

TRAFFIC IMPACT STUDY FOR

DRI 3213

KILBURN/GRAVEL SPRINGS ROAD DEVELOPMENT

DATE:

December 15, 2020

LOCATION:

SR 324 (Gravel Springs Rd) at Brown Road
Buford, Gwinnett County, Georgia

PREPARED FOR:

Kilburn Commercial Properties

PREPARED BY:

NV5 Engineers and Consultants, Inc.
1255 Canton Street, Suite G Roswell, GA 30075

Executive Summary

The new 958,896 square feet of warehouse/distribution center buildings will be located northwest of the intersection of Gravel Springs Road (SR 324) and Brown Road in northeastern Gwinnett County, Georgia (to be annexed into the City of Buford). The new development will have two (2) vehicular access points, the main access point on Brown Road, and a secondary access point on SR 324. The project will be developed in a single phase by 2022.

When completed, the development is expected to generate a total of 1,560 daily trips. During the AM peak hour, the site is expected to generate 140 trips (108 entering and 32 exiting). During the PM peak hour, this site is expected to generate 143 trips (39 entering and 104 exiting). Of these new vehicular trips, 211 trucks are expected to enter and exit the site daily (7 entering and 11 exiting during the AM peak hour, 12 entering and 9 exiting during the PM peak hour).

Approximately 80% of the new vehicular trips are expected to originate and terminate east of the site via SR 324, with 20% to from the west.

Traffic operations at the signalized SR 324 study intersections are satisfactory in the existing conditions and for 2022 conditions with or without the new project trips with the existing lane configurations. The SR 324 through and turning traffic operates adequately now and will continue to operate adequately in 2022 with or without the project trips. The new site driveways will operate adequately. The stop sign controlled side street approaches to SR 324 on Ivy Creek Rd, Brown Rd, and Ivy Church Rd experience delays for left-turning vehicles seeking gaps in through traffic, but traffic throughout the day is insufficient to warrant consideration of installation of either a traffic signals or roundabouts. Alternate routes are available for these vehicles.

Widening of Brown Rd from the site driveway to SR 324 and installation of a sidewalk along the Brown Rd site frontage is recommended. Installation of dedicated left-turn lanes on the SR 324 driveway and on the Brown Rd approach to SR 324 are recommended to avoid queued left-turning vehicles from blocking right turning vehicles unnecessarily

While the analysis prepared for the proposed development indicates some impact on traffic operations in the study area, improvements at the study intersections are not required to mitigate the impact of the proposed development.

TABLE OF CONTENTS

Executive Summary	1
Introduction	2
Existing Conditions.....	6
B.1 Phasing	6
B.2 Transportation Facilities	6
B.3 Transit	6
B.3 Pedestrian and Bicycle Facilities.....	6
B.4 Traffic Volumes.....	6
Future Conditions.....	9
C.1. Background Traffic	9
C.2. Project Trip Generation	9
C.3. Trip Distribution and Assignment.....	9
Traffic Impact Analyses.....	13
D.1. Existing Conditions Capacity Analysis	13
D.2. No-Build Conditions Capacity Analysis.....	14
D.3. Build Conditions Capacity Analysis	15
Recommendations and Conclusions	16

LIST OF TABLES

Table 1: Project Trip Generation	9
Table 2: Existing Capacity Analysis	13
Table 3: No-Build Capacity Analysis.....	14
Table 4: Build Capacity Analysis	15

LIST OF FIGURES

Figure 1: Vicinity Map	4
Figure 2: Site Location Aerial	5
Figure 3: Existing Traffic Volumes.....	8
Figure 4: No Build Traffic Volumes	10
Figure 5: Project Trips Volumes	11
Figure 6: Build Traffic Volumes	12

NV5 #2020220

Introduction

The new 958,896 square feet of warehouse/distribution center buildings will be located northwest of the intersection of Gravel Springs Road (SR 324) and Brown Road in northeastern Gwinnett County, Georgia (to be annexed into the City of Buford). The new development will have two (2) vehicular access points, the main access point on Brown Road, and a secondary access point on SR 324.

The project will be developed in a single phase by 2022.

The purpose of this study is to identify the traffic impacts associated with the development – both existing traffic, future background growth traffic, and full future traffic in the completion year to assess if any mitigation is needed. The traffic impact study analyzes the levels of service at the development access points. Figures 1 and 2 show the site location, study intersections and new trip distribution. A copy of the site plan is included in Appendix A.

This report summarizes the data collected, projected traffic at the study locations, analysis of traffic impacts including Level of Service (LOS), turn lane analysis, and conclusions from the analysis.

Figure 1: Vicinity Map

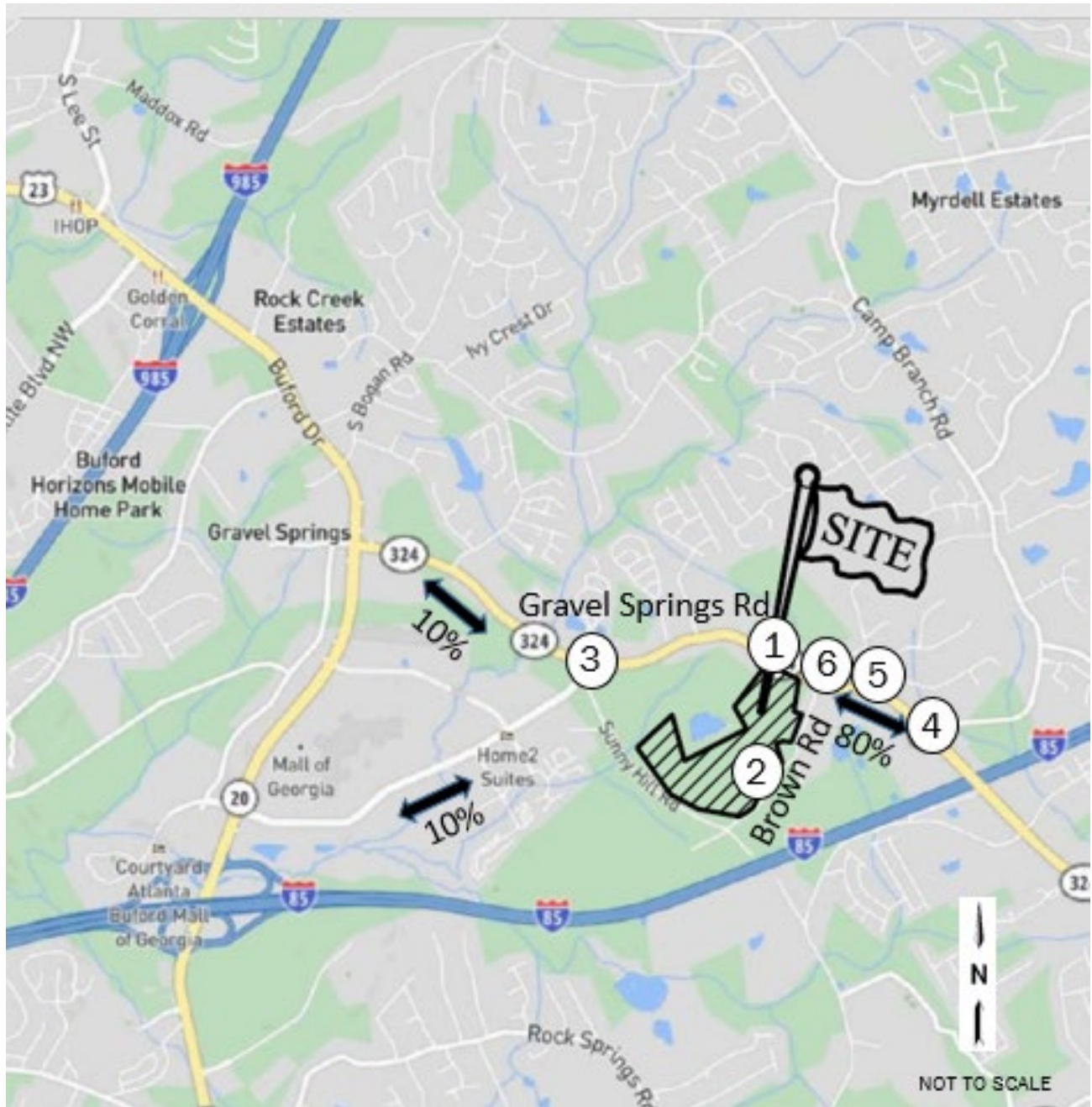


Figure 2: Site Location Aerial



Existing Conditions

B.1 Phasing

The development is planned to be completed in a single phase by 2027.

B.2 Transportation Facilities

SR 324 (Gravel Springs Road) is a four-lane divided Urban Minor Arterial east-west roadway between SR 8 and SR 20, with access ramps at I-85 under construction with a 45 miles per hour posted speed limit. There are left and right turn lane at all median crossovers in this area. The adjacent to the site land uses are primarily residential, institutional, and vacant/agricultural.

Brown Road is a north-south two-lane local roadway with a 25 miles per hour posted speed limit, running south from SR 324 at Ivy Church Road to Sunny Hill Rd (currently terminates at Mall of GA Blvd to the north). The adjacent land uses are primarily residential and vacant/agricultural.

Ivy Church Road is a north-south two-lane local roadway aligned with Brown Rd at SR 324 that provides access to a single home and a small church. The adjacent land uses are primarily institutional, residential, and vacant/agricultural.

Ivy Creek Road is a two-lane local roadway running north from SR 324 to Camp Branch Rd.

Camp Branch Road is a two-lane local roadway posted for no trucks with a 35 mph posted speed limit running north from SR 324 to Hamilton Mill Rd (providing access to I-85 ramps). The adjacent land uses are primarily residential and vacant/agricultural.

The adjacent land uses are primarily residential and vacant/agricultural.

Camp Branch Road is a two-lane local roadway posted for no trucks with a 35 mph speed limit running north from SR 324 to Hamilton Mill Rd (providing access to I-85 ramps). The adjacent land uses are primarily residential and vacant/agricultural.

LOS D will be considered the minimum standard unless existing conditions are lower.

B.3. Transit

There are no transit facilities adjacent to the site.

B.3. Pedestrian and Bicycle Facilities

There are no sidewalks along the Brown Rd site frontage but a sidewalk will be constructed along the site frontage. There are no bicycle lanes adjacent to the site.

B.4. Traffic Volumes

As discussed at the Methodology Meeting held on December 7, 2020 for DRI #3213 the

previously collected 2016 and 2017 existing counts are increased by a 3.0% annual background growth rate between the year of the traffic counts and the current year 2020 and for the build year of 2022 analyses.

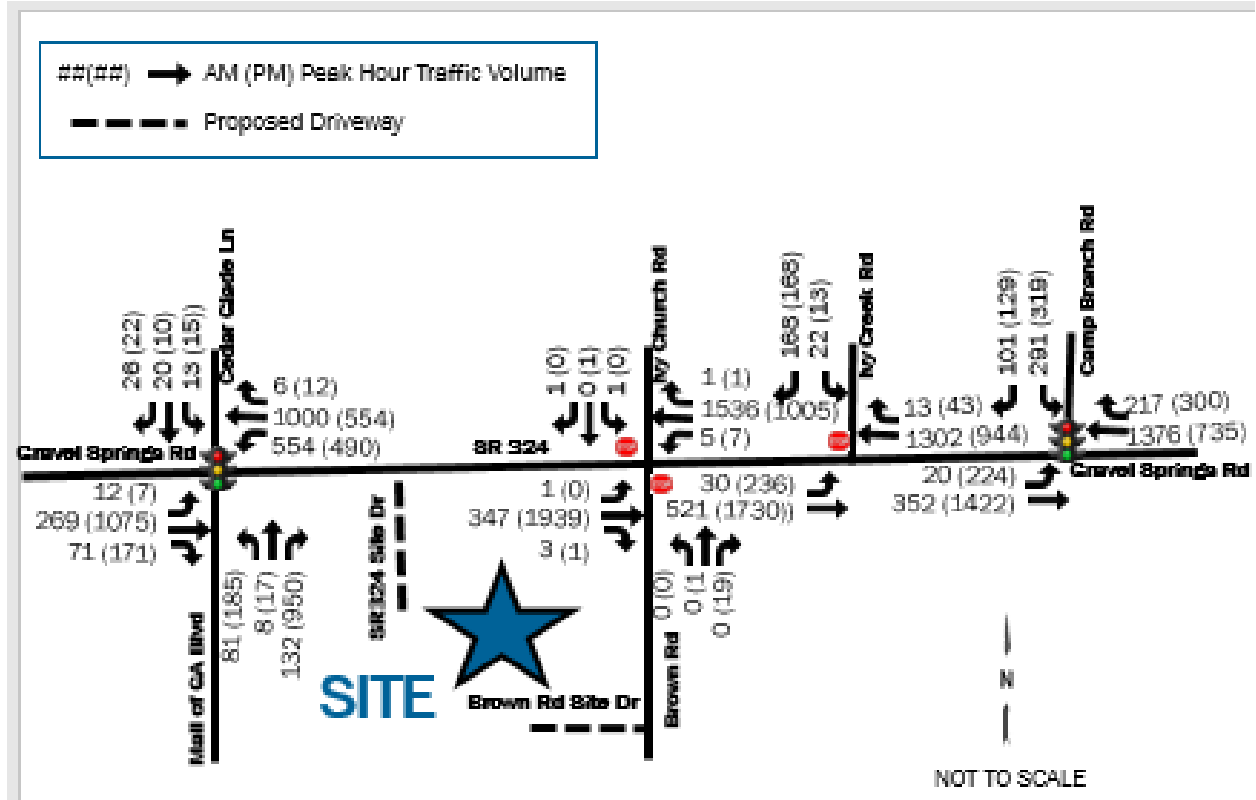
In addition, the new 2,460 daily trips expected from 129 single family & townhomes and 157 townhomes in the portion of DRI #1071 (Andover Phases 1 & 2) northwest of Ivy Creek Rd are included in the build and no-build 2022 analyses as provided by Gwinnett County planning. These new trips are expected to add approximately 169 AM and 218 PM peak hour new trips. In the AM peak hour, approximately 41 entering and 128 exiting new trips are expected on Ivy Creek Rd with approximately 137 entering and 81 exiting new trips in the PM peak hour. These new trips were assigned approximately evenly to origins and destinations equally in the three cardinal directions from the site.

As outlined in the Letter of Understanding, the study area includes the following study intersections

1. Site Driveway on Gravel Springs Road/ SR 324 at existing median crossover
2. Site Driveway on Brown Road
3. Gravel Springs Road/ SR 324 at Camp Branch Road (signalized)
4. Gravel Springs Road/ SR 324 at Mall of Georgia Boulevard (signalized)
5. Gravel Springs Road/ SR 324 at Ivy Creek Road

Figure 3 shows the existing turning movement counts, modified as discussed above. The previously collected traffic counts worksheets are included in Appendix B.

Figure 3: Existing Traffic Volumes



Future Conditions

C.1. Background Traffic

The existing calculated 2020 volumes were increased by 3.0% annually for two (2) years and additional traffic expected from the portion of DRI #1071 northwest of Ivy Creek Road being currently developed, as calculated using the ITE Trip Generation Manual, No Build (background) traffic volumes as shown in Figure 4. The study analyses assume existing lane configurations and traffic control at the study intersections,

C.2. Project Trip Generation

Table 1 summarizes the project trip generation calculated using the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10th Edition, 2017.

Table 1: Project Trip Generation

Land Use (ITE LUC) Density			Total	In	Out
Warehousing (150) 958,896 square feet	Total	Daily	1560	780	780
		AM	140	108	32
		PM	143	39	104
	Trucks	Daily	422	211	211
		AM	18	7	11
		PM	21	12	9
	Personal Vehicles	Daily	1,138	569	569
		AM	122	101	21
		PM	122	27	95

C.3. Trip Distribution and Assignment

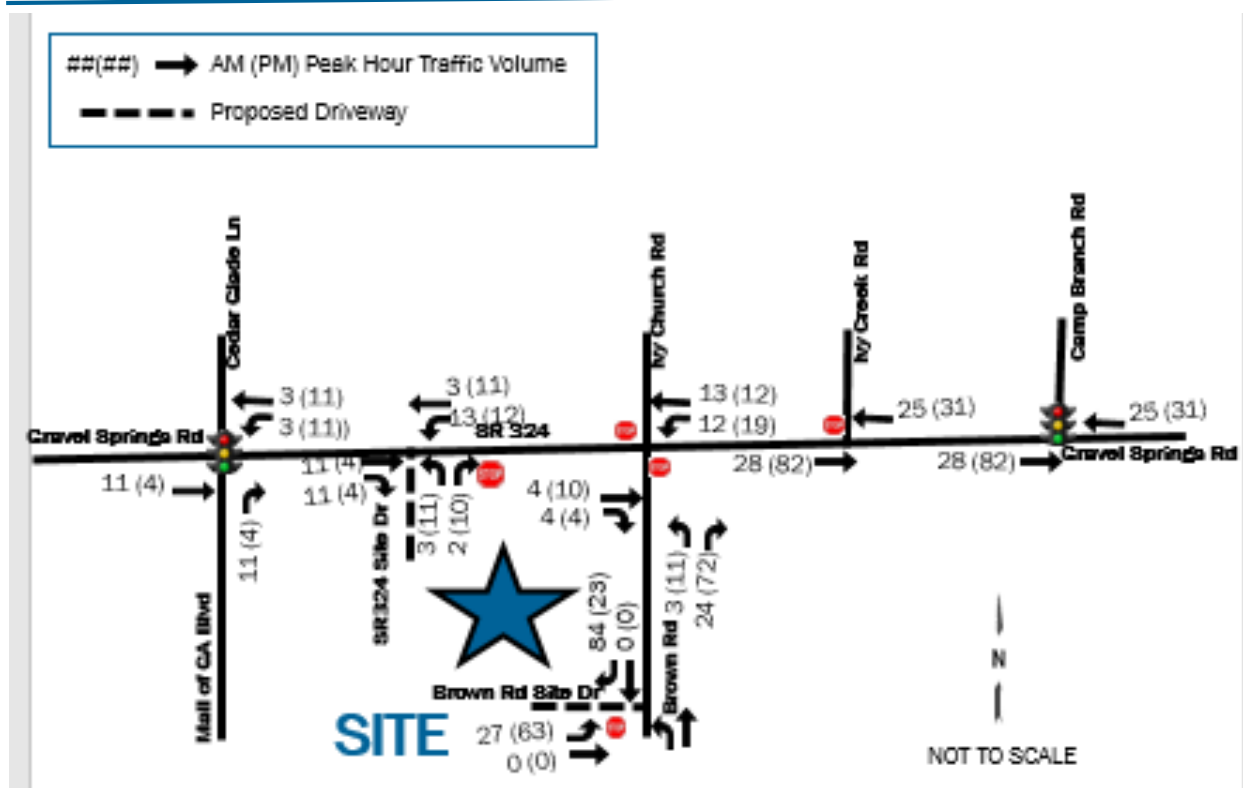
As outlined in the Letter of Understanding and subsequently updated on December 9, 2020, the new project trips were assigned to the study area as follows:

- 80% to/from the east on Gravel Springs Road
- 20% to/from the west on Gravel Springs Road
 - 10% to/from the northeast on Mall of Georgia Blvd
 - 10% to/from north on Gravel Springs Road

The new project trips distribution is shown in Figure 5

The future site traffic (project trips) is shown in Figure 5 and the Build traffic volumes is shown in Figure 6. The trip generation details are included in Appendix C.

Figure 5: Project Trips Volumes



Traffic Impact Analyses

The analysis in each of the scenarios for the study was performed using the traffic analysis software Synchro®. Average vehicular delays are calculated and reported as Levels of Service (LOS) as defined by the Highway Capacity Manual (HCM). Capacity analysis worksheets are included in Appendix D.

D.1. Existing Conditions Capacity Analysis

The results of the Existing conditions capacity analysis are shown in Table 2. The analysis utilizes the volumes depicted in Figure 3.

Table 2: Existing Capacity Analysis

ID	Intersection	Control	Movement	AM		PM	
				LOS	Delay	LOS	Delay
3	Mall of GA Blvd at Gravel Springs Rd	Signal	Overall	B	18.3	C	24.6
4	Camp Branch Rd at Gravel Springs Rd	Signal	Overall	B	16.1	B	15.6
5	Ivy Creek Rd at Gravel Springs Rd	Site Street Stop	SB	B	14.1	F	67.7
			EB	B	10.4	C	16.3
			WB	A	0	A	0
6	Brown Rd/ Ivy Church Rd at Gravel Springs Rd	Site Street Stop	NB	A	0	E	38.3
			SB	E	49.8	F	313
			EB	B	14.2	A	0
			WB	A	8.1	C	17.8

As shown in Table 2, the through traffic on SR 324 operates adequately and the signalized intersections at Mall of Georgia Blvd and Camp Branch Rd operate adequately during the morning and evening peak hours. Because of the heavy through volumes on SR 324 during the peak hours, left turning vehicles at the side street stop controlled approaches of Ivy Creek Rd and Brown/Ivy Church Rd may experience long delays waiting for gaps in the through traffic. There are insufficient side street left-turning hourly volumes throughout the day to meet warrants for installation of traffic signals. Installation of a modern design roundabouts is not recommended since the side street daily volumes do not exceed 10% of the SR 324 through traffic volumes. Vehicles intending to make left turns from Ivy Creek Rd can use Camp Branch Rd as an alternate route to a signal controlled intersection on SR 324. Brown/Ivy church Rd left turning vehicles can turn right and make U-turns.

D.2. No-Build Conditions Capacity Analysis

The results of the No-Build conditions capacity analysis are shown in Table 3 below. The analysis utilizes the volumes in Figure 4.

Table 3: No-Build Capacity Analysis

ID	Intersection	Control	Movement	AM		PM	
				LOS	Delay	LOS	Delay
3	Mall of GA Blvd at Gravel Springs Rd	Signal	Overall	C	32.0	C	26.3
4	Camp Branch Rd at Gravel Springs Rd	Signal	Overall	B	16.8	B	17.2
5	Ivy Creek Rd at Gravel Springs Rd	Site Street Stop	SB	B	22.7	F	164.4
			EB	B	11.6	B	13.8
			WB	A	0	A	0
6	Brown Rd/ Ivy Church Rd at Gravel Springs Rd	Site Street Stop	NB	A	0	E	48.6
			SB	E	61.9	F	480
			EB	C	15.3	A	0
			WB	A	8.2	C	19.9

As shown in Table 3, the traffic operations during peak hours in 2022 are expected to remain adequate at most intersections, with excessive delays for left turning vehicles from Ivy Creek Rd, Brown Rd, and Ivy Church Rd to continue. As noted for existing conditions, these vehicles can make right turns onto SR 324 and U-turns downstream to avoid the delays. The Ivy Creek Rd vehicles can use the alternate route via Camp Creek Rd to reach a signalized SR 324 intersection. Consideration of traffic signals or roundabouts is not recommended due to insufficient side-street approach volumes.

D.3. Build Conditions Capacity Analysis

The Build conditions capacity analysis is shown in Table 4. The analysis utilizes the volumes in Figure 7.

Table 4: Build Capacity Analysis

ID	Intersection	Control	Movement	AM		PM	
				LOS	Delay	LOS	Delay
	SR 324 Site Driveway at Gravel Springs Rd	Site Street Stop	NB	C	22.9	B	12.4
			EB	A	0	A	0
			WB	A	8.3	C	24.4
	Site Driveway at Brown Rd	Site Street Stop	NB	A	0	A	0
			SB	A	0	A	0
			EB	A	8.8	A	9.0
3	Mall of GA Blvd at Gravel Springs Rd	Signal	Overall	C	34.5	C	26.4
4	Camp Branch Rd at Gravel Springs Rd	Signal	Overall	B	18.2	B	18.1
5	Ivy Creek Rd at Gravel Springs Rd	Site Street Stop	SB	C	22.3	F	197
			EB	B	11.3	B	14.2
			WB	A	0	A	0
6	Brown Rd/ Ivy Church Rd at Gravel Springs Rd	Site Street Stop	NB	B	14.1	F	1924
			SB	F	98.7	F	590
			EB	C	15.4	A	0
			WB	A	8.4	C	21.5

As shown in Table 4, the traffic operations with the project trips during peak hours in 2022 are expected to remain adequate at most intersections, with excessive delays continuing for left turning vehicles from Ivy Creek Rd, Brown Rd, and Ivy Church Rd. As noted for existing and no-build conditions, these vehicles can make right turns onto SR 324 and U-turns downstream to avoid the delays. The Ivy Creek Rd vehicles can use the alternate route via Camp Creek Rd to reach a signalized SR 324 intersection. Consideration of traffic signals or roundabouts is not recommended due to insufficient side-street approach volumes.

Widening of Brown Rd from the site driveway to SR 324 and installation of a sidewalk along the Brown Rd site frontage is recommended. Installation of dedicated left-turn lanes on the SR 324 driveway and on the Brown Rd approach to SR 324 are recommended to avoid queued left-turning vehicles from blocking right turning vehicles unnecessarily.

Recommendations and Conclusions

The new 958,896 square feet of warehouse/distribution center buildings will be located northwest of the intersection of Gravel Springs Road (SR 324) and Brown Road in northeastern Gwinnett County, Georgia (to be annexed into the City of Buford). The new development will have two (2) vehicular access points, the main access point on Brown Road, and a secondary access point on SR 324. The project will be developed in a single phase by 2022.

When completed, the development is expected to generate a total of 1,560 daily trips. During the AM peak hour, the site is expected to generate 140 trips (108 entering and 32 exiting). During the PM peak hour, this site is expected to generate 143 trips (39 entering and 104 exiting). Of these new vehicular trips, 211 trucks are expected to enter and exit the site daily (7 entering and 11 exiting during the AM peak hour, 12 entering and 9 exiting during the PM peak hour).

Approximately 80% of the new vehicular trips are expected to originate and terminate east of the site via SR 324, with 20% to from the west.

Traffic operations at the signalized SR 324 study intersections are satisfactory in the existing conditions and for 2022 conditions with or without the new project trips with the existing lane configurations. The SR 324 through and turning traffic operates adequately now and will continue to operate adequately in 2022 with or without the project trips. The new site driveways will operate adequately. The stop sign controlled side street approaches to SR 324 on Ivy Creek Rd, Brown Rd, and Ivy Church Rd experience delays for left-turning vehicles seeking gaps in through traffic, but traffic throughout the day is insufficient to warrant consideration of installation of either a traffic signals or roundabouts. Alternate routes are available for these vehicles.

Widening of Brown Rd from the site driveway to SR 324 and installation of a sidewalk along the Brown Rd site frontage is recommended. Installation of dedicated left-turn lanes on the SR 324 driveway and on the Brown Rd approach to SR 324 are recommended to avoid queued left-turning vehicles from blocking right turning vehicles unnecessarily.

While the analysis prepared for the proposed development indicates some impact on traffic operations in the study area, improvements at the study intersections are not required to mitigate the impact of the proposed development.

APPENDIX

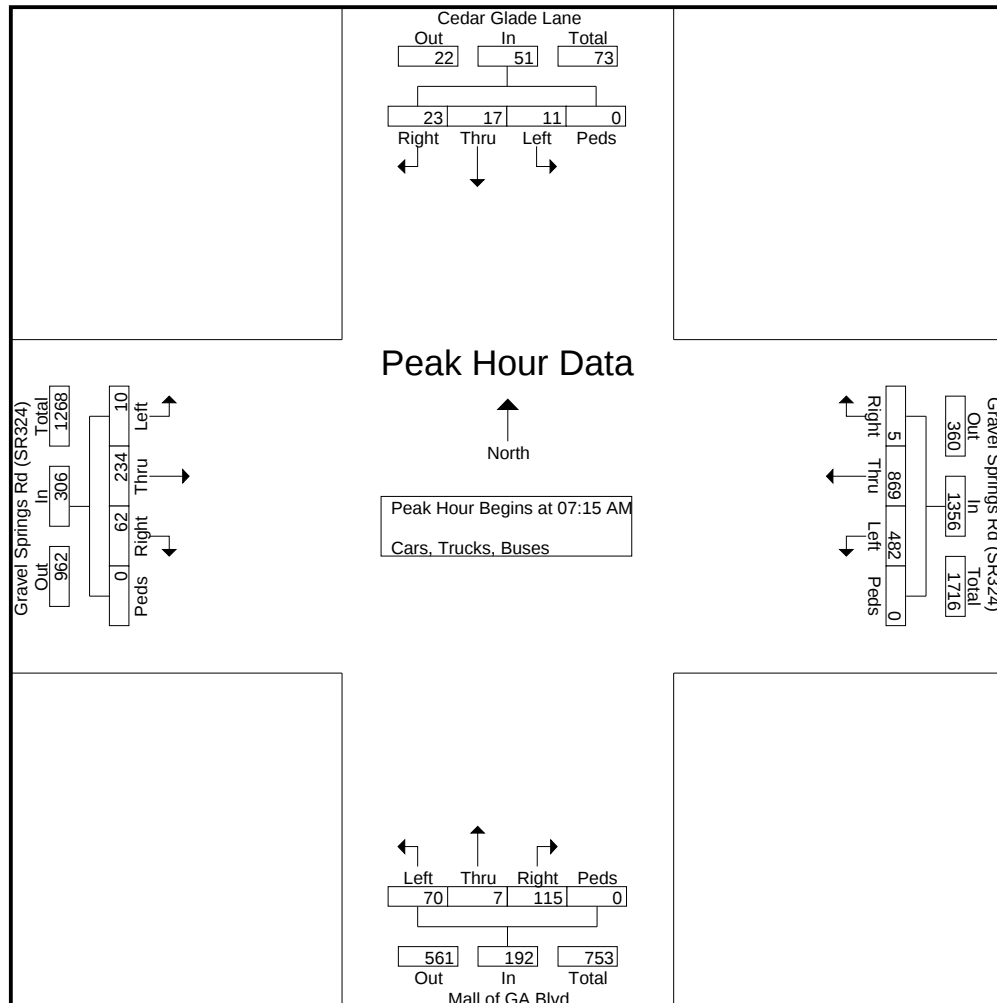
Reliable Traffic Data Services, LLC

Tel: (770) 578-8158 | Fax: (770) 578-8159
info@reliabletraffic.org | www.reliabletraffic.org

TMC Data
Gravel Springs Rd @ Mall of GA Blvd/
Cedar Glade Lane
7-9am I 4.30-6.30pm

File Name : 38080009
Site Code : 38080009
Start Date : 3/23/2016
Page No : 2

	Mall of GA Blvd Northbound					Cedar Glade Lane Southbound					Gravel Springs Rd (SR324) Eastbound					Gravel Springs Rd (SR324) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	8	1	22	0	31	2	6	6	0	14	3	63	17	0	83	120	232	2	0	354	482
07:30 AM	21	0	25	0	46	1	5	5	0	11	2	68	16	0	86	124	227	1	0	352	495
07:45 AM	19	3	32	0	54	3	3	9	0	15	3	41	14	0	58	119	208	1	0	328	455
08:00 AM	22	3	36	0	61	5	3	3	0	11	2	62	15	0	79	119	202	1	0	322	473
Total Volume	70	7	115	0	192	11	17	23	0	51	10	234	62	0	306	482	869	5	0	1356	1905
% App. Total	36.5	3.6	59.9	0		21.6	33.3	45.1	0		3.3	76.5	20.3	0		35.5	64.1	0.4	0		
PHF	.795	.583	.799	.000	.787	.550	.708	.639	.000	.850	.833	.860	.912	.000	.890	.972	.936	.625	.000	.958	.962



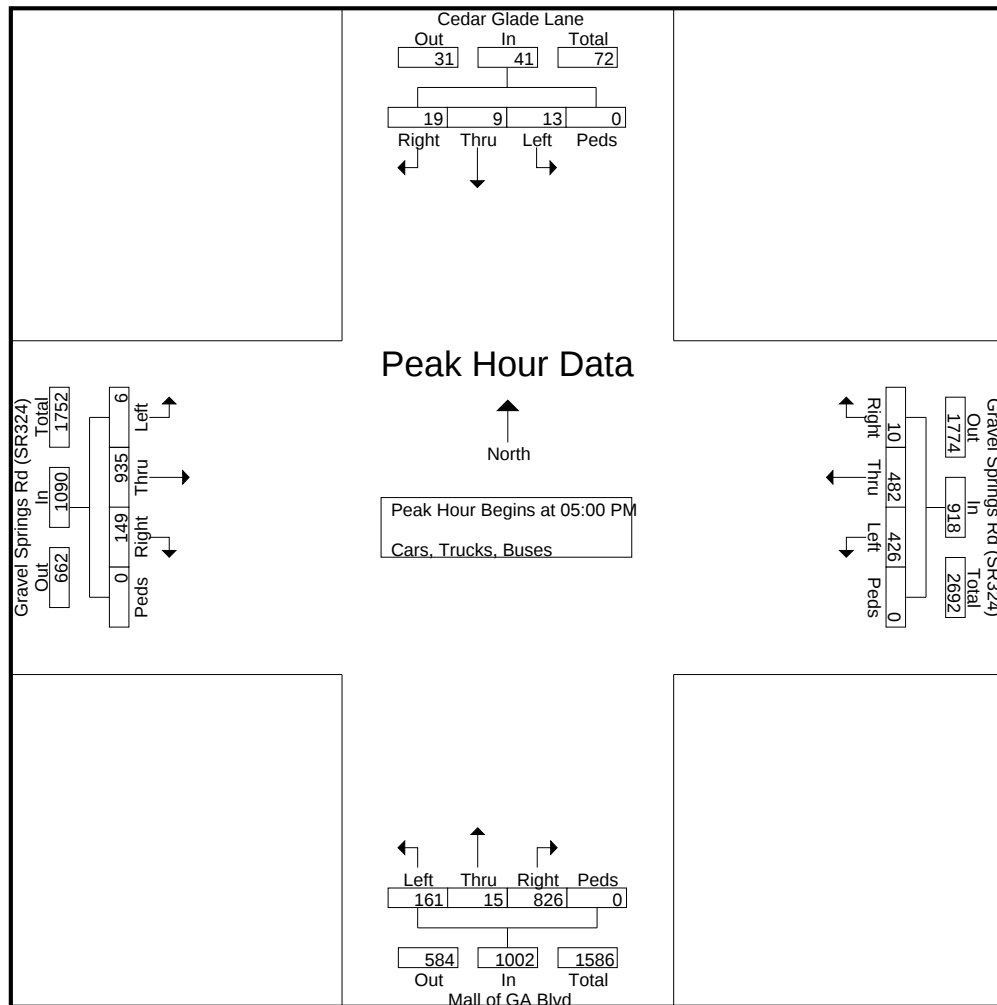
Reliable Traffic Data Services, LLC

Tel: (770) 578-8158 | Fax: (770) 578-8159
info@reliabletraffic.org | www.reliabletraffic.org

TMC Data
Gravel Springs Rd @ Mall of GA Blvd/
Cedar Glade Lane
7-9am I 4.30-6.30pm

File Name : 38080009
Site Code : 38080009
Start Date : 3/23/2016
Page No : 3

	Mall of GA Blvd Northbound					Cedar Glade Lane Southbound					Gravel Springs Rd (SR324) Eastbound					Gravel Springs Rd (SR324) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	42	5	210	0	257	2	3	4	0	9	0	230	32	0	262	97	117	2	0	216	744
05:15 PM	46	3	213	0	262	3	1	6	0	10	3	234	36	0	273	103	125	3	0	231	776
05:30 PM	38	3	206	0	247	2	2	4	0	8	1	237	39	0	277	109	122	3	0	234	766
05:45 PM	35	4	197	0	236	6	3	5	0	14	2	234	42	0	278	117	118	2	0	237	765
Total Volume	161	15	826	0	1002	13	9	19	0	41	6	935	149	0	1090	426	482	10	0	918	3051
% App. Total	16.1	1.5	82.4	0		31.7	22	46.3	0		0.6	85.8	13.7	0		46.4	52.5	1.1	0		
PHF	.875	.750	.969	.000	.956	.542	.750	.792	.000	.732	.500	.986	.887	.000	.980	.910	.964	.833	.000	.968	.983



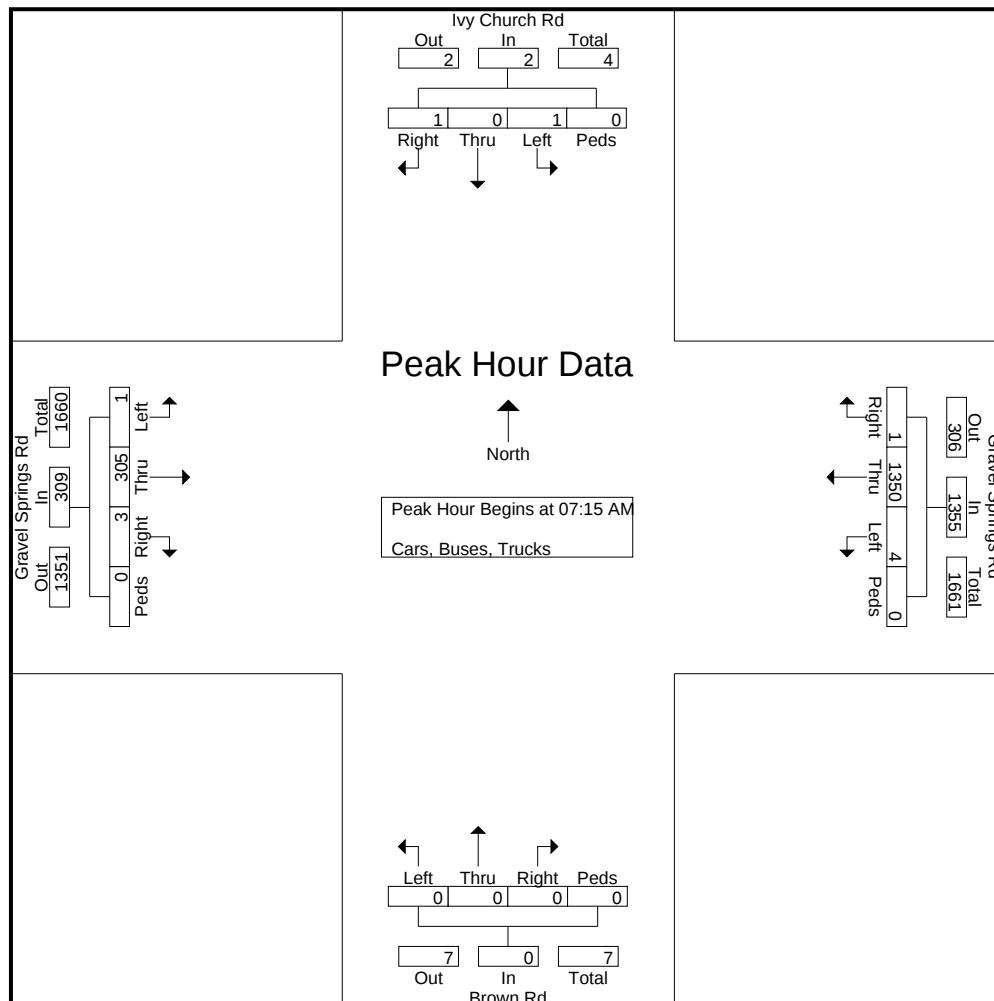
Reliable Traffic Data Services, LLC

Tel: (770) 578-8158 | Fax: (770) 578-8159
info@reliabletraffic.org | www.reliabletraffic.org

TMC Data
Gravel Springs Rd @ Brown Rd/
Ivy Church Rd
7-9am I 4-6pm

File Name : 38870002
Site Code : 38870002
Start Date : 8/2/2016
Page No : 2

	Brown Rd Northbound					Ivy Church Rd Southbound					Gravel Springs Rd Eastbound					Gravel Springs Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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	0	0	0	0	0	0	0	0	0	77	1	0	78	1	306	0	0	307	385
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	73	0	0	73	2	324	0	0	326	399
07:45 AM	0	0	0	0	0	1	0	0	0	1	1	69	0	0	70	0	368	0	0	368	439
08:00 AM	0	0	0	0	0	0	0	1	0	1	0	86	2	0	88	1	352	1	0	354	443
Total Volume	0	0	0	0	0	1	0	1	0	2	1	305	3	0	309	4	1350	1	0	1355	1666
% App. Total	0	0	0	0	0	50	0	50	0	0	0.3	98.7	1	0	0	0.3	99.6	0.1	0	0	0
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.500	.250	.887	.375	.000	.878	.500	.917	.250	.000	.921	.940



Reliable Traffic Data Services, LLC

Tel: (770) 578-8158 | Fax: (770) 578-8159
info@reliabletraffic.org | www.reliabletraffic.org

TMC Data
Gravel Springs Rd @ Brown Rd/
Ivy Church Rd
7-9am I 4-6pm

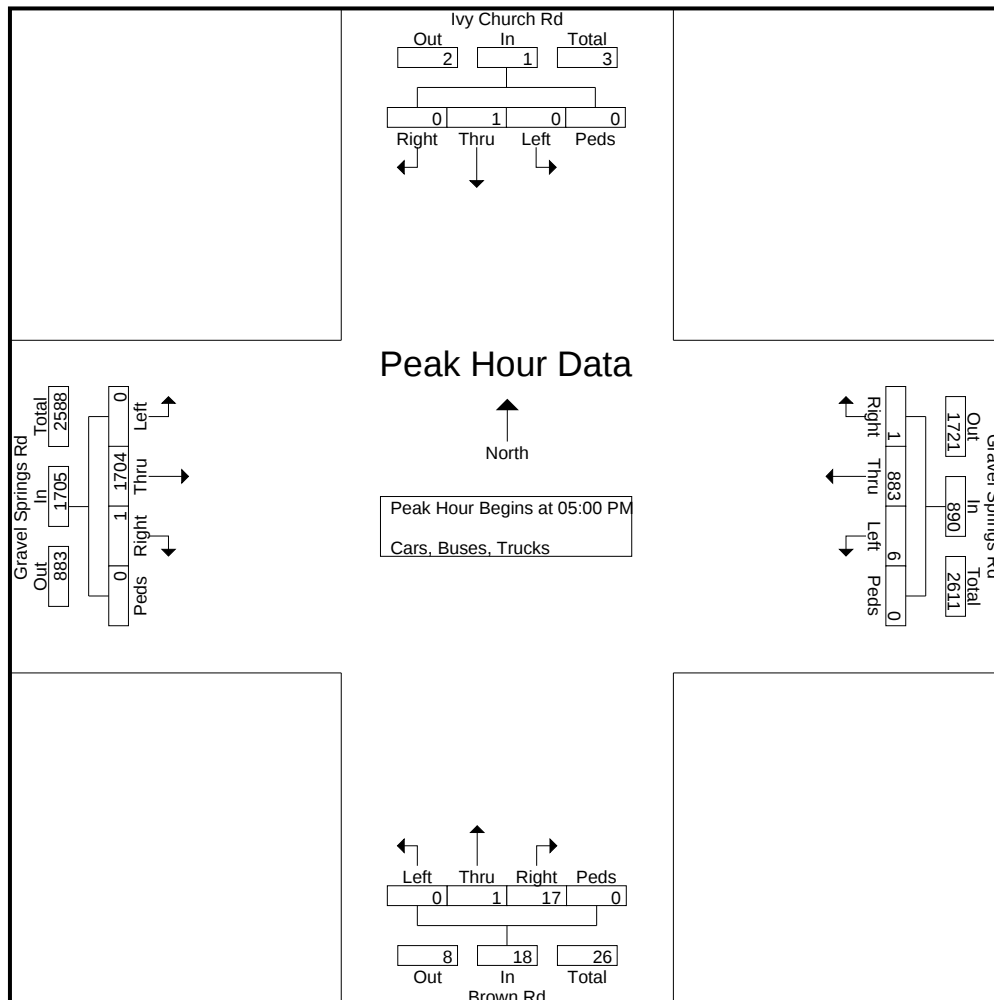
File Name : 38870002
Site Code : 38870002
Start Date : 8/2/2016
Page No : 3

	Brown Rd Northbound					Ivy Church Rd Southbound					Gravel Springs Rd Eastbound					Gravel Springs Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	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 05:00 PM

05:00 PM	0	0	5	0	5	0	0	0	0	0	0	433	0	0	433	1	228	0	0	229	667
05:15 PM	0	0	6	0	6	0	0	0	0	0	0	421	1	0	422	0	226	0	0	226	654
05:30 PM	0	1	5	0	6	0	0	0	0	0	0	428	0	0	428	5	221	1	0	227	661
05:45 PM	0	0	1	0	1	0	1	0	0	1	0	422	0	0	422	0	208	0	0	208	632
Total Volume	0	1	17	0	18	0	1	0	0	1	0	1704	1	0	1705	6	883	1	0	890	2614
% App. Total	0	5.6	94.4	0		0	100	0	0		0	99.9	0.1	0		0.7	99.2	0.1	0		
PHF	.000	.250	.708	.000	.750	.000	.250	.000	.000	.250	.000	.984	.250	.000	.984	.300	.968	.250	.000	.972	.980



PEAK HOUR ITM SUMMARY

#003 Ivy Creek Road & Gravel Springs Road (S.R. 324)

LOCATION#:	003	QTD PROJ#:	2019162	AM PEAK:	700 AM
NORTH / SOUTH:	Ivy Creek Road	DATE:	Wednesday, May 08, 2019	MD PEAK:	100 PM
EAST / WEST:	Gravel Springs Road (S.R. 324)	VICINITY:	GA	PM PEAK:	500 PM

Ivy Creek Road

SOUTHBOUND LANES			
LN	1	0	1
AM	160	0	21
MD	123	0	10
PM	160	0	12
TOTAL	443	0	43



Gravel Springs Road (S.R. 324)

EASTBOUND LANES	LN	AM	MD	PM	TOTAL
	0.5	29	155	225	409
	1	497	932	1630	3059
	0	0	0	0	0

1-WAY STOP (SB)

WESTBOUND LANES	TOTAL	PM	MD	AM	LN
	66	41	13	12	1
	2959	900	817	1242	2
	0	0	0	0	0

Gravel Springs Road (S.R. 324)

NORTHBOUND LANES			
LN	0	0	0
AM	0	0	0
MD	0	0	0
PM	0	0	0
TOTAL	0	0	0

Ivy Creek Road



QUALITY TRAFFIC DATA, LLC

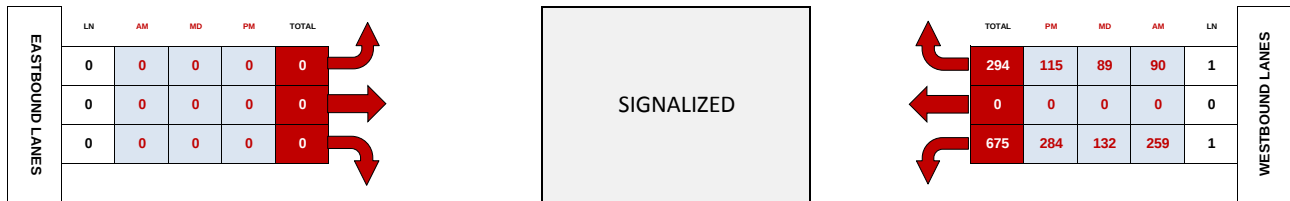
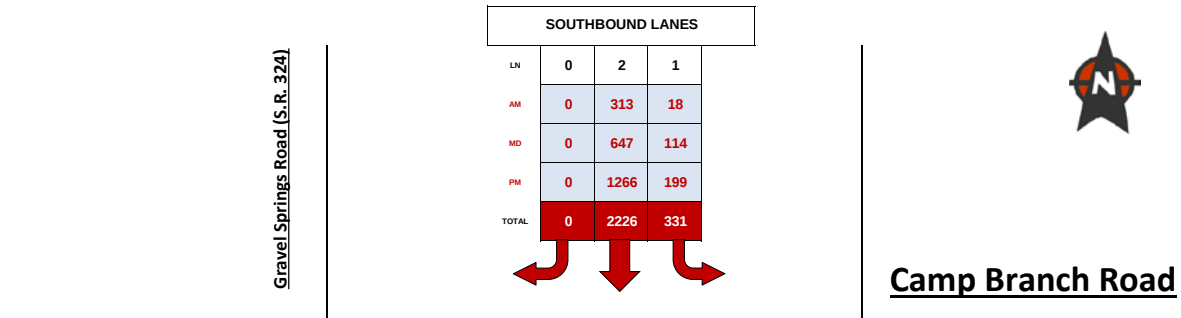
Phone: 877-852-4355 Fax: 877-877-3698 Info@QualityTrafficData.com

AM COUNT	6:00 AM	TO	12:00 PM
MD COUNT	12:00 PM	TO	2:00 PM
PM COUNT	2:00 PM	TO	7:00 PM

PEAK HOUR ITM SUMMARY

#004 Gravel Springs Road (S.R. 324) & Camp Branch Road

LOCATION#:	004	QTD PROJ#:	2017102	AM PEAK:	715 AM
NORTH / SOUTH:	Gravel Springs Road (S.R. 324)	DATE:	Tuesday, January 10, 2017	MD PEAK:	100 PM
EAST / WEST:	Camp Branch Road	VICINITY:	GA	PM PEAK:	500 PM



Camp Branch Road

NORTHBOUND LANES			
TOTAL	1	2429	571
PM	1	654	267
MD	0	550	111
AM	0	1225	193
LN	1	2	1

Gravel Springs Road (S.R. 324)



QUALITY TRAFFIC DATA, LLC

9701 W Pico Blvd, Suite 205, Los Angeles, CA 90035

Phone: 310-341-0019 Fax: 310-807-9247 Info@QualityTrafficData.com

AM COUNT	6:00 AM	TO	12:00 PM
MD COUNT	12:00 PM	TO	2:00 PM
PM COUNT	2:00 PM	TO	7:00 PM

Reliable Traffic Data Services, LLC

Tel: (770) 578-8158 | Fax: (770) 578-8159
info@reliabletraffic.org | www.reliabletraffic.org

TMC Data
Gravel Springs Rd @ Mall of GA Blvd/
Cedar Glade Lane
7-9am I 4.30-6.30pm

File Name : 38080009
Site Code : 38080009
Start Date : 3/23/2016
Page No : 1

Groups Printed- Cars, Trucks, Buses

	Mall of GA Blvd Northbound					Cedar Glade Lane Southbound					Gravel Springs Rd (SR324) Eastbound					Gravel Springs Rd (SR324) Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	8	0	23	0	31	3	4	2	0	9	2	42	8	0	52	91	215	0	0	306	398
07:15 AM	8	1	22	0	31	2	6	6	0	14	3	63	17	0	83	120	232	2	0	354	482
07:30 AM	21	0	25	0	46	1	5	5	0	11	2	68	16	0	86	124	227	1	0	352	495
07:45 AM	19	3	32	0	54	3	3	9	0	15	3	41	14	0	58	119	208	1	0	328	455
Total	56	4	102	0	162	9	18	22	0	49	10	214	55	0	279	454	882	4	0	1340	1830
08:00 AM	22	3	36	0	61	5	3	3	0	11	2	62	15	0	79	119	202	1	0	322	473
08:15 AM	13	0	15	0	28	0	3	4	0	7	2	53	12	0	67	117	210	4	0	331	433
08:30 AM	14	1	31	0	46	2	4	4	0	10	1	57	15	0	73	107	176	1	0	284	413
08:45 AM	13	0	25	0	38	3	3	2	0	8	2	59	15	0	76	114	199	2	0	315	437
Total	62	4	107	0	173	10	13	13	0	36	7	231	57	0	295	457	787	8	0	1252	1756
*** BREAK ***																					
04:30 PM	31	3	184	0	218	2	2	2	0	6	1	207	33	0	241	109	110	1	0	220	685
04:45 PM	35	4	193	0	232	5	2	3	0	10	2	214	29	0	245	103	112	2	0	217	704
Total	66	7	377	0	450	7	4	5	0	16	3	421	62	0	486	212	222	3	0	437	1389
05:00 PM	42	5	210	0	257	2	3	4	0	9	0	230	32	0	262	97	117	2	0	216	744
05:15 PM	46	3	213	0	262	3	1	6	0	10	3	234	36	0	273	103	125	3	0	231	776
05:30 PM	38	3	206	0	247	2	2	4	0	8	1	237	39	0	277	109	122	3	0	234	766
05:45 PM	35	4	197	0	236	6	3	5	0	14	2	234	42	0	278	117	118	2	0	237	765
Total	161	15	826	0	1002	13	9	19	0	41	6	935	149	0	1090	426	482	10	0	918	3051
06:00 PM	37	5	185	0	227	2	3	6	0	11	2	225	39	0	266	112	109	2	0	223	727
06:15 PM	45	3	175	0	223	3	2	5	0	10	3	222	36	0	261	110	104	3	0	217	711
Grand Total	427	38	1772	0	2237	44	49	70	0	163	31	2248	398	0	2677	1771	2586	30	0	4387	9464
Apprch %	19.1	1.7	79.2	0		27	30.1	42.9	0		1.2	84	14.9	0		40.4	58.9	0.7	0		
Total %	4.5	0.4	18.7	0	23.6	0.5	0.5	0.7	0	1.7	0.3	23.8	4.2	0	28.3	18.7	27.3	0.3	0	46.4	

Reliable Traffic Data Services, LLC

Tel: (770) 578-8158 | Fax: (770) 578-8159
info@reliabletraffic.org | www.reliabletraffic.org

TMC Data
Gravel Springs Rd @ Brown Rd/
Ivy Church Rd
7-9am I 4-6pm

File Name : 38870002
Site Code : 38870002
Start Date : 8/2/2016
Page No : 1

Groups Printed- Cars, Buses, Trucks

	Brown Rd Northbound					Ivy Church Rd Southbound					Gravel Springs Rd Eastbound					Gravel Springs Rd Westbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	48	0	0	48	1	253	0	0	254	302
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	77	1	0	78	1	306	0	0	307	385
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	73	0	0	73	2	324	0	0	326	399
07:45 AM	0	0	0	0	0	1	0	0	0	1	1	69	0	0	70	0	368	0	0	368	439
Total	0	0	0	0	0	1	0	0	0	1	1	267	1	0	269	4	1251	0	0	1255	1525
08:00 AM	0	0	0	0	0	0	0	1	0	1	0	86	2	0	88	1	352	1	0	354	443
08:15 AM	1	0	2	0	3	0	0	0	0	0	0	86	0	0	86	1	276	0	0	277	366
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	64	0	0	64	1	271	0	0	272	336
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	95	0	0	95	0	267	1	0	268	363
Total	1	0	2	0	3	0	0	1	0	1	0	331	2	0	333	3	1166	2	0	1171	1508
*** BREAK ***																					
04:00 PM	0	0	4	0	4	0	0	0	0	0	0	340	0	0	340	2	196	0	0	198	542
04:15 PM	3	0	6	0	9	0	0	0	0	0	0	368	0	0	368	0	213	0	0	213	590
04:30 PM	0	0	2	0	2	0	0	0	0	0	0	342	0	0	342	2	222	0	0	224	568
04:45 PM	0	0	2	0	2	0	0	0	0	0	1	358	1	0	360	3	230	0	0	233	595
Total	3	0	14	0	17	0	0	0	0	0	1	1408	1	0	1410	7	861	0	0	868	2295
05:00 PM	0	0	5	0	5	0	0	0	0	0	0	433	0	0	433	1	228	0	0	229	667
05:15 PM	0	0	6	0	6	0	0	0	0	0	0	421	1	0	422	0	226	0	0	226	654
05:30 PM	0	1	5	0	6	0	0	0	0	0	0	428	0	0	428	5	221	1	0	227	661
05:45 PM	0	0	1	0	1	0	1	0	0	1	0	422	0	0	422	0	208	0	0	208	632
Total	0	1	17	0	18	0	1	0	0	1	0	1704	1	0	1705	6	883	1	0	890	2614
Grand Total	4	1	33	0	38	1	1	1	0	3	2	3710	5	0	3717	20	4161	3	0	4184	7942
Apprch %	10.5	2.6	86.8	0		33.3	33.3	33.3	0		0.1	99.8	0.1	0		0.5	99.5	0.1	0		
Total %	0.1	0	0.4	0	0.5	0	0	0	0	0	0	46.7	0.1	0	46.8	0.3	52.4	0	0	52.7	

VEHICLE TURNING MOVEMENT COUNT

#003 Ivy Creek Road & Gravel Springs Road (S.R. 324) - AM PEAK

LOCATION#:	003	QTD PROJ#:	2019162
NORTH / SOUTH:	Ivy Creek Road	DATE:	Wednesday, May 08, 2019
EAST / WEST:	Gravel Springs Road (S.R. 324)	VICINITY:	GA

DIRECTION:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTALS
LANES:	0	0	0	1	0	1	0.5	1	0	0	2	1	
6:00 AM	0	0	0	1	0	19	4	34	0	0	197	0	255
6:15 AM	0	0	0	4	0	29	6	60	0	0	243	1	343
6:30 AM	0	0	0	3	0	32	1	98	0	0	292	2	428
6:45 AM	0	0	0	6	0	24	7	150	0	0	282	2	471
7:00 AM	0	0	0	8	0	35	6	164	0	0	290	5	508
7:15 AM	0	0	0	5	0	37	6	126	0	0	328	4	506
7:30 AM	0	0	0	2	0	43	8	92	0	0	310	2	457
7:45 AM	0	0	0	6	0	45	9	115	0	0	314	1	490
8:00 AM	0	0	0	3	0	43	14	137	0	0	298	4	499
8:15 AM	0	0	0	1	0	47	14	112	0	0	322	5	501
8:30 AM	0	0	0	1	0	34	11	96	0	0	262	5	409
8:45 AM	0	0	0	3	0	32	16	132	0	0	236	2	421
9:00 AM	0	0	0	5	0	38	24	111	0	0	226	1	405
9:15 AM	0	0	0	0	0	32	13	104	0	0	263	7	419
9:30 AM	0	0	0	4	0	48	21	111	0	0	221	2	407
9:45 AM	0	0	0	2	0	34	16	102	0	0	248	2	404
10:00 AM	0	0	0	3	0	40	15	113	0	0	211	6	388
10:15 AM	0	0	0	4	0	37	22	118	0	0	226	2	409
10:30 AM	0	0	0	5	0	45	25	137	0	0	250	4	466
10:45 AM	0	0	0	2	0	34	14	149	0	0	213	0	412
11:00 AM	0	0	0	3	0	49	21	144	0	0	213	2	432
11:15 AM	0	0	0	4	0	31	22	182	0	0	228	3	470
11:30 AM	0	0	0	4	0	36	39	185	0	0	240	4	508
11:45 AM	0	0	0	2	0	39	31	179	0	0	223	5	479
VOLUME STATS:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
TOTAL:	0	0	0	81	0	883	365	2951	0	0	6136	71	10487
P.H.V: 1	0	0	0	21	0	160	29	497	0	0	1242	12	1961
P.H.F: 2	0.000			0.887			0.774			0.944			0.965

(1) Peak Hour Volume (Peak Hour Begins At 700 AM)

(2) Peak Hour Factor (directional aggregate)



QUALITY TRAFFIC DATA, LLC

Phone: 877-852-4355 Fax: 877-877-3698 Info@QualityTrafficData.com

VEHICLE TURNING MOVEMENT COUNT

#003 Ivy Creek Road & Gravel Springs Road (S.R. 324) - PM PEAK

LOCATION#:	003	QTD PROJ#:	2019162
NORTH / SOUTH:	Ivy Creek Road	DATE:	Wednesday, May 08, 2019
EAST / WEST:	Gravel Springs Road (S.R. 324)	VICINITY:	GA

DIRECTION:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTALS
LANES:	0	0	0	1	0	1	0.5	1	0	0	2	1	
2:00 PM	0	0	0	2	0	29	42	271	0	0	183	4	531
2:15 PM	0	0	0	5	0	42	44	269	0	0	209	12	581
2:30 PM	0	0	0	3	0	38	35	294	0	0	216	4	590
2:45 PM	0	0	0	3	0	31	37	287	0	0	226	4	588
3:00 PM	0	0	0	1	0	35	48	295	0	0	213	8	600
3:15 PM	0	0	0	6	0	48	50	316	0	0	205	1	626
3:30 PM	0	0	0	5	0	29	48	306	0	0	186	7	581
3:45 PM	0	0	0	2	0	31	50	319	0	0	215	9	626
4:00 PM	0	0	0	3	0	41	41	333	0	0	185	4	607
4:15 PM	0	0	0	0	0	36	47	357	0	0	216	3	659
4:30 PM	0	0	0	2	0	30	53	346	0	0	216	9	656
4:45 PM	0	0	0	2	0	31	50	434	0	0	223	4	744
5:00 PM	0	0	0	2	0	36	52	421	0	0	200	8	719
5:15 PM	0	0	0	1	0	37	58	423	0	0	215	7	741
5:30 PM	0	0	0	2	0	47	59	388	0	0	248	11	755
5:45 PM	0	0	0	7	0	40	56	398	0	0	237	15	753
6:00 PM	0	0	0	3	0	46	62	389	0	0	209	6	715
6:15 PM	0	0	0	6	0	43	64	381	0	0	202	12	708
6:30 PM	0	0	0	1	0	37	77	372	0	0	219	15	721
6:45 PM	0	0	0	5	0	40	64	310	0	0	205	4	628

VOLUME STATS:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
TOTAL:	0	0	0	61	0	747	1037	6909	0	0	4228	147	13129
P.H.V: ₁	0	0	0	12	0	160	225	1630	0	0	900	41	2968
P.H.F: ₂	0.000			0.878			0.964			0.908			0.983

(1) Peak Hour Volume (Peak Hour Begins At 500 PM)

(2) Peak Hour Factor (directional aggregate)



QUALITY TRAFFIC DATA, LLC

Phone: 877-852-4355 Fax: 877-877-3698 Info@QualityTrafficData.com

VEHICLE TURNING MOVEMENT COUNT

#004 Gravel Springs Road (S.R. 324) & Camp Branch Road - AM PEAK

LOCATION#:	004	QTD PROJ#:	2017102
NORTH / SOUTH:	Gravel Springs Road (S.R. 324)	DATE:	Tuesday, January 10, 2017
EAST / WEST:	Camp Branch Road	VICINITY:	GA

DIRECTION:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTALS
LANES:	1	2	1	1	2	0	0	0	0	1	0	1	
6:00 AM	0	175	14	3	38	0	0	0	0	15	0	10	255
6:15 AM	0	207	28	8	50	0	0	0	0	29	0	15	337
6:30 AM	0	235	30	4	49	0	0	0	0	58	0	11	387
6:45 AM	0	259	42	4	66	0	0	0	0	51	0	18	440
7:00 AM	0	234	54	3	86	0	0	0	0	51	0	15	443
7:15 AM	0	341	43	2	79	0	0	0	0	63	0	13	541
7:30 AM	0	311	37	7	83	0	0	0	0	65	0	20	523
7:45 AM	0	304	62	4	81	0	0	0	0	73	0	27	551
8:00 AM	0	269	51	5	70	0	0	0	0	58	0	30	483
8:15 AM	0	225	38	9	70	0	0	0	0	43	0	22	407
8:30 AM	0	210	33	4	77	0	0	0	0	47	0	16	387
8:45 AM	0	261	41	6	93	0	0	0	0	59	0	23	483
9:00 AM	0	200	40	8	76	0	0	0	0	31	0	22	377
9:15 AM	0	216	33	8	75	0	0	0	0	31	0	23	386
9:30 AM	1	202	23	8	72	0	0	0	0	22	0	17	345
9:45 AM	0	180	27	13	64	0	0	0	0	18	0	22	324
10:00 AM	0	163	26	7	69	0	0	0	0	23	0	23	311
10:15 AM	0	156	14	13	97	0	0	0	0	22	0	19	321
10:30 AM	0	155	25	10	81	0	0	0	0	22	0	26	319
10:45 AM	0	145	25	18	107	0	0	0	0	19	0	29	343
11:00 AM	0	163	24	11	107	0	0	0	0	28	0	24	357
11:15 AM	0	141	21	20	118	0	0	0	0	15	0	18	333
11:30 AM	0	150	25	10	109	0	0	0	0	18	0	18	330
11:45 AM	0	160	21	23	130	0	0	0	0	27	0	29	390
VOLUME STATS:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
TOTAL:	1	5062	777	208	1947	0	0	0	0	888	0	490	9373
P.H.V: ₁	0	1225	193	18	313	0	0	0	0	259	0	90	2098
P.H.F: ₂	0.923			0.919			0.000			0.873			0.952

(1) Peak Hour Volume (Peak Hour Begins At 715 AM)

(2) Peak Hour Factor (directional aggregate)



QUALITY TRAFFIC DATA, LLC

9701 W Pico Blvd, Suite 205, Los Angeles, CA 90035

Phone: 310-341-0019 Fax: 310-807-9247 Info@QualityTrafficData.com

VEHICLE TURNING MOVEMENT COUNT

#004 Gravel Springs Road (S.R. 324) & Camp Branch Road - PM PEAK

LOCATION#:	004	QTD PROJ#:	2017102
NORTH / SOUTH:	Gravel Springs Road (S.R. 324)	DATE:	Tuesday, January 10, 2017
EAST / WEST:	Camp Branch Road	VICINITY:	GA

DIRECTION:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTALS
LANES:	1	2	1	1	2	0	0	0	0	1	0	1	
2:00 PM	0	126	38	21	153	0	0	0	0	31	0	16	385
2:15 PM	0	148	49	21	214	0	0	0	0	28	0	19	479
2:30 PM	0	140	30	30	194	0	0	0	0	46	0	20	460
2:45 PM	0	164	46	18	200	0	0	0	0	48	0	13	489
3:00 PM	0	148	49	32	203	0	0	0	0	37	0	17	486
3:15 PM	1	148	47	42	195	0	0	0	0	52	0	22	507
3:30 PM	0	148	46	29	216	0	0	0	0	67	0	16	522
3:45 PM	0	156	45	43	235	0	0	0	0	55	0	18	552
4:00 PM	0	129	62	34	261	0	0	0	0	50	0	22	558
4:15 PM	0	158	60	28	244	0	0	0	0	63	0	19	572
4:30 PM	0	155	54	59	288	0	0	0	0	66	0	14	636
4:45 PM	0	174	64	47	297	0	0	0	0	54	0	18	654
5:00 PM	0	144	72	57	297	0	0	0	0	59	0	27	656
5:15 PM	0	204	65	54	318	0	0	0	0	67	0	34	742
5:30 PM	1	157	69	39	330	0	0	0	0	77	0	26	699
5:45 PM	0	149	61	49	321	0	0	0	0	81	0	28	689
6:00 PM	0	150	52	35	263	0	0	0	0	53	0	26	579
6:15 PM	0	180	42	46	283	0	0	0	0	57	0	23	631
6:30 PM	0	158	48	51	248	0	0	0	0	51	0	19	575
6:45 PM	0	139	33	32	285	0	0	0	0	45	0	15	549

VOLUME STATS:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
TOTAL:	2	3075	1032	767	5045	0	0	0	0	1087	0	412	11420
P.H.V: 1	1	654	267	199	1266	0	0	0	0	284	0	115	2786
P.H.F: 2	0.857	0.985	0.000	0.915									0.939

(1) Peak Hour Volume (Peak Hour Begins At 500 PM)

(2) Peak Hour Factor (directional aggregate)



QUALITY TRAFFIC DATA, LLC

9701 W Pico Blvd, Suite 205, Los Angeles, CA 90035

Phone: 310-341-0019 Fax: 310-807-9247 Info@QualityTrafficData.com

Average Daily Traffic Volumes

Quality Traffic Data, LLC

QTD PROJ/LOC #:	2019162 - 004	GPS COORDINATES:	0
ON STREET:	Gravel Springs Road (S.R. 324) (E/W)	START DATE:	Wednesday, May 08, 2019
CROSS STREETS:	Ivy Creek Road (N/S)	VICINITY:	GA

AM COUNTS						PM COUNTS					
NB	SB	EB	WB			NB	SB	EB	WB		
00:00	4	50	9			12:00	40	219	197		
00:15	1	27	10			12:15	35	201	203		
00:30	3	33	9			12:30	41	236	221		
00:45	3	11	20	130	7	12:45	31	147	228	884	223
				35	176					844	1875
01:00	3	18	3			13:00	28	277	207		
01:15	0	10	7			13:15	35	237	175		
01:30	1	10	7			13:30	29	281	199		
01:45	2	6	12	50	9	13:45	41	133	292	1087	249
				26	82					830	2050
02:00	1	12	8			14:00	31	313	187		
02:15	3	12	7			14:15	47	314	221		
02:30	3	10	7			14:30	41	329	220		
02:45	1	8	11	45	6	14:45	33	152	324	1280	230
				28	81					858	2290
03:00	1	7	8			15:00	36	343	222		
03:15	1	5	4			15:15	54	366	206		
03:30	1	7	11			15:30	34	354	193		
03:45	1	4	8	27	15	15:45	33	157	369	1432	224
				38	69					845	2434
04:00	0	5	10			16:00	44	374	189		
04:15	1	6	26			16:15	36	404	219		
04:30	3	7	29			16:30	32	400	225		
04:45	4	8	11	29	51	16:45	33	145	484	1662	227
				116	153					860	2667
05:00	12	10	56			17:00	38	473	208		
05:15	9	15	83			17:15	38	481	222		
05:30	19	22	146			17:30	50	448	259		
05:45	26	66	24	71	153	17:45	47	173	454	1856	253
				438	575					942	2971
06:00	20	38	197			18:00	49	451	215		
06:15	33	66	244			18:15	49	445	214		
06:30	35	99	294			18:30	38	449	234		
06:45	30	118	157	360	284	18:45	44	180	374	1719	210
				1019	1497					873	2772
07:00	43	170	295			19:00	36	348	159		
07:15	42	132	333			19:15	33	310	138		
07:30	45	99	312			19:30	30	312	140		
07:45	51	181	124	525	315	19:45	45	144	261	1231	139
				1255	1961					576	1951
08:00	46	151	302			20:00	27	300	107		
08:15	48	126	327			20:15	14	256	129		
08:30	35	107	267			20:30	20	239	94		
08:45	36	165	148	532	238	20:45	15	76	229	1024	91
				1134	1831					421	1521
09:00	43	135	227			21:00	8	232	81		
09:15	32	117	270			21:15	9	217	79		
09:30	52	131	223			21:30	12	199	79		
09:45	36	163	118	501	250	21:45	12	41	146	794	57
				970	1634					296	1131
10:00	43	128	216			22:00	7	138	42		
10:15	41	140	228			22:15	6	106	33		
10:30	50	162	254			22:30	7	111	30		
10:45	36	170	163	593	213	22:45	5	25	74	429	24
				911	1674					129	583
11:00	52	165	215			23:00	1	68	16		
11:15	35	204	231			23:15	9	65	20		
11:30	40	224	244			23:30	6	46	12		
11:45	41	168	210	803	228	23:45	2	18	26	205	16
				918	1889					64	287
TOTALS:	1068	3666	6888	11622		TOTALS:	1391	13603	7538	22532	

D-FACTOR: 0.62

K-FACTOR: 0.17

SPLIT	9.2%	31.5%	59.3%	34.0%	SPLIT	6.2%	60.4%	33.5%	66.0%
PEAK HOUR	07:30	11:45	07:15	07:00	PEAK HOUR	17:30	16:45	17:15	17:00
PH VOLUME	190	866	1262	1961	PH VOLUME	195	1886	949	2971
PHF	0.93	0.92	0.95	0.97	PHF	0.98	0.97	0.92	0.98

DAY'S TOTAL				
NB	SB	EB	WB	TOTAL
	2459	17269	14426	34154



QUALITY TRAFFIC DATA, LLC

Phone: 877-852-4355 Fax: 877-877-3698 Info@QualityTrafficData.com

HCM 6th Signalized Intersection Summary 3: Mall of GA Blvd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
AM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 						 	
Traffic Volume (veh/h)	12	269	71	554	1000	6	81	8	132	13	20	26
Future Volume (veh/h)	12	269	71	554	1000	6	81	8	132	13	20	26
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	12	280	74	577	1042	0	84	8	0	14	21	27
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	216	496	221	676	1608		538	585		577	232	299
Arrive On Green	0.14	0.14	0.14	0.20	0.45	0.00	0.31	0.31	0.00	0.31	0.31	0.31
Sat Flow, veh/h	541	3554	1585	3456	3554	1585	1357	1870	1585	1407	743	955
Grp Volume(v), veh/h	12	280	74	577	1042	0	84	8	0	14	0	48
Grp Sat Flow(s),veh/h/ln	541	1777	1585	1728	1777	1585	1357	1870	1585	1407	0	1698
Q Serve(g_s), s	1.0	3.8	2.2	8.2	11.6	0.0	2.4	0.2	0.0	0.4	0.0	1.0
Cycle Q Clear(g_c), s	1.0	3.8	2.2	8.2	11.6	0.0	3.4	0.2	0.0	0.5	0.0	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.56
Lane Grp Cap(c), veh/h	216	496	221	676	1608		538	585		577	0	531
V/C Ratio(X)	0.06	0.56	0.33	0.85	0.65		0.16	0.01		0.02	0.00	0.09
Avail Cap(c_a), veh/h	310	1112	496	676	2224		538	585		577	0	531
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.4	20.5	19.9	19.9	10.8	0.0	13.6	12.1	0.0	12.3	0.0	12.4
Incr Delay (d2), s/veh	0.1	1.0	0.9	10.4	0.4	0.0	0.6	0.0	0.0	0.1	0.0	0.3
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	0.1	1.4	0.7	3.7	3.2	0.0	0.7	0.1	0.0	0.1	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.5	21.6	20.7	30.2	11.3	0.0	14.2	12.2	0.0	12.4	0.0	12.8
LnGrp LOS	B	C	C	C	B		B	B		B	A	B
Approach Vol, veh/h		366			1619	A		92	A		62	
Approach Delay, s/veh		21.3			18.0			14.1			12.7	
Approach LOS		C			B			B			B	
Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		22.0	16.0	13.1		22.0		29.1				
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0		6.0				
Max Green Setting (Gmax), s		16.0	10.0	16.0		16.0		32.0				
Max Q Clear Time (g_c+l1), s		5.4	10.2	5.8		3.0		13.6				
Green Ext Time (p_c), s		0.1	0.0	1.4		0.2		6.6				

Intersection Summary

HCM 6th Ctrl Delay 18.3
HCM 6th LOS B

Notes

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

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

HCM 6th Signalized Intersection Summary 3: Mall of GA Blvd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
PM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 						 	
Traffic Volume (veh/h)	7	1075	171	490	554	12	185	17	950	15	10	22
Future Volume (veh/h)	7	1075	171	490	554	12	185	17	950	15	10	22
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	7	1097	174	500	565	0	189	17	0	15	10	22
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	13	1276	569	643	1911		377	413		392	115	253
Arrive On Green	0.01	0.36	0.36	0.19	0.54	0.00	0.22	0.22	0.00	0.22	0.22	0.22
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	1377	1870	1585	1396	520	1144
Grp Volume(v), veh/h	7	1097	174	500	565	0	189	17	0	15	0	32
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1377	1870	1585	1396	0	1664
Q Serve(g_s), s	0.3	22.0	6.1	10.6	6.7	0.0	9.7	0.5	0.0	0.7	0.0	1.2
Cycle Q Clear(g_c), s	0.3	22.0	6.1	10.6	6.7	0.0	10.9	0.5	0.0	1.2	0.0	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.69
Lane Grp Cap(c), veh/h	13	1276	569	643	1911		377	413		392	0	368
V/C Ratio(X)	0.54	0.86	0.31	0.78	0.30		0.50	0.04		0.04	0.00	0.09
Avail Cap(c_a), veh/h	93	1386	618	1572	2818		377	413		392	0	368
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.1	22.9	17.7	29.8	9.8	0.0	28.1	23.6	0.0	24.0	0.0	23.8
Incr Delay (d2), s/veh	31.3	5.4	0.3	2.1	0.1	0.0	4.7	0.2	0.0	0.2	0.0	0.5
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	9.0	2.0	4.2	2.1	0.0	3.4	0.2	0.0	0.2	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	28.2	18.0	31.9	9.9	0.0	32.8	23.7	0.0	24.2	0.0	24.3
LnGrp LOS	E	C	B	C	A		C	C		C	A	C
Approach Vol, veh/h		1278			1065	A		206	A		47	
Approach Delay, s/veh		27.1			20.2			32.1			24.3	
Approach LOS		C			C			C			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	20.3	33.6		23.0	6.6	47.4				
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		17.0	35.0	30.0		17.0	4.0	61.0				
Max Q Clear Time (g_c+l1), s		12.9	12.6	24.0		3.2	2.3	8.7				
Green Ext Time (p_c), s		0.2	1.7	3.6		0.1	0.0	3.8				

Intersection Summary

HCM 6th Ctrl Delay 24.6
HCM 6th LOS C

Notes

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

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

HCM 6th Signalized Intersection Summary 4: SR 324 Gravel Springs Rd & Camp Branch Rd

Kilburn Gravel Springs DRI 3213
AM Existing

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	20	352	1379	217	291	101
Future Volume (veh/h)	20	352	1379	217	291	101
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	371	1452	0	306	106
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	169	1706	1706		556	494
Arrive On Green	0.48	0.48	0.48	0.00	0.31	0.31
Sat Flow, veh/h	366	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	21	371	1452	0	306	106
Grp Sat Flow(s),veh/h/ln	366	1777	1777	1585	1781	1585
Q Serve(g_s), s	3.1	3.5	20.7	0.0	8.2	2.8
Cycle Q Clear(g_c), s	23.8	3.5	20.7	0.0	8.2	2.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	169	1706	1706		556	494
V/C Ratio(X)	0.12	0.22	0.85		0.55	0.21
Avail Cap(c_a), veh/h	184	1847	1847		556	494
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	8.7	13.2	0.0	16.5	14.6
Incr Delay (d2), s/veh	0.3	0.1	3.8	0.0	3.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.0	6.7	0.0	3.5	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.0	8.8	17.0	0.0	20.4	15.6
LnGrp LOS	C	A	B		C	B
Approach Vol, veh/h		392	1452	A	412	
Approach Delay, s/veh		9.6	17.0		19.2	
Approach LOS		A	B		B	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				33.7	24.0	33.7
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				30.0	18.0	30.0
Max Q Clear Time (g_c+l1), s				25.8	10.2	22.7
Green Ext Time (p_c), s				0.9	0.8	5.0
Intersection Summary						
HCM 6th Ctrl Delay			16.1			
HCM 6th LOS			B			

Notes

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

HCM 6th Signalized Intersection Summary 4: SR 324 Gravel Springs Rd & Camp Branch Rd

Kilburn Gravel Springs DRI 3213
PM Existing

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 			
Traffic Volume (veh/h)	224	1422	735	300	319	129
Future Volume (veh/h)	224	1422	735	300	319	129
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	238	1513	782	0	339	137
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	382	1831	1831		506	450
Arrive On Green	0.52	0.52	0.52	0.00	0.28	0.28
Sat Flow, veh/h	691	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	238	1513	782	0	339	137
Grp Sat Flow(s),veh/h/ln	691	1777	1777	1585	1781	1585
Q Serve(g_s), s	19.5	21.5	8.2	0.0	10.1	4.1
Cycle Q Clear(g_c), s	27.7	21.5	8.2	0.0	10.1	4.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	382	1831	1831		506	450
V/C Ratio(X)	0.62	0.83	0.43		0.67	0.30
Avail Cap(c_a), veh/h	384	1841	1841		506	450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	17.6	12.2	9.0	0.0	18.9	16.8
Incr Delay (d2), s/veh	3.1	3.2	0.2	0.0	6.9	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	6.7	2.3	0.0	4.7	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.7	15.5	9.2	0.0	25.8	18.5
LnGrp LOS	C	B	A		C	B
Approach Vol, veh/h		1751	782	A	476	
Approach Delay, s/veh		16.2	9.2		23.7	
Approach LOS		B	A		C	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				36.8	23.0	36.8
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				31.0	17.0	31.0
Max Q Clear Time (g_c+l1), s				29.7	12.1	10.2
Green Ext Time (p_c), s				1.1	0.7	4.9
Intersection Summary						
HCM 6th Ctrl Delay			15.6			
HCM 6th LOS			B			

Notes

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

HCM Unsignalized Intersection Capacity Analysis 5: SR 324 Gravel Springs Rd & Ivy Creek Rd

Kilburn Gravel Springs DRI 3213
AM Existing

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	30	521	1302	13	22	168		
Future Volume (Veh/h)	30	521	1302	13	22	168		
Sign Control		Free	Free		Stop			
Grade		0%	0%		0%			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Hourly flow rate (vph)	31	537	1342	13	23	173		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type		None	None					
Median storage (veh)								
Upstream signal (ft)			761					
pX, platoon unblocked	0.66				0.66	0.66		
vC, conflicting volume	1355				1672	671		
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	492				976	0		
tC, single (s)	4.1				6.8	6.9		
tC, 2 stage (s)								
tF (s)	2.2				3.5	3.3		
p0 queue free %	96				85	76		
cM capacity (veh/h)	700				156	711		
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	31	268	268	671	671	13	23	173
Volume Left	31	0	0	0	0	0	23	0
Volume Right	0	0	0	0	0	13	0	173
cSH	700	1700	1700	1700	1700	1700	156	711
Volume to Capacity	0.04	0.16	0.16	0.39	0.39	0.01	0.15	0.24
Queue Length 95th (ft)	3	0	0	0	0	0	13	24
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	0.0	32.1	11.7
Lane LOS	B						D	B
Approach Delay (s)	0.6			0.0			14.1	
Approach LOS							B	
Intersection Summary								
Average Delay			1.5					
Intersection Capacity Utilization			53.1%		ICU Level of Service			A
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis 5: SR 324 Gravel Springs Rd & Ivy Creek Rd

Kilburn Gravel Springs DRI 3213
PM Existing

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		 	 					
Traffic Volume (veh/h)	236	1730	944	43	13	168		
Future Volume (Veh/h)	236	1730	944	43	13	168		
Sign Control		Free	Free		Stop			
Grade		0%	0%		0%			
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98		
Hourly flow rate (vph)	241	1765	963	44	13	171		
Pedestrians					168			
Lane Width (ft)					12.0			
Walking Speed (ft/s)					4.0			
Percent Blockage					14			
Right turn flare (veh)								
Median type		None	None					
Median storage (veh)								
Upstream signal (ft)			761					
pX, platoon unblocked	0.88				0.88	0.88		
vC, conflicting volume	1175				2496	650		
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	918				2424	318		
tC, single (s)	4.1				6.8	6.9		
tC, 2 stage (s)								
tF (s)	2.2				3.5	3.3		
p0 queue free %	57				0	67		
cM capacity (veh/h)	557				11	511		
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	241	882	882	482	482	44	13	171
Volume Left	241	0	0	0	0	0	13	0
Volume Right	0	0	0	0	0	44	0	171
cSH	557	1700	1700	1700	1700	1700	11	511
Volume to Capacity	0.43	0.52	0.52	0.28	0.28	0.03	1.14	0.33
Queue Length 95th (ft)	54	0	0	0	0	0	58	37
Control Delay (s)	16.3	0.0	0.0	0.0	0.0	0.0	754.1	15.6
Lane LOS	C						F	C
Approach Delay (s)	2.0			0.0			67.7	
Approach LOS							F	
Intersection Summary								
Average Delay			5.1					
Intersection Capacity Utilization			57.8%		ICU Level of Service			B
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis 6: Brown Rd/Ivy Church Rd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
AM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	1	347	3	5	1536	1	0	0	0	1	0	1
Future Volume (Veh/h)	1	347	3	5	1536	1	0	0	0	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	1	369	3	5	1634	1	0	0	0	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1635			372			1199	2016	184	1830	2018	817
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1635			372			1199	2016	184	1830	2018	817
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	98	100	100
cM capacity (veh/h)	393			1183			140	57	826	47	57	320
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1		
Volume Total	1	184	184	3	5	817	817	1	0	2		
Volume Left	1	0	0	0	5	0	0	0	0	1		
Volume Right	0	0	0	3	0	0	0	1	0	1		
cSH	393	1700	1700	1700	1183	1700	1700	1700	1700	82		
Volume to Capacity	0.00	0.11	0.11	0.00	0.00	0.48	0.48	0.00	0.00	0.02		
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0	2		
Control Delay (s)	14.2	0.0	0.0	0.0	8.1	0.0	0.0	0.0	0.0	49.8		
Lane LOS	B				A					A	E	
Approach Delay (s)	0.0				0.0				0.0	49.8		
Approach LOS									A	E		
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			52.5%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 6: Brown Rd/Ivy Church Rd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
PM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1939	1	7	1005	1	0	1	19	0	1	0
Future Volume (Veh/h)	0	1939	1	7	1005	1	0	1	19	0	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	1979	1	7	1026	1	0	1	19	0	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1027			1980			2506	3020	990	2049	3020	513
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1027			1980			2506	3020	990	2049	3020	513
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			100	92	92	100	92	100
cM capacity (veh/h)	672			288			13	13	245	28	13	506
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1		
Volume Total	0	990	990	1	7	513	513	1	20	1		
Volume Left	0	0	0	0	7	0	0	0	0	0		
Volume Right	0	0	0	1	0	0	0	1	19	0		
cSH	1700	1700	1700	1700	288	1700	1700	1700	128	13		
Volume to Capacity	0.00	0.58	0.58	0.00	0.02	0.30	0.30	0.00	0.16	0.08		
Queue Length 95th (ft)	0	0	0	0	2	0	0	0	13	6		
Control Delay (s)	0.0	0.0	0.0	0.0	17.8	0.0	0.0	0.0	38.3	312.9		
Lane LOS					C				E	F		
Approach Delay (s)	0.0				0.1				38.3	312.9		
Approach LOS									E	F		
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			63.6%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM 6th Signalized Intersection Summary 3: Mall of GA Blvd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
AM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 						 	
Traffic Volume (veh/h)	13	292	75	610	1083	6	86	8	147	14	21	28
Future Volume (veh/h)	13	292	75	610	1083	6	86	8	147	14	21	28
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	14	304	78	635	1128	0	90	8	0	15	22	29
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	727	324	625	1320		492	541		533	212	279
Arrive On Green	0.01	0.20	0.20	0.18	0.37	0.00	0.29	0.29	0.00	0.29	0.29	0.29
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	1354	1870	1585	1407	732	965
Grp Volume(v), veh/h	14	304	78	635	1128	0	90	8	0	15	0	51
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1354	1870	1585	1407	0	1697
Q Serve(g_s), s	0.4	4.1	2.3	10.0	16.2	0.0	2.9	0.2	0.0	0.4	0.0	1.2
Cycle Q Clear(g_c), s	0.4	4.1	2.3	10.0	16.2	0.0	4.1	0.2	0.0	0.6	0.0	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.57
Lane Grp Cap(c), veh/h	25	727	324	625	1320		492	541		533	0	491
V/C Ratio(X)	0.56	0.42	0.24	1.02	0.85		0.18	0.01		0.03	0.00	0.10
Avail Cap(c_a), veh/h	129	1028	458	625	1413		492	541		533	0	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.1	19.1	18.4	22.7	16.0	0.0	15.9	14.0	0.0	14.2	0.0	14.4
Incr Delay (d2), s/veh	18.3	0.4	0.4	40.2	5.1	0.0	0.8	0.0	0.0	0.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	1.5	0.7	6.9	6.0	0.0	0.9	0.1	0.0	0.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.4	19.5	18.8	62.9	21.1	0.0	16.7	14.1	0.0	14.3	0.0	14.8
LnGrp LOS	D	B	B	F	C		B	B		B	A	B
Approach Vol, veh/h		396			1763	A		98	A		66	
Approach Delay, s/veh		20.3			36.1			16.5			14.7	
Approach LOS		C			D			B			B	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		22.0	16.0	17.3		22.0	6.8	26.5				
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		16.0	10.0	16.0		16.0	4.0	22.0				
Max Q Clear Time (g_c+l1), s		6.1	12.0	6.1		3.2	2.4	18.2				
Green Ext Time (p_c), s		0.1	0.0	1.4		0.2	0.0	2.4				

Intersection Summary

HCM 6th Ctrl Delay 32.0
HCM 6th LOS C

Notes

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

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

HCM 6th Signalized Intersection Summary 3: Mall of GA Blvd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
PM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	1163	181	534	602	13	196	18	1031	16	11	23
Future Volume (veh/h)	7	1163	181	534	602	13	196	18	1031	16	11	23
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	7	1187	185	545	614	0	200	18	0	16	11	23
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	13	1379	615	678	2051		346	389		362	112	234
Arrive On Green	0.01	0.39	0.39	0.20	0.58	0.00	0.21	0.21	0.00	0.21	0.21	0.21
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	1375	1870	1585	1395	539	1128
Grp Volume(v), veh/h	7	1187	185	545	614	0	200	18	0	16	0	34
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1375	1870	1585	1395	0	1667
Q Serve(g_s), s	0.3	26.6	7.0	13.0	7.6	0.0	11.9	0.7	0.0	0.8	0.0	1.4
Cycle Q Clear(g_c), s	0.3	26.6	7.0	13.0	7.6	0.0	13.4	0.7	0.0	1.5	0.0	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	13	1379	615	678	2051		346	389		362	0	347
V/C Ratio(X)	0.55	0.86	0.30	0.80	0.30		0.58	0.05		0.04	0.00	0.10
Avail Cap(c_a), veh/h	82	1518	677	1875	3282		346	389		362	0	347
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.9	24.3	18.4	33.2	9.4	0.0	33.1	27.4	0.0	28.0	0.0	27.7
Incr Delay (d2), s/veh	32.1	4.9	0.3	2.3	0.1	0.0	6.9	0.2	0.0	0.2	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	10.9	2.4	5.3	2.5	0.0	4.4	0.3	0.0	0.3	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.9	29.3	18.6	35.5	9.4	0.0	40.0	27.7	0.0	28.3	0.0	28.3
LnGrp LOS	E	C	B	D	A		D	C		C	A	C
Approach Vol, veh/h		1379			1159	A		218	A		50	
Approach Delay, s/veh		28.1			21.7			39.0			28.3	
Approach LOS		C			C			D			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		24.0	23.0	39.6		24.0	6.6	56.0				
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		18.0	47.0	37.0		18.0	4.0	80.0				
Max Q Clear Time (g_c+l1), s		15.4	15.0	28.6		3.5	2.3	9.6				
Green Ext Time (p_c), s		0.2	2.0	5.0		0.1	0.0	4.3				

Intersection Summary

HCM 6th Ctrl Delay 26.3
HCM 6th LOS C

Notes

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

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

HCM 6th Signalized Intersection Summary 4: SR 324 Gravel Springs Rd & Camp Branch Rd

Kilburn Gravel Springs DRI 3213
AM Background

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	380	1467	237	331	129
Future Volume (veh/h)	28	380	1467	237	331	129
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	29	400	1544	0	348	136
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	165	1797	1797		516	459
Arrive On Green	0.51	0.51	0.51	0.00	0.29	0.29
Sat Flow, veh/h	335	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	29	400	1544	0	348	136
Grp Sat Flow(s),veh/h/ln	335	1777	1777	1585	1781	1585
Q Serve(g_s), s	4.9	3.7	22.3	0.0	10.1	3.9
Cycle Q Clear(g_c), s	27.1	3.7	22.3	0.0	10.1	3.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	165	1797	1797		516	459
V/C Ratio(X)	0.18	0.22	0.86		0.67	0.30
Avail Cap(c_a), veh/h	173	1878	1878		516	459
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	24.5	8.1	12.7	0.0	18.4	16.2
Incr Delay (d2), s/veh	0.5	0.1	4.1	0.0	6.9	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.0	7.1	0.0	4.7	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.0	8.1	16.8	0.0	25.3	17.8
LnGrp LOS	C	A	B		C	B
Approach Vol, veh/h		429	1544	A	484	
Approach Delay, s/veh		9.3	16.8		23.2	
Approach LOS		A	B		C	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				35.7	23.0	35.7
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				31.0	17.0	31.0
Max Q Clear Time (g_c+I1), s				29.1	12.1	24.3
Green Ext Time (p_c), s				0.5	0.8	4.9
Intersection Summary						
HCM 6th Ctrl Delay			16.8			
HCM 6th LOS			B			

Notes

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

HCM 6th Signalized Intersection Summary 4: SR 324 Gravel Springs Rd & Camp Branch Rd

Kilburn Gravel Springs DRI 3213
PM Background

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	261	1531	793	341	351	151
Future Volume (veh/h)	261	1531	793	341	351	151
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	278	1629	844	0	373	161
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	394	2080	2080		453	403
Arrive On Green	0.59	0.59	0.59	0.00	0.25	0.25
Sat Flow, veh/h	652	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	278	1629	844	0	373	161
Grp Sat Flow(s),veh/h/ln	652	1777	1777	1585	1781	1585
Q Serve(g_s), s	30.2	26.2	9.7	0.0	14.8	6.3
Cycle Q Clear(g_c), s	39.9	26.2	9.7	0.0	14.8	6.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	394	2080	2080		453	403
V/C Ratio(X)	0.71	0.78	0.41		0.82	0.40
Avail Cap(c_a), veh/h	396	2091	2091		453	403
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	19.3	11.9	8.4	0.0	26.3	23.1
Incr Delay (d2), s/veh	5.6	2.0	0.1	0.0	15.6	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	8.2	2.8	0.0	7.8	2.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.9	13.9	8.6	0.0	41.9	26.1
LnGrp LOS	C	B	A		D	C
Approach Vol, veh/h		1907	844	A	534	
Approach Delay, s/veh		15.5	8.6		37.1	
Approach LOS		B	A		D	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				49.8	25.0	49.8
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				44.0	19.0	44.0
Max Q Clear Time (g_c+l1), s				41.9	16.8	11.7
Green Ext Time (p_c), s				1.9	0.5	6.1
Intersection Summary						
HCM 6th Ctrl Delay			17.2			
HCM 6th LOS			B			

Notes

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

HCM Unsignalized Intersection Capacity Analysis 5: SR 324 Gravel Springs Rd & Ivy Creek Rd

Kilburn Gravel Springs DRI 3213
AM Background

								
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	39	575	1474	21	45	200		
Future Volume (Veh/h)	39	575	1474	21	45	200		
Sign Control		Free	Free		Stop			
Grade		0%	0%		0%			
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97		
Hourly flow rate (vph)	40	593	1520	22	46	206		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type		None	None					
Median storage (veh)								
Upstream signal (ft)			761					
pX, platoon unblocked	0.61				0.61	0.61		
vC, conflicting volume	1542				1896	760		
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	624				1202	0		
tC, single (s)	4.1				6.8	6.9		
tC, 2 stage (s)								
tF (s)	2.2				3.5	3.3		
p0 queue free %	93				55	69		
cM capacity (veh/h)	585				101	665		
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1	SB 2
Volume Total	40	296	296	760	760	22	46	206
Volume Left	40	0	0	0	0	0	46	0
Volume Right	0	0	0	0	0	22	0	206
cSH	585	1700	1700	1700	1700	1700	101	665
Volume to Capacity	0.07	0.17	0.17	0.45	0.45	0.01	0.45	0.31
Queue Length 95th (ft)	5	0	0	0	0	0	49	33
Control Delay (s)	11.6	0.0	0.0	0.0	0.0	0.0	67.2	12.8
Lane LOS	B						F	B
Approach Delay (s)	0.7			0.0			22.7	
Approach LOS							C	
Intersection Summary								
Average Delay			2.6					
Intersection Capacity Utilization			59.8%		ICU Level of Service			B
Analysis Period (min)			15					

HCM Unsignalized Intersection Capacity Analysis 5: SR 324 Gravel Springs Rd & Ivy Creek Rd

Kilburn Gravel Springs DRI 3213
PM Background

													
Movement	EBL	EBT	WBT	WBR	SBL	SBR							
Lane Configurations													
Traffic Volume (veh/h)	273	1848	1024	69	28	191							
Future Volume (Veh/h)	273	1848	1024	69	28	191							
Sign Control		Free	Free		Stop								
Grade		0%	0%		0%								
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98							
Hourly flow rate (vph)	279	1886	1045	70	29	195							
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type		None	None										
Median storage veh													
Upstream signal (ft)													
pX, platoon unblocked	0.88				0.88	0.88							
vC, conflicting volume	1115				2546	522							
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	854				2483	179							
tC, single (s)	4.1				6.8	6.9							
tC, 2 stage (s)													
tF (s)	2.2				3.5	3.3							
p0 queue free %	59				0	73							
cM capacity (veh/h)	686				13	731							
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1	SB 2					
Volume Total	279	943	943	522	522	70	29	195					
Volume Left	279	0	0	0	0	0	29	0					
Volume Right	0	0	0	0	0	70	0	195					
cSH	686	1700	1700	1700	1700	1700	13	731					
Volume to Capacity	0.41	0.55	0.55	0.31	0.31	0.04	2.29	0.27					
Queue Length 95th (ft)	49	0	0	0	0	0	112	27					
Control Delay (s)	13.8	0.0	0.0	0.0	0.0	0.0	1191.5	11.7					
Lane LOS	B						F	B					
Approach Delay (s)	1.8			0.0			164.4						
Approach LOS							F						
Intersection Summary													
Average Delay	11.6												
Intersection Capacity Utilization	61.1%												
Analysis Period (min)	15												
	ICU Level of Service												

HCM Unsignalized Intersection Capacity Analysis 6: Brown Rd/Ivy Church Rd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
AM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	382	3	5	1653	1	0	0	0	1	0	1
Future Volume (Veh/h)	1	382	3	5	1653	1	0	0	0	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	1	406	3	5	1759	1	0	0	0	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1760			409			1298	2178	203	1974	2180	880
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1760			409			1298	2178	203	1974	2180	880
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	97	100	100
cM capacity (veh/h)	351			1146			118	45	804	37	45	290
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1		
Volume Total	1	203	203	3	5	880	880	1	0	2		
Volume Left	1	0	0	0	5	0	0	0	0	1		
Volume Right	0	0	0	3	0	0	0	1	0	1		
cSH	351	1700	1700	1700	1146	1700	1700	1700	1700	65		
Volume to Capacity	0.00	0.12	0.12	0.00	0.00	0.52	0.52	0.00	0.03	0.03		
Queue Length 95th (ft)	0	0	0	0	0	0	0	0	0	2		
Control Delay (s)	15.3	0.0	0.0	0.0	8.2	0.0	0.0	0.0	0.0	61.9		
Lane LOS	C				A				A	F		
Approach Delay (s)	0.0				0.0				0.0	61.9		
Approach LOS									A	F		
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			55.7%		ICU Level of Service					B		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 6: Brown Rd/Ivy Church Rd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
PM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	0	2013	5	26	1093	1	0	1	20	0	1	0
Future Volume (Veh/h)	0	2013	5	26	1093	1	0	1	20	0	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	2054	5	27	1115	1	0	1	20	0	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1116			2059			2666	3224	1027	2216	3228	558
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1116			2059			2666	3224	1027	2216	3228	558
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			90			100	88	91	100	88	100
cM capacity (veh/h)	622			268			9	9	232	19	8	473
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1		
Volume Total	0	1027	1027	5	27	558	558	1	21	1		
Volume Left	0	0	0	0	27	0	0	0	0	0		
Volume Right	0	0	0	5	0	0	0	1	20	0		
cSH	1700	1700	1700	1700	268	1700	1700	1700	103	8		
Volume to Capacity	0.00	0.60	0.60	0.00	0.10	0.33	0.33	0.00	0.20	0.12		
Queue Length 95th (ft)	0	0	0	0	8	0	0	0	18	8		
Control Delay (s)	0.0	0.0	0.0	0.0	19.9	0.0	0.0	0.0	48.6	480.3		
Lane LOS					C				E	F		
Approach Delay (s)	0.0				0.5				48.6	480.3		
Approach LOS									E	F		
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			65.6%		ICU Level of Service				C			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

1: SR324 Site Dr & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
AM Build

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	397	11	13	1663	3	2
Future Volume (Veh/h)	397	11	13	1663	3	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	432	12	14	1808	3	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	981					
pX, platoon unblocked						
vC, conflicting volume			444			1370
vC1, stage 1 conf vol						222
vC2, stage 2 conf vol						
vCu, unblocked vol			444			1370
tC, single (s)			4.1			6.8
tC, 2 stage (s)						6.9
tF (s)			2.2			3.5
p0 queue free %			99			98
cM capacity (veh/h)			1112			138
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	288	156	14	904	904	5
Volume Left	0	0	14	0	0	3
Volume Right	0	12	0	0	0	2
cSH	1700	1700	1112	1700	1700	206
Volume to Capacity	0.17	0.09	0.01	0.53	0.53	0.02
Queue Length 95th (ft)	0	0	1	0	0	2
Control Delay (s)	0.0	0.0	8.3	0.0	0.0	22.9
Lane LOS						C
Approach Delay (s)	0.0		0.1			22.9
Approach LOS						C
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			56.0%	ICU Level of Service		
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis1: SR324 Site Dr & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
PM Build

										
Movement	EBT	EBR	WBL	WBT	NBL	NBR				
Lane Configurations										
Traffic Volume (veh/h)	2108	4	12	1121	0	10				
Future Volume (Veh/h)	2108	4	12	1121	0	10				
Sign Control	Free			Free	Stop					
Grade	0%			0%	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				
Hourly flow rate (vph)	2291	4	13	1218	0	11				
Pedestrians										
Lane Width (ft)										
Walking Speed (ft/s)										
Percent Blockage										
Right turn flare (veh)										
Median type	None			None						
Median storage veh										
Upstream signal (ft)	981									
pX, platoon unblocked			0.68		0.68	0.68				
vC, conflicting volume			2295		2928	1148				
vC1, stage 1 conf vol										
vC2, stage 2 conf vol										
vCu, unblocked vol			1960		2894	267				
tC, single (s)			4.1		6.8	6.9				
tC, 2 stage (s)										
tF (s)			2.2		3.5	3.3				
p0 queue free %			93		100	98				
cM capacity (veh/h)			199		8	495				
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1				
Volume Total	1527	768	13	609	609	11				
Volume Left	0	0	13	0	0	0				
Volume Right	0	4	0	0	0	11				
cSH	1700	1700	199	1700	1700	495				
Volume to Capacity	0.90	0.45	0.07	0.36	0.36	0.02				
Queue Length 95th (ft)	0	0	5	0	0	2				
Control Delay (s)	0.0	0.0	24.4	0.0	0.0	12.4				
Lane LOS				C						
Approach Delay (s)	0.0			0.3						
Approach LOS				B						
Intersection Summary										
Average Delay				0.1						
Intersection Capacity Utilization				68.4%	ICU Level of Service					
Analysis Period (min)				15						

C

HCM Unsignalized Intersection Capacity Analysis2: Browns Rd Site Dr & Brown Rd

Kilburn Gravel Springs DRI 3213
AM Build

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	27	0	0	0	0	84
Future Volume (Veh/h)	27	0	0	0	0	84
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	0	0	0	0	91
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	46	46	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	46	46	91			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	965	1024	1504			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	29	0	91			
Volume Left	29	0	0			
Volume Right	0	0	91			
cSH	965	1700	1700			
Volume to Capacity	0.03	0.00	0.05			
Queue Length 95th (ft)	2	0	0			
Control Delay (s)	8.8	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.8	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			15.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

2: Browns Rd Site Dr & Brown Rd

Kilburn Gravel Springs DRI 3213
PM Build

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	94	0	0	0	0	23
Future Volume (Veh/h)	94	0	0	0	0	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	0	0	0	0	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	12	12	25			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12	12	25			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	100	100			
cM capacity (veh/h)	1007	1068	1589			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	102	0	25			
Volume Left	102	0	0			
Volume Right	0	0	25			
cSH	1007	1700	1700			
Volume to Capacity	0.10	0.00	0.01			
Queue Length 95th (ft)	8	0	0			
Control Delay (s)	9.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	9.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			7.2			
Intersection Capacity Utilization			15.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM 6th Signalized Intersection Summary

3: Mall of GA Blvd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213

AM Build

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 							
Traffic Volume (veh/h)	13	303	75	613	1086	6	86	8	158	14	21	28
Future Volume (veh/h)	13	303	75	613	1086	6	86	8	158	14	21	28
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	14	316	78	639	1131	0	90	8	0	15	22	29
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	664	296	702	1337		478	518		519	203	267
Arrive On Green	0.01	0.19	0.19	0.20	0.38	0.00	0.28	0.28	0.00	0.28	0.28	0.28
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	1354	1870	1585	1407	732	965
Grp Volume(v), veh/h	14	316	78	639	1131	0	90	8	0	15	0	51
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1354	1870	1585	1407	0	1697
Q Serve(g_s), s	0.4	4.3	2.3	9.8	15.8	0.0	2.9	0.2	0.0	0.4	0.0	1.2
Cycle Q Clear(g_c), s	0.4	4.3	2.3	9.8	15.8	0.0	4.1	0.2	0.0	0.6	0.0	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.57
Lane Grp Cap(c), veh/h	25	664	296	702	1337		478	518		519	0	470
V/C Ratio(X)	0.56	0.48	0.26	0.91	0.85		0.19	0.02		0.03	0.00	0.11
Avail Cap(c_a), veh/h	165	1051	469	702	1445		478	518		519	0	470
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.5	19.6	18.8	21.1	15.4	0.0	16.1	14.2	0.0	14.4	0.0	14.6
Incr Delay (d2), s/veh	18.2	0.5	0.5	15.9	4.6	0.0	0.9	0.1	0.0	0.1	0.0	0.5
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	1.5	0.7	4.8	5.7	0.0	0.9	0.1	0.0	0.1	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.7	20.2	19.3	37.0	20.0	0.0	17.0	14.3	0.0	14.5	0.0	15.0
LnGrp LOS	D	C	B	D	C		B	B		B	A	B
Approach Vol, veh/h		408			1770	A		98	A		66	
Approach Delay, s/veh		20.8			26.2			16.7			14.9	
Approach LOS		C			C			B			B	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		21.0	17.0	16.1		21.0	6.8	26.4				
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		15.0	11.0	16.0		15.0	5.0	22.0				
Max Q Clear Time (g_c+I1), s		6.1	11.8	6.3		3.2	2.4	17.8				
Green Ext Time (p_c), s		0.1	0.0	1.4		0.2	0.0	2.6				

Intersection Summary

HCM 6th Ctrl Delay 24.5
HCM 6th LOS C

Notes

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

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

HCM 6th Signalized Intersection Summary 3: Mall of GA Blvd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
PM Build

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 		 	 						 	
Traffic Volume (veh/h)	7	1167	181	545	613	13	196	18	1035	16	11	23
Future Volume (veh/h)	7	1167	181	545	613	13	196	18	1035	16	11	23
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	7	1191	185	556	626	0	200	18	0	16	11	23
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	13	1355	604	694	2043		342	380		358	110	229
Arrive On Green	0.01	0.38	0.38	0.20	0.57	0.00	0.20	0.20	0.00	0.20	0.20	0.20
Sat Flow, veh/h	1781	3554	1585	3456	3554	1585	1375	1870	1585	1395	539	1128
Grp Volume(v), veh/h	7	1191	185	556	626	0	200	18	0	16	0	34
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1728	1777	1585	1375	1870	1585	1395	0	1667
Q Serve(g_s), s	0.3	26.1	6.8	12.8	7.6	0.0	11.6	0.6	0.0	0.8	0.0	1.4
Cycle Q Clear(g_c), s	0.3	26.1	6.8	12.8	7.6	0.0	13.0	0.6	0.0	1.4	0.0	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.68
Lane Grp Cap(c), veh/h	13	1355	604	694	2043		342	380		358	0	339
V/C Ratio(X)	0.55	0.88	0.31	0.80	0.31		0.58	0.05		0.04	0.00	0.10
Avail Cap(c_a), veh/h	85	1443	644	1692	3014		342	380		358	0	339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.4	24.1	18.1	31.9	9.2	0.0	32.4	26.8	0.0	27.4	0.0	27.1
Incr Delay (d2), s/veh	31.8	6.3	0.3	2.2	0.1	0.0	7.1	0.2	0.0	0.2	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	10.9	2.3	5.2	2.4	0.0	4.3	0.3	0.0	0.3	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.3	30.4	18.4	34.1	9.3	0.0	39.5	27.1	0.0	27.7	0.0	27.7
LnGrp LOS	E	C	B	C	A		D	C		C	A	C
Approach Vol, veh/h		1383			1182	A		218	A		50	
Approach Delay, s/veh		29.0			20.9			38.5			27.7	
Approach LOS		C			C			D			C	
Timer - Assigned Phs		2	3	4		6	7	8				
Phs Duration (G+Y+Rc), s		23.0	22.8	37.9		23.0	6.6	54.1				
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0	6.0				
Max Green Setting (Gmax), s		17.0	41.0	34.0		17.0	4.0	71.0				
Max Q Clear Time (g_c+l1), s		15.0	14.8	28.1		3.4	2.3	9.6				
Green Ext Time (p_c), s		0.1	2.0	3.8		0.1	0.0	4.4				

Intersection Summary

HCM 6th Ctrl Delay 26.4
HCM 6th LOS C

Notes

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

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

HCM 6th Signalized Intersection Summary 4: SR 324 Gravel Springs Rd & Camp Branch Rd

Kilburn Gravel Springs DRI 3213
AM Build

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 			
Traffic Volume (veh/h)	28	406	1553	237	331	129
Future Volume (veh/h)	28	406	1553	237	331	129
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	29	427	1635	0	348	136
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	152	1836	1836		505	449
Arrive On Green	0.52	0.52	0.52	0.00	0.28	0.28
Sat Flow, veh/h	307	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	29	427	1635	0	348	136
Grp Sat Flow(s),veh/h/ln	307	1777	1777	1585	1781	1585
Q Serve(g_s), s	5.6	4.0	24.7	0.0	10.4	4.0
Cycle Q Clear(g_c), s	30.3	4.0	24.7	0.0	10.4	4.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	152	1836	1836		505	449
V/C Ratio(X)	0.19	0.23	0.89		0.69	0.30
Avail Cap(c_a), veh/h	152	1836	1836		505	449
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	8.0	13.0	0.0	19.1	16.9
Incr Delay (d2), s/veh	0.6	0.1	5.9	0.0	7.5	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.1	8.3	0.0	4.9	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	27.1	8.0	18.9	0.0	26.7	18.6
LnGrp LOS	C	A	B		C	B
Approach Vol, veh/h		456	1635	A	484	
Approach Delay, s/veh		9.2	18.9		24.4	
Approach LOS		A	B		C	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				37.0	23.0	37.0
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				31.0	17.0	31.0
Max Q Clear Time (g_c+l1), s				32.3	12.4	26.7
Green Ext Time (p_c), s				0.0	0.7	3.4
Intersection Summary						
HCM 6th Ctrl Delay			18.2			
HCM 6th LOS			B			

Notes

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

HCM 6th Signalized Intersection Summary 4: SR 324 Gravel Springs Rd & Camp Branch Rd

Kilburn Gravel Springs DRI 3213
PM Build

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		 	 			
Traffic Volume (veh/h)	261	1613	824	341	351	151
Future Volume (veh/h)	261	1613	824	341	351	151
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	278	1716	877	0	373	161
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	386	2128	2128		446	397
Arrive On Green	0.60	0.60	0.60	0.00	0.25	0.25
Sat Flow, veh/h	632	3647	3647	1585	1781	1585
Grp Volume(v), veh/h	278	1716	877	0	373	161
Grp Sat Flow(s),veh/h/ln	632	1777	1777	1585	1781	1585
Q Serve(g_s), s	33.3	29.9	10.5	0.0	15.8	6.8
Cycle Q Clear(g_c), s	43.8	29.9	10.5	0.0	15.8	6.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	386	2128	2128		446	397
V/C Ratio(X)	0.72	0.81	0.41		0.84	0.41
Avail Cap(c_a), veh/h	388	2138	2138		446	397
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	20.2	12.4	8.5	0.0	28.3	24.9
Incr Delay (d2), s/veh	6.4	2.4	0.1	0.0	16.7	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	9.5	3.1	0.0	8.4	2.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	26.5	14.8	8.6	0.0	45.0	28.0
LnGrp LOS	C	B	A		D	C
Approach Vol, veh/h		1994	877	A	534	
Approach Delay, s/veh		16.4	8.6		39.9	
Approach LOS		B	A		D	
Timer - Assigned Phs				4	6	8
Phs Duration (G+Y+Rc), s				53.8	26.0	53.8
Change Period (Y+Rc), s				6.0	6.0	6.0
Max Green Setting (Gmax), s				48.0	20.0	48.0
Max Q Clear Time (g_c+l1), s				45.8	17.8	12.5
Green Ext Time (p_c), s				2.0	0.4	6.5
Intersection Summary						
HCM 6th Ctrl Delay			18.1			
HCM 6th LOS			B			

Notes

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

HCM Unsignalized Intersection Capacity Analysis 5: SR 324 Gravel Springs Rd & Ivy Creek Rd

Kilburn Gravel Springs DRI 3213
AM Build

													
Movement	EBL	EBT	WBT	WBR	SBL	SBR							
Lane Configurations													
Traffic Volume (veh/h)	39	601	1474	21	45	200							
Future Volume (Veh/h)	39	601	1474	21	45	200							
Sign Control		Free	Free		Stop								
Grade		0%	0%		0%								
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97							
Hourly flow rate (vph)	40	620	1520	22	46	206							
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type		None	None										
Median storage veh													
Upstream signal (ft)													
pX, platoon unblocked	0.59					0.59	0.59						
vC, conflicting volume	1542					1910	760						
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	518					1145	0						
tC, single (s)	4.1					6.8	6.9						
tC, 2 stage (s)													
tF (s)	2.2					3.5	3.3						
p0 queue free %	93					57	68						
cM capacity (veh/h)	613					106	637						
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1	SB 2					
Volume Total	40	310	310	760	760	22	46	206					
Volume Left	40	0	0	0	0	0	46	0					
Volume Right	0	0	0	0	0	22	0	206					
cSH	613	1700	1700	1700	1700	1700	106	637					
Volume to Capacity	0.07	0.18	0.18	0.45	0.45	0.01	0.43	0.32					
Queue Length 95th (ft)	5	0	0	0	0	0	46	35					
Control Delay (s)	11.3	0.0	0.0	0.0	0.0	0.0	62.7	13.3					
Lane LOS	B						F	B					
Approach Delay (s)	0.7						22.3						
Approach LOS							C						
Intersection Summary													
Average Delay													
Intersection Capacity Utilization													
Analysis Period (min)													

HCM Unsignalized Intersection Capacity Analysis 5: SR 324 Gravel Springs Rd & Ivy Creek Rd

Kilburn Gravel Springs DRI 3213
PM Build

													
Movement	EBL	EBT	WBT	WBR	SBL	SBR							
Lane Configurations													
Traffic Volume (veh/h)	273	1930	1055	69	28	191							
Future Volume (Veh/h)	273	1930	1055	69	28	191							
Sign Control		Free	Free		Stop								
Grade		0%	0%		0%								
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98							
Hourly flow rate (vph)	279	1969	1077	70	29	195							
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type		None	None										
Median storage (veh)													
Upstream signal (ft)													
pX, platoon unblocked	0.87					0.87	0.87						
vC, conflicting volume	1147					2620	538						
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	879					2564	182						
tC, single (s)	4.1					6.8	6.9						
tC, 2 stage (s)													
tF (s)	2.2					3.5	3.3						
p0 queue free %	58					0	73						
cM capacity (veh/h)	668					11	724						
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	SB 1	SB 2					
Volume Total	279	984	984	538	538	70	29	195					
Volume Left	279	0	0	0	0	0	29	0					
Volume Right	0	0	0	0	0	70	0	195					
cSH	668	1700	1700	1700	1700	1700	11	724					
Volume to Capacity	0.42	0.58	0.58	0.32	0.32	0.04	2.67	0.27					
Queue Length 95th (ft)	52	0	0	0	0	0	116	27					
Control Delay (s)	14.2	0.0	0.0	0.0	0.0	0.0	1445.1	11.8					
Lane LOS	B						F	B					
Approach Delay (s)	1.8						197.4						
Approach LOS							F						
Intersection Summary													
Average Delay													
			13.3										
Intersection Capacity Utilization			63.4%	ICU Level of Service				B					
Analysis Period (min)			15										

HCM Unsignalized Intersection Capacity Analysis 6: Brown Rd/Ivy Church Rd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
AM Build

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	385	14	78	1666	1	3	0	24	1	0	1
Future Volume (Veh/h)	1	385	14	78	1666	1	3	0	24	1	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	1	410	15	83	1772	1	3	0	26	1	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1773			425			1465	2351	205	2171	2365	886
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1773			425			1465	2351	205	2171	2365	886
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			96	100	97	96	100	100
cM capacity (veh/h)	347			1131			84	33	802	24	32	288
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1		
Volume Total	1	205	205	15	83	886	886	1	29	2		
Volume Left	1	0	0	0	83	0	0	0	3	1		
Volume Right	0	0	0	15	0	0	0	1	26	1		
cSH	347	1700	1700	1700	1131	1700	1700	1700	425	44		
Volume to Capacity	0.00	0.12	0.12	0.01	0.07	0.52	0.52	0.00	0.07	0.05		
Queue Length 95th (ft)	0	0	0	0	6	0	0	0	5	3		
Control Delay (s)	15.4	0.0	0.0	0.0	8.4	0.0	0.0	0.0	14.1	90.7		
Lane LOS	C				A				B	F		
Approach Delay (s)	0.0				0.4				14.1	90.7		
Approach LOS									B	F		
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			62.7%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 6: Brown Rd/Ivy Church Rd & SR 324 Gravel Springs Rd

Kilburn Gravel Springs DRI 3213
PM Build

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (veh/h)	0	2113	5	26	1105	1	22	1	92	0	1	0
Future Volume (Veh/h)	0	2113	5	26	1105	1	22	1	92	0	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	2156	5	27	1128	1	22	1	94	0	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1129			2161			2774	3339	1078	2354	3343	564
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1129			2161			2774	3339	1078	2354	3343	564
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			0	86	56	100	86	100
cM capacity (veh/h)	615			245			7	7	214	9	7	469
Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	
Volume Total	0	1078	1078	5	27	564	564	1	22	95	1	
Volume Left	0	0	0	0	27	0	0	0	22	0	0	
Volume Right	0	0	0	5	0	0	0	1	0	94	0	
cSH	1700	1700	1700	1700	245	1700	1700	1700	7	164	7	
Volume to Capacity	0.00	0.63	0.63	0.00	0.11	0.33	0.33	0.00	3.03	0.58	0.14	
Queue Length 95th (ft)	0	0	0	0	9	0	0	0	Err	76	9	
Control Delay (s)	0.0	0.0	0.0	0.0	21.5	0.0	0.0	0.0	Err	53.7	589.7	
Lane LOS					C				F	F	F	
Approach Delay (s)	0.0				0.5				1923.7		589.7	
Approach LOS									F		F	
Intersection Summary												
Average Delay			65.9									
Intersection Capacity Utilization			73.0%		ICU Level of Service				C			
Analysis Period (min)			15									