

**DEVELOPMENT OF REGIONAL IMPACT
(DRI #3877)**

**TRAFFIC STUDY
FOR
CHESTATEE CROSSROADS
FORSYTH COUNTY, GEORGIA**



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A & R Project # 22-198

EXECUTIVE SUMMARY

Traffic impacts were evaluated for the proposed Chestatee Crossroads located southeast of the intersection at Marsett Parkway and Settingdown Road in Forsyth County, Georgia. The development will consist of:

- Single-Family Attached Housing: 579 units
- Single-Family Detached Housing: 198 units

The development proposes three full access driveways:

- Full access driveway 1 proposed to connect to Marsett Parkway aligns with Hemingway Trail
- Full access driveway 2 proposed to connect to Marsett Parkway
- Full access driveway 3 (emergency access only) proposed to connect to Settingdown Road aligns with Heards Circle

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

1. SR 400/ US 19 at Martin Road
2. SR 400/ US 19 at Hemingway Trail
3. SR 400/ US 19 at Settingdown Road
4. Settingdown Road at Marsett Parkway
5. Marsett Parkway at Hemingway Trail / Site Driveway 1
6. Marsett Parkway at Martin Road
7. Marsett Parkway at Site Driveway 2

Nearby Planned Developments – First Light Development

There is a planned commercial development that will include of retail, office, fast food restaurant with drive through window and convenience store/gas station located to the northeast corner of the intersection at SR 400/ US 19 and Settingdown Road in Forsyth County, Georgia. The development is planned to be completed in 2024 and will have four access at the following locations:

- Site driveway 1: Full access eastern driveway on Settingdown Road
- Site driveway 2: Full access western driveway on Settingdown Road aligns with Marsett Parkway
- Site driveway 3: Right-in/right-out southern driveway on SR 400/ US 19
- Site driveway 4: Right-in/right-out northern driveway on SR 400/ US 19

The development traffic will be included in the No Build and Build analysis as background traffic. Among the four access locations only the site driveway 2 is considered in the analysis since it aligns with one of the study intersections (i.e. Settingdown Road at Marsett Parkway)

GDOT planned improvement project (PI 0013369) was identified as a programmed improvement project that is projected to be completed in 2023. The intersection of SR 400 / US 19 and Martin Road will be converted to median divided and right in-right out as a system improvement after the completion of SR 400/ SR 369 Interchange project. Since the proposed development is planned to be completed in 2027, the overlapping intersections in the study network and improved project that are included in the DRI

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study network are listed below and the programmed project will be analyzed in the “No-Build” and “Build” conditions.

The intersection SR 400/ US 19 at Martin Road will be considered with the programmed improvement project lane geometry in the analysis.

Traffic Operations Summary

Table E1 below provides a summary of traffic operations for the “No-Build” and “Build” conditions for the year 2027 with and without system improvements. As per GRTA requirements, all approaches that do not meet the level-of-service (LOS) standard (considered failing) are highlighted in Table E1. Table E1 for “Build” conditions also includes the project’s total added trip and the respective percentage of overall total “Build” condition approach traffic volume for all failing LOS approaches after all improvements are completed.

TABLE E1 — FUTURE INTERSECTION OPERATIONS AT FAILING APPROACHES															
Intersection		No-Build Condition: LOS (Delay)				Build Condition: LOS (Delay)									
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS ONLY		SYSTEM AND SITE IMPROVEMENTS		SITE VOLUMES AT FAILING APPROACH BUILD WITH IMPROVEMENTS		PERCENT SITE TRIPS OF TOTAL APPROACH TRIPS AT FAILING APPROACHES	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1	SR 400/ US 19 @ Martin Road (RIRO)														
	-Eastbound Approach	F (227.7)	C (19.9)	F (227.7)	C (19.9)	F (*)	C (22.5)	F (*)	C (22.5)	F (*)	C (22.5)	0	0	0%	0%
	-Westbound Approach	B (13.8)	F (*)	B (13.8)	F (*)	B (14.2)	F (*)	B (14.2)	F (*)	B (14.2)	F (*)	0	0	0%	0%
2	SR 400/ US 19 @ Hemingway Trail														
	-Westbound Approach	B (14.6)	F (52.3)	B (14.6)	F (52.3)	C (15.9)	F (79.2)	C (15.9)	F (79.2)	C (15.9)	F (79.2)	37	26	40%	39%
3	SR 400/ US 19 @ Settingdown Road														
	-Eastbound Approach	C (24.7) E (70.4)	D (48.5) E (65.2)	C (22.3) E (56.5)	C (23.8) D (52.0)	D (43.0) E (70.2)	E (67.8) E (70.8)	D (37.4) E (56.6)	D (36.6) D (53.5)	C (27.9) E (69.2)	C (31.8) D (54.9)	10	25	11%	23%
	-Westbound Approach	E (64.7)	E (68.0)	E (66.8)	E (55.2)	F (170.5)	F (132.0)	F (1262)	E (71.6)	D (54.7)	E (58.7)	234	165	42%	38%
	-Northbound Approach	B (14.9)	E (60.1)	B (12.1)	C (22.0)	B (17.2)	E (76.5)	B (16.7)	D (36.6)	B (16.4)	C (30.7)	52	64	4%	2%

4	<u>Settingdown</u> <u>Road @</u> <u>Marsett</u> <u>Parkway</u> -Northbound Approach	D (28.6)	C (17.4)	D (28.6)	C (17.4)	F (*)	F (120.1)	F (*)	F (120.1)	B (17.9) C (34.7)	B (16.8) D (36.3)	254	181	74%	61%
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*Delay exceeds 300 sec

The results of future “Build” traffic operations show that after the addition of site traffic the following intersections will continue to have LOS “E” and “F” for one or more approaches:

- Intersection 1: SR 400/ US 19 at Martin Road (RIRO)
- Intersection 2: SR 400/ US 19 at Hemingway Trail
- Intersection 3: SR 400/ US 19 at Settingdown Road
- Intersection 4: Settingdown Road @ Marsett Parkway

The intersections 1 and 2 have right-in/right out access. It is not unusual for stop controlled side-streets along arterial roadways to have elevated delays during peak periods caused by side-streets wait times to get onto the mainline. Therefore, no improvements are suggested.

After the recommended system and site mitigation improvements listed below are implemented, the signalized intersections 3 and 4 will operate at an overall LOS “C” or better in both the AM and PM peak hours.

The table below includes 95th percentile Synchro HCM 6 queue length for failing level-of-service approaches for the build condition with improvements that had site generated traffic. Queue length reports are included in the Appendix.

TABLE E2 – FUTURE 95TH PERCENTILE SYNCHRO QUEUES (FT) FOR FAILING APPROACHES				
Intersection		Available Storage (ft)	Queue in feet	
			BUILD with Improvements	
			AM Peak	PM Peak
1	<u>SR 400/ US 19 @ Martin Road (RIRO)</u>			
	-Eastbound Right	500	465	45
	-Westbound Right	500	15	430
2	<u>SR 400/ US 19 @ Hemingway Trail</u>			
	-Westbound Right	390	23	80
3	<u>SR 400/ US 19 @ Settingdown Road</u>			
	-Eastbound Left	210	133	198
	-Eastbound Thru	210	150	158
	-Westbound Left	350	248	188
	-Westbound Thru	350	183	165
	-Northbound Left	490	75	90
	-Northbound Thru	1200	223	675
	-Northbound Right	1200	238	790
4	<u>Settingdown Road @ Marsett Parkway</u>			
	-Northbound Approach	-	265	238

As reported in Table E2, the projected “Build” condition 95th percentile approach queues will be accommodated by the existing storage available.

Recommended System Improvements

The following are system improvements that were identified from the “No-Build” condition analysis.

Intersection 3: SR 400/ US 19 at Settingdown Road

- Increase the storage and taper lengths of westbound left turn lane as per GDOT standards.
- Convert the existing northbound right turn lane on SR 400/ US 19 to a shared thru-right lane and extend the thru lane approximately 1200 feet.

Recommended Site Mitigation Improvements

Intersection 3: SR 400/ US 19 at Settingdown Road

- Addition of a second westbound left turn lane on Settingdown Road

Intersection 4: Settingdown Road at Marsett Parkway

- Installation of a traffic signal when warranted by MUTCD warrants
- One entering lane and two exiting lanes for the southbound traffic (Adjacent site)
- Installation of a left turn lane and right turn lane on Settingdown Road (Adjacent site)

Site Driveway Recommendations

The following improvements are recommended at the proposed site access intersections

Intersection 5: Marsett Parkway at Hemingway Trail/ Site Driveway 1

- One entering and one exiting lane

Intersection 7: Marsett Parkway at Site Driveway 2

- One entering and one exiting lane
- Addition of left turn lane and deceleration lane for entering traffic

TABLE OF CONTENTS

Item	Page
Executive Summary	E-1
Nearby Planned Developments – First Light Development.....	E-1
Traffic Operations Summary	E-3
Recommended System Improvements.....	E-6
Recommended Site Mitigation Improvements.....	E-6
Site Driveway Recommendations	E-6
Introduction	1
Study Network Determination	3
Existing Roadway Facilities	5
Existing Bicycle and Pedestrian Facilities.....	6
Alternative Modes of Access.....	6
Study Methodology	7
Unsignalized Intersections	7
Signalized Intersections	8
Existing 2023 Traffic Analysis	9
Existing Traffic Volumes.....	9
Existing Traffic Operations	14
Project Description	15
Site Plan	16
Planned Bicycle and Pedestrian Facilities	18
Potential Pedestrian and Bicycle Destinations	18
Planned Transit Facilities	18
Consistency with Adopted Comprehensive Plan	18
Future Land Use Map.....	18
Project Phasing.....	18
Trip Generation.....	19
Trip Distribution	19
Future 2027 Traffic Analysis	21
Future “No-Build” Conditions	21
Annual Traffic Growth.....	21
Nearby Planned Developments – First Light Development.....	21
Planned and Programmed Improvements in Study Area	23
Future “No-Build” Traffic Operations	29
Recommended System Improvements.....	30
Future “Build” Conditions	31
Auxiliary Lane Analysis.....	33
Future “Build” Traffic Operations	34
Site Mitigation Improvements	35
Site Driveway Recommendations	35

Conclusions and Recommendations.....	37
Recommended System Improvements.....	38
Recommended Site Mitigation Improvements.....	38
Site Driveway Recommendations	38
Appendix	

LIST OF TABLES

Item	Page
Table E1 – Future Intersection Operations at Failing Approaches	3
Table E2 – Future 95th Percentile Synchro Queues (ft) for Failing Approaches	5
Table 1 – Level-of-service Criteria for Unsignalized Intersections.....	7
Table 2 – Level-of-service Criteria for Signalized Intersections	8
Table 3 – Existing Intersection Operations	14
Table 4 – Trip Generation (Proposed Site).....	19
Table 5 – Trip Generation (Adjacent Site).....	23
Table 6 – Planned and Programmed Improvements	23
Table 7 – Future “No-Build” Intersection Operations.....	29
Table 8 – GDOT Requirements for Left Turn Lanes	33
Table 9 – GDOT Requirements for Deceleration Lanes	33
Table 10 – Future “Build” Intersection Operations	34

LIST OF FIGURES

Item	Page
Figure 1 – Location Map and Study Intersections.....	4
Figure 2 – 2022 Peak Hour Volumes.....	10
Figure 3 – Projected 2023 Peak Hour Volumes	11
Figure 4 –Shifted Traffic Volumes.....	12
Figure 5 – Existing Traffic Control and Lane Geometry	13
Figure 6 – Site Plan.....	17
Figure 7 – Outer Leg Trip Distribution and Site Generated Weekday Peak Hour Volumes.....	20
Figure 8 – Site Plan (Adjacent Development)	25
Figure 9 – Trip Distribution and Site-Generated Weekday Peak Hour Volumes (Adjacent Site)	26
Figure 10 – Site Peak Hour Pass-By Volumes (Adjacent Site)	27
Figure 11 – Future (No-Build) Weekday Peak Hour Volumes.....	28
Figure 12 – Future (Build) Weekday Peak Hour Volumes.....	32
Figure 13 – Future Traffic Control and Lane Geometry	36

INTRODUCTION

The purpose of this study is to determine the traffic impact for the proposed Chestatee Crossroads that will be located to the southeast of the intersection at Marsett Parkway and Settingdown Road in Forsyth County, Georgia. The traffic analysis evaluates the current operations and the future conditions with the traffic generated by the development. The development will consist of:

- Single-Family Attached Housing: 579 units
- Single-Family Detached Housing: 198 units



The development proposes access at the following locations:

- Site Driveway 1: Full access driveway proposed to connect to Marsett Parkway aligns with Hemingway Trial
- Site Driveway 2: Full access driveway proposed to connect to Marsett Parkway

- Site Driveway 3: Full access driveway (emergency access only) proposed to connect to Settingdown Road aligns with Heards Circle

The AM and PM peak hours have been analyzed in this study. In addition to the site access points, this study includes the evaluation of traffic operations at the intersections of:

1. SR 400/ US 19 at Martin Road
2. SR 400/ US 19 at Hemingway Trail
3. SR 400/ US 19 at Settingdown Road
4. Settingdown Road at Marsett Parkway
5. Marsett Parkway at Hemingway Trail
6. Marsett Parkway at Martin Road

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

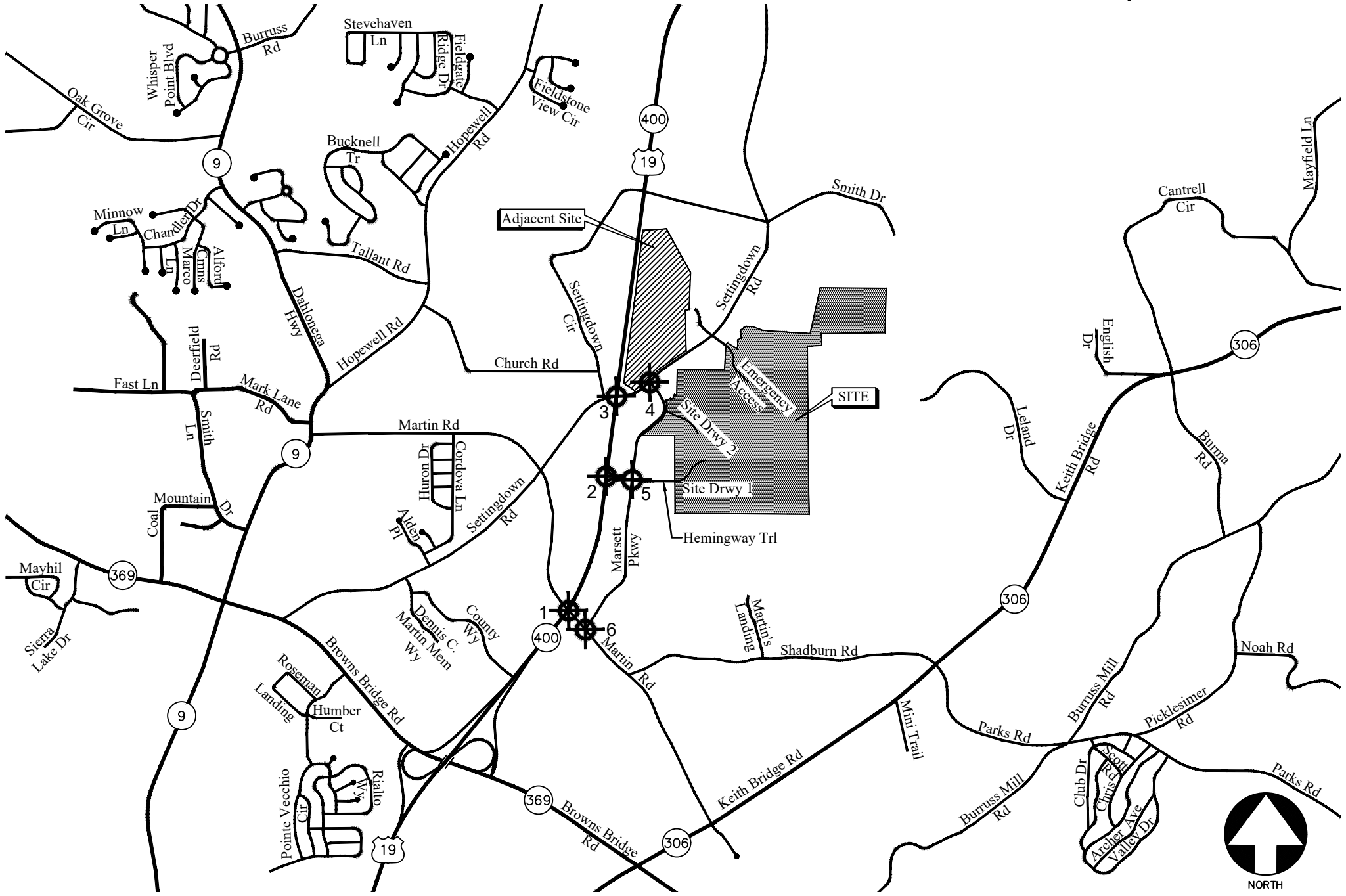
STUDY NETWORK DETERMINATION

The study network was determined by evaluating the amount of traffic that the proposed development will add to each roadway segment in the area. According to GRTA requirements, a roadway segment carries a “significant” amount of traffic if the project contributes 7% or more trips to the two-way daily service volumes of the roadway at the appropriate level of service standard. Upon agreement with GRTA a level of service standard of “D” was used for determining the study area network.

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

1. SR 400/ US 19 at Martin Road
2. SR 400/ US 19 at Hemingway Trail
3. SR 400/ US 19 at Settingdown Road
4. Settingdown Road at Marsett Parkway
5. Marsett Parkway at Hemingway Trail
6. Marsett Parkway at Martin Road

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



LOCATION MAP

FIGURE 1
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EXISTING ROADWAY FACILITIES

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

SR 400/ US 19

SR 400/ US 29 is a north-south, four-lane, median divided roadway with a speed limit of 65 mph in the vicinity of the site. Synchro software which utilizes the HCM methodology (HCM 6th edition) supports speed limit in the range of 25 mph to 55 mph. As a result, for analysis purpose the speed limit on SR 400/ US 29 is considered as 55 mph. GDOT traffic counts (Station ID's 117-0090 & 117-0092) indicate that the daily traffic volume on SR 14/ US 29 in 2019 was 42,400 vehicles per day north of Martin Road and 37,000 vehicles per day north of Settingdown Circle/ Bottoms Road. GDOT classifies SR 14/ US 29 as an Urban Principal Arterial roadway.

Marsett Parkway

Marsett Parkway is a north-south, two-lane roadway including a two way left turn lane and posted speed limit of 30 mph in the vicinity of the site.

Martin Road

Martin Road is an east-west, two-lane, undivided roadway with a posted speed limit of 40 mph in the vicinity of the site.

Settingdown Road

Settingdown Road is an east-west, two-lane, undivided roadway with a posted speed limit of 40 mph in the vicinity of the site.

Hemingway Trail

Hemingway Trail is an east-west, two-lane, median divided roadway with a posted speed limit of 25 mph in the vicinity of the site.

Existing Bicycle and Pedestrian Facilities

- Sidewalk and Bike paths are not present in the study network.

Alternative Modes of Access

- Existing transit routes were not identified in the study network.
- No high-capacity transit stations were identified in the vicinity of the proposed development.

The graphic below includes the location of existing sidewalks in the study network.

Existing Alternative Transportation Map



STUDY METHODOLOGY

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

Unsignalized Intersections

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

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

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

TABLE 1 — LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS		
Control Delay (sec/vehicle)	LOS by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	v/c > 1.0
≤ 10	A	F
> 10 and ≤ 15	B	F
> 15 and ≤ 25	C	F
> 25 and ≤ 35	D	F
> 35 and ≤ 50	E	F
> 50	F	F

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

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

Signalized Intersections

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

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

TABLE 2 — LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS		
Control Delay (sec/vehicle) *	LOS for Lane Group by Volume-to-Capacity Ratio*	
	v/c ≤ 1.0	v/c > 1.0
≤ 10	A	F
> 10 and ≤ 20	B	F
> 20 and ≤ 35	C	F
> 35 and ≤ 55	D	F
> 55 and ≤ 80	E	F
> 80	F	F

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

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

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

EXISTING 2023 TRAFFIC ANALYSIS

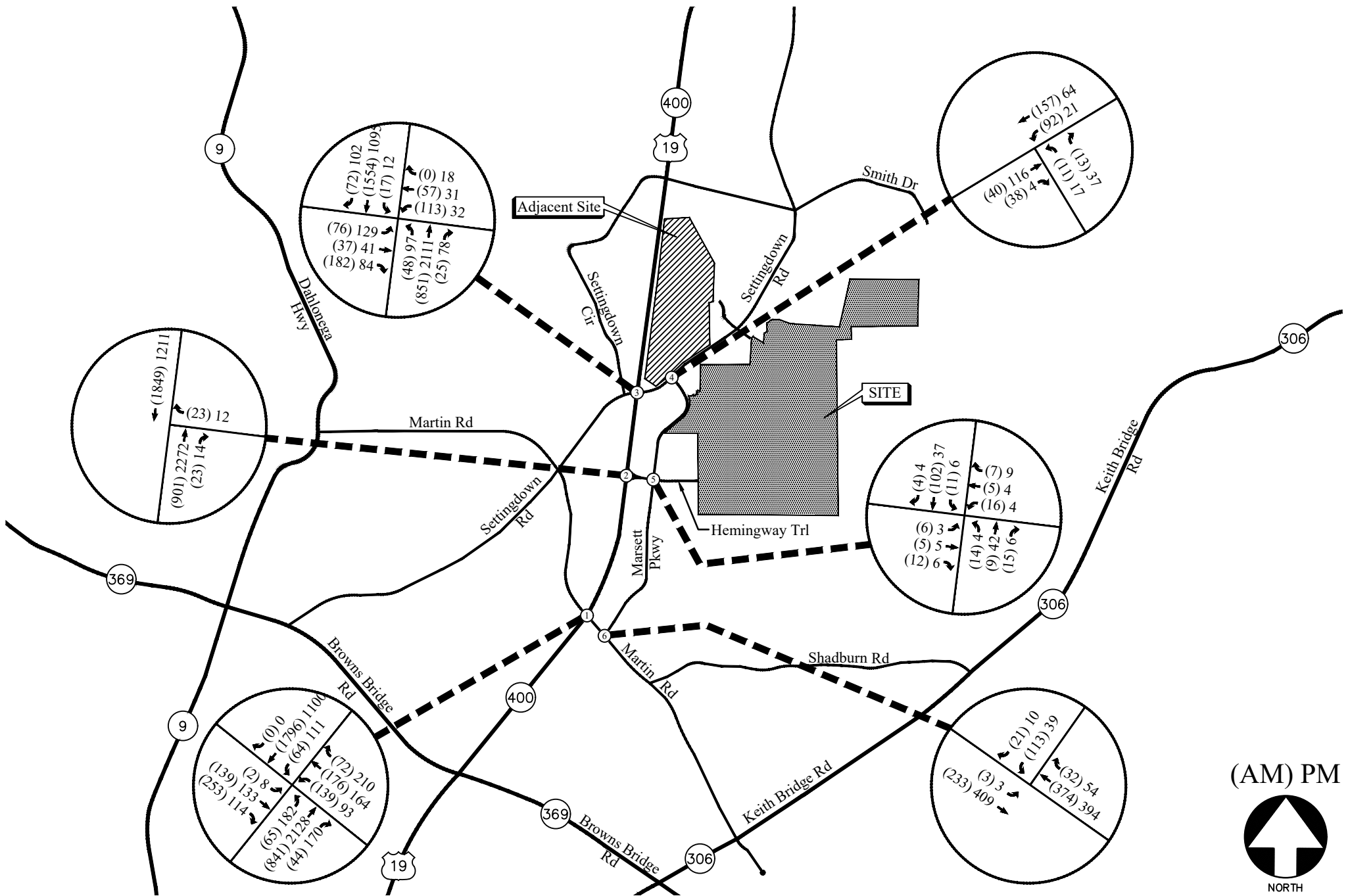
Existing Traffic Volumes

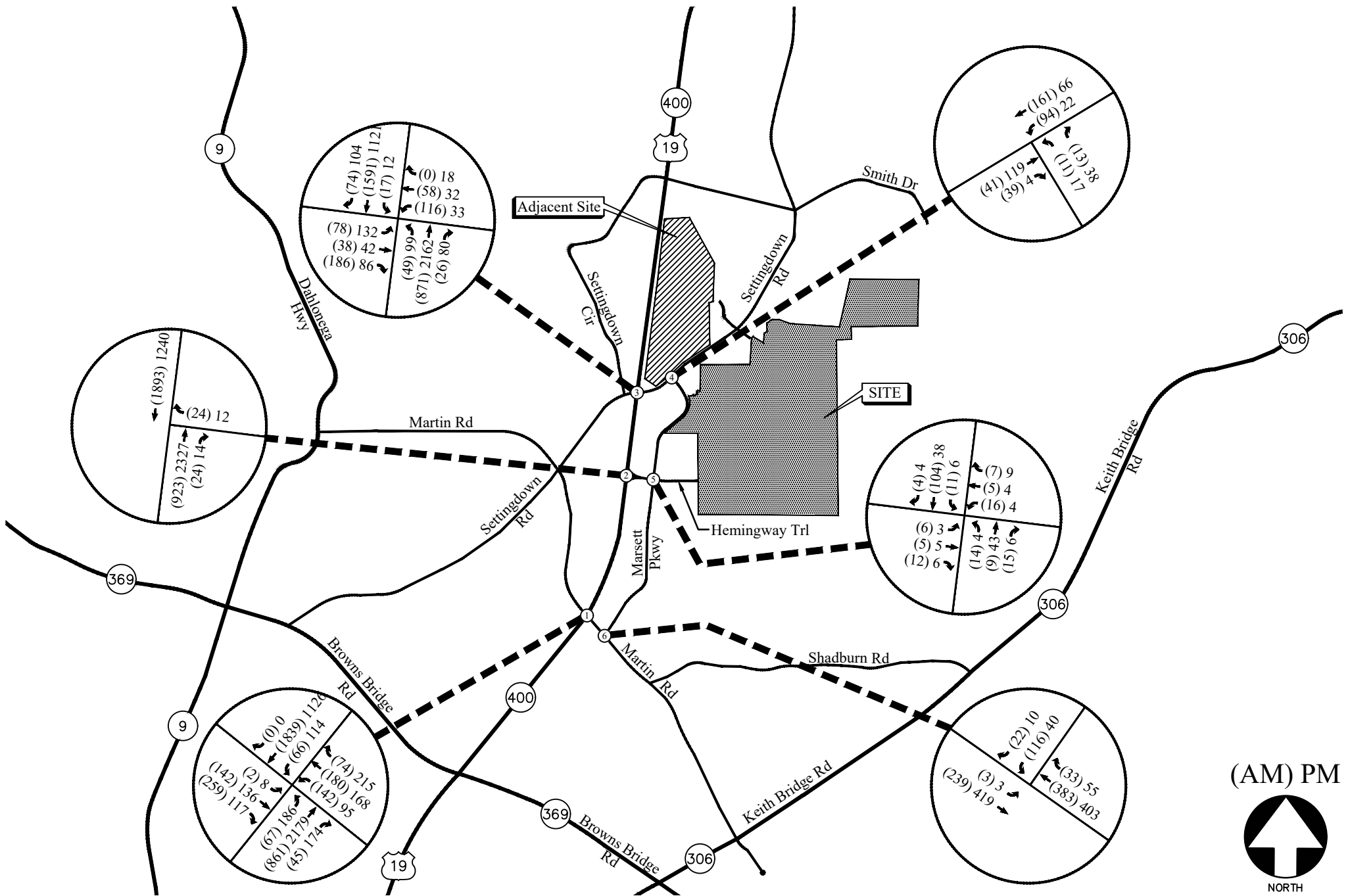
Existing traffic counts were obtained at the following study intersections:

1. SR 400/ US 19 at Martin Road
2. SR 400/ US 19 at Hemingway Trail
3. SR 400/ US 19 at Settingdown Road
4. Settingdown Road at Marsett Parkway
5. Marsett Parkway at Hemingway Trail
6. Marsett Parkway at Martin Road

Turning movement counts were collected on Tuesday, May 17, 2022. All turning movement counts were recorded during the AM and PM peak hours between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM, respectively. The four consecutive 15-minute interval volumes that summed to produce the highest volume at the intersections were then determined. These volumes make up the peak hour traffic volumes for the intersections counted and are shown in Figure 2. Since the volumes were taken in 2022, to make up for the present scenario, the volumes are projected to 2023 with the growth factor of 2.4% and used in the analysis, shown in Figure 3.

As a part of GDOT planned improvement project (PI 0013369), the intersection at SR 400/ US 19 and Martin Road will be converted to median divided and right in-right out. As a result, all the left turn and through movements at this intersection will be shifted and are shown in Figure 4.





PROJECTED 2023 PEAK-HOUR VOLUMES

(AM) PM

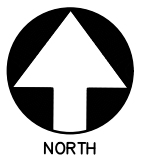
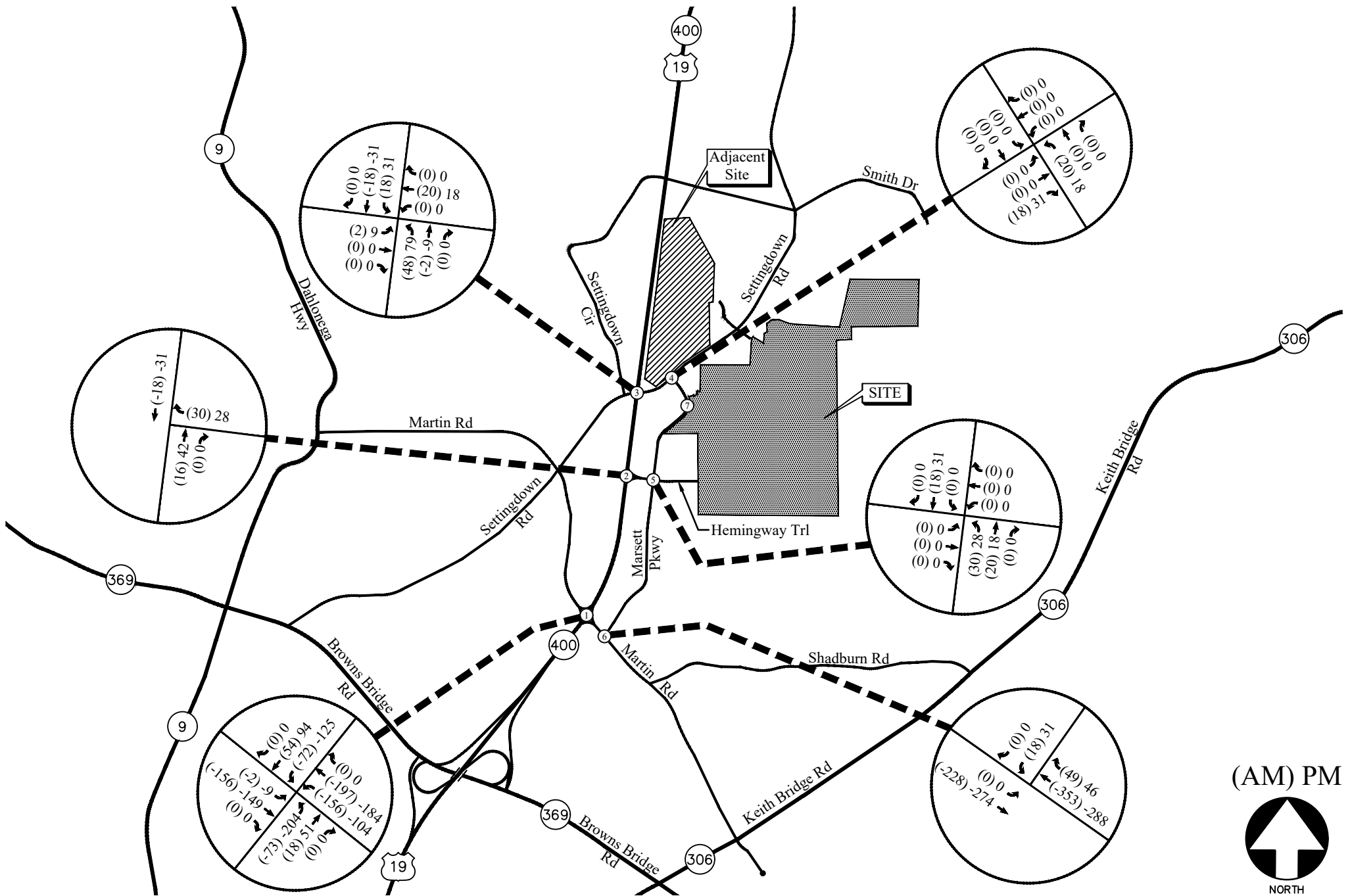


FIGURE 3

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SHIFTED TRAFFIC VOLUMES

(AM) PM

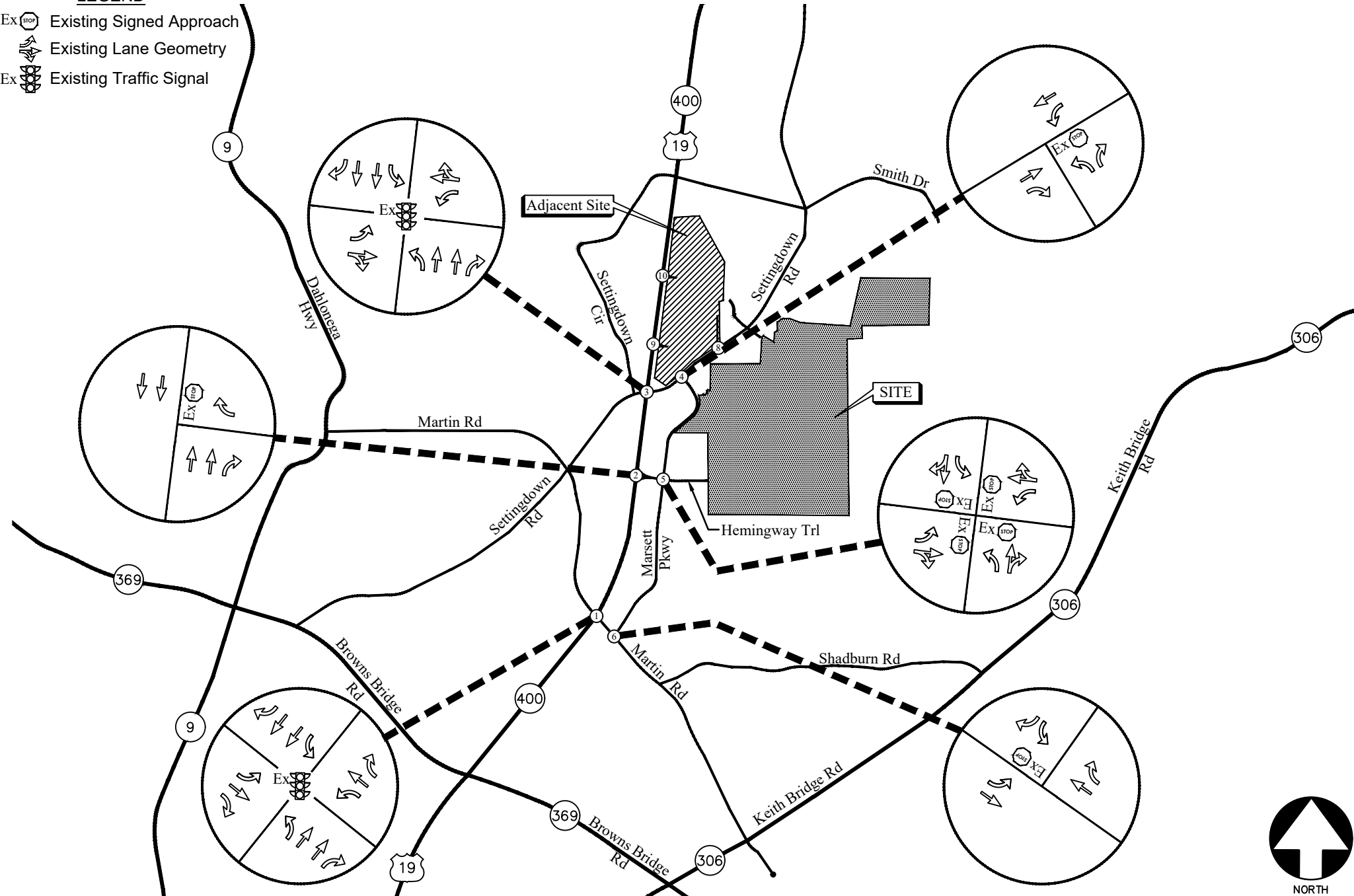


FIGURE 4

A&R Engineering Inc.

LEGEND

- Ex  Existing Signed Approach
- Ex  Existing Lane Geometry
- Ex  Existing Traffic Signal



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 5
A&R Engineering Inc.

Existing Traffic Operations

Existing 2023 traffic operations were analyzed at the study intersections in accordance with the HCM methodology. The results of the analyses are shown in Table 3. The existing traffic control and lane geometry for the intersections are shown in Figure 5.

TABLE 3 — EXISTING INTERSECTION OPERATIONS					
Intersection		Traffic Control	AM Peak	PM Peak	LOS Standard
1	<u>SR 400/ US 19 @ Martin Road</u>	Signalized	<u>D (35.7)</u>	<u>D (35.6)</u>	<u>D/D</u>
	-Eastbound Approach		E (63.7)	E (68.4)	D/D
	-Westbound Approach		D (46.9)	E (64.0)	D/D
	-Northbound Approach		B (19.8)	C (34.3)	D/D
	-Southbound Approach		D (35.5)	C (20.6)	D/D
2	<u>SR 400/ US 19 @ Hemingway Trail</u> -Westbound Approach	Right In- Right out on WB approach	B (12.4)	D (29.5)	D/D
3	<u>SR 400/ US 19 @ Settingdown Road</u>	Signalized	<u>B (16.2)</u>	<u>B (17.2)</u>	<u>D/D</u>
	-Eastbound Approach		E (69.6)	E (72.2)	D/D
	-Westbound Approach		E (72.8)	E (70.9)	D/D
	-Northbound Approach		A (7.5)	B (15.9)	D/D
	-Southbound Approach		B (11.5)	A (9.2)	D/D
4	<u>Settingdown Road @ Marsett Parkway</u> -Westbound Left -Northbound Approach	Stop Controlled on NB approach	A (7.5) B (10.1)	A (7.5) A (9.4)	D/D D/D
5	<u>Marsett Parkway @ Hemingway Trail</u>	All way stop controlled	<u>A (8.2)</u>	<u>A (7.6)</u>	<u>D/D</u>
	-Eastbound Approach		A (7.7)	A (7.5)	D/D
	-Westbound Approach		A (8.1)	A (7.4)	D/D
	-Northbound Approach		A (7.6)	A (7.7)	D/D
	-Southbound Approach		A (8.5)	A (7.7)	D/D
6	<u>Marsett Parkway @ Martin Road</u> -Eastbound Left -Southbound Approach	Stop Controlled on NB approach	A (8.2) C (16.6)	A (8.2) C (17.2)	D/D D/D

The results of existing traffic operations analysis indicate that all the study intersections (signalized) are operating at an overall level-of-service “D” or better in both the AM and PM peak hours. The study intersections whose approaches are stop controlled are operating at a level-of-service “D” or better in both the AM and PM peak hours.

PROJECT DESCRIPTION

The proposed Chestatee Crossroads will be located to the southeast of the intersection at Marsett Parkway and Settingdown Road in Forsyth County, Georgia. The development will consist of:

- Single-Family Attached Housing: 579 units
- Single-Family Detached Housing: 198 units



The development proposes access at the following locations:

- Site Driveway 1: Full access driveway proposed to connect to Marsett Parkway aligns with Hemingway Trial
- Site Driveway 2: Full access driveway proposed to connect to Marsett Parkway
- Site Driveway 3: Full access driveway (emergency access only) proposed to connect to Settingdown Road aligns with Heards Circle

Site Plan

A site plan is shown in Figure 6. A digital copy of the site plan is also provided with this report.



DEVELOPER
THE PACIFIC GROUP INC.
5755 DUPRE DR., NW #13
ATLANTA, GA 30327
770-573-4801
FAX: 678-302-6362

CIVIL ENGINEER
GREYDEN ENGINEERING
12460 CRANAPPLE ROAD, S
APLHARETTA, GA 30004
770-573-4801
FAX: 678-302-6362

VICINITY MAP

EXISTING ZONING	RES-6
PROPOSED ZONING	RES-6
AREA OF PROJECT	203.47 ACRES
EXISTING RES-6 ZONING	81.39 ACRES
PROPOSED OPEN SPACE	10.21 ACRES
PROPOSED COMMON SPACE	
RES-6 ZONING	236-064
APPLICATION NUMBER	720886
SINGLE FAMILY LOTS	198
FEE SIMPLE TOWNHOME LOTS	579
DENSITY (LOTS PER ACRES)	3.81
GARAGE SPACES	1600
ACTIVE RECREATION AREA	85
PARKING SPACES PER UNIT	2.0 TO 1

VICINITY MAP



- A** 25' STATE UNDISTURBED STREAM BUFFER

Diagram illustrating the components of the total area:

- COMMON AREA (Green)
- UNDISTURBED (Grey)

REQUIRED	SHOWN
4.0	3.76
4000 SF	4000 SF
2500 SF	4000 SF
50'	50'
40%	40.01% (81.39 AC)
5.02%	5.02% (10.21 AC)
10'	10'
20'	20'
20'	20'
20'	20'
1500 SF	1500 SF

DEVELOPMENT DATA:
CHESTNUT CROSSROADS DAY 3877
1.800.406.406 4.489 1.474 NORTH- 1.474 NORTH- 1.474 NORTH-

- [illegible]

WATER COMPANY INFORMATION

UTILITY	— FORTSHY COUNTY WATER AND SEWER, 110 E. MAIN ST. #150, CUMMING, GA 30040, 404-623-4241
SEWER	— FORTSHY COUNTY WATER AND SEWER, 110 E. MAIN ST. #150, CUMMING, GA 30040, 404-623-4241
GAS	— AGS
ELECTRIC	— SOUTHEAST ELECTRIC, 770-887-2383
TELEPHONE	— AT&T

DATE	2/15/2023
JOB NO.	22-084
DRAWN	TJG
CHECKED	RAD
SCALE	AS NOTED
SHEET:	
GRTA SITE PLAN	

SHEET:
GRTA SITE PLAN

1111

Planned Bicycle and Pedestrian Facilities

Sidewalks will be provided along the internal street network and along street frontage of the proposed development to promote external connectivity via pedestrian facilities. Trails will be considered where possible internal to the development.

Potential Pedestrian and Bicycle Destinations

Potential pedestrian and bicycle destinations in the vicinity of the proposed development include the following:

- Bennett Park
- Coal Mountain Park
- Charleston Park
- Young Deer Creek Park
- Central Park
- Lanier Land Park
- Atlanta Cricket Fields

Planned Transit Facilities

There is no existing or planned public transit service near the proposed development.

Consistency with Adopted Comprehensive Plan

The proposed development will include single family (198 units) and townhomes (579 units). The site is currently zoned as Multi-Family Residential District (RES-6).

Future Land Use Map

Future Land Use Map Zoning	Multi-Family Residential District (RES-6)
Land Use Vision and Goals for Complete Community / Interstate Gateway Character Area	The vision of the Forsyth County Comprehensive Plan is to focus on establishing and enhancing development along major transportation corridors. The vision for much of the County's land outside of major corridors is defined by its proposed housing type, predominantly suburban living.
Relation to Existing Land Use Plans	The proposed residential development is consistent with the land use vision and goals included by Forsyth County.

The proposed development is consistent with the land use vision and goals listed above.

Project Phasing

This project has been evaluated for the complete build-out of the development in 2027.

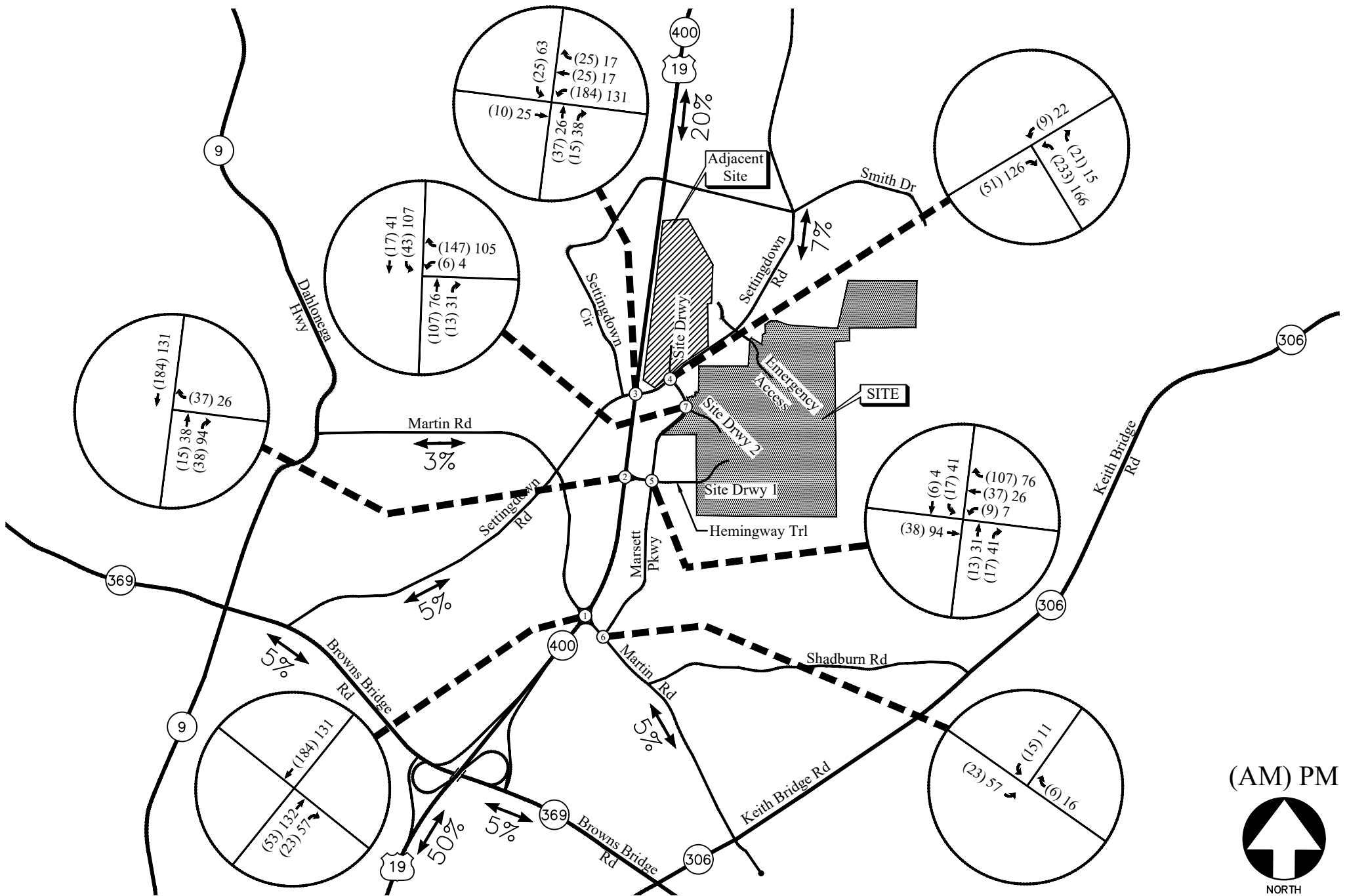
Trip Generation

Trip generation estimates for the project were based on the rates and equations published in the 11th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Uses: 210 – *Single Family Detached Housing* and 215 – *Single Family Attached Housing*. The trip generation for the proposed development is shown in Table 4.

TABLE 4 – TRIP GENERATION (PROPOSED SITE)								
Land Use	Size	AM Peak Hour			PM Peak Hour			24-Hour
		Enter	Exit	Total	Enter	Exit	Total	2-way
ITE 210 – Single Family detached Housing	198 units	36	103	139	119	70	189	1,892
ITE 215 – Single Family Attached Housing	579 units	91	204	295	195	148	343	4,362
New External Trips		127	307	434	314	218	532	6,254

Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An individual trip distribution was developed for the site for cars and trucks based on a review of GDOT ADT volumes and the locations of major roadways and highways that will serve the development. The site-generated peak hour traffic volumes, shown in Table 4, were assigned to the study area intersections based on this distribution. The outer-leg distribution and AM and PM peak hour new traffic generated by the site are shown in Figure 7.



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES

(AM) PM

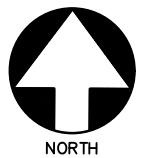


FIGURE 7

A&R Engineering Inc.

FUTURE 2027 TRAFFIC ANALYSIS

The future 2027 traffic operations are analyzed for the “Build” and “No-Build” conditions. This provides a basis of reference for determining both the contribution of the site to overall traffic conditions and the additional improvements needed to provide sufficient site access and capacity for passing traffic. Note that survey and construction drawings would be needed to verify the feasibility and extent of additional right-of-way required for any recommended improvements.

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

Future “No-Build” Conditions

The “No-Build” (or background) conditions provide an assessment of how traffic will operate in the study horizon year without the study site being developed as proposed, with projected increases in through traffic volumes due to normal annual growth and due to other planned developments in the area. The Future “No-Build” volumes consist of the projected 2023 traffic volumes (Figure 3) plus increases for annual growth of traffic and traffic from other planned developments.

Annual Traffic Growth

In order to evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last three (2017-2019) years revealed growth of approximately 2.4% in the area. This growth factor was applied to the existing traffic volumes to estimate the future year traffic volumes prior to the addition of site-generated traffic. The resulting Future “No-Build” volumes on the roadway are shown in Figure 11.

Nearby Planned Developments – First Light Development

There is a planned commercial development that will include of retail, office, fast food restaurant with drive through window and convenience store/gas station located to the northeast corner of the intersection at SR 400/ US 19 and Settingdown Road in Forsyth County, Georgia. The development is planned to be completed in 2024 and will have four access at the following locations:

- Site driveway 1: Full access eastern driveway on Settingdown Road
- Site driveway 2: Full access western driveway on Settingdown Road aligns with Marsett Parkway
- Site driveway 3: Right-in/right-out southern driveway on SR 400/ US 19
- Site driveway 4: Right-in/right-out northern driveway on SR 400/ US 19

The development traffic will be included in the No Build and Build analysis as background traffic. Among the four access locations only the site driveway 2 is considered in the analysis since it aligns with one of the study intersections (i.e. Settingdown Road at Marsett Parkway)

A site-overlay of both proposed residential and adjacent commercial development is shown below. Adjacent site plan is shown in Figure 8.



Trip generation estimates for the First Light commercial development were based on the rates and equations published in the 11th edition of the Institute of Transportation Engineers (ITE) Trip Generation report. This reference contains traffic volume count data collected at similar facilities nationwide. The trip generation was based on the following ITE Land Uses: 710- General Office Building, 822 - Strip Retail Plaza (<40k), 934 - Fast-Food Restaurant with Drive-Through Window and 945 - Convenience Store/Gas Station – GFA (5.5-10K) with Gas Station. Because there is limited data provided by ITE for Land Use 950 – Truck Stop, field data collected on August 26, 2015 at a truck stop facility in Ellenwood, Georgia with 8 truck fueling positions was used in this analysis. A copy of the count data is attached in the appendix. Due to the nature of the development, pass-by and mixed-use reductions have been applied per ITE standards. The trip generation for the adjacent site development is shown in Table 5.

TABLE 5 — TRIP GENERATION (ADJACENT SITE)								
Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	Two-way
ITE 710 – General Office Building	36,700 sf	62	9	71	12	60	72	485
Mixed-Use Reduction		-13	-2	-15	-4	-9	-13	-89
ITE 822 – Strip Retail Plaza (<40k)	34,266 sf	39	26	65	93	94	187	1,676
Mixed-Use Reduction		0	-2	-2	-1	-1	-2	-14
ITE 934 – Fast-Food Restaurant with Drive-Through Window	6,400 sf	146	140	286	110	101	211	2,992
Mixed-Use Reduction		-1	-4	-5	-2	-1	-3	-24
Pass-by Trips (50%) 55%		-73	-68	-141	-59	-55	-114	-1,140
ITE 945 – Convenience Store/Gas Station - GFA (5.5-10k)	16 Vehicle Fueling Positions	253	253	506	215	215	430	5,532
Mixed-Use Reduction		-1	-7	-8	-5	-2	-7	-45
Pass-by Trips (60%) 56%		-151	-148	-299	-118	-119	-237	-2,370*
Truck Fueling Station with Convenience Market	3 Vehicle Fueling Positions	27	26	53	14	15	29	677
Mixed-Use Reduction		0	0	0	-1	0	-1	-6
Pass-by Trips (60%) 56%		-16	-16	-32	-7	-8	-15	-150*
Total Trips (without Reductions)		527	454	981	444	485	929	11,362
New External Trips (with Reductions)		272	207	479	247	290	537	7,524

Since the development is planned to be completed in 2024, the site generated traffic from this development was included in the analysis of the “No-Build” and “Build” conditions. Adjacent site volumes are shown in Figure 9 and pass-by volumes are shown in Figure 10.

Planned and Programmed Improvements in Study Area

The following improvements have been identified in the Regional Transportation Plan (Plan 2040), GDOT GeoPi, and/or the local comprehensive transportation plan. These improvements are within the vicinity of the proposed development.

TABLE 6 — PLANNED AND PROGRAMMED IMPROVEMENTS							
Project Name	From / To Points	Sponsor	GDOT PI #	ARC ID #	Design FY	ROW / UTL FY	CST FY
GA 400/GA 369 Interchange Project	Upgrading the existing at-grade signalized intersection of US 19/SR 400 and SR 369/ Browns Bridge Road to a grade-separated, partial cloverleaf interchange.	GDOT	0013369	FT-06D	2020-2023		

GeoPI #0013369 Design:



The network year for the programmed project is 2023 and the proposed development is planned to be completed in 2027, The SR 400/ SR 369 interchange project will interact with one of the proposed study intersections. This project will be considered completed for the “No-Build” and “Build” analysis scenarios in the detailed traffic study.

GENERAL NOTES:

1. THIS DRAWING SHOULD BE REGARDED AS A PRELIMINARY "DIGITAL SKETCH".
2. THIS PLAN, BEING PRELIMINARY IN NATURE, DOES NOT TAKE INTO FULL ACCOUNT THE REQUIREMENTS FOR ZONING, DRAINAGE, STORM WATER RETENTION, GRADING, UTILITY EASEMENTS, D.O.T. RESTRICTIONS, RIGHTS OF WAY, ENVIRONMENTAL PROTECTION AGENCY RESTRICTIONS, OR F.A.A. AIR RIGHTS. THE ABOVE REQUIREMENTS CAN AFFECT THE LAYOUT OF THIS SITE.
3. ALL SITE DIMENSIONS AND AREAS ARE SUBJECT TO ESTIMATION AND SHOULD BE VERIFIED.
4. VERIFY ALL DIMENSIONS WITH CIVIL ENGINEER DOCUMENTS, SURVEY AND FIELD CONDITIONS. NOTIFY CIVIL ENGINEER AND ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES.

SQUARE FOOTAGE:

RETAIL: 34,266
OFFICE: 16,700

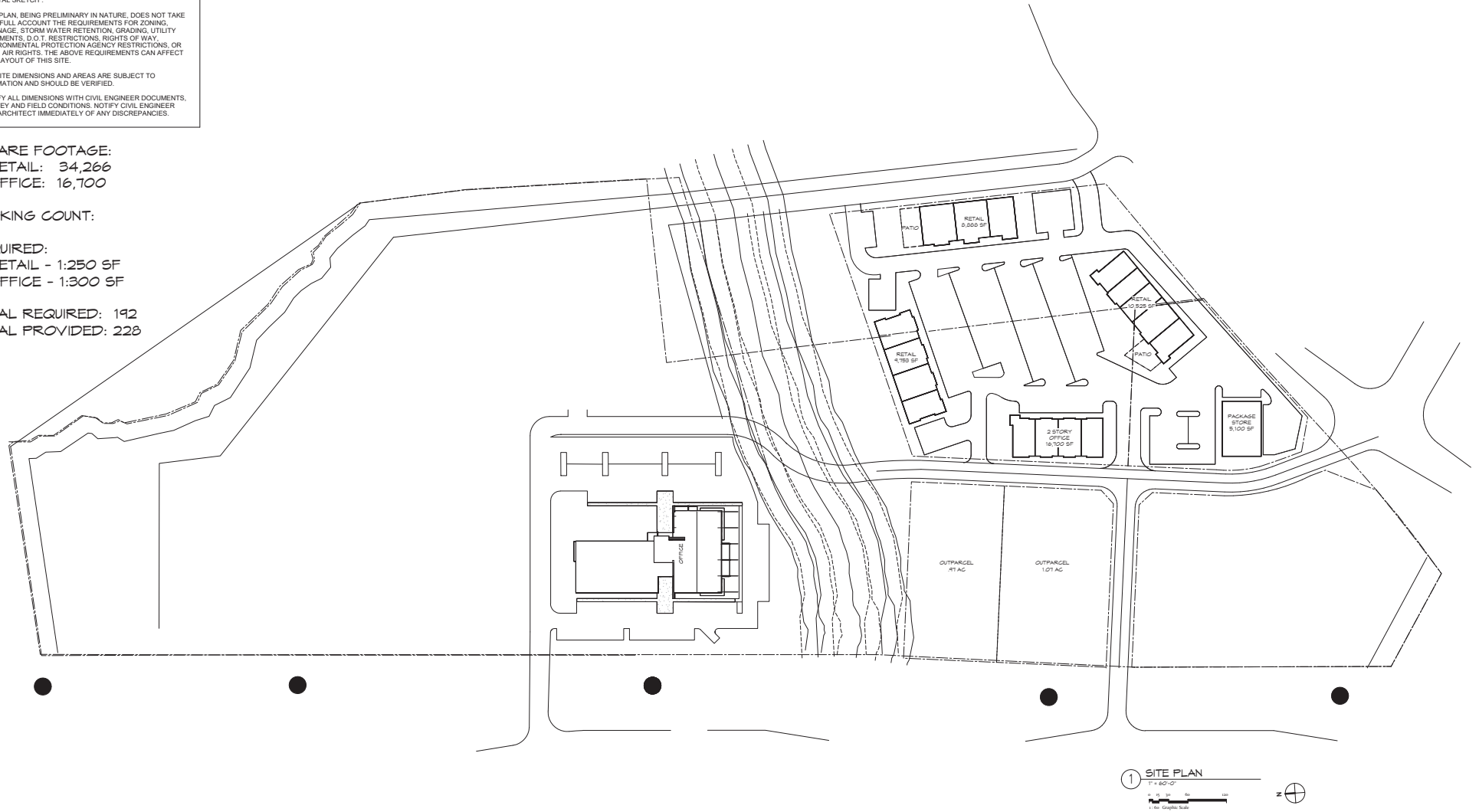
PARKING COUNT:

REQUIRED:

RETAIL - 1:250 SF
OFFICE - 1:300 SF

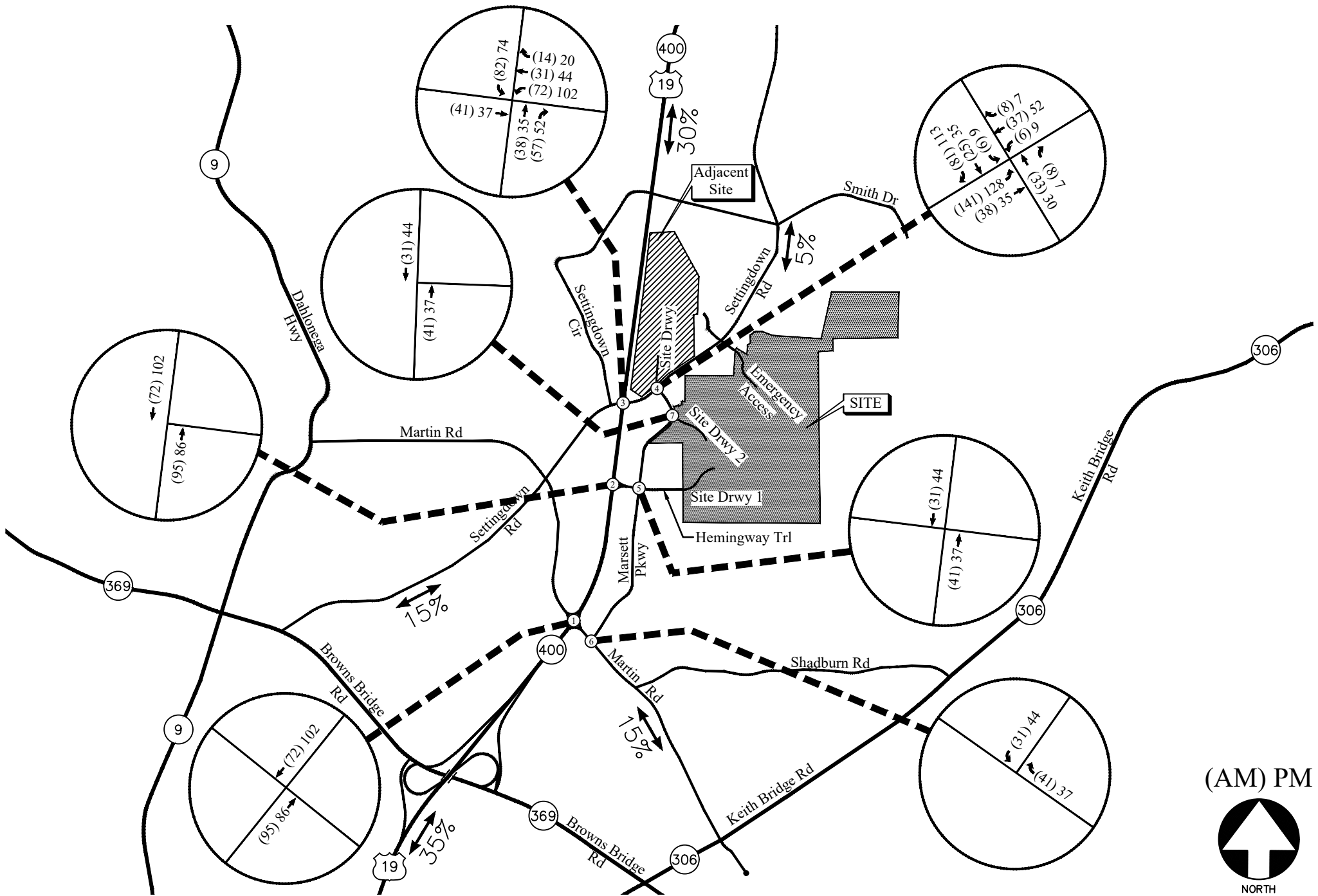
TOTAL REQUIRED: 192

TOTAL PROVIDED: 228



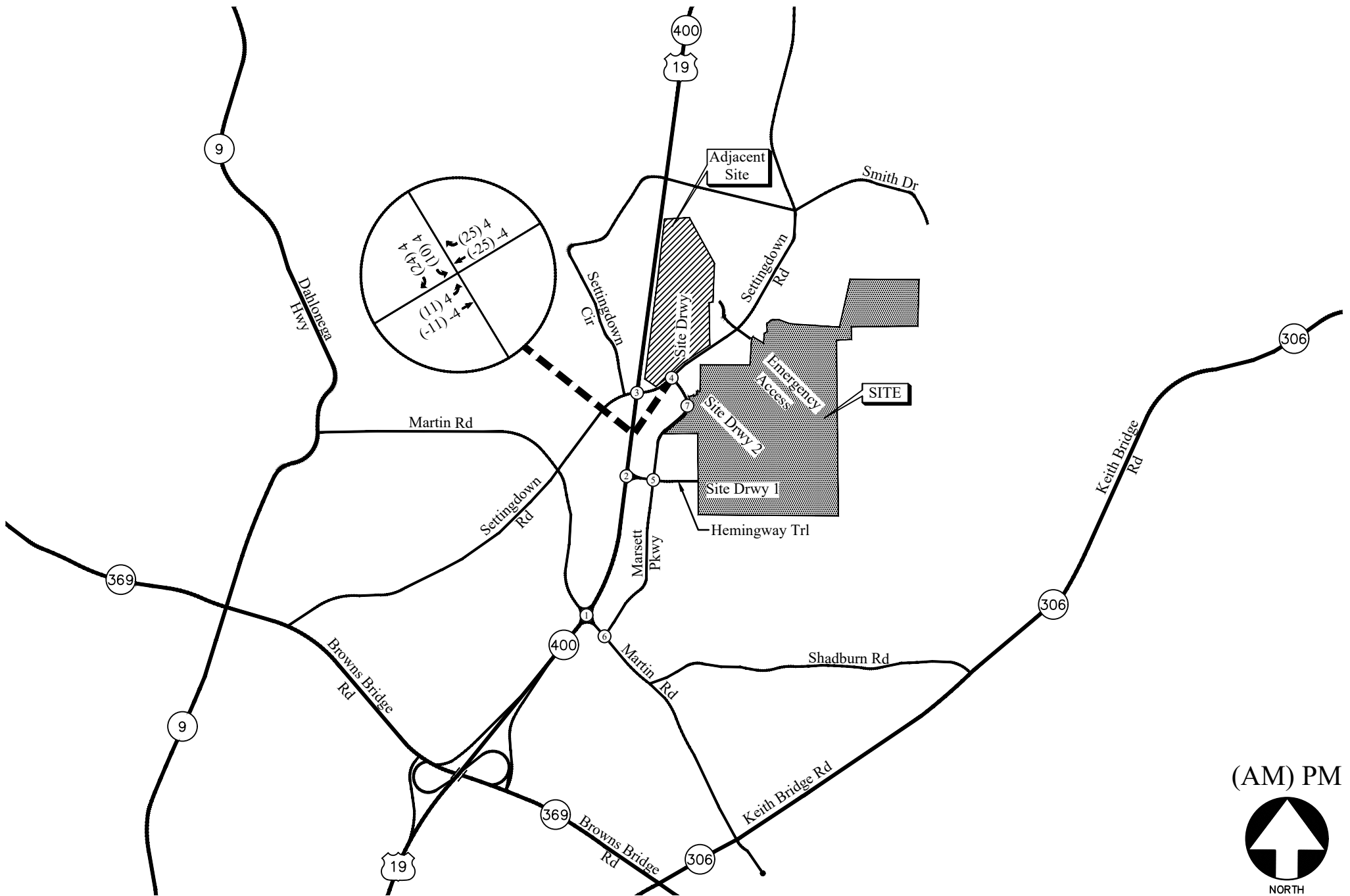
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TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES
(ADJACENT SITE)

FIGURE 9
A&R Engineering Inc.



SITE PEAK HOUR PASS-BY VOLUMES (ADJACENT SITE)

(AM) PM

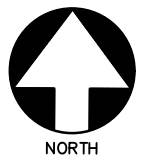
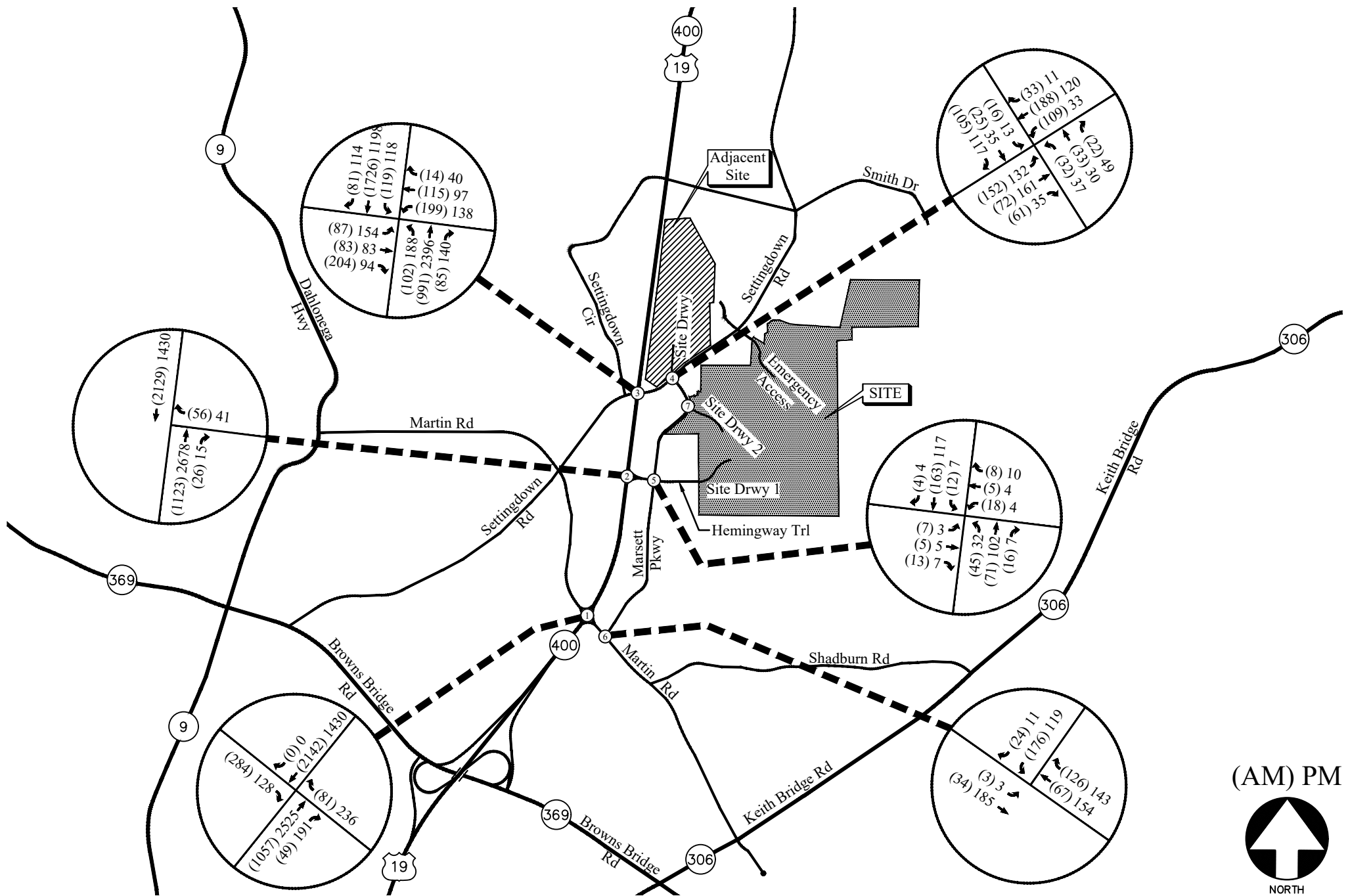


FIGURE 10

A&R Engineering Inc.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES

FIGURE 11

A&R Engineering Inc.

Future “No-Build” Traffic Operations

The future “No-Build” traffic operations were analyzed using the volumes in Figure 11 and the results are shown in Table 7.

TABLE 7 — FUTURE “NO-BUILD” INTERSECTION OPERATIONS					
Intersection		Intersection			
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS	
		AM Peak	PM Peak	AM Peak	PM Peak
1	<u>SR 400/ US 19 @ Martin Road (RIRO)</u> -Eastbound Approach -Westbound Approach	F (227.7) B (13.8)	C (19.9) F (*)	-	-
2	<u>SR 400/ US 19 @ Hemingway Trail</u> -Westbound Approach	B (14.6)	F (52.3)	-	-
3	<u>SR 400/ US 19 @ Settingdown Road</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	<u>C (24.7)</u> E (70.4) E (64.7) B (14.9) C (20.1)	<u>D (48.5)</u> E (65.2) E (68.0) E (60.1) C (20.6)	<u>C (22.3)</u> E (56.5) E (66.8) B (12.1) B (18.2)	<u>C (23.8)</u> D (52.0) E (55.2) C (22.0) B (17.3)
4	<u>Settingdown Road @ Marsett Parkway</u> -Eastbound Left -Westbound Left -Northbound Approach -Southbound Approach	A (8.1) A (7.6) D (28.6) B (14.7)	A (7.8) A (7.7) C (17.4) B (12.4)	-	-
5	<u>Marsett Parkway @ Hemingway Trail</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	<u>A (9.0)</u> A (8.3) A (8.6) A (8.5) A (9.6)	<u>A (8.6)</u> A (8.1) A (8.0) A (8.5) A (8.8)	-	-
6	<u>Marsett Parkway @ Martin Road</u> -Eastbound Left -Southbound Approach	A (7.4) B (10.1)	A (7.6) B (12.0)	-	-

*Delay exceeds 300 sec

The results of future “No-Build” traffic operations show that the following intersection has LOS “E” and/or “F” for one or more approaches in the AM and PM peak hour:

- Intersection 1: SR 400/ US 19 at Martin Road (RIRO)
- Intersection 2: SR 400/ US 19 at Hemingway Trail
- Intersection 3: SR 400/ US 19 at Settingdown Road

The intersections 1 and 2 have right-in/right out access. It is not unusual for stop controlled (yield sign) side-streets along arterial roadways to have elevated delays during peak periods caused by side-streets wait times to get onto the mainline. Therefore, no improvements are suggested.

Recommended System Improvements

The following are system improvements that were identified from the “No-Build” condition analysis.

Intersection 3: SR 400/ US 19 at Settingdown Road

- Increase the storage and taper lengths of westbound left turn lane as per GDOT standards.
- Convert the existing northbound right turn lane on SR 400/ US 19 to a shared thru-right lane and extend the thru lane approximately 1200 feet.

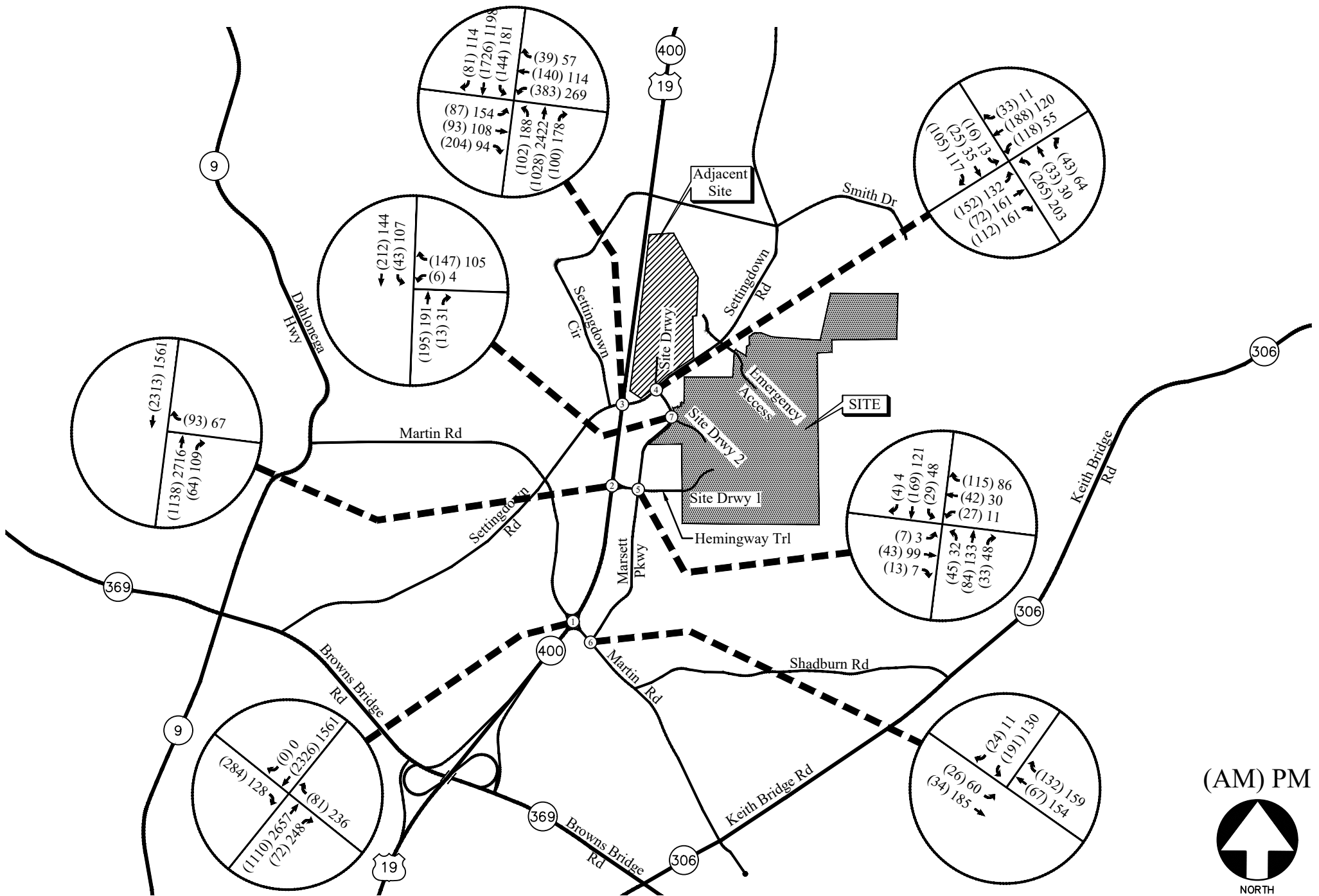
After the recommended system improvements are implemented, the approaches at intersection 3 (SR 400/ US 19 at Settingdown Road) will operate at LOS “D” and LOS “E” with slightly reduced delays.

In the existing condition, Settingdown Circle forms a three-legged intersection with Settingdown Road right next to the busy intersection of SR 400/ US 19 and Settingdown Road which will be the first signalized intersection on SR 400/ US 19. It is recommended to convert the Settingdown Circle into a right in-right out to cut down the left turn volumes turning on to Settingdown Road. In the future expansion of the city, Fulton County need to propose a road to connect Church Road and Martin Road to facilitate the left turn movements for the vehicles using Church Road and Settingdown Circle to turn on to SR 400/ US 19, as shown in the sketch below.



Future “Build” Conditions

The “Build” or development conditions include the estimated background traffic from the “No-Build” conditions plus the added traffic from the proposed development and adjacent site development. In order to evaluate future traffic operations in this area, the additional traffic volumes from the proposed site (Figure 7) and adjacent site (Figure 9 and 10) were added to base traffic volumes (Figure 11) to calculate the future traffic volumes after the construction of the development. These total future traffic volumes are shown in Figure 12.



FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES

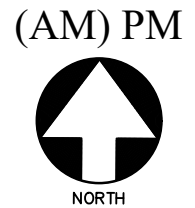


FIGURE 12
A&R Engineering Inc.

Auxiliary Lane Analysis

Included below are analyses for left-turn lanes and deceleration lanes for all site driveways per GDOT standards. The analyses below are based off the trip distribution included in the "Trip Distribution" section. According to the trip distribution, the total 24-hour two-way vehicle volume entering and exiting the site is 6,254 vehicles. The development proposes to extend Hemingway trail to their site driveway 1. For that reason, the auxiliary lane analysis was only completed for driveway 2.

Left Turn Lane Analysis

For two lane roadways with AADT's less than 6,000 vehicles and a posted speed limit of 30 mph, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 300 left-turning vehicles a day. The projected left-turn volumes per day for cars and trucks are included in Table 8.

TABLE 8 — GDOT REQUIREMENTS FOR LEFT TURN LANES

Intersection	Left turn traffic (% total entering)	Left-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/ day)	Warrants met?
Marsett Pkwy @ Site Drwy 2	34% (Southbound)	1063 $(\text{total trips}) \div 2 \times 0.34 =$ $(6254) \div 2 \times 0.34 = 1063$	30 mph / 2-Lane / < 6,000	300	Yes

Per GDOT standards, a left turn lane is warranted at the site driveways 2 on Marsett Parkway.

Deceleration Turn Lane Analysis

The daily site generated traffic right-turn movements threshold to warrant a deceleration lane is 200 right turning vehicles a day for two lane roadways with AADT's less than 6,000 vehicles and a posted speed limit of 30 mph. The projected right-turn volumes per day for cars and trucks are included in Table 9.

TABLE 9 — GDOT REQUIREMENTS FOR DECELERATION LANES

Intersection	Right-turn traffic (% total entering)	Right-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrants met?
Marsett Pkwy @ Site Drwy 2	10% (Northbound)	313 $(\text{total trips}) \div 2 \times 0.1 =$ $(6254) \div 2 \times 0.1 = 313$	30 mph / 2-Lane / < 6,000	200	Yes

A right turn lane is warranted at the site driveway 2 per GDOT standards.

Future “Build” Traffic Operations

The future “Build” traffic operations were analyzed using the volumes in Figure 12. The results of the future “Build” traffic operations analysis are shown in Table 11.

TABLE 10 — FUTURE “BUILD” INTERSECTION OPERATIONS							
Intersection		Build Condition: LOS (Delay)					
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS ONLY		SYSTEM AND SITE IMPROVEMENTS	
		AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
1	<u>SR 400/ US 19 @ Martin Road (RIRO)</u> -Eastbound Approach -Westbound Approach	F (*) B (14.2)	C (22.5) F (*)	-	-	-	-
2	<u>SR 400/ US 19 @ Hemingway Trail</u> -Westbound Approach	C (15.9)	F (79.2)	-	-	-	-
3	<u>SR 400/ US 19 @ Settingdown Road</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	<u>D (43.0)</u> E (70.2) F (170.5) B (17.2) C (22.6)	<u>E (67.8)</u> E (70.8) F (132.0) E (76.5) C (34.5)	<u>D (37.4)</u> E (56.6) F (1262) B (16.7) C (24.9)	<u>D (36.6)</u> D (53.5) E (71.6) D (36.6) C (24.8)	<u>C (27.9)</u> E (69.2) D (54.7) B (16.4) C (24.2)	<u>C (31.8)</u> D (54.9) E (58.7) C (30.7) C (22.8)
4	<u>Settingdown Road @ Marsett Parkway</u> -Eastbound Left -Westbound Left -Northbound Approach -Southbound Approach	A (8.1) A (7.6) F (*) C (15.2)	A (7.8) A (7.7) F (120.1) B (12.9)	-	-	<u>B (17.9)</u> A (9.4) A (7.9) C (34.7) C (25.3)	<u>B (16.8)</u> A (6.1) A (5.8) D (36.3) C (29.1)
5	<u>Marsett Parkway @ Hemingway Trail</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	<u>B (10.8)</u> A (9.8) B (10.7) B (10.2) B (11.6)	<u>B (10.9)</u> B (11.0) B (10.2) B (11.6) B (10.6)	-	-	-	-
6	<u>Marsett Parkway @ Martin Road</u> -Eastbound Left -Southbound Approach	A (7.4) B (10.7)	A (7.7) B (14.5)	-	-	-	-
7	<u>Marsett Parkway @ Site Drwy 2</u> -Westbound Approach -Southbound Left	B (10.6) A (7.8)	B (10.3) A (8.0)	-	-	-	-

* Delay exceeds 300 seconds

The results of future “Build” traffic operations show that after the addition of site traffic the following intersections will continue to have LOS “E” and “F” for one or more approaches:

- Intersection 1: SR 400/ US 19 at Martin Road (RIRO)
- Intersection 2: SR 400/ US 19 at Hemingway Trail
- Intersection 3: SR 400/ US 19 at Settingdown Road
- Intersection 4: Settingdown Road @ Marsett Parkway

Site Mitigation Improvements

The following are site mitigation Improvements that were identified from the “Build” condition analysis.

Intersection 3: SR 400/ US 19 at Settingdown Road

- Addition of a second westbound left turn lane on Settingdown Road

Intersection 4: Settingdown Road at Marsett Parkway

- Installation of a traffic signal when warranted by MUTCD warrants
- One entering lane and two exiting lanes for the southbound traffic (Adjacent site)
- Installation of a left turn lane and right turn lane on Settingdown Road (Adjacent site)

Site Driveway Recommendations

The following improvements are recommended at the proposed site access intersections.

Intersection 5: Marsett Parkway at Hemingway Trail/ Site Driveway 1

- One entering and one exiting lane

Intersection 7: Marsett Parkway at Site Driveway 2

- One entering and one exiting lane
- Addition of left turn lane and right turn lane for entering traffic
- Confirm adequate sight distance per AASHTO standards

The intersections 1 and 2 have right-in/right out access. It is not unusual for stop controlled side-streets along arterial roadways to have elevated delays during peak periods caused by side-streets wait times to get onto the mainline. Therefore, no improvements are suggested.

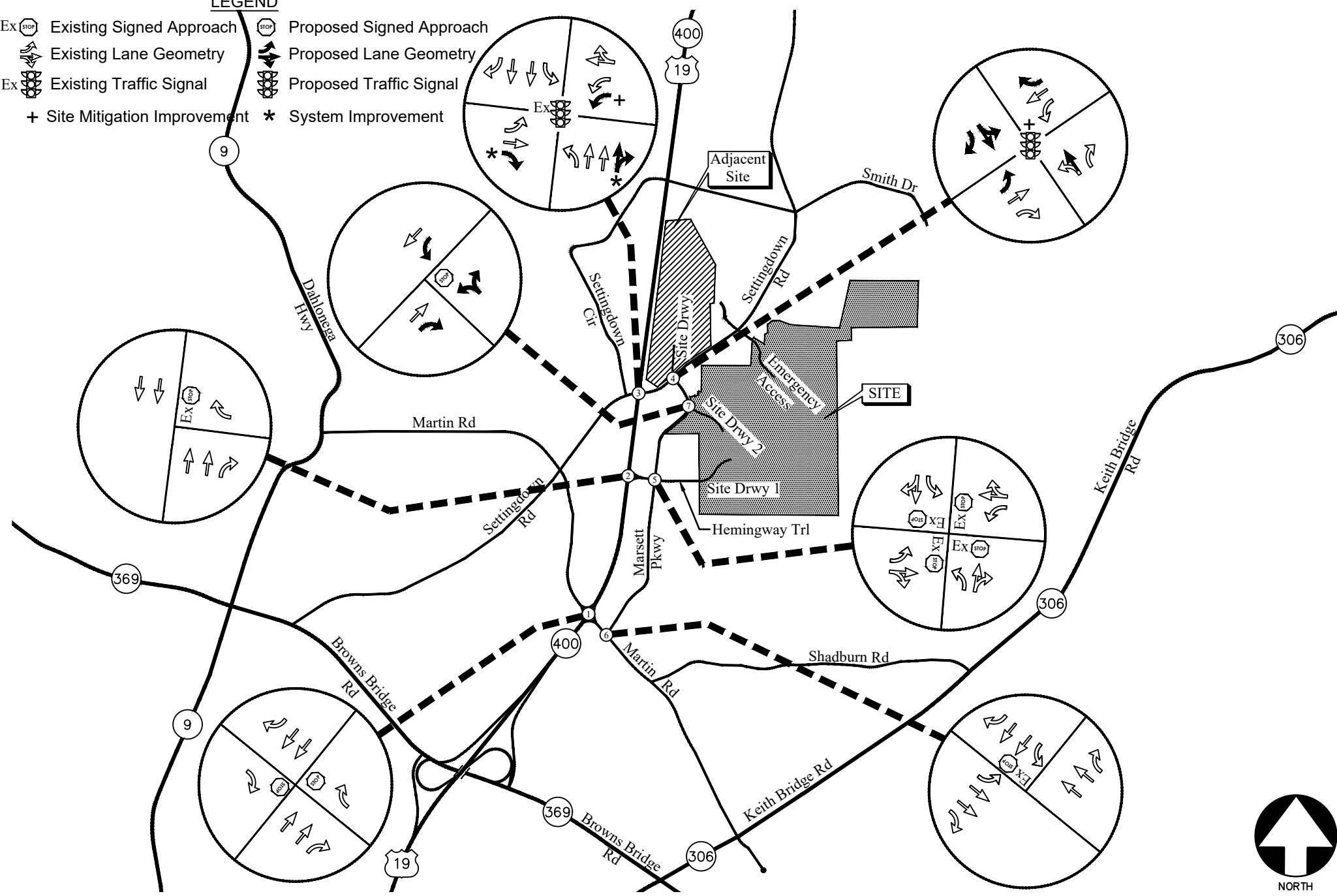
After the recommended system improvements mentioned in the “Future No-Build Traffic Operations” section and site mitigation improvements detailed above, the following signalized intersections will operate at an overall LOS “C” or better in both the AM and PM peak hours.

- Intersection 3: SR 400/ US 19 at Settingdown Road
- Intersection 4: Settingdown Road @ Marsett Parkway

Recommendations for future traffic control and lane geometry are shown in Figure 13.

LEGEND

- Ex  Existing Signed Approach
-  Existing Lane Geometry
- Ex  Existing Traffic Signal
- + Site Mitigation Improvement
-  Proposed Signed Approach
-  Proposed Lane Geometry
-  Proposed Traffic Signal
- * System Improvement



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY

FIGURE 13

A&R Engineering Inc.

CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for proposed Chestatee Crossroads located southeast of the intersection at Marsett Parkway and Settingdown Road in Forsyth County, Georgia.

The development proposes three full access driveways:

- Full access driveway 1 proposed to connect to Marsett Parkway aligns with Hemingway Trail
- Full access driveway 2 proposed to connect to Marsett Parkway
- Full access driveway 3 (emergency access only) proposed to connect to Settingdown Road aligns with Heards Circle

The AM and PM peak hours have been analyzed in this study. In addition to the site access points, this study includes the evaluation of traffic operations at the intersections of:

1. SR 400/ US 19 at Martin Road
2. SR 400/ US 19 at Hemingway Trail
3. SR 400/ US 19 at Settingdown Road
4. Settingdown Road at Marsett Parkway
5. Marsett Parkway at Hemingway Trail / Site Driveway 1
6. Marsett Parkway at Martin Road
7. Marsett Parkway at Site Driveway 2

The analysis included the evaluation of Future operations for “No-Build” and “Build” conditions, both of which account for increases in annual growth of through traffic. The results of future “Build” traffic operations show that after the addition of site traffic the following intersections will continue to have LOS “E” and “F” for one or more approaches:

- Intersection 1: SR 400/ US 19 at Martin Road (RIRO)
- Intersection 2: SR 400/ US 19 at Hemingway Trail
- Intersection 3: SR 400/ US 19 at Settingdown Road
- Intersection 4: Settingdown Road @ Marsett Parkway

The intersections 1 and 2 have right-in/right out access. It is not unusual for stop controlled (yield sign) side-streets along arterial roadways to have elevated delays during peak periods caused by side-streets wait times to get onto the mainline. Therefore, no improvements are suggested.

After the recommended system and site mitigation improvements are implemented, the signalized intersections will operate at an overall LOS “C” or better in both the AM and PM peak hours.

Recommended System Improvements

The following are system improvements that were identified from the “No-Build” condition analysis.

Intersection 3: SR 400/ US 19 at Settingdown Road

- Increase the storage and taper lengths of westbound left turn lane as per GDOT standards
- Convert the existing northbound right turn lane on SR 400/ US 19 to a shared thru-right lane and extend the thru lane approximately 1200 feet

Recommended Site Mitigation Improvements

The following are site mitigation Improvements that were identified from the “Build” condition analysis.

Intersection 3: SR 400/ US 19 at Settingdown Road

- Addition of a second westbound left turn lane on Settingdown Road

Intersection 4: Settingdown Road at Marsett Parkway

- Installation of a traffic signal when warranted by MUTCD warrants
- One entering lane and two exiting lanes for the southbound traffic (Adjacent site)
- Installation of a left turn lane and right turn lane on Settingdown Road (Adjacent site)

Site Driveway Recommendations

The following improvements are recommended at the proposed site access intersections

Intersection 5: Marsett Parkway at Hemingway Trail/ Site Driveway 1

- One entering and one exiting lane

Intersection 7: Marsett Parkway at Site Driveway 2

- One entering and one exiting lane
- Addition of left turn lane and right turn lane for entering traffic
- Confirm adequate sight distance per AASHTO standards

Appendix

Existing Intersection Traffic Counts	
Character Areas.....	
GRTA Letter of Understanding.....	
Linear Regression of Daily Traffic.....	
Fact Sheets for Planned and Programmed Improvements.....	
Existing Intersection Analysis.....	
Future “No-Build” Intersection Analysis	
Future “No-Build” Intersection Analysis with Improvements	
Future “Build” Intersections Analysis	
Future “Build” Intersections Analysis with System Improvements Only.....	
Future “Build” Intersections Analysis with System and Site Improvements	
Traffic Volume Worksheets	

Existing Intersection Traffic Counts

A & R Engineering, Inc.

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

TMC DATA
GA 400 @ Martin Rd
7-9 am | 4-6 pm

File Name : 20220262
Site Code : 20220262
Start Date : 5/17/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

	GA 400 Northbound				GA 400 Southbound				Martin Rd Eastbound				Martin Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	14	151	0	165	18	552	1	571	0	20	67	87	34	21	12	67	890
07:15 AM	12	136	13	161	27	462	0	489	1	25	59	85	46	41	13	100	835
07:30 AM	22	192	10	224	15	473	0	488	0	27	55	82	32	48	20	100	894
07:45 AM	15	219	18	252	16	431	0	447	0	43	64	107	40	56	15	111	917
Total	63	698	41	802	76	1918	1	1995	1	115	245	361	152	166	60	378	3536
08:00 AM	13	206	8	227	17	435	0	452	2	37	71	110	35	34	18	87	876
08:15 AM	15	224	8	247	16	457	0	473	0	32	63	95	32	38	19	89	904
08:30 AM	15	202	5	222	34	357	1	392	5	30	51	86	55	52	16	123	823
08:45 AM	15	233	7	255	21	355	0	376	0	27	42	69	29	24	24	77	777
Total	58	865	28	951	88	1604	1	1693	7	126	227	360	151	148	77	376	3380
*** BREAK ***																	
04:00 PM	33	390	42	465	27	236	0	263	1	34	23	58	21	42	29	92	878
04:15 PM	42	478	29	549	27	268	0	295	1	29	28	58	14	33	43	90	992
04:30 PM	43	465	31	539	35	228	0	263	4	52	31	87	22	49	67	138	1027
04:45 PM	46	522	42	610	20	280	0	300	3	22	35	60	14	25	49	88	1058
Total	164	1855	144	2163	109	1012	0	1121	9	137	117	263	71	149	188	408	3955
05:00 PM	45	528	45	618	32	272	0	304	2	35	33	70	22	45	46	113	1105
05:15 PM	44	535	38	617	26	307	0	333	0	27	29	56	25	38	50	113	1119
05:30 PM	48	530	42	620	29	262	0	291	6	43	27	76	24	45	49	118	1105
05:45 PM	45	535	45	625	24	259	0	283	0	28	25	53	22	36	65	123	1084
Total	182	2128	170	2480	111	1100	0	1211	8	133	114	255	93	164	210	467	4413
Grand Total	467	5546	383	6396	384	5634	2	6020	25	511	703	1239	467	627	535	1629	15284
Apprch %	7.3	86.7	6		6.4	93.6	0		2	41.2	56.7		28.7	38.5	32.8		
Total %	3.1	36.3	2.5	41.8	2.5	36.9	0	39.4	0.2	3.3	4.6	8.1	3.1	4.1	3.5	10.7	

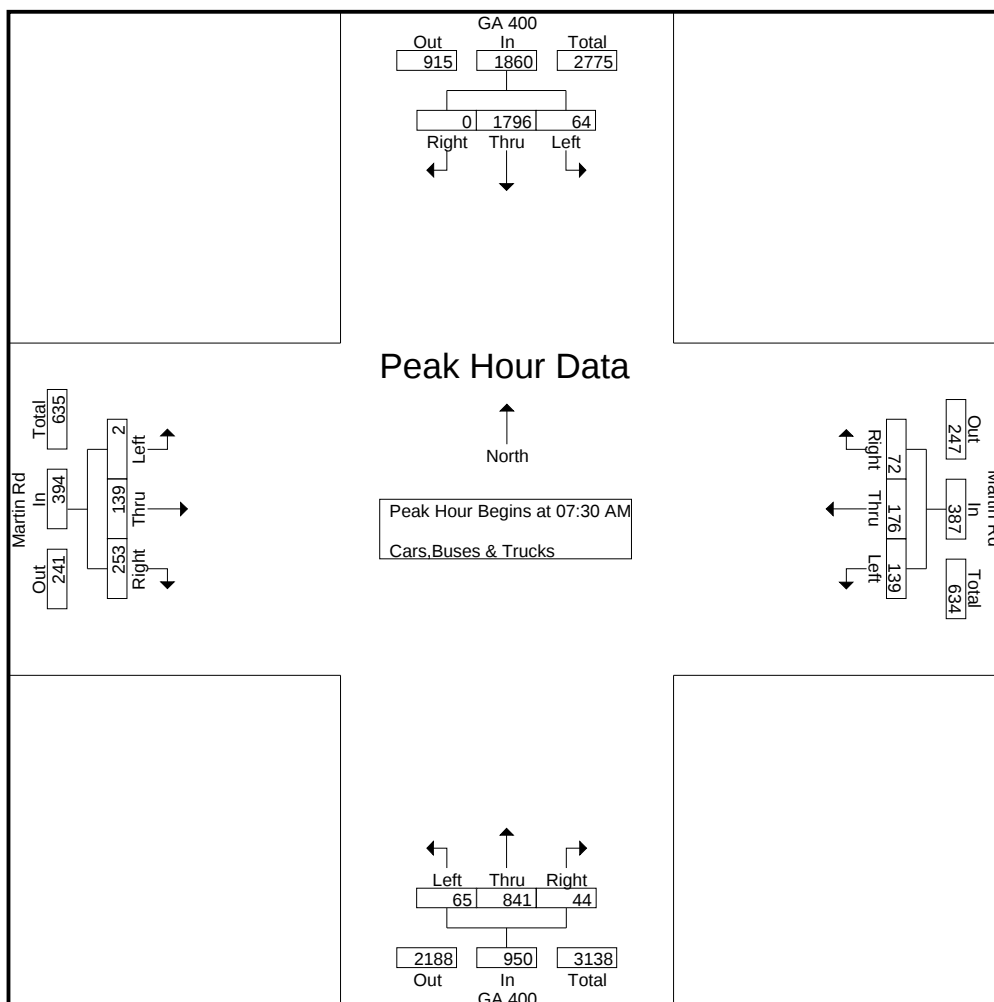
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GA 400 @ Martin Rd
7-9 am | 4-6 pm

File Name : 20220262
Site Code : 20220262
Start Date : 5/17/2022
Page No : 2

	GA 400 Northbound				GA 400 Southbound				Martin Rd Eastbound				Martin Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	22	192	10	224	15	473	0	488	0	27	55	82	32	48	20	100	894
07:45 AM	15	219	18	252	16	431	0	447	0	43	64	107	40	56	15	111	917
08:00 AM	13	206	8	227	17	435	0	452	2	37	71	110	35	34	18	87	876
08:15 AM	15	224	8	247	16	457	0	473	0	32	63	95	32	38	19	89	904
Total Volume	65	841	44	950	64	1796	0	1860	2	139	253	394	139	176	72	387	3591
% App. Total	6.8	88.5	4.6		3.4	96.6	0		0.5	35.3	64.2		35.9	45.5	18.6		
PHF	.739	.939	.611	.942	.941	.949	.000	.953	.250	.808	.891	.895	.869	.786	.900	.872	.979



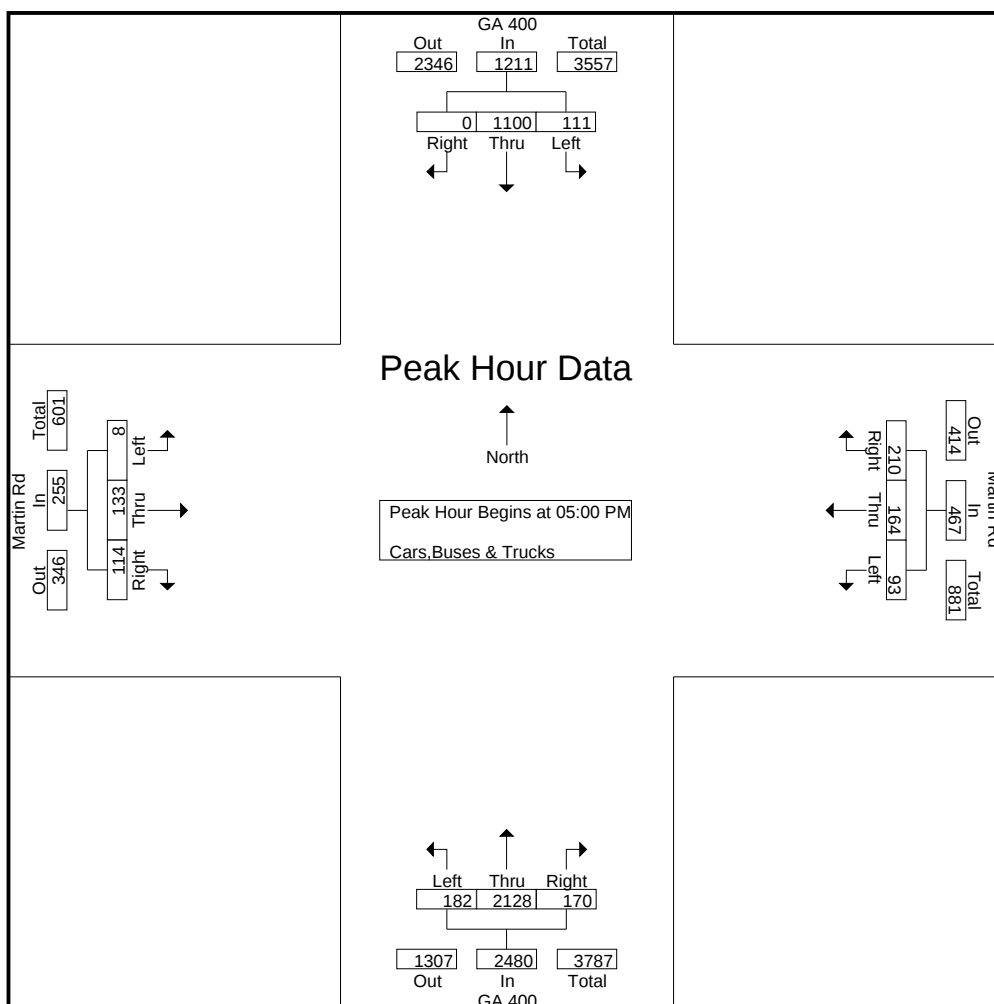
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	GA 400 Northbound				GA 400 Southbound				Martin Rd Eastbound				Martin Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	45	528	45	618	32	272	0	304	2	35	33	70	22	45	46	113	1105
05:15 PM	44	535	38	617	26	307	0	333	0	27	29	56	25	38	50	113	1119
05:30 PM	48	530	42	620	29	262	0	291	6	43	27	76	24	45	49	118	1105
05:45 PM	45	535	45	625	24	259	0	283	0	28	25	53	22	36	65	123	1084
Total Volume	182	2128	170	2480	111	1100	0	1211	8	133	114	255	93	164	210	467	4413
% App. Total	7.3	85.8	6.9		9.2	90.8	0		3.1	52.2	44.7		19.9	35.1	45		
PHF	.948	.994	.944	.992	.867	.896	.000	.909	.333	.773	.864	.839	.930	.911	.808	.949	.986



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TMC DATA
GA 400 @ Settingdown Rd
7-9 am | 4-6 pm

File Name : 20220263
Site Code : 20220263
Start Date : 5/17/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

	GA 400 Northbound				GA 400 Southbound				Settingdown Rd Eastbound				Settingdown Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	11	126	1	138	4	512	23	539	16	3	42	61	17	2	2	21	759
07:15 AM	7	143	1	151	9	422	29	460	7	5	42	54	25	16	0	41	706
07:30 AM	6	179	3	188	0	413	22	435	15	3	47	65	28	9	0	37	725
07:45 AM	13	244	7	264	2	351	11	364	22	13	55	90	41	19	0	60	778
Total	37	692	12	741	15	1698	85	1798	60	24	186	270	111	46	2	159	2968
08:00 AM	12	210	6	228	7	378	20	405	25	12	48	85	26	17	0	43	761
08:15 AM	17	218	9	244	8	412	19	439	14	9	32	55	18	12	0	30	768
08:30 AM	12	210	5	227	5	345	22	372	13	10	24	47	9	15	1	25	671
08:45 AM	11	220	11	242	4	328	27	359	13	7	24	44	15	15	0	30	675
Total	52	858	31	941	24	1463	88	1575	65	38	128	231	68	59	1	128	2875
*** BREAK ***																	
04:00 PM	17	406	20	443	3	234	17	254	23	3	30	56	9	6	3	18	771
04:15 PM	22	464	27	513	3	271	17	291	23	12	27	62	8	7	9	24	890
04:30 PM	25	478	14	517	2	238	25	265	37	21	24	82	7	6	1	14	878
04:45 PM	23	526	20	569	0	273	19	292	23	8	18	49	9	9	8	26	936
Total	87	1874	81	2042	8	1016	78	1102	106	44	99	249	33	28	21	82	3475
05:00 PM	26	528	15	569	1	270	26	297	37	18	26	81	8	9	5	22	969
05:15 PM	24	525	18	567	2	301	24	327	27	3	23	53	9	8	3	20	967
05:30 PM	21	530	20	571	8	264	27	299	34	12	19	65	8	6	2	16	951
05:45 PM	26	528	25	579	1	260	25	286	31	8	16	55	7	8	8	23	943
Total	97	2111	78	2286	12	1095	102	1209	129	41	84	254	32	31	18	81	3830
Grand Total	273	5535	202	6010	59	5272	353	5684	360	147	497	1004	244	164	42	450	13148
Apprch %	4.5	92.1	3.4		1	92.8	6.2		35.9	14.6	49.5		54.2	36.4	9.3		
Total %	2.1	42.1	1.5	45.7	0.4	40.1	2.7	43.2	2.7	1.1	3.8	7.6	1.9	1.2	0.3	3.4	

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TMC DATA

GA 400 @ Settingdown Rd

7-9 am | 4-6 pm

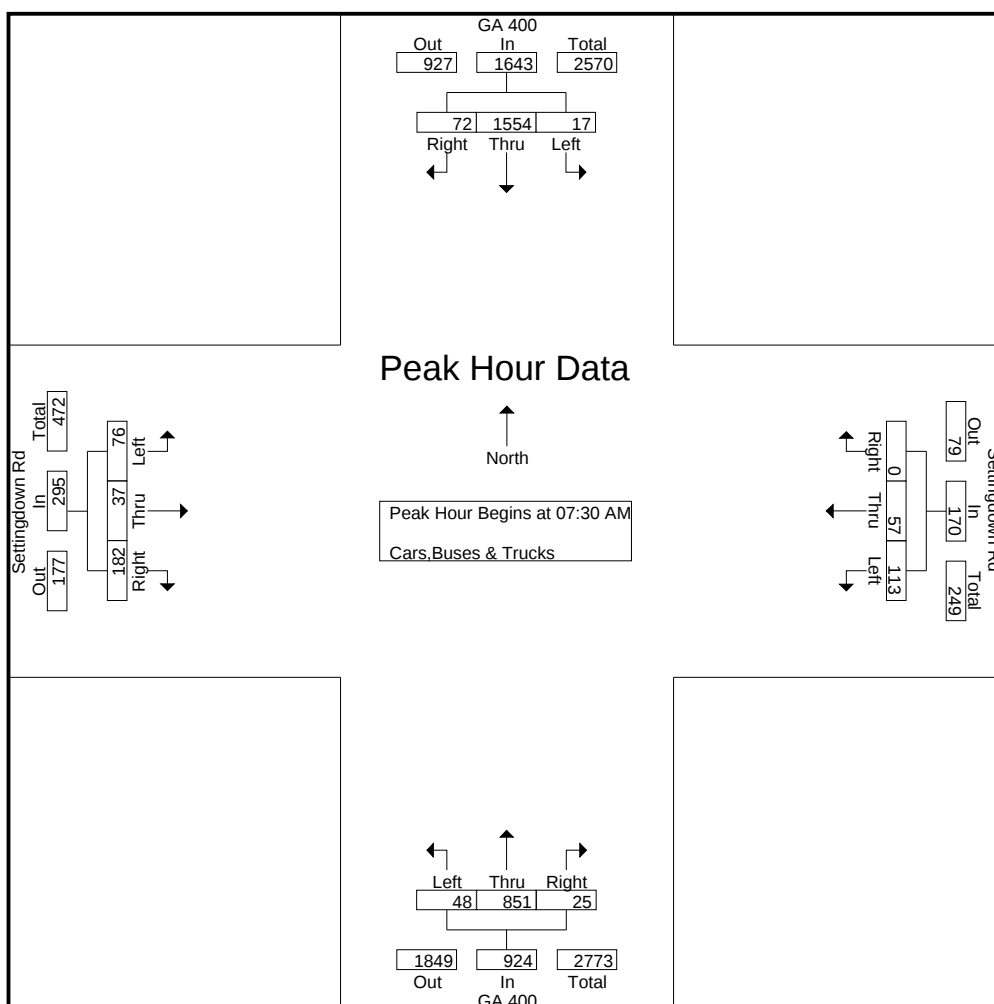
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Page No : 2

	GA 400 Northbound				GA 400 Southbound				Settingdown Rd Eastbound				Settingdown Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	6	179	3	188	0	413	22	435	15	3	47	65	28	9	0	37	725
07:45 AM	13	244	7	264	2	351	11	364	22	13	55	90	41	19	0	60	778
08:00 AM	12	210	6	228	7	378	20	405	25	12	48	85	26	17	0	43	761
08:15 AM	17	218	9	244	8	412	19	439	14	9	32	55	18	12	0	30	768
Total Volume	48	851	25	924	17	1554	72	1643	76	37	182	295	113	57	0	170	3032
% App. Total	5.2	92.1	2.7		1	94.6	4.4		25.8	12.5	61.7		66.5	33.5	0		
PHF	.706	.872	.694	.875	.531	.941	.818	.936	.760	.712	.827	.819	.689	.750	.000	.708	.974



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7-9 am | 4-6 pm

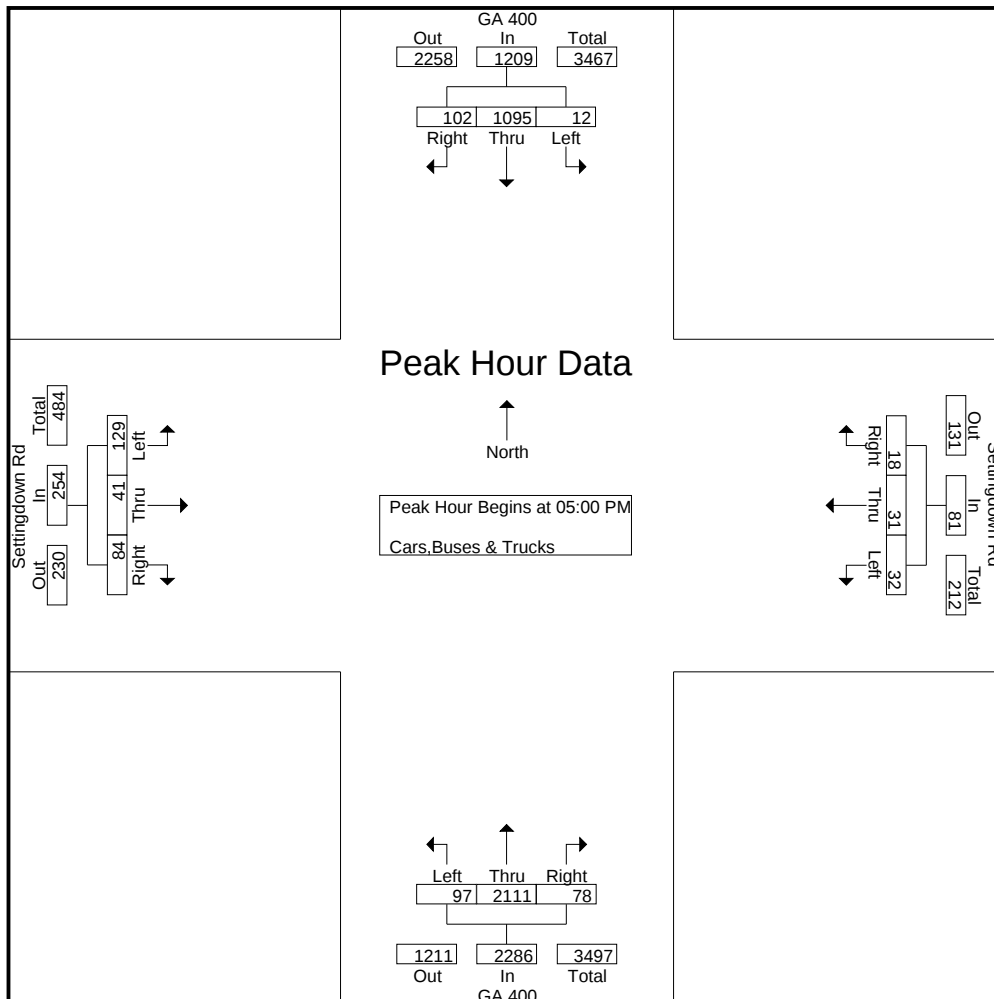
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Page No : 3

	GA 400 Northbound				GA 400 Southbound				Settingdown Rd Eastbound				Settingdown Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	26	528	15	569	1	270	26	297	37	18	26	81	8	9	5	22	969
05:15 PM	24	525	18	567	2	301	24	327	27	3	23	53	9	8	3	20	967
05:30 PM	21	530	20	571	8	264	27	299	34	12	19	65	8	6	2	16	951
05:45 PM	26	528	25	579	1	260	25	286	31	8	16	55	7	8	8	23	943
Total Volume	97	2111	78	2286	12	1095	102	1209	129	41	84	254	32	31	18	81	3830
% App. Total	4.2	92.3	3.4		1	90.6	8.4		50.8	16.1	33.1		39.5	38.3	22.2		
PHF	.933	.996	.780	.987	.375	.909	.944	.924	.872	.569	.808	.784	.889	.861	.563	.880	.988



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TMC Data
Martin Rd @ Marsett Pkwy
7-9 am I 4-6 pm

File Name : 20220265
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Groups Printed- Cars,Buses & Trucks

	Northbound				Marsett Pkwy Southbound				Martin Rd Eastbound				Martin Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	22	0	4	26	0	55	0	55	0	92	4	96	177
07:15 AM	0	0	0	0	20	0	4	24	0	61	0	61	0	108	6	114	199
07:30 AM	0	0	0	0	36	0	8	44	2	66	0	68	0	97	12	109	221
07:45 AM	0	0	0	0	35	0	5	40	1	51	0	52	0	77	10	87	179
Total	0	0	0	0	113	0	21	134	3	233	0	236	0	374	32	406	776
08:00 AM	0	0	0	0	18	0	4	22	1	62	0	63	0	82	9	91	176
08:15 AM	0	0	0	0	17	0	5	22	0	58	0	58	0	84	4	88	168
08:30 AM	0	0	0	0	6	0	1	7	0	72	0	72	0	96	4	100	179
08:45 AM	0	0	0	0	6	0	0	6	0	56	0	56	0	69	5	74	136
Total	0	0	0	0	47	0	10	57	1	248	0	249	0	331	22	353	659
*** BREAK ***																	
04:00 PM	0	0	0	0	10	0	2	12	0	90	0	90	0	87	11	98	200
04:15 PM	0	0	0	0	11	0	3	14	0	107	0	107	0	87	10	97	218
04:30 PM	0	0	0	0	3	0	0	3	2	100	0	102	0	102	14	116	221
04:45 PM	0	0	0	0	16	0	5	21	0	94	0	94	0	92	13	105	220
Total	0	0	0	0	40	0	10	50	2	391	0	393	0	368	48	416	859
05:00 PM	0	0	0	0	9	0	2	11	1	108	0	109	0	113	17	130	250
05:15 PM	0	0	0	0	8	0	0	8	1	96	0	97	0	98	11	109	214
05:30 PM	0	0	0	0	7	0	0	7	0	90	0	90	0	79	8	87	184
05:45 PM	0	0	0	0	6	0	1	7	0	83	0	83	0	87	9	96	186
Total	0	0	0	0	30	0	3	33	2	377	0	379	0	377	45	422	834
Grand Total	0	0	0	0	230	0	44	274	8	1249	0	1257	0	1450	147	1597	3128
Apprch %	0	0	0		83.9	0	16.1		0.6	99.4	0		0	90.8	9.2		
Total %	0	0	0		7.4	0	1.4	8.8	0.3	39.9	0	40.2	0	46.4	4.7	51.1	

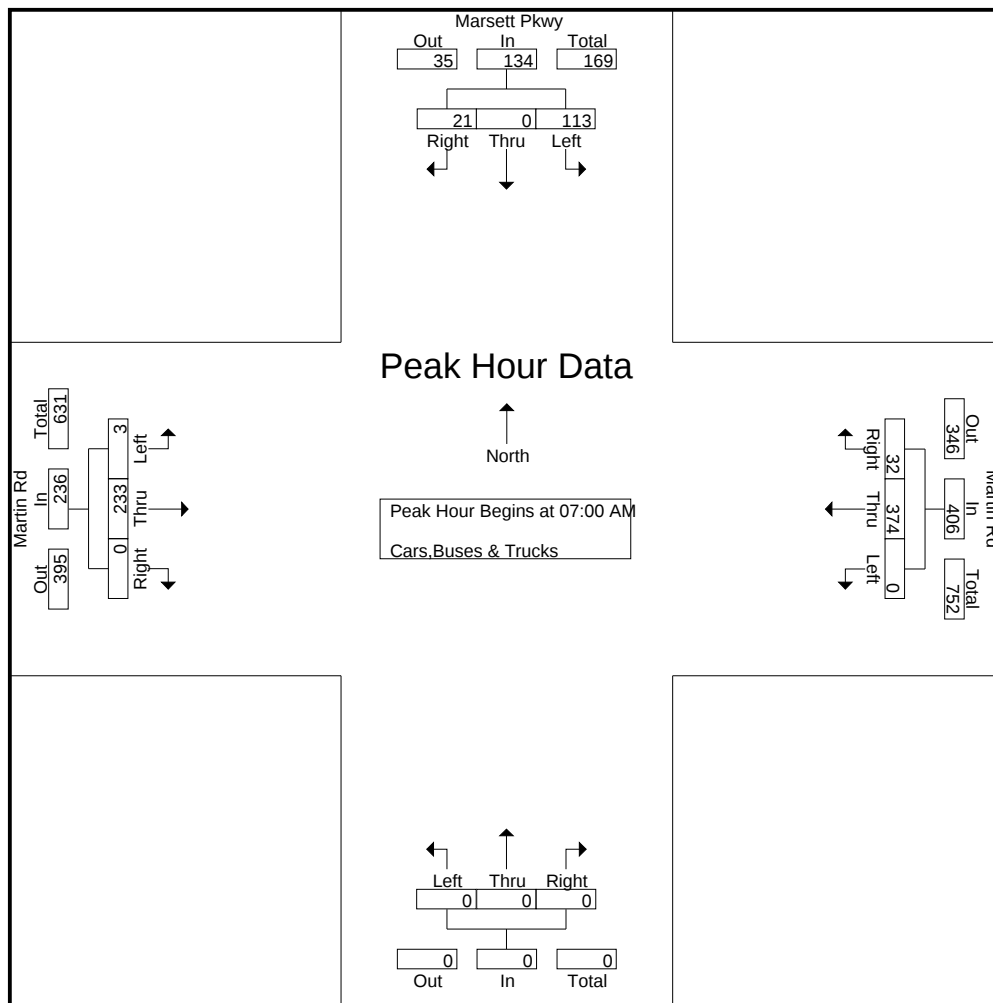
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Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	22	0	4	26	0	55	0	55	0	92	4	96	177
07:15 AM	0	0	0	0	20	0	4	24	0	61	0	61	0	108	6	114	199
07:30 AM	0	0	0	0	36	0	8	44	2	66	0	68	0	97	12	109	221
07:45 AM	0	0	0	0	35	0	5	40	1	51	0	52	0	77	10	87	179
Total Volume	0	0	0	0	113	0	21	134	3	233	0	236	0	374	32	406	776
% App. Total	0	0	0	0	84.3	0	15.7		1.3	98.7	0		0	92.1	7.9		
PHF	.000	.000	.000	.000	.785	.000	.656	.761	.375	.883	.000	.868	.000	.866	.667	.890	.878



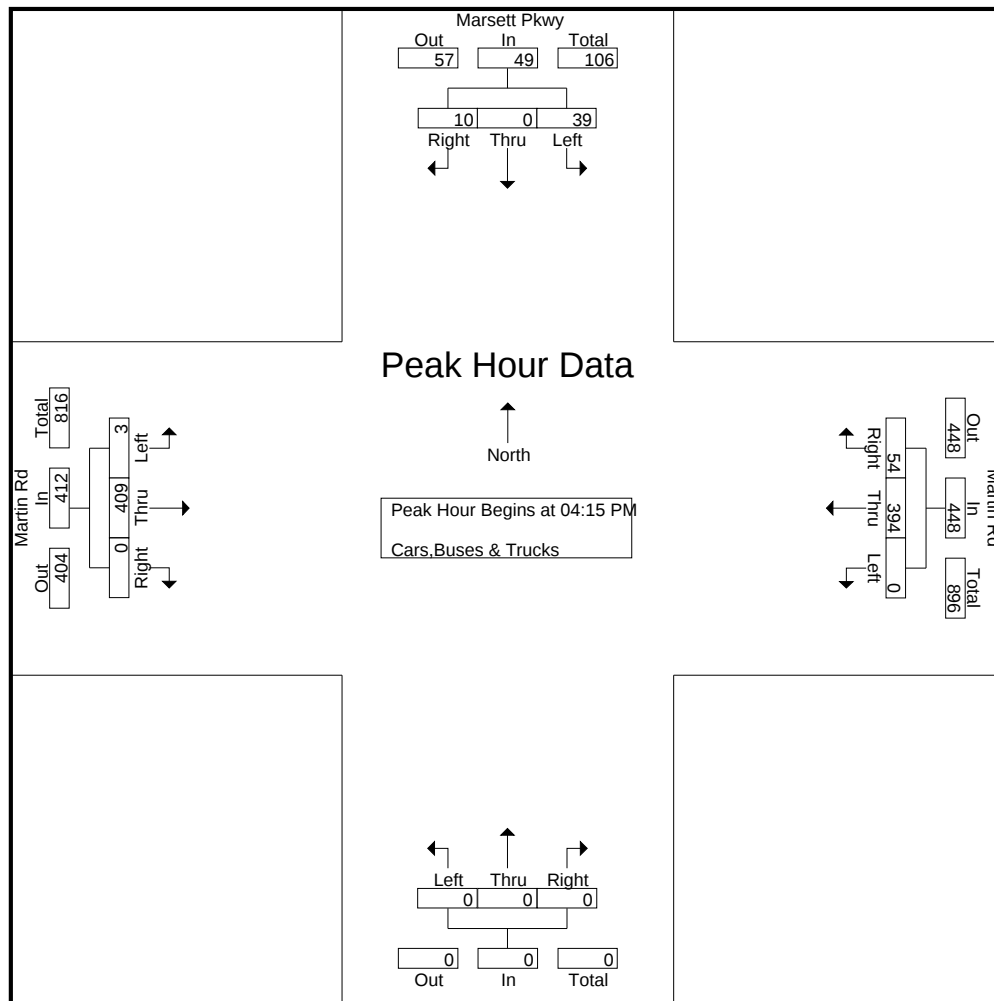
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Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	11	0	3	14	0	107	0	107	0	87	10	97	218
04:30 PM	0	0	0	0	3	0	0	3	2	100	0	102	0	102	14	116	221
04:45 PM	0	0	0	0	16	0	5	21	0	94	0	94	0	92	13	105	220
05:00 PM	0	0	0	0	9	0	2	11	1	108	0	109	0	113	17	130	250
Total Volume	0	0	0	0	39	0	10	49	3	409	0	412	0	394	54	448	909
% App. Total	0	0	0	0	79.6	0	20.4		0.7	99.3	0		0	87.9	12.1		
PHF	.000	.000	.000	.000	.609	.000	.500	.583	.375	.947	.000	.945	.000	.872	.794	.862	.909



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Marietta, GA 30067

TMC DATA

Settingdown Rd @ Marsett Pkwy

7-9 am | 4-6 pm

File Name : 20220266

Site Code : 20220266

Start Date : 5/17/2022

Page No : 1

Groups Printed- Cars,Buses & Trucks

	Marsett Pkwy Northbound				Southbound				Settingdown Rd Eastbound				Settingdown Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	0	2	4	0	0	0	0	0	2	12	14	9	27	0	36	54
07:15 AM	2	0	1	3	0	0	0	0	0	4	5	9	13	33	0	46	58
07:30 AM	3	0	2	5	0	0	0	0	0	5	5	10	29	51	0	80	95
07:45 AM	5	0	3	8	0	0	0	0	0	11	16	27	28	55	0	83	118
Total	12	0	8	20	0	0	0	0	0	22	38	60	79	166	0	245	325
08:00 AM	1	0	5	6	0	0	0	0	0	10	5	15	20	27	0	47	68
08:15 AM	2	0	3	5	0	0	0	0	0	14	12	26	15	24	0	39	70
08:30 AM	0	0	2	2	0	0	0	0	0	13	3	16	4	28	0	32	50
08:45 AM	0	0	3	3	0	0	0	0	0	16	3	19	3	17	0	20	42
Total	3	0	13	16	0	0	0	0	0	53	23	76	42	96	0	138	230
*** BREAK ***																	
04:00 PM	2	0	8	10	0	0	0	0	0	22	2	24	7	15	0	22	56
04:15 PM	2	0	8	10	0	0	0	0	0	34	2	36	7	11	0	18	64
04:30 PM	4	0	8	12	0	0	0	0	0	28	0	28	4	12	0	16	56
04:45 PM	5	0	12	17	0	0	0	0	0	26	2	28	5	16	0	21	66
Total	13	0	36	49	0	0	0	0	0	110	6	116	23	54	0	77	242
05:00 PM	6	0	9	15	0	0	0	0	0	28	0	28	5	25	0	30	73
05:15 PM	5	0	9	14	0	0	0	0	0	20	0	20	7	19	0	26	60
05:30 PM	2	0	6	8	0	0	0	0	0	21	2	23	6	21	0	27	58
05:45 PM	2	0	4	6	0	0	0	0	0	21	0	21	7	15	0	22	49
Total	15	0	28	43	0	0	0	0	0	90	2	92	25	80	0	105	240
Grand Total	43	0	85	128	0	0	0	0	0	275	69	344	169	396	0	565	1037
Apprch %	33.6	0	66.4		0	0	0		0	79.9	20.1		29.9	70.1	0		
Total %	4.1	0	8.2	12.3	0	0	0	0	0	26.5	6.7	33.2	16.3	38.2	0	54.5	

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TMC DATA

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7-9 am | 4-6 pm

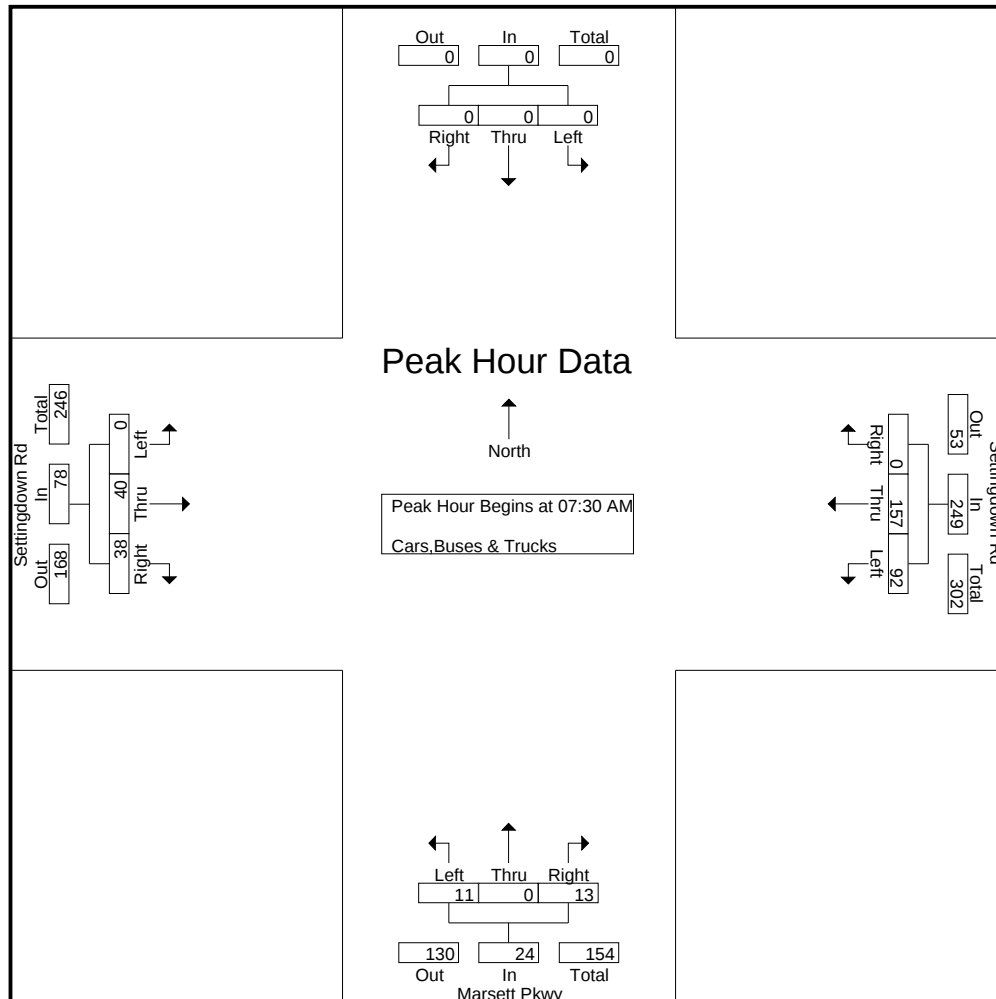
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	Marsett Pkwy Northbound				Southbound				Settingdown Rd Eastbound				Settingdown Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	3	0	2	5	0	0	0	0	0	5	5	10	29	51	0	80	95
07:45 AM	5	0	3	8	0	0	0	0	0	11	16	27	28	55	0	83	118
08:00 AM	1	0	5	6	0	0	0	0	0	10	5	15	20	27	0	47	68
08:15 AM	2	0	3	5	0	0	0	0	0	14	12	26	15	24	0	39	70
Total Volume	11	0	13	24	0	0	0	0	0	40	38	78	92	157	0	249	351
% App. Total	45.8	0	54.2		0	0	0		0	51.3	48.7		36.9	63.1	0		
PHF	.550	.000	.650	.750	.000	.000	.000	.000	.000	.714	.594	.722	.793	.714	.000	.750	.744



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TMC DATA

Settingdown Rd @ Marsett Pkwy

7-9 am | 4-6 pm

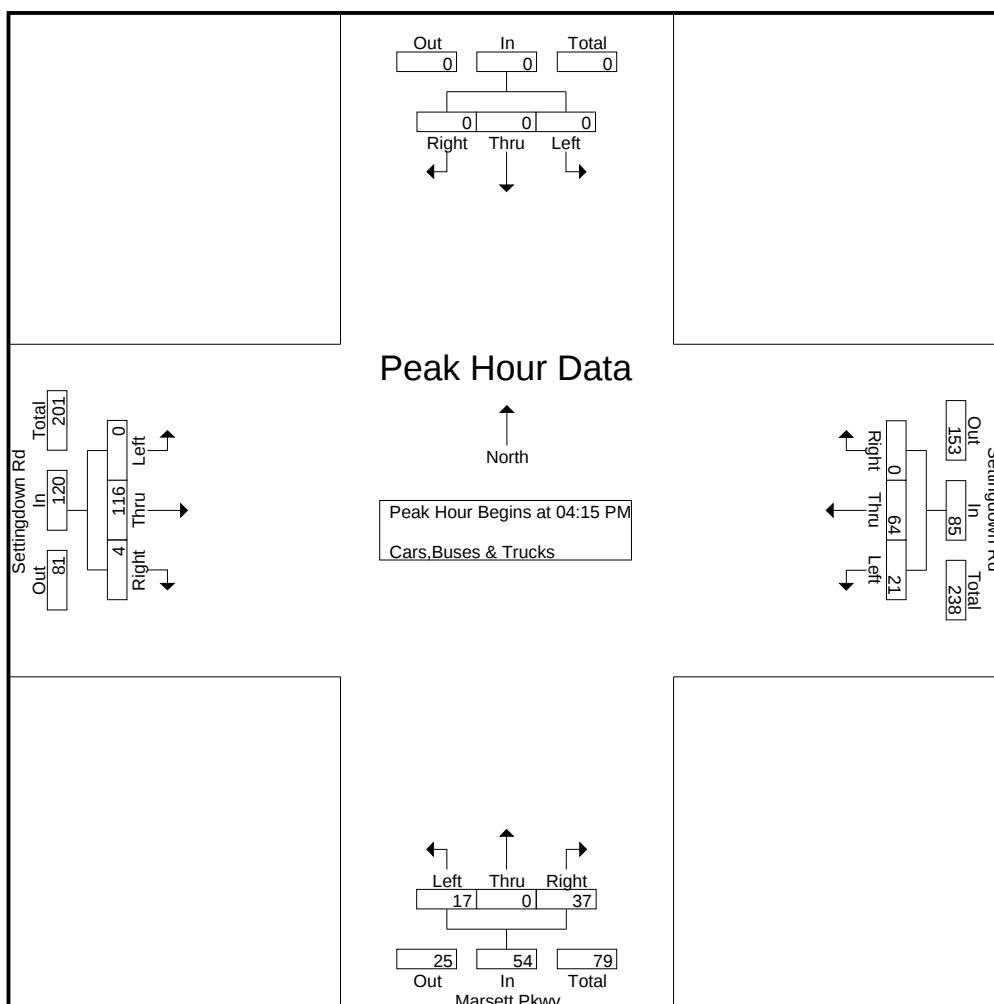
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	Marsett Pkwy Northbound				Southbound				Settingdown Rd Eastbound				Settingdown Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	2	0	8	10	0	0	0	0	0	34	2	36	7	11	0	18	64
04:30 PM	4	0	8	12	0	0	0	0	0	28	0	28	4	12	0	16	56
04:45 PM	5	0	12	17	0	0	0	0	0	26	2	28	5	16	0	21	66
05:00 PM	6	0	9	15	0	0	0	0	0	28	0	28	5	25	0	30	73
Total Volume	17	0	37	54	0	0	0	0	0	116	4	120	21	64	0	85	259
% App. Total	31.5	0	68.5		0	0	0		0	96.7	3.3		24.7	75.3	0		
PHF	.708	.000	.771	.794	.000	.000	.000	.000	.000	.853	.500	.833	.750	.640	.000	.708	.887



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TMC Data
Settingdown Rd @ Heards Circle
7-9 am I 4-6 pm

File Name : 20220268
Site Code : 20220268
Start Date : 5/17/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Heards Circle Northbound				Private Drwy Southbound				Settingdown Rd Eastbound				Settingdown Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	4	0	4	0	36	0	36	40
07:15 AM	1	0	1	2	1	0	0	1	0	5	0	5	1	43	1	45	53
07:30 AM	1	0	0	1	0	0	1	1	1	6	0	7	1	78	0	79	88
07:45 AM	0	0	1	1	0	0	0	0	0	12	2	14	0	82	1	83	98
Total	2	0	2	4	1	0	1	2	1	27	2	30	2	239	2	243	279
08:00 AM	0	0	0	0	0	0	0	0	0	15	0	15	0	47	0	47	62
08:15 AM	0	0	1	1	0	0	1	1	0	16	1	17	1	38	1	40	59
08:30 AM	1	0	0	1	1	0	0	1	0	15	0	15	1	30	1	32	49
08:45 AM	1	0	0	1	0	0	0	0	1	16	2	19	0	19	0	19	39
Total	2	0	1	3	1	0	1	2	1	62	3	66	2	134	2	138	209
*** BREAK ***																	
04:00 PM	1	0	1	2	1	0	0	1	1	29	0	30	1	18	1	20	53
04:15 PM	0	0	0	0	0	0	1	1	1	41	0	42	0	17	1	18	61
04:30 PM	1	0	1	2	0	0	0	0	0	35	1	36	0	14	1	15	53
04:45 PM	0	0	0	0	0	0	1	1	0	37	1	38	0	18	2	20	59
Total	2	0	2	4	1	0	2	3	2	142	2	146	1	67	5	73	226
05:00 PM	0	0	1	1	0	0	0	0	1	36	0	37	0	29	1	30	68
05:15 PM	1	0	0	1	1	0	0	1	1	28	0	29	0	25	1	26	57
05:30 PM	1	0	1	2	0	0	1	1	0	27	1	28	1	15	1	17	48
05:45 PM	0	0	0	0	0	0	0	0	0	25	0	25	1	21	1	23	48
Total	2	0	2	4	1	0	1	2	2	116	1	119	2	90	4	96	221
Grand Total	8	0	7	15	4	0	5	9	6	347	8	361	7	530	13	550	935
Apprch %	53.3	0	46.7		44.4	0	55.6		1.7	96.1	2.2		1.3	96.4	2.4		
Total %	0.9	0	0.7	1.6	0.4	0	0.5	1	0.6	37.1	0.9	38.6	0.7	56.7	1.4	58.8	

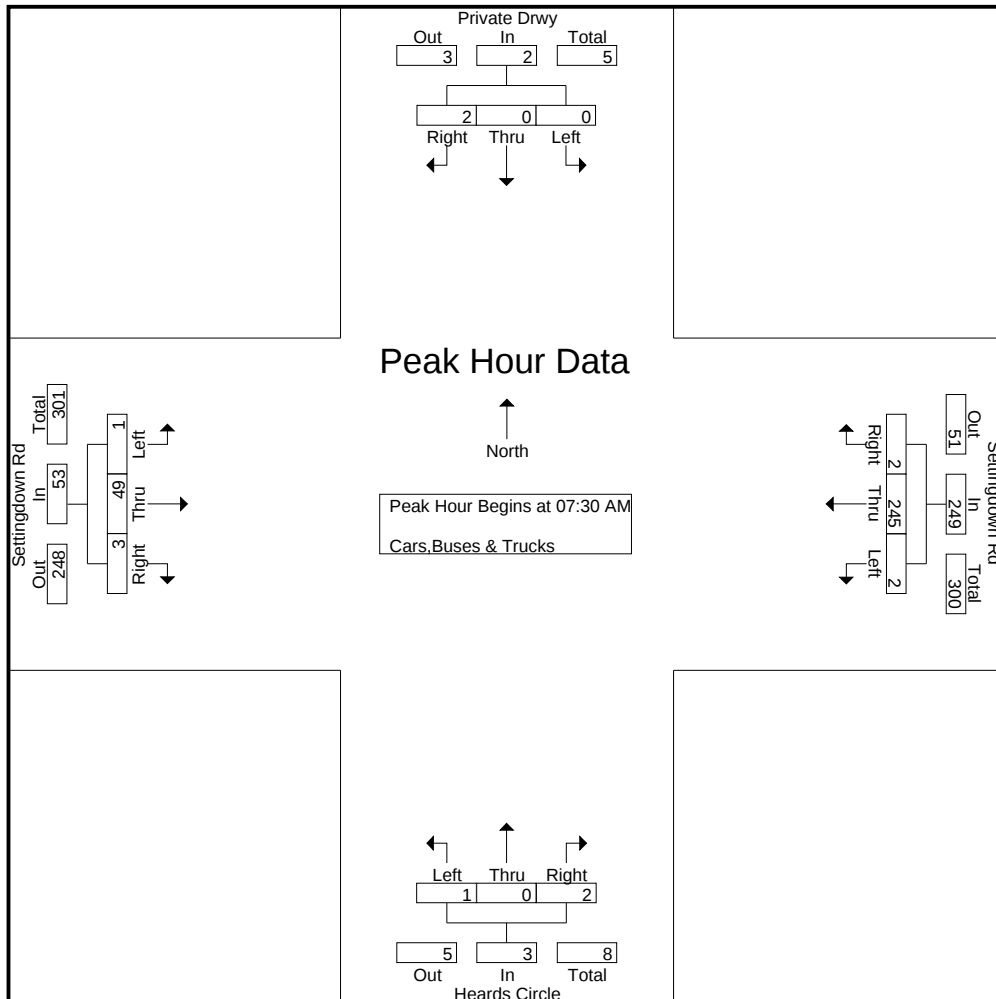
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TMC Data
Settingdown Rd @ Heards Circle
7-9 am I 4-6 pm

File Name : 20220268
Site Code : 20220268
Start Date : 5/17/2022
Page No : 2

	Heards Circle Northbound				Private Drwy Southbound				Settingdown Rd Eastbound				Settingdown Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	0	0	1	0	0	1	1	1	6	0	7	1	78	0	79	88
07:45 AM	0	0	1	1	0	0	0	0	0	12	2	14	0	82	1	83	98
08:00 AM	0	0	0	0	0	0	0	0	0	15	0	15	0	47	0	47	62
08:15 AM	0	0	1	1	0	0	1	1	0	16	1	17	1	38	1	40	59
Total Volume	1	0	2	3	0	0	2	2	1	49	3	53	2	245	2	249	307
% App. Total	33.3	0	66.7		0	0	100		1.9	92.5	5.7		0.8	98.4	0.8		
PHF	.250	.000	.500	.750	.000	.000	.500	.500	.250	.766	.375	.779	.500	.747	.500	.750	.783



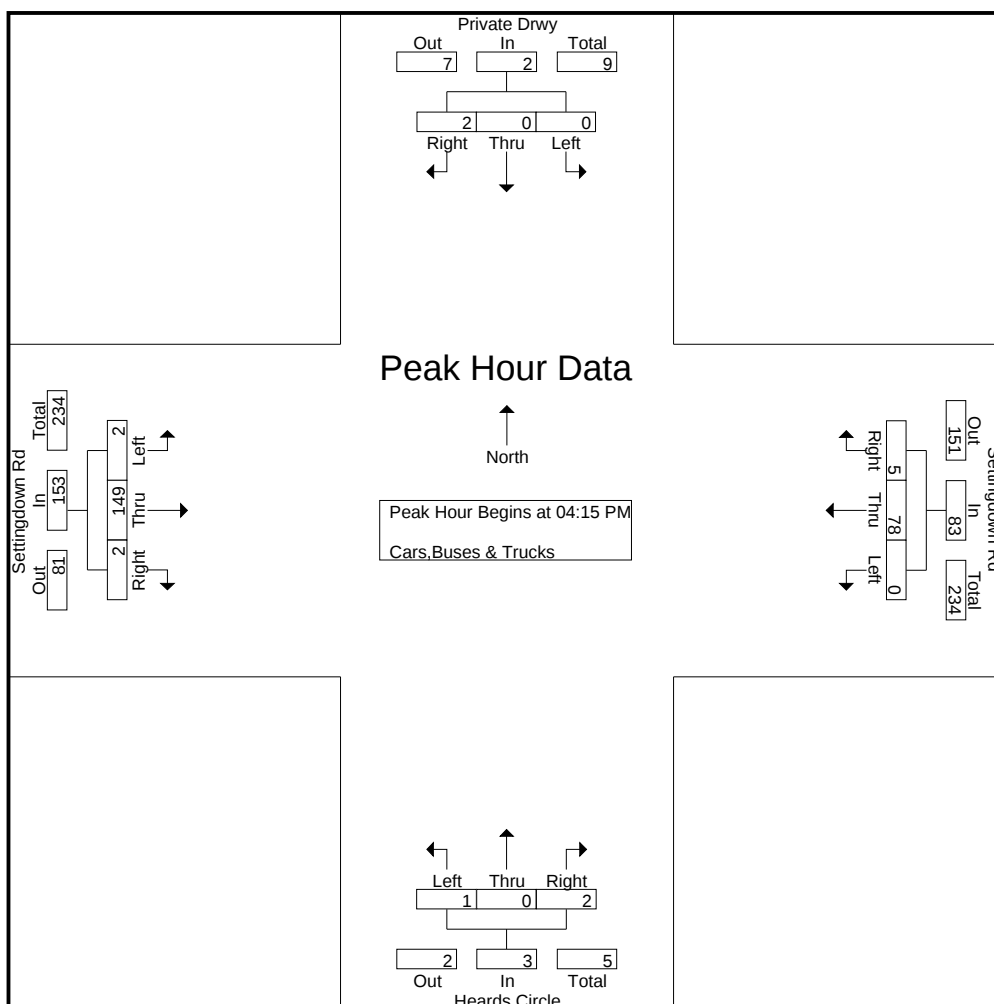
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	Heards Circle Northbound				Private Drwy Southbound				Settingdown Rd Eastbound				Settingdown Rd Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	0	1	1	1	41	0	42	0	17	1	18	61
04:30 PM	1	0	1	2	0	0	0	0	0	35	1	36	0	14	1	15	53
04:45 PM	0	0	0	0	0	0	1	1	0	37	1	38	0	18	2	20	59
05:00 PM	0	0	1	1	0	0	0	0	1	36	0	37	0	29	1	30	68
Total Volume	1	0	2	3	0	0	2	2	2	149	2	153	0	78	5	83	241
% App. Total	33.3	0	66.7		0	0	100		1.3	97.4	1.3		0	94	6		
PHF	.250	.000	.500	.375	.000	.000	.500	.500	.500	.909	.500	.911	.000	.672	.625	.692	.886



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TMC Data
Marsett Pkwy @ Hemingway Trail
7-9 am I 4-6 pm

File Name : 20220269
Site Code : 20220269
Start Date : 5/17/2022
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Marsett Pkwy Northbound				Marsett Pkwy Southbound				Hemingway Trail Eastbound				Hemingway Trail Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	3	1	4	1	19	1	21	0	1	3	4	4	1	1	6	35
07:15 AM	3	1	2	6	4	13	2	19	0	1	5	6	6	1	2	9	40
07:30 AM	5	2	7	14	2	31	1	34	2	2	6	10	7	2	1	10	68
07:45 AM	2	3	2	7	3	37	0	40	3	1	1	5	2	1	2	5	57
Total	10	9	12	31	10	100	4	114	5	5	15	25	19	5	6	30	200
08:00 AM	4	3	4	11	2	21	1	24	1	1	0	2	1	1	2	4	41
08:15 AM	0	5	0	5	3	21	2	26	0	2	1	3	0	2	0	2	36
08:30 AM	0	1	1	2	3	6	1	10	0	1	1	2	0	1	1	2	16
08:45 AM	1	2	0	3	2	3	1	6	0	1	1	2	2	1	1	4	15
Total	5	11	5	21	10	51	5	66	1	5	3	9	3	5	4	12	108
*** BREAK ***																	
04:00 PM	0	7	1	8	2	10	1	13	0	1	1	2	1	1	2	4	27
04:15 PM	1	7	1	9	3	12	0	15	1	1	1	3	1	1	2	4	31
04:30 PM	1	10	1	12	2	2	0	4	0	0	0	0	1	0	2	3	19
04:45 PM	0	11	2	13	1	17	1	19	2	1	2	5	2	1	4	7	44
Total	2	35	5	42	8	41	2	51	3	3	4	10	5	3	10	18	121
05:00 PM	2	15	1	18	2	10	2	14	0	2	0	2	1	0	0	1	35
05:15 PM	1	10	2	13	1	7	1	9	1	1	1	3	0	1	3	4	29
05:30 PM	1	6	1	8	2	3	0	5	0	1	3	4	1	2	2	5	22
05:45 PM	1	6	1	8	3	3	1	7	0	3	2	5	2	1	0	3	23
Total	5	37	5	47	8	23	4	35	1	7	6	14	4	4	5	13	109
Grand Total	22	92	27	141	36	215	15	266	10	20	28	58	31	17	25	73	538
Apprch %	15.6	65.2	19.1		13.5	80.8	5.6		17.2	34.5	48.3		42.5	23.3	34.2		
Total %	4.1	17.1	5	26.2	6.7	40	2.8	49.4	1.9	3.7	5.2	10.8	5.8	3.2	4.6	13.6	

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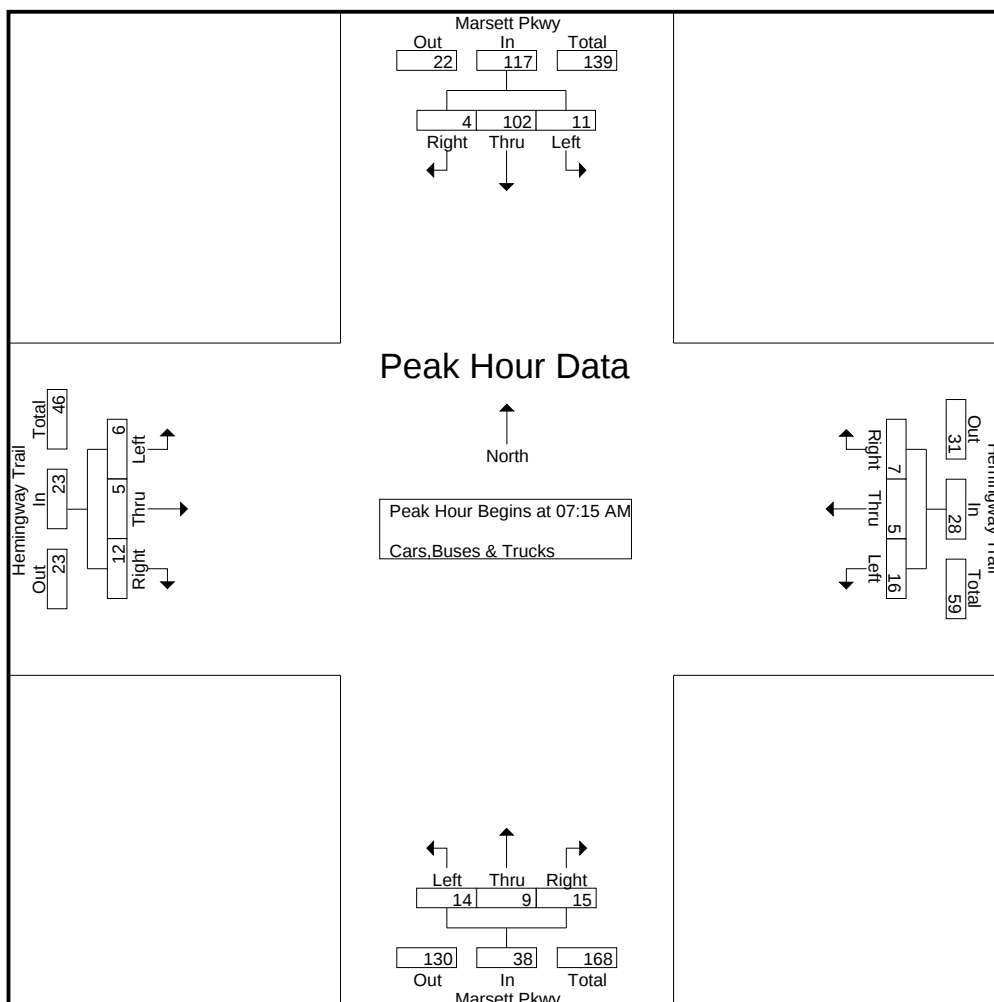
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	Marsett Pkwy Northbound				Marsett Pkwy Southbound				Hemingway Trail Eastbound				Hemingway Trail Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	3	1	2	6	4	13	2	19	0	1	5	6	6	1	2	9	40
07:30 AM	5	2	7	14	2	31	1	34	2	2	6	10	7	2	1	10	68
07:45 AM	2	3	2	7	3	37	0	40	3	1	1	5	2	1	2	5	57
08:00 AM	4	3	4	11	2	21	1	24	1	1	0	2	1	1	2	4	41
Total Volume	14	9	15	38	11	102	4	117	6	5	12	23	16	5	7	28	206
% App. Total	36.8	23.7	39.5		9.4	87.2	3.4		26.1	21.7	52.2		57.1	17.9	25		
PHF	.700	.750	.536	.679	.688	.689	.500	.731	.500	.625	.500	.575	.571	.625	.875	.700	.757



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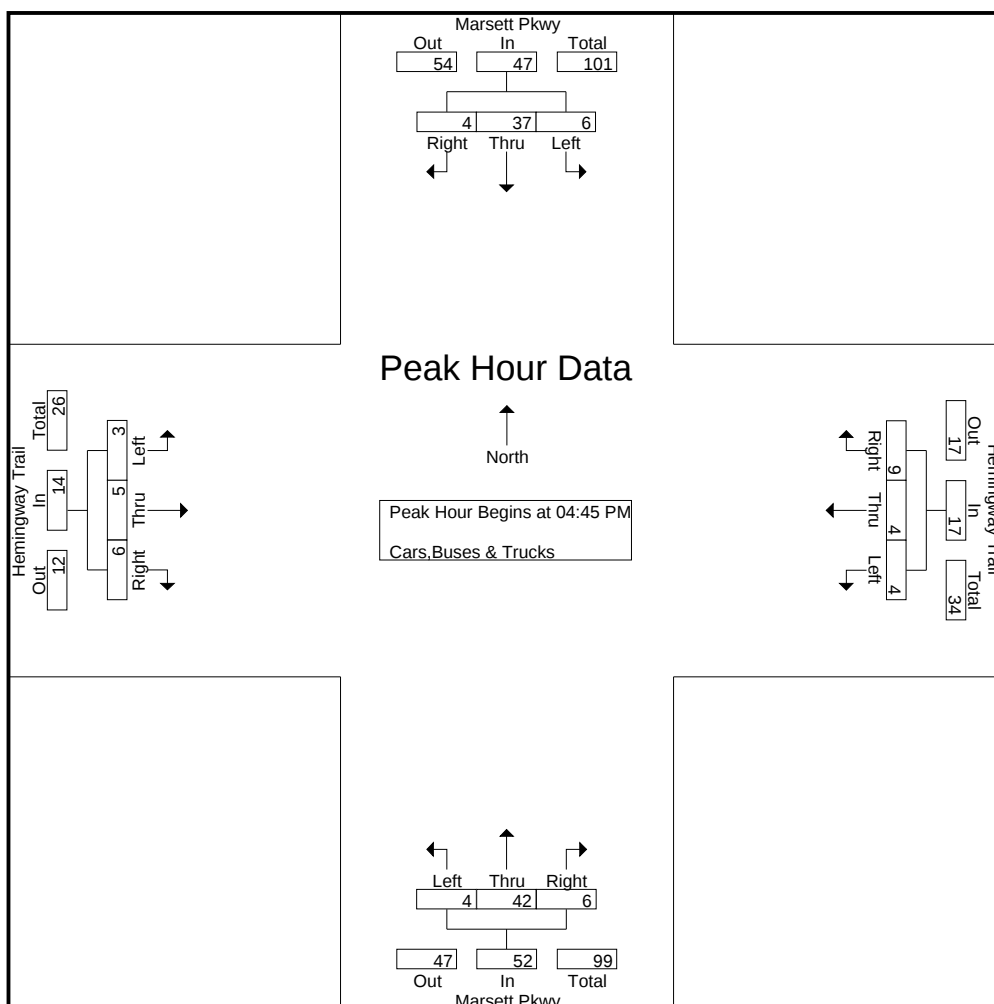
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	Marsett Pkwy Northbound				Marsett Pkwy Southbound				Hemingway Trail Eastbound				Hemingway Trail Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	11	2	13	1	17	1	19	2	1	2	5	2	1	4	7	44
05:00 PM	2	15	1	18	2	10	2	14	0	2	0	2	1	0	0	1	35
05:15 PM	1	10	2	13	1	7	1	9	1	1	1	3	0	1	3	4	29
05:30 PM	1	6	1	8	2	3	0	5	0	1	3	4	1	2	2	5	22
Total Volume	4	42	6	52	6	37	4	47	3	5	6	14	4	4	9	17	130
% App. Total	7.7	80.8	11.5		12.8	78.7	8.5		21.4	35.7	42.9		23.5	23.5	52.9		
PHF	.500	.700	.750	.722	.750	.544	.500	.618	.375	.625	.500	.700	.500	.500	.563	.607	.739



GRTA Letter of Understanding



LETTER OF UNDERSTANDING

January 13, 2023

Kevin Seifert
The Pacific Group
5755 Dupree Drive NW,
Atlanta, GA 30327

RE: **Chestatee Crossroads (DRI#: 3877)**

Dear Kevin Seifert:

The purpose of this Letter of Understanding is to document the discussions during the Methodology Meeting held virtually on January 9, 2023, regarding **Chestatee Crossroads** Development of Regional Impact (DRI). The *GRTA DRI Review Procedures*, as well as the inputs and parameters documented in this Letter of Understanding and the revised Methodology Meeting Packet, shall be adhered to in preparing the GRTA required Transportation Study.

PROJECT OVERVIEW

- The proposed site is located at Marsett Parkway, southeast to the intersection of Marsett Parkway and Settingdown Road.
- The proposed development includes 198 units and 579 units.
- The projected build-out is one phase to be completed by 2027.
- The proposed development includes (3) site accesses along Marsett Parkway and Settingdown Road.
- The DRI trigger for this development is a land disturbance permit.
- The vehicular trip generation is estimated to be 6,254 net daily trips based on the *ITE Trip Generation Manual 10th edition*.
- The applicant is applying for approval under GRTA's non-expedited Traffic Impact Study review process.

STUDY NETWORK

1. US 19/ SR 400 and Martin Road
2. US 19/ SR 400 and Hemingway Trail
3. US 19/ SR 400 and Settingdown Road
4. Settingdown Road and Marsett Parkway
5. Marsett Parkway and Hemingway Trail
6. Marsett Parkway and Martin Road

METHODOLOGY MEETING PACKET INPUTS & PARAMETERS

- The Site Plan shall meet all the applicable requirements in Section 7.1 of the *GRTA DRI Review Procedures*.
- All Study Network intersections shall be analyzed during the AM and PM peak hours for (1) existing conditions, (2) future "no-build" conditions, and (3) future "build" conditions as specified in the *GRTA DRI Review Procedures*.
- This DRI shall be modeled and reviewed in one phase to be completed by 2027.

- The Level of Service (LOS) standard for all analysis shall be LOS D unless specified otherwise in Section 3.2.2.1. For example, a LOS E standard is allowed if the existing LOS for the intersection or approach is a LOS F.
- Default values should not be assumed in the traffic modeling. Existing conditions shall be taken into account as required in Section 3.2.2.
- The trip generation calculations in the revised Methodology Meeting Packet shall be used in the Transportation Study. Mixed-use and pass-by reductions are not allowed for this site. Pass-by reductions shall not exceed 15% of a roadway's traffic volume standard established in Appendix 7.2.
- The trip assignment approach in the revised Methodology Meeting Packet shall be utilized for all Study Network intersection movements.
- The applicant shall research TIP, STIP, RTP and GDOT's construction work program, as well as any local government and transit operator plans (SPLOST, CIP, etc.), to determine the open date, sponsor, cost of the project, funding source(s), for future roadway projects in the project vicinity. Programmed transportation projects anticipated to open on or before the Build Out year of the DRI Project shall be modeled as completed in the No-Build and Build conditions unless approved otherwise.
- A 2.4% annual traffic Background Growth Rate shall be used for all roadways.
- Capacity analysis shall be based on turning movement counts collected not more than 12-months prior to the date of the actual DRI submittal to GRTA, unless specified otherwise. As specified in Section 2.3, turning movement counts shall be collected while local schools are in session, on a Tuesday, Wednesday or Thursday (unless approved otherwise) and not during holiday periods (weeks of July 4th, Thanksgiving and +/- 5 days of Christmas).
- If the *GRTA DRI Review Procedures* requires an Enhanced Focus Area for Heavy Vehicles or an Enhanced Focus Area for Dense Urban Environments, the Transportation Study shall incorporate the inputs and parameters agreed to at the Methodology Meeting and documented in the revised Methodology Meeting Packet. These inputs may include a Heavy Vehicle modeling percentages, a Heavy Vehicle route map, a pedestrian crosswalk delay adjustment and a bus blockage adjustment factor.

ADDITIONAL REQUIREMENTS

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

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

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

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

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

For example, a turn lane may be identified as a needed improvement in the no-build condition. The turn lane should not be modeled as completed in the build condition. The turn lane should only be modeled as complete in the no-build with improvements condition and the build with improvements condition.

DRI REVIEW PACKAGE SUBMITTAL

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

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

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

Sincerely,

Elizabeth Davis
Senior Transit Planner

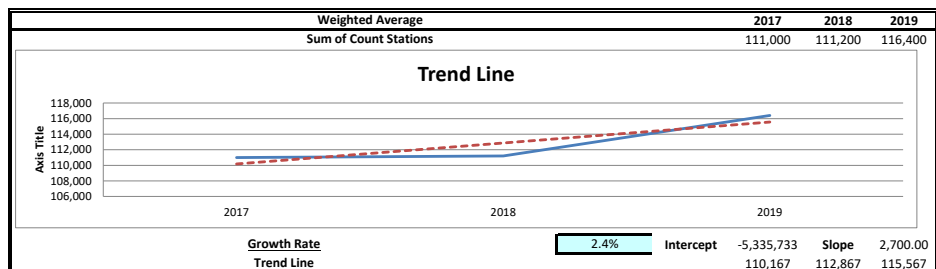
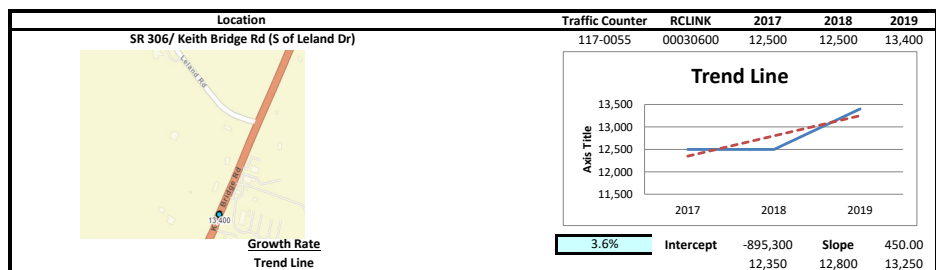
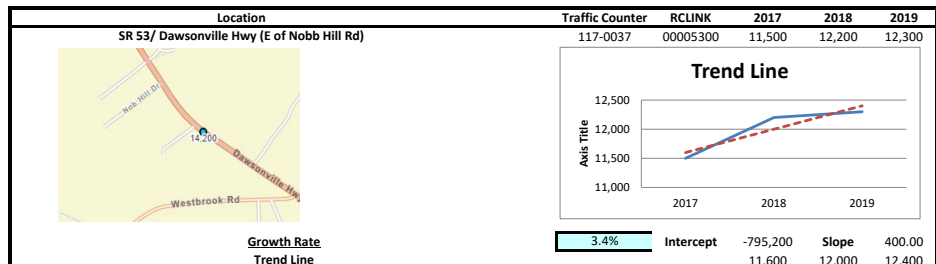
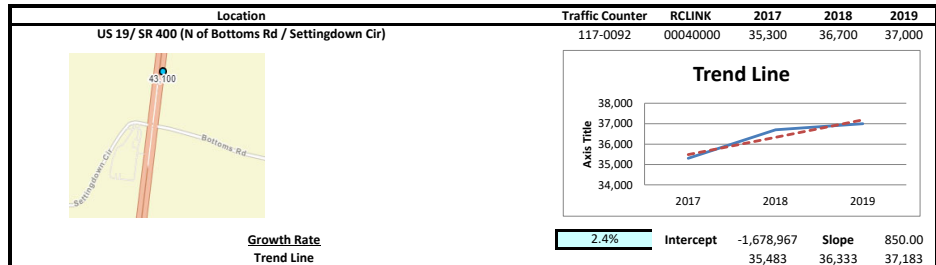
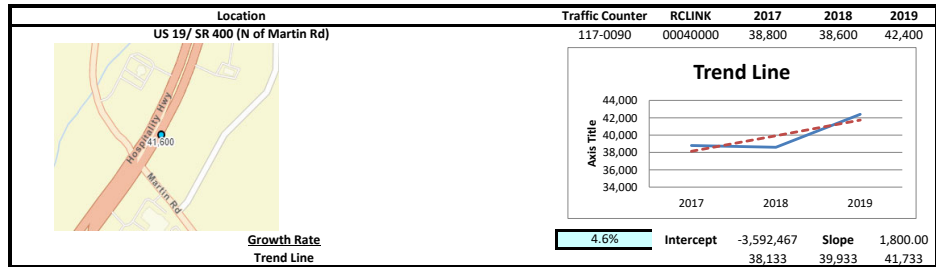
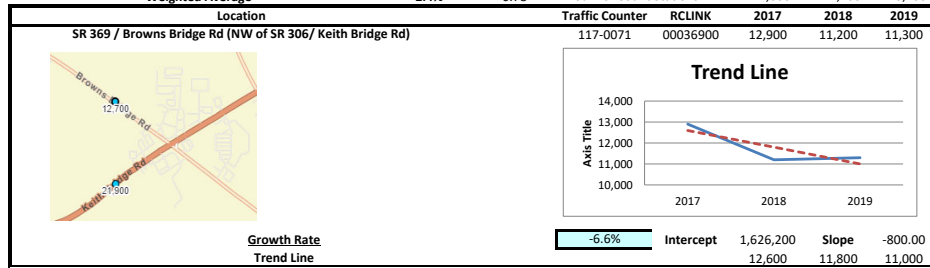
Cc:

Tim Allen, Forsyth County
December Weir, GRTA/ATL
Reginald James, ARC
Donald Shockey, ARC
Leslie D. Silas, Forsyth County

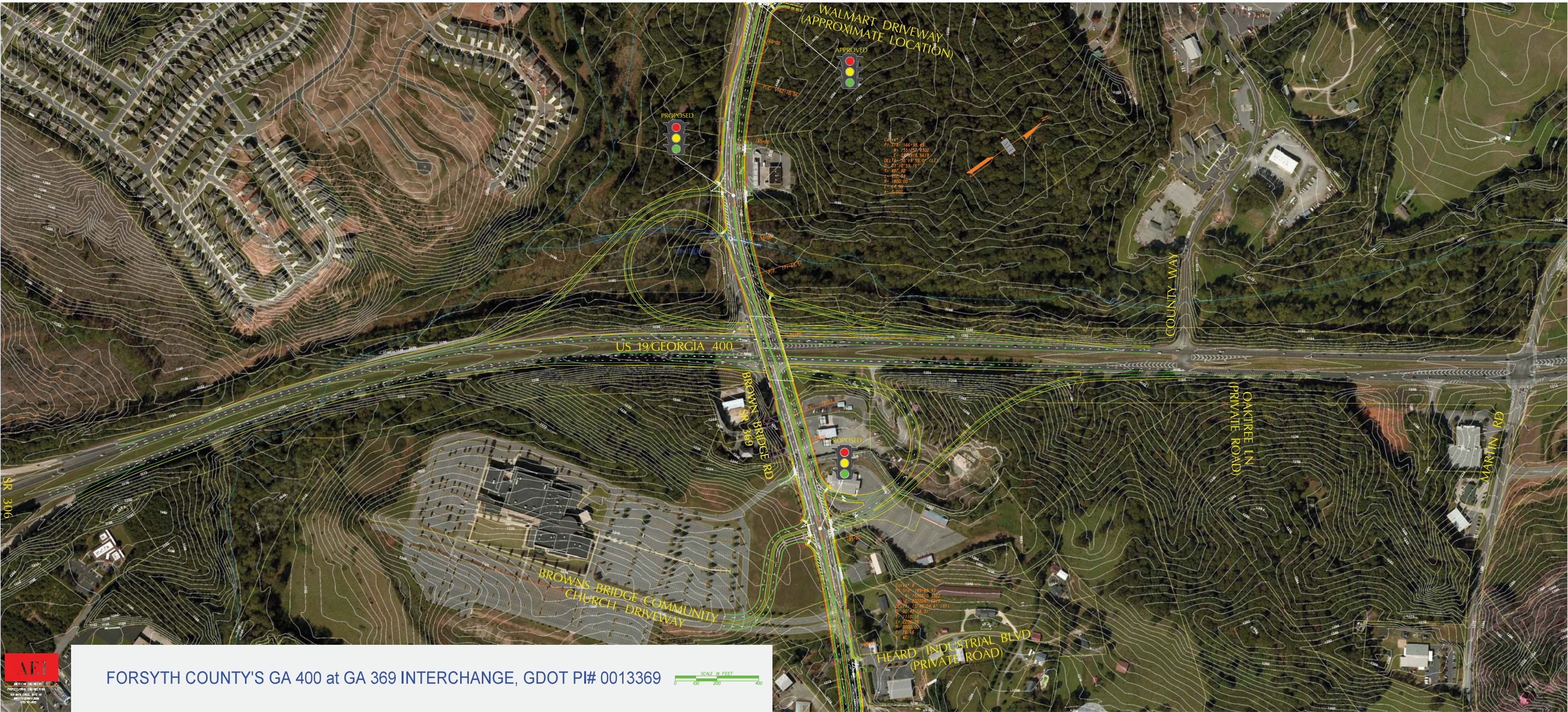
Abdul Amer, A&R Engineering
Kevin Nintin, A&R Engineering
Ralph Davia, Greyden Engineering

Linear Regression of Daily Traffic

Location	Growth Rate	R Squared	Station ID	Route	2017	2018	2019
SR 369 / Browns Bridge Rd (NW of SR 306/ Keith Bridge Rd)	-6.6%	0.70	117-0071	00036900	12,900	11,200	11,300
US 19 / SR 400 (N of Martin Rd)	4.6%	0.71	117-0090	00040000	38,800	38,600	42,400
US 19 / SR 400 (N of Bottoms Rd / Settingdown Cir)	2.4%	0.88	117-0092	00040000	35,300	36,700	37,000
SR 53 / Dawsonville Hwy (E of Nobb Hill Rd)	3.4%	0.84	117-0037	00005300	11,500	12,200	12,300
SR 306 / Keith Bridge Rd (S of Leland Dr)	3.6%	0.75	117-0055	00030600	12,500	12,500	13,400
Weighted Average	2.4%	0.78	Sum of Count Stations =		111,000	111,200	116,400



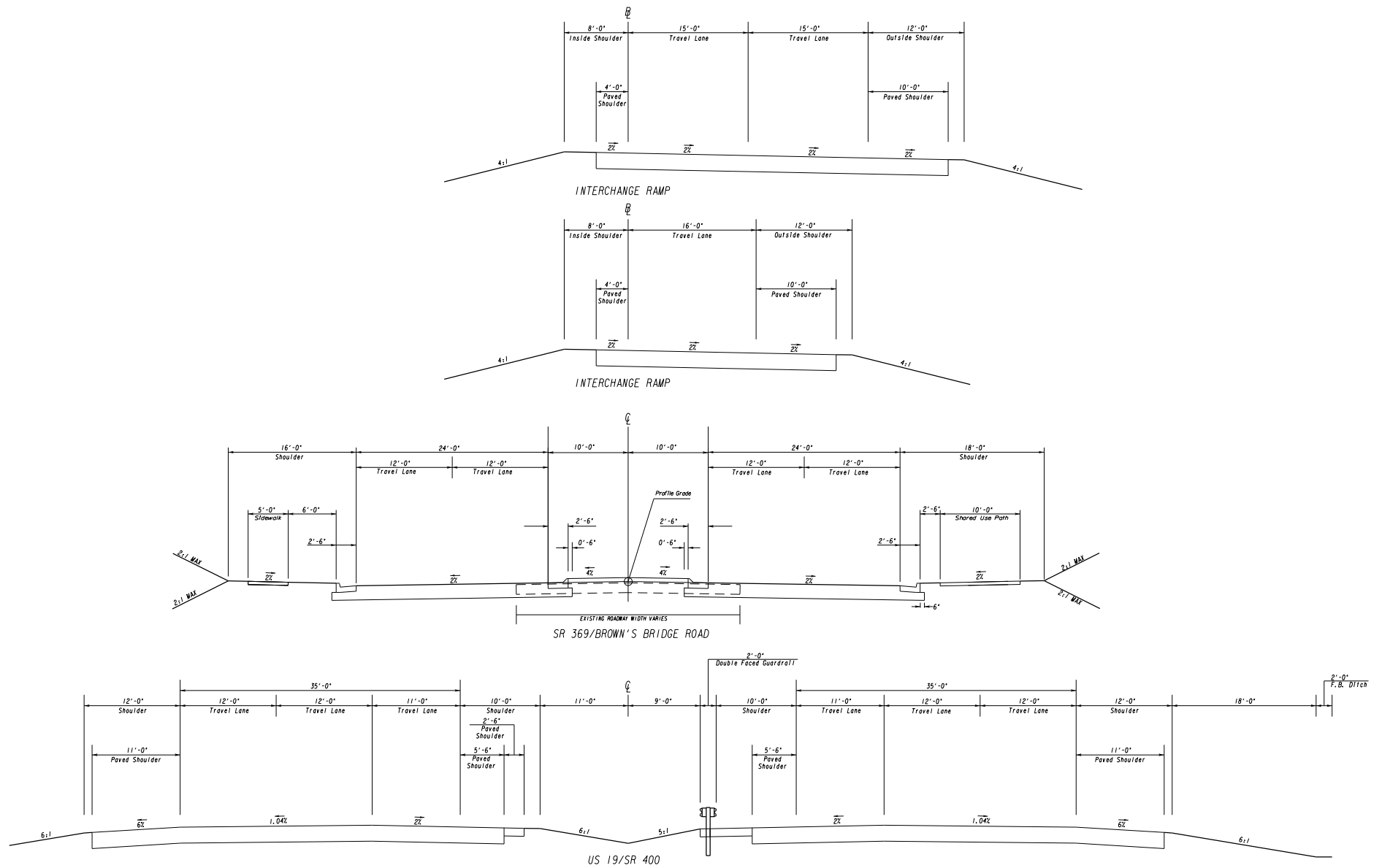
**Fact Sheets for Planned and Programmed
Improvements**



FORSYTH COUNTY'S GA 400 at GA 369 INTERCHANGE, GDOT PI# 0013369

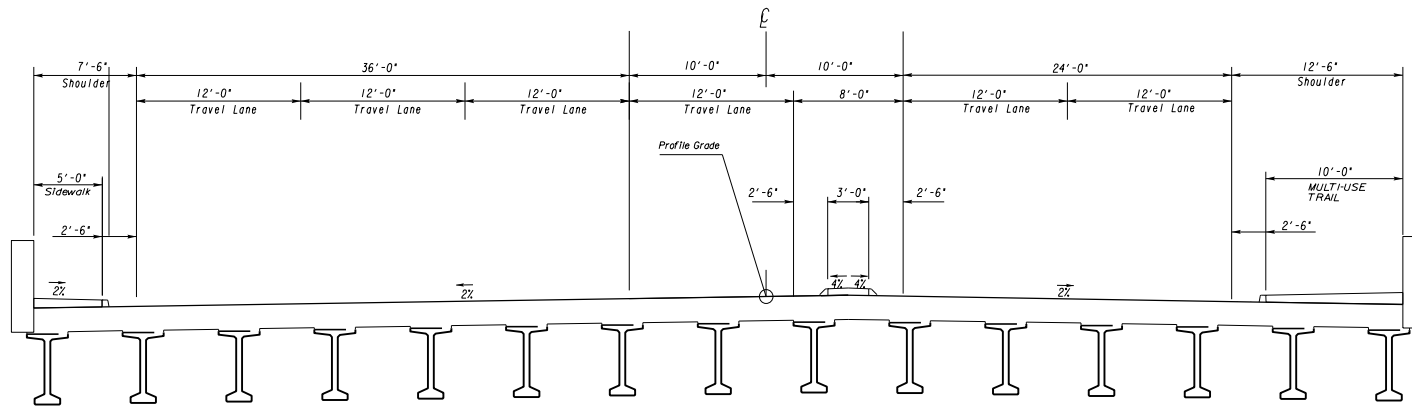


Appendix 2: Typical Sections



NOT TO SCALE

Appendix 2: Typical Sections



SR 369/BROWN'S BRIDGE ROAD BRIDGE OVER US 19/SR 400

Existing Intersection Analysis

Timings

1: SR 400 / US 19 & Martin Rd

1a. Existing 2023 AM

01/31/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	2	142	259	142	180	74	67	861	45	66	1839
Future Volume (vph)	2	142	259	142	180	74	67	861	45	66	1839
Lane Group Flow (vph)	2	143	262	143	182	75	68	870	45	67	1858
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8		1	6		5	2
Permitted Phases	4		4	8		8	6		6	2	
Detector Phase	7	4	4	3	8	8	1	6	6	5	2
Switch Phase											
Minimum Initial (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	15.0	50.5	50.5	15.0	57.5	57.5	15.0	38.5	38.5	15.0	27.5
Total Split (s)	15.0	57.5	57.5	15.0	57.5	57.5	15.0	62.5	62.5	15.0	62.5
Total Split (%)	10.0%	38.3%	38.3%	10.0%	38.3%	38.3%	10.0%	41.7%	41.7%	10.0%	41.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.01	0.67	0.74	0.65	0.49	0.19	0.47	0.38	0.04	0.16	0.82
Control Delay	43.0	78.5	31.1	64.6	58.3	5.3	27.6	14.5	0.1	10.7	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	78.5	31.1	64.6	58.3	5.3	27.6	14.5	0.1	10.7	25.4
Queue Length 50th (ft)	2	137	64	121	157	0	18	209	0	17	489
Queue Length 95th (ft)	9	203	161	178	247	27	68	296	0	m51	#773
Internal Link Dist (ft)		436			404			1010			1201
Turn Bay Length (ft)	40		90	165		115	550		165	510	
Base Capacity (vph)	249	645	674	220	645	612	167	2273	1051	432	2257
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.22	0.39	0.65	0.28	0.12	0.41	0.38	0.04	0.16	0.82

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

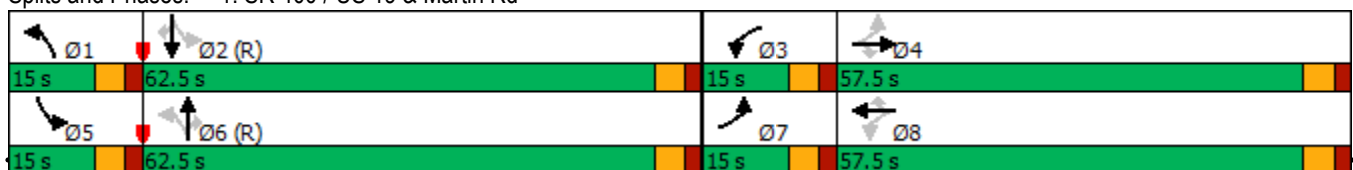
Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: SR 400 / US 19 & Martin Rd



HCM 6th Signalized Intersection Summary
1: SR 400 / US 19 & Martin Rd

1a. Existing 2023 AM
01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	142	259	142	180	74	67	861	45	66	1839	0
Future Volume (veh/h)	2	142	259	142	180	74	67	861	45	66	1839	0
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	2	143	262	143	182	75	68	870	45	67	1858	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	347	294	276	460	390	130	2037	909	369	2037	909
Arrive On Green	0.00	0.19	0.19	0.06	0.25	0.25	0.03	0.57	0.57	0.03	0.57	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	2	143	262	143	182	75	68	870	45	67	1858	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.1	10.1	24.2	9.5	12.2	5.6	2.4	20.7	1.9	2.3	70.1	0.0
Cycle Q Clear(g_c), s	0.1	10.1	24.2	9.5	12.2	5.6	2.4	20.7	1.9	2.3	70.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	238	347	294	276	460	390	130	2037	909	369	2037	909
V/C Ratio(X)	0.01	0.41	0.89	0.52	0.40	0.19	0.52	0.43	0.05	0.18	0.91	0.00
Avail Cap(c_a), veh/h	346	648	549	276	648	549	187	2037	909	426	2037	909
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.5	53.9	59.6	45.2	47.2	44.7	33.8	18.1	14.1	13.8	28.6	0.0
Incr Delay (d2), s/veh	0.0	0.8	9.2	1.7	0.6	0.2	3.2	0.7	0.1	0.2	7.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.8	10.4	4.4	5.7	2.2	1.5	8.1	0.7	0.9	29.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.5	54.7	68.8	46.8	47.8	45.0	37.0	18.7	14.2	14.0	36.3	0.0
LnGrp LOS	D	D	E	D	D	D	D	B	B	B	D	A
Approach Vol, veh/h		407			400			983			1925	
Approach Delay, s/veh		63.7			46.9			19.8			35.5	
Approach LOS		E			D			B			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.2	91.5	15.0	33.3	10.2	91.5	5.9	42.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	57.0	9.5	52.0	9.5	57.0	9.5	52.0				
Max Q Clear Time (g_c+I1), s	4.4	72.1	11.5	26.2	4.3	22.7	2.1	14.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	12.4	0.0	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			35.7									
HCM 6th LOS			D									

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	24	923	24	0	1893
Future Vol, veh/h	0	24	923	24	0	1893
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	26	1003	26	0	2058
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	502	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	515	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	515	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	12.4	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 515		-			
HCM Lane V/C Ratio	- 0.051		-			
HCM Control Delay (s)	- 12.4		-			
HCM Lane LOS	- B		-			
HCM 95th %tile Q(veh)	- 0.2		-			

Timings 3: SR 400 / US 19 & Settingdown Rd

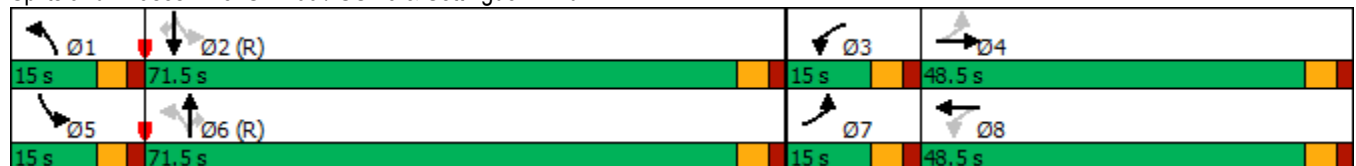
1a. Existing 2023 AM
01/31/2023

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	78	38	116	58	49	871	26	17	1591	74
Future Volume (vph)	78	38	116	58	49	871	26	17	1591	74
Lane Group Flow (vph)	79	226	117	59	49	880	26	17	1607	75
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	1	6		5	2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	7	4	3	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	5.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	15.0	48.5	15.0	28.5	28.5	15.0	28.5	28.5
Total Split (s)	15.0	48.5	15.0	48.5	15.0	71.5	71.5	15.0	71.5	71.5
Total Split (%)	10.0%	32.3%	10.0%	32.3%	10.0%	47.7%	47.7%	10.0%	47.7%	47.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.35	0.78	0.72	0.38	0.25	0.35	0.02	0.04	0.67	0.07
Control Delay	55.2	38.0	78.7	69.8	13.6	8.7	0.0	6.6	17.9	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.2	38.0	78.7	69.8	13.6	8.7	0.0	6.6	17.9	1.2
Queue Length 50th (ft)	67	57	102	56	11	134	0	4	468	0
Queue Length 95th (ft)	110	145	154	99	40	176	0	13	693	13
Internal Link Dist (ft)		708		636		1400			1039	
Turn Bay Length (ft)	90		110		490		410	515		375
Base Capacity (vph)	223	585	162	534	226	2518	1154	478	2391	1101
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.39	0.72	0.11	0.22	0.35	0.02	0.04	0.67	0.07

Intersection Summary

Cycle Length: 150
 Actuated Cycle Length: 150
 Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



HCM 6th Signalized Intersection Summary

3: SR 400 / US 19 & Settingdown Rd

1a. Existing 2023 AM

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	38	186	116	58	0	49	871	26	17	1591	74
Future Volume (veh/h)	78	38	186	116	58	0	49	871	26	17	1591	74
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	79	38	0	117	59	0	49	880	26	17	1607	75
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	169	75		188	93		244	2605	1162	475	2562	1143
Arrive On Green	0.05	0.04	0.00	0.06	0.05	0.00	0.03	0.73	0.73	0.02	0.72	0.72
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	79	38	0	117	59	0	49	880	26	17	1607	75
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	6.3	3.0	0.0	9.5	4.6	0.0	1.1	13.2	0.7	0.4	34.5	2.1
Cycle Q Clear(g_c), s	6.3	3.0	0.0	9.5	4.6	0.0	1.1	13.2	0.7	0.4	34.5	2.1
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	169	75		188	93		244	2605	1162	475	2562	1143
V/C Ratio(X)	0.47	0.51		0.62	0.63		0.20	0.34	0.02	0.04	0.63	0.07
Avail Cap(c_a), veh/h	186	536		188	536		305	2605	1162	558	2562	1143
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.5	70.6	0.0	64.6	69.9	0.0	9.6	7.1	5.4	5.6	10.7	6.1
Incr Delay (d2), s/veh	2.0	5.3	0.0	6.2	6.9	0.0	0.4	0.4	0.0	0.0	1.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	1.5	0.0	4.6	2.4	0.0	0.4	4.3	0.2	0.1	11.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	75.8	0.0	70.7	76.8	0.0	10.0	7.5	5.5	5.7	11.8	6.2
LnGrp LOS	E	E		E	E		A	A	A	A	B	A
Approach Vol, veh/h		117			176			955			1699	
Approach Delay, s/veh		69.6			72.8			7.5			11.5	
Approach LOS		E			E			A			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.9	113.7	15.0	11.5	8.0	115.5	13.5	13.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	66.0	9.5	43.0	9.5	66.0	9.5	43.0				
Max Q Clear Time (g_c+I1), s	3.1	36.5	11.5	5.0	2.4	15.2	8.3	6.6				
Green Ext Time (p_c), s	0.0	22.5	0.0	0.1	0.0	13.9	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			16.2									
HCM 6th LOS			B									
Notes												
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection								
Int Delay, s/veh	2.7							
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↖	↑	↖	↗		
Traffic Vol, veh/h	41	39	94	161	11	13		
Future Vol, veh/h	41	39	94	161	11	13		
Conflicting Peds, #/hr	0	0	0	0	0	0		
Sign Control	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	Yield	-	None	-	Yield		
Storage Length	-	200	190	-	0	-		
Veh in Median Storage, #	0	-	-	0	0	-		
Grade, %	0	-	-	0	0	-		
Peak Hour Factor	89	89	89	89	89	89		
Heavy Vehicles, %	2	2	2	2	2	2		
Mvmt Flow	46	44	106	181	12	15		
Major/Minor	Major1		Major2		Minor1			
Conflicting Flow All	0	0	46	0	439	46		
Stage 1	-	-	-	-	46	-		
Stage 2	-	-	-	-	393	-		
Critical Hdwy	-	-	4.12	-	6.42	6.22		
Critical Hdwy Stg 1	-	-	-	-	5.42	-		
Critical Hdwy Stg 2	-	-	-	-	5.42	-		
Follow-up Hdwy	-	-	2.218	-	3.518	3.318		
Pot Cap-1 Maneuver	-	-	1562	-	575	1023		
Stage 1	-	-	-	-	976	-		
Stage 2	-	-	-	-	682	-		
Platoon blocked, %	-	-		-				
Mov Cap-1 Maneuver	-	-	1562	-	536	1023		
Mov Cap-2 Maneuver	-	-	-	-	536	-		
Stage 1	-	-	-	-	976	-		
Stage 2	-	-	-	-	636	-		
Approach	EB		WB		NB			
HCM Control Delay, s	0		2.8		10.1			
HCM LOS	B							
Minor Lane/Major Mvmt	NBLn1		NBLn2		EBT	EBR	WBL	WBT
Capacity (veh/h)	536		1023		-	-	1562	-
HCM Lane V/C Ratio	0.023		0.014		-	-	0.068	-
HCM Control Delay (s)	11.9		8.6		-	-	7.5	-
HCM Lane LOS	B		A		-	-	A	-
HCM 95th %tile Q(veh)	0.1		0		-	-	0.2	-

Intersection

Intersection Delay, s/veh 8.2

Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	5	12	16	5	7	14	9	15	11	104	4
Future Vol, veh/h	6	5	12	16	5	7	14	9	15	11	104	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	7	16	22	7	9	19	12	20	15	141	5
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	7.7	8.1	7.6	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	38%	0%	29%	0%	42%	0%	96%
Vol Right, %	0%	62%	0%	71%	0%	58%	0%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	14	24	6	17	16	12	11	108
LT Vol	14	0	6	0	16	0	11	0
Through Vol	0	9	0	5	0	5	0	104
RT Vol	0	15	0	12	0	7	0	4
Lane Flow Rate	19	32	8	23	22	16	15	146
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.028	0.04	0.013	0.029	0.034	0.021	0.021	0.188
Departure Headway (Hd)	5.336	4.396	5.59	4.592	5.581	4.669	5.176	4.649
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	674	818	643	783	645	770	685	763
Service Time	3.046	2.106	3.296	2.298	3.286	2.374	2.96	2.433
HCM Lane V/C Ratio	0.028	0.039	0.012	0.029	0.034	0.021	0.022	0.191
HCM Control Delay	8.2	7.3	8.4	7.4	8.5	7.5	8.1	8.5
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0	0.1	0.1	0.1	0.1	0.7

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	239	383	33	116	22
Future Vol, veh/h	3	239	383	33	116	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	263	421	36	127	24
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	421	0	-	0	690	421
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	269	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1138	-	-	-	411	632
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	776	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1138	-	-	-	410	632
Mov Cap-2 Maneuver	-	-	-	-	410	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	776	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		16.6		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1138	-	-	-	410	632
HCM Lane V/C Ratio	0.003	-	-	-	0.311	0.038
HCM Control Delay (s)	8.2	-	-	-	17.7	10.9
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	1.3	0.1

Timings
1: SR 400 / US 19 & Martin Rd

1b. Existing 2023 PM
01/31/2023

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	8	136	117	95	168	215	186	2179	174	114	1126
Future Volume (vph)	8	136	117	95	168	215	186	2179	174	114	1126
Lane Group Flow (vph)	8	137	118	96	170	217	188	2201	176	115	1137
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8		1	6		5	2
Permitted Phases	4		4	8		8	6		6	2	
Detector Phase	7	4	4	3	8	8	1	6	6	5	2
Switch Phase											
Minimum Initial (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	15.0	50.5	50.5	15.0	57.5	57.5	15.0	38.5	38.5	15.0	27.5
Total Split (s)	15.0	57.5	57.5	15.0	57.5	57.5	17.0	62.5	62.5	15.0	60.5
Total Split (%)	10.0%	38.3%	38.3%	10.0%	38.3%	38.3%	11.3%	41.7%	41.7%	10.0%	40.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.04	0.66	0.42	0.44	0.47	0.45	0.48	1.02	0.17	0.67	0.59
Control Delay	44.1	77.7	13.6	54.7	58.3	9.3	12.3	52.5	7.1	48.4	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	77.7	13.6	54.7	58.3	9.3	12.3	52.5	7.1	48.4	23.4
Queue Length 50th (ft)	6	131	0	79	146	0	53	~1094	29	67	277
Queue Length 95th (ft)	21	195	58	126	233	74	102	#1480	79	143	394
Internal Link Dist (ft)		436			404			1010			1201
Turn Bay Length (ft)	40		90	165		115	550		165	510	
Base Capacity (vph)	248	645	625	219	645	690	393	2166	1007	182	1919
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.21	0.19	0.44	0.26	0.31	0.48	1.02	0.17	0.63	0.59

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

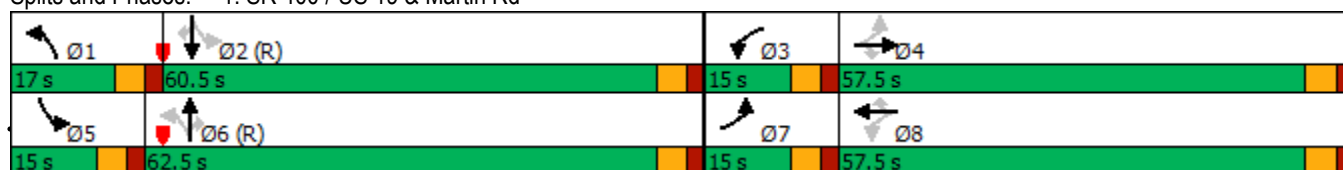
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: SR 400 / US 19 & Martin Rd



HCM 6th Signalized Intersection Summary
1: SR 400 / US 19 & Martin Rd

1b. Existing 2023 PM
01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	136	117	95	168	215	186	2179	174	114	1126	0
Future Volume (veh/h)	8	136	117	95	168	215	186	2179	174	114	1126	0
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	8	137	118	96	170	217	188	2201	176	115	1137	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	203	172	196	295	250	369	2277	1015	137	2255	1006
Arrive On Green	0.01	0.11	0.11	0.06	0.16	0.16	0.05	0.64	0.64	0.05	0.63	0.00
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	8	137	118	96	170	217	188	2201	176	115	1137	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.6	10.6	10.8	7.0	12.6	20.0	5.6	87.7	6.7	4.8	25.8	0.0
Cycle Q Clear(g_c), s	0.6	10.6	10.8	7.0	12.6	20.0	5.6	87.7	6.7	4.8	25.8	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	138	203	172	196	295	250	369	2277	1015	137	2255	1006
V/C Ratio(X)	0.06	0.68	0.69	0.49	0.58	0.87	0.51	0.97	0.17	0.84	0.50	0.00
Avail Cap(c_a), veh/h	234	648	549	203	648	549	414	2277	1015	169	2255	1006
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	58.7	64.3	64.4	53.8	58.5	61.6	11.8	25.4	10.9	45.7	14.7	0.0
Incr Delay (d2), s/veh	0.2	3.9	4.8	1.9	1.8	8.9	1.1	12.5	0.4	25.2	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	5.2	4.5	3.2	6.1	8.6	2.0	35.8	2.4	5.2	9.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.9	68.3	69.2	55.7	60.3	70.5	12.9	38.0	11.3	70.8	15.5	0.0
LnGrp LOS	E	E	E	E	E	E	B	D	B	E	B	A
Approach Vol, veh/h		263			483			2565			1252	
Approach Delay, s/veh		68.4			64.0			34.3			20.6	
Approach LOS		E			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.2	100.7	14.3	21.7	12.3	101.6	6.9	29.2				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	11.5	55.0	9.5	52.0	9.5	57.0	9.5	52.0				
Max Q Clear Time (g_c+I1), s	7.6	27.8	9.0	12.8	6.8	89.7	2.6	22.0				
Green Ext Time (p_c), s	0.2	14.7	0.0	1.1	0.1	0.0	0.0	1.6				
Intersection Summary												
HCM 6th Ctrl Delay			35.6									
HCM 6th LOS			D									
Notes												
User approved pedestrian interval to be less than phase max green.												

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	12	2327	14	0	1240
Future Vol, veh/h	0	12	2327	14	0	1240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	13	2529	15	0	1348
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	1265	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	160	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	160	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	29.5	0	0			
HCM LOS	D					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 160		-			
HCM Lane V/C Ratio	- 0.082		-			
HCM Control Delay (s)	- 29.5		-			
HCM Lane LOS	- D		-			
HCM 95th %tile Q(veh)	- 0.3		-			

Timings
3: SR 400 / US 19 & Settingdown Rd

1b. Existing 2023 PM
01/31/2023

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	132	42	33	32	99	2162	80	12	1121	104
Future Volume (vph)	132	42	33	32	99	2162	80	12	1121	104
Lane Group Flow (vph)	133	129	33	50	100	2184	81	12	1132	105
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	1	6		5	2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	7	4	3	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	5.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	15.0	48.5	15.0	28.5	28.5	15.0	28.5	28.5
Total Split (s)	15.0	48.5	15.0	48.5	15.0	71.5	71.5	15.0	71.5	71.5
Total Split (%)	10.0%	32.3%	10.0%	32.3%	10.0%	47.7%	47.7%	10.0%	47.7%	47.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.73	0.65	0.22	0.36	0.28	0.83	0.07	0.10	0.47	0.09
Control Delay	80.0	46.0	54.2	50.9	9.6	20.8	5.0	7.7	13.1	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.0	46.0	54.2	50.9	9.6	20.8	5.0	7.7	13.1	2.2
Queue Length 50th (ft)	120	57	28	30	34	525	5	2	257	0
Queue Length 95th (ft)	177	125	57	72	m53	m681	m14	10	389	25
Internal Link Dist (ft)		708		636		1400			1039	
Turn Bay Length (ft)	90		110		490		410	515		375
Base Capacity (vph)	182	530	171	517	369	2622	1198	163	2414	1113
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.24	0.19	0.10	0.27	0.83	0.07	0.07	0.47	0.09

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

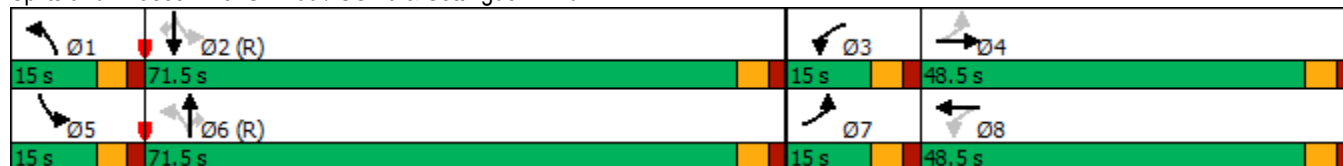
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



HCM 6th Signalized Intersection Summary

3: SR 400 / US 19 & Settingdown Rd

1b. Existing 2023 PM

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	42	86	33	32	18	99	2162	80	12	1121	104
Future Volume (veh/h)	132	42	86	33	32	18	99	2162	80	12	1121	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	133	42	0	33	32	0	100	2184	81	12	1132	105
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	146		146	74		370	2620	1169	124	2550	1138
Arrive On Green	0.06	0.08	0.00	0.02	0.04	0.00	0.03	0.74	0.74	0.01	0.72	0.72
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	133	42	0	33	32	0	100	2184	81	12	1132	105
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	9.5	3.2	0.0	2.6	2.5	0.0	2.2	62.8	2.1	0.3	19.8	3.0
Cycle Q Clear(g_c), s	9.5	3.2	0.0	2.6	2.5	0.0	2.2	62.8	2.1	0.3	19.8	3.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	192	146		146	74		370	2620	1169	124	2550	1138
V/C Ratio(X)	0.69	0.29		0.23	0.43		0.27	0.83	0.07	0.10	0.44	0.09
Avail Cap(c_a), veh/h	192	536		215	536		424	2620	1169	214	2550	1138
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.9	65.2	0.0	66.9	70.4	0.0	6.6	13.4	5.5	18.4	8.8	6.4
Incr Delay (d2), s/veh	10.1	1.1	0.0	0.8	4.0	0.0	0.4	3.3	0.1	0.3	0.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	1.6	0.0	1.2	1.3	0.0	0.7	20.9	0.7	0.2	6.6	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.0	66.3	0.0	67.7	74.3	0.0	7.0	16.7	5.6	18.7	9.3	6.6
LnGrp LOS	E	E		E	E		A	B	A	B	A	A
Approach Vol, veh/h	175			65			2365			1249		
Approach Delay, s/veh	72.2			70.9			15.9			9.2		
Approach LOS	E			E			B			A		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	113.1	9.2	17.2	7.5	116.1	15.0	11.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	66.0	9.5	43.0	9.5	66.0	9.5	43.0				
Max Q Clear Time (g_c+I1), s	4.2	21.8	4.6	5.2	2.3	64.8	11.5	4.5				
Green Ext Time (p_c), s	0.1	20.0	0.0	0.2	0.0	1.2	0.0	0.1				

Intersection Summary

HCM 6th Ctrl Delay 17.2

HCM 6th LOS B

Notes

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

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

Intersection						
Int Delay, s/veh	2.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	119	4	22	66	17	38
Future Vol, veh/h	119	4	22	66	17	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	Yield	-	None	-	Yield
Storage Length	-	200	190	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	4	25	74	19	43
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	134	0	258	134
Stage 1	-	-	-	-	134	-
Stage 2	-	-	-	-	124	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1451	-	731	915
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1451	-	719	915
Mov Cap-2 Maneuver	-	-	-	-	719	-
Stage 1	-	-	-	-	892	-
Stage 2	-	-	-	-	887	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.9		9.4	
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	719	915	-	-	1451	-
HCM Lane V/C Ratio	0.027	0.047	-	-	0.017	-
HCM Control Delay (s)	10.1	9.1	-	-	7.5	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	5	6	4	4	9	4	43	6	6	38	4
Future Vol, veh/h	3	5	6	4	4	9	4	43	6	6	38	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	7	8	5	5	12	5	58	8	8	51	5
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	7.5	7.4	7.7	7.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	88%	0%	45%	0%	31%	0%	90%
Vol Right, %	0%	12%	0%	55%	0%	69%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	49	3	11	4	13	6	42
LT Vol	4	0	3	0	4	0	6	0
Through Vol	0	43	0	5	0	4	0	38
RT Vol	0	6	0	6	0	9	0	4
Lane Flow Rate	5	66	4	15	5	18	8	57
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.008	0.084	0.006	0.019	0.008	0.021	0.012	0.072
Departure Headway (Hd)	5.139	4.553	5.387	4.503	5.384	4.397	5.143	4.576
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	694	784	668	800	669	819	694	780
Service Time	2.886	2.299	3.087	2.203	3.084	2.097	2.89	2.323
HCM Lane V/C Ratio	0.007	0.084	0.006	0.019	0.007	0.022	0.012	0.073
HCM Control Delay	7.9	7.7	8.1	7.3	8.1	7.2	8	7.7
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.3	0	0.1	0	0.1	0	0.2

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	419	403	55	40	10
Future Vol, veh/h	3	419	403	55	40	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	460	443	60	44	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	443	0	-	0	909	443
Stage 1	-	-	-	-	443	-
Stage 2	-	-	-	-	466	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1117	-	-	-	305	615
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1117	-	-	-	304	615
Mov Cap-2 Maneuver	-	-	-	-	304	-
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	632	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		17.2		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1117	-	-	-	304	615
HCM Lane V/C Ratio	0.003	-	-	-	0.145	0.018
HCM Control Delay (s)	8.2	-	-	-	18.8	11
HCM Lane LOS	A	-	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5	0.1

Future “No-Build” Intersection Analysis

Intersection												
Int Delay, s/veh	18.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	284	0	0	81	0	1057	49	0	2142	0
Future Vol, veh/h	0	0	284	0	0	81	0	1057	49	0	2142	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Yield	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	165	-	-	395
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	287	0	0	82	0	1068	49	0	2164	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	1082	-	-	534	-	0	-	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	~ 213	0	0	491	0	-	0	0	-	0
Stage 1	0	0	-	0	0	-	0	-	0	0	-	0
Stage 2	0	0	-	0	0	-	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	-	~ 213	-	-	491	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	227.7		13.8		0		0					
HCM LOS	F		B									
Minor Lane/Major Mvmt	NBT EBLn1WBLn1		SBT									
Capacity (veh/h)	- 213 491		-									
HCM Lane V/C Ratio	- 1.347 0.167		-									
HCM Control Delay (s)	- 227.7 13.8		-									
HCM Lane LOS	- F B		-									
HCM 95th %tile Q(veh)	- 16 0.6		-									
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	56	1123	26	0	2129
Future Vol, veh/h	0	56	1123	26	0	2129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	61	1221	28	0	2314
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	611	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	437	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	437	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	14.6	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 437		-			
HCM Lane V/C Ratio	- 0.139		-			
HCM Control Delay (s)	- 14.6		-			
HCM Lane LOS	- B		-			
HCM 95th %tile Q(veh)	- 0.5		-			

Timings
3: SR 400 / US 19 & Settingdown Rd

2a. No Build AM 2027
01/31/2023

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	87	83	199	115	102	991	85	119	1726	81
Future Volume (vph)	87	83	199	115	102	991	85	119	1726	81
Lane Group Flow (vph)	88	290	201	130	103	1001	86	120	1743	82
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	1	6		5	2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	7	4	3	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	5.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	15.0	48.5	15.0	28.5	28.5	15.0	28.5	28.5
Total Split (s)	23.0	49.0	23.0	49.0	15.0	61.0	61.0	17.0	63.0	63.0
Total Split (%)	15.3%	32.7%	15.3%	32.7%	10.0%	40.7%	40.7%	11.3%	42.0%	42.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.26	0.84	0.82	0.34	0.60	0.56	0.10	0.40	0.97	0.10
Control Delay	37.2	62.6	65.7	50.2	41.8	28.7	3.7	18.0	52.0	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.2	62.6	65.7	50.2	41.8	28.7	3.7	18.0	52.0	3.4
Queue Length 50th (ft)	62	203	151	106	48	348	0	47	860	0
Queue Length 95th (ft)	96	291	#237	160	120	503	28	92	#1239	25
Internal Link Dist (ft)		708		636		1400			1039	
Turn Bay Length (ft)	90		110		490		410	515		375
Base Capacity (vph)	416	541	254	534	181	1798	852	324	1791	849
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.54	0.79	0.24	0.57	0.56	0.10	0.37	0.97	0.10

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

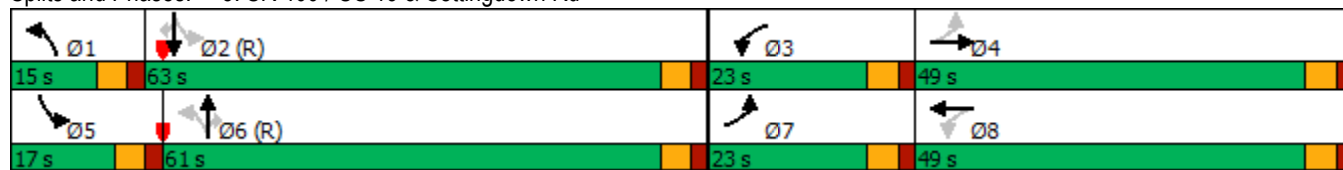
Natural Cycle: 150

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



HCM 6th Signalized Intersection Summary

3: SR 400 / US 19 & Settingdown Rd

2a. No Build AM 2027

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	83	204	199	115	14	102	991	85	119	1726	81
Future Volume (veh/h)	87	83	204	199	115	14	102	991	85	119	1726	81
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	88	84	0	201	116	0	103	1001	86	120	1743	82
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	112		276	221		184	2273	1014	373	2286	1020
Arrive On Green	0.06	0.06	0.00	0.12	0.12	0.00	0.03	0.64	0.64	0.04	0.64	0.64
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	88	84	0	201	116	0	103	1001	86	120	1743	82
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	6.9	6.6	0.0	15.5	8.7	0.0	3.0	21.2	3.1	3.5	51.5	2.9
Cycle Q Clear(g_c), s	6.9	6.6	0.0	15.5	8.7	0.0	3.0	21.2	3.1	3.5	51.5	2.9
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	112		276	221		184	2273	1014	373	2286	1020
V/C Ratio(X)	0.39	0.75		0.73	0.52		0.56	0.44	0.08	0.32	0.76	0.08
Avail Cap(c_a), veh/h	332	542		277	542		237	2273	1014	443	2286	1020
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(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.3	69.4	0.0	55.8	62.2	0.0	23.0	13.6	10.3	10.3	18.7	10.1
Incr Delay (d2), s/veh	1.1	9.4	0.0	9.2	1.9	0.0	2.6	0.6	0.2	0.5	2.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	3.4	0.0	7.6	4.2	0.0	1.9	7.9	1.1	1.3	19.3	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.4	78.8	0.0	65.0	64.1	0.0	25.6	14.2	10.5	10.8	21.2	10.2
LnGrp LOS	E	E		E	E		C	B	B	B	C	B
Approach Vol, veh/h	172			317			1190			1945		
Approach Delay, s/veh	70.4			64.7			14.9			20.1		
Approach LOS	E			E			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	102.0	23.0	14.5	11.1	101.4	14.2	23.2				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	57.5	17.5	43.5	11.5	55.5	17.5	43.5				
Max Q Clear Time (g_c+I1), s	5.0	53.5	17.5	8.6	5.5	23.2	8.9	10.7				
Green Ext Time (p_c), s	0.1	3.8	0.0	0.4	0.1	14.7	0.1	0.6				
Intersection Summary												
HCM 6th Ctrl Delay				24.7								
HCM 6th LOS				C								
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection												
Int Delay, s/veh	7.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	152	72	61	109	188	33	32	33	22	16	25	105
Future Vol, veh/h	152	72	61	109	188	33	32	33	22	16	25	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	Yield
Storage Length	50	-	200	190	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	171	81	69	122	211	37	36	37	25	18	28	118
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	248	0	0	81	0	0	911	915	81	897	878	211
Stage 1	-	-	-	-	-	-	423	423	-	455	455	-
Stage 2	-	-	-	-	-	-	488	492	-	442	423	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1318	-	-	1517	-	-	255	273	979	261	287	829
Stage 1	-	-	-	-	-	-	609	588	-	585	569	-
Stage 2	-	-	-	-	-	-	561	548	-	594	588	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1318	-	-	1517	-	-	168	218	979	188	230	829
Mov Cap-2 Maneuver	-	-	-	-	-	-	168	218	-	188	230	-
Stage 1	-	-	-	-	-	-	530	512	-	509	523	-
Stage 2	-	-	-	-	-	-	419	504	-	467	512	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.3			2.5			28.6			14.7		
HCM LOS							D			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	190	979	1318	-	-	1517	-	-	212	829		
HCM Lane V/C Ratio	0.384	0.025	0.13	-	-	0.081	-	-	0.217	0.142		
HCM Control Delay (s)	35.3	8.8	8.1	-	-	7.6	-	-	26.6	10.1		
HCM Lane LOS	E	A	A	-	-	A	-	-	D	B		
HCM 95th %tile Q(veh)	1.7	0.1	0.4	-	-	0.3	-	-	0.8	0.5		

Intersection

Intersection Delay, s/veh

9

Intersection LOS

A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	5	13	18	5	8	45	71	16	12	163	4
Future Vol, veh/h	7	5	13	18	5	8	45	71	16	12	163	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	7	18	24	7	11	61	96	22	16	220	5
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	8.3	8.6	8.5	9.6
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	82%	0%	28%	0%	38%	0%	98%
Vol Right, %	0%	18%	0%	72%	0%	62%	0%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	45	87	7	18	18	13	12	167
LT Vol	45	0	7	0	18	0	12	0
Through Vol	0	71	0	5	0	5	0	163
RT Vol	0	16	0	13	0	8	0	4
Lane Flow Rate	61	118	9	24	24	18	16	226
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.092	0.157	0.016	0.034	0.041	0.025	0.024	0.306
Departure Headway (Hd)	5.44	4.809	6.108	5.094	6.094	5.156	5.395	4.876
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	660	748	586	702	588	694	665	738
Service Time	3.161	2.529	3.841	2.827	3.826	2.888	3.114	2.596
HCM Lane V/C Ratio	0.092	0.158	0.015	0.034	0.041	0.026	0.024	0.306
HCM Control Delay	8.7	8.4	8.9	8	9.1	8	8.2	9.7
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.3	0.6	0	0.1	0.1	0.1	0.1	1.3

Intersection						
Int Delay, s/veh	4.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	34	67	126	176	24
Future Vol, veh/h	3	34	67	126	176	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	37	74	138	193	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	74	0	-	0	117	74
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1526	-	-	-	879	988
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	979	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1526	-	-	-	877	988
Mov Cap-2 Maneuver	-	-	-	-	877	-
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	979	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.6	0		10.1		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1526	-	-	-	877	988
HCM Lane V/C Ratio	0.002	-	-	-	0.221	0.027
HCM Control Delay (s)	7.4	-	-	-	10.3	8.7
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.8	0.1

Intersection												
Int Delay, s/veh	17.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	128	0	0	236	0	2525	191	0	1430	0
Future Vol, veh/h	0	0	128	0	0	236	0	2525	191	0	1430	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Yield	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	165	-	-	395
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	129	0	0	238	0	2551	193	0	1444	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	722	-	-	1276	-	0	-	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	369	0	0	~ 158	0	-	0	0	-	0
Stage 1	0	0	-	0	0	-	0	-	0	0	-	0
Stage 2	0	0	-	0	0	-	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	-	369	-	-	~ 158	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	19.9		\$ 311.3		0		0					
HCM LOS	C		F									
Minor Lane/Major Mvmt	NBT EBLn1WBLn1		SBT									
Capacity (veh/h)	-		369	158	-							
HCM Lane V/C Ratio	-		0.35	1.509	-							
HCM Control Delay (s)	-		19.9	\$ 311.3	-							
HCM Lane LOS	-		C	F	-							
HCM 95th %tile Q(veh)	-		1.5	15.7	-							
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon						

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	41	2678	15	0	1430
Future Vol, veh/h	0	41	2678	15	0	1430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	2911	16	0	1554
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	1456	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	119	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	119	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	52.3	0		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 119		-			
HCM Lane V/C Ratio	- 0.374		-			
HCM Control Delay (s)	- 52.3		-			
HCM Lane LOS	- F		-			
HCM 95th %tile Q(veh)	- 1.5		-			

Timings
3: SR 400 / US 19 & Settingdown Rd

2b. No Build PM 2027
01/31/2023

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	154	83	138	97	188	2396	140	118	1198	114
Future Volume (vph)	154	83	138	97	188	2396	140	118	1198	114
Lane Group Flow (vph)	156	179	139	138	190	2420	141	119	1210	115
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	1	6		5	2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	7	4	3	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	5.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	15.0	48.5	15.0	28.5	28.5	15.0	28.5	28.5
Total Split (s)	23.0	50.0	20.0	50.0	20.0	62.0	62.0	15.0	57.0	57.0
Total Split (%)	15.3%	33.3%	13.3%	33.3%	13.3%	41.3%	41.3%	10.0%	38.0%	38.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.58	0.74	0.60	0.68	0.55	1.19	0.15	0.68	0.66	0.13
Control Delay	54.5	67.0	56.4	73.6	18.3	122.5	6.8	52.8	30.2	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	67.0	56.4	73.6	18.3	122.5	6.8	52.8	30.2	5.4
Queue Length 50th (ft)	126	134	111	119	63	~1500	18	65	451	4
Queue Length 95th (ft)	182	209	164	187	135	#1793	62	138	631	44
Internal Link Dist (ft)		708		636		1400			1039	
Turn Bay Length (ft)	90		110		490		410	515		375
Base Capacity (vph)	292	570	242	538	350	2027	948	182	1847	877
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.31	0.57	0.26	0.54	1.19	0.15	0.65	0.66	0.13

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

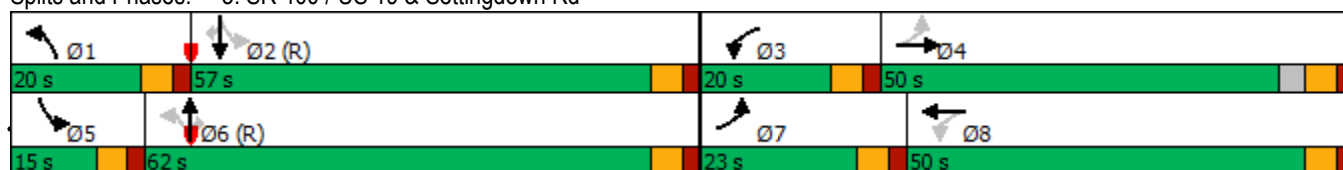
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



HCM 6th Signalized Intersection Summary

3: SR 400 / US 19 & Settingdown Rd

2b. No Build PM 2027

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	83	94	138	97	40	188	2396	140	118	1198	114
Future Volume (veh/h)	154	83	94	138	97	40	188	2396	140	118	1198	114
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	156	84	0	139	98	0	190	2420	141	119	1210	115
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	237	145		244	127		328	2270	1012	141	2271	1013
Arrive On Green	0.09	0.08	0.00	0.09	0.07	0.00	0.05	0.64	0.64	0.05	0.64	0.64
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	156	84	0	139	98	0	190	2420	141	119	1210	115
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	12.1	6.5	0.0	10.8	7.7	0.0	5.5	95.8	5.3	5.8	28.0	4.2
Cycle Q Clear(g_c), s	12.1	6.5	0.0	10.8	7.7	0.0	5.5	95.8	5.3	5.8	28.0	4.2
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	237	145		244	127		328	2270	1012	141	2271	1013
V/C Ratio(X)	0.66	0.58		0.57	0.77		0.58	1.07	0.14	0.84	0.53	0.11
Avail Cap(c_a), veh/h	277	555		265	555		407	2270	1012	161	2271	1013
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.9	66.9	0.0	58.4	68.7	0.0	12.8	27.1	10.7	50.3	14.8	10.5
Incr Delay (d2), s/veh	4.4	3.7	0.0	2.5	9.4	0.0	1.6	39.4	0.3	29.0	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	3.2	0.0	5.0	4.0	0.0	2.0	47.1	1.9	5.5	10.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.3	70.5	0.0	60.9	78.1	0.0	14.5	66.5	11.0	79.3	15.7	10.8
LnGrp LOS	E	E		E	E		B	F	B	E	B	B
Approach Vol, veh/h	240				237				2751			
Approach Delay, s/veh	65.2				68.0				60.1			
Approach LOS	E				E				E			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.3	101.3	18.3	17.1	13.3	101.3	19.7	15.7				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	14.5	51.5	14.5	44.5	9.5	56.5	17.5	44.5				
Max Q Clear Time (g_c+I1), s	7.5	30.0	12.8	8.5	7.8	97.8	14.1	9.7				
Green Ext Time (p_c), s	0.3	14.2	0.1	0.4	0.0	0.0	0.1	0.5				

Intersection Summary

HCM 6th Ctrl Delay 48.5

HCM 6th LOS D

Notes

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

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

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	132	161	35	33	120	11	37	30	49	13	35	117
Future Vol, veh/h	132	161	35	33	120	11	37	30	49	13	35	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	Yield
Storage Length	50	-	200	190	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	148	181	39	37	135	12	42	34	55	15	39	131
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	147	0	0	181	0	0	712	698	181	703	686	135
Stage 1	-	-	-	-	-	-	477	477	-	209	209	-
Stage 2	-	-	-	-	-	-	235	221	-	494	477	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1435	-	-	1394	-	-	347	364	862	352	370	914
Stage 1	-	-	-	-	-	-	569	556	-	793	729	-
Stage 2	-	-	-	-	-	-	768	720	-	557	556	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1435	-	-	1394	-	-	244	318	862	274	323	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	244	318	-	274	323	-
Stage 1	-	-	-	-	-	-	510	499	-	711	709	-
Stage 2	-	-	-	-	-	-	605	701	-	436	499	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.1			1.5			17.4			12.4		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	272	862	1435	-	-	1394	-	-	308	914		
HCM Lane V/C Ratio	0.277	0.064	0.103	-	-	0.027	-	-	0.175	0.144		
HCM Control Delay (s)	23.2	9.5	7.8	-	-	7.7	-	-	19.2	9.6		
HCM Lane LOS	C	A	A	-	-	A	-	-	C	A		
HCM 95th %tile Q(veh)	1.1	0.2	0.3	-	-	0.1	-	-	0.6	0.5		

Intersection

Intersection Delay, s/veh 8.6

Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	5	7	4	4	10	32	102	7	7	117	4
Future Vol, veh/h	3	5	7	4	4	10	32	102	7	7	117	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	7	9	5	5	14	43	138	9	9	158	5
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	8.1	8	8.5	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	94%	0%	42%	0%	29%	0%	97%
Vol Right, %	0%	6%	0%	58%	0%	71%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	109	3	12	4	14	7	121
LT Vol	32	0	3	0	4	0	7	0
Through Vol	0	102	0	5	0	4	0	117
RT Vol	0	7	0	7	0	10	0	4
Lane Flow Rate	43	147	4	16	5	19	9	164
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.062	0.19	0.007	0.023	0.009	0.026	0.014	0.217
Departure Headway (Hd)	5.197	4.651	5.936	5.022	5.932	4.926	5.31	4.786
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	681	760	606	716	606	730	678	755
Service Time	2.993	2.447	3.646	2.732	3.641	2.635	3.01	2.486
HCM Lane V/C Ratio	0.063	0.193	0.007	0.022	0.008	0.026	0.013	0.217
HCM Control Delay	8.3	8.6	8.7	7.9	8.7	7.8	8.1	8.8
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.2	0.7	0	0.1	0	0.1	0	0.8

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	185	154	143	119	11
Future Vol, veh/h	3	185	154	143	119	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	203	169	157	131	12
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	169	0	-	0	378	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	209	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1409	-	-	-	624	875
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	826	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1409	-	-	-	623	875
Mov Cap-2 Maneuver	-	-	-	-	623	-
Stage 1	-	-	-	-	859	-
Stage 2	-	-	-	-	826	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		12		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1409	-	-	-	623	875
HCM Lane V/C Ratio	0.002	-	-	-	0.21	0.014
HCM Control Delay (s)	7.6	-	-	-	12.3	9.2
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.8	0

Future “No-Build” Intersection Analysis with Improvements

Intersection												
Int Delay, s/veh	18.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	284	0	0	81	0	1057	49	0	2142	0
Future Vol, veh/h	0	0	284	0	0	81	0	1057	49	0	2142	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Yield	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	165	-	-	395
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	287	0	0	82	0	1068	49	0	2164	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	1082	-	-	534	-	0	-	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	~ 213	0	0	491	0	-	0	0	-	0
Stage 1	0	0	-	0	0	-	0	-	0	0	-	0
Stage 2	0	0	-	0	0	-	0	-	0	0	-	0
Platoon blocked, %							-					
Mov Cap-1 Maneuver	-	-	~ 213	-	-	491	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	227.7		13.8		0		0					
HCM LOS	F		B									
Minor Lane/Major Mvmt	NBT EBLn1WBLn1		SBT									
Capacity (veh/h)	- 213 491		-									
HCM Lane V/C Ratio	- 1.347 0.167		-									
HCM Control Delay (s)	- 227.7 13.8		-									
HCM Lane LOS	- F B		-									
HCM 95th %tile Q(veh)	- 16 0.6		-									
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	56	1123	26	0	2129
Future Vol, veh/h	0	56	1123	26	0	2129
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	61	1221	28	0	2314
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	611	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	437	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	437	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.6	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 437		-			
HCM Lane V/C Ratio	- 0.139		-			
HCM Control Delay (s)	- 14.6		-			
HCM Lane LOS	- B		-			
HCM 95th %tile Q(veh)	- 0.5		-			

Timings
3: SR 400 / US 19 & Settingdown Rd

2a. No Build AM 2027 - Sys Imprv
01/31/2023

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	87	83	204	199	115	102	991	119	1726	81
Future Volume (vph)	87	83	204	199	115	102	991	119	1726	81
Lane Group Flow (vph)	88	84	206	201	130	103	1087	120	1743	82
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		3	8	1	6	5	2	
Permitted Phases	4		4	8		6		2		2
Detector Phase	7	4	4	3	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	5.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	47.5	15.0	48.5	15.0	28.5	15.0	28.5	28.5
Total Split (s)	18.0	24.0	24.0	16.0	22.0	15.0	65.0	15.0	65.0	65.0
Total Split (%)	15.0%	20.0%	20.0%	13.3%	18.3%	12.5%	54.2%	12.5%	54.2%	54.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.34	0.42	0.63	0.68	0.62	0.57	0.39	0.35	0.89	0.09
Control Delay	38.7	54.7	20.4	51.8	62.1	30.0	16.3	11.1	31.9	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.7	54.7	20.4	51.8	62.1	30.0	16.3	11.1	31.9	1.1
Queue Length 50th (ft)	55	62	24	133	95	26	167	31	601	0
Queue Length 95th (ft)	94	108	98	196	157	90	226	61	#873	10
Internal Link Dist (ft)		708			638		1397		2910	
Turn Bay Length (ft)	210		150	210		490		515		375
Base Capacity (vph)	296	287	389	296	255	203	2781	360	1956	929
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.29	0.53	0.68	0.51	0.51	0.39	0.33	0.89	0.09

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

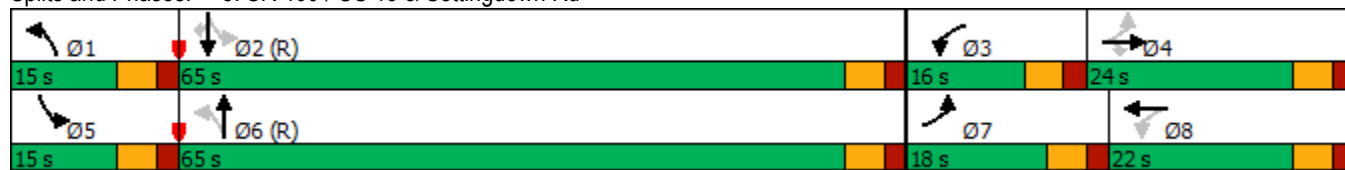
Natural Cycle: 150

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



HCM 6th Signalized Intersection Summary

3: SR 400 / US 19 & Settingdown Rd

2a. No Build AM 2027 - Sys Imprv

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	83	204	199	115	14	102	991	85	119	1726	81
Future Volume (veh/h)	87	83	204	199	115	14	102	991	85	119	1726	81
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	88	84	0	201	116	0	103	1001	86	120	1743	82
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	117		240	169		200	2997	257	406	2226	993
Arrive On Green	0.06	0.06	0.00	0.09	0.09	0.00	0.04	0.63	0.63	0.04	0.63	0.63
Sat Flow, veh/h	1781	1870	1585	1781	1870	0	1781	4790	411	1781	3554	1585
Grp Volume(v), veh/h	88	84	0	201	116	0	103	711	376	120	1743	82
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	0	1781	1702	1796	1781	1777	1585
Q Serve(g_s), s	5.5	5.3	0.0	10.5	7.2	0.0	2.5	11.9	11.9	2.9	43.2	2.4
Cycle Q Clear(g_c), s	5.5	5.3	0.0	10.5	7.2	0.0	2.5	11.9	11.9	2.9	43.2	2.4
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	205	117		240	169		200	2130	1124	406	2226	993
V/C Ratio(X)	0.43	0.72		0.84	0.69		0.52	0.33	0.33	0.30	0.78	0.08
Avail Cap(c_a), veh/h	284	288		240	257		269	2130	1124	474	2226	993
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(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.7	55.2	0.0	50.0	52.9	0.0	20.1	10.6	10.6	7.9	16.4	8.8
Incr Delay (d2), s/veh	1.4	8.0	0.0	22.1	4.8	0.0	2.0	0.4	0.8	0.4	2.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	2.7	0.0	2.3	3.6	0.0	1.5	3.9	4.3	1.0	15.3	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.1	63.2	0.0	72.1	57.8	0.0	22.1	11.0	11.4	8.3	19.3	9.0
LnGrp LOS	D	E		E	E		C	B	B	A	B	A
Approach Vol, veh/h	172			317			1190			1945		
Approach Delay, s/veh	56.5			66.8			12.1			18.2		
Approach LOS	E			E			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.3	80.7	16.0	13.0	10.4	80.6	12.6	16.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	59.5	10.5	18.5	9.5	59.5	12.5	16.5				
Max Q Clear Time (g_c+l1), s	4.5	45.2	12.5	7.3	4.9	13.9	7.5	9.2				
Green Ext Time (p_c), s	0.1	12.7	0.0	0.2	0.1	16.5	0.1	0.2				

Intersection Summary

HCM 6th Ctrl Delay 22.3

HCM 6th LOS C

Notes

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

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

Intersection												
Int Delay, s/veh	7.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	152	72	61	109	188	33	32	33	22	16	25	105
Future Vol, veh/h	152	72	61	109	188	33	32	33	22	16	25	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	Yield
Storage Length	50	-	200	190	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	171	81	69	122	211	37	36	37	25	18	28	118
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	248	0	0	81	0	0	911	915	81	897	878	211
Stage 1	-	-	-	-	-	-	423	423	-	455	455	-
Stage 2	-	-	-	-	-	-	488	492	-	442	423	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1318	-	-	1517	-	-	255	273	979	261	287	829
Stage 1	-	-	-	-	-	-	609	588	-	585	569	-
Stage 2	-	-	-	-	-	-	561	548	-	594	588	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1318	-	-	1517	-	-	168	218	979	188	230	829
Mov Cap-2 Maneuver	-	-	-	-	-	-	168	218	-	188	230	-
Stage 1	-	-	-	-	-	-	530	512	-	509	523	-
Stage 2	-	-	-	-	-	-	419	504	-	467	512	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.3			2.5			28.6			14.7		
HCM LOS							D			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	190	979	1318	-	-	1517	-	-	212	829		
HCM Lane V/C Ratio	0.384	0.025	0.13	-	-	0.081	-	-	0.217	0.142		
HCM Control Delay (s)	35.3	8.8	8.1	-	-	7.6	-	-	26.6	10.1		
HCM Lane LOS	E	A	A	-	-	A	-	-	D	B		
HCM 95th %tile Q(veh)	1.7	0.1	0.4	-	-	0.3	-	-	0.8	0.5		

Intersection

Intersection Delay, s/veh

9

Intersection LOS

A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	5	13	18	5	8	45	71	16	12	163	4
Future Vol, veh/h	7	5	13	18	5	8	45	71	16	12	163	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	7	18	24	7	11	61	96	22	16	220	5
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	8.3	8.6	8.5	9.6
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	82%	0%	28%	0%	38%	0%	98%
Vol Right, %	0%	18%	0%	72%	0%	62%	0%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	45	87	7	18	18	13	12	167
LT Vol	45	0	7	0	18	0	12	0
Through Vol	0	71	0	5	0	5	0	163
RT Vol	0	16	0	13	0	8	0	4
Lane Flow Rate	61	118	9	24	24	18	16	226
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.092	0.157	0.016	0.034	0.041	0.025	0.024	0.306
Departure Headway (Hd)	5.44	4.809	6.108	5.094	6.094	5.156	5.395	4.876
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	660	748	586	702	588	694	665	738
Service Time	3.161	2.529	3.841	2.827	3.826	2.888	3.114	2.596
HCM Lane V/C Ratio	0.092	0.158	0.015	0.034	0.041	0.026	0.024	0.306
HCM Control Delay	8.7	8.4	8.9	8	9.1	8	8.2	9.7
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.3	0.6	0	0.1	0.1	0.1	0.1	1.3

Intersection						
Int Delay, s/veh	4.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	34	67	126	176	24
Future Vol, veh/h	3	34	67	126	176	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	37	74	138	193	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	74	0	-	0	117	74
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1526	-	-	-	879	988
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	979	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1526	-	-	-	877	988
Mov Cap-2 Maneuver	-	-	-	-	877	-
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	979	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.6	0		10.1		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1526	-	-	-	877	988
HCM Lane V/C Ratio	0.002	-	-	-	0.221	0.027
HCM Control Delay (s)	7.4	-	-	-	10.3	8.7
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.8	0.1

Intersection																						
Int Delay, s/veh	17.6																					
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR										
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗										
Traffic Vol, veh/h	0	0	128	0	0	236	0	2525	191	0	1430	0										
Future Vol, veh/h	0	0	128	0	0	236	0	2525	191	0	1430	0										
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0										
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free										
RT Channelized	-	-	Yield	-	-	Yield	-	-	Free	-	-	Free										
Storage Length	-	-	-	-	-	-	-	-	165	-	-	395										
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-										
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-										
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99										
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2										
Mvmt Flow	0	0	129	0	0	238	0	2551	193	0	1444	0										
Major/Minor	Minor2		Minor1		Major1		Major2															
Conflicting Flow All	-	-	722	-	-	1276	-	0	-	-	-	0										
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-										
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-										
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-										
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-										
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-										
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-										
Pot Cap-1 Maneuver	0	0	369	0	0	~ 158	0	-	0	0	-	0										
Stage 1	0	0	-	0	0	-	0	-	0	0	-	0										
Stage 2	0	0	-	0	0	-	0	-	0	0	-	0										
Platoon blocked, %							-															
Mov Cap-1 Maneuver	-	-	369	-	-	~ 158	-	-	-	-	-	-										
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-										
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-										
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-										
Approach	EB		WB		NB		SB															
HCM Control Delay, s	19.9		\$ 311.3		0		0															
HCM LOS	C		F																			
Minor Lane/Major Mvmt	NBT EBLn1WBLn1		SBT																			
Capacity (veh/h)	-		369	158	-																	
HCM Lane V/C Ratio	-		0.35	1.509	-																	
HCM Control Delay (s)	-		19.9	\$ 311.3	-																	
HCM Lane LOS	-		C	F	-																	
HCM 95th %tile Q(veh)	-		1.5	15.7	-																	
Notes																						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon																						

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	41	2678	15	0	1430
Future Vol, veh/h	0	41	2678	15	0	1430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	45	2911	16	0	1554
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	1456	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	119	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	119	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB		NB		SB	
HCM Control Delay, s	52.3		0		0	
HCM LOS	F					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 119		-			
HCM Lane V/C Ratio	- 0.374		-			
HCM Control Delay (s)	- 52.3		-			
HCM Lane LOS	- F		-			
HCM 95th %tile Q(veh)	- 1.5		-			

Timings
3: SR 400 / US 19 & Settingdown Rd

2b. No Build PM 2027 - Sys Imprv
01/31/2023

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	154	83	94	138	97	188	2396	118	1198	114
Future Volume (vph)	154	83	94	138	97	188	2396	118	1198	114
Lane Group Flow (vph)	156	84	95	139	138	190	2561	119	1210	115
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		3	8	1	6	5	2	
Permitted Phases	4		4	8		6		2		2
Detector Phase	7	4	4	3	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	5.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	47.5	15.0	48.5	15.0	28.5	15.0	28.5	28.5
Total Split (s)	17.0	22.0	22.0	15.0	20.0	15.0	68.0	15.0	68.0	68.0
Total Split (%)	14.2%	18.3%	18.3%	12.5%	16.7%	12.5%	56.7%	12.5%	56.7%	56.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.61	0.38	0.32	0.51	0.70	0.67	0.92	0.64	0.63	0.13
Control Delay	48.1	53.1	6.7	44.5	65.2	23.0	31.9	36.7	21.4	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.1	53.1	6.7	44.5	65.2	23.0	31.9	36.7	21.4	2.5
Queue Length 50th (ft)	99	60	0	87	93	53	662	40	346	0
Queue Length 95th (ft)	161	111	29	145	162	#112	#824	104	421	25
Internal Link Dist (ft)		708			638		1397		2910	
Turn Bay Length (ft)	210		150	210		490		515		375
Base Capacity (vph)	263	256	323	276	227	288	2782	202	1922	916
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.33	0.29	0.50	0.61	0.66	0.92	0.59	0.63	0.13

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

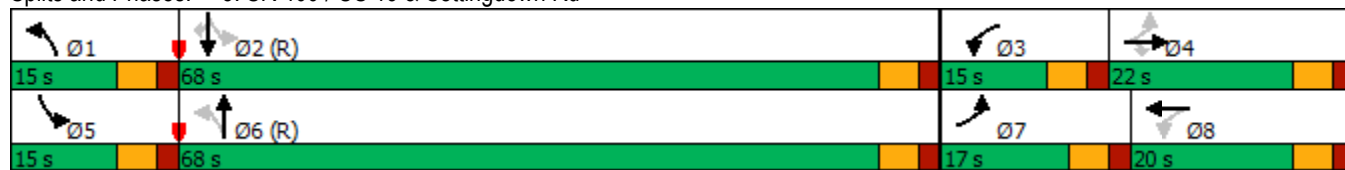
Natural Cycle: 150

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



HCM 6th Signalized Intersection Summary 3: SR 400 / US 19 & Settingdown Rd

2b. No Build PM 2027 - Sys Imprv
01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	83	94	138	97	40	188	2396	140	118	1198	114
Future Volume (veh/h)	154	83	94	138	97	40	188	2396	140	118	1198	114
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	156	84	0	139	98	0	190	2420	141	119	1210	115
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	161		258	130		323	3005	173	164	2104	939
Arrive On Green	0.10	0.09	0.00	0.08	0.07	0.00	0.06	0.61	0.61	0.04	0.59	0.59
Sat Flow, veh/h	1781	1870	1585	1781	1870	0	1781	4939	285	1781	3554	1585
Grp Volume(v), veh/h	156	84	0	139	98	0	190	1660	901	119	1210	115
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	0	1781	1702	1819	1781	1777	1585
Q Serve(g_s), s	9.6	5.2	0.0	8.6	6.2	0.0	5.0	44.7	46.1	3.1	25.3	3.8
Cycle Q Clear(g_c), s	9.6	5.2	0.0	8.6	6.2	0.0	5.0	44.7	46.1	3.1	25.3	3.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	254	161		258	130		323	2072	1107	164	2104	939
V/C Ratio(X)	0.61	0.52		0.54	0.75		0.59	0.80	0.81	0.73	0.57	0.12
Avail Cap(c_a), veh/h	254	257		258	226		359	2072	1107	229	2104	939
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(l)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	52.5	0.0	47.2	54.8	0.0	13.1	17.9	18.2	26.5	15.1	10.8
Incr Delay (d2), s/veh	4.3	2.6	0.0	2.2	8.5	0.0	2.1	3.4	6.6	6.8	1.2	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	4.5	2.5	0.0	3.9	3.2	0.0	1.8	15.6	18.2	2.2	9.1	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.3	55.1	0.0	49.5	63.3	0.0	15.1	21.3	24.8	33.3	16.3	11.0
LnGrp LOS	D	E		D	E		B	C	C	C	B	B
Approach Vol, veh/h	240			237			2751			1444		
Approach Delay, s/veh	52.0			55.2			22.0			17.3		
Approach LOS	D			E			C			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.6	76.6	15.0	15.8	10.6	78.5	17.0	13.8				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	62.5	9.5	16.5	9.5	62.5	11.5	14.5				
Max Q Clear Time (g_c+I1), s	7.0	27.3	10.6	7.2	5.1	48.1	11.6	8.2				
Green Ext Time (p_c), s	0.1	19.5	0.0	0.2	0.1	14.0	0.0	0.2				

Intersection Summary

HCM 6th Ctrl Delay	23.8
HCM 6th LOS	C

Notes

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

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

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	132	161	35	33	120	11	37	30	49	13	35	117
Future Vol, veh/h	132	161	35	33	120	11	37	30	49	13	35	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	Yield
Storage Length	50	-	200	190	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	148	181	39	37	135	12	42	34	55	15	39	131
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	147	0	0	181	0	0	712	698	181	703	686	135
Stage 1	-	-	-	-	-	-	477	477	-	209	209	-
Stage 2	-	-	-	-	-	-	235	221	-	494	477	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1435	-	-	1394	-	-	347	364	862	352	370	914
Stage 1	-	-	-	-	-	-	569	556	-	793	729	-
Stage 2	-	-	-	-	-	-	768	720	-	557	556	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1435	-	-	1394	-	-	244	318	862	274	323	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	244	318	-	274	323	-
Stage 1	-	-	-	-	-	-	510	499	-	711	709	-
Stage 2	-	-	-	-	-	-	605	701	-	436	499	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.1			1.5			17.4			12.4		
HCM LOS							C			B		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	272	862	1435	-	-	1394	-	-	308	914		
HCM Lane V/C Ratio	0.277	0.064	0.103	-	-	0.027	-	-	0.175	0.144		
HCM Control Delay (s)	23.2	9.5	7.8	-	-	7.7	-	-	19.2	9.6		
HCM Lane LOS	C	A	A	-	-	A	-	-	C	A		
HCM 95th %tile Q(veh)	1.1	0.2	0.3	-	-	0.1	-	-	0.6	0.5		

Intersection												
Intersection Delay, s/veh	8.6											
Intersection LOS	A											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	5	7	4	4	10	32	102	7	7	117	4
Future Vol, veh/h	3	5	7	4	4	10	32	102	7	7	117	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	7	9	5	5	14	43	138	9	9	158	5
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	8.1	8	8.5	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	94%	0%	42%	0%	29%	0%	97%
Vol Right, %	0%	6%	0%	58%	0%	71%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	109	3	12	4	14	7	121
LT Vol	32	0	3	0	4	0	7	0
Through Vol	0	102	0	5	0	4	0	117
RT Vol	0	7	0	7	0	10	0	4
Lane Flow Rate	43	147	4	16	5	19	9	164
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.062	0.19	0.007	0.023	0.009	0.026	0.014	0.217
Departure Headway (Hd)	5.197	4.651	5.936	5.022	5.932	4.926	5.31	4.786
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	681	760	606	716	606	730	678	755
Service Time	2.993	2.447	3.646	2.732	3.641	2.635	3.01	2.486
HCM Lane V/C Ratio	0.063	0.193	0.007	0.022	0.008	0.026	0.013	0.217
HCM Control Delay	8.3	8.6	8.7	7.9	8.7	7.8	8.1	8.8
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.2	0.7	0	0.1	0	0.1	0	0.8

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	185	154	143	119	11
Future Vol, veh/h	3	185	154	143	119	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	203	169	157	131	12
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	169	0	-	0	378	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	209	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1409	-	-	-	624	875
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	826	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1409	-	-	-	623	875
Mov Cap-2 Maneuver	-	-	-	-	623	-
Stage 1	-	-	-	-	859	-
Stage 2	-	-	-	-	826	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		12		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1409	-	-	-	623	875
HCM Lane V/C Ratio	0.002	-	-	-	0.21	0.014
HCM Control Delay (s)	7.6	-	-	-	12.3	9.2
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.8	0

Future “Build” Intersections Analysis

Intersection												
Int Delay, s/veh	24.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	284	0	0	81	0	1110	72	0	2326	0
Future Vol, veh/h	0	0	284	0	0	81	0	1110	72	0	2326	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Yield	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	165	-	-	395
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	287	0	0	82	0	1121	73	0	2349	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	1175	-	-	561	-	0	-	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	~ 184	0	0	471	0	-	0	0	-	0
Stage 1	0	0	-	0	0	-	0	-	0	0	-	0
Stage 2	0	0	-	0	0	-	0	-	0	0	-	0
Platoon blocked, %								-	-			
Mov Cap-1 Maneuver	-	-	~ 184	-	-	471	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s\$	322.3		14.2		0		0					
HCM LOS	F		B									
Minor Lane/Major Mvmt	NBT EBLn1WBLn1		SBT									
Capacity (veh/h)	- 184 471		-									
HCM Lane V/C Ratio	- 1.559 0.174		-									
HCM Control Delay (s)	-\$ 322.3 14.2		-									
HCM Lane LOS	- F B		-									
HCM 95th %tile Q(veh)	- 18.6 0.6		-									
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	93	1138	64	0	2313
Future Vol, veh/h	0	93	1138	64	0	2313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	101	1237	70	0	2514
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	619	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	432	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	432	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	15.9	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 432		-			
HCM Lane V/C Ratio	- 0.234		-			
HCM Control Delay (s)	- 15.9		-			
HCM Lane LOS	- C		-			
HCM 95th %tile Q(veh)	- 0.9		-			

Timings 3: SR 400 / US 19 & Settingdown Rd

3a. Build 2027 AM
01/31/2023

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	87	93	383	140	102	1028	100	144	1726	81
Future Volume (vph)	87	93	383	140	102	1028	100	144	1726	81
Lane Group Flow (vph)	88	300	387	180	103	1038	101	145	1743	82
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	1	6		5	2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	7	4	3	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	5.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	15.0	48.5	15.0	28.5	28.5	15.0	28.5	28.5
Total Split (s)	20.0	50.0	25.0	55.0	15.0	60.0	60.0	15.0	60.0	60.0
Total Split (%)	13.3%	33.3%	16.7%	36.7%	10.0%	40.0%	40.0%	10.0%	40.0%	40.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.26	0.84	1.37	0.41	0.60	0.64	0.13	0.51	1.03	0.10
Control Delay	34.7	63.8	220.6	47.6	41.7	35.0	5.6	22.2	69.3	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	63.8	220.6	47.6	41.7	35.0	5.6	22.2	69.3	3.7
Queue Length 50th (ft)	59	220	~445	142	46	401	0	62	~955	0
Queue Length 95th (ft)	92	309	#624	204	120	570	41	115	#1284	26
Internal Link Dist (ft)		703		636		1400			1039	
Turn Bay Length (ft)	90		110		490		410	515		375
Base Capacity (vph)	384	548	283	601	182	1628	783	287	1685	805
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.55	1.37	0.30	0.57	0.64	0.13	0.51	1.03	0.10

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

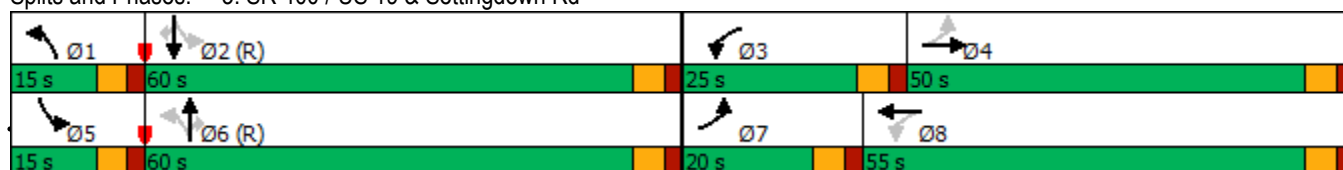
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



HCM 6th Signalized Intersection Summary

3: SR 400 / US 19 & Settingdown Rd

3a. Build 2027 AM

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	93	204	383	140	39	102	1028	100	144	1726	81
Future Volume (veh/h)	87	93	204	383	140	39	102	1028	100	144	1726	81
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	88	94	0	387	141	0	103	1038	101	145	1743	82
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	233	123		301	258		176	2180	972	351	2213	987
Arrive On Green	0.06	0.07	0.00	0.13	0.14	0.00	0.03	0.61	0.61	0.04	0.62	0.62
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	88	94	0	387	141	0	103	1038	101	145	1743	82
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	6.8	7.4	0.0	19.5	10.5	0.0	3.2	23.9	3.9	4.6	54.5	3.1
Cycle Q Clear(g_c), s	6.8	7.4	0.0	19.5	10.5	0.0	3.2	23.9	3.9	4.6	54.5	3.1
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	233	123		301	258		176	2180	972	351	2213	987
V/C Ratio(X)	0.38	0.76		1.29	0.55		0.58	0.48	0.10	0.41	0.79	0.08
Avail Cap(c_a), veh/h	302	555		301	617		227	2180	972	385	2213	987
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.6	68.9	0.0	58.3	60.3	0.0	25.6	15.8	12.0	12.3	21.0	11.3
Incr Delay (d2), s/veh	1.0	9.4	0.0	151.7	1.8	0.0	3.0	0.7	0.2	0.8	2.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	3.8	0.0	14.6	5.1	0.0	2.0	9.1	1.4	1.7	21.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	78.3	0.0	210.0	62.1	0.0	28.6	16.6	12.2	13.1	23.9	11.4
LnGrp LOS	E	E		F	E		C	B	B	B	C	B
Approach Vol, veh/h		182			528			1242			1970	
Approach Delay, s/veh		70.2			170.5			17.2			22.6	
Approach LOS		E			F			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.7	98.9	25.0	15.4	12.1	97.5	14.2	26.2				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	54.5	19.5	44.5	9.5	54.5	14.5	49.5				
Max Q Clear Time (g_c+I1), s	5.2	56.5	21.5	9.4	6.6	25.9	8.8	12.5				
Green Ext Time (p_c), s	0.1	0.0	0.0	0.5	0.1	14.5	0.1	0.7				

Intersection Summary

HCM 6th Ctrl Delay 43.0

HCM 6th LOS D

Notes

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

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

Intersection												
Int Delay, s/veh	139.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	152	72	112	118	188	33	265	33	43	16	25	105
Future Vol, veh/h	152	72	112	118	188	33	265	33	43	16	25	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	Yield
Storage Length	50	-	200	190	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	171	81	126	133	211	37	298	37	48	18	28	118
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	248	0	0	81	0	0	933	937	81	919	900	211
Stage 1	-	-	-	-	-	-	423	423	-	477	477	-
Stage 2	-	-	-	-	-	-	510	514	-	442	423	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1318	-	-	1517	-	-	~ 246	265	979	252	278	829
Stage 1	-	-	-	-	-	-	609	588	-	569	556	-
Stage 2	-	-	-	-	-	-	546	535	-	594	588	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1318	-	-	1517	-	-	~ 161	210	979	175	220	829
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 161	210	-	175	220	-
Stage 1	-	-	-	-	-	-	530	512	-	495	507	-
Stage 2	-	-	-	-	-	-	404	488	-	456	512	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.7			2.6			\$ 463.9			15.2		
HCM LOS							F			C		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	165		979	1318	-	-	1517	-	-	200	829	
HCM Lane V/C Ratio	2.029		0.049	0.13	-	-	0.087	-	-	0.23	0.142	
HCM Control Delay (s)	\$ 529.6		8.9	8.1	-	-	7.6	-	-	28.3	10.1	
HCM Lane LOS	F		A	A	-	-	A	-	-	D	B	
HCM 95th %tile Q(veh)	26		0.2	0.4	-	-	0.3	-	-	0.9	0.5	
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Intersection

Intersection Delay, s/veh 11.4

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	43	13	27	42	115	45	84	33	29	169	4
Future Vol, veh/h	7	43	13	27	42	115	45	84	33	29	169	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	58	18	36	57	155	61	114	45	39	228	5
Number of Lanes	1	1	0	1	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	2
HCM Control Delay	10.4	11.4	10.3	12.7
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	77%	0%	27%	0%	98%
Vol Right, %	0%	0%	100%	0%	23%	0%	73%	0%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	45	84	33	7	56	27	157	29	173
LT Vol	45	0	0	7	0	27	0	29	0
Through Vol	0	84	0	0	43	0	42	0	169
RT Vol	0	0	33	0	13	0	115	0	4
Lane Flow Rate	61	114	45	9	76	36	212	39	234
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.116	0.2	0.07	0.019	0.138	0.069	0.343	0.073	0.402
Departure Headway (Hd)	6.854	6.348	5.639	7.235	6.565	6.843	5.823	6.707	6.185
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	522	564	633	493	544	522	615	533	580
Service Time	4.608	4.102	3.393	4.998	4.328	4.597	3.577	4.457	3.935
HCM Lane V/C Ratio	0.117	0.202	0.071	0.018	0.14	0.069	0.345	0.073	0.403
HCM Control Delay	10.5	10.7	8.8	10.1	10.4	10.1	11.6	10	13.1
HCM Lane LOS	B	B	A	B	B	B	B	A	B
HCM 95th-tile Q	0.4	0.7	0.2	0.1	0.5	0.2	1.5	0.2	1.9

Intersection						
Int Delay, s/veh	5.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	34	67	132	191	24
Future Vol, veh/h	26	34	67	132	191	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	37	74	145	210	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	74	0	-	0	169	74
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	95	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1526	-	-	-	821	988
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1526	-	-	-	805	988
Mov Cap-2 Maneuver	-	-	-	-	805	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	929	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.2	0		10.7		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1526	-	-	-	805	988
HCM Lane V/C Ratio	0.019	-	-	-	0.261	0.027
HCM Control Delay (s)	7.4	-	-	-	11	8.7
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	1	0.1

Intersection						
Int Delay, s/veh	3.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	147	195	13	43	212
Future Vol, veh/h	6	147	195	13	43	212
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	75	135	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	160	212	14	47	230
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	536	212	0	0	226	0
Stage 1	212	-	-	-	-	-
Stage 2	324	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	505	828	-	-	1342	-
Stage 1	823	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	487	828	-	-	1342	-
Mov Cap-2 Maneuver	487	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	707	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.6	0		1.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	806	1342	-	
HCM Lane V/C Ratio	-	-	0.206	0.035	-	
HCM Control Delay (s)	-	-	10.6	7.8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-	

Intersection												
Int Delay, s/veh	20.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	128	0	0	236	0	2657	248	0	1561	0
Future Vol, veh/h	0	0	128	0	0	236	0	2657	248	0	1561	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Yield	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	165	-	-	395
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	129	0	0	238	0	2684	251	0	1577	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	789	-	-	1342	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-
Pot Cap-1 Maneuver	0	0	333	0	0	~ 142	0	0
Stage 1	0	0	-	0	0	-	0	0
Stage 2	0	0	-	0	0	-	0	0
Platoon blocked, %								
Mov Cap-1 Maneuver	-	-	333	-	-	~ 142	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.5	\$ 389.2	0	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	333	142	-
HCM Lane V/C Ratio	-	0.388	1.679	-
HCM Control Delay (s)	-	22.5	\$ 389.2	-
HCM Lane LOS	-	C	F	-
HCM 95th %tile Q(veh)	-	1.8	17.2	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	67	2716	109	0	1561
Future Vol, veh/h	0	67	2716	109	0	1561
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	73	2952	118	0	1697
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	1476	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	115	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	115	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	79.2	0		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 115		-			
HCM Lane V/C Ratio	- 0.633		-			
HCM Control Delay (s)	- 79.2		-			
HCM Lane LOS	- F		-			
HCM 95th %tile Q(veh)	- 3.2		-			

Timings 3: SR 400 / US 19 & Settingdown Rd

3b. Build 2027 PM
01/31/2023

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	154	108	269	114	188	2422	178	181	1198	114
Future Volume (vph)	154	108	269	114	188	2422	178	181	1198	114
Lane Group Flow (vph)	156	204	272	173	190	2446	180	183	1210	115
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4	3	8	1	6		5	2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	7	4	3	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	5.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	15.0	48.5	15.0	28.5	28.5	15.0	28.5	28.5
Total Split (s)	18.0	49.0	20.0	51.0	20.0	66.0	66.0	15.0	61.0	61.0
Total Split (%)	12.0%	32.7%	13.3%	34.0%	13.3%	44.0%	44.0%	10.0%	40.7%	40.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.59	0.77	1.10	0.60	0.58	1.45	0.22	0.62	0.69	0.14
Control Delay	52.4	71.2	129.8	61.1	22.7	236.7	11.9	45.1	33.4	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	71.2	129.8	61.1	22.7	236.7	11.9	45.1	33.4	5.3
Queue Length 50th (ft)	122	168	~259	145	68	~1689	43	119	471	2
Queue Length 95th (ft)	175	246	#355	213	148	#1953	105	211	657	43
Internal Link Dist (ft)		703		636		1400			1039	
Turn Bay Length (ft)	90		110		490		410	515		375
Base Capacity (vph)	269	522	248	548	332	1688	806	297	1754	840
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.39	1.10	0.32	0.57	1.45	0.22	0.62	0.69	0.14

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

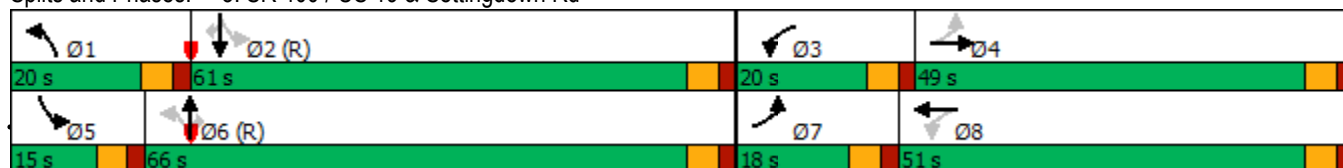
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



HCM 6th Signalized Intersection Summary 3: SR 400 / US 19 & Settingdown Rd

3b. Build 2027 PM
01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	108	94	269	114	57	188	2422	178	181	1198	114
Future Volume (veh/h)	154	108	94	269	114	57	188	2422	178	181	1198	114
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	156	109	0	272	115	0	190	2446	180	183	1210	115
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	232	139		242	164		325	2200	981	161	2234	996
Arrive On Green	0.08	0.07	0.00	0.10	0.09	0.00	0.05	0.62	0.62	0.06	0.63	0.63
Sat Flow, veh/h	1781	1870	0	1781	1870	0	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	156	109	0	272	115	0	190	2446	180	183	1210	115
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	0	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	12.1	8.6	0.0	14.5	9.0	0.0	5.9	92.9	7.3	9.5	28.8	4.4
Cycle Q Clear(g_c), s	12.1	8.6	0.0	14.5	9.0	0.0	5.9	92.9	7.3	9.5	28.8	4.4
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	232	139		242	164		325	2200	981	161	2234	996
V/C Ratio(X)	0.67	0.79		1.12	0.70		0.58	1.11	0.18	1.14	0.54	0.12
Avail Cap(c_a), veh/h	232	542		242	567		401	2200	981	161	2234	996
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.5	68.3	0.0	61.8	66.5	0.0	13.6	28.6	12.3	54.6	15.7	11.2
Incr Delay (d2), s/veh	7.4	9.4	0.0	95.5	5.4	0.0	1.7	57.4	0.4	112.9	0.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	4.4	0.0	8.5	4.5	0.0	2.2	51.8	2.7	11.0	10.8	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.9	77.6	0.0	157.3	71.9	0.0	15.3	85.9	12.7	167.5	16.6	11.4
LnGrp LOS	E	E		F	E		B	F	B	F	B	B
Approach Vol, veh/h	265		387				2816		1508			
Approach Delay, s/veh	70.8		132.0				76.5		34.5			
Approach LOS	E		F				E		C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.6	99.8	20.0	16.6	15.0	98.4	18.0	18.6				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	14.5	55.5	14.5	43.5	9.5	60.5	12.5	45.5				
Max Q Clear Time (g_c+I1), s	7.9	30.8	16.5	10.6	11.5	94.9	14.1	11.0				
Green Ext Time (p_c), s	0.2	15.6	0.0	0.5	0.0	0.0	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	67.8
HCM 6th LOS	E

Notes

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

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

Intersection												
Int Delay, s/veh	35.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	132	161	161	55	120	11	203	30	64	13	35	117
Future Vol, veh/h	132	161	161	55	120	11	203	30	64	13	35	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	Yield
Storage Length	50	-	200	190	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	148	181	181	62	135	12	228	34	72	15	39	131
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	147	0	0	181	0	0	762	748	181	753	736	135
Stage 1	-	-	-	-	-	-	477	477	-	259	259	-
Stage 2	-	-	-	-	-	-	285	271	-	494	477	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1435	-	-	1394	-	-	322	341	862	326	346	914
Stage 1	-	-	-	-	-	-	569	556	-	746	694	-
Stage 2	-	-	-	-	-	-	722	685	-	557	556	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1435	-	-	1394	-	-	~ 221	293	862	243	297	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 221	293	-	243	297	-
Stage 1	-	-	-	-	-	-	510	499	-	669	663	-
Stage 2	-	-	-	-	-	-	556	655	-	427	499	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.3			2.3			120.1			12.9		
HCM LOS							F			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	228 862		1435	-	-	1394	-	-	280	914		
HCM Lane V/C Ratio	1.148 0.083		0.103	-	-	0.044	-	-	0.193	0.144		
HCM Control Delay (s)	150.4 9.6		7.8	-	-	7.7	-	-	20.9	9.6		
HCM Lane LOS	F A		A	-	-	A	-	-	C	A		
HCM 95th %tile Q(veh)	12.2 0.3		0.3	-	-	0.1	-	-	0.7	0.5		
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Intersection

Intersection Delay, s/veh 11.2

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	99	7	11	30	86	32	133	48	48	121	4
Future Vol, veh/h	3	99	7	11	30	86	32	133	48	48	121	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	134	9	15	41	116	43	180	65	65	164	5
Number of Lanes	1	1	0	1	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	2
HCM Control Delay	11.7	10.9	10.9	11.5
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	93%	0%	26%	0%	97%
Vol Right, %	0%	0%	100%	0%	7%	0%	74%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	133	48	3	106	11	116	48	125
LT Vol	32	0	0	3	0	11	0	48	0
Through Vol	0	133	0	0	99	0	30	0	121
RT Vol	0	0	48	0	7	0	86	0	4
Lane Flow Rate	43	180	65	4	143	15	157	65	169
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.081	0.312	0.1	0.008	0.261	0.029	0.264	0.124	0.297
Departure Headway (Hd)	6.763	6.257	5.549	7.124	6.572	7.092	6.063	6.855	6.326
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	528	573	643	501	544	504	591	522	566
Service Time	4.519	4.013	3.305	4.887	4.335	4.852	3.823	4.611	4.081
HCM Lane V/C Ratio	0.081	0.314	0.101	0.008	0.263	0.03	0.266	0.125	0.299
HCM Control Delay	10.1	11.8	8.9	9.9	11.7	10.1	11	10.6	11.8
HCM Lane LOS	B	B	A	A	B	B	B	B	B
HCM 95th-tile Q	0.3	1.3	0.3	0	1	0.1	1.1	0.4	1.2

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	185	154	159	130	11
Future Vol, veh/h	60	185	154	159	130	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	203	169	175	143	12
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	169	0	-	0	504	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	335	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1409	-	-	-	528	875
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1409	-	-	-	503	875
Mov Cap-2 Maneuver	-	-	-	-	503	-
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	725	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.9	0		14.5		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1409	-	-	-	503	875
HCM Lane V/C Ratio	0.047	-	-	-	0.284	0.014
HCM Control Delay (s)	7.7	-	-	-	15	9.2
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2	0

Intersection						
Int Delay, s/veh	3.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	105	191	31	107	144
Future Vol, veh/h	4	105	191	31	107	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	75	135	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	114	208	34	116	157
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	597	208	0	0	242	0
Stage 1	208	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	466	832	-	-	1324	-
Stage 1	827	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	425	832	-	-	1324	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.3	0		3.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	804	1324	-	
HCM Lane V/C Ratio	-	-	0.147	0.088	-	
HCM Control Delay (s)	-	-	10.3	8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.5	0.3	-	

**Future “Build” Intersections Analysis with
System Improvements Only**

Intersection												
Int Delay, s/veh	24.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	284	0	0	81	0	1110	72	0	2326	0
Future Vol, veh/h	0	0	284	0	0	81	0	1110	72	0	2326	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Yield	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	165	-	-	395
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	287	0	0	82	0	1121	73	0	2349	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	1175	-	-	561	-	0	-	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	~ 184	0	0	471	0	-	0	0	-	0
Stage 1	0	0	-	0	0	-	0	-	0	0	-	0
Stage 2	0	0	-	0	0	-	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	-	~ 184	-	-	471	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s\$	322.3		14.2		0		0					
HCM LOS	F		B									
Minor Lane/Major Mvmt	NBT EBLn1WBLn1		SBT									
Capacity (veh/h)	- 184 471		-									
HCM Lane V/C Ratio	- 1.559 0.174		-									
HCM Control Delay (s)	-\$ 322.3 14.2		-									
HCM Lane LOS	- F B		-									
HCM 95th %tile Q(veh)	- 18.6 0.6		-									
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	93	1138	64	0	2313
Future Vol, veh/h	0	93	1138	64	0	2313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	101	1237	70	0	2514
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	619	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	432	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	432	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	15.9	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 432		-			
HCM Lane V/C Ratio	- 0.234		-			
HCM Control Delay (s)	- 15.9		-			
HCM Lane LOS	- C		-			
HCM 95th %tile Q(veh)	- 0.9		-			

Timings 3: SR 400 / US 19 & Settingdown Rd

3a. Build 2027 AM - Sys Imprv
01/31/2023

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	87	93	204	383	140	102	1028	144	1726	81
Future Volume (vph)	87	93	204	383	140	102	1028	144	1726	81
Lane Group Flow (vph)	88	94	206	387	180	103	1139	145	1743	82
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		3	8	1	6	5	2	
Permitted Phases	4		4	8		6		2		2
Detector Phase	7	4	4	3	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	5.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	47.5	15.0	48.5	15.0	28.5	15.0	28.5	28.5
Total Split (s)	19.0	18.0	18.0	22.0	21.0	15.0	65.0	15.0	65.0	65.0
Total Split (%)	15.8%	15.0%	15.0%	18.3%	17.5%	12.5%	54.2%	12.5%	54.2%	54.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.35	0.57	0.76	1.11	0.68	0.57	0.44	0.46	0.94	0.09
Control Delay	37.4	65.8	35.5	120.6	60.1	29.9	18.7	14.2	39.1	1.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.4	65.8	35.5	120.6	60.1	29.9	18.7	14.2	39.1	1.1
Queue Length 50th (ft)	52	71	45	~307	126	29	195	42	653	0
Queue Length 95th (ft)	94	126	#141	#451	#236	86	239	72	#873	10
Internal Link Dist (ft)		703			638		1400		3070	
Turn Bay Length (ft)	210		150	210		490		515		375
Base Capacity (vph)	305	194	294	348	265	202	2609	325	1850	886
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.48	0.70	1.11	0.68	0.51	0.44	0.45	0.94	0.09

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



HCM 6th Signalized Intersection Summary

3: SR 400 / US 19 & Settingdown Rd

3a. Build 2027 AM - Sys Imprv

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	93	204	383	140	39	102	1028	100	144	1726	81
Future Volume (veh/h)	87	93	204	383	140	39	102	1028	100	144	1726	81
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	88	94	0	387	141	0	103	1038	101	145	1743	82
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	125		328	272		173	2653	258	367	2032	906
Arrive On Green	0.06	0.07	0.00	0.14	0.15	0.00	0.04	0.56	0.56	0.05	0.57	0.57
Sat Flow, veh/h	1781	1870	1585	1781	1870	0	1781	4732	460	1781	3554	1585
Grp Volume(v), veh/h	88	94	0	387	141	0	103	746	393	145	1743	82
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	0	1781	1702	1788	1781	1777	1585
Q Serve(g_s), s	5.4	5.9	0.0	16.5	8.4	0.0	2.9	14.8	14.8	4.1	49.5	2.8
Cycle Q Clear(g_c), s	5.4	5.9	0.0	16.5	8.4	0.0	2.9	14.8	14.8	4.1	49.5	2.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	249	125		328	272		173	1909	1002	367	2032	906
V/C Ratio(X)	0.35	0.75		1.18	0.52		0.60	0.39	0.39	0.39	0.86	0.09
Avail Cap(c_a), veh/h	344	195		328	272		242	1909	1002	417	2032	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	55.0	0.0	46.3	47.4	0.0	25.2	14.8	14.8	11.1	21.6	11.6
Incr Delay (d2), s/veh	0.8	8.6	0.0	108.0	1.8	0.0	3.3	0.6	1.2	0.7	5.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	3.0	0.0	11.5	4.0	0.0	1.7	5.2	5.7	1.5	19.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.0	63.6	0.0	154.3	49.2	0.0	28.5	15.4	16.0	11.8	26.6	11.8
LnGrp LOS	D	E		F	D		C	B	B	B	C	B
Approach Vol, veh/h	182			528			1242			1970		
Approach Delay, s/veh	56.6			126.2			16.7			24.9		
Approach LOS	E			F			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.4	74.1	22.0	13.5	11.7	72.8	12.6	22.9				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	59.5	16.5	12.5	9.5	59.5	13.5	15.5				
Max Q Clear Time (g_c+I1), s	4.9	51.5	18.5	7.9	6.1	16.8	7.4	10.4				
Green Ext Time (p_c), s	0.1	7.4	0.0	0.1	0.1	17.1	0.1	0.2				

Intersection Summary

HCM 6th Ctrl Delay 37.4

HCM 6th LOS D

Notes

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

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

Intersection												
Int Delay, s/veh	139.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	152	72	112	118	188	33	265	33	43	16	25	105
Future Vol, veh/h	152	72	112	118	188	33	265	33	43	16	25	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	Yield
Storage Length	50	-	200	190	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	171	81	126	133	211	37	298	37	48	18	28	118
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	248	0	0	81	0	0	933	937	81	919	900	211
Stage 1	-	-	-	-	-	-	423	423	-	477	477	-
Stage 2	-	-	-	-	-	-	510	514	-	442	423	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1318	-	-	1517	-	-	~ 246	265	979	252	278	829
Stage 1	-	-	-	-	-	-	609	588	-	569	556	-
Stage 2	-	-	-	-	-	-	546	535	-	594	588	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1318	-	-	1517	-	-	~ 161	210	979	175	220	829
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 161	210	-	175	220	-
Stage 1	-	-	-	-	-	-	530	512	-	495	507	-
Stage 2	-	-	-	-	-	-	404	488	-	456	512	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3.7			2.6			\$ 463.9			15.2		
HCM LOS							F			C		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	165		979	1318	-	-	1517	-	-	200	829	
HCM Lane V/C Ratio	2.029		0.049	0.13	-	-	0.087	-	-	0.23	0.142	
HCM Control Delay (s)	\$ 529.6		8.9	8.1	-	-	7.6	-	-	28.3	10.1	
HCM Lane LOS	F		A	A	-	-	A	-	-	D	B	
HCM 95th %tile Q(veh)	26		0.2	0.4	-	-	0.3	-	-	0.9	0.5	
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Intersection

Intersection Delay, s/veh 11.4

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	43	13	27	42	115	45	84	33	29	169	4
Future Vol, veh/h	7	43	13	27	42	115	45	84	33	29	169	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	58	18	36	57	155	61	114	45	39	228	5
Number of Lanes	1	1	0	1	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	2
HCM Control Delay	10.4	11.4	10.3	12.7
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	77%	0%	27%	0%	98%
Vol Right, %	0%	0%	100%	0%	23%	0%	73%	0%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	45	84	33	7	56	27	157	29	173
LT Vol	45	0	0	7	0	27	0	29	0
Through Vol	0	84	0	0	43	0	42	0	169
RT Vol	0	0	33	0	13	0	115	0	4
Lane Flow Rate	61	114	45	9	76	36	212	39	234
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.116	0.2	0.07	0.019	0.138	0.069	0.343	0.073	0.402
Departure Headway (Hd)	6.854	6.348	5.639	7.235	6.565	6.843	5.823	6.707	6.185
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	522	564	633	493	544	522	615	533	580
Service Time	4.608	4.102	3.393	4.998	4.328	4.597	3.577	4.457	3.935
HCM Lane V/C Ratio	0.117	0.202	0.071	0.018	0.14	0.069	0.345	0.073	0.403
HCM Control Delay	10.5	10.7	8.8	10.1	10.4	10.1	11.6	10	13.1
HCM Lane LOS	B	B	A	B	B	B	B	A	B
HCM 95th-tile Q	0.4	0.7	0.2	0.1	0.5	0.2	1.5	0.2	1.9

Intersection						
Int Delay, s/veh	5.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	34	67	132	191	24
Future Vol, veh/h	26	34	67	132	191	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	37	74	145	210	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	74	0	-	0	169	74
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	95	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1526	-	-	-	821	988
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1526	-	-	-	805	988
Mov Cap-2 Maneuver	-	-	-	-	805	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	929	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.2	0		10.7		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1526	-	-	-	805	988
HCM Lane V/C Ratio	0.019	-	-	-	0.261	0.027
HCM Control Delay (s)	7.4	-	-	-	11	8.7
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	1	0.1

Intersection						
Int Delay, s/veh	3.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↑	↔	↑
Traffic Vol, veh/h	6	147	195	13	43	212
Future Vol, veh/h	6	147	195	13	43	212
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	75	135	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	160	212	14	47	230
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	536	212	0	0	226	0
Stage 1	212	-	-	-	-	-
Stage 2	324	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	505	828	-	-	1342	-
Stage 1	823	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	487	828	-	-	1342	-
Mov Cap-2 Maneuver	487	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	707	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.6	0	1.3			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	806	1342	-	
HCM Lane V/C Ratio	-	-	0.206	0.035	-	
HCM Control Delay (s)	-	-	10.6	7.8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-	

Intersection												
Int Delay, s/veh	20.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	128	0	0	236	0	2657	248	0	1561	0
Future Vol, veh/h	0	0	128	0	0	236	0	2657	248	0	1561	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Yield	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	165	-	-	395
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	129	0	0	238	0	2684	251	0	1577	0

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	-	-	789	-	-	1342	-	0
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-
Pot Cap-1 Maneuver	0	0	333	0	0	~ 142	0	0
Stage 1	0	0	-	0	0	-	0	0
Stage 2	0	0	-	0	0	-	0	0
Platoon blocked, %								
Mov Cap-1 Maneuver	-	-	333	-	-	~ 142	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.5	\$ 389.2	0	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	333	142	-
HCM Lane V/C Ratio	-	0.388	1.679	-
HCM Control Delay (s)	-	22.5	\$ 389.2	-
HCM Lane LOS	-	C	F	-
HCM 95th %tile Q(veh)	-	1.8	17.2	-

Notes			
~: Volume exceeds capacity	\$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	67	2716	109	0	1561
Future Vol, veh/h	0	67	2716	109	0	1561
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	73	2952	118	0	1697
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	1476	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	115	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	115	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	79.2	0	0			
HCM LOS	F					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 115		-			
HCM Lane V/C Ratio	- 0.633		-			
HCM Control Delay (s)	- 79.2		-			
HCM Lane LOS	- F		-			
HCM 95th %tile Q(veh)	- 3.2		-			

Timings 3: SR 400 / US 19 & Settingdown Rd

3b. Build 2027 PM - Sys Imprv
01/31/2023

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	154	108	94	269	114	188	2422	181	1198	114
Future Volume (vph)	154	108	94	269	114	188	2422	181	1198	114
Lane Group Flow (vph)	156	109	95	272	173	190	2626	183	1210	115
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		3	8	1	6	5	2	
Permitted Phases	4		4	8		6		2		2
Detector Phase	7	4	4	3	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	5.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	47.5	15.0	48.5	15.0	28.5	15.0	28.5	28.5
Total Split (s)	23.0	20.0	20.0	20.0	17.0	15.0	65.0	15.0	65.0	65.0
Total Split (%)	19.2%	16.7%	16.7%	16.7%	14.2%	12.5%	54.2%	12.5%	54.2%	54.2%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.55	0.54	0.34	0.80	0.79	0.73	1.03	0.89	0.67	0.13
Control Delay	42.1	60.3	7.2	57.4	71.8	29.8	55.3	70.0	24.7	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.1	60.3	7.2	57.4	71.8	29.8	55.3	70.0	24.7	2.8
Queue Length 50th (ft)	94	80	0	178	118	58	~810	92	366	0
Queue Length 95th (ft)	155	140	30	#270	#264	#144	#902	#234	446	27
Internal Link Dist (ft)		703			638		1400		3070	
Turn Bay Length (ft)	210		150	210		490		515		375
Base Capacity (vph)	339	225	299	338	219	266	2554	205	1802	866
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.48	0.32	0.80	0.79	0.71	1.03	0.89	0.67	0.13

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



HCM 6th Signalized Intersection Summary 3: SR 400 / US 19 & Settingdown Rd

3b. Build 2027 PM - Sys Imprv
01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	108	94	269	114	57	188	2422	178	181	1198	114
Future Volume (veh/h)	154	108	94	269	114	57	188	2422	178	181	1198	114
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	156	109	0	272	115	0	190	2446	180	183	1210	115
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	141		299	185		310	2630	191	208	1976	881
Arrive On Green	0.10	0.08	0.00	0.12	0.10	0.00	0.06	0.54	0.54	0.08	0.56	0.56
Sat Flow, veh/h	1781	1870	1585	1781	1870	0	1781	4859	352	1781	3554	1585
Grp Volume(v), veh/h	156	109	0	272	115	0	190	1702	924	183	1210	115
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	0	1781	1702	1807	1781	1777	1585
Q Serve(g_s), s	9.5	6.9	0.0	14.5	7.1	0.0	5.7	55.1	57.6	7.6	27.5	4.2
Cycle Q Clear(g_c), s	9.5	6.9	0.0	14.5	7.1	0.0	5.7	55.1	57.6	7.6	27.5	4.2
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	284	141		299	185		310	1843	978	208	1976	881
V/C Ratio(X)	0.55	0.77		0.91	0.62		0.61	0.92	0.94	0.88	0.61	0.13
Avail Cap(c_a), veh/h	370	226		299	185		336	1843	978	208	1976	881
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.1	54.5	0.0	47.0	51.9	0.0	15.5	25.3	25.8	36.1	17.9	12.7
Incr Delay (d2), s/veh	1.6	8.7	0.0	30.2	6.4	0.0	2.9	9.3	18.1	32.1	1.4	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	4.3	3.5	0.0	3.5	3.6	0.0	2.2	21.6	26.3	7.0	10.3	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.7	63.1	0.0	77.3	58.3	0.0	18.4	34.6	43.9	68.2	19.4	13.1
LnGrp LOS	D	E		E	E		B	C	D	E	B	B
Approach Vol, veh/h	265			387			2816			1508		
Approach Delay, s/veh	53.5			71.6			36.6			24.8		
Approach LOS	D			E			D			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.2	72.2	20.0	14.5	15.0	70.5	17.2	17.3				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	59.5	14.5	14.5	9.5	59.5	17.5	11.5				
Max Q Clear Time (g_c+I1), s	7.7	29.5	16.5	8.9	9.6	59.6	11.5	9.1				
Green Ext Time (p_c), s	0.1	17.7	0.0	0.2	0.0	0.0	0.2	0.1				

Intersection Summary

HCM 6th Ctrl Delay	36.6
HCM 6th LOS	D

Notes

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

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

Intersection												
Int Delay, s/veh	35.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	132	161	161	55	120	11	203	30	64	13	35	117
Future Vol, veh/h	132	161	161	55	120	11	203	30	64	13	35	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	Yield
Storage Length	50	-	200	190	-	150	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	148	181	181	62	135	12	228	34	72	15	39	131
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	147	0	0	181	0	0	762	748	181	753	736	135
Stage 1	-	-	-	-	-	-	477	477	-	259	259	-
Stage 2	-	-	-	-	-	-	285	271	-	494	477	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1435	-	-	1394	-	-	322	341	862	326	346	914
Stage 1	-	-	-	-	-	-	569	556	-	746	694	-
Stage 2	-	-	-	-	-	-	722	685	-	557	556	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1435	-	-	1394	-	-	~ 221	293	862	243	297	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 221	293	-	243	297	-
Stage 1	-	-	-	-	-	-	510	499	-	669	663	-
Stage 2	-	-	-	-	-	-	556	655	-	427	499	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.3			2.3			120.1			12.9		
HCM LOS							F			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	228 862		1435	-	-	1394	-	-	280	914		
HCM Lane V/C Ratio	1.148 0.083		0.103	-	-	0.044	-	-	0.193	0.144		
HCM Control Delay (s)	150.4 9.6		7.8	-	-	7.7	-	-	20.9	9.6		
HCM Lane LOS	F A		A	-	-	A	-	-	C	A		
HCM 95th %tile Q(veh)	12.2 0.3		0.3	-	-	0.1	-	-	0.7	0.5		
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Intersection												
Intersection Delay, s/veh	11.2											
Intersection LOS	B											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	99	7	11	30	86	32	133	48	48	121	4
Future Vol, veh/h	3	99	7	11	30	86	32	133	48	48	121	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	134	9	15	41	116	43	180	65	65	164	5
Number of Lanes	1	1	0	1	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	2	2	2
HCM Control Delay	11.7	10.9	10.9	11.5
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	93%	0%	26%	0%	97%
Vol Right, %	0%	0%	100%	0%	7%	0%	74%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	133	48	3	106	11	116	48	125
LT Vol	32	0	0	3	0	11	0	48	0
Through Vol	0	133	0	0	99	0	30	0	121
RT Vol	0	0	48	0	7	0	86	0	4
Lane Flow Rate	43	180	65	4	143	15	157	65	169
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.081	0.312	0.1	0.008	0.261	0.029	0.264	0.124	0.297
Departure Headway (Hd)	6.763	6.257	5.549	7.124	6.572	7.092	6.063	6.855	6.326
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	528	573	643	501	544	504	591	522	566
Service Time	4.519	4.013	3.305	4.887	4.335	4.852	3.823	4.611	4.081
HCM Lane V/C Ratio	0.081	0.314	0.101	0.008	0.263	0.03	0.266	0.125	0.299
HCM Control Delay	10.1	11.8	8.9	9.9	11.7	10.1	11	10.6	11.8
HCM Lane LOS	B	B	A	A	B	B	B	B	B
HCM 95th-tile Q	0.3	1.3	0.3	0	1	0.1	1.1	0.4	1.2

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	185	154	159	130	11
Future Vol, veh/h	60	185	154	159	130	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	203	169	175	143	12
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	169	0	-	0	504	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	335	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1409	-	-	-	528	875
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1409	-	-	-	503	875
Mov Cap-2 Maneuver	-	-	-	-	503	-
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	725	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.9	0		14.5		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1409	-	-	-	503	875
HCM Lane V/C Ratio	0.047	-	-	-	0.284	0.014
HCM Control Delay (s)	7.7	-	-	-	15	9.2
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2	0

Intersection						
Int Delay, s/veh	3.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	105	191	31	107	144
Future Vol, veh/h	4	105	191	31	107	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	75	135	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	114	208	34	116	157
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	597	208	0	0	242	0
Stage 1	208	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	466	832	-	-	1324	-
Stage 1	827	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	425	832	-	-	1324	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.3	0		3.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	804	1324	-	
HCM Lane V/C Ratio	-	-	0.147	0.088	-	
HCM Control Delay (s)	-	-	10.3	8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.5	0.3	-	

**Future “Build” Intersections Analysis with
System and Site Improvements**

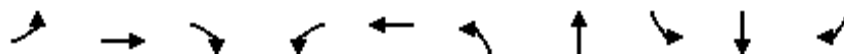
Intersection												
Int Delay, s/veh	24.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	284	0	0	81	0	1110	72	0	2326	0
Future Vol, veh/h	0	0	284	0	0	81	0	1110	72	0	2326	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Yield	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	165	-	-	395
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	287	0	0	82	0	1121	73	0	2349	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	1175	-	-	561	-	0	-	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	~ 184	0	0	471	0	-	0	0	-	0
Stage 1	0	0	-	0	0	-	0	-	0	0	-	0
Stage 2	0	0	-	0	0	-	0	-	0	0	-	0
Platoon blocked, %							-		-			
Mov Cap-1 Maneuver	-	-	~ 184	-	-	471	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s\$	322.3		14.2		0		0					
HCM LOS	F		B									
Minor Lane/Major Mvmt	NBT EBLn1WBLn1		SBT									
Capacity (veh/h)	- 184 471		-									
HCM Lane V/C Ratio	- 1.559 0.174		-									
HCM Control Delay (s)	-\$ 322.3 14.2		-									
HCM Lane LOS	- F B		-									
HCM 95th %tile Q(veh)	- 18.6 0.6		-									
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↗↗	↗		↗↗
Traffic Vol, veh/h	0	93	1138	64	0	2313
Future Vol, veh/h	0	93	1138	64	0	2313
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	101	1237	70	0	2514
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	619	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	432	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	432	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	15.9	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 432		-			
HCM Lane V/C Ratio	- 0.234		-			
HCM Control Delay (s)	- 15.9		-			
HCM Lane LOS	- C		-			
HCM 95th %tile Q(veh)	- 0.9		-			

Timings
3: SR 400 / US 19 & Settingdown Rd

3a. Build 2027 AM - Sys & Site Impv

01/31/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	←	→	→	←	→	←	→	←	→	→
Traffic Volume (vph)	87	93	204	383	140	102	1028	144	1726	81
Future Volume (vph)	87	93	204	383	140	102	1028	144	1726	81
Lane Group Flow (vph)	88	94	206	387	180	103	1139	145	1743	82
Turn Type	Prot	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		3	8	1	6	5	2	
Permitted Phases			4			6		2		2
Detector Phase	7	4	4	3	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	5.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	47.5	15.0	48.5	15.0	28.5	15.0	28.5	28.5
Total Split (s)	30.0	15.0	15.0	30.0	15.0	15.0	60.0	15.0	60.0	60.0
Total Split (%)	25.0%	12.5%	12.5%	25.0%	12.5%	12.5%	50.0%	12.5%	50.0%	50.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.53	0.44	0.66	0.72	0.55	0.56	0.48	0.50	1.03	0.10
Control Delay	62.6	57.6	28.3	56.0	50.7	29.3	22.4	17.7	62.8	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	57.6	28.3	56.0	50.7	29.3	22.4	17.7	62.8	1.3
Queue Length 50th (ft)	66	69	44	148	123	32	213	47	~760	0
Queue Length 95th (ft)	117	128	#158	193	205	86	261	81	#935	11
Internal Link Dist (ft)		703			638		1400		3075	
Turn Bay Length (ft)	210		150	350		490		515		375
Base Capacity (vph)	361	214	311	700	326	202	2374	299	1686	818
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.44	0.66	0.55	0.55	0.51	0.48	0.48	1.03	0.10

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



22-198 Marsett Pkwy Residential Development

Page 3

HCM 6th Signalized Intersection Summary

3: SR 400 / US 19 & Settingdown Rd

3a. Build 2027 AM - Sys & Site Impv

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	93	204	383	140	39	102	1028	100	144	1726	81
Future Volume (veh/h)	87	93	204	383	140	39	102	1028	100	144	1726	81
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	88	94	0	387	141	0	103	1038	101	145	1743	82
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	124		462	256		175	2675	260	370	2047	913
Arrive On Green	0.06	0.07	0.00	0.13	0.14	0.00	0.04	0.57	0.57	0.05	0.58	0.58
Sat Flow, veh/h	1781	1870	1585	3456	1870	0	1781	4732	460	1781	3554	1585
Grp Volume(v), veh/h	88	94	0	387	141	0	103	746	393	145	1743	82
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1870	0	1781	1702	1788	1781	1777	1585
Q Serve(g_s), s	5.8	5.9	0.0	13.1	8.4	0.0	2.9	14.6	14.7	4.1	49.0	2.8
Cycle Q Clear(g_c), s	5.8	5.9	0.0	13.1	8.4	0.0	2.9	14.6	14.7	4.1	49.0	2.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	112	124		462	256		175	1924	1011	370	2047	913
V/C Ratio(X)	0.78	0.76		0.84	0.55		0.59	0.39	0.39	0.39	0.85	0.09
Avail Cap(c_a), veh/h	364	148		706	256		244	1924	1011	420	2047	913
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.99	0.99	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.4	55.1	0.0	50.7	48.3	0.0	24.9	14.5	14.5	10.9	21.2	11.4
Incr Delay (d2), s/veh	11.2	16.7	0.0	5.4	2.5	0.0	3.1	0.6	1.1	0.7	4.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	3.3	0.0	5.9	4.1	0.0	1.7	5.2	5.6	1.4	18.6	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.6	71.7	0.0	56.1	50.8	0.0	28.0	15.1	15.7	11.6	25.9	11.6
LnGrp LOS	E	E		E	D		C	B	B	B	C	B
Approach Vol, veh/h	182			528			1242			1970		
Approach Delay, s/veh	69.2			54.7			16.4			24.2		
Approach LOS	E			D			B			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.3	74.6	21.6	13.5	11.6	73.3	13.1	22.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	54.5	24.5	9.5	9.5	54.5	24.5	9.5				
Max Q Clear Time (g_c+I1), s	4.9	51.0	15.1	7.9	6.1	16.7	7.8	10.4				
Green Ext Time (p_c), s	0.1	3.3	1.0	0.0	0.1	16.3	0.2	0.0				

Intersection Summary

HCM 6th Ctrl Delay	27.9
HCM 6th LOS	C

Notes

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

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

Timings

3a. Build 2027 AM - Sys & Site Impv

4: Marsett Pkwy/Adj Site Drwy 2 & Settingdown Rd

01/31/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	72	112	118	188	33	265	33	43	16	25	105
Future Volume (vph)	152	72	112	118	188	33	265	33	43	16	25	105
Lane Group Flow (vph)	171	81	126	133	211	37	0	335	48	0	46	118
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
Total Split (s)	50.0	50.0	50.0	50.0	50.0	50.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	55.6%	55.6%	55.6%	55.6%	55.6%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5		5.5	5.5		5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.26	0.08	0.13	0.18	0.20	0.04		0.83	0.09		0.10	0.21
Control Delay	12.4	10.6	2.7	11.5	11.2	4.1		45.8	6.1		20.4	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	12.4	10.6	2.7	11.5	11.2	4.1		45.8	6.1		20.4	4.7
Queue Length 50th (ft)	46	19	0	34	55	0		174	0		18	0
Queue Length 95th (ft)	98	47	26	75	107	15		247	21		38	32
Internal Link Dist (ft)		638			521			231			98	
Turn Bay Length (ft)	50		200	190		150			210			
Base Capacity (vph)	669	1069	962	752	1069	924		512	636		596	679
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.26	0.08	0.13	0.18	0.20	0.04		0.65	0.08		0.08	0.17

Intersection Summary

Cycle Length: 90

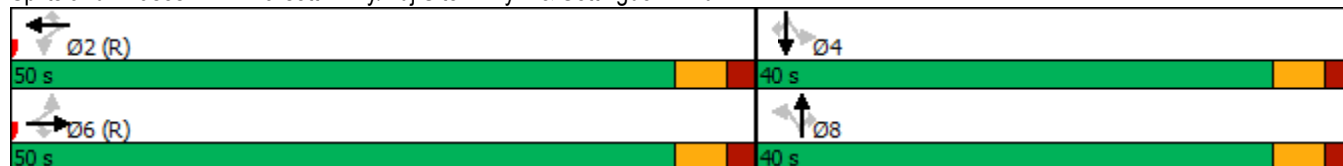
Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Splits and Phases: 4: Marsett Pkwy/Adj Site Drwy 2 & Settingdown Rd



HCM 6th Signalized Intersection Summary

4: Marsett Pkwy/Adj Site Drwy 2 & Settingdown Rd

3a. Build 2027 AM - Sys & Site Impv

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	152	72	112	118	188	33	265	33	43	16	25	105
Future Volume (veh/h)	152	72	112	118	188	33	265	33	43	16	25	105
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	171	81	0	133	211	37	298	37	0	18	28	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	723	1153		869	1153	977	412	42		212	307	
Arrive On Green	0.62	0.62	0.00	0.62	0.62	0.62	0.26	0.26	0.00	0.26	0.26	0.00
Sat Flow, veh/h	1132	1870	1585	1317	1870	1585	1289	160	1585	597	1176	1585
Grp Volume(v), veh/h	171	81	0	133	211	37	335	0	0	46	0	0
Grp Sat Flow(s),veh/h/ln	1132	1870	1585	1317	1870	1585	1449	0	1585	1773	0	1585
Q Serve(g_s), s	6.9	1.6	0.0	4.1	4.4	0.8	18.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	11.3	1.6	0.0	5.6	4.4	0.8	19.9	0.0	0.0	1.7	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.89		1.00	0.39		1.00
Lane Grp Cap(c), veh/h	723	1153		869	1153	977	454	0		519	0	
V/C Ratio(X)	0.24	0.07		0.15	0.18	0.04	0.74	0.00		0.09	0.00	
Avail Cap(c_a), veh/h	723	1153		869	1153	977	628	0		719	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.87	0.87	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.9	6.9	0.0	8.0	7.5	6.8	31.7	0.0	0.0	25.2	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.1	0.0	0.4	0.3	0.1	2.9	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.6	0.0	1.1	1.6	0.3	7.1	0.0	0.0	0.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.6	7.0	0.0	8.4	7.8	6.8	34.7	0.0	0.0	25.3	0.0	0.0
LnGrp LOS	B	A		A	A	A	C	A		C	A	
Approach Vol, veh/h	252			381			335			46		
Approach Delay, s/veh	9.4			7.9			34.7			25.3		
Approach LOS	A			A			C			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	61.0			29.0			61.0			29.0		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	44.5			34.5			44.5			34.5		
Max Q Clear Time (g_c+I1), s	7.6			3.7			13.3			21.9		
Green Ext Time (p_c), s	3.8			0.2			2.4			1.6		
Intersection Summary												
HCM 6th Ctrl Delay	17.9											
HCM 6th LOS	B											

Intersection

Intersection Delay, s/veh 11.4

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	43	13	27	42	115	45	84	33	29	169	4
Future Vol, veh/h	7	43	13	27	42	115	45	84	33	29	169	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	58	18	36	57	155	61	114	45	39	228	5
Number of Lanes	1	1	0	1	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	3
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	2	3	2	2
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	3	2	2	2
HCM Control Delay	10.4	11.4	10.3	12.7
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	77%	0%	27%	0%	98%
Vol Right, %	0%	0%	100%	0%	23%	0%	73%	0%	2%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	45	84	33	7	56	27	157	29	173
LT Vol	45	0	0	7	0	27	0	29	0
Through Vol	0	84	0	0	43	0	42	0	169
RT Vol	0	0	33	0	13	0	115	0	4
Lane Flow Rate	61	114	45	9	76	36	212	39	234
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.116	0.2	0.07	0.019	0.138	0.069	0.343	0.073	0.402
Departure Headway (Hd)	6.854	6.348	5.639	7.235	6.565	6.843	5.823	6.707	6.185
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	522	564	633	493	544	522	615	533	580
Service Time	4.608	4.102	3.393	4.998	4.328	4.597	3.577	4.457	3.935
HCM Lane V/C Ratio	0.117	0.202	0.071	0.018	0.14	0.069	0.345	0.073	0.403
HCM Control Delay	10.5	10.7	8.8	10.1	10.4	10.1	11.6	10	13.1
HCM Lane LOS	B	B	A	B	B	B	B	A	B
HCM 95th-tile Q	0.4	0.7	0.2	0.1	0.5	0.2	1.5	0.2	1.9

Intersection						
Int Delay, s/veh	5.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	34	67	132	191	24
Future Vol, veh/h	26	34	67	132	191	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	37	74	145	210	26
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	74	0	-	0	169	74
Stage 1	-	-	-	-	74	-
Stage 2	-	-	-	-	95	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1526	-	-	-	821	988
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1526	-	-	-	805	988
Mov Cap-2 Maneuver	-	-	-	-	805	-
Stage 1	-	-	-	-	931	-
Stage 2	-	-	-	-	929	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.2	0		10.7		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1526	-	-	-	805	988
HCM Lane V/C Ratio	0.019	-	-	-	0.261	0.027
HCM Control Delay (s)	7.4	-	-	-	11	8.7
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	1	0.1

Intersection						
Int Delay, s/veh	3.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	147	195	13	43	212
Future Vol, veh/h	6	147	195	13	43	212
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	75	135	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	160	212	14	47	230
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	536	212	0	0	226	0
Stage 1	212	-	-	-	-	-
Stage 2	324	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	505	828	-	-	1342	-
Stage 1	823	-	-	-	-	-
Stage 2	733	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	487	828	-	-	1342	-
Mov Cap-2 Maneuver	487	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	707	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.6	0		1.3		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	806	1342	-	
HCM Lane V/C Ratio	-	-	0.206	0.035	-	
HCM Control Delay (s)	-	-	10.6	7.8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-	

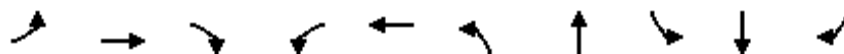
Intersection												
Int Delay, s/veh	20.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗			↗		↗↗	↗		↗↗	↗
Traffic Vol, veh/h	0	0	128	0	0	236	0	2657	248	0	1561	0
Future Vol, veh/h	0	0	128	0	0	236	0	2657	248	0	1561	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Yield	-	-	Yield	-	-	Free	-	-	Free
Storage Length	-	-	-	-	-	-	-	-	165	-	-	395
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	129	0	0	238	0	2684	251	0	1577	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	789	-	-	1342	-	0	-	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.94	-	-	6.94	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.32	-	-	3.32	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	333	0	0	~ 142	0	-	0	0	-	0
Stage 1	0	0	-	0	0	-	0	-	0	0	-	0
Stage 2	0	0	-	0	0	-	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	-	333	-	-	~ 142	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	22.5		\$ 389.2		0		0					
HCM LOS	C		F									
Minor Lane/Major Mvmt	NBT EBLn1WBLn1		SBT									
Capacity (veh/h)	- 333 142		-									
HCM Lane V/C Ratio	- 0.388 1.679		-									
HCM Control Delay (s)	- 22.5\$ 389.2		-									
HCM Lane LOS	- C F		-									
HCM 95th %tile Q(veh)	- 1.8 17.2		-									
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon						

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	67	2716	109	0	1561
Future Vol, veh/h	0	67	2716	109	0	1561
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	Free	-	None
Storage Length	-	0	-	410	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	73	2952	118	0	1697
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	1476	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	115	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	115	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	79.2	0		0		
HCM LOS	F					
Minor Lane/Major Mvmt	NBTWBLn1		SBT			
Capacity (veh/h)	- 115		-			
HCM Lane V/C Ratio	- 0.633		-			
HCM Control Delay (s)	- 79.2		-			
HCM Lane LOS	- F		-			
HCM 95th %tile Q(veh)	- 3.2		-			

Timings
3: SR 400 / US 19 & Settingdown Rd

3b. Build 2027 PM - Sys & Site Impv

01/31/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	←	→	→	←	→	←	→	←	→	→
Traffic Volume (vph)	154	108	94	269	114	188	2422	181	1198	114
Future Volume (vph)	154	108	94	269	114	188	2422	181	1198	114
Lane Group Flow (vph)	156	109	95	272	173	190	2626	183	1210	115
Turn Type	pm+pt	NA	Perm	Prot	NA	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4		3	8	1	6	5	2	
Permitted Phases	4		4			6		2		2
Detector Phase	7	4	4	3	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	5.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	47.5	47.5	15.0	48.5	15.0	28.5	15.0	28.5	28.5
Total Split (s)	17.0	19.0	19.0	25.0	27.0	15.0	61.0	15.0	61.0	61.0
Total Split (%)	14.2%	15.8%	15.8%	20.8%	22.5%	12.5%	50.8%	12.5%	50.8%	50.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.58	0.58	0.30	0.64	0.69	0.69	1.06	0.77	0.68	0.13
Control Delay	44.1	63.4	2.4	57.1	58.4	27.6	65.4	49.5	25.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	63.4	2.4	57.1	58.4	27.6	65.4	49.5	25.9	0.8
Queue Length 50th (ft)	96	81	0	105	116	56	~861	85	377	0
Queue Length 95th (ft)	147	141	0	145	184	#161	#953	#239	478	7
Internal Link Dist (ft)		703			638		1400		3075	
Turn Bay Length (ft)	210		150	350		490		515		375
Base Capacity (vph)	273	214	335	557	331	279	2488	237	1780	882
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.51	0.28	0.49	0.52	0.68	1.06	0.77	0.68	0.13

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: SR 400 / US 19 & Settingdown Rd



22-198 Marsett Pkwy Residential Development

Page 3

HCM 6th Signalized Intersection Summary

3: SR 400 / US 19 & Settingdown Rd

3b. Build 2027 PM - Sys & Site Impv

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	108	94	269	114	57	188	2422	178	181	1198	114
Future Volume (veh/h)	154	108	94	269	114	57	188	2422	178	181	1198	114
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	156	109	0	272	115	0	190	2446	180	183	1210	115
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	256	145		340	149		320	2741	199	210	2057	918
Arrive On Green	0.10	0.08	0.00	0.10	0.08	0.00	0.06	0.56	0.56	0.08	0.58	0.58
Sat Flow, veh/h	1781	1870	1585	3456	1870	0	1781	4859	352	1781	3554	1585
Grp Volume(v), veh/h	156	109	0	272	115	0	190	1702	924	183	1210	115
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1870	0	1781	1702	1807	1781	1777	1585
Q Serve(g_s), s	9.5	6.9	0.0	9.2	7.2	0.0	5.4	52.3	54.7	7.2	26.1	4.0
Cycle Q Clear(g_c), s	9.5	6.9	0.0	9.2	7.2	0.0	5.4	52.3	54.7	7.2	26.1	4.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.19	1.00		1.00
Lane Grp Cap(c), veh/h	256	145		340	149		320	1920	1019	210	2057	918
V/C Ratio(X)	0.61	0.75		0.80	0.77		0.59	0.89	0.91	0.87	0.59	0.13
Avail Cap(c_a), veh/h	256	210		562	335		351	1920	1019	214	2057	918
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.99	0.99	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.2	54.2	0.0	52.9	54.1	0.0	13.9	22.8	23.3	35.5	16.1	11.5
Incr Delay (d2), s/veh	4.2	8.7	0.0	4.3	8.0	0.0	2.3	6.5	13.0	30.1	1.2	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	4.4	3.5	0.0	4.1	3.7	0.0	2.0	19.7	23.6	6.9	9.6	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.4	62.9	0.0	57.2	62.1	0.0	16.2	29.3	36.4	65.6	17.4	11.8
LnGrp LOS	D	E		E	E		B	C	D	E	B	B
Approach Vol, veh/h	265		387				2816		1508			
Approach Delay, s/veh	54.9		58.7				30.7		22.8			
Approach LOS	D		E				C		C			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.9	75.0	17.3	14.8	14.7	73.2	17.0	15.1				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	9.5	55.5	19.5	13.5	9.5	55.5	11.5	21.5				
Max Q Clear Time (g_c+I1), s	7.4	28.1	11.2	8.9	9.2	56.7	11.5	9.2				
Green Ext Time (p_c), s	0.1	16.7	0.6	0.2	0.0	0.0	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			31.8									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

3b. Build 2027 PM - Sys & Site Impv

4: Marsett Pkwy/Adj Site Drwy 2 & Settingdown Rd

01/31/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	161	161	55	120	11	203	30	64	13	35	117
Future Volume (vph)	132	161	161	55	120	11	203	30	64	13	35	117
Lane Group Flow (vph)	148	181	181	62	135	12	0	262	72	0	54	131
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		6			2			8			4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	6	6	6	2	2	2	8	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	15.0	15.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
Total Split (s)	50.0	50.0	50.0	50.0	50.0	50.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	55.6%	55.6%	55.6%	55.6%	55.6%	55.6%	44.4%	44.4%	44.4%	44.4%	44.4%	44.4%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5	5.5	5.5	5.5		5.5	5.5		5.5	5.5
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.19	0.16	0.17	0.08	0.12	0.01		0.76	0.16		0.13	0.26
Control Delay	9.8	9.1	2.1	9.3	8.9	1.4		44.4	6.2		23.4	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0
Total Delay	9.8	9.1	2.1	9.3	8.9	1.4		44.4	6.2		23.4	5.4
Queue Length 50th (ft)	33	39	0	13	29	0		137	0		24	0
Queue Length 95th (ft)	79	88	29	37	67	3		193	26		45	35
Internal Link Dist (ft)		638			521			231			98	
Turn Bay Length (ft)	50		200	190		150			210			
Base Capacity (vph)	773	1153	1048	741	1153	991		510	651		634	687
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.19	0.16	0.17	0.08	0.12	0.01		0.51	0.11		0.09	0.19

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Splits and Phases: 4: Marsett Pkwy/Adj Site Drwy 2 & Settingdown Rd



HCM 6th Signalized Intersection Summary
4: Marsett Pkwy/Adj Site Drwy 2 & Settingdown Rd

3b. Build 2027 PM - Sys & Site Impv

01/31/2023

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	161	161	55	120	11	203	30	64	13	35	117
Future Volume (veh/h)	132	161	161	55	120	11	203	30	64	13	35	117
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	148	181	0	62	135	12	228	34	0	15	39	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	878	1251		842	1251	1060	340	40		127	300	
Arrive On Green	0.67	0.67	0.00	0.67	0.67	0.67	0.21	0.21	0.00	0.21	0.21	0.00
Sat Flow, veh/h	1241	1870	1585	1203	1870	1585	1270	189	1585	363	1436	1585
Grp Volume(v), veh/h	148	181	0	62	135	12	262	0	0	54	0	0
Grp Sat Flow(s),veh/h/ln	1241	1870	1585	1203	1870	1585	1460	0	1585	1799	0	1585
Q Serve(g_s), s	4.4	3.2	0.0	1.8	2.3	0.2	13.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.7	3.2	0.0	5.0	2.3	0.2	15.4	0.0	0.0	2.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.87		1.00	0.28		1.00
Lane Grp Cap(c), veh/h	878	1251		842	1251	1060	380	0		427	0	
V/C Ratio(X)	0.17	0.14		0.07	0.11	0.01	0.69	0.00		0.13	0.00	
Avail Cap(c_a), veh/h	878	1251		842	1251	1060	627	0		724	0	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	0.65	0.65	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	6.5	5.5	0.0	6.4	5.3	5.0	34.0	0.0	0.0	29.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.2	0.0	0.2	0.2	0.0	2.2	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.0	0.0	0.4	0.8	0.1	5.6	0.0	0.0	1.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.8	5.6	0.0	6.6	5.5	5.0	36.3	0.0	0.0	29.1	0.0	0.0
LnGrp LOS	A	A		A	A	A	D	A		C	A	
Approach Vol, veh/h	329			209			262			54		
Approach Delay, s/veh	6.1			5.8			36.3			29.1		
Approach LOS	A			A			D			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	65.7			24.3			65.7			24.3		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	44.5			34.5			44.5			34.5		
Max Q Clear Time (g_c+I1), s	7.0			4.1			8.7			17.4		
Green Ext Time (p_c), s	2.1			0.2			3.3			1.4		

Intersection Summary

HCM 6th Ctrl Delay 16.8

HCM 6th LOS B

Notes

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

Intersection

Intersection Delay, s/veh11.2

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	99	7	11	30	86	32	133	48	48	121	4
Future Vol, veh/h	3	99	7	11	30	86	32	133	48	48	121	4
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	134	9	15	41	116	43	180	65	65	164	5
Number of Lanes	1	1	0	1	1	0	1	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	3
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	2	3	2	2
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	3	2	2	2
HCM Control Delay	11.7	10.9	10.9	11.5
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	100%	0%	0%	93%	0%	26%	0%	97%
Vol Right, %	0%	0%	100%	0%	7%	0%	74%	0%	3%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	133	48	3	106	11	116	48	125
LT Vol	32	0	0	3	0	11	0	48	0
Through Vol	0	133	0	0	99	0	30	0	121
RT Vol	0	0	48	0	7	0	86	0	4
Lane Flow Rate	43	180	65	4	143	15	157	65	169
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.081	0.312	0.1	0.008	0.261	0.029	0.264	0.124	0.297
Departure Headway (Hd)	6.763	6.257	5.549	7.124	6.572	7.092	6.063	6.855	6.326
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	528	573	643	501	544	504	591	522	566
Service Time	4.519	4.013	3.305	4.887	4.335	4.852	3.823	4.611	4.081
HCM Lane V/C Ratio	0.081	0.314	0.101	0.008	0.263	0.03	0.266	0.125	0.299
HCM Control Delay	10.1	11.8	8.9	9.9	11.7	10.1	11	10.6	11.8
HCM Lane LOS	B	B	A	A	B	B	B	B	B
HCM 95th-tile Q	0.3	1.3	0.3	0	1	0.1	1.1	0.4	1.2

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	185	154	159	130	11
Future Vol, veh/h	60	185	154	159	130	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	160	-	-	200	135	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	66	203	169	175	143	12
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	169	0	-	0	504	169
Stage 1	-	-	-	-	169	-
Stage 2	-	-	-	-	335	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1409	-	-	-	528	875
Stage 1	-	-	-	-	861	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1409	-	-	-	503	875
Mov Cap-2 Maneuver	-	-	-	-	503	-
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	725	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.9	0		14.5		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1409	-	-	-	503	875
HCM Lane V/C Ratio	0.047	-	-	-	0.284	0.014
HCM Control Delay (s)	7.7	-	-	-	15	9.2
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.1	-	-	-	1.2	0

Intersection						
Int Delay, s/veh	3.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	105	191	31	107	144
Future Vol, veh/h	4	105	191	31	107	144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	75	135	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	114	208	34	116	157
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	597	208	0	0	242	0
Stage 1	208	-	-	-	-	-
Stage 2	389	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	466	832	-	-	1324	-
Stage 1	827	-	-	-	-	-
Stage 2	685	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	425	832	-	-	1324	-
Mov Cap-2 Maneuver	425	-	-	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.3	0		3.4		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	804	1324	-	
HCM Lane V/C Ratio	-	-	0.147	0.088	-	
HCM Control Delay (s)	-	-	10.3	8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.5	0.3	-	

Traffic Volume Worksheets

22-198 Residential Development on Marsett Parkway
Traffic Volumes

A&R Engineering
February 2023

1.SR 400 @ Martin Rd

A.M. Peak Hour

Condition	SR 400 / US 19 Northbound				SR 400 / US 19 Southbound				Martin Road Eastbound				Martin Road Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	65	841	44	950	64	1796	0	1860	2	139	253	394	139	176	72	387
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	67	861	45	973	66	1839	0	1905	2	142	259	403	142	180	74	396
Shifted Traffic:	-73	18	0	-55	-72	54	0	-18	-2	-156	0	-158	-156	-197	0	-353
Adjacent Site Trips:	0	95	0	95	0	72	0	72	0	0	0	0	0	0	0	0
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	95	0	95	0	72	0	72	0	0	0	0	0	0	0	0
No-Build 2027 Volumes:	0	1057	49	1106	0	2142	0	2142	0	0	284	284	0	0	81	81
Total New Trips:	0	53	23	76	0	184	0	184	0	0	0	0	0	0	0	0
Future 2027 Traffic Volumes:	0	1110	72	1182	0	2326	0	2326	0	0	284	284	0	0	81	81

P.M. Peak Hour

Condition	SR 400 / US 19 Northbound				SR 400 / US 19 Southbound				Martin Road Eastbound				Martin Road Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	182	2128	170	2480	111	1100	0	1211	8	133	114	255	93	164	210	467
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	186	2179	174	2539	114	1126	0	1240	8	136	117	261	95	168	215	478
Shifted Traffic:	-204	51	0	-153	-125	94	0	-31	-9	-149	0	-158	-104	-184	0	-288
Adjacent Site Trips:	0	86	0	86	0	102	0	102	0	0	0	0	0	0	0	0
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	86	0	86	0	102	0	102	0	0	0	0	0	0	0	0
No-Build 2027 Volumes:	0	2525	191	2716	0	1430	0	1430	0	0	128	128	0	0	236	236
Total New Trips:	0	132	57	189	0	131	0	131	0	0	0	0	0	0	0	0
Future 2027 Traffic Volumes:	0	2657	248	2905	0	1561	0	1561	0	0	128	128	0	0	236	236

22-198 Residential Development on Marsett Parkway
Traffic Volumes

A&R Engineering
February 2023

2.SR 400 @ Hemingway Trl

A.M. Peak Hour

Condition	SR 400 / US 19 Northbound				SR 400 / US 19 Southbound				- Eastbound				Hemingway Trail Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	0	901	23	924	0	1849	0	1849	0	0	0	0	0	0	23	23
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	0	923	24	947	0	1893	0	1893	0	0	0	0	0	0	24	24
Shifted Traffic:	0	16	0	16	0	-18	0	-18	0	0	0	0	0	0	30	30
Adjacent Site Trips:	0	95	0	95	0	72	0	72	0	0	0	0	0	0	0	0
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	95	0	95	0	72	0	72	0	0	0	0	0	0	0	0
No-Build 2027 Volumes:	0	1123	26	1149	0	2129	0	2129	0	0	0	0	0	0	56	56
Total New Trips:	0	15	38	53	0	184	0	184	0	0	0	0	0	0	37	37
Future 2027 Traffic Volumes:	0	1138	64	1202	0	2313	0	2313	0	0	0	0	0	0	93	93

P.M. Peak Hour

Condition	SR 400 / US 19 Northbound				SR 400 / US 19 Southbound				- Eastbound				Hemingway Trail Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	0	2272	14	2286	0	1211	0	1211	0	0	0	0	0	0	12	12
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	0	2327	14	2341	0	1240	0	1240	0	0	0	0	0	0	12	12
Shifted Traffic:	0	42	0	42	0	-31	0	-31	0	0	0	0	0	0	28	28
Adjacent Site Trips:	0	86	0	86	0	102	0	102	0	0	0	0	0	0	0	0
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	86	0	86	0	102	0	102	0	0	0	0	0	0	0	0
No-Build 2027 Volumes:	0	2678	15	2693	0	1430	0	1430	0	0	0	0	0	0	41	41
Total New Trips:	0	38	94	132	0	131	0	131	0	0	0	0	0	0	26	26
Future 2027 Traffic Volumes:	0	2716	109	2825	0	1561	0	1561	0	0	0	0	0	0	67	67

22-198 Residential Development on Marsett Parkway
Traffic Volumes

A&R Engineering
February 2023

3.SR 400 @ Settingdown Rd

A.M. Peak Hour

Condition	SR 400 / US 19 Northbound				SR 400 / US 19 Southbound				Settingdown Road Eastbound				Settingdown Road Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	48	851	25	924	17	1554	72	1643	76	37	182	295	113	57	0	170
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	49	871	26	946	17	1591	74	1682	78	38	186	302	116	58	0	174
Shifted Traffic:	48	-2	0	46	18	-18	0	0	2	0	0	2	0	20	0	20
Adjacent Site Trips:	0	38	57	95	82	0	0	82	0	41	0	41	72	31	14	117
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	38	57	95	82	0	0	82	0	41	0	41	72	31	14	117
No-Build 2027 Volumes:	102	991	85	1178	119	1726	81	1926	87	83	204	374	199	115	14	328
Total New Trips:	0	37	15	52	25	0	0	25	0	10	0	10	184	25	25	234
Future 2027 Traffic Volumes:	102	1028	100	1230	144	1726	81	1951	87	93	204	384	383	140	39	562

P.M. Peak Hour

Condition	SR 400 / US 19 Northbound				SR 400 / US 19 Southbound				Settingdown Road Eastbound				Settingdown Road Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	97	2111	78	2286	12	1095	102	1209	129	41	84	254	32	31	18	81
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	99	2162	80	2341	12	1121	104	1237	132	42	86	260	33	32	18	83
Shifted Traffic:	79	-9	0	70	31	-31	0	0	9	0	0	9	0	18	0	18
Adjacent Site Trips:	0	35	52	87	74	0	0	74	0	37	0	37	102	44	20	166
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	35	52	87	74	0	0	74	0	37	0	37	102	44	20	166
No-Build 2027 Volumes:	188	2396	140	2724	118	1198	114	1430	154	83	94	331	138	97	40	275
Total New Trips:	0	26	38	64	63	0	0	63	0	25	0	25	131	17	17	165
Future 2027 Traffic Volumes:	188	2422	178	2788	181	1198	114	1493	154	108	94	356	269	114	57	440

22-198 Residential Development on Marsett Parkway
Traffic Volumes

A&R Engineering
February 2023

4.Settingdown Rd @ Marsett Pkwy

A.M. Peak Hour

Condition	Marsett Parkway Northbound				Adjacent Site Driveway Southbound				Settingdown Road Eastbound				Settingdown Road Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	11	0	13	24	0	0	0	0	0	40	38	78	92	157	0	249
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	11	0	13	24	0	0	0	0	0	41	39	80	94	161	0	255
Shifted Traffic:	20	0	0	20	0	0	0	0	0	0	18	18	0	0	0	0
Adjacent Site Trips:	0	33	8	41	6	25	81	112	141	38	0	179	6	37	8	51
Passby Trips:	0	0	0	0	10	0	24	34	11	-11	0	0	0	-25	25	0
Total Adjacent Site Trips:	0	33	8	41	16	25	105	146	152	27	0	179	6	12	33	51
No-Build 2027 Volumes:	32	33	22	87	16	25	105	146	152	72	61	285	109	188	33	330
Total New Trips:	233	0	21	254	0	0	0	0	0	0	51	51	9	0	0	9
Future 2027 Traffic Volumes:	265	33	43	341	16	25	105	146	152	72	112	336	118	188	33	339

P.M. Peak Hour

Condition	Marsett Parkway Northbound				Adjacent Site Driveway Southbound				Settingdown Road Eastbound				Settingdown Road Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	17	0	37	54	0	0	0	0	0	116	4	120	21	64	0	85
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	17	0	38	55	0	0	0	0	0	119	4	123	22	66	0	88
Shifted Traffic:	18	0	0	18	0	0	0	0	0	0	31	31	0	0	0	0
Adjacent Site Trips:	0	30	7	37	9	35	113	157	128	35	0	163	9	52	7	68
Passby Trips:	0	0	0	0	4	0	4	8	4	-4	0	0	0	-4	4	0
Total Adjacent Site Trips:	0	30	7	37	13	35	117	165	132	31	0	163	9	48	11	68
No-Build 2027 Volumes:	37	30	49	116	13	35	117	165	132	161	35	328	33	120	11	164
Total New Trips:	166	0	15	181	0	0	0	0	0	0	126	126	22	0	0	22
Future 2027 Traffic Volumes:	203	30	64	297	13	35	117	165	132	161	161	454	55	120	11	186

22-198 Residential Development on Marsett Parkway
Traffic Volumes

A&R Engineering
February 2023

5.Marsett Pkwy @ Hemingway Trl

A.M. Peak Hour

Condition	Marsett Parkway Northbound				Marsett Parkway Southbound				Hemingway Trail Eastbound				Hemingway Trail/ Site Driveway 1 Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	14	9	15	38	11	102	4	117	6	5	12	23	16	5	7	28
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	14	9	15	38	11	104	4	119	6	5	12	23	16	5	7	28
Shifted Traffic:	30	20	0	50	0	18	0	18	0	0	0	0	0	0	0	0
Adjacent Site Trips:	0	41	0	41	0	31	0	31	0	0	0	0	0	0	0	0
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	41	0	41	0	31	0	31	0	0	0	0	0	0	0	0
No-Build 2027 Volumes:	45	71	16	132	12	163	4	179	7	5	13	25	18	5	8	31
Total New Trips:	0	13	17	30	17	6	0	23	0	38	0	38	9	37	107	153
Future 2027 Traffic Volumes:	45	84	33	162	29	169	4	202	7	43	13	63	27	42	115	184

P.M. Peak Hour

Condition	Marsett Parkway Northbound				Marsett Parkway Southbound				Hemingway Trail Eastbound				Hemingway Trail/ Site Driveway 1 Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	4	42	6	52	6	37	4	47	3	5	6	14	4	4	9	17
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	4	43	6	53	6	38	4	48	3	5	6	14	4	4	9	17
Shifted Traffic:	28	18	0	46	0	31	0	31	0	0	0	0	0	0	0	0
Adjacent Site Trips:	0	37	0	37	0	44	0	44	0	0	0	0	0	0	0	0
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	37	0	37	0	44	0	44	0	0	0	0	0	0	0	0
No-Build 2027 Volumes:	32	102	7	141	7	117	4	128	3	5	7	15	4	4	10	18
Total New Trips:	0	31	41	72	41	4	0	45	0	94	0	94	7	26	76	109
Future 2027 Traffic Volumes:	32	133	48	213	48	121	4	173	3	99	7	109	11	30	86	127

22-198 Residential Development on Marsett Parkway
Traffic Volumes

A&R Engineering
February 2023

6.Marsett Pkwy @ Martin Rd

A.M. Peak Hour

Condition	-				Marsett Parkway				Martin Road				Martin Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	0	0	0	0	113	0	21	134	3	233	0	236	0	374	32	406
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	0	0	0	0	116	0	22	138	3	239	0	242	0	383	33	416
Shifted Traffic:	0	0	0	0	18	0	0	18	0	-228	0	-228	0	-353	49	-304
Adjacent Site Trips:	0	0	0	0	31	0	0	31	0	0	0	0	0	0	41	41
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	0	0	0	31	0	0	31	0	0	0	0	0	0	41	41
No-Build 2027 Volumes:	0	0	0	0	176	0	24	200	3	34	0	37	0	67	126	193
Total New Trips:	0	0	0	0	15	0	0	15	23	0	0	23	0	0	6	6
Future 2027 Traffic Volumes:	0	0	0	0	191	0	24	215	26	34	0	60	0	67	132	199

P.M. Peak Hour

Condition	-				Marsett Parkway				Martin Road				Martin Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	0	0	0	0	39	0	10	49	3	409	0	412	0	394	54	448
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	0	0	0	0	40	0	10	50	3	419	0	422	0	403	55	458
Shifted Traffic:	0	0	0	0	31	0	0	31	0	-274	0	-274	0	-288	46	-242
Adjacent Site Trips:	0	0	0	0	44	0	0	44	0	0	0	0	0	0	37	37
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	0	0	0	44	0	0	44	0	0	0	0	0	0	37	37
No-Build 2027 Volumes:	0	0	0	0	119	0	11	130	3	185	0	188	0	154	143	297
Total New Trips:	0	0	0	0	11	0	0	11	57	0	0	57	0	0	16	16
Future 2027 Traffic Volumes:	0	0	0	0	130	0	11	141	60	185	0	245	0	154	159	313

22-198 Residential Development on Marsett Parkway
Traffic Volumes

A&R Engineering
February 2023

7. Marsett Pkwy @ Site Drwy 2

A.M. Peak Hour

Condition	Marsett Parkway Northbound				Marsett Parkway Southbound				- Eastbound				Site Driveway 2 Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	0	24	0	24	0	130	0	130	0	0	0	0	0	0	0	0
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	0	25	0	25	0	133	0	133	0	0	0	0	0	0	0	0
Shifted Traffic:	0	20	0	20	0	18	0	18	0	0	0	0	0	0	0	0
Adjacent Site Trips:	0	41	0	41	0	31	0	31	0	0	0	0	0	0	0	0
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	41	0	41	0	31	0	31	0	0	0	0	0	0	0	0
No-Build 2027 Volumes:	0	88	0	88	0	195	0	195	0	0	0	0	0	0	0	0
Total New Trips:	0	107	13	120	43	17	0	60	0	0	0	0	6	0	147	153
Future 2027 Traffic Volumes:	0	195	13	208	43	212	0	255	0	0	0	0	6	0	147	153

P.M. Peak Hour

Condition	Marsett Parkway Northbound				Marsett Parkway Southbound				- Eastbound				Site Driveway 2 Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
2022 Traffic Counts:	0	54	0	54	0	25	0	25	0	0	0	0	0	0	0	0
Growth Factor (%):	2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4		2.4	2.4	2.4	
Projected 2023 Volumes:	0	55	0	55	0	26	0	26	0	0	0	0	0	0	0	0
Shifted Traffic:	0	18	0	18	0	31	0	31	0	0	0	0	0	0	0	0
Adjacent Site Trips:	0	37	0	37	0	44	0	44	0	0	0	0	0	0	0	0
Passby Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Adjacent Site Trips:	0	37	0	37	0	44	0	44	0	0	0	0	0	0	0	0
No-Build 2027 Volumes:	0	115	0	115	0	103	0	103	0	0	0	0	0	0	0	0
Total New Trips:	0	76	31	107	107	41	0	148	0	0	0	0	4	0	105	109
Future 2027 Traffic Volumes:	0	191	31	222	107	144	0	251	0	0	0	0	4	0	105	109