Southbound				Riverside Parkway Eastbound				Riverside Parkway Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	151	595	405	1151	106	744	104	954	142	294	270	706	191	117	12	320
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	154	607	413	1174	108	759	106	973	145	300	275	720	195	119	12	326
Total New Trips:	8	0	0	8	0	0	13	13	41	14	28	83	0	4	0	4
Future 2023 Traffic Volumes:	162	607	413	1182	108	759	119	986	186	314	303	803	195	123	12	330

P.M. Peak Hour

Condition	SR 6 (Thornton Road) Northbound				SR 6 (Thornton Road) Southbound				Riverside Parkway Eastbound				Riverside Parkway Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	282	958	491	1731	108	998	196	1302	131	192	172	495	218	320	11	549
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	288	977	501	1766	110	1018	200	1328	134	196	175	505	222	326	11	559
Total New Trips:	24	0	0	24	0	0	36	36	22	7	15	44	0	12	0	12
Future 2023 Traffic Volumes:	312	977	501	1790	110	1018	236	1364	156	203	190	549	222	338	11	571

Number of Years = 1 (2022 to 2023)
Growth Factor (%) = 2

22-048 Emblem Phase II, Riverside Parkway, City of Douglasville DRI

Traffic Volumes

A&R Engineering
May 2022

2. Riverside Pkwy @ Rock House

A.M. Peak Hour

	Rock House Road Northbound				Rock House Road Southbound				Riverside Parkway Eastbound				Riverside Parkway Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	1	0	3	4	57	8	85	150	68	669	10	747	20	254	11	285
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	1	0	3	4	58	8	87	153	69	682	10	761	20	259	11	290
Total New Trips:	0	0	0	0	0	0	4	4	14	83	0	97	0	25	0	25
Future 2023 Traffic Volumes:	1	0	3	4	58	8	91	157	83	765	10	858	20	284	11	315

P.M. Peak Hour

	Rock House Road Northbound				Rock House Road Southbound				Riverside Parkway Eastbound				Riverside Parkway Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	2	4	10	16	60	1	80	141	42	370	6	418	50	654	54	758
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	2	4	10	16	61	1	82	144	43	377	6	426	51	667	55	773
Total New Trips:	0	0	0	0	0	0	12	12	7	44	0	51	0	71	0	71
Future 2023 Traffic Volumes:	2	4	10	16	61	1	94	156	50	421	6	477	51	738	55	844

Number of Years = 1 (2022 to 2023)
Growth Factor (%) = 2

22-048 Emblem Phase II, Riverside Parkway, City of Douglasville DRI

Traffic Volumes

A&R Engineering
May 2022

3. Riverside Pkwy @ Summer Lake

A.M. Peak Hour

	Riverside Parkway Northbound				Riverside Parkway Southbound				Summer Lake Road Eastbound				- Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	18	692	0	710	0	367	11	378	54	0	34	88	0	0	0	0
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	18	706	0	724	0	374	11	385	55	0	35	90	0	0	0	0
Total New Trips:	0	87	0	87	0	29	0	29	10	0	4	14	0	0	0	0
Future 2023 Traffic Volumes:	18	793	0	811	0	403	11	414	65	0	39	104	0	0	0	0

P.M. Peak Hour

	Riverside Parkway Northbound				Riverside Parkway Southbound				Summer Lake Road Eastbound				- Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	23	351	0	374	0	650	43	693	30	0	19	49	0	0	0	0
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	23	358	0	381	0	663	44	707	31	0	19	50	0	0	0	0
Total New Trips:	0	47	0	47	0	83	0	83	5	0	2	7	0	0	0	0
Future 2023 Traffic Volumes:	23	405	0	428	0	746	44	790	36	0	21	57	0	0	0	0

Number of Years = 1 (2022 to 2023)
Growth Factor (%) = 2

22-048 Emblem Phase II, Riverside Parkway, City of Douglasville DRI

Traffic Volumes

A&R Engineering
May 2022

4. Riverside Pkwy @ Drwy (N)

A.M. Peak Hour

	Riverside Parkway Northbound				Riverside Parkway Southbound				Site Driveway (N) Eastbound				- Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	710	0	710	0	401	0	401	0	0	0	0	0	0	0	0
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	0	724	0	724	0	409	0	409	0	0	0	0	0	0	0	0
Total New Trips:	8	39	0	47	0	16	18	34	48	0	21	69	0	0	0	0
Future 2023 Traffic Volumes:	8	763	0	771	0	425	18	443	48	0	21	69	0	0	0	0

P.M. Peak Hour

	Riverside Parkway Northbound				Riverside Parkway Southbound				Site Driveway (N) Eastbound				- Westbound			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	374	0	374	0	669	0	669	0	0	0	0	0	0	0	0
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	0	381	0	381	0	682	0	682	0	0	0	0	0	0	0	0
Total New Trips:	21	21	0	42	0	36	50	86	26	0	11	37	0	0	0	0
Future 2023 Traffic Volumes:	21	402	0	423	0	718	50	768	26	0	11	37	0	0	0	0

Number of Years = 1 (2022 to 2023)
Growth Factor (%) = 2

22-048 Emblem Phase II, Riverside Parkway, City of Douglasville DRI

Traffic Volumes

A&R Engineering
May 2022

5. Riverside Pkwy @ Drwy (S)

A.M. Peak Hour

	Riverside Parkway **Northbound**				Riverside Parkway **Southbound**				Site Driveway (S) **Eastbound**				- **Westbound**			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	710	0	710	0	401	0	401	0	0	0	0	0	0	0	0
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	0	724	0	724	0	409	0	409	0	0	0	0	0	0	0	0
Total New Trips:	5	8	0	13	0	25	12	37	39	0	17	56	0	0	0	0
Future 2023 Traffic Volumes:	5	732	0	737	0	434	12	446	39	0	17	56	0	0	0	0

P.M. Peak Hour

	Riverside Parkway **Northbound**				Riverside Parkway **Southbound**				Site Driveway (S) **Eastbound**				- **Westbound**			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	374	0	374	0	669	0	669	0	0	0	0	0	0	0	0
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	0	381	0	381	0	682	0	682	0	0	0	0	0	0	0	0
Total New Trips:	14	21	0	35	0	13	33	46	21	0	9	30	0	0	0	0
Future 2023 Traffic Volumes:	14	402	0	416	0	695	33	728	21	0	9	30	0	0	0	0

Number of Years = 1 (2022 to 2023)
Growth Factor (%) = 2

22-048 Emblem Phase II, Riverside Parkway, City of Douglasville DRI

Traffic Volumes

A&R Engineering
May 2022

6. Summer Lake @ Exit Only Drwy

A.M. Peak Hour

	Summer Lake Road **Northbound**				Summer Lake Road **Southbound**				Exit Only Driveway **Eastbound**				- **Westbound**			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	29	0	29	0	88	0	88	0	0	0	0	0	0	0	0
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	0	30	0	30	0	90	0	90	0	0	0	0	0	0	0	0
Total New Trips:	0	0	0	0	0	0	0	0	0	0	14	14	0	0	0	0
Future 2023 Traffic Volumes:	0	30	0	30	0	90	0	90	0	0	14	14	0	0	0	0

P.M. Peak Hour

	Summer Lake Road **Northbound**				Summer Lake Road **Southbound**				Exit Only Driveway **Eastbound**				- **Westbound**			
Condition	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing 2022 Traffic Counts:	0	66	0	66	0	49	0	49	0	0	0	0	0	0	0	0
Growth Factor (%):	2	2	2		2	2	2		2	2	2		2	2	2	
No-Build 2023 Volumes:	0	67	0	67	0	50	0	50	0	0	0	0	0	0	0	0
Total New Trips:	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0
Future 2023 Traffic Volumes:	0	67	0	67	0	50	0	50	0	0	7	7	0	0	0	0

Number of Years = 1 (2022 to 2023)
Growth Factor (%) = 2