April 4, 2023

Capps Ferry Rd

Traffic Impact Study
5716.00

Prepared for:
HRC Engineers
6554 Church Street
Douglasville, GA 30134

Prepared by:
Michael Crawford, PE
PE#019633

Capps Ferry Rd
DRI #3982
Traffic Impact Study

PREPARED BY:
Columbia Engineering and Services, Inc.
2862 Buford Highway, Suite 200
Duluth, GA 30096
770-925-0357

Table of Contents

Contents

Introduction

The Capps Ferry residential project is proposed to consist of 609 single family units to be built on currently vacant land in Douglasville, Georgia. A methodology meeting was held on February 6, 2023, and the resultant MOU is included in the appendix to this report.

Study Area Description

The project is located along Capps Ferry Road with a site area of 707.21 acres in southern Douglas County, near the border of Carroll County. The development consists of two new proposed driveways and a third access connecting to the existing Brookcrest Court and then to Capps Ferry Road. The middle project driveway will create the fourth leg of the intersection with Basket Creek Road. The project site plan is shown in Figure 1.

A Study Network Identification was completed consistent with GRTA guidelines, and was reviewed at the methodology meeting. Based on that information, the following intersections have been included for analysi:

- project access points
- Highway 5 at SR 166
- SR 166 at Capps Ferry Road
- Brookcrest Court at Capps Ferry Road
- Florence Road at Capps Ferry Road
- South Fulton Parkway and Campbellton-Redwine Road.

The following paragraphs provide a brief description of the facilities in the Study Area.

Highway 5 at SR 166 is a single-lane roundabout with a posted speed limit of 15 mph within the roundabout. The posted speed limit on either side of the roundabout is 55 mph on Highway 5 and 45 mph on SR 166.

The intersection of SR 166 at Capps Ferry Road is a two-lane, 'T' intersection with Capps Ferry Road traffic yielding to SR 166. The posted speed limits at this intersection are 45 mph on Capps Ferry Road and 45 mph on SR 166.

The intersection of Brookcrest Court and Capps Ferry Road is a two-lane, 'T' intersection with Brookcrest Court Traffic yielding to Capps Ferry Road traffic. Brookcrest Court is a residential drive with a posted speed limit of 25 mph and a posted speed limit of 45 mph on Capps Ferry Road.

The intersection of Florence Road and Capps Ferry Road is a two-lane, 'T' intersection with Florence Road traffic yielding to Capps Ferry Road traffic. Florence Road does not have a posted speed limit. Capps Ferry Road's posted speed limit at this intersection is 45 mph.

The intersection of South Fulton Parkway and Campbellton-Redwine Road is a four-way intersection with Campbellton-Redwine Road traffic stopping and yielding to South Fulton Parkway traffic. South Fulton

Parkway has a posted speed limit of 45 mph. Campbellton-Redwine Road is a two-lane road with a posted speed limit of 55 mph.

Trip Generation

The amount of traffic to be generated from the project site was estimated utilizing the Institute of Transportation Engineers (ITE) *Trip General Manual, 10th Edition.* This manual represents accepted practice from around the country and provides studies and equations to be used in trip estimation.

To calculate the estimated trip generation from the project site, ITE Land Use Code 210, Single Family dwelling units, was utilized. The land use code is indicative of the type of single-family units anticipated to be developed on the subject site.

The trips to be generated are reported in Table 1.

Table 1: Trip Generation Estimates

Trip Generation Summary

Alternative: Alternative 1
Phase:
Project: New Project

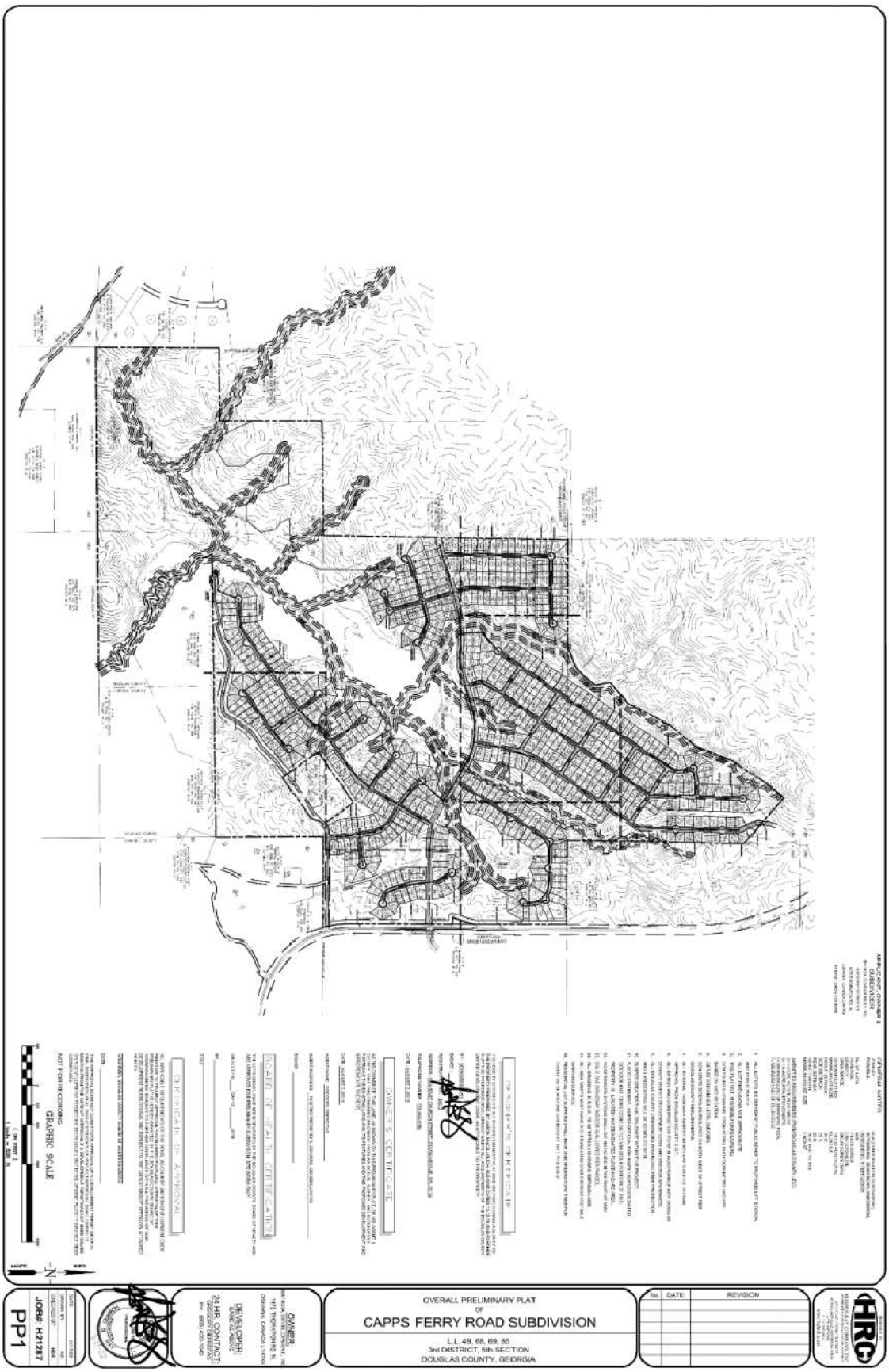
Open Date: 12/29/2022
Analysis Date: 12/29/2022

ITE	Land Use	*	Weekday Average Daily Trips Enter	Exit	Total	*	Weekday AM Peak Hour of Adjacent Street Traffic Enter	Exit	Total	*	Weekday PM Peak Hour of Adjacent Street Traffic Enter	Exit	Total
210	SFHOUSE 1		2875	2874	5749		113	338	451		380	223	603
	609 Dwelling Units												
Unadjusted Volume			2875	2874	5749		113	338	451		380	223	603
Internal Capture Trips			0	0	0		0	0	0		0	0	0
Pass-By Trips			0	0	0		0	0	0		0	0	0
Volume Added to Adjacent Streets			2875	2874	5749		113	338	451		380	223	603

Total Weekday Average Daily Trips Internal Capture = 0 Percent
Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent
Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Review of Table 1 indicates the project is anticipated to generate approximately 5,749 vehicles per day (VPD).

Figure 1: Proposed Site Plan



Existing Conditions Analysis

Traffic counts were conducted in the project vicinity on February 14th, 2023. AM and PM peak period counts were conducted at the intersections of Highway 5 at SR 166, SR 166 at Capps Ferry Road, Brookcrest Court at Capps Ferry Road, Florence Road at Capps Ferry Road, and South Fulton Parkway and Campbellton-Redwine Road.

Currently, approximately 2713 vehicles per day travel on Capps Ferry Road in the project vicinity. The existing AM and PM peak period traffic are shown in Figure 2 &3. Traffic count data are provided in the Appendix.

Figure 2: Existing Peak Period Traffic -Part 1

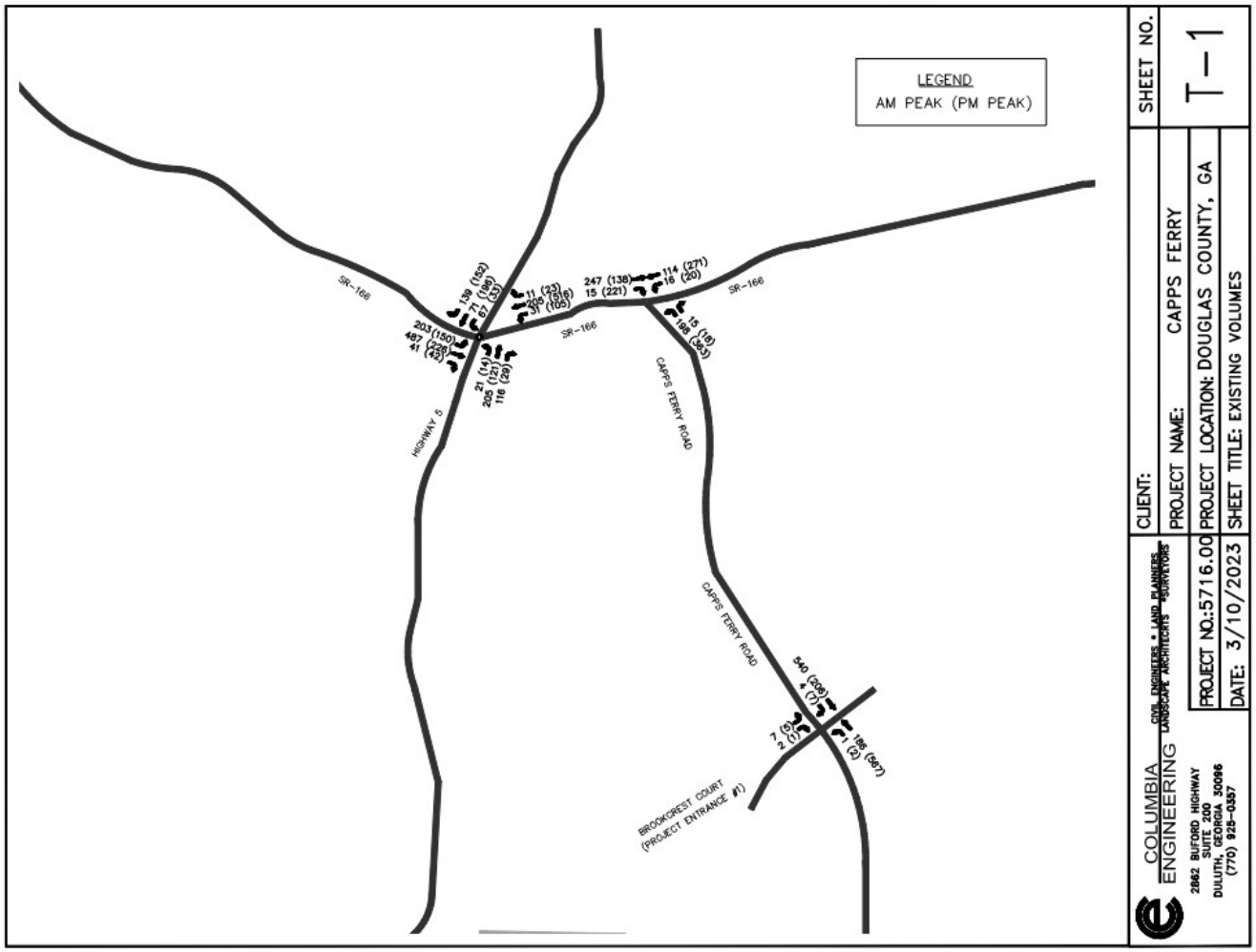
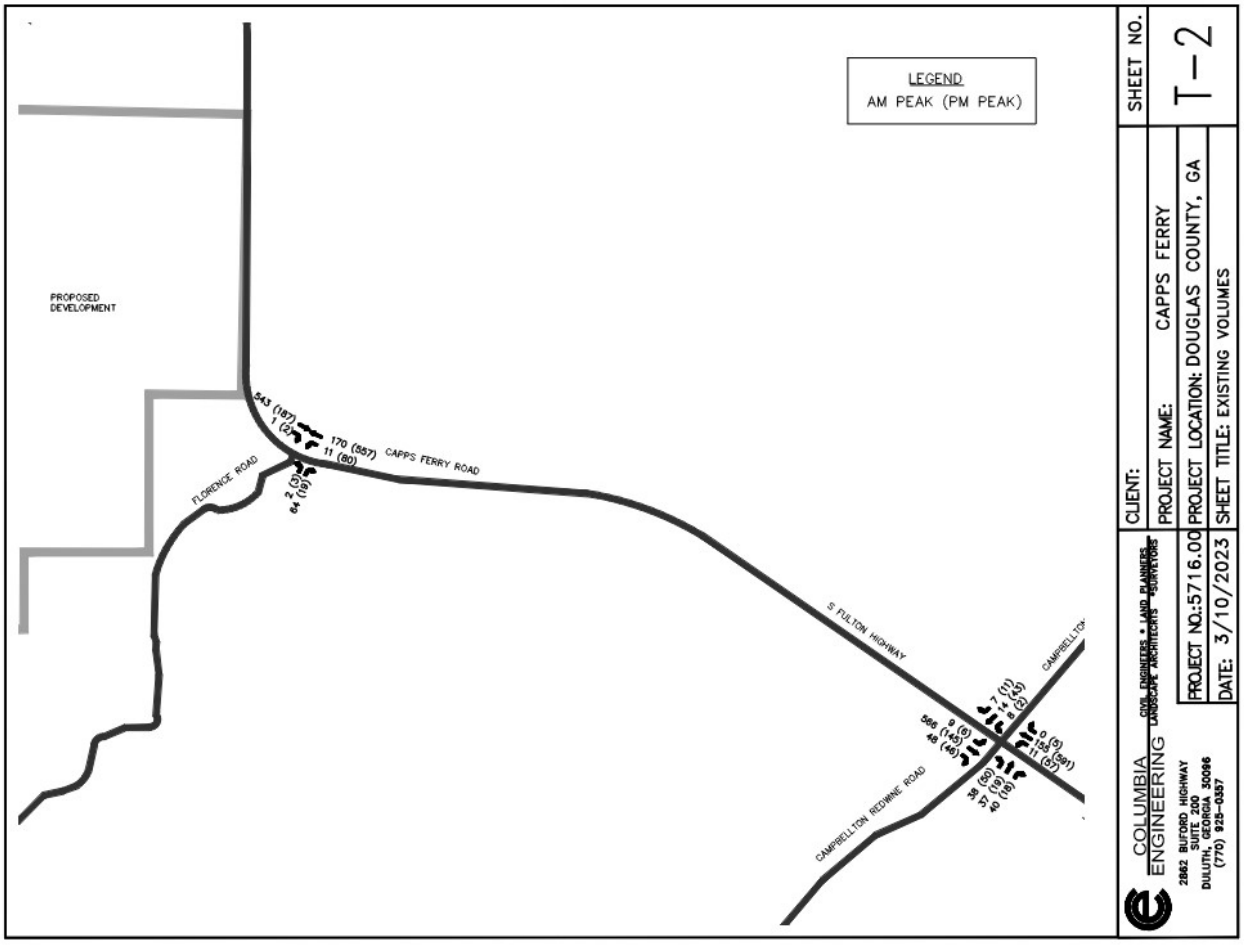


Figure 3: Existing Peak Period Traffic -Part 2



Vicinity Map

Area Analysis

The site is located east of Highway 5, west of Capps Ferry Road and south of SR 166.

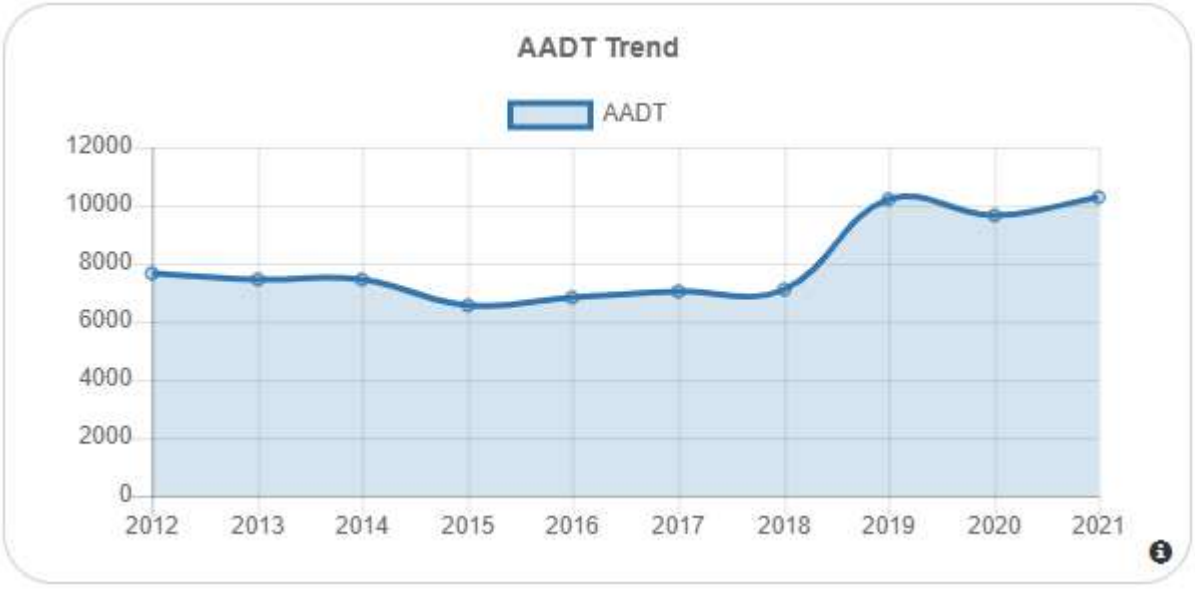
The site is accessed by two proposed driveways as entrances and a third access connecting to an existing entrance at Brookcrest Court and Capps Ferry Road. The first and second entrances are located on the west side of Capps Ferry Road, adjacent to Basket Creek Road. It is assumed that all the future intersections will be stop-controlled, thus no signals are proposed for the future site. See Figure 2 for traffic volumes on existing roads at proposed access points.

Growth Factor Analysis

To estimate the growth factor of the development area, data was pulled and analyzed from the GDOT Traffic Analysis & Data Application (TADA). Available data near the project site were utilized as shown on Figure 4. At Sampling Point #1 shown in Figure 4, the data shows an inconsistent growth rate from 2012 to 2021, however, there has been an estimated growth rate of 1% over the past 10 years. The Annual Average Daily Traffic (AADT) in 2012 was 7,660 with an actual AADT of 10,200 in 2019 and an estimated AADT of 10,300 in 2021. See Figure 4 below of the AADT trend at Sampling Point #1 from 2012 to 2021.

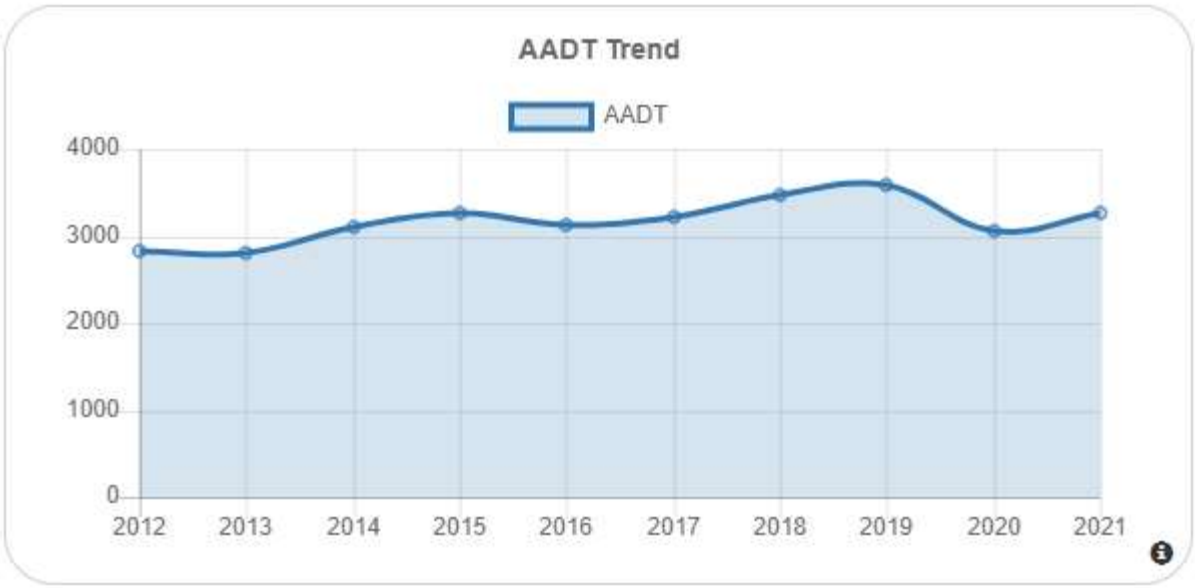
Figure 4: GDOT Traffic Count Map

Figure 5: AADT Trend (Sampling Point #1)



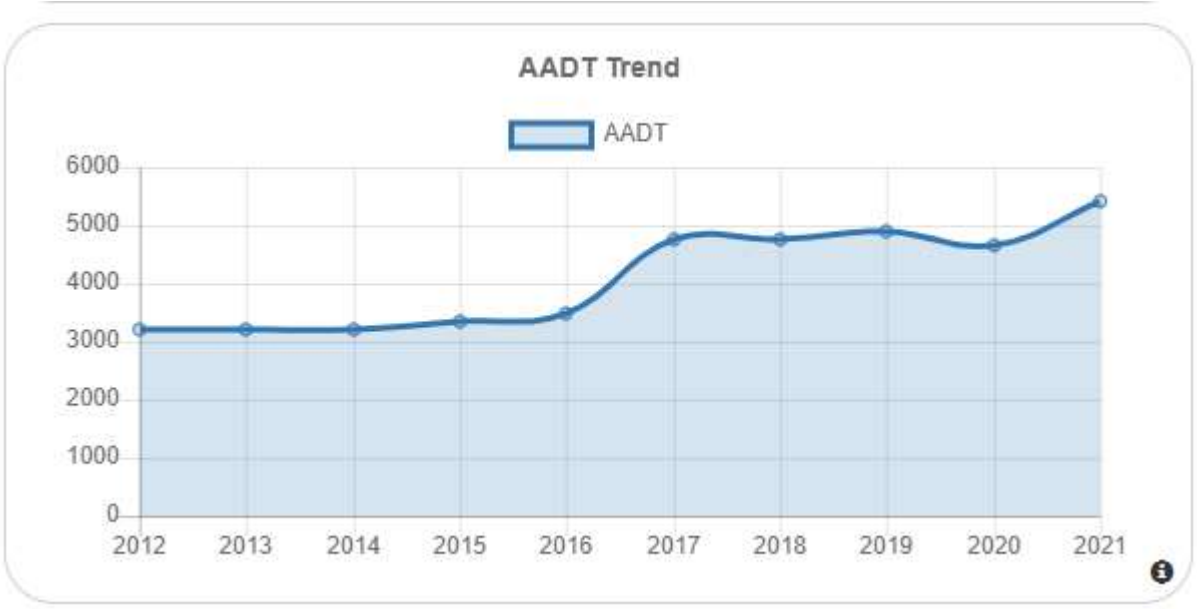
The data analyzed at Sampling Point #2 shown in Figure 3 displayed an increase of roughly 2.05% between 2012 and 2021. Annual Average Daily Traffic (AADT) in 2012 was 2,830 with an actual AADT of 3,060 in 2020 and an estimated AADT of 3,270 in 2021. See Figure 5 below.

Figure 6: AADT Trend (Sampling Point #2)



The data analyzed at Sampling Point #3 shown in Figure 3 displayed an increase of roughly 1% between 2012 and 2021. The actual Annual Average Daily Traffic (AADT) in 2012 with 3,190 with an actual AADT of 5,410 in 2021. See Figure 6 below.

Figure 7: AADT Trend (Sampling Point #3)



Utilizing the trends from all 3 sampling points, it is assumed that the traffic in the project vicinity will have a 1% annual growth rate moving forward. As seen in all sampling points, a decrease in traffic was seen in 2020 due to Covid. This data point has been noted as an outlier and is not representative of future conditions. Over the past 10 years, traffic has remained relatively flat in the study area with an average 1% increase. Given these conditions, traffic growth is assumed to be 1% as evidenced by the historic trends.

Based on this analysis, the existing traffic volume counts taken at each of the existing project site intersections will be used to estimate future base year volumes. The base year (ie project opening year) is assumed to be 2023. Additionally, a base year + 7 years analysis in year 2030 will be conducted as well.

In addition to the background traffic growth, project traffic from the Foxhall DRI was also added and considered as background traffic as requested at the methodology meeting.

Figures 8 &9 show the projected volumes projected volumes in 2030 without the project the traffic.

Figure 8: 2030 No Build - Projected Volumes-Part 1

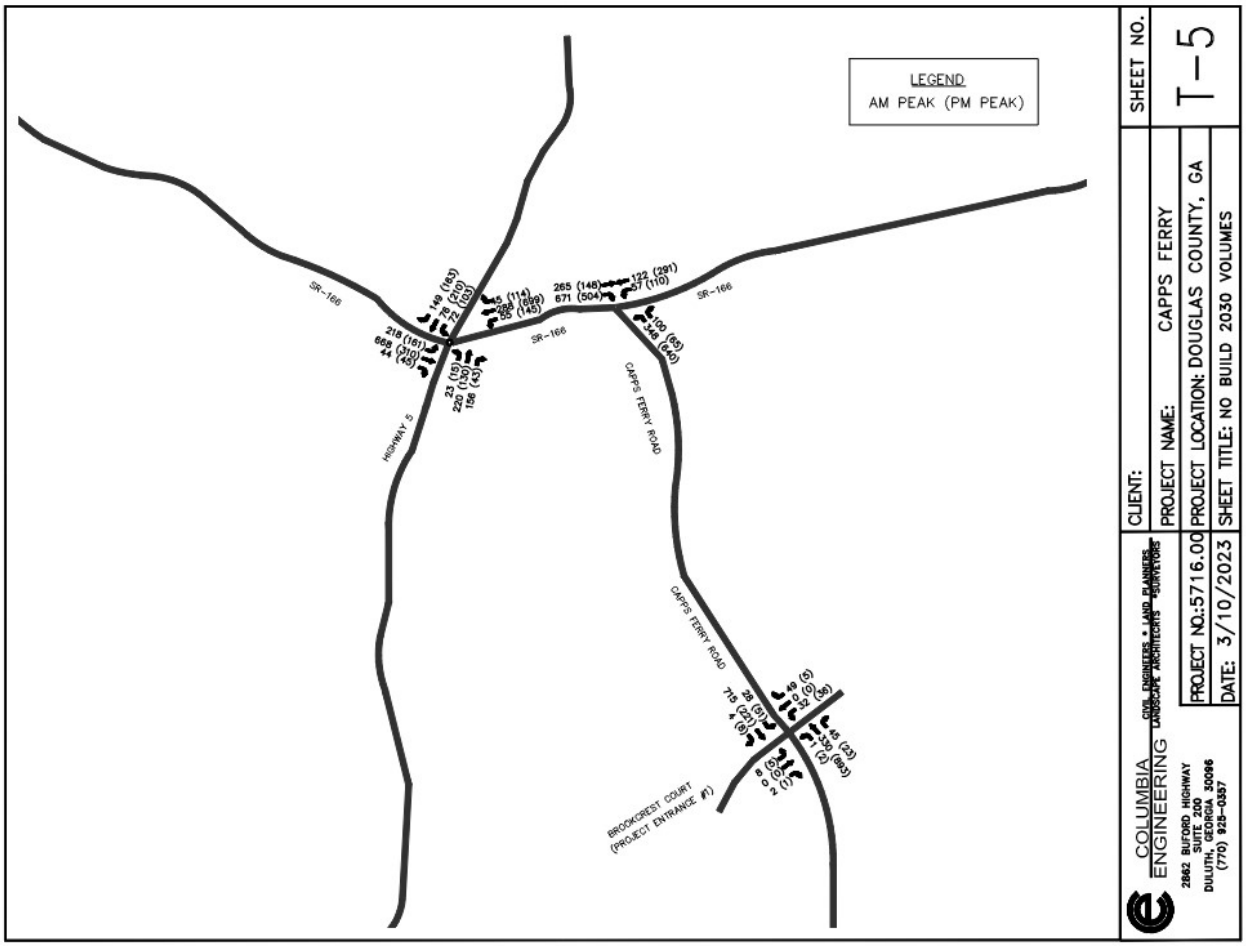
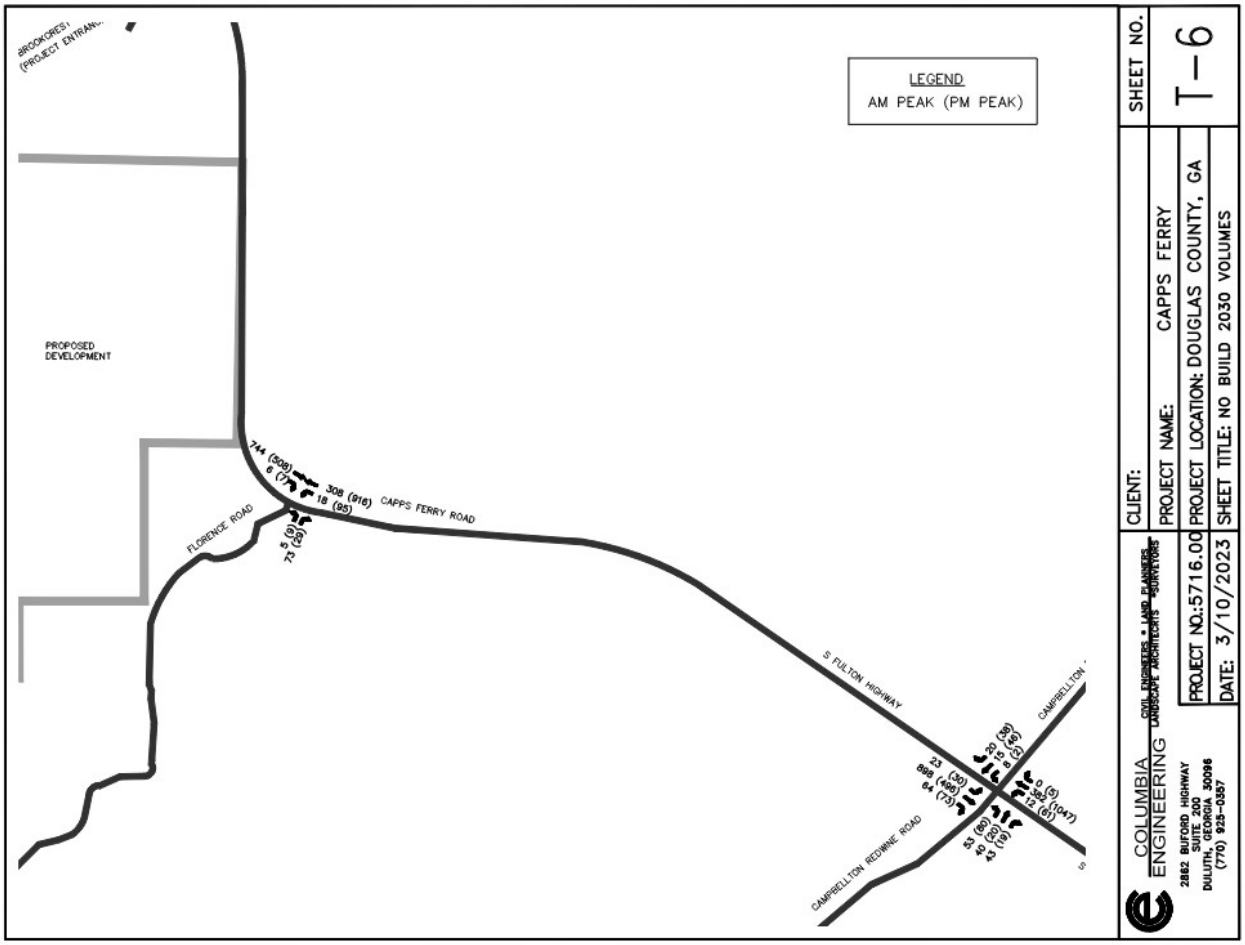


Figure 9: 2030 No Build - Projected Volumes-Part 2



Project Traffic Distribution and Assignment

To estimate the project traffic distribution to the adjacent roadway networks, the area was reviewed to determine the locations of nearby attractions (schools, employment, recreation, shopping, etc.) that would attract trips from the project site. In addition, existing traffic counts were reviewed to determine existing direction of travel from homes in the area of the project.

Based on this analysis, it is estimated that 30% of project traffic will travel north to Douglasville, 30% will travel northeast to South Fulton and the City of Atlanta, 15% will travel Northwest to Douglas County, 10% to Carroll County/ City of Carrollton, 10% southeast to City of Atlanta, and 5% will travel south to City of Newnan. These distributions were applied to trips generated by the development as shown in Table 2.

Figure 10: Project Trip Assignment

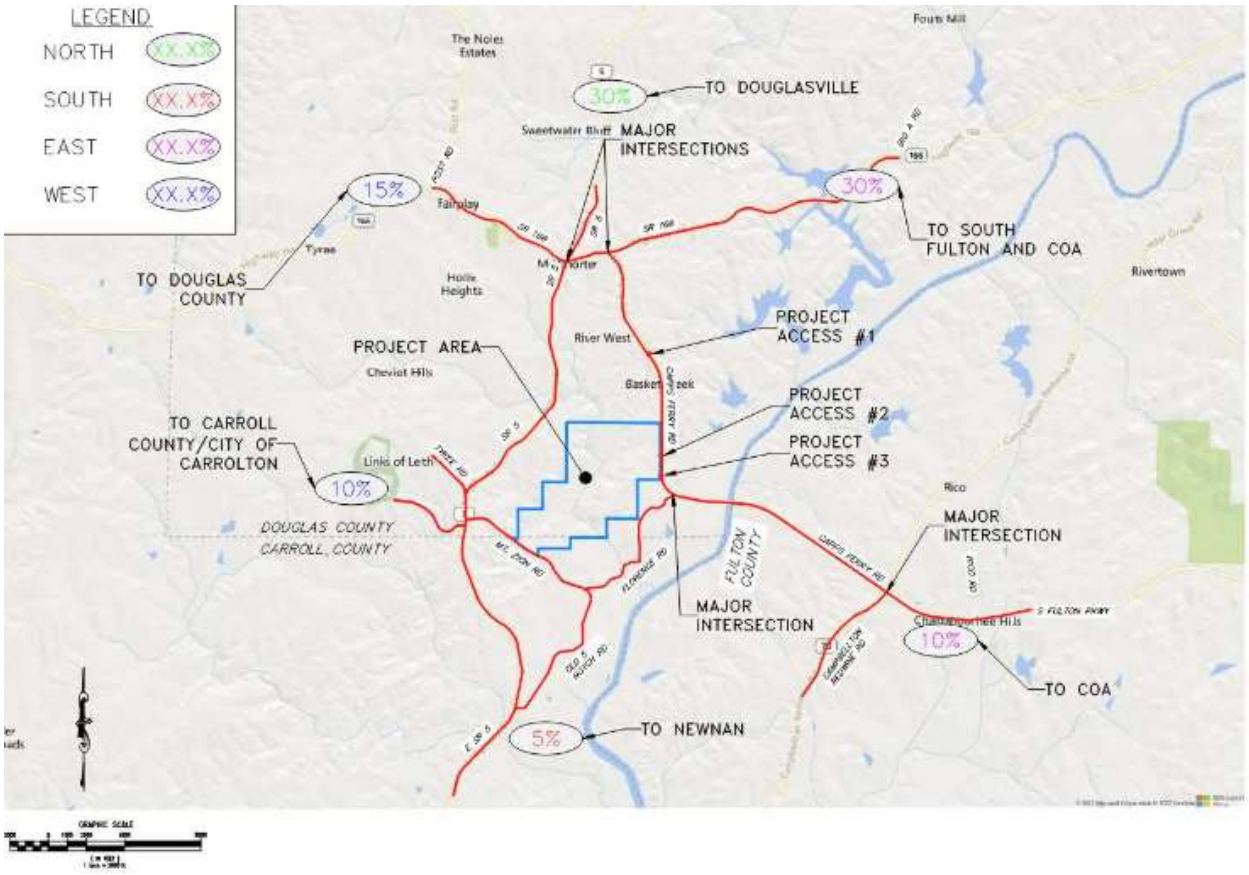


Table 2: Roadway Distribution

Roadway	From	To	Distribution						# Lanes	Classification	LOS D Service Volume	Project Traffic	Proj. Traffic % Svc Volume	Include Intersection in Study Network?
			N	S	NE	NW	SE	W				Residential		
Capps Ferry Road	Project Access #1	SR 166	30%	0%	30%	15%	0%	0%	2	Major Arterial	24,800	4312	17.39	YES
	Project Access #1	Project Access #2	0%	5%	0%	0%	10%	10%	2	Major Arterial	24,800	479	1.93	NO
	Project Access #2	Project Access #3	0%	5%	0%	0%	10%	10%	2	Major Arterial	24,800	479	1.93	NO
	Project Access #3	Campbellton Redwine Rd	0%	5%	0%	0%	10%	10%	2	Major Arterial	24,800	1437	5.80	NO
	Florence Road	Campbellton Redwine Rd	0%	0%	0%	0%	10%	0%	2	Major Arterial	24,800	575	2.32	NO
SR 166	Capps Ferry Rd	SR 5	30%	0%	0%	15%	0%	0%	2	Major Arterial	24,800	2587	10.43	YES
	SR 5	Post Rd	0%	0%	0%	15%	0%	0%	2	Major Arterial	24,800	862	3.48	NO
	Capps Ferry Rd	Big A Rd	0%	0%	30%	0%	0%	0%	2	Major Arterial	24,800	1725	6.95	NO
Florence Rd	Capps Ferry Rd	Mt Zion Church Rd/Old 5 Notch Rd	0%	5%	0%	0%	0%	10%	2	Rural	14,600	862	5.91	NO
Mt Zion Church Rd	Florence Rd	SR 5	0%	0%	0%	0%	0%	10%	2	Rural	14,600	575	3.94	NO
Old 5 Notch Rd	Florence Rd	E SR 5	0%	5%	0%	0%	0%	0%	2	Rural	14,600	287	1.97	NO

Based upon this distribution, project traffic was assigned to the roadway network as shown in Figure 11 & 12. 2030 volumes plus project traffic are shown in Figures 13 & 14.

Figure 11: Project Traffic-Part 1

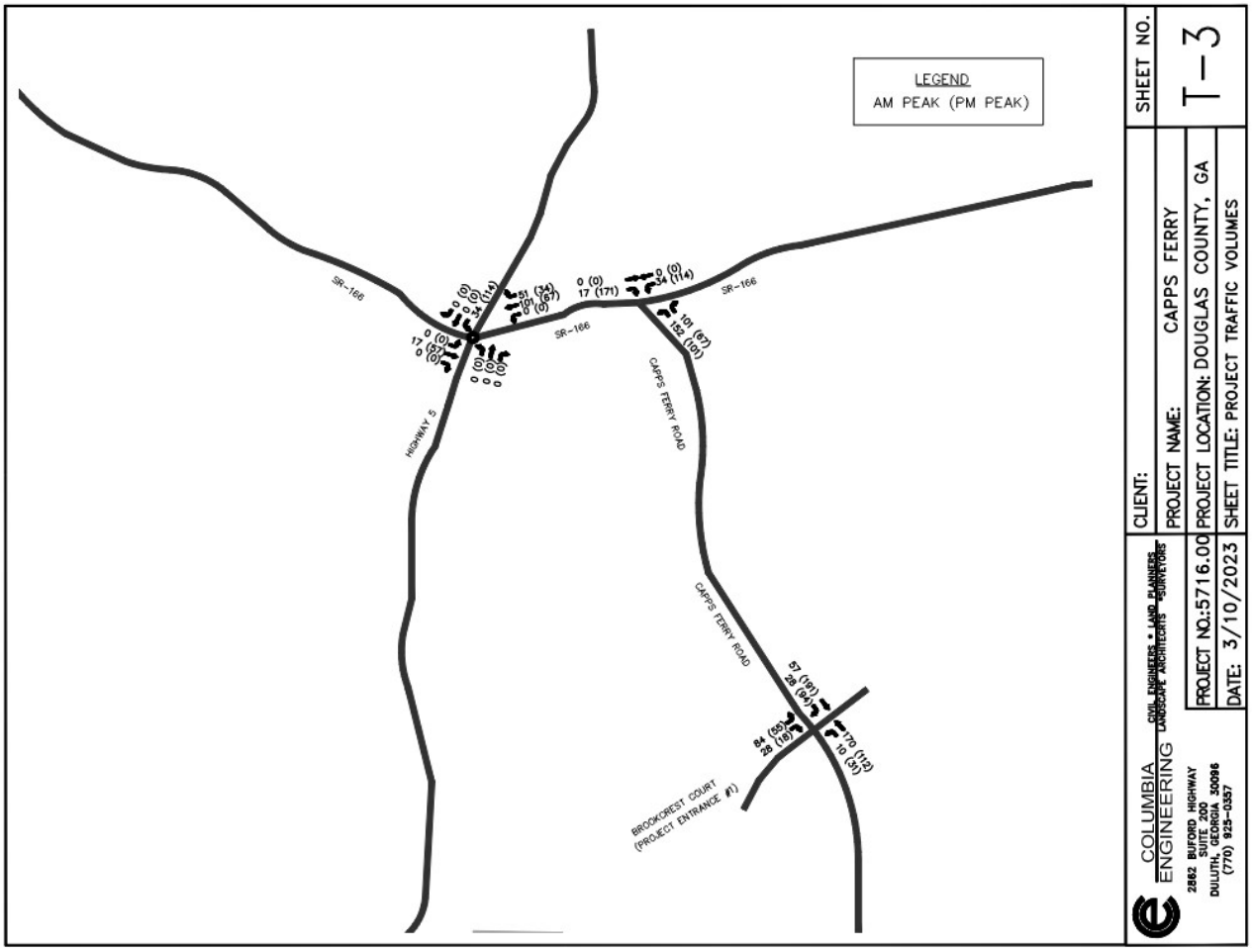


Figure 12: Project Traffic-Part 2

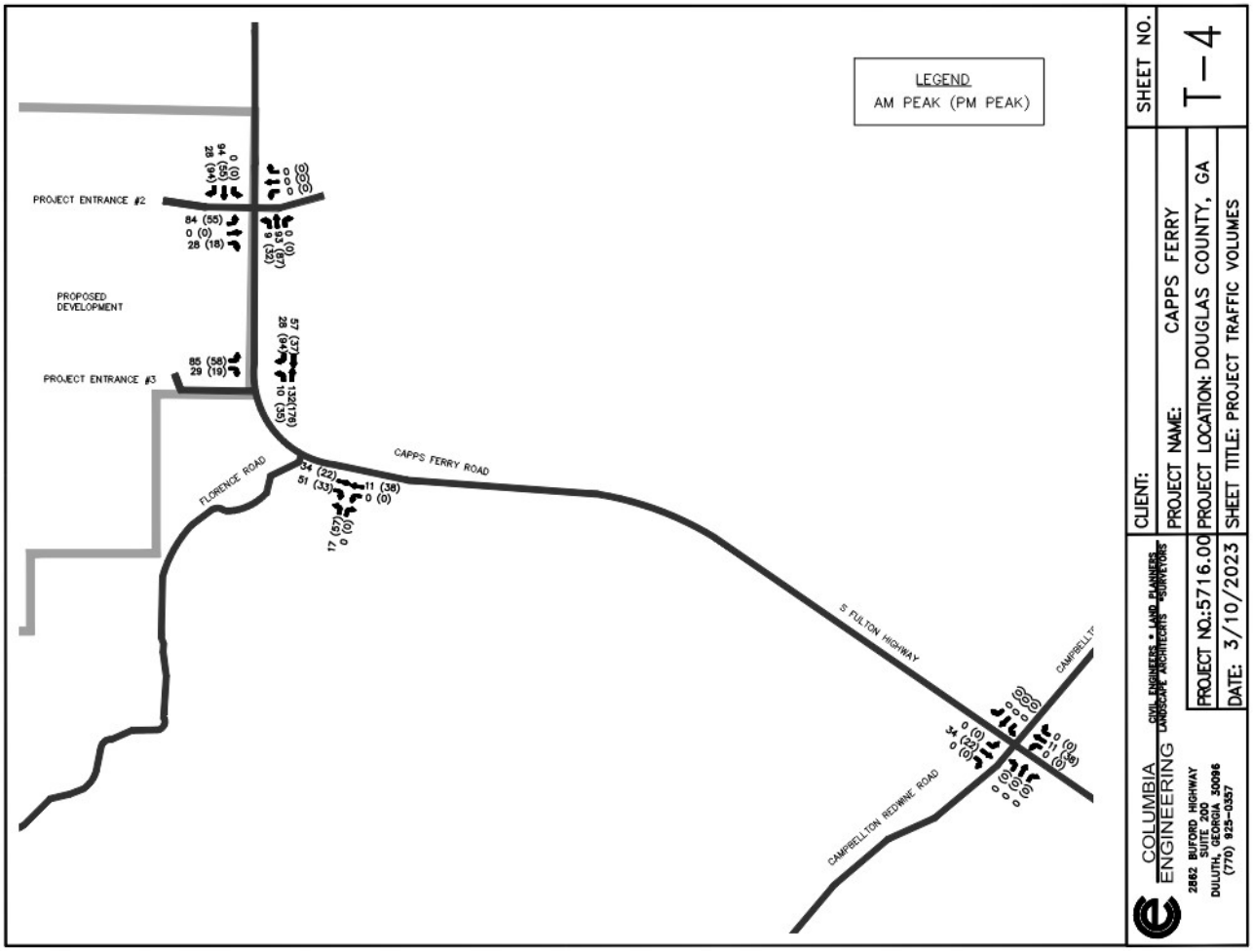


Figure 13: 2030 Volumes Plus Project Traffic-Part 1

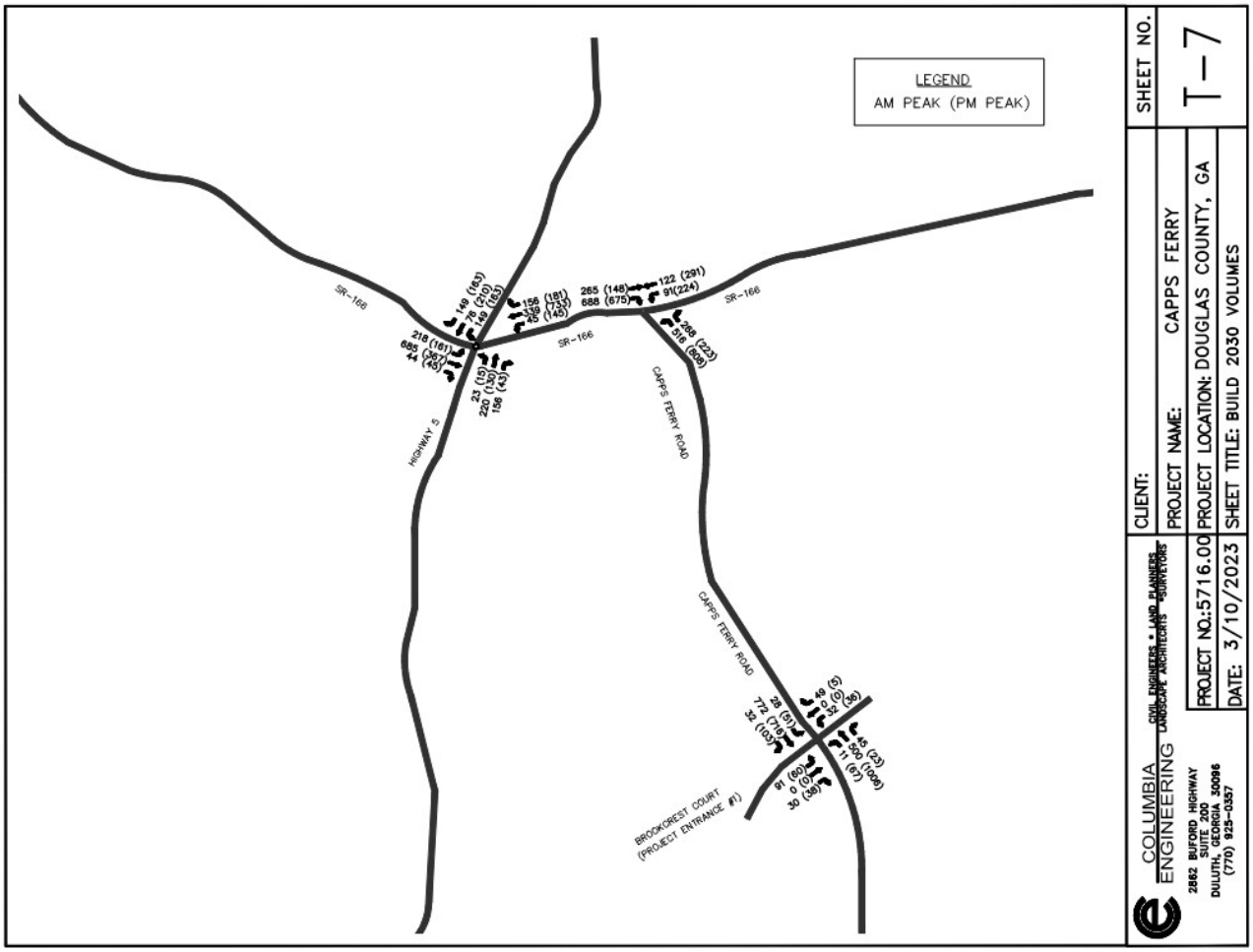
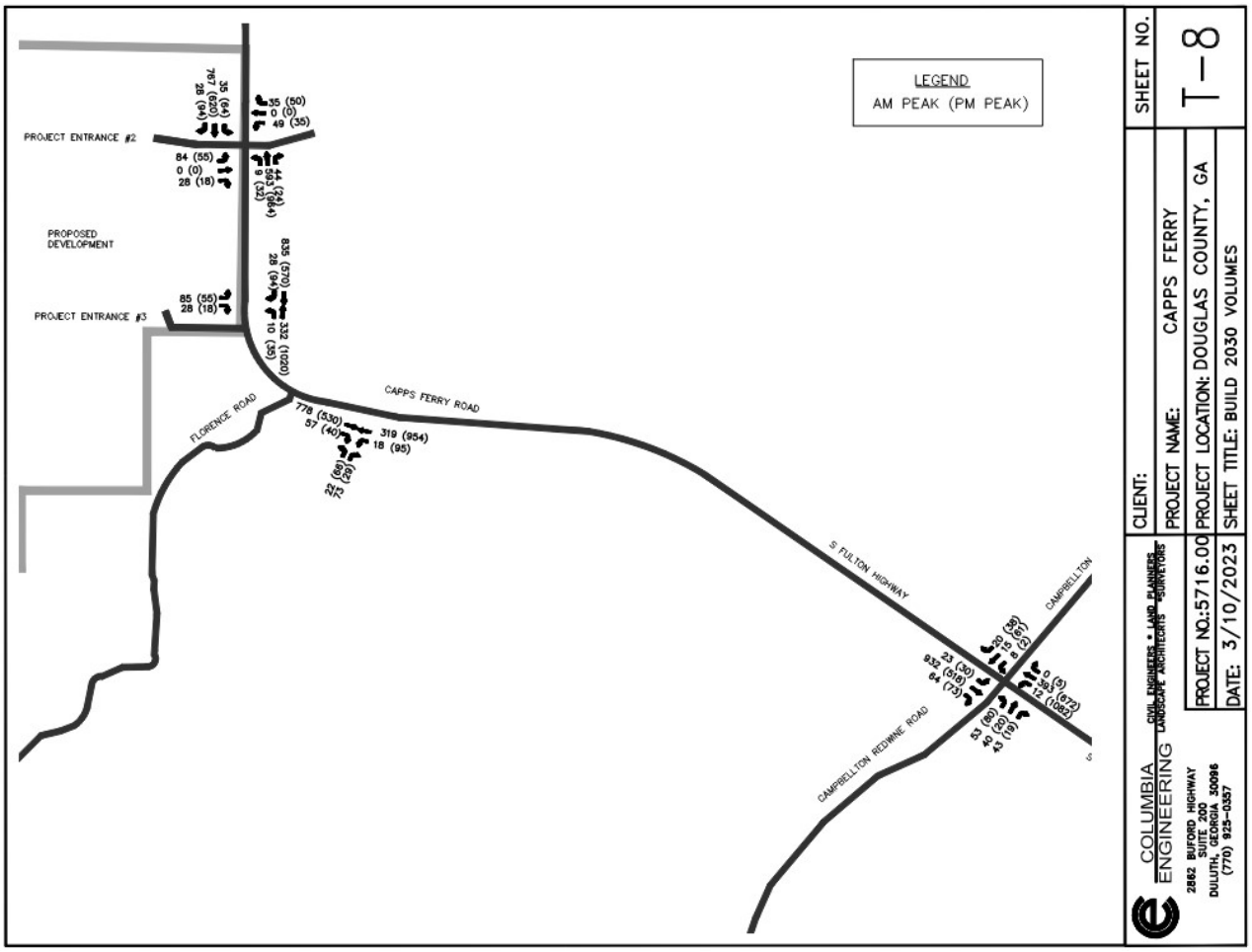


Figure 14: 2030 Volumes Plus Project Traffic-Part 2



Capacity Analysis

To determine the operation efficiency of the adjacent roads and intersections, under existing and total traffic conditions, SYNCHRO analysis was performed utilizing methods documented in the *Highway Capacity Manual (HCM), 6th Edition*, published by the Transportation Research Board.

Level of Service is a function of driver expectation and is calculated based upon delay experienced by vehicles at intersections. For roadway segments, level of service (LOS) is a function of the average travel speed. Level of service is graded from A through F, with LOS A being the best and LOS F being the worst. The higher the letter grade, generally the higher levels of delay and congestion may be expected.

For unsignalized and signalized intersections, the average delay per vehicle is calculated for all vehicles traversing the intersection. Level of service thresholds developed in the *Highway Capacity Manual* are then used to grade the intersection operations. Table 3 reports the thresholds utilized for unsignalized intersections.

Table 3: Level of Service Criteria – Unsignalized Intersections

Level of Service	Average Control Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

Each additional intersection adjacent to the proposed site was analyzed with existing geometry for both the existing and total traffic scenarios. Results of this analysis indicate that the individual movement groups at the intersections. See Table 4 for full LOS results and Table 5 for the max V/C ratio results.

Table 4: Level of Service Analysis Summary

Intersection	Movement	Existing Traffic				2030 No Build				2030 Build			
		AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period		AM Peak Period		PM Peak Period	
		Sec/Veh	LOS	Sec/Veh	LOS	Sec/Veh	LOS	Sec/Veh	LOS	Sec/Veh	LOS	Sec/Veh	LOS
Highway 5 & SR 166 (Roundabout)	Int	9.9	A	10.6	B	25	C	24	C	43	E	30.5	D
	EB	12.2	B	8.2	A	43.5	E	13.8	B	74.9	F	20.4	C
	WB	7.4	A	14.3	B	13.2	B	35.5	E	8.4	A	40.6	E
	NB	10.9	B	5.6	A	24.3	C	7	A	20.7	C	8.2	A
	SB	4.8	A	9.3	A	7.1	A	18.6	C	6.7	A	29.1	D
SR166 & Capps Ferry (TWSC)	EB	0	A	0	A	2	A	0	A	0	A	0	A
	WB	1	A	0.6	A	3.4	A	2.7	A	4.8	A	5.2	A
	NW	14.7	B	47.6	E	178.9	F	878.6	F	468.3	F	1279.2	F
Brookcrest & Capps Ferry (TWSC)	EB	4.6	B	47.2	E	30.3	D	54	F	257.1	F	1038.5	F
	WB	-	-	-	-	23.7	C	104.8	F	48.4	E	905.8	F
	NB	0	A	0	A	0	A	0	A	0.2	A	0.6	A
	SB	0	A	0.6	A	0.3	A	1.9	A	0.3	A	0.7	A
Entrance #2 & Capps Ferry (TWSC)	EB	-	-	-	-	-	-	-	-	328.5	F	824.5	F
	WB	-	-	-	-	-	-	-	-	124	F	335.8	F
	NB	-	-	-	-	-	-	-	-	0.1	A	0.3	A
	SB	-	-	-	-	-	-	-	-	0.4	A	0.9	A
Entrance #3 & Capps Ferry (TWSC)	EB	-	-	-	-	-	-	-	-	50	E	155.7	F
	WB	-	-	-	-	-	-	-	-	0.3	A	0.3	A
	NB	-	-	-	-	-	-	-	-	0	A	0	A
Florence Rd & Capps Ferry (TWSC)	EB	0	A	0	A	0	A	0	A	0	A	0	A
	WB	0.5	A	1	A	0.5	A	0.8	A	0.5	A	0.8	A
	NB	13.4	B	10.9	B	18.1	C	26	D	24.4	C	305.1	F
Campbellton Redwine Rd & S. Fulton (TWSC)	EB	0.1	A	0.4	A	0.2	A	0.6	A	0.2	A	0.6	A
	WB	0.6	A	0.7	A	0.3	A	0.5	A	0.3	A	0.5	A
	NB	16.7	C	28	D	166.5	F	5508.3	F	205.3	F	-	F
	SB	16.C	C	20	C	35.5	E	200.5	F	40.2	E	274.1	F

Table 5: Volume to Capacity Analysis Summary

Intersection	Existing Traffic		2030 No Build		2030 Build	
	AM Peak Period	PM Peak Period	AM Peak Period	PM Peak Period	AM Peak Period	PM Peak Period
	V/C	V/C	V/C	V/C	V/C	V/C
Highway 5 & SR 166 (Roundabout)	0.63	0.62	0.83	0.86	0.89	0.9
SR166 & Capps Ferry (TWSC)	0.38	0.89	1.55	3.06	3.02	8.03
Brookcrest & Capps Ferry (TWSC)	0.03	0.02	0.31	0.56	1.31	2.28
Entrance #2 & Capps Ferry (TWSC)	0	0	0	0	1.4	2.1
Entrance #3 & Capps Ferry (TWSC)	0	0	0	0	0.63	0.86
Florence Rd & Capps Ferry (TWSC)	0.35	0.12	0.48	0.33	0.53	1.09
Campbellton Redwine Rd & S. Fulton (TWSC)	0.37	0.39	1.16	6.53	1.26	9.62

Below are the recommendations based on the Synchro analysis results.

The analysis of Highway 5 and SR 166 shows that with the current operating conditions, the background traffic in 2030 will require intersection improvements with or without the Capps Ferry Residential project traffic. Suggested improvements for this roundabout are to install a northbound right-turn bypass lane along the SR 5 approach. This intersection should be monitored for improvement needs. This improvement was recommended by the Foxhall DRI.

Traffic at Capps Ferry Road and SR-166 has an LOS of F northbound from Capps Ferry Road for both the NO BUILD 2030 and BUILD 2030 simulations. A signal may be required at this intersection by the background traffic. Other recommended improvements are to install a right-turn lane eastbound on SR-166 and a left turn lane westbound on SR-166. The intersection should be monitored to determine if or when warrants would be met. See appendix for the reports on the proposed intersection with background traffic and the proposed intersection with background and project traffic. This improvement was recommended by the Foxhall DRI.

Brookcrest Court and Capps Ferry Road is a two-lane project driveway with an LOS F for traffic turning out of Capps Residential. Suggested improvements are to; install an auxiliary eastbound right turn lane along Brookcrest Court, install an exclusive northbound left-turn lane along Capps Ferry Road, install an exclusive southbound left-turn lane along Capps Ferry Road, and install a northbound right-turn lane along

Capps Ferry Road. This intersection does not meet traffic signal warrants but should be monitored. The auxiliary lane proposals at this intersection were recommended by the Foxhall DRI.

The project traffic at Entrance #2 was analyzed assuming a two-lane project driveway, with inbound and one outbound lane. Suggested improvements are to install an auxiliary right-turn lane. This intersection traffic does not warrant a signal, but the intersection should be monitored to see if signal warrants are met in future conditions.

The project traffic at Entrance #3 was analyzed assuming a two-lane project driveway, with inbound and one outbound lane. With projected traffic volumes, the intersection operates at LOS F, however, the intersection does not warrant a signal. Suggested improvements are to install an auxiliary right-turn lane. The intersection should be monitored to see if signal warrants are met in future conditions.

The traffic at Capps Ferry Road and Florence Road has LOS F in the BUILD 2030 PM analysis. This intersection traffic does not warrant a signal, but the intersection should be monitored to see if signal warrants are met in future conditions.

Traffic at Campbellton-Redwine Road and S. Fulton Highway has an LOS of F northbound from Capps Ferry Road for both the NO BUILD 2030 and BUILD 2030 simulations. A signal may be required at this intersection by the background traffic and the intersection should be monitored. This improvement was also recommended by the Foxhall DRI.

Conclusions

This report has analyzed traffic and safety conditions in the project vicinity of a proposed development including 609 single family dwelling units to be built on currently vacant land. Based upon this analysis, the conclusion can be made that the project traffic is not anticipated to have a significant impact on levels of service, however, background traffic requires improvements at neighboring intersections. The intersections are outlined in this report and are recommended to be monitored to see if signal warrants are met in future conditions.