

**DEVELOPMENT OF REGIONAL IMPACT
(DRI #4098)**

**TRAFFIC STUDY
FOR**

**THOMPSON MILL VILLAGE DRI 4098
ON SR 347 (FRIENDSHIP ROAD)**

HALL & GWINNETT COUNTIES, GEORGIA



Prepared for:

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EXECUTIVE SUMMARY

Traffic impacts were evaluated for the proposed Thompson Mill Village DRI 4098 that will be located between SR 347 (Friendship Road) and Thompson Mill Road and west of SR 211, in Hall and Gwinnett counties, Georgia. The development will consist of:

- Single-Family Attached Housing: 141 dwelling units
- Multifamily Housing (Mid-Rise): 460 dwelling units
- Senior Adult Housing – Multifamily: 939 dwelling units
- Hotel: 200 rooms
- General Office Building: 105,049 sf
- Medical-Dental Office Building - Within/Near Hospital Campus: 254,200 sf
- Shopping Center (>150k): 374,218 sf
- Fast Casual Restaurant: 15,000 sf
- Fine Dining Restaurant: 15,000 sf
- High-Turnover (Sit-Down) Restaurant: 15,000 sf
- Fast-Food Restaurant without Drive-Through Window: 5,000 sf

The development proposes access at the following locations:

- Site Driveway 1: Full-access driveway on SR 347 (Friendship Road), aligned with River Place
- Site Driveway 2: Full-access driveway on SR 347 (Friendship Road), aligned with the main driveway of Northeast Georgia Medical Center
- Site Driveway 3: Full-access driveway on Thompson Mill Road, aligned with Retreat Point Parkway
- Site Driveway 4: Full-access driveway on Thompson Mill Road
- Site Driveway 5: Full-access driveway on Thompson Mill Road
- Site Driveway 6: Full-access driveway on Thompson Mill Road
- Site Driveway 7: Full-access driveway on Deaton Creek Parkway
- Site Driveway 8: Full-access driveway on Deaton Creek Parkway
- Site Driveway 9: Full-access driveway on Thompson Mill Road

Existing and future traffic operations during the AM peak hour (7:00 AM – 9:00 AM), and PM peak hour (4:00 PM – 6:00 PM) were analyzed at the following intersections in “Existing”, “No-Build” and “Build” conditions as per the methodology meeting conducted on November 14, 2023.

1. SR 211 at SR 347 (Friendship Road) / Bayberry Drive
2. SR 211 at Thompson Mill Road / Grand Hickory Drive
3. SR 211 at Golf Club Drive / Liberty Church Road
4. SR 211 at I-85 Southbound Ramps
5. SR 211 at I-85 Northbound Ramps
6. SR 211 at SR 53
7. SR 347 (Friendship Road) at Northeast Georgia Medical Center’s main driveway/ Site Driveway 2
8. SR 347 (Friendship Road) at River Place/ Site Driveway 1

9. SR 347 (Friendship Road) at Deaton Creek Parkway
10. SR 347 (Friendship Road) at Spout Springs Road
11. SR 347 (Friendship Road) at Sardis Church Road
12. Sardis Church Road at Thompson Mill Road
13. Spout Springs Road at Thompson Mill Road
14. Thompson Mill Road at Deaton Creek Parkway
15. Thompson Mill Road at Autumn Maple Drive
16. Thompson Mill Road at Retreat Point Parkway/ Site Driveway 3
17. Thompson Mill Road at Site Driveway 4
18. Thompson Mill Road at Site Driveway 5
19. Thompson Mill Road at Site Driveway 6
20. Deaton Creek Parkway at Site Driveway 7
21. Deaton Creek Parkway at Site Driveway 8
22. Thompson Mill Road at Site Driveway 9

Deaton Creek Parkway has recently been renamed as “Deaton Way”. All references to “Deaton Creek Parkway” in this study may be taken as “Deaton Way”.

Traffic Operations Summary

Table E1 below provides a summary of traffic operations for the “No-Build” and “Build” conditions for the year 2028 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/ 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
1	SR 211 @ SR 347	D (43.4)	E (56.4)	D (38.0)	D 37.3)	D (51.8)	E (75.7)	D (42.6)	D (39.8)				
	-Eastbound Approach	E (65.8)	F (84.5)	D (54.3)	D (54.4)	E (70.4)	F (124.1)	D (53.4)	D (47.3)	-	-	-	-
	-Westbound Approach	E (58.3)	E (55.9)	E (58.7)	E (55.4)	E (58.0)	E (70.6)	E (58.5)	E (55.8)	10	8	6%	4%
	-Northbound Approach	D (41.5)	D (50.2)	D (36.4)	C (32.0)	D (46.0)	D (48.1)	D (43.6)	D (37.3)	-	-	-	-
	-Southbound Approach	C (32.0)	D (35.7)	C (26.9)	C (22.2)	D (54.1)	E (70.4)	C (30.0)	C (31.1)	-	-	-	-
2	SR 211 @ Thompson Mill Rd / Grand Hickory Dr	D (36.8)	F (139.5)	B (15.5)	B (11.9)	F (153.9)	F (*)	C (33.5)	D (42.2)				
	-Eastbound Approach	E (59.5)	F (92.9)	E (56.8)	E (57.8)	F (196.0)	F (*)	E (55.8)	E (55.1)	156	379	38%	52%
	-Westbound Approach	D (52.1)	D (42.6)	D (45.3)	D (46.6)	F (131.4)	F (98.9)	D (42.4)	D (40.0)	-	-	-	-
	-Northbound Approach	D (40.0)	D (40.8)	A (9.4)	A (8.5)	F (140.9)	F (154.9)	C (24.6)	D (45.7)	-	-	-	-
	-Southbound Approach	C (21.7)	F (273.8)	B (13.2)	A (6.4)	F (165.2)	F (*)	D (45.0)	D (37.6)	-	-	-	-
3	SR 211 @ Golf Club Dr / Liberty Church Rd	D (49.3)	F (162.2)	B (16.8)	C (20.7)	F (178.0)	F (273.4)	C (20.4)	C (25.2)				
	-Eastbound Approach	E (64.3)	F (82.1)	E (64.3)	E (64.4)	E (75.1)	E (74.5)	E (64.4)	E (64.4)	0	0	0%	0%
	-Westbound Approach	E (62.6)	F (110.0)	E (56.5)	E (57.9)	F (185.5)	F (185.0)	E (56.6)	D (54.9)	20	16	3%	2%
	-Northbound Approach	D (39.5)	D (36.6)	B (12.5)	B (14.4)	F (221.9)	F (147.0)	B (16.0)	B (18.9)	-	-	-	-
	-Southbound Approach	D (53.4)	F (245.8)	A (9.9)	B (14.4)	F (132.7)	F (*)	B (17.1)	C (23.2)	-	-	-	-
8	SR 347 @ Site Drwy 1												
	-Eastbound Approach	C (18.3)	C (15.1)	C (18.3)	C (15.1)	C (20.6)	C (17.7)	C (20.6)	C (17.7)	-	-	-	-
	-Westbound Approach	-	-	-	-	C (20.5)	C (24.9)	C (20.5)	C (24.9)	-	-	-	-
	-Northbound Approach	-	-	-	-	F (99.4)	F (*)	F (99.4)	F (*)	63	191	100%	100%
	-Southbound Approach	C (21.7)	D (26.4)	C (21.7)	D (26.4)	E (45.5)	F (299.4)	E (45.5)	F (299.4)	0	0	0%	0%

		No-Build		No-Build Improved		Build – No Imp		Build (Improved)		Site Volume @ Failing App		% of Trips @ Failing App	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
9	<u>SR 347 @ Deaton Cr Pkwy</u>	<u>B (17.9)</u>	<u>B (11.9)</u>	<u>B (10.2)</u>	<u>B (11.6)</u>	<u>B (12.3)</u>	<u>B (14.8)</u>	<u>B (13.7)</u>	<u>C (21.2)</u>				
	-Eastbound Approach	A (7.6)	A (8.2)	A (8.4)	A (9.1)	B (11.1)	B (15.5)	B (11.1)	B (15.5)	-	-	-	-
	-Westbound Approach	C (22.0)	A (0.3)	A (0.2)	A (0.3)	A (0.4)	A (0.8)	A (4.5)	B (17.0)	-	-	-	-
	-Northbound Approach	D (50.6)	E (59.9)	D (46.8)	D (52.3)	D (44.5)	D (41.6)	D (44.5)	D (42.5)	-	-	-	-
	-Southbound Approach	E (59.5)	E (60.4)	E (59.5)	E (60.6)	E (58.6)	E (60.1)	E (58.6)	E (60.1)	20	16	20%	14%
10	<u>SR 347@Spout Springs Rd</u>	<u>D (42.3)</u>	<u>E (63.3)</u>	<u>D (43.7)</u>	<u>D (51.7)</u>	<u>D (49.7)</u>	<u>F (91.3)</u>	<u>D (45.9)</u>	<u>E (58.0)</u>				
	-Eastbound Approach	C (34.3)	D (50.5)	D (40.8)	D (50.9)	D (46.6)	E (76.0)	D (45.5)	D (54.9)	168	138	14%	8%
	-Westbound Approach	C (33.0)	E (75.7)	D (40.5)	D (50.6)	D (48.8)	F (90.1)	D (44.7)	D (52.9)	129	313	10%	19%
	-Northbound Approach	E (59.3)	E (67.6)	D (51.4)	D (54.9)	D (53.1)	F (103.2)	D (50.7)	D (54.8)	-	-	-	-
	-Southbound Approach	D (53.4)	E (69.7)	D (45.3)	D (52.2)	D (54.1)	F (122.3)	D (44.4)	E (77.8)	30	24	4%	3%
11	<u>SR 347 @ Sardis Ch. Rd</u>	<u>D (26.8)</u>	<u>F (93.6)</u>	<u>B (10.9)</u>	<u>C (22.2)</u>			<u>B (13.4)</u>	<u>C (32.6)</u>				
	-Eastbound Approach	-	-	A (6.9)	B (18.9)	-	-	A (9.5)	D (36.5)	-	-	-	-
	-Westbound Approach	B (11.1)	E (39.2)	A (4.0)	B (13.5)	B (12.5)	F (91.7)	A (5.6)	B (17.8)	-	-	-	-
	-Northbound Approach	F (175.6)	F (*)	E (57.5)	E (65.7)	F (299.7)	F (*)	E (59.1)	E (65.3)	49	41	18%	11%
13	<u>Spout Springs Rd @ Thompson Mill Rd</u>	<u>C (21.5)</u>	<u>C (27.9)</u>	<u>C (21.5)</u>	<u>C (28.1)</u>	<u>C (23.4)</u>	<u>C (29.0)</u>	<u>C (23.4)</u>	<u>C (29.0)</u>				
	-Eastbound Approach	D (52.7)	E (57.7)	D (52.7)	D (48.9)	D (49.3)	D (50.1)	D (49.3)	D (50.1)	-	-	-	-
	-Westbound Approach	E (59.4)	E (55.1)	E (59.4)	D (54.8)	E (59.3)	D (54.8)	E (59.3)	D (54.8)	0	0	0%	0%
	-Northbound Approach	B (16.3)	B (17.6)	B (16.3)	B (19.5)	B (19.2)	C (20.5)	B (19.1)	C (20.5)	-	-	-	-
	-Southbound Approach	B (12.4)	B (19.2)	B (12.4)	C (21.4)	B (14.1)	C (22.5)	B (14.1)	C (22.5)	-	-	-	-

The results of the Future “No-Build” analysis indicate that the following intersections has LOS “F” for one or more approaches in the AM or PM peak hour or both:

- Intersection 1: SR 211 at SR 347 (Friendship Road) / Bayberry Drive
- Intersection 2: SR 211 at Thompson Mill Road / Grand Hickory Drive
- Intersection 3: SR 211 at Golf Club Drive / Liberty Church Road
- Intersection 11: SR 347 (Friendship Road) at Sardis Church Road
- Intersection 12: Sardis Church Road at Thompson Mill Road

Recommendations for System Improvements

SR 211 is a two-lane roadway from I-85 ramps to SR 347 (Friendship Road) and needs to be widened to a four-lane roadway to accommodate the traffic volumes of more than 1,000 vehicles in each approach in the PM peak hours. Intersections 1 and 2 on SR 211 will operate at overall LOS “E” due to the inadequate capacity of the existing two-lane SR 211. Intersections 3 and 5 on SR 211 will have at least one approach operating at LOS “E” either in AM or PM peak hour. Based on the traffic volumes in the “No-Build” conditions, we recommend that SR 211 be widened to a four-lane roadway from SR 347 (Friendship Road) to I-85 southbound ramps.

GDOT PI 0013988 – SR 211 Widening from I-85 NB Ramp to north of Pinot Noir Drive:

GDOT’s above project will widen SR 211 to a four-lane roadway from the I-85 northbound ramp terminals (where dual left turn lanes will be provided on SR 211 to turn onto the I-85 northbound entrance ramp) to north of Pinot Noir Drive. North of Tour de France Drive, the project will provide a four-lane urban section with a 20-foot raised median and 10-foot side path on the east side of SR 211. The project will also construct two multi-lane roundabouts at the SR 211 intersections with the I-85 southbound ramps and the Braselton Parkway Extension/Tour de France Drive.

Since GDOT’s completion date is stated as 2025, we have assumed the widening as completed in our “No-Build 2027” and “Build 2027” analysis. A summary of the system improvements (apart from GDOT’s SR 211 widening mentioned above), which address deficiencies that are found within the existing road network for the “No-Build” conditions, is provided below.

Intersection 1: SR 211 at SR 347 (Friendship Road) / Bayberry Drive

- Addition of a left turn lane creating dual left turn lanes on the eastbound approach of SR 347 (Friendship Road) with protective only phasing.

Intersection 2: SR 211 at Thompson Mill Road / Grand Hickory Drive

In “No-Build” PM, the eastbound approach will have 283 eastbound right-turning trips without a dedicated right-turn lane. The northbound and southbound volumes exceed 1,000 trips each way in either AM or PM peak hours.

- Re-stripe the eastbound approach of Thompson Mill Road to a shared left/through lane and a dedicated right-turn lane with channelization and right-turn overlap phase.
- Convert the northbound and southbound right-turn lanes on SR 211 to a shared northbound shared through/right-turn lane and a southbound shared through/right-turn lane to create two through lanes in both northbound and southbound approaches.

Intersection 3: SR 211 at Golf Club Drive / Liberty Church Road

The westbound Liberty Church Approach currently has a lane geometry of a left-turn lane and a shared through/right-turn lane. The future “No-Build” volumes for this approach will exceed 350 vehicles in the PM peak hour and warrant a dual left-left-turn lane. Also, as explained, the heavy volumes on SR 211 will need a capacity increased to a four-lane roadway.

- Addition of a second southbound through lane on SR 211
- Restripe existing westbound shared through/right turn lane on of Liberty Church Road to a right-turn lane.
- Addition of westbound shared through and left-turn lane on Liberty Church Road, make the approach to have dual left turn lanes.
- Convert the existing northbound right-turn lane on SR 211 to a shared through/right-turn lane to accommodate two northbound through lanes.

Intersection 5: SR 211 at I-85 NB Ramps

The eastbound left-turn approach of I-85 ramp will have a volume of 243 in AM peak and 451 in the PM peak hour and currently has only one lane. Based on the future “No-Build” volumes, the eastbound left-turn approach needs to have two left-turn lanes.

- Addition of an additional eastbound left-turn lane on the northbound ramp to turn left on SR 211.

Intersection 10: SR 347 (Friendship Road) at Spout Springs Road

SR 347 (Friendship Road) currently has one eastbound left-turn lane and one westbound left-turn lane. The future “No-Build” left-turn volumes of 372 and 382 respectively in the PM peak hour warrant a second eastbound and westbound left-turn lane.

- Addition of a second eastbound left-turn lane on SR 347 with “protected” phasing.
- Addition of a second westbound left-turn lane on SR 347 with “protected” phasing.
- Convert the existing southbound right-turn lane into a shared through/right-turn lane on Spout Springs Road.

Intersection 11: SR 347 (Friendship Road) at Sardis Church Road

Due to the heavy through volumes on SR 347 and heavy westbound left-turn volumes cause considerable delays for the northbound left-turn vehicles to find gaps turning left on SR 347. Heavy left-turn volumes indicate that a signal will be warranted. However, a detailed signal warrant study/ICE study be conducted to see if a traffic signal is warranted.

- Installation of a traffic signal (if warranted and approved by GDOT) with “protected+permissive” phasing for westbound left turn lane on SR 347

Intersection 12: Sardis Church Road at Thompson Mill Road

The entering volumes at this “All-Way Stop” controlled intersection is approximately 1,500 vehicles in the PM peak hour and therefore all approaches will experience long delays. Installation of a traffic signal or a roundabout to improve the traffic operations at this intersection.

Recommendations for Site Mitigation Improvements

Improvements that are identified as mitigation improvements address deficiencies that are caused by site traffic and can be identified as related to the proposed development. In addition to the system improvements discussed in the earlier section, the following site improvements are identified.

Intersection 7: SR 347 (Friendship Road) at NEG Medical Center Drwy / Site Driveway 2

- Provide two receiving lanes on driveway for potential future second westbound left-turn lane on SR 347. As recommended by GDOT, provide offset hatching to reserve space for future dual lefts.

After the recommended system and site improvements are implemented, the signalized intersections will be operating at an overall level of service “D” or better in both the AM and PM peak hours except the intersection of SR 347 at Spout Springs Road which will have overall LOS “E” in the PM peak hour.

Stop controlled side streets to the intersection of SR 347 at River Place/ Site Driveway 1 will operate at a level of service “F”. It is not unusual for stop-controlled side-streets along arterial roadways to have elevated delays during peak periods as delays caused by side-streets wait times to turn left onto the mainline.

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 211 @ SR 347/ Bayberry Dr</u> -Westbound Left -Westbound Thru/Right	300' 300'	65' 143'	93' 155'
2	<u>SR 211 @ Thompson Mill Rd / Grand Hickory Dr</u> -Eastbound Left -Eastbound Right	250' -	138' 204'	163' 607'
3	<u>SR 211 @ Golf Club Dr / Liberty Church Rd</u> -Eastbound Left/Thru -Westbound Left	250' 275	43' 170'	63' 293'
8	<u>SR 347 @ Site Drwy 1</u> -Northbound Left/ Thru -Northbound Right -Southbound Left/ Thru -Southbound Right	- 50' - 100'	68' 8' 15' 3'	240' 35' 185' 23'
9	<u>SR 347 @ Deaton Cr Pkwy</u> -Southbound Left -Southbound Thru -Southbound Right	95' - 100'	63' 25' 65'	65' 20' 90'
10	<u>SR 347@Spout Springs Rd</u> -Southbound Left -Southbound Thru	125' -	261' 238'	348' 221'

11	<u>SR 347 @ Sardis Church Rd</u>			
	-Northbound Left	140'	138'	104'
	-Northbound Right	-	96'	78'
13	<u>Spout Springs Rd @ Thompson Mill Rd</u>			
	-Westbound Left	225'	53'	257'
	-Westbound Thru/Right	-	74'	272'

As reported in Table E2, the projected “Build” condition 95th percentile approach queues will be accommodated by the existing storage available except at intersection # 3 (SR 211 at Golf Club Drive / Liberty Church Road) (queue exceeds marginally), intersection # 10 (SR 347 at Spout Springs Road), and intersection # 13 (SR 347 at Sardis Church Road).

Recommended Site Access Configuration

The following access configuration is recommended for the proposed site driveway intersections. It is recommended that adequate sight distance as per AASHTO standard is provided for each driveway.

- Site Driveway 1: Full-access driveway on SR 347 (Friendship Road), aligned with River Place
 - One entering and two exiting lanes (shared left-thru and channelized right turn lane).
 - Stop-sign controlled on the driveway approach with SR 347 remaining free flow.
- Site Driveway 2: Full access driveway on SR 347 (Friendship Road), aligned with the main driveway of Northeast Georgia Medical Center
 - Two entering and two exiting lanes (left and shared thru-right turn lane).
 - Intersection to continue to operate with a traffic signal.
- Site Driveway 3: Full-access driveway on Thompson Mill Road, aligned with Retreat Point Parkway
 - One entering and two exiting lanes (shared left-thru and right turn lane).
 - Stop-sign controlled on the driveway approach.
 - A right turn lane for entering traffic.
 - A left turn lane for entering traffic.
- Site Driveway 4: Full access driveway on Thompson Mill Road
 - One entering and one exiting lanes.
 - Stop-sign controlled on the driveway approach.
 - A right turn lane for entering traffic.
 - A left turn lane for entering traffic.
- Site Driveway 5: Full access driveway on Thompson Mill Road east of Autumn Maple Drive
Currently there is a 500 feet long westbound left-turn lane storage on Thompson Mill Road at Autumn Maple Drive. Based on our analysis, the westbound left turn volumes and queues do not require this long of a left turn lane. Given below is 95th % percentile queue length table for the Autumn Maple Drive intersection and the proposed full access site driveway.

TABLE E 3 — FUTURE 95TH PERCENTILE SYNCHRO QUEUES (FT)				
Intersection		Available Storage (ft)	Queue in feet	
			BUILD with Improvements	
			AM Peak	PM Peak
15	<u>Thompson Mill Road @ Autumn Maple Drive</u> -Westbound Left	500'	25' (Synchro) 32' (SimTraffic)	25' (Synchro) 35' (SimTraffic)
18	<u>Thompson Mill Rd @ Site Drwy 5</u> -Eastbound Left	160'	25' (Synchro) 23' (SimTraffic)	25' (Synchro) 23' (SimTraffic)

Based on the above queue length analysis, we recommend that site driveway 5 be shifted further east of Autumn Maple Drive to allow a 160 feet storage and 50 feet taper for its eastbound left-turn lane. The remaining storage of 290 feet can be utilized for the westbound left turn lane storage and taper length for Autumn Maple Drive intersection.

- o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o A right turn lane for entering traffic.
 - o A left turn lane and right turn lane for entering traffic.
- Site Driveway 6: Full access driveway on Thompson Mill Road
 - o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o A right turn lane for entering traffic.
 - o A left turn lane for entering traffic.
- Site Driveway 7: Full access driveway on Deaton Creek Parkway
 - o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o Existing two-way-left-turn-lane will be used as a left-turn lane.
- Site Driveway 8: Full access driveway on Deaton Creek Parkway
 - o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o Existing two-way-left-turn-lane will be used as a left-turn lane.
- Site Driveway 9: Full access driveway on Thompson Mill Road
 - o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o A right turn lane for entering traffic.

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INTRODUCTION

The purpose of this study is to determine the traffic impact from the proposed Thompson Mill Village DRI # 4098 that will be located between SR 347 (Friendship Road) and Thompson Mill Road, to the west of SR 211, in Hall and Gwinnett counties, Georgia. This study is prepared in accordance with the agreed upon methodology and the LOU. The traffic analysis evaluates the current operations and the future conditions with the traffic generated by the development. The proposed development will consist of:

- Single-Family Attached Housing: 141 dwelling units
- Multifamily Housing (Mid-Rise): 460 dwelling units
- Senior Adult Housing – Multifamily: 939 dwelling units
- Hotel: 200 rooms
- General Office Building: 105,049 sf
- Medical-Dental Office Building - Within/Near Hospital Campus: 254,200 sf
- Shopping Center (>150k): 374,218 sf
- Fast Casual Restaurant: 15,000 sf
- Fine Dining Restaurant: 15,000 sf
- High-Turnover (Sit-Down) Restaurant: 15,000 sf
- Fast-Food Restaurant without Drive-Through Window: 5,000 sf



The development proposes access at the following locations:

- Site Driveway 1: Full-access driveway on SR 347 (Friendship Road), aligned with River Place
- Site Driveway 2: Full-access driveway on SR 347 (Friendship Road), aligned with the main driveway of Northeast Georgia Medical Center
- Site Driveway 3: Full-access driveway on Thompson Mill Road, aligned with Retreat Point Parkway
- Site Driveway 4: Full-access driveway on Thompson Mill Road
- Site Driveway 5: Full-access driveway on Thompson Mill Road
- Site Driveway 6: Full-access driveway on Thompson Mill Road
- Site Driveway 7: Full-access driveway on Deaton Creek Parkway
- Site Driveway 8: Full-access driveway on Deaton Creek Parkway
- Site Driveway 9: Full-access driveway on Thompson Mill Road

The AM and PM peak hours have been analyzed in this study. This study includes the evaluation of traffic operations at the intersections of:

1. SR 211 at SR 347 (Friendship Road) / Bayberry Drive
2. SR 211 at Thompson Mill Road / Grand Hickory Drive
3. SR 211 at Golf Club Drive / Liberty Church Road
4. SR 211 at I-85 Southbound Ramps
5. SR 211 at I-85 Northbound Ramps
6. SR 211 at SR 53
7. SR 347 (Friendship Road) at Northeast Georgia Medical Center's main driveway/ Site Driveway 2
8. SR 347 (Friendship Road) at River Place/ Site Driveway 1
9. SR 347 (Friendship Road) at Deaton Creek Parkway
10. SR 347 (Friendship Road) at Spout Springs Road
11. SR 347 (Friendship Road) at Sardis Church Road
12. Sardis Church Road at Thompson Mill Road
13. Spout Springs Road at Thompson Mill Road
14. Thompson Mill Road at Deaton Creek Parkway
15. Thompson Mill Road at Autumn Maple Drive
16. Thompson Mill Road at Retreat Point Parkway
17. Thompson Mill Road at Site Driveway 4
18. Thompson Mill Road at Site Driveway 5
19. Thompson Mill Road at Site Driveway 6
20. Deaton Creek Parkway at Site Driveway 7
21. Deaton Creek Parkway at Site Driveway 8
22. Thompson Mill Road at Site Driveway 9

Recommendations to improve traffic operations have been identified as appropriate and are discussed in detail in the following sections of the report. The location of the development and the surrounding roadway network is shown in Figure 1.

Deaton Creek Parkway has recently been renamed as Deaton Way. All references to "Deaton Creek Parkway" in this study may be taken as "Deaton Way".

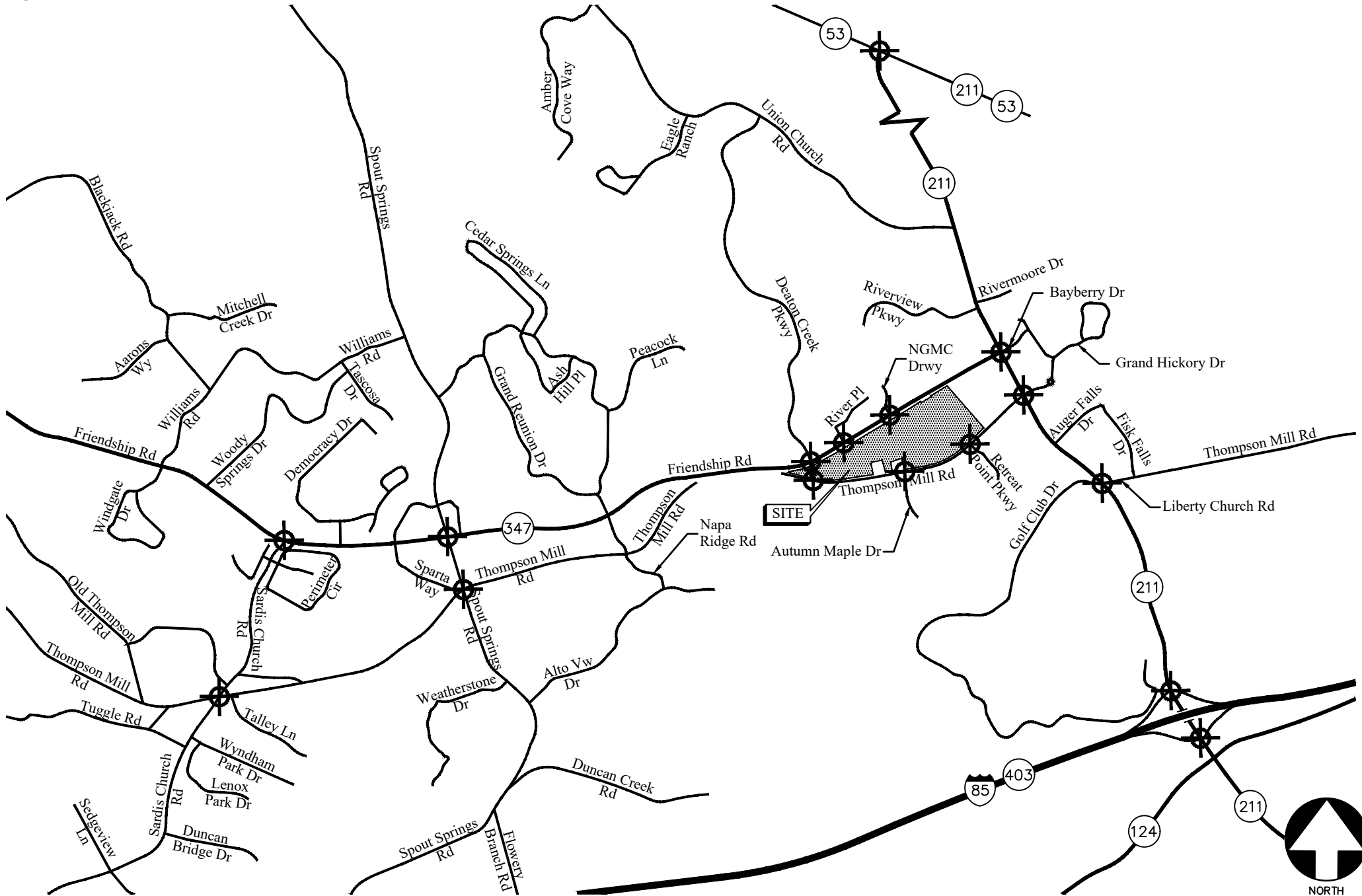
STUDY NETWORK DETERMINATION

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 GRTA, ARC, GDOT, Hall County, Gwinnett County, Town of Braselton (adjoins), and Barrow County:

1. SR 211 at SR 347 (Friendship Road) / Bayberry Drive
2. SR 211 at Thompson Mill Road / Grand Hickory Drive
3. SR 211 at Golf Club Drive / Liberty Church Road
4. SR 211 at I-85 Southbound Ramps
5. SR 211 at I-85 Northbound Ramps
6. SR 211 at SR 53
7. SR 347 (Friendship Road) at Northeast Georgia Medical Center’s main Drwy/ Site Driveway 2
8. SR 347 (Friendship Road) at River Place/ Site Driveway 1
9. SR 347 (Friendship Road) at Deaton Creek Parkway
10. SR 347 (Friendship Road) at Spout Springs Road
11. SR 347 (Friendship Road) at Sardis Church Road
12. Sardis Church Road at Thompson Mill Road
13. Spout Springs Road at Thompson Mill Road
14. Thompson Mill Road at Deaton Creek Parkway
15. Thompson Mill Road at Autumn Maple Drive
16. Thompson Mill Road at Retreat Point Parkway
17. Thompson Mill Road at Site Driveway 4
18. Thompson Mill Road at Site Driveway 5
19. Thompson Mill Road at Site Driveway 6
20. Deaton Creek Parkway at Site Driveway 7
21. Deaton Creek Parkway at Site Driveway 8
22. Thompson Mill Road at Site Driveway 9

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

EXISTING ROADWAY FACILITIES

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

SR 347 (Friendship Road)

SR 347 (Friendship Road) is an east-west, six-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID 139-0491) indicate that the daily traffic volume on SR 347 (Friendship Road) in 2022 was 17,100 vehicles per day between Puckett Road and Williams Road. GDOT classifies SR 347 (Friendship Road) as an Urban Minor Arterial roadway. Gwinnett County classifies Friendship Road as a Highway.

SR 211

SR 211 is a north-south, two-lane, undivided roadway with a posted speed limit of 50 mph in the vicinity of the site. SR 211 is posted with a speed limit of 45 mph near SR 53 and I-85 and 55 mph near Golf Club Drive/Liberty Church Road. GDOT traffic counts (Station ID's 135-0234, 135-0235 & 139-0545) indicate that the daily traffic volume on SR 211 in 2022 was 30,900 vehicles per day south of Thompson Mill Road, 26,100 vehicles per day between SR 347 (Friendship Road) and Thompson Mill Road, and 11,800 vehicles per day north of Union Church Road/Howington Road. Gwinnett County classifies SR 211 as an a Major Arterial roadway.

Thompson Mill Road

Thompson Mill Road is an east-west, two-lane, undivided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID 135-0703) indicate that the daily traffic volume on Thompson Mill Road in 2022 was 3,780 vehicles per day west of SR 211. GDOT classifies Thompson Mill Road as an Urban Local roadway. Gwinnett County classifies Thompson Mill Road as Minor Arterial.

Bayberry Drive

Bayberry Drive is an east-west, four-lane, median-divided roadway with an assumed speed limit of 25 mph.

Grand Hickory Drive

Grand Hickory Drive is an east-west, four-lane, median-divided roadway with an assumed speed limit of 25 mph.

Deaton Creek Parkway

Deaton Creek Parkway is a north-south, two-lane roadway with a posted speed limit of 25 mph.

River Place

River Place is a two-lane, undivided roadway with an assumed speed limit of 25 mph.

Autumn Maple Drive

Autumn Maple Drive is a north-south, two-lane roadway with an assumed speed limit of 25 mph.

Retreat Point Parkway

Retreat Point Parkway is a north-south, two-lane roadway with an assumed speed limit of 25 mph.

SR 53

SR 53 is an east-west, four-lane, median-divided roadway with a posted speed limit of 45 mph in the vicinity of the site. GDOT traffic counts (Station ID's 139-0289 & 139-0292) indicate that the daily traffic volume on SR 53 in 2022 was 24,400 vehicles per day northwest of Plantation Drive and 14,700 vehicles per day southeast of SR 211. GDOT classifies SR 53 as an Urban Principal Arterial roadway northwest of Plantation Drive and as an Urban Minor Arterial roadway southeast of SR 211.

Interstate 85 (I-85)

Interstate 85 (I-85) is an east-west, six-lane, median-divided roadway with a posted speed limit of 70 mph in the vicinity of the site. GDOT traffic counts (Station ID's 013-0174 & 013-0175) indicate that the daily traffic volume on I-85 in 2022 was 75,700 vehicles per day west of SR 211 and 63,900 vehicles per day east of SR 211.

Golf Club Drive

Golf Club Drive is an east-west, two-lane, undivided roadway with an assumed speed limit of 25 mph.

Liberty Church Road

Liberty Church Road is an east-west, two-lane, undivided roadway with a posted speed limit of 45 mph in the vicinity of the site.

Spout Springs Road

Spout Springs Road is a north-south, two-lane, undivided roadway with a posted speed limit of 40 mph in the vicinity of the site. GDOT traffic counts (Station ID's 139-0437 & 135-7360) indicate that the daily traffic volume on Spout Springs Road in 2022 was 11,400 vehicles north of SR 347 (Friendship Road) and 9,990 vehicles southwest of Flowery Branch Road. GDOT classifies Spout Springs Road as an Urban Minor Arterial roadway north of SR 347 (Friendship Road) and as an Urban Major Collector roadway southwest of Flowery Branch Road.

Sardis Church Road

Sardis Church Road is a north-south, two-lane, undivided roadway with a posted speed limit of 35 mph in the vicinity of the site.

Existing Bicycle and Pedestrian Facilities

- Sidewalks were identified in the vicinity of the proposed development and are shown in the graphic below.
- Crosswalks are present at the intersections of:
 - SR 211 and SR 347 (Friendship Road) on all approaches
 - SR 211 and Thompson Mill Road on all approaches
 - SR 347 (Friendship Road) and Northeast Georgia Medical Center's main signalized entrance on all approaches
 - SR 347 (Friendship Road) and Deaton Creek Parkway on all approaches
 - SR 347 (Friendship Road) and River Place on northbound and southbound approaches
 - Thompson Mill Road and Retreat Point Parkway on northbound approach
 - Thompson Mill Road and Autumn Maple Drive on eastbound and northbound approaches
- Multi-use paths (10' wide) for golfcarts, bicycles and pedestrians are along both sides of SR 347 and runs along SR 347 (Friendship Road) up to Lake Lanier where SR 347 change name to Lanier Islands Parkway. It serves as the main east-west route from Lake Lanier Islands to the town of Braselton for the biking community.
- Braselton Life Path provides urban connectivity in a suburban setting by linking residential, retail and offices via alternative modes of transportation along the 10 feet wide concrete pathway. The Lifepath connects The Village at Deaton Creek and the Northeast Georgia Medical Center to Chateau Elan, Mulberry Walk and the Town of Braselton Mulberry River Walk.
- There is no public transport in the vicinity of the site. Gwinnett County's recent transit expansion doesn't cover the study area. The town of Braselton Trolley serves Friendship Road on a weekend schedule. It is a free hourly service provided by the City of Braselton on Fridays and Saturdays between 4-11 pm at the following seven locations. The closest to the site is at 6323 Grand Hickory Drive which is 0.35 miles from site driveway # 3 on Thompson Mill Road, across from Retreat point Parkway. The 10' multi-use path connects the site to the nearest trolley stop at 6323 Grand Hickory Drive. Since it is more than a quarter mile away from the site driveway, no further information is provided.



- There are no streetlights in the vicinity of the site except Northeast Georgia Medical Center's main entrance on SR 347

Alternative Modes of Access

- There are no transit routes in the study network.
- There are no high-capacity transit stations 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*	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 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 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*	
	$v/c \leq 1.0$	$v/c > 1.0$
≤ 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 TRAFFIC ANALYSIS

Existing Traffic Volumes

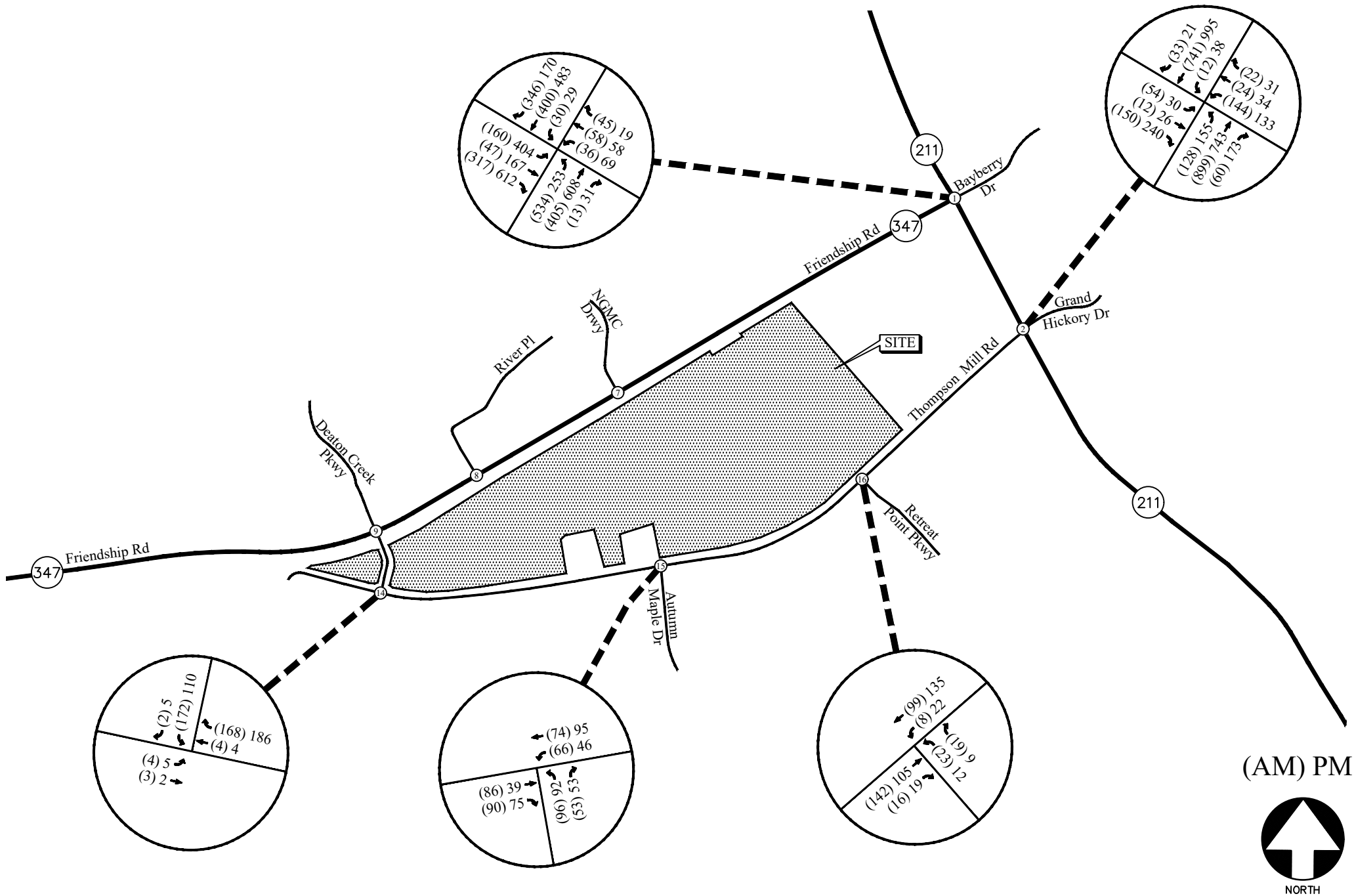
Existing traffic counts were obtained at the following study intersections:

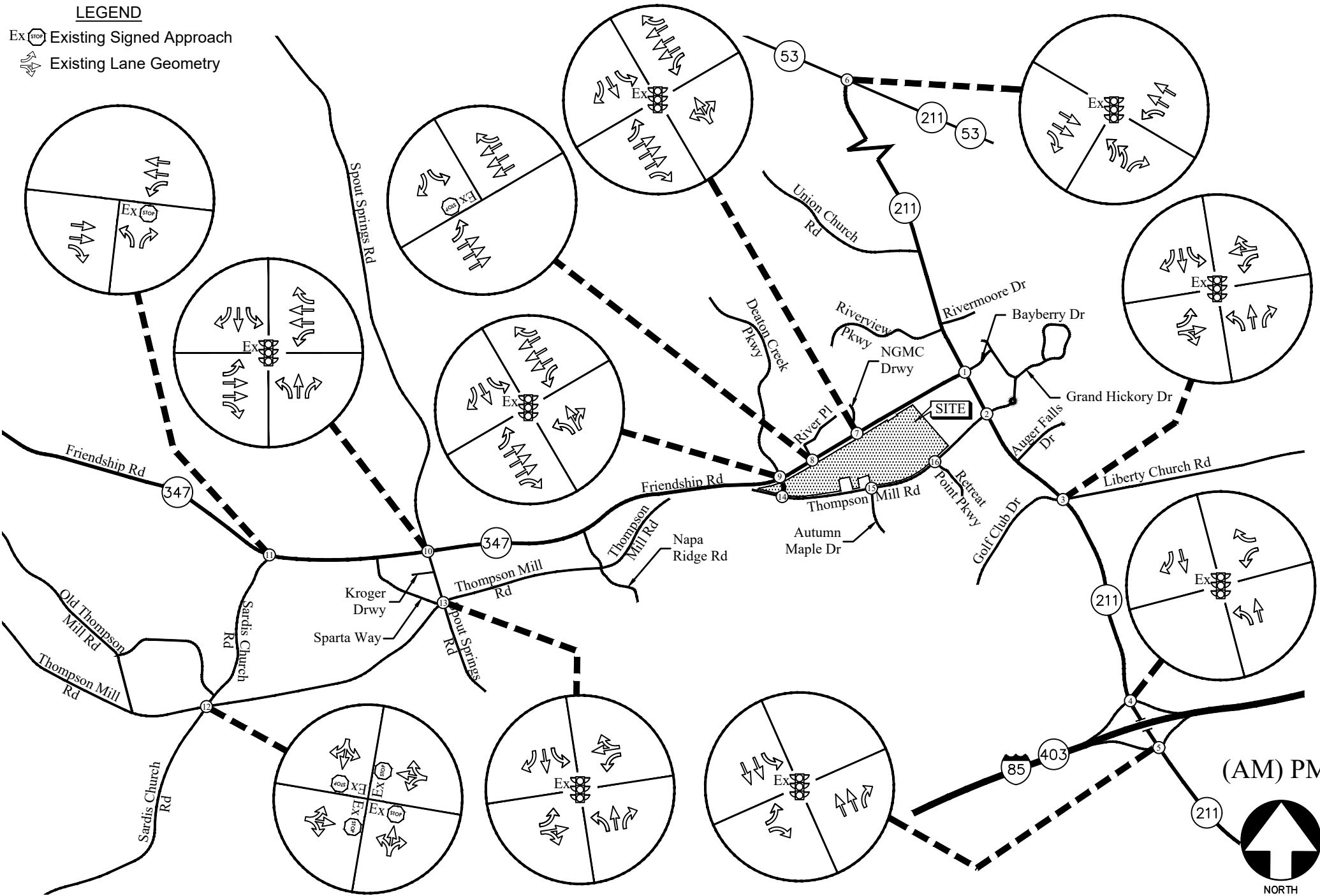
1. SR 211 at SR 347 (Friendship Road) / Bayberry Drive
2. SR 211 at Thompson Mill Road / Grand Hickory Drive
3. SR 211 at Golf Club Drive / Liberty Church Road
4. SR 211 at I-85 Southbound Ramps
5. SR 211 at I-85 Northbound Ramps
6. SR 211 at SR 53
7. SR 347 (Friendship Road) at Northeast Georgia Medical Center's main driveway
8. SR 347 (Friendship Road) at River Place
9. SR 347 (Friendship Road) at Deaton Creek Parkway
10. SR 347 (Friendship Road) at Spout Springs Road
11. SR 347 (Friendship Road) at Sardis Church Road
12. Sardis Church Road at Thompson Mill Road
13. Spout Springs Road at Thompson Mill Road
14. Thompson Mill Road at Deaton Creek Parkway
15. Thompson Mill Road at Autumn Maple Drive
16. Thompson Mill Road at Retreat Point Parkway

Turning movement counts were collected on Tuesday, May 2, 2023, and the counts for intersection 11 (SR 347 (Friendship Road) at Sardis Church Road) was collected on Thursday, May 11, 2023. The counts at the Interstate 85 (I-85) ramps were collected on Tuesday, October 3, 2023. 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 produced 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 Figures 2A and 2B. The existing traffic control and lane geometry for the intersections are shown in Figures 3A and 3B.

EXISTING WEEKDAY PEAK-HOUR VOLUMES 1 OF 2





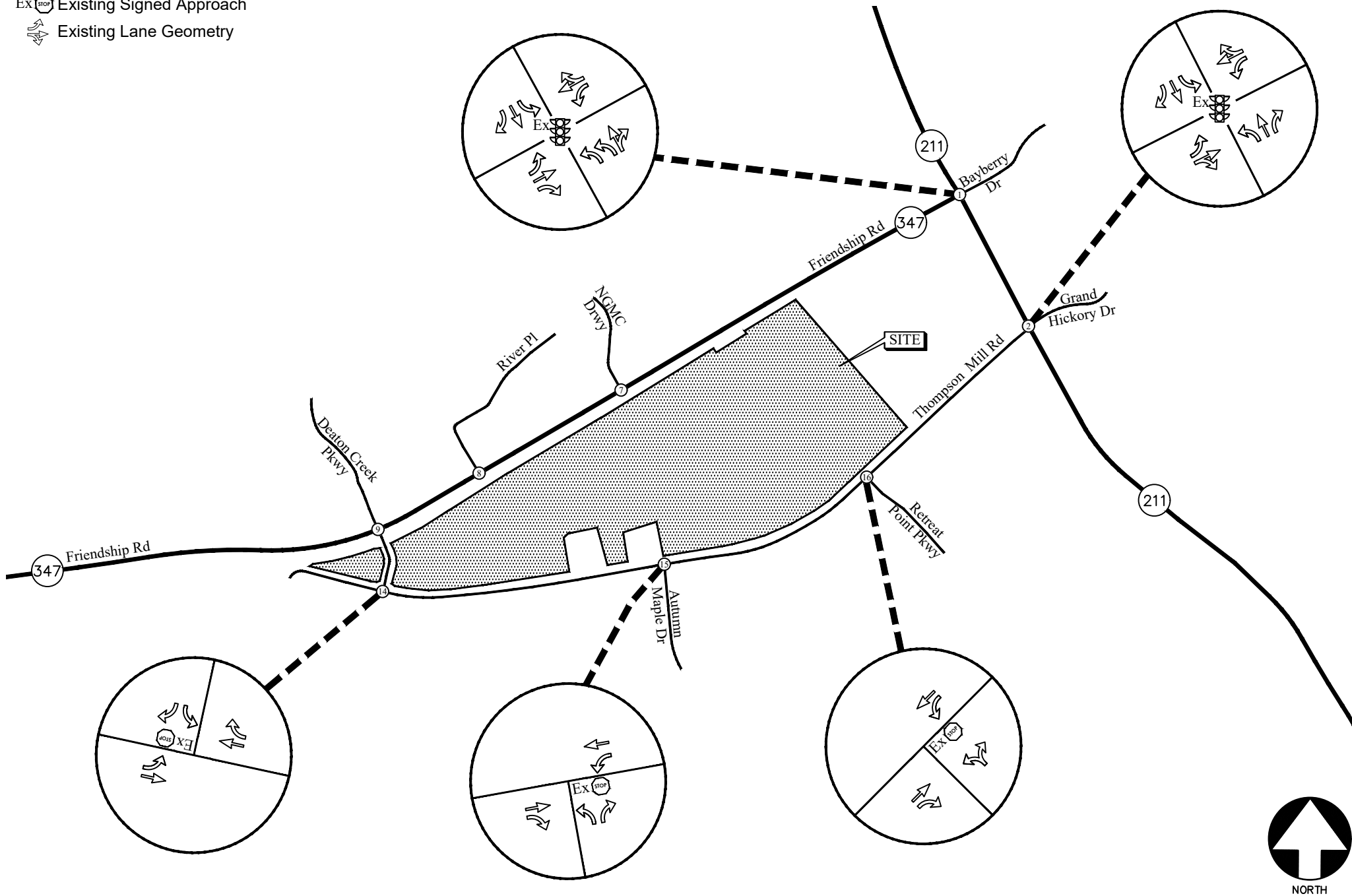
EXISTING TRAFFIC CONTROL AND LANE GEOMETRY 1 OF 2

FIGURE 3A
A&R Engineering Inc.

LEGEND

Ex  Existing Signed Approach

 Existing Lane Geometry



EXISTING TRAFFIC CONTROL AND LANE GEOMETRY 2 OF 2

FIGURE 3B

A&R Engineering Inc.

Existing Traffic Operations

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

TABLE 3 — EXISTING INTERSECTION OPERATIONS					
	Intersection	Traffic Control	AM Peak	PM Peak	LOS Standard
1	<u>SR 211 @ SR 347 (Friendship Road) / Bayberry Drive</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>D (38.6)</u> D (52.9) E (59.2) D (37.6) C (27.1)	<u>D (44.6)</u> E (69.2) E (56.8) D (35.5) C (29.1)	<u>D/D</u> D/D D/D D/D D/D
2	<u>SR 211 @ Thompson Mill Road / Grand Hickory Drive</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>C (20.5)</u> E (57.2) D (44.5) B (19.5) A (5.2)	<u>E (60.4)</u> F (116.2) E (71.5) C (33.9) E (69.8)	<u>D/D</u> D/E D/D D/D D/D
3	<u>SR 211 @ Golf Club Dr / Liberty Church Rd</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>D (46.1)</u> E (64.6) E (60.3) D (42.8) D (39.9)	<u>E (70.4)</u> E (64.3) E (60.2) D (36.4) F (94.5)	<u>D/D</u> D/D D/D D/D D/E
4	<u>SR 211 @ I-85 Southbound Ramps</u> -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>C (29.0)</u> E (62.7) C (29.2) B (19.4)	<u>B (14.3)</u> E (62.7) A (9.0) B (14.3)	<u>D/D</u> D/D D/D D/D
5	<u>SR 211 @ I-85 Northbound Ramps</u> -Eastbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>B (12.9)</u> E (59.6) B (11.0) A (1.8)	<u>B (17.3)</u> E (58.5) B (17.0) A (2.0)	<u>D/D</u> D/D D/D D/D
6	<u>SR 211 @ SR 53</u> -Eastbound Approach -Westbound Approach -Northbound Approach	Signalized	<u>B (16.2)</u> A (6.5) A (7.1) D (50.2)	<u>B (14.6)</u> A (4.7) A (5.3) D (53.4)	<u>D/D</u> D/D D/D D/D
7	<u>SR 347 (Friendship Road) @ Northeast Georgia Medical Center Main Driveway</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>A (4.9)</u> A (0.5) A (3.7) D (54.7) E (59.8)	<u>A (9.7)</u> A (0.2) A (6.1) D (45.4) D (52.8)	<u>D/D</u> D/D D/D D/D D/D
8	<u>SR 347 (Friendship Road) @ River Place</u> -Eastbound Left -Southbound Approach	Stop Controlled on SB Approach	B (14.9) C (17.1)	B (13.3) C (19.4)	D/D D/D

9	<u>SR 347 @ Deaton Creek Pkwy</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>B (14.8)</u> A (7.4) B (14.0) D (47.5) E (58.6)	<u>B (11.0)</u> A (8.3) A (0.3) D (48.7) E (61.0)	<u>D/D</u> D/D D/D D/D D/D
10	<u>SR 347 (Friendship Rd) @ Spout Springs Rd</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>D (35.8)</u> C (25.7) C (24.3) D (52.5) D (54.2)	<u>D (40.9)</u> C (31.2) C (34.2) E (58.2) E (60.0)	<u>D/D</u> D/D D/D D/D D/D
11	<u>SR 347 (Friendship Rd) @ Sardis Church Rd</u> -Westbound Left -Northbound Approach	Stop Controlled on NB Approach	B (10.1) F (55.0)	C (20.5) F (*)	D/D E/E
12	<u>Sardis Church Road @ Thompson Mill Road</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	All-Way Stop Controlled	<u>C (15.7)</u> B (14.0) C (16.6) C (16.1) C (15.7)	<u>D (28.0)</u> C (21.8) D (28.3) D (32.4) D (27.8)	D/D D/D D/D D/D
13	<u>Spout Springs Rd @ Thompson Mill Rd</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	Signalized	<u>B (18.7)</u> D (52.9) E (59.8) B (12.1) B (10.2)	<u>C (24.6)</u> D (52.8) E (56.1) B (14.3) B (15.4)	<u>D/D</u> D/D D/D D/D D/D
14	<u>Thompson Mill Road @ Deaton Creek Parkway</u> -Eastbound Left -Southbound Approach	Stop Controlled on SB Approach	A (7.2) A (9.5)	A (7.2) A (9.1)	D/D D/D
15	<u>Thompson Mill Road @ Autumn Maple Dr</u> -Westbound Left -Northbound Approach	Stop Controlled on NB Approach	A (7.8) B (10.8)	A (7.6) B (10.4)	D/D D/D
16	<u>Thompson Mill Road @ Retreat Point Pkwy</u> -Westbound Left -Northbound Approach	Stop Controlled on NB Approach	A (7.6) A (9.9)	A (7.5) A (9.9)	D/D D/D

* Delay exceeds 300 seconds

The results of the existing traffic operations analysis indicate at all signalized intersections one or more approaches are operating at level-of-service (LOS) "E" or "F" in either AM, PM or both peak hours, except the intersection of SR 211 @ SR 53. The stop-controlled northbound approach of Sardis Church Road at SR 347 is operating at LOS "F" in both peak hours. The approaches at the signalized and unsignalized intersections that are operating at level of service "F" in AM and/or PM peak hours will be addressed in Future Traffic Operations section.

PROJECT DESCRIPTION

The proposed Thompson Mill Village mixed-use development will be located between SR 347 (Friendship Road) and Thompson Mill Road and west of SR 211, in Hall and Gwinnett counties. The development will consist of:

- Single-Family Attached Housing: 141 dwelling units
- Multifamily Housing (Mid-Rise): 460 dwelling units
- Senior Adult Housing – Multifamily: 939 dwelling units
- Hotel: 200 rooms
- General Office Building: 105,049 sf
- Medical-Dental Office Building - Within/Near Hospital Campus: 254,200 sf
- Shopping Center (>150k): 374,218 sf
- Fast Casual Restaurant: 15,000 sf
- Fine Dining Restaurant: 15,000 sf
- High-Turnover (Sit-Down) Restaurant: 15,000 sf
- Fast-Food Restaurant without Drive-Through Window: 5,000 sf



The development proposes access at the following locations:

- Site Driveway 1: Full-access driveway on SR 347 (Friendship Road), aligned with River Place
- Site Driveway 2: Full-access driveway on SR 347 (Friendship Road), aligned with the main driveway of Northeast Georgia Medical Center
- Site Driveway 3: Full-access driveway on Thompson Mill Road, aligned with Retreat Point Parkway
- Site Driveway 4: Full-access driveway on Thompson Mill Road
- Site Driveway 5: Full-access driveway on Thompson Mill Road
- Site Driveway 6: Full-access driveway on Thompson Mill Road
- Site Driveway 7: Full-access driveway on Deaton Creek Parkway
- Site Driveway 8: Full-access driveway on Deaton Creek Parkway
- Site Driveway 9: Full-access driveway on Thompson Mill Road

Site Plan

A site plan is shown in Figure 4. A digital copy of the site plan is also provided with this report.

Pedestrian sidewalks and trails will be provided throughout the development.

Gwinnett County's "Gwinnett Trails – Countywide Trails Master Plan" does not show any trails planned in the vicinity of the development, either in the Signature Trails or Spotlight Projects. Hall County's Parks Facilities Master Plan also does not show any trails or bicycle facilities in the vicinity.

[illegible]

- Food (Within 0.25-mile proximity): Starbucks, LongHorn Steakhouse, Culver's, Pats Eatery, Chick-fil-A, Park Place, Ninja Steak and Sushi, Jacks Public House, Wayback Burgers, Houndstooth Grill and Bar, Umami Tavern Sushi, Tom Henry's BBQ, Hit's Tap Room, Juke N Jive Creamery, Moe's Southwest Grill, Arby's, Dunkin' Donuts, Baskin-Robbins, Jersey Mike's Subs Diablos Southwest Grill, Monterrey Mexican Grill.
- Retail (Within 0.25-mile proximity): Sherwin-Williams Paint Store, Johnson's River Place Pharmacy, Majik Touch Cleaners, EZ Grocery, Fiddles and Sticks Violin Shop.

- Medical (Within 0.25-mile proximity): Northeast Georgia Medical Center, North Atlanta Primary Care Braselton, Longstreet Clinic Pediatrics, Braselton Urgent Care, Northeast Georgia ENT, Pediatric Associates, Vineyards Dental Care, Chateau Animal Hospital.
- Services (Within 0.25-mile proximity): Primrose School of Braselton, 12 Stone Church, Legacy MMA Karate, Mulberry Baptist Church, Lakeside Ob Gyn & Pelvic Surgery, DaVita Braselton Dialysis

Planned Transit Facilities

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



SIGNATURE TRAILS

While this plan looks to expand the County's trails system in general, a handful of signature trails will help to create an identity for the trails system and will serve as examples of how to design and build bicycle and pedestrian facilities in Gwinnett. These signature trails, termed such to signify that these facilities will be the hallmarks of the network, were identified because of the importance that they have in the overall system, in regards to scale of facility, amenities, connectivity, location, and other defining features. Some Gwinnett cities are leading the implementation of signature trails in their communities, for example Sugar Hill Greenway and Suwanee Creek Greenway.

Gwinnett County's signature trails are:

- Harbins Greenway
- Ivy Creek Greenway
- Ivy Creek to Snellville Trail
- The Loop Trail
- Norcross to Lilburn Trail
- Piedmont Pathway
- Sugar Hill Greenway
- Suwanee Creek Greenway
- Western Gwinnett Bikeway



SPOTLIGHT PROJECTS

The Countywide Trails Master Plan is an overall vision for bicycle and pedestrian facilities in Gwinnett that may take many decades to fully implement, based on current funding levels. The success of the plan will be realized incrementally, facility-by-facility, but a few significant quick-win projects will be critical for the plan to gain momentum and to perhaps accelerate the community's desire and commitment to advance bicycle and pedestrian facilities in the County.

These Spotlight Projects illustrate the County's ability to catalyze bicycle/pedestrian "wins" for the community and were identified based on the planning team's analysis of facilities that will serve a significant portion of the County while being more feasible to implement than some larger-scale trails.

The Countywide Trails Master Plan Spotlight Projects are:

WESTERN GWINNETT BIKEWAY

Western Gwinnett, including Berkeley Lake, Duluth, Norcross, Peachtree Corners, and Suwanee, GA



TRAIL LENGTH: Spotlight - 10.5 miles; Total - 18.1 miles

POPULATION WITHIN 1/2 MILE: 34,400 people

PARK CONNECTIONS: Berkeley Lake Nature Preserve, Chattahoochee River National Recreation Area, Duluth Greenspace, E. E. Robinson, Pinckneyville, Rogers Bridge, West Gwinnett

HARBINS GREENWAY

Eastern Gwinnett, including Loganville, GA



TRAIL LENGTH: Spotlight - 6.9 miles; Total - 17.4 miles

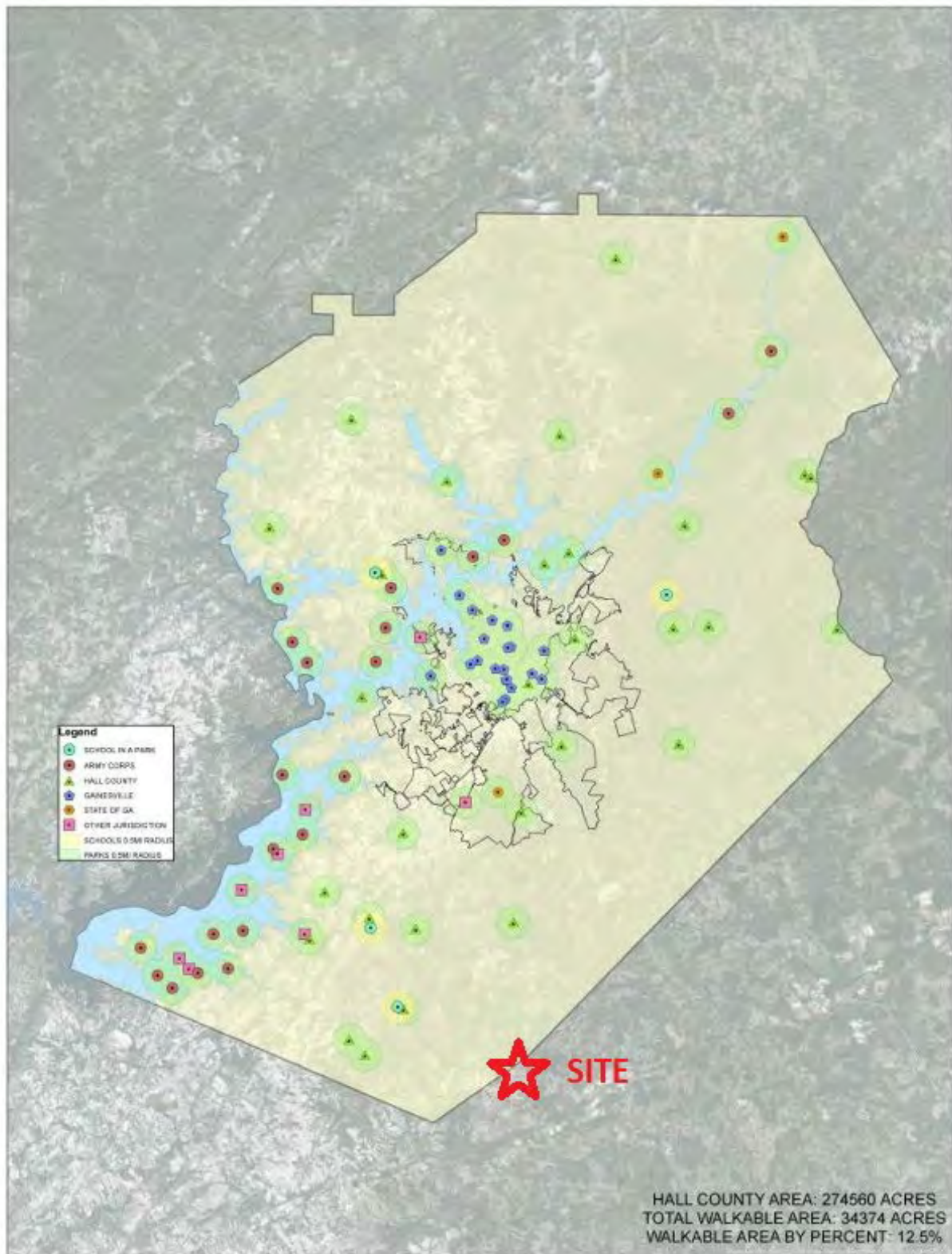
POPULATION WITHIN 1/2 MILE: 11,850 people

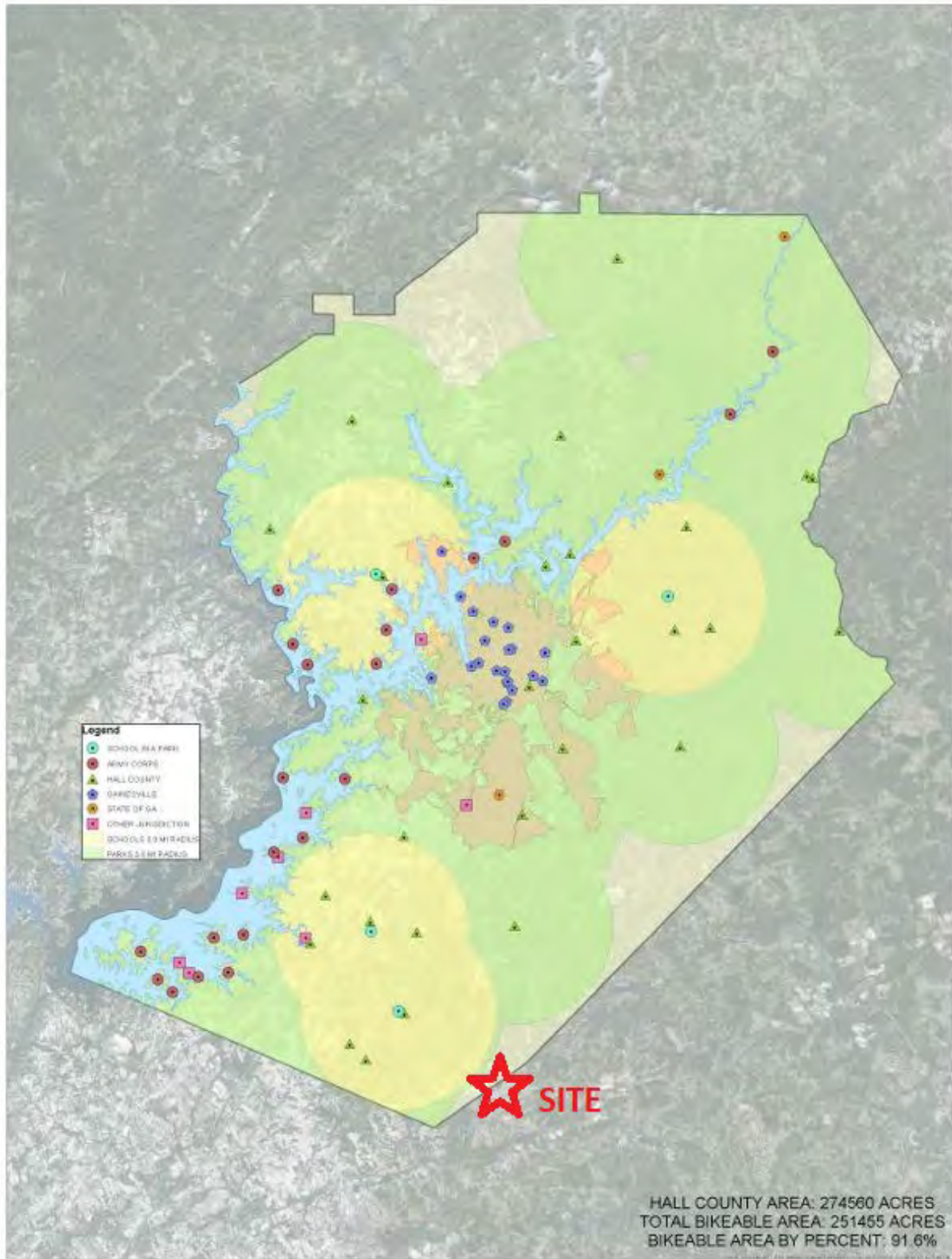
PARK CONNECTIONS: Bay Creek, Harbins Community, Harbins Conservation, Palm Creek, Tribble Mill, and Vines

COUNTYWIDE TRAILS MASTER PLAN



7





HALL COUNTY - BIKEABILITY



Consistency with Adopted Comprehensive Plan

The proposed development will include townhomes, apartments, age restricted independent living, hotel, retail, office, and restaurant. The property includes 109.838 acres of land the majority of which was initially rezoned in 2008. The site is currently zoned as PCD (Planned Commercial Development) per Hall County standards and MUO (Mixed Use Overlay) and OI (Office-Institutional District) per Gwinnett County standards.

Future Land Use Map

Future Land Use Map Zoning	Developing Suburbs/Emerging Suburban
Land Use Vision and Goals for Gwinnett and Hall Counties	Gwinnett County's Emerging Suburban Character Area designates areas that are currently mainly residential but have not yet matured into established communities due to relatively large amounts of remaining, undeveloped land. They are expected to experience new single-family detached residential development during the 20-year planning period contemplated by the Unified Plan. These areas generally rely on nearby activity centers and nodes to provide goods and services. Most Emerging Suburban areas are located on local, collector, or minor arterial roads rather than major arterials and corridors. As this Character Area develops, it is likely that new Neighborhood Nodes will be designated at key intersections. The vision for the Gwinnett County Comprehensive Plan is to Engage the Community using the following: • Public Hearings • Community Open Houses • Planning Advisory Committee • Online Survey • Speaking Engagements • Intercept Interviews • Pop Up Events • Radio Engagements • Living Room Chats • Engagement Activities Gwinnett County's Guiding Philosophies: • Use Character Areas to Establish Transitional Areas • Encourage Redevelopment in Key Areas While Still Allowing for Greenfield Development Opportunities • Preserve the Character of Areas That Are Still Relatively Undeveloped • Use Urban Scale to Communicate and Articulate Implied Densities and Character • Encourage Development to Be More Nodal Than Linear • Incorporate and Integrate Office Areas into Mixed-Used Districts

	Gwinnett County’s Five Themes to act as an overall framework to guide policies: 1. Maintain Economic Development & Fiscal Health 2. Foster Redevelopment 3. Maintain Mobility & Accessibility 4. Provide More Housing Choices 5. 5. Keep Gwinnett a “Preferred Place” The Hall County Comprehensive Plan is currently undergoing periodic revision. Targeted adoption of the new plan is June 20224. The vision for the Hall County as expressed in the current Comprehensive Plan is to: • Support existing businesses and focus recruitment efforts on technology business and industry. • Stimulate revitalization activities and redevelopment of aging properties. • Preserve rural character and development patterns in North and East Hall areas. • Maintain green space in new developments. • Protect and enhance established neighborhoods. • Create quality new development. • Accommodate housing options. • Coordinate transportation and land use planning. • Protect water resources and improve water quality. • Support and partner with local organizations to protect the environment. • Develop and implement a coordinated plan for a linked system of protected greenspace and trails. • Promote and protect the county’s history.
Relation to Existing Land Use Plans	The proposed development creates quality new development, provides more housing choices and promotes economic development, consistent with goals of Land Use Plans of both Hall and Gwinnett Counties.

Project Phasing

This project has been evaluated for the complete build-out of the development in 2028.

2021 ARC Unified Growth Policy Map



April 10, 2023

Counties

Regional Areas - copy

Developing Suburbs

Rural Areas

1:9,028

0.3 mi

0.6 km

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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*: 215 – Single-Family Attached Housing, 221 – Multifamily Housing (Mid-Rise) - Not Close to Rail Transit, 252 – Senior Adult Housing - Multifamily, 310 – Hotel, 710 – General Office Building, 720 – Medical-Dental Office Building - Within/Near Hospital Campus, 820 – Shopping Center (>150k), , 930 – Fast Casual Restaurant, 931 – Fine Dining Restaurant, 932 – High-Turnover (Sit-Down) Restaurant and 933 – Fast-Food Restaurant without Drive-Through Window. Due to the nature of the development, pass-by and mixed-use reductions have been applied per ITE standards. A 3% alternate mode reduction has also been applied. The calculated total trip generation for the proposed development is shown in Table 4.

TABLE 4 – TRIP GENERATION								
Land Use	Size	AM Peak Hour			PM Peak Hour			24 Hour
		Enter	Exit	Total	Enter	Exit	Total	2-way
ITE 215 – Single-Family Attached Housing	141 units	17	51	68	48	33	81	1,024
Mixed-Use Reduction		-1	-11	-12	-30	-21	-51	-510
ITE 221 – Multifamily Housing (Mid-Rise) - Not Close to Rail Transit	460 units	44	147	191	110	70	180	2,148
Mixed-Use Reduction		-3	-24	-27	-63	-43	-106	-1069
ITE 252 – Senior Adult Housing - Multifamily	939 units	61	118	179	131	104	235	2,739
Mixed-Use Reduction		-4	-30	-34	-81	-55	-136	-1363
ITE 310 – Hotel	200 rooms	52	41	93	61	59	120	1,744
Mixed-Use Reduction		-2	-19	-21	-52	-36	-88	-868
ITE 710 – General Office Building	105,049 sf	154	21	175	29	144	173	1,211
Mixed-Use Reduction		-13	-11	-24	-4	-9	-13	-126
ITE 720 – Medical-Dental Office Building	254,200 sf	559	131	690	192	576	768	8,919
Mixed-Use Reduction		-96	-83	-179	-27	-66	-93	-924
ITE 820 – Shopping Center (>150k)	364,218 sf	220	134	354	701	759	1,460	15,635
Mixed-Use Reduction		-131	-89	-220	-300	-319	-619	-6188
Pass-by Trips (0%) 19%		0	0	0	-74	-81	-155	-1,550
ITE 930 – Fast Casual Restaurant	15,000 sf	11	10	21	139	114	253	1,457
Mixed-Use Reduction		-12	-8	-20	-28	-30	-58	-577
ITE 931 – Fine Dining Restaurant	15,000 sf	5	6	11	78	39	117	1,258
Mixed-Use Reduction		-11	-7	-18	-24	-26	-50	-498
Pass-by Trips (0%) 44%		0	0	0	-23	-6	-29	-290

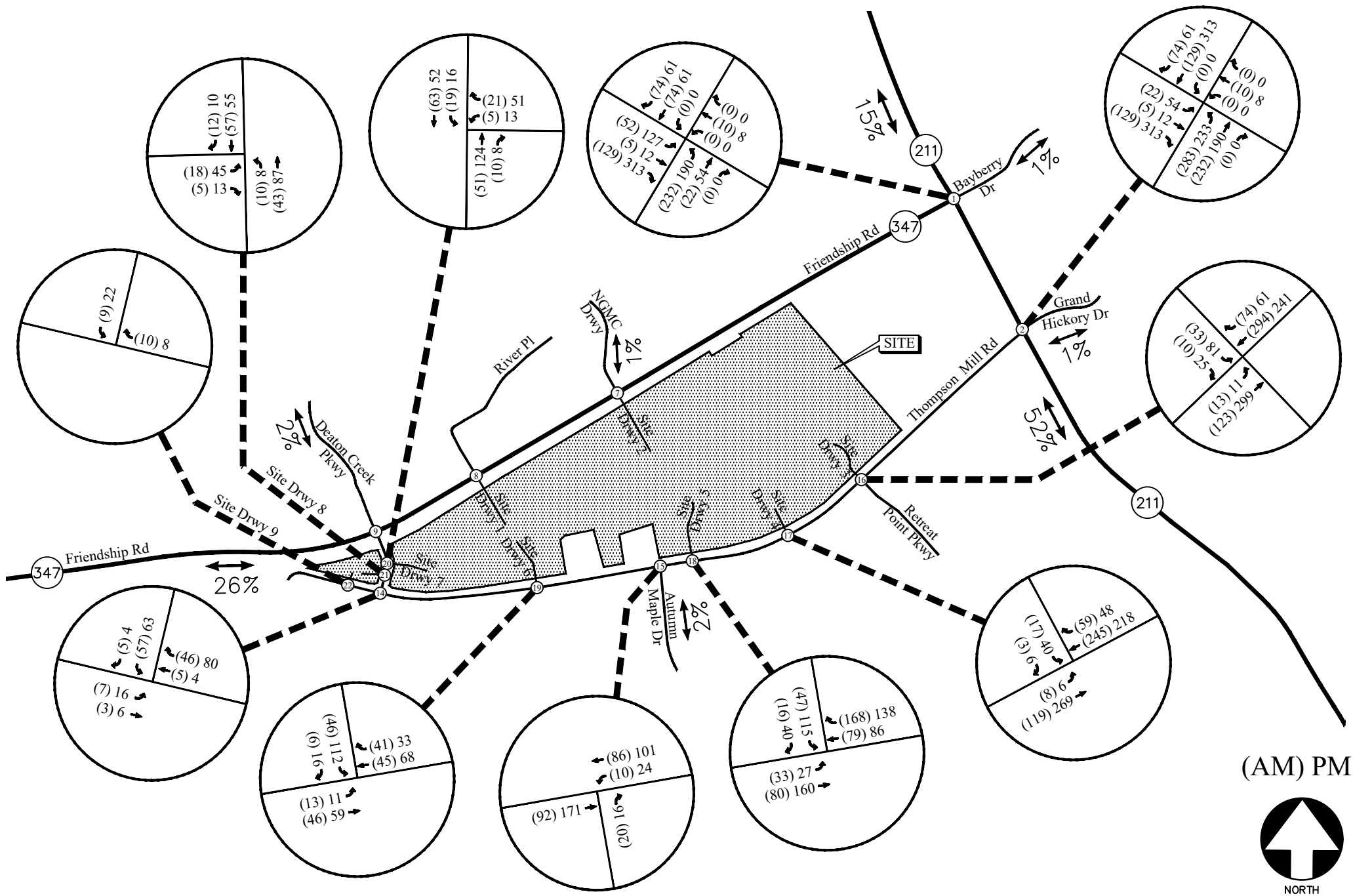
ITE 932 – High-Turnover (Sit-Down) Restaurant	15,000 sf	79	65	144	83	53	136	1,608
Mixed-Use Reduction		-13	-9	-22	-31	-33	-64	-636
Pass-by Trips (0%) 43%		0	0	0	-22	-8	-30	-300
ITE 933 – Fast-Food Restaurant without Drive-Through Window	5,000 sf	125	91	216	72	72	144	2,252
Mixed-Use Reduction		-19	-14	-33	-43	-45	-88	-891
Alternate Mode Reduction (3%)		-31	-15	-46	-29	-40	-69	-790
Total Trips (without Reductions)		1,327	815	2,142	1,644	2,023	3,667	39,995
New External Trips (with Reductions)		991	495	1,486	813	1,205	2,018	23,415

*Pass-by trips (AM) PM; Daily pass-by volume reduction estimated to be the lesser of the PM peak hour pass-by rate determined volume or ten times the PM pass-by volume

Trip Distribution

The trip distribution describes how traffic arrives and departs from the site. An overall trip distribution was developed for the site based on a review of the existing travel patterns in the area 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 Figures 5A and 5B. Pass-by volumes for have also been distributed based on existing travel patterns and are shown in Figure 6A and 6B.

FIGURE 5A



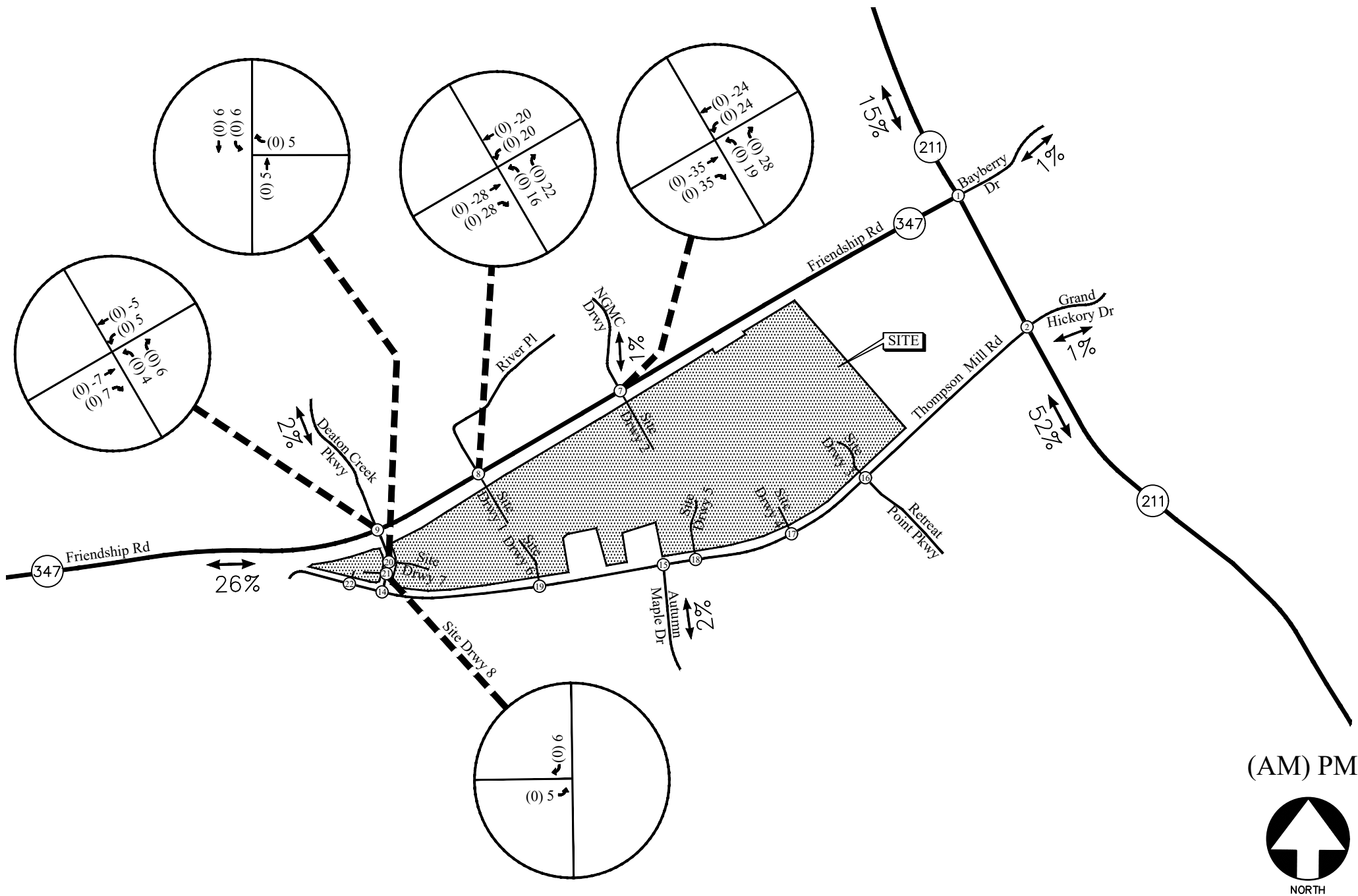
(AM) PM



TRIP DISTRIBUTION AND SITE-GENERATED WEEKDAY PEAK HOUR VOLUMES 2 OF 2

FIGURE 5B

A&R Engineering Inc.



SITE PEAK HOUR PASS-BY VOLUMES

FIGURE 6

A&R Engineering Inc.

FUTURE 2028 TRAFFIC ANALYSIS

The future 2028 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.

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. 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.

Future “No-Build” Conditions

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

Annual Traffic Growth

In order to evaluate future traffic operations in this area, a projection of normal traffic growth was applied to the existing volumes. The Georgia Department of Transportation recorded average daily traffic volumes at several locations in the vicinity of the site. Reviewing the growth over the last five years (2015-2019) revealed growth of approximately 3.6% 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 Figures 7A and 7B.

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 5 — PLANNED AND PROGRAMMED IMPROVEMENTS

Item #	Project Name	From / To Points	Sponsor	GDOT PI #	ARC ID #	Design FY	ROW / UTL FY	CST FY
1	SR 211 Widening	SR 211 widening from 2 lanes to 4 lanes between SR 124 in Gwinnett County and the proposed Winder West Bypass	Barrow County	N/A	BA-013	2050	LR 2041-2050	LR 2041-2050
2	Braselton Parkway Extension	From SR 211 at Tour De France to Jesse Cronin Road in Jackson County	City of Braselton	N/A	BA-022	2030	LR 2029-2030	LR 2029-2030
3	SR 211 (Old Winder Highway) Widening—Phase 2	From Pinot Noir Drive to SR 347	City of Braselton	0016089	BA-033B	2030	2024-2026	2026
4	SR 124 Widening	From Gwinnett County Line to Jackson County Line	GDOT	0007833	BA-041	LR 2041-2050	LR 2041-2050	LR 2041-2050
5	Spout Springs Road Widening - Phase II	Project P.I. no. 0015280 proposes to widen CR 1287 / Spout Springs Road from a 2-lane roadway to a 4-lane divided roadway with a 20-foot raised median and sidewalks. Median openings and intersections will be modified/removed accordingly. The project limits long Spout Springs Road are Union Circle to S. of SR 347 for a total distance of 2.51 miles.	Hall County	0015280	GH-023B	-	-	2025
6	SR 211 Widening	The widening from two to four lanes of SR 211/Old Winder Highway from SR 53/Winder Highway to SR 347/Friendship Rd for 3.4 miles.	GDOT	0007233	GH-025	2030	2027	2027
7	SR 211 Widening	The widening SR 211 from I-85 NB ramps to north of Pinot Noir Drive, with two multilane roundabouts at SR 211 intersections with I-85 SB ramps and Braselton Parkway Extension/ Tour de France Drive	GDOT	0013988	-	2021	2025	2025
8	SR 53 Widening	SR 53/Winder Highway from I-85/Jackson County to SR 211/Tanners Mill Road/Hall County for 5.6 miles	GDOT	0013310	GH-040	2050		

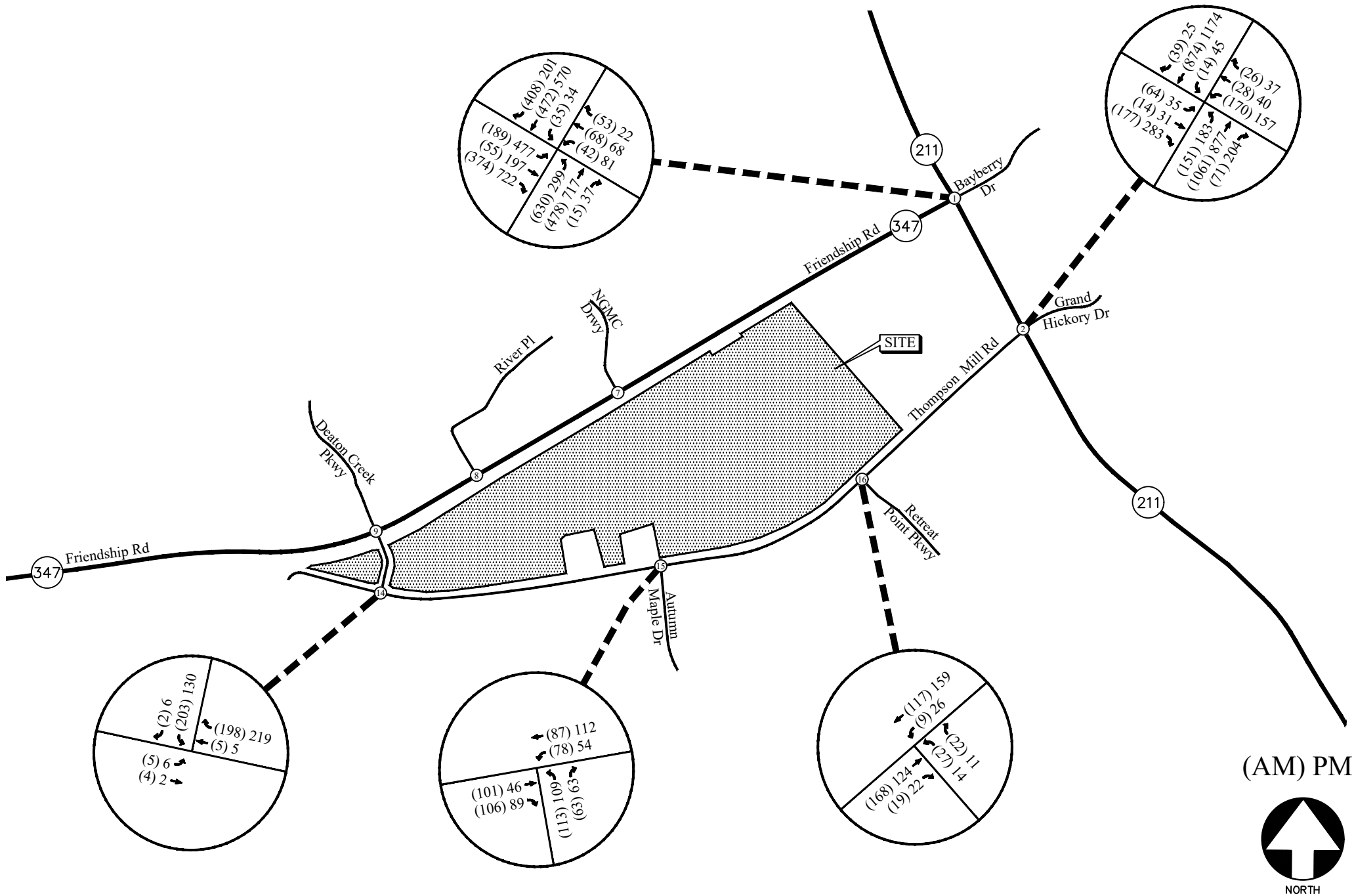
9	I-85 Widening and Reconstruction	Widen (2 lanes to 3 lanes in each direction) and reconstruct approximately 6.7 miles of I-85 from north of SR 53 to just north of US 129	GDOT	0013545	GH-109	-	N/A	2020
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Table 5, Item #7: SR 211 Widening from I-85 NB Ramp to CS 1274/ Pinot Noir Drive

Project PI# 0013988 will widen SR 211 from the I-85 northbound ramp terminals to north of Pinot Noir Drive. North of Tour de France Drive, the project will provide a four-lane urban section with a 20-foot raised median and 10-foot side path on the east side of SR 211. The project will also construct two multi-lane roundabouts at the SR 211 intersections with the I-85 southbound ramps and the Braselton Parkway extension/ Tour de France Drive. This project has been incorporated in both the “No-Build” and “Build” conditions. The plans are included in the Appendix.

FIGURE 7A

A&R Engineering Inc.



FUTURE (NO-BUILD) WEEKDAY PEAK HOUR VOLUMES 2 OF 2

FIGURE 7B

A&R Engineering Inc.

Future “No-Build” Traffic Operations

The future “No-Build” traffic operations were analyzed using the volumes in Figures 7A and 7B and the results are shown in Table 6 below. The analysis included existing roadway conditions and also with “System Recommended Improvements” assumed as implemented.

TABLE 6 — FUTURE “NO-BUILD” INTERSECTION OPERATIONS					
Intersection		LOS (Delay)			
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS	
		AM Peak	PM Peak	AM Peak	PM Peak
1	SR 211 @ SR 347 (Friendship Rd) / Bayberry Dr	D (43.4)	E (56.4)	D (38.0)	D 37.3)
	-Eastbound Approach	E (65.8)	F (84.5)	D (54.3)	D (54.4)
	-Westbound Approach	E (58.3)	E (55.9)	E (58.7)	E (55.4)
	-Northbound Approach	D (41.5)	D (50.2)	D (36.4)	C (32.0)
	-Southbound Approach	C (32.0)	D (35.7)	C (26.9)	C (22.2)
2	SR 211 @ Thompson Mill Rd / Grand Hickory Dr	D (36.8)	F (139.5)	B (15.5)	B (11.9)
	-Eastbound Approach	E (59.5)	F (92.9)	E (56.8)	E (57.8)
	-Westbound Approach	D (52.1)	D (42.6)	D (45.3)	D (46.6)
	-Northbound Approach	D (40.0)	D (40.8)	A (9.4)	A (8.5)
	-Southbound Approach	C (21.7)	F (273.8)	B (13.2)	A (6.4)
3	SR 211 @ Golf Club Dr / Liberty Church Rd	D (49.3)	F (162.2)	B (16.8)	C (20.7)
	-Eastbound Approach	E (64.3)	F (82.1)	E (64.3)	E (64.4)
	-Westbound Approach	E (62.6)	F (110.0)	E (56.5)	E (57.9)
	-Northbound Approach	D (39.5)	D (36.6)	B (12.5)	B (14.4)
	-Southbound Approach	D (53.4)	F (245.8)	A (9.9)	B (14.4)
4	SR 211 @ I-85 Southbound Ramps	B (12.0)	B (10.1)	B (12.4)	B (10.3)
	-Westbound Approach	A (0)	A (0)	A (0)	A (0)
	-Northbound Approach	B (12.4)	A (8.8)	B (13.1)	A (9.2)
	-Southbound Approach	B (11.3)	B (11.5)	B (11.3)	B (11.5)
5	SR 211 @ I-85 Northbound Ramps	B (16.5)	C (23.1)	B (11.9)	B (15.9)
	-Eastbound Approach	E (58.2)	D (53.6)	E (57.0)	D (52.0)
	-Northbound Approach	B (14.8)	C (20.6)	A (9.7)	B (10.9)
	-Southbound Approach	A (6.5)	B (13.6)	A (1.8)	A (6.4)
6	SR 211 @ SR 53	B (17.8)	B (15.8)	B (17.8)	B (15.8)
	-Eastbound Approach	A (8.5)	A (6.1)	A (8.5)	A (6.1)
	-Westbound Approach	A (10.0)	A (8.3)	A (10.0)	A (8.3)
	-Northbound Approach	D (48.3)	D (51.9)	D (48.3)	D (51.9)
7	SR 347 (Friendship Rd) @ Northeast Georgia Medical Center Main Drwy/ Site Drwy 2	A (5.6)	B (10.0)	A (5.0)	B (10.0)
	-Eastbound Approach	A (1.8)	A (0.3)	A (0.6)	A (0.3)
	-Westbound Approach	A (4.1)	A (7.4)	A (4.1)	A (7.4)
	-Northbound Approach	D (54.2)	D (43.2)	D (54.2)	D (43.2)
	-Southbound Approach	E (59.6)	D (51.3)	E (59.6)	D (51.3)
8	SR 347 (Friendship Rd) @ River Place/ Site Drwy 1 (Western)				
	-Eastbound Left/ Approach	C (18.3)	C (15.1)	C (18.3)	C (15.1)
	-Southbound Approach	C (21.7)	D (26.4)	C (21.7)	D (26.4)

9	<u>SR 347 (Friendship Rd) @ Deaton Creek Pkwy</u>	<u>B (17.9)</u>	<u>B (11.9)</u>	<u>B (10.2)</u>	<u>B (11.6)</u>
	-Eastbound Approach	A (7.6)	A (8.2)	A (8.4)	A (9.1)
	-Westbound Approach	C (22.0)	A (0.3)	A (0.2)	A (0.3)
	-Northbound Approach	D (50.6)	E (59.9)	D (46.8)	D (52.3)
	-Southbound Approach	E (59.5)	E (60.4)	E (59.5)	E (60.6)
10	<u>SR 347 (Friendship Rd) @ Spout Springs Rd</u>	<u>D (42.3)</u>	<u>E (63.3)</u>	<u>D (43.7)</u>	<u>D (51.7)</u>
	-Eastbound Approach	C (34.3)	D (50.5)	D (40.8)	D (50.9)
	-Westbound Approach	C (33.0)	E (75.7)	D (40.5)	D (50.6)
	-Northbound Approach	E (59.3)	E (67.6)	D (51.4)	D (54.9)
	-Southbound Approach	D (53.4)	E (69.7)	D (45.3)	D (52.2)
11	<u>SR 347 (Friendship Rd) @ Sardis Church Rd</u>	<u>D (26.8)</u>	<u>F (93.6)</u>	<u>B (10.9)</u>	<u>C (22.2)</u>
	-Eastbound Approach	-	-	A (6.9)	B (18.9)
	-Westbound Approach/Left	B (11.1)	E (39.2)	A (4.0)	B (13.5)
	-Northbound Approach	F (175.6)	F (*)	E (57.5)	E (65.7)
12	<u>Sardis Church Rd @ Thompson Mill Rd</u>	<u>C (26.8)</u>	<u>C (24.4)</u>	<u>C (24.4)</u>	<u>C (24.9)</u>
	-Eastbound Approach	C (21.4)	F (54.8)	D (36.7)	C (31.5)
	-Westbound Approach	D (29.2)	F (86.6)	D (46.8)	D (44.9)
	-Northbound Approach	D (28.6)	F (132.4)	B (10.5)	B (15.0)
	-Southbound Approach	D (26.8)	F (88.6)	A (9.8)	B (13.5)
13	<u>Spout Springs Rd @ Thompson Mill Rd</u>	<u>C (21.5)</u>	<u>C (27.9)</u>	<u>C (21.5)</u>	<u>C (28.1)</u>
	-Eastbound Approach	D (52.7)	E (57.7)	D (52.7)	D (48.9)
	-Westbound Approach	E (59.4)	E (55.1)	E (59.4)	D (54.8)
	-Northbound Approach	B (16.3)	B (17.6)	B (16.3)	B (19.5)
	-Southbound Approach	B (12.4)	B (19.2)	B (12.4)	C (21.4)
14	<u>Thompson Mill Rd @ Deaton Creek Pkwy</u>				
	-Eastbound Left	A (7.2)	A (7.2)	A (7.2)	A (7.2)
	-Southbound Approach	A (9.8)	A (9.3)	A (9.8)	A (9.3)
15	<u>Thompson Mill Rd @ Autumn Maple Dr</u>				
	-Westbound Left	A (7.9)	A (7.7)	A (7.9)	A (7.7)
	-Northbound Approach	B (11.5)	B (10.9)	B (11.5)	B (10.9)
16	<u>Thompson Mill Rd @ Retreat Point Pkwy</u>				
	-Westbound Left	A (7.6)	A (7.6)	A (7.6)	A (7.6)
	-Northbound Approach	B (10.2)	B (10.3)	B (10.2)	B (10.3)

* Delay exceeds 300 seconds

The results of the Future “No-Build” analysis indicate that the following intersections will have LOS “F” for one or more approaches in the AM or PM peak hour or both:

- Intersection 1: SR 211 at SR 347 (Friendship Road) / Bayberry Drive
- Intersection 2: SR 211 at Thompson Mill Road / Grand Hickory Drive
- Intersection 3: SR 211 at Liberty Church Road/Golf Club Drive (Overall LOS “F” in PM peak)
- Intersection 11: SR 347 (Friendship Road) at Sardis Church Road
- Intersection 12: Sardis Church Road at Thompson Mill Road

The stop-controlled northbound approach of Sardis Church Road @ SR 347 (Friendship Road) will operate at LOS “F” in both peak hours. All approaches of the “All-Way Stop” controlled intersection of Sardis Church Road and Thompson Mill Road will also operate at LOS “F” in the PM peak hour.

Recommendations for System Improvements

SR 211 is a two-lane roadway from I-85 ramps to SR 347 (Friendship Road) and needs to be widened to a four-lane roadway to accommodate the traffic volumes of more than 1,000 vehicles in each approach in the PM peak hours. Intersections 1 and 2 on SR 211 will operate at overall LOS “E” due to the inadequate capacity of the existing two-lane SR 211. Intersections 3 and 5 on SR 211 will have at least one approach operating at LOS “E” either in AM or PM peak hour. Based on the traffic volumes in the “No-Build” conditions, we recommend that SR 211 be widened to a four-lane roadway from SR 347 (Friendship Road) to I-85 southbound ramps.

GDOT PI 0013988 – SR 211 Widening from I-85 NB Ramp to north of Pinot Noir Drive:

GDOT’s above project will widen SR 211 to a four-lane roadway from the I-85 northbound ramp terminals (where dual left turn lanes will be provided on SR 211 to turn onto the I-85 northbound entrance ramp) to north of Pinot Noir Drive. North of Tour de France Drive, the project will provide a four-lane urban section with a 20-foot raised median and 10-foot side path on the east side of SR 211. The project will also construct two multi-lane roundabouts at the SR 211 intersections with the I-85 southbound ramps and the Braselton Parkway Extension/Tour de France Drive. GDOT SR 211 widening project location map is included in the Appendix.

Since GDOT’s completion date is stated as 2025, we have assumed the widening as completed in our “No-Build 2027” and “Build 2027” analysis. A summary of the system improvements (apart from GDOT’s SR 211 widening mentioned above), which address deficiencies that are found within the existing road network for the “No-Build” conditions, is provided below.

Intersection 1: SR 211 at SR 347 (Friendship Road) / Bayberry Drive

- Addition of a left turn lane creating dual left turn lanes on the eastbound approach of SR 347 (Friendship Road) with protective only phasing.

Intersection 2: SR 211 at Thompson Mill Road / Grand Hickory Drive

In “No-Build” PM, the eastbound approach will have 283 eastbound right-turning trips without a dedicated right-turn lane. The northbound and southbound volumes exceed 1,000 trips each way in either AM or PM peak hours.

- Re-stripe the eastbound approach of Thompson Mill Road to a shared left/through lane and a dedicated right-turn lane with channelization and right-turn overlap phase.
- Convert the northbound and southbound right-turn lanes on SR 211 to a shared northbound shared through/right-turn lane and a southbound shared through/right-turn lane to create two through lanes in both northbound and southbound approaches.

Intersection 3: SR 211 at Golf Club Drive / Liberty Church Road

The westbound Liberty Church Approach currently has a lane geometry of a left-turn lane and a shared through/right-turn lane. The future “No-Build” volumes for this approach will exceed 350 vehicles in the PM peak hour and warrant a dual left-left-turn lane. Also, as explained, the heavy volumes on SR 211 will need a capacity increased to a four-lane roadway.

- Addition of a second southbound through lane on SR 211

- Restripe existing westbound shared through/right turn lane on of Liberty Church Road to a right-turn lane.
- Addition of westbound shared through and left-turn lane on Liberty Church Road, make the approach to have dual left turn lanes.
- Convert the existing northbound right-turn lane on SR 211 to a shared through/right-turn lane to accommodate two northbound through lanes.

Intersection 5: SR 211 at I-85 NB Ramps

The eastbound left-turn approach of I-85 ramp will have a volume of 243 in AM peak and 451 in the PM peak hour and currently has only one lane. Based on the future “No-Build” volumes, the eastbound left-turn approach needs to have two left-turn lanes.

- Addition of an additional eastbound left-turn lane on the northbound ramp to turn left on SR 211.

Intersection 10: SR 347 (Friendship Road) at Spout Springs Road

SR 347 (Friendship Road) currently has one eastbound left-turn lane and one westbound left-turn lane. The future “No-Build” left-turn volumes of 372 and 382 respectively in the PM peak hour warrant a second eastbound and westbound left-turn lane.

- Addition of a second eastbound left-turn lane on SR 347 with “protected” phasing.
- Addition of a second westbound left-turn lane on SR 347 with “protected” phasing.
- Convert the existing southbound right-turn lane into a shared through/right-turn lane on Spout Springs Road.

Intersection 11: SR 347 (Friendship Road) at Sardis Church Road

Due to the heavy through volumes on SR 347 and heavy westbound left-turn volumes cause considerable delays for the northbound left-turn vehicles to find gaps turning left on SR 347. Heavy left-turn volumes indicate that a signal will be warranted. However, a detailed signal warrant study/ICE study be conducted to see if a traffic signal is warranted.

- Installation of a traffic signal (if warranted and approved by GDOT) with “protected+permissive” phasing for westbound left turn lane on SR 347

Intersection 12: Sardis Church Road at Thompson Mill Road

The entering volumes at this “All-Way Stop” controlled intersection is approximately 1,500 vehicles in the PM peak hour and therefore all approaches will experience long delays.

- Installation of a traffic signal or a roundabout to improve the traffic operations at this intersection.

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 Section 5.2. According to the trip distribution, the 24-hour two-way volume entering and exiting the site is 25,555 vehicles (passby trips included). The ADT on Thompson Mill Road is assumed to be greater than 6,000 vehicles and ADT on Deaton Creek Parkway is assumed to be less than 6,000 vehicles based on the GDOT volumes on the surrounding roadways.

Left Turn Lane Analysis

For six lane roadways with AADT's greater than or equal to 10,000 vehicles and a posted speed limit of 45 mph, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 250 left-turning vehicles a day. For two lane roadways with AADT's greater than or equal to 6,000 vehicles and a posted speed limit of 45 mph, the daily site generated traffic left-turn movements threshold to warrant a left-turn lane is 175 left-turning vehicles a day. For two lane roadways with AADT's less than 6,000 vehicles and a posted speed limit of 25 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 each driveway is included in Table 7.

Intersection	Left turn traffic (% total entering)	Left-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/ day)	Warrants met?
SR 347 (Friendship Road) @ River Place / Site Driveway 1 (Western)	6.86%	877 $(\text{Total trips}) \div 2 \times 0.0686 =$ $(25555) \div 2 \times 0.0686 = 877$	45 mph / 6-Lane / $\geq 10,000$	250	Yes
SR 347 (Friendship Road) @ NGMC Main Driveway / Site Driveway 2 (Eastern)	23.70%	3028 $(\text{Total trips}) \div 2 \times 0.237 =$ $(25555) \div 2 \times 0.237 = 3028$	45 mph / 6-Lane / $\geq 10,000$	250	Yes

A left-turn lane is warranted at the proposed site driveways 1 and 2 per GDOT standards. Left-turn lanes are warranted at site driveways 3, 4, 5 and 6 on Thompson Mill Road as per Gwinnett County guidelines. We also recommend left-turn lanes on site driveways 7, 8 and 9 in Hall County jurisdictions.

Deceleration Turn Lane Analysis

For six lane roadways with AADT's greater than or equal to 10,000 vehicles, for two lane roadways with AADT's greater than or equal to 6,000 vehicles and a posted speed limit of 45 mph, the daily site generated traffic right-turn movements threshold to warrant a deceleration lane is 75 right turning vehicles a day. For two lane roadways with AADT's less than 6,000 vehicles and a posted speed limit of 25 mph, the daily site generated traffic right-turn movements threshold to warrant a deceleration lane

is 200 right turning vehicles a day. The projected right-turn volumes per day for each driveway is included in Table 8.

Intersection	Right-turn traffic (% total entering)	Right-turn Volume (vehicles/day)	Roadway Speed/ # lanes / ADT	GDOT Threshold (vehicles/day)	Warrants met?
SR 347 (Friendship Road) @ River Place / Site Driveway 1 (Western)	7.80%	997 $(\text{Total trips}) \div 2 \times 0.078 =$ $(25555) \div 2 \times 0.078 = 997$	45 mph / 6-Lane / $\geq 10,000$	75	Yes
SR 347 (Friendship Road) @ NGMC Main Driveway / Site Driveway 2 (Eastern)	13.20%	1687 $(\text{Total trips}) \div 2 \times 0.132 =$ $(25555) \div 2 \times 0.132 = 1687$	45 mph / 6-Lane / $\geq 10,000$	75	Yes

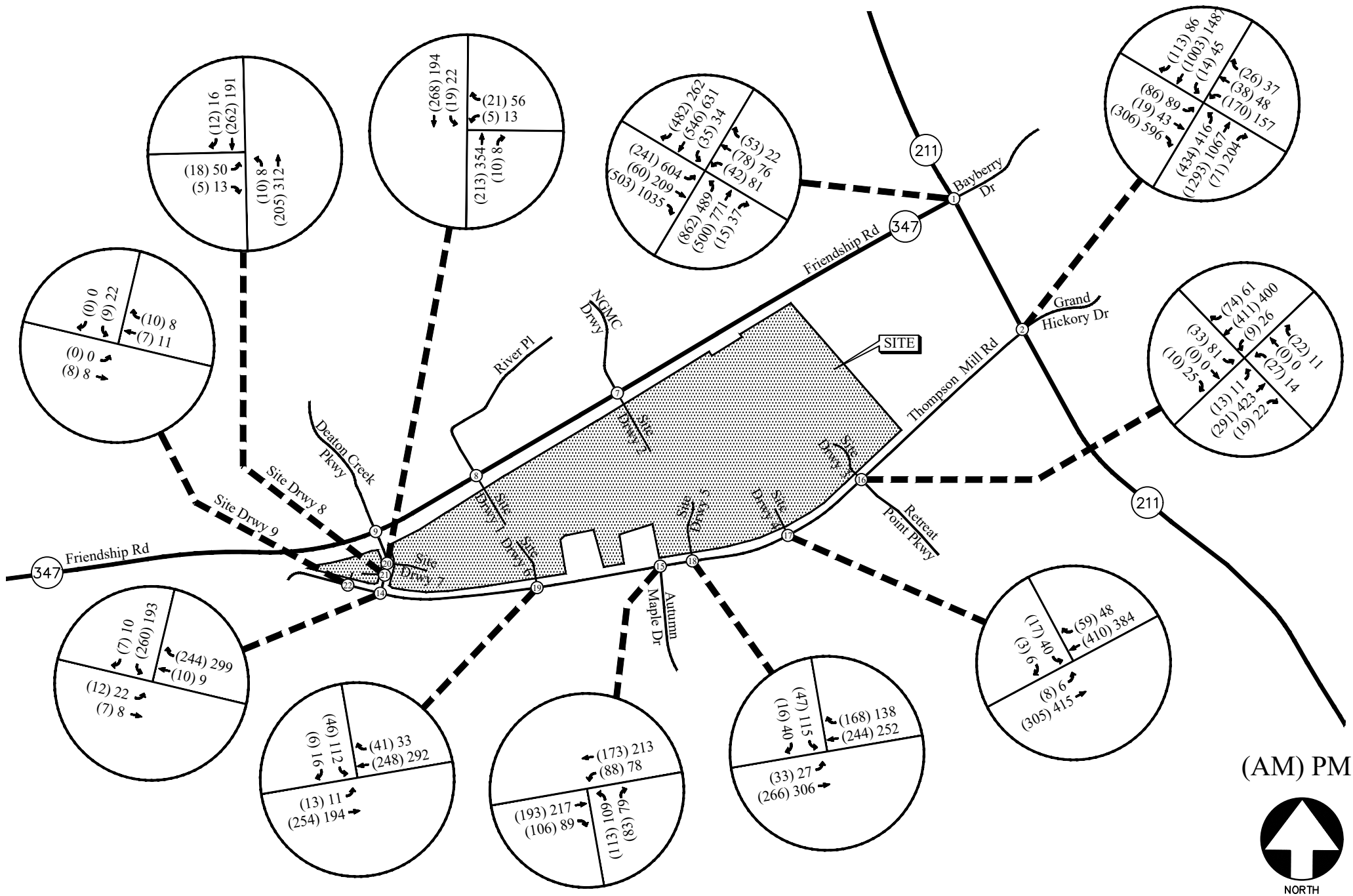
A right turn lane is warranted at both site driveways on SR 347 (Friendship Road) as per GDOT standards. A right-turn lane is also warranted at all site driveways on Thompson Mill Road in Gwinnett County jurisdiction as per their guidelines. We also recommend a right-turn lane on Thompson Mill Road at site driveway 9 in Hall County jurisdiction.

Future “Build” Conditions

The “Build” or development conditions include the estimated background traffic from the “No-Build” conditions plus the traffic from the proposed development. In order to evaluate future traffic operations in this area, the additional traffic volumes from the site (Figures 5A and 5B) and pass-by volumes (Figure 6) were added to base traffic volumes (Figures 7A and 7B) to calculate the future traffic volumes after the construction of the development. These total future “Build” traffic volumes are shown in Figures 8A and 8B.

FIGURE 8A

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FUTURE (BUILD) WEEKDAY PEAK HOUR VOLUMES 2 OF 2

FIGURE 8B

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Future “Build” Traffic Operations

The future “Build” traffic operations were analyzed using the volumes in Figures 8A and 8B and the results are shown in Table 9.

TABLE 9 — FUTURE “BUILD” INTERSECTION OPERATIONS					
Intersection		LOS (Delay)			
		NO IMPROVEMENTS		SYSTEM IMPROVEMENTS	
		AM Peak	PM Peak	AM Peak	PM Peak
1	<u>SR 211 @ SR 34 / Bayberry Dr</u>	<u>D (51.8)</u>	<u>E (75.7)</u>	<u>D (42.6)</u>	<u>D (39.8)</u>
	-Eastbound Approach	E (70.4)	F (124.1)	D (53.4)	D (47.3)
	-Westbound Approach	E (58.0)	E (70.6)	E (58.5)	E (55.8)
	-Northbound Approach	D (46.0)	D (48.1)	D (43.6)	D (37.3)
	-Southbound Approach	D (54.1)	E (70.4)	C (30.0)	C (31.1)
2	<u>SR 211 @ Thompson Mill Rd / Grand Hickory Dr</u>	<u>F (153.9)</u>	<u>F (*)</u>	<u>C (33.5)</u>	<u>D (42.2)</u>
	-Eastbound Approach	F (196.0)	F (*)	E (55.8)	E (55.1)
	-Westbound Approach	F (131.4)	F (98.9)	D (42.4)	D (40.0)
	-Northbound Approach	F (140.9)	F (154.9)	C (24.6)	D (45.7)
	-Southbound Approach	F (165.2)	F (*)	D (45.0)	D (37.6)
3	<u>SR 211 @ Golf Club Dr / Liberty Church Rd</u>	<u>F (178.0)</u>	<u>F (273.4)</u>	<u>C (20.4)</u>	<u>C (25.2)</u>
	-Eastbound Approach	E (75.1)	E (74.5)	E (64.4)	E (64.4)
	-Westbound Approach	F (185.5)	F (185.0)	E (56.6)	D (54.9)
	-Northbound Approach	F (221.9)	F (147.0)	B (16.0)	B (18.9)
	-Southbound Approach	F (132.7)	F (*)	B (17.1)	C (23.2)
4	<u>SR 211 @ I-85 Southbound Ramps</u>	<u>B (18.1)</u>	<u>B (14.3)</u>	<u>B (18.1)</u>	<u>B (14.3)</u>
	-Westbound Approach	-	-	-	-
	-Northbound Approach	C (20.5)	B (11.7)	C (20.5)	B (11.7)
	-Southbound Approach	B (14.6)	C (16.4)	B (14.6)	C (16.4)
5	<u>SR 211 @ I-85 Northbound Ramps</u>	<u>D (40.7)</u>	<u>D (41.4)</u>	<u>C (21.1)</u>	<u>C (21.5)</u>
	-Eastbound Approach	F (81.8)	E (77.6)	D (51.0)	D (47.8)
	-Northbound Approach	D (39.9)	D (41.3)	B (17.8)	B (18.7)
	-Southbound Approach	B (17.0)	C (24.5)	A (9.4)	B (11.3)
6	<u>SR 211 @ SR 53</u>	<u>B (19.8)</u>	<u>B (19.1)</u>	<u>B (19.8)</u>	<u>B (19.1)</u>
	-Eastbound Approach	B (10.3)	A (7.9)	B (10.3)	A (7.9)
	-Westbound Approach	B (12.5)	B (14.2)	B (12.5)	B (14.2)
	-Northbound Approach	D (48.8)	D (50.3)	D (48.8)	D (50.0)
7	<u>SR 347 @ NE Georgia Medical Center Main Drwy/ Site Drwy 2</u>	<u>B (10.4)</u>	<u>C (31.9)</u>	<u>B (10.4)</u>	<u>C (20.8)</u>
	-Eastbound Approach	A (1.0)	B (17.7)	A (1.0)	A (0.9)
	-Westbound Approach	A (9.3)	D (47.5)	A (9.1)	C (34.9)
	-Northbound Approach	D (50.6)	C (30.5)	D (50.6)	C (30.5)
	-Southbound Approach	D (51.2)	D (40.2)	D (51.2)	D (40.2)

8	<u>SR 347 (Friendship Rd) @ River Place/ Site Drwy 1 (Western)</u> -Eastbound Left/ Approach -Westbound Left/ Approach -Northbound Approach -Southbound Approach	C (20.6) C (20.5) F (99.4) E (45.5)	C (17.7) C (24.9) F (*) F (299.4)	C (20.6) C (20.5) F (99.4) E (45.5)	C (17.7) C (24.9) F (*) F (299.4)
9	<u>SR 347 (Friendship Rd) @ Deaton Creek Pkwy</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	<u>B (12.3)</u> B (11.1) A (0.4) D (44.5) E (58.6)	<u>B (14.8)</u> B (15.5) A (0.8) D (41.6) E (60.1)	<u>B (13.7)</u> B (11.1) A (4.5) D (44.5) E (58.6)	<u>C (21.2)</u> B (15.5) B (17.0) D (42.5) E (60.1)
10	<u>SR 347 (Friendship Rd) @ Spout Springs Rd</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	<u>D (49.7)</u> D (46.6) D (48.8) D (53.1) D (54.1)	<u>F (91.3)</u> E (76.0) F (90.1) F (103.2) F (122.3)	<u>D (45.9)</u> D (45.5) D (44.7) D (50.7) D (44.4)	<u>E (58.0)</u> D (54.9) D (52.9) D (54.8) E (77.8)
11	<u>SR 347 (Friendship Rd) @ Sardis Church Rd</u> -Eastbound Approach -Westbound Approach/Left -Northbound Approach	- B (12.5) F (299.7)	- F (91.7) F (*)	<u>B (13.4)</u> A (9.5) A (5.6) E (59.1)	<u>C (32.6)</u> D (36.5) B (17.8) E (65.3)
12	<u>Sardis Church Rd @ Thompson Mill Rd</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	<u>F (56.8)</u> D (33.1) F (52.5) F (81.6) F (50.3)	<u>F (134.8)</u> F (63.4) F (121.5) F (184.9) F (144.7)	<u>C (24.5)</u> D (35.3) D (46.8) B (12.6) B (11.2)	<u>C (26.3)</u> C (29.0) D (44.9) B (18.4) B (16.5)
13	<u>Spout Springs Rd @ Thompson Mill Rd</u> -Eastbound Approach -Westbound Approach -Northbound Approach -Southbound Approach	<u>C (23.4)</u> D (49.3) E (59.3) B (19.2) B (14.1)	<u>C (29.0)</u> D (50.1) D (54.8) C (20.5) C (22.5)	<u>C (23.4)</u> D (49.3) E (59.3) B (19.1) B (14.1)	<u>C (29.0)</u> D (50.1) D (54.8) C (20.5) C (22.5)
14	<u>Thompson Mill Rd @ Deaton Creek Pkwy</u> -Eastbound Left -Southbound Approach	A (7.3) B (10.4)	A (7.3) B (10.0)	A (7.3) B (10.4)	A (7.3) B (10.0)
15	<u>Thompson Mill Rd @ Autumn Maple Dr</u> -Westbound Left -Northbound Approach	A (8.2) B (13.9)	A (8.3) C (16.2)	A (8.2) B (13.9)	A (8.3) C (16.2)
16	<u>Thompson Mill Rd @ Retreat Point Pkwy/ Site Drwy 3 (Eastern)</u> -Eastbound Left -Westbound Left -Northbound Approach -Southbound Approach	A (8.5) A (8.0) C (16.1) C (17.8)	A (8.5) A (8.5) C (20.6) D (32.9)	A (8.5) A (8.0) C (16.1) C (17.8)	A (8.5) A (8.5) C (20.8) D (32.9)
17	<u>Thompson Mill Rd @ Site Drwy 4</u> -Eastbound Left -Southbound Approach	A (8.4) C (15.1)	A (8.3) C (17.5)	A (8.4) C (15.2)	A (8.3) C (17.6)

18	<u>Thompson Mill Rd @ Site Drwy 5</u> -Eastbound Left -Southbound Approach	A (8.3) B (13.6)	A (8.3) C (16.9)	A (8.3) B (13.6)	A (8.3) C (16.9)
19	<u>Thompson Mill Rd @ Site Drwy 6</u> -Eastbound Left -Southbound Approach	A (7.9) B (13.2)	A (8.0) B (14.7)	A (7.9) B (13.2)	A (8.0) B (14.7)
20	<u>Deaton Creek Pkwy @ Drwy 7</u> -Westbound Approach -Southbound Left	B (10.1) A (7.8)	B (11.5) A (8.2)	B (10.1) A (7.8)	B (11.5) A (8.2)
21	<u>Deaton Creek Pkwy @ Drwy 8</u> -Eastbound Approach -Northbound Left	B (11.2) A (7.9)	B (11.8) A (7.7)	B (11.2) A (7.9)	B (11.8) A (7.7)
22	<u>Thompson Mill Rd @ Site Drwy 9</u> -Eastbound Left -Southbound Approach	A (0.0) A (8.6)	A (0.0) A (8.7)	A (0.0) A (8.6)	A (0.0) A (8.7)

* Delay exceeds 300 seconds

The results of the future “Build with System Improvements” traffic operations analysis show that the following approaches will continue to operate at LOS “E” as in “No-Build” conditions:

- Westbound approach of Bayberry Drive @ SR 347 @ SR 211 (Intersection # 1)
- Eastbound approach of Thompson Mill Road at SR 211 (Intersection # 2)
- Eastbound and westbound approaches of Golf Club Drive and Liberty Church Road at SR 211 (Intersection # 3)
- Southbound approach of Deaton Creek Parkway @ SR 347 (Intersection # 9)
- Northbound approach of Sardis Church Road @ SR 347 (Intersection # 11)
- Westbound approach of Thompson Mill Road @ Spout Springs Road (Intersection # 13)

All these side streets which continue to operate at LOS “E” in the “Build” conditions as in “No-Build” conditions are caused by high through and left-turn volumes on mainline taking longer green time for mainlines.

The intersection of SR 347 (Friendship Road) @ Spout Springs Road will operate at overall LOS “E” in “Build” peak hour. There will be two through lanes, two left turns on main lines as part of the “system improvements” and no other reasonable improvement will aid bring the LOS “E” to “D”.

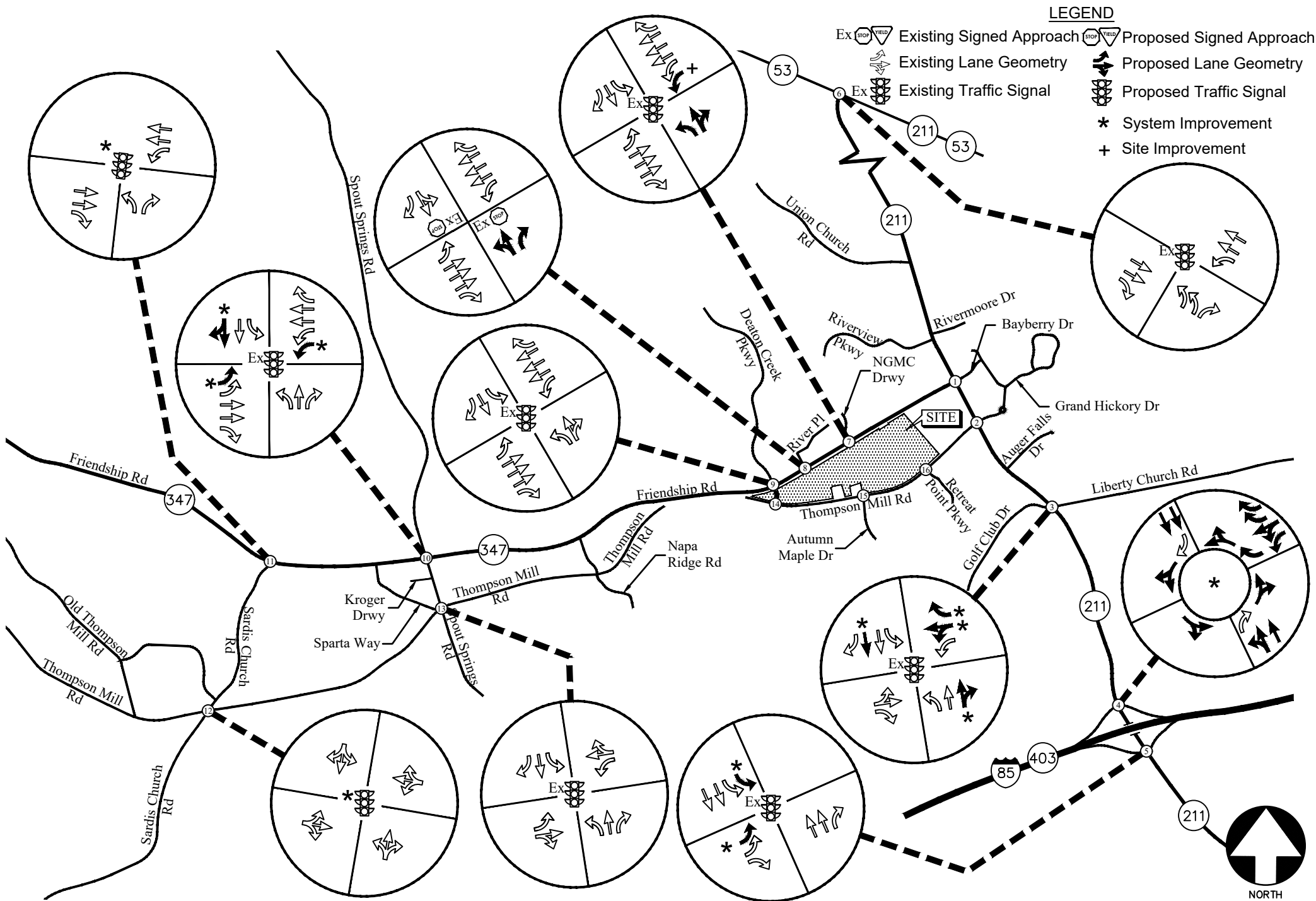
The northbound site driveway and the southbound River Road at their un-signalized intersection at SR 347 (Friendship Road) will operate at LOS “F” in both peak hours. The adjacent site driveway will be signalized, and it is expected that many of exiting left turns will use the signalized intersection. It is not uncommon for side streets to experience long delays to turn on major highways.

Recommendations for Site Mitigation Improvements

Improvements that are identified as mitigation improvements address deficiencies that are caused by site traffic and can be identified as related to the proposed development. In addition to the system improvements discussed in the earlier section, the following site improvements are identified.

Intersection 7: SR 347 (Friendship Road) at NEG Medical Center Drwy / Site Driveway 2

- Addition of a second westbound left-turn lane on SR 347 for future use. As recommended by GDOT, provide offset hatching to reserve space for future dual lefts.



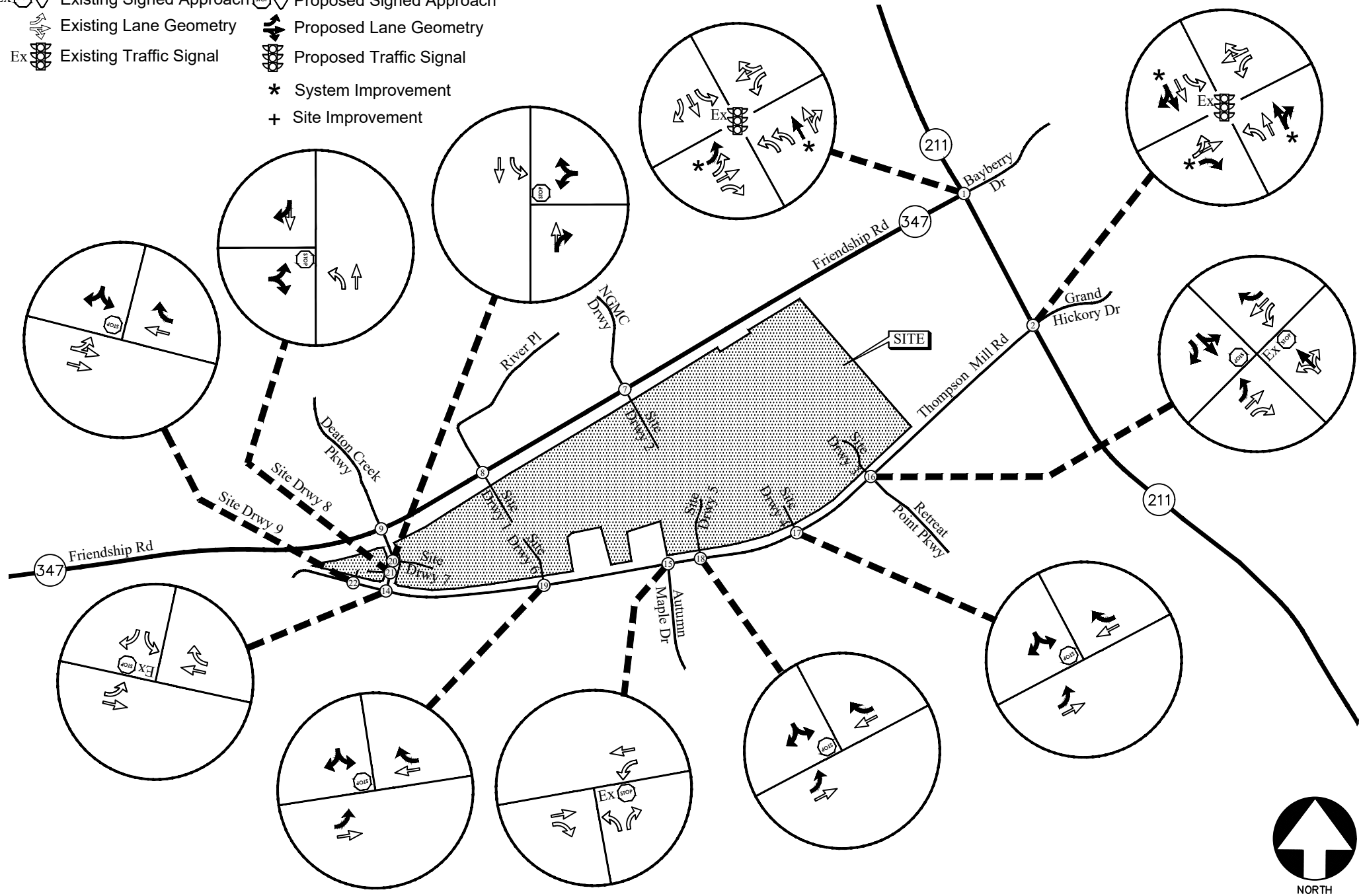
FUTURE TRAFFIC CONTROL AND LANE GEOMETRY 1 OF 2

FIGURE 9A

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LEGEND

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



FUTURE TRAFFIC CONTROL AND LANE GEOMETRY 2 OF 2

FIGURE 9B
A&R Engineering Inc.

CONCLUSIONS AND RECOMMENDATIONS

Traffic impacts were evaluated for the proposed Thompson Mill Village mixed-use development located between SR 347 (Friendship Road) and Thompson Mill Road and west of SR 211, in Hall and Gwinnett counties, Georgia. The development will consist of:

- Single-Family Attached Housing: 141 dwelling units
- Multifamily Housing (Mid-Rise): 460 dwelling units
- Senior Adult Housing – Multifamily: 939 dwelling units
- Hotel: 200 rooms
- General Office Building: 105,049 sf
- Medical-Dental Office Building - Within/Near Hospital Campus: 254,200 sf
- Shopping Center (>150k): 374,218 sf
- Fast Casual Restaurant: 15,000 sf
- Fine Dining Restaurant: 15,000 sf
- High-Turnover (Sit-Down) Restaurant: 15,000 sf
- Fast-Food Restaurant without Drive-Through Window: 5,000 sf

The development proposes access at the following locations:

- Site Driveway 1: Full-access driveway on SR 347 (Friendship Road), aligned with River Place
- Site Driveway 2: Full-access driveway on SR 347 (Friendship Road), aligned with the main driveway of Northeast Georgia Medical Center
- Site Driveway 3: Full-access driveway on Thompson Mill Road, aligned with Retreat Point Parkway
- Site Driveway 4: Full-access driveway on Thompson Mill Road
- Site Driveway 5: Full-access driveway on Thompson Mill Road
- Site Driveway 6: Full-access driveway on Thompson Mill Road
- Site Driveway 7: Full-access driveway on Deaton Creek Parkway
- Site Driveway 8: Full-access driveway on Deaton Creek Parkway
- Site Driveway 9: Full-access driveway on Thompson Mill Road

Existing and future operations after completion of the project were analyzed at the intersections of:

1. SR 211 at SR 347 (Friendship Road) / Bayberry Drive
2. SR 211 at Thompson Mill Road / Grand Hickory Drive
3. SR 211 at Golf Club Drive / Liberty Church Road
4. SR 211 at I-85 Southbound Ramps
5. SR 211 at I-85 Northbound Ramps
6. SR 211 at SR 53
7. SR 347 (Friendship Road) at Northeast Georgia Medical Center's main driveway/ Site Driveway 2
8. SR 347 (Friendship Road) at River Place/ Site Driveway 1
9. SR 347 (Friendship Road) at Deaton Creek Parkway

10. SR 347 (Friendship Road) at Spout Springs Road
11. SR 347 (Friendship Road) at Sardis Church Road
12. Sardis Church Road at Thompson Mill Road
13. Spout Springs Road at Thompson Mill Road
14. Thompson Mill Road at Deaton Creek Parkway
15. Thompson Mill Road at Autumn Maple Drive
16. Thompson Mill Road at Retreat Point Parkway/ Site Driveway 3
17. Thompson Mill Road at Site Driveway 4
18. Thompson Mill Road at Site Driveway 5
19. Thompson Mill Road at Site Driveway 6
20. Deaton Creek Parkway at Site Driveway 7
21. Deaton Creek Parkway at Site Driveway 8
22. Thompson Mill Road at Site Driveway 9

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 the Future “No-Build” analysis indicate that the following intersections will have LOS “F” for one or more approaches in the AM or PM peak hour or both:

- Intersection 1: SR 211 at SR 347 (Friendship Road) / Bayberry Drive
- Intersection 2: SR 211 at Thompson Mill Road / Grand Hickory Drive
- Intersection 11: SR 347 (Friendship Road) at Sardis Church Road
- Intersection 12: Sardis Church Road at Thompson Mill Road

The results of the future “Build with System Improvements” traffic operations analysis show that the following approaches will continue to operate at LOS “E” as in “No-Build” conditions:

- Westbound approach of Bayberry Drive @ SR 347 @ SR 211 (Intersection # 1)
- Eastbound approach of Thompson Mill Road at SR 211 (Intersection # 2)
- Eastbound and westbound approaches of Golf Club Drive and Liberty Church Road at SR 211 (Intersection # 3)
- Southbound approach of Deaton Creek Parkway @ SR 347 (Intersection # 9)
- Northbound approach of Sardis Church Road @ SR 347 (Intersection # 11)
- Westbound approach of Thompson Mill Road @ Spout Springs Road (Intersection # 13)

All these side streets which continue to operate at LOS “E” in the “Build” conditions as in “No-Build” conditions are caused by high through and left-turn volumes on mainline taking longer green time for mainlines.

The intersection of SR 347 (Friendship Road) @ Spout Springs Road will operate at overall LOS “E” in “Build” peak hour. There will be two through lanes, two left turns on main lines as part of the “system improvements” and no other reasonable improvement will aid bring the LOS “E” to “D”.

The northbound site driveway and the southbound River Road at their un-signalized intersection at SR 347 (Friendship Road) will operate at LOS “F” in both peak hours. The adjacent site driveway will be signalized, and it is expected that many of exiting left turns will use the signalized intersection. It is not uncommon for side streets to experience long delays to turn on major highways.

Recommendations for System Improvements

SR 211 is a two-lane roadway from I-85 ramps to SR 347 (Friendship Road) and needs to be widened to a four-lane roadway to accommodate the traffic volumes of more than 1,000 vehicles in each approach in the PM peak hours. Intersections 1 and 2 on SR 211 will operate at overall LOS “E” due to the inadequate capacity of the existing two-lane SR 211. Intersections 3 and 5 on SR 211 will have at least one approach operating at LOS “E” either in AM or PM peak hour. Based on the traffic volumes in the “No-Build” conditions, we recommend that SR 211 be widened to a four-lane roadway from SR 347 (Friendship Road) to I-85 southbound ramps.

GDOT PI 0013988 – SR 211 Widening from I-85 NB Ramp to north of Pinot Noir Drive:

GDOT’s above project will widen SR 211 to a four-lane roadway from the I-85 northbound ramp terminals (where dual left turn lanes will be provided on SR 211 to turn onto the I-85 northbound entrance ramp) to north of Pinot Noir Drive. North of Tour de France Drive, the project will provide a four-lane urban section with a 20-foot raised median and 10-foot side path on the east side of SR 211. The project will also construct two multi-lane roundabouts at the SR 211 intersections with the I-85 southbound ramps and the Braselton Parkway Extension/Tour de France Drive.

Since GDOT’s completion date is stated as 2025, we have assumed the widening as completed in our “No-Build 2027” and “Build 2027” analysis. A summary of the system improvements (apart from GDOT’s SR 211 widening mentioned above), which address deficiencies that are found within the existing road network for the “No-Build” conditions, is provided below.

Intersection 1: SR 211 at SR 347 (Friendship Road) / Bayberry Drive

- Addition of a left turn lane creating dual left turn lanes on the eastbound approach of SR 347 (Friendship Road) with protective only phasing.

Intersection 2: SR 211 at Thompson Mill Road / Grand Hickory Drive

In “No-Build” PM, the eastbound approach will have 283 eastbound right-turning trips without a dedicated right-turn lane. The northbound and southbound volumes exceed 1,000 trips each way in either AM or PM peak hours.

- Re-stripe the eastbound approach of Thompson Mill Road to a shared left/through lane and a dedicated right-turn lane with channelization and right-turn overlap phase.
- Convert the northbound and southbound right-turn lanes on SR 211 to a shared northbound shared through/right-turn lane and a southbound shared through/right-turn lane to create two through lanes in both northbound and southbound approaches.

Intersection 3: SR 211 at Golf Club Drive / Liberty Church Road

The westbound Liberty Church Approach currently has a lane geometry of a left-turn lane and a shared through/right-turn lane. The future “No-Build” volumes for this approach will exceed 350 vehicles in the PM peak hour and warrant a dual left-left-turn lane. Also, as explained, the heavy volumes on SR 211 will need a capacity increased to a four-lane roadway.

- Addition of a second southbound through lane on SR 211

- Restripe existing westbound shared through/right turn lane on of Liberty Church Road to a right-turn lane.
- Addition of westbound shared through and left-turn lane on Liberty Church Road, make the approach to have dual left turn lanes.
- Convert the existing northbound right-turn lane on SR 211 to a shared through/right-turn lane to accommodate two northbound through lanes.

Intersection 5: SR 211 at I-85 NB Ramps

The eastbound left-turn approach of I-85 ramp will have a volume of 243 in AM peak and 451 in the PM peak hour and currently has only one lane. Based on the future “No-Build” volumes, the eastbound left-turn approach needs to have two left-turn lanes.

- Addition of an additional eastbound left-turn lane on the northbound ramp to turn left on SR 211.

Intersection 10: SR 347 (Friendship Road) at Spout Springs Road

SR 347 (Friendship Road) currently has one eastbound left-turn lane and one westbound left-turn lane. The future “No-Build” left-turn volumes of 372 and 382 respectively in the PM peak hour warrant a second eastbound and westbound left-turn lane.

- Addition of a second eastbound left-turn lane on SR 347 with “protected” phasing.
- Addition of a second westbound left-turn lane on SR 347 with “protected” phasing.
- Convert the existing southbound right-turn lane into a shared through/right-turn lane on Spout Springs Road.

Intersection 11: SR 347 (Friendship Road) at Sardis Church Road

Due to the heavy through volumes on SR 347 and heavy westbound left-turn volumes cause considerable delays for the northbound left-turn vehicles to find gaps turning left on SR 347. Heavy left-turn volumes indicate that a signal will be warranted. However, a detailed signal warrant study/ICE study be conducted to see if a traffic signal is warranted.

- Installation of a traffic signal (if warranted and approved by GDOT) with “protected+permissive” phasing for westbound left turn lane on SR 347

Intersection 12: Sardis Church Road at Thompson Mill Road

The entering volumes at this “All-Way Stop” controlled intersection is approximately 1,500 vehicles in the PM peak hour and therefore all approaches will experience long delays. Installation of a traffic signal or a roundabout to improve the traffic operations at this intersection.

Recommendations for Site Mitigation Improvements

Improvements that are identified as mitigation improvements address deficiencies that are caused by site traffic and can be identified as related to the proposed development. In addition to the system improvements discussed in the earlier section, the following site improvements are identified.

Intersection 7: SR 347 (Friendship Road) at NEG Medical Center Drwy / Site Driveway 2

- Provide two receiving lanes on driveway for potential future second westbound left-turn lane on SR 347. As recommended by GDOT, provide offset hatching to reserve space for future dual lefts.

Recommendations for Site Access Configuration

The following access configuration is recommended for the proposed site driveway intersections. It is recommended that adequate sight distance as per AASHTO standard is provided for each driveway.

- Site Driveway 1: Full-access driveway on SR 347 (Friendship Road), aligned with River Place
 - o One entering and two exiting lanes (shared left-thru and channelized right turn lane).
 - o Stop-sign controlled on the driveway approach with SR 347 remaining free flow.
- Site Driveway 2: Full access driveway on SR 347 (Friendship Road), aligned with the main driveway of Northeast Georgia Medical Center
 - o Two entering and two exiting lanes (left and shared thru-right turn lane).
 - o Intersection to continue to operate with a traffic signal.
- Site Driveway 3: Full-access driveway on Thompson Mill Road, aligned with Retreat Point Parkway
 - o One entering and two exiting lanes (shared left-thru and right turn lane).
 - o Stop-sign controlled on the driveway approach.
 - o A right turn lane for entering traffic.
 - o A left turn lane for entering traffic.
- Site Driveway 4: Full access driveway on Thompson Mill Road
 - o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o A right turn lane for entering traffic.
 - o A left turn lane for entering traffic.
- Site Driveway 5: Full access driveway on Thompson Mill Road east of Autumn Maple Drive

Currently there is a 500 feet long westbound left-turn lane storage on Thompson Mill Road at Autumn Maple Drive. Based on our analysis, the westbound left turn volumes and queues do not require this long of a left turn lane. Given below is 95th % percentile queue length table for the Autumn Maple Drive intersection and the proposed full access site driveway.

TABLE 10 – FUTURE 95TH PERCENTILE SYNCHRO QUEUES (FT)				
Intersection		Available Storage (ft)	Queue in feet	
			BUILD with Improvements	
			AM Peak	PM Peak
15	<u>Thompson Mill Road @ Autumn Maple Drive</u> -Westbound Left	240'	25' (Synchro) 32' (SimTraffic)	25' (Synchro) 35' (SimTraffic)
18	<u>Thompson Mill Rd @ Site Drwy 5</u> -Eastbound Left	160'	25' (Synchro) 23' (SimTraffic)	25' (Synchro) 23' (SimTraffic)

Based on the above queue length analysis, we recommend that site driveway 5 be shifted further east of Autumn Maple Drive to allow a 160 feet storage and 50 feet taper for its eastbound left-turn lane. The remaining storage of 290 feet can be utilized for the westbound left turn lane storage and taper length for Autumn Maple Drive intersection.

- o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o A right turn lane for entering traffic.
 - o A left turn lane and right turn lane for entering traffic.
- Site Driveway 6: Full access driveway on Thompson Mill Road
 - o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o A right turn lane for entering traffic.
 - o A left turn lane for entering traffic.
- Site Driveway 7: Full access driveway on Deaton Creek Parkway
 - o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o Existing two-way-left-turn-lane will be used as a left-turn lane.
- Site Driveway 8: Full access driveway on Deaton Creek Parkway
 - o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o Existing two-way-left-turn-lane will be used as a left-turn lane.
- Site Driveway 9: Full access driveway on Thompson Mill Road
 - o One entering and one exiting lanes.
 - o Stop-sign controlled on the driveway approach.
 - o A right turn lane for entering traffic.

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” Intersections Analysis with Improvements.....	
Future “Build” Intersections Analysis	
Future “Build” Intersections Analysis with System Improvements	
Traffic Volume Worksheets	

Existing Intersection Traffic Counts

A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 347 (Friendship Rd) @ NE
Georgia Medical Center's Main Drwy
7am - 7pm

File Name : 20230147
Site Code : 20230147
Start Date : 5/2/2023
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Town Center Way Northbound				NE Georgia Medical Center's Main Drwy Southbound				SR 347 (Friendship Rd) Eastbound				SR 347 (Friendship 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	9	0	9	18	16	111	0	127	1	133	21	155	300
07:15 AM	0	0	1	1	11	0	9	20	33	137	0	170	0	178	35	213	404
07:30 AM	0	0	0	0	5	0	10	15	28	179	0	207	0	195	41	236	458
07:45 AM	0	0	1	1	12	0	11	23	31	147	0	178	1	174	28	203	405
Total	0	0	2	2	37	0	39	76	108	574	0	682	2	680	125	807	1567
08:00 AM	0	0	0	0	9	0	6	15	47	150	0	197	0	162	31	193	405
08:15 AM	0	0	0	0	9	0	4	13	20	142	0	162	0	133	30	163	338
08:30 AM	0	0	0	0	10	0	11	21	26	147	0	173	0	184	33	217	411
08:45 AM	0	0	0	0	9	0	9	18	19	132	0	151	1	176	26	203	372
Total	0	0	0	0	37	0	30	67	112	571	0	683	1	655	120	776	1526
09:00 AM	0	0	0	0	26	0	23	49	18	153	0	171	0	167	35	202	422
09:15 AM	1	0	0	1	16	0	13	29	19	144	0	163	0	136	22	158	351
09:30 AM	0	0	1	1	28	0	9	37	14	137	0	151	1	145	31	177	366
09:45 AM	0	0	0	0	17	0	15	32	18	141	0	159	1	149	31	181	372
Total	1	0	1	2	87	0	60	147	69	575	0	644	2	597	119	718	1511
10:00 AM	0	0	0	0	14	0	12	26	17	141	0	158	0	127	25	152	336
10:15 AM	0	0	0	0	35	0	20	55	10	155	1	166	0	132	40	172	393
10:30 AM	1	0	0	1	27	0	18	45	18	149	0	167	0	118	34	152	365
10:45 AM	0	0	0	0	20	0	18	38	11	133	0	144	0	120	27	147	329
Total	1	0	0	1	96	0	68	164	56	578	1	635	0	497	126	623	1423
11:00 AM	0	0	0	0	34	0	23	57	10	132	1	143	0	119	19	138	338
11:15 AM	0	0	0	0	33	0	18	51	4	148	1	153	0	132	24	156	360
11:30 AM	0	0	0	0	32	0	24	56	2	137	1	140	0	130	18	148	344
11:45 AM	0	0	0	0	34	0	14	48	6	140	0	146	0	113	30	143	337
Total	0	0	0	0	133	0	79	212	22	557	3	582	0	494	91	585	1379
12:00 PM	0	0	0	0	29	0	14	43	8	151	0	159	0	131	23	154	356
12:15 PM	0	0	0	0	21	0	16	37	5	133	0	138	1	147	31	179	354
12:30 PM	0	0	1	1	24	0	16	40	20	170	0	190	0	168	44	212	443
12:45 PM	0	0	1	1	22	0	9	31	23	184	0	207	0	152	27	179	418
Total	0	0	2	2	96	0	55	151	56	638	0	694	1	598	125	724	1571
01:00 PM	0	0	0	0	17	0	19	36	22	181	0	203	0	142	26	168	407
01:15 PM	0	0	0	0	14	0	18	32	15	146	1	162	0	150	30	180	374
01:30 PM	0	0	0	0	33	0	20	53	19	165	0	184	0	157	25	182	419
01:45 PM	0	0	0	0	28	0	21	49	17	163	0	180	0	142	20	162	391
Total	0	0	0	0	92	0	78	170	73	655	1	729	0	591	101	692	1591
02:00 PM	0	0	1	1	24	0	15	39	14	126	1	141	0	135	19	154	335
02:15 PM	0	0	2	2	28	0	20	48	14	140	1	155	0	141	22	163	368
02:30 PM	0	0	0	0	30	0	18	48	18	138	0	156	0	160	35	195	399
02:45 PM	0	0	0	0	36	0	34	70	19	139	0	158	0	147	32	179	407
Total	0	0	3	3	118	0	87	205	65	543	2	610	0	583	108	691	1509
03:00 PM	1	0	0	1	42	0	23	65	9	156	0	165	0	190	17	207	438
03:15 PM	0	0	0	0	34	0	15	49	12	178	0	190	0	124	11	135	374
03:30 PM	0	0	0	0	46	0	13	59	10	181	0	191	0	159	13	172	422
03:45 PM	0	0	0	0	47	0	18	65	13	215	0	228	1	158	6	165	458
Total	1	0	0	1	169	0	69	238	44	730	0	774	1	631	47	679	1692

A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 347 (Friendship Rd) @ NE
Georgia Medical Center's Main Drwy
7am - 7pm

File Name : 20230147
Site Code : 20230147
Start Date : 5/2/2023
Page No : 2

Groups Printed- Cars,Buses & Trucks

	Town Center Way Northbound				NE Georgia Medical Center's Main Drwy Southbound				SR 347 (Friendship Rd) Eastbound				SR 347 (Friendship 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
04:00 PM	0	0	0	0	28	0	22	50	9	197	0	206	0	158	9	167	423
04:15 PM	0	0	0	0	42	0	18	60	6	197	0	203	0	156	11	167	430
04:30 PM	0	0	0	0	38	0	28	66	6	198	0	204	0	165	4	169	439
04:45 PM	0	0	0	0	37	0	36	73	4	201	0	205	0	188	8	196	474
Total	0	0	0	0	145	0	104	249	25	793	0	818	0	667	32	699	1766
05:00 PM	0	0	1	1	33	0	26	59	6	247	1	254	1	185	9	195	509
05:15 PM	0	0	0	0	34	0	22	56	6	229	0	235	0	145	12	157	448
05:30 PM	0	0	0	0	19	0	15	34	9	214	0	223	0	173	7	180	437
05:45 PM	0	0	0	0	17	0	10	27	6	211	0	217	0	205	5	210	454
Total	0	0	1	1	103	0	73	176	27	901	1	929	1	708	33	742	1848
06:00 PM	0	0	0	0	11	0	19	30	14	173	0	187	0	142	6	148	365
06:15 PM	0	0	0	0	13	0	13	26	16	172	0	188	0	110	10	120	334
06:30 PM	0	0	0	0	20	0	9	29	18	135	0	153	0	115	7	122	304
06:45 PM	0	0	0	0	8	0	13	21	9	104	0	113	0	90	6	96	230
Total	0	0	0	0	52	0	54	106	57	584	0	641	0	457	29	486	1233
Grand Total	3	0	9	12	1165	0	796	1961	714	7699	8	8421	8	7158	1056	8222	18616
Apprch %	25	0	75		59.4	0	40.6		8.5	91.4	0.1		0.1	87.1	12.8		
Total %	0	0	0	0.1	6.3	0	4.3	10.5	3.8	41.4	0	45.2	0	38.5	5.7	44.2	

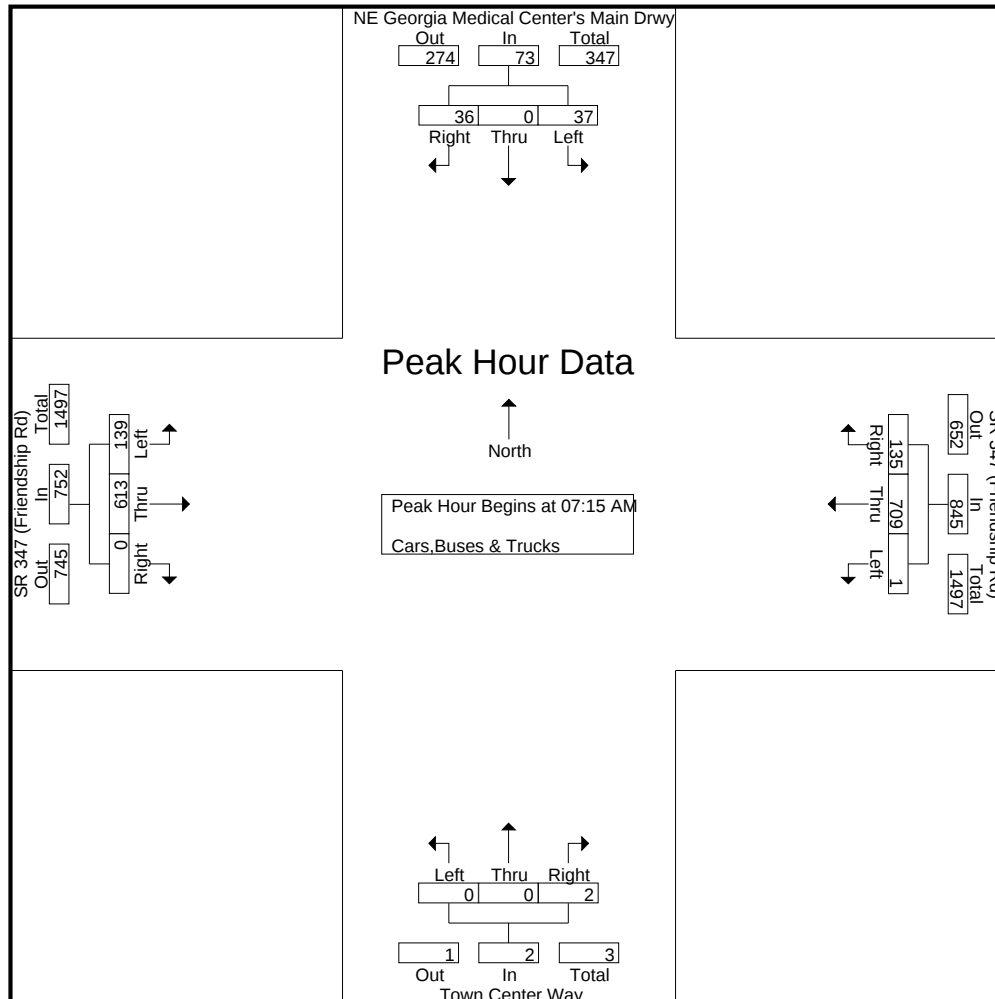
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Marietta, GA 30067

TMC DATA
SR 347 (Friendship Rd) @ NE
Georgia Medical Center's Main Drwy
7am - 7pm

File Name : 20230147
Site Code : 20230147
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	Town Center Way Northbound				NE Georgia Medical Center's Main Drwy Southbound				SR 347 (Friendship Rd) Eastbound				SR 347 (Friendship 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 07:15 AM																	
07:15 AM	0	0	1	1	11	0	9	20	33	137	0	170	0	178	35	213	404
07:30 AM	0	0	0	0	5	0	10	15	28	179	0	207	0	195	41	236	458
07:45 AM	0	0	1	1	12	0	11	23	31	147	0	178	1	174	28	203	405
08:00 AM	0	0	0	0	9	0	6	15	47	150	0	197	0	162	31	193	405
Total Volume	0	0	2	2	37	0	36	73	139	613	0	752	1	709	135	845	1672
% App. Total	0	0	100		50.7	0	49.3		18.5	81.5	0		0.1	83.9	16		
PHF	.000	.000	.500	.500	.771	.000	.818	.793	.739	.856	.000	.908	.250	.909	.823	.895	.913



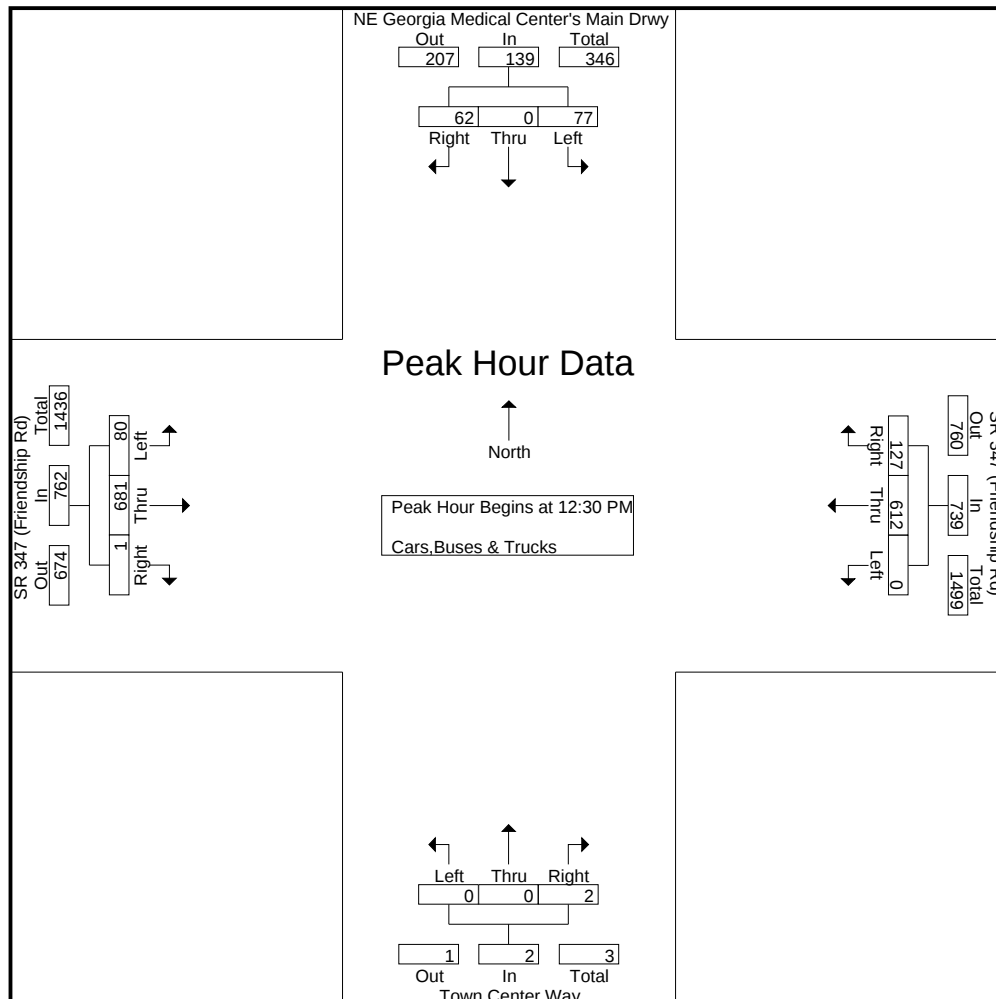
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Marietta, GA 30067

TMC DATA
SR 347 (Friendship Rd) @ NE
Georgia Medical Center's Main Drwy
7am - 7pm

File Name : 20230147
Site Code : 20230147
Start Date : 5/2/2023
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	Town Center Way Northbound				NE Georgia Medical Center's Main Drwy Southbound				SR 347 (Friendship Rd) Eastbound				SR 347 (Friendship 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 12:00 PM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:30 PM																	
12:30 PM	0	0	1	1	24	0	16	40	20	170	0	190	0	168	44	212	443
12:45 PM	0	0	1	1	22	0	9	31	23	184	0	207	0	152	27	179	418
01:00 PM	0	0	0	0	17	0	19	36	22	181	0	203	0	142	26	168	407
01:15 PM	0	0	0	0	14	0	18	32	15	146	1	162	0	150	30	180	374
Total Volume	0	0	2	2	77	0	62	139	80	681	1	762	0	612	127	739	1642
% App. Total	0	0	100		55.4	0	44.6		10.5	89.4	0.1		0	82.8	17.2		
PHF	.000	.000	.500	.500	.802	.000	.816	.869	.870	.925	.250	.920	.000	.911	.722	.871	.927



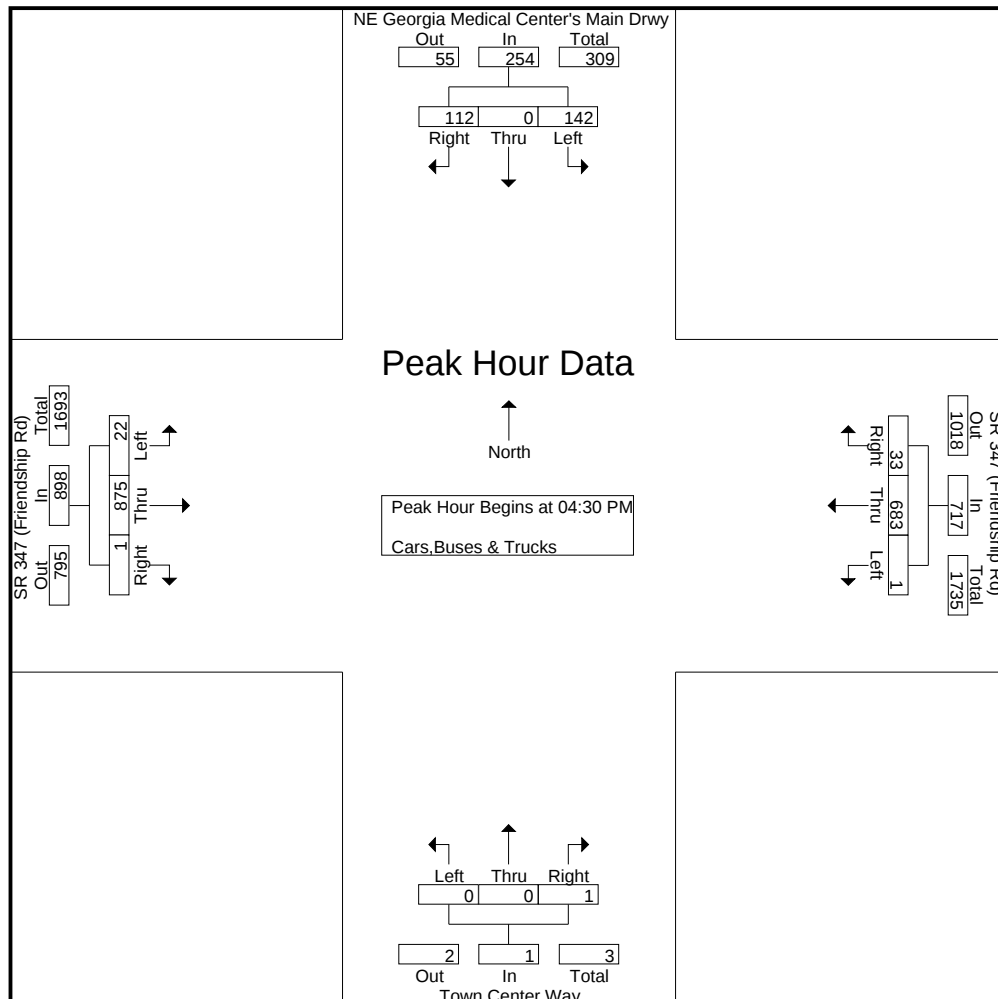
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TMC DATA
SR 347 (Friendship Rd) @ NE
Georgia Medical Center's Main Drwy
7am - 7pm

File Name : 20230147
Site Code : 20230147
Start Date : 5/2/2023
Page No : 5

	Town Center Way Northbound				NE Georgia Medical Center's Main Drwy Southbound				SR 347 (Friendship Rd) Eastbound				SR 347 (Friendship 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 04:30 PM																	
04:30 PM	0	0	0	0	38	0	28	66	6	198	0	204	0	165	4	169	439
04:45 PM	0	0	0	0	37	0	36	73	4	201	0	205	0	188	8	196	474
05:00 PM	0	0	1	1	33	0	26	59	6	247	1	254	1	185	9	195	509
05:15 PM	0	0	0	0	34	0	22	56	6	229	0	235	0	145	12	157	448
Total Volume	0	0	1	1	142	0	112	254	22	875	1	898	1	683	33	717	1870
% App. Total	0	0	100		55.9	0	44.1		2.4	97.4	0.1		0.1	95.3	4.6		
PHF	.000	.000	.250	.250	.934	.000	.778	.870	.917	.886	.250	.884	.250	.908	.688	.915	.918



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Marietta, GA 30067

TMC DATA
SR 347 (Friendship Road) @ River Place
7-9 am | 4-6 pm

File Name : 20230148
Site Code : 20230148
Start Date : 5/2/2023
Page No : 1

Groups Printed- Cars,Buses & Trucks

Start Time	Northbound				River Place Southbound				SR 347 (Friendship Road) Eastbound				SR 347 (Friendship Road) Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	0	0	2	2	9	127	0	136	0	134	8	142	280
07:15 AM	0	0	0	0	0	0	1	1	21	170	0	191	0	173	14	187	379
07:30 AM	0	0	0	0	0	0	2	2	27	207	0	234	0	183	22	205	441
07:45 AM	0	0	0	0	3	0	4	7	31	175	0	206	0	157	28	185	398
Total	0	0	0	0	3	0	9	12	88	679	0	767	0	647	72	719	1498
08:00 AM	0	0	0	0	3	0	4	7	31	194	0	225	0	138	30	168	400
08:15 AM	0	0	0	0	7	0	12	19	26	155	0	181	0	116	21	137	337
08:30 AM	0	0	0	0	12	0	12	24	18	161	0	179	0	176	19	195	398
08:45 AM	0	0	0	0	11	0	14	25	15	140	0	155	0	159	26	185	365
Total	0	0	0	0	33	0	42	75	90	650	0	740	0	589	96	685	1500
*** BREAK ***																	
04:00 PM	0	0	0	0	21	0	19	40	5	185	0	190	0	176	4	180	410
04:15 PM	0	0	0	0	11	0	19	30	5	192	0	197	0	172	2	174	401
04:30 PM	0	0	0	0	22	0	23	45	5	182	0	187	0	188	5	193	425
04:45 PM	0	0	0	0	5	0	19	24	9	200	0	209	0	222	2	224	457
Total	0	0	0	0	59	0	80	139	24	759	0	783	0	758	13	771	1693
05:00 PM	0	0	0	0	16	0	18	34	3	238	0	241	0	209	2	211	486
05:15 PM	0	0	0	0	9	0	13	22	4	226	0	230	0	164	3	167	419
05:30 PM	0	0	0	0	10	0	7	17	5	213	0	218	0	186	2	188	423
05:45 PM	0	0	0	0	2	0	7	9	3	215	0	218	0	211	4	215	442
Total	0	0	0	0	37	0	45	82	15	892	0	907	0	770	11	781	1770
Grand Total	0	0	0	0	132	0	176	308	217	2980	0	3197	0	2764	192	2956	6461
Apprch %	0	0	0		42.9	0	57.1		6.8	93.2	0		0	93.5	6.5		
Total %	0	0	0	0	2	0	2.7	4.8	3.4	46.1	0	49.5	0	42.8	3	45.8	

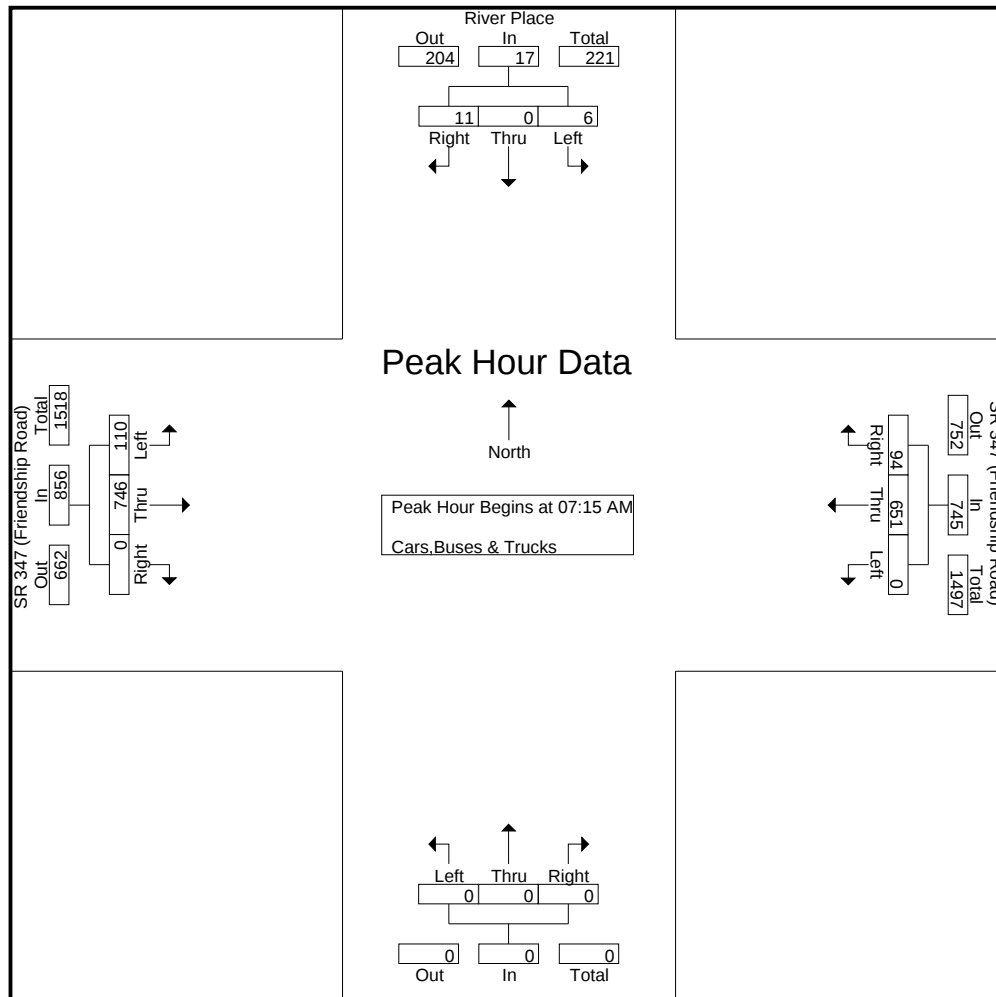
A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
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TMC DATA
SR 347 (Friendship Road) @ River Place
7-9 am | 4-6 pm

File Name : 20230148
Site Code : 20230148
Start Date : 5/2/2023
Page No : 2

	Northbound				River Place Southbound				SR 347 (Friendship Road) Eastbound				SR 347 (Friendship Road) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	1	1	21	170	0	191	0	173	14	187	379
07:30 AM	0	0	0	0	0	0	2	2	27	207	0	234	0	183	22	205	441
07:45 AM	0	0	0	0	3	0	4	7	31	175	0	206	0	157	28	185	398
08:00 AM	0	0	0	0	3	0	4	7	31	194	0	225	0	138	30	168	400
Total Volume	0	0	0	0	6	0	11	17	110	746	0	856	0	651	94	745	1618
% App. Total	0	0	0		35.3	0	64.7		12.9	87.1	0		0	87.4	12.6		
PHF	.000	.000	.000	.000	.500	.000	.688	.607	.887	.901	.000	.915	.000	.889	.783	.909	.917



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA

SR 347 (Friendship Road) @ River Place

7-9 am | 4-6 pm

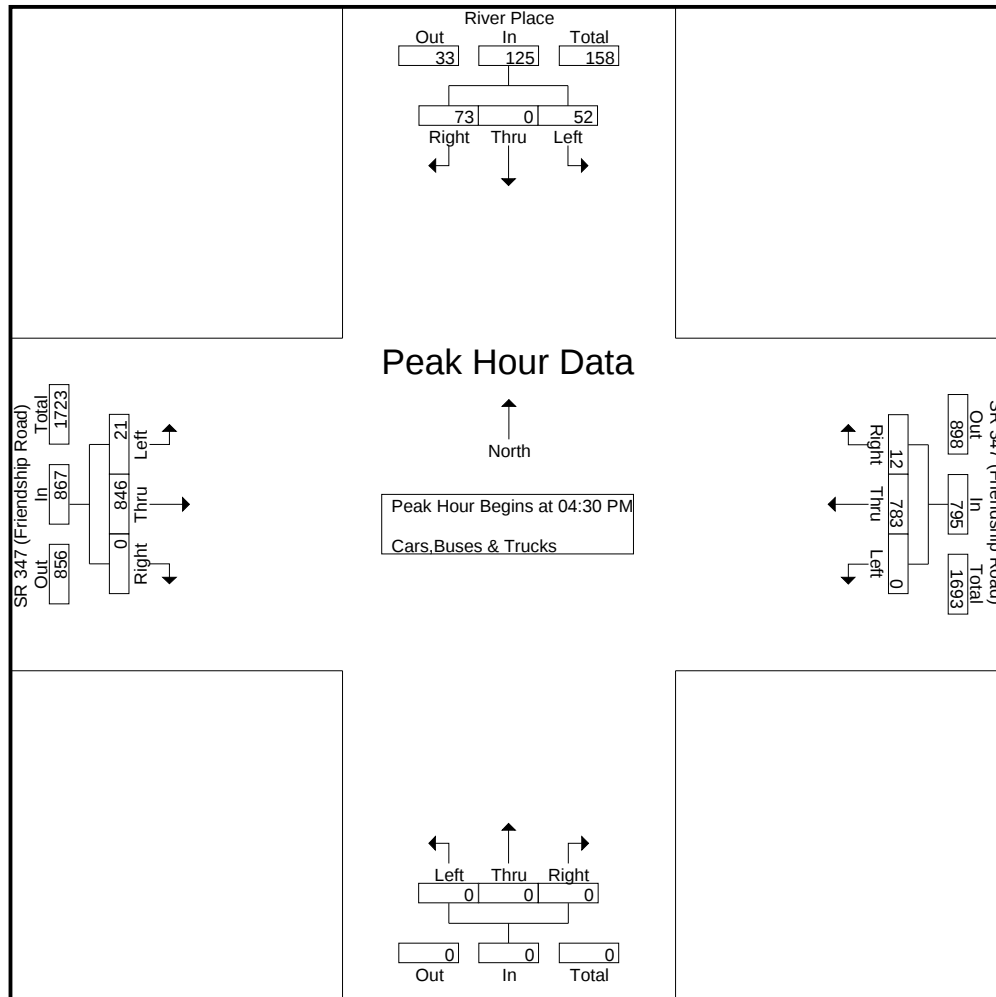
File Name : 20230148

Site Code : 20230148

Start Date : 5/2/2023

Page No : 3

	Northbound				River Place Southbound				SR 347 (Friendship Road) Eastbound				SR 347 (Friendship Road) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	0	0	22	0	23	45	5	182	0	187	0	188	5	193	425
04:45 PM	0	0	0	0	5	0	19	24	9	200	0	209	0	222	2	224	457
05:00 PM	0	0	0	0	16	0	18	34	3	238	0	241	0	209	2	211	486
05:15 PM	0	0	0	0	9	0	13	22	4	226	0	230	0	164	3	167	419
Total Volume	0	0	0	0	52	0	73	125	21	846	0	867	0	783	12	795	1787
% App. Total	0	0	0	0	41.6	0	58.4		2.4	97.6	0		0	98.5	1.5		
PHF	.000	.000	.000	.000	.591	.000	.793	.694	.583	.889	.000	.899	.000	.882	.600	.887	.919



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Marietta, GA 30067

TMC DATA

Thompson Mill Rd @ Autumn Maple Dr

7-9 am | 4-6 pm

File Name : 20230149

Site Code : 20230149

Start Date : 5/2/2023

Page No : 1

Groups Printed- Cars,Buses & Trucks

	Autumn Maple Dr Northbound				Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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	22	0	15	37	0	0	0	0	0	8	10	18	14	14	0	28	83
07:15 AM	17	0	10	27	0	0	0	0	0	16	19	35	4	11	0	15	77
07:30 AM	23	0	22	45	0	0	0	0	0	19	14	33	12	12	0	24	102
07:45 AM	23	0	20	43	0	0	0	0	0	24	21	45	11	17	0	28	116
Total	85	0	67	152	0	0	0	0	0	67	64	131	41	54	0	95	378
08:00 AM	17	0	15	32	0	0	0	0	0	18	17	35	17	16	0	33	100
08:15 AM	22	0	15	37	0	0	0	0	0	25	24	49	16	21	0	37	123
08:30 AM	25	0	10	35	0	0	0	0	0	17	27	44	17	18	0	35	114
08:45 AM	32	0	13	45	0	0	0	0	0	26	22	48	16	19	0	35	128
Total	96	0	53	149	0	0	0	0	0	86	90	176	66	74	0	140	465
*** BREAK ***																	
04:00 PM	11	0	11	22	0	0	0	0	0	14	11	25	18	21	0	39	86
04:15 PM	20	0	11	31	0	0	0	0	0	24	16	40	19	14	0	33	104
04:30 PM	12	0	18	30	0	0	0	0	0	22	21	43	18	21	0	39	112
04:45 PM	13	0	16	29	0	0	0	0	0	8	24	32	17	19	0	36	97
Total	56	0	56	112	0	0	0	0	0	68	72	140	72	75	0	147	399
05:00 PM	15	0	7	22	0	0	0	0	0	13	22	35	7	22	0	29	86
05:15 PM	25	0	15	40	0	0	0	0	0	10	12	22	11	20	0	31	93
05:30 PM	29	0	11	40	0	0	0	0	0	7	13	20	11	28	0	39	99
05:45 PM	23	0	20	43	0	0	0	0	0	9	28	37	17	25	0	42	122
Total	92	0	53	145	0	0	0	0	0	39	75	114	46	95	0	141	400
Grand Total	329	0	229	558	0	0	0	0	0	260	301	561	225	298	0	523	1642
Apprch %	59	0	41		0	0	0		0	46.3	53.7		43	57	0		
Total %	20	0	13.9	34	0	0	0	0	0	15.8	18.3	34.2	13.7	18.1	0	31.9	

A & R Engineering, Inc.

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TMC DATA

Thompson Mill Rd @ Autumn Maple Dr

7-9 am | 4-6 pm

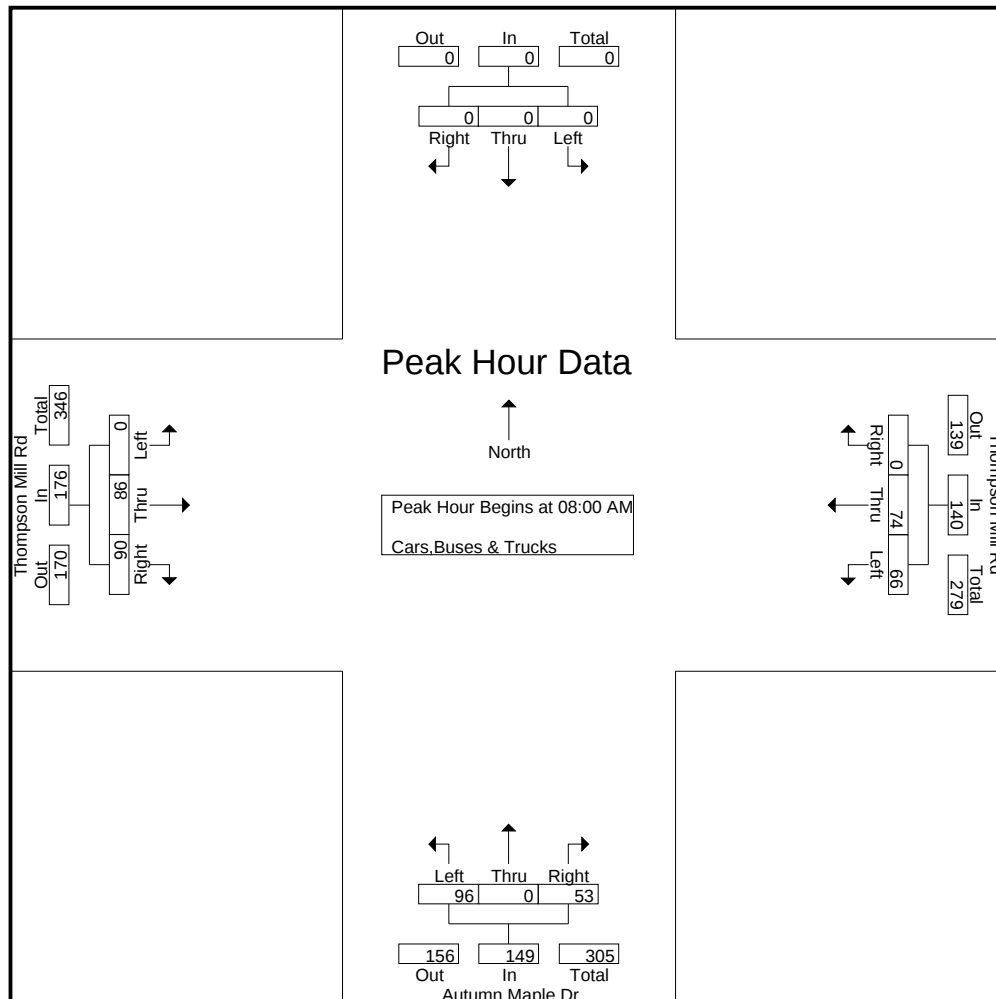
File Name : 20230149

Site Code : 20230149

Start Date : 5/2/2023

Page No : 2

	Autumn Maple Dr Northbound				Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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 08:00 AM																	
08:00 AM	17	0	15	32	0	0	0	0	0	18	17	35	17	16	0	33	100
08:15 AM	22	0	15	37	0	0	0	0	0	25	24	49	16	21	0	37	123
08:30 AM	25	0	10	35	0	0	0	0	0	17	27	44	17	18	0	35	114
08:45 AM	32	0	13	45	0	0	0	0	0	26	22	48	16	19	0	35	128
Total Volume	96	0	53	149	0	0	0	0	0	86	90	176	66	74	0	140	465
% App. Total	64.4	0	35.6		0	0	0		0	48.9	51.1		47.1	52.9	0		
PHF	.750	.000	.883	.828	.000	.000	.000	.000	.000	.827	.833	.898	.971	.881	.000	.946	.908



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2160 Kingston Court Suite 'O'
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TMC DATA

Thompson Mill Rd @ Autumn Maple Dr

7-9 am | 4-6 pm

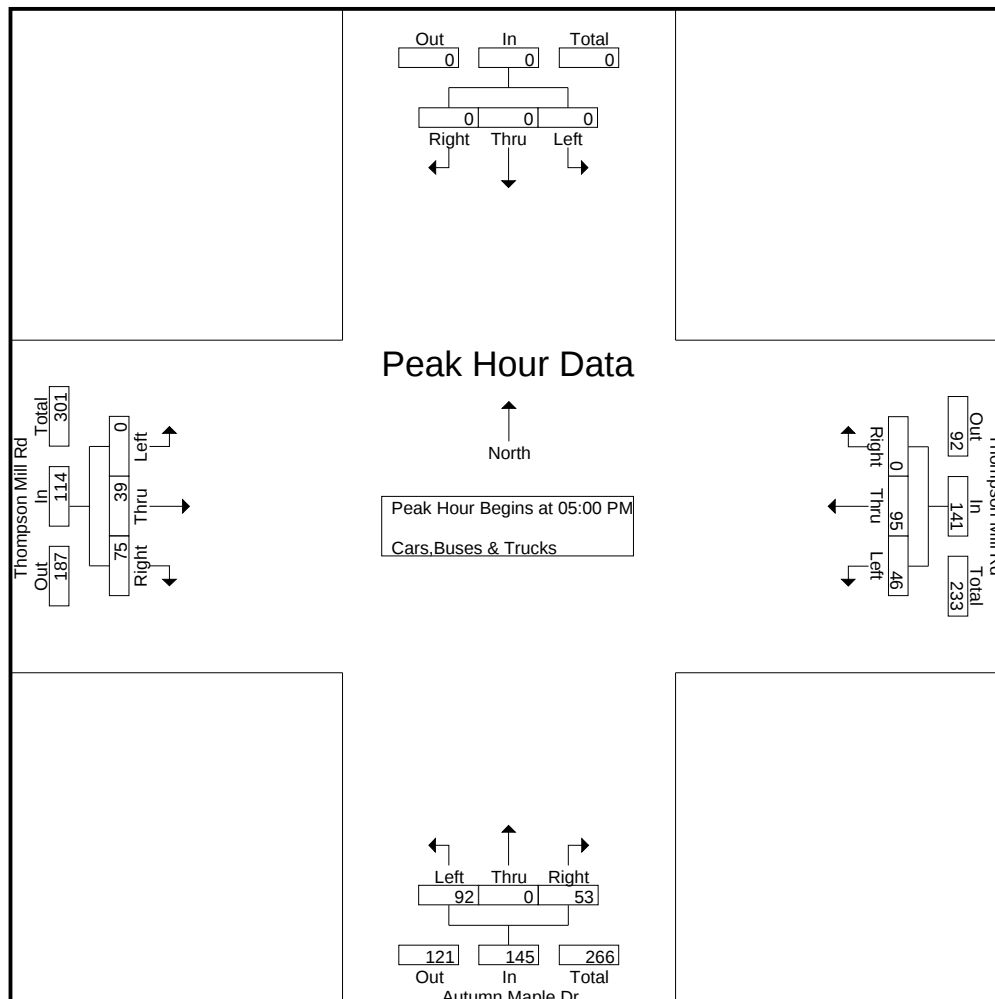
File Name : 20230149

Site Code : 20230149

Start Date : 5/2/2023

Page No : 3

	Autumn Maple Dr Northbound				Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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	15	0	7	22	0	0	0	0	0	13	22	35	7	22	0	29	86
05:15 PM	25	0	15	40	0	0	0	0	0	10	12	22	11	20	0	31	93
05:30 PM	29	0	11	40	0	0	0	0	0	7	13	20	11	28	0	39	99
05:45 PM	23	0	20	43	0	0	0	0	0	9	28	37	17	25	0	42	122
Total Volume	92	0	53	145	0	0	0	0	0	39	75	114	46	95	0	141	400
% App. Total	63.4	0	36.6		0	0	0		0	34.2	65.8		32.6	67.4	0		
PHF	.793	.000	.663	.843	.000	.000	.000	.000	.000	.750	.670	.770	.676	.848	.000	.839	.820



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 347 (Friendship Rd) @
Deaton Creek Pkwy
7am - 7pm

File Name : 20230156
Site Code : 20230156
Start Date : 5/2/2023
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Deaton Creek Pkwy Northbound				Deaton Creek Pkwy Southbound				SR 347 (Friendship Rd) Eastbound				SR 347 (Friendship 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	37	0	0	37	3	1	6	10	3	133	19	155	1	134	1	136	338
07:15 AM	23	0	4	27	3	2	5	10	4	184	31	219	1	172	1	174	430
07:30 AM	35	0	2	37	8	3	8	19	2	224	30	256	0	181	4	185	497
07:45 AM	33	3	6	42	4	5	12	21	5	196	41	242	1	154	6	161	466
Total	128	3	12	143	18	11	31	60	14	737	121	872	3	641	12	656	1731
08:00 AM	29	1	1	31	8	1	11	20	7	216	31	254	0	140	2	142	447
08:15 AM	41	0	3	44	7	0	5	12	6	171	45	222	4	118	6	128	406
08:30 AM	40	2	2	44	4	2	14	20	17	173	37	227	4	178	6	188	479
08:45 AM	48	1	4	53	8	3	18	29	9	143	43	195	4	159	10	173	450
Total	158	4	10	172	27	6	48	81	39	703	156	898	12	595	24	631	1782
09:00 AM	31	4	1	36	13	4	16	33	12	143	34	189	3	156	5	164	422
09:15 AM	18	5	6	29	11	1	18	30	11	145	39	195	3	142	12	157	411
09:30 AM	29	4	2	35	9	3	18	30	15	152	34	201	2	149	4	155	421
09:45 AM	36	3	4	43	9	3	26	38	17	157	33	207	2	137	13	152	440
Total	114	16	13	143	42	11	78	131	55	597	140	792	10	584	34	628	1694
10:00 AM	30	1	2	33	10	2	15	27	18	151	35	204	4	141	8	153	417
10:15 AM	33	2	2	37	7	3	22	32	15	143	28	186	3	144	4	151	406
10:30 AM	32	1	3	36	12	1	32	45	14	136	26	176	2	141	7	150	407
10:45 AM	24	1	3	28	12	4	32	48	16	140	19	175	1	133	5	139	390
Total	119	5	10	134	41	10	101	152	63	570	108	741	10	559	24	593	1620
11:00 AM	23	1	2	26	9	4	25	38	2	129	25	156	1	127	0	128	348
11:15 AM	26	1	2	29	6	3	23	32	3	129	24	156	3	115	0	118	335
11:30 AM	29	1	2	32	8	1	21	30	9	112	35	156	1	105	0	106	324
11:45 AM	32	2	1	35	5	5	20	30	2	120	40	162	2	108	2	112	339
Total	110	5	7	122	28	13	89	130	16	490	124	630	7	455	2	464	1346
12:00 PM	24	0	0	24	6	1	22	29	6	110	32	148	4	105	0	109	310
12:15 PM	31	3	3	37	4	5	32	41	3	103	32	138	1	111	0	112	328
12:30 PM	38	0	4	42	9	2	23	34	11	102	37	150	1	116	0	117	343
12:45 PM	43	2	0	45	11	3	29	43	14	99	50	163	0	124	1	125	376
Total	136	5	7	148	30	11	106	147	34	414	151	599	6	456	1	463	1357
01:00 PM	49	1	1	51	7	1	24	32	9	104	41	154	1	125	0	126	363
01:15 PM	45	3	1	49	6	2	20	28	11	102	20	133	0	134	1	135	345
01:30 PM	40	2	2	44	2	1	15	18	18	118	32	168	2	124	1	127	357
01:45 PM	32	3	1	36	8	3	12	23	12	118	39	169	3	138	0	141	369
Total	166	9	5	180	23	7	71	101	50	442	132	624	6	521	2	529	1434
02:00 PM	35	0	2	37	6	0	16	22	8	126	37	171	2	132	0	134	364
02:15 PM	31	2	1	34	6	2	19	27	5	131	39	175	4	137	1	142	378
02:30 PM	33	3	3	39	4	1	22	27	10	133	36	179	4	141	1	146	391
02:45 PM	21	0	6	27	8	1	16	25	3	128	42	173	5	149	2	156	381
Total	120	5	12	137	24	4	73	101	26	518	154	698	15	559	4	578	1514
03:00 PM	25	3	2	30	2	0	16	18	11	148	34	193	3	155	0	158	399
03:15 PM	26	2	3	31	7	2	12	21	10	149	36	195	2	160	2	164	411
03:30 PM	21	1	2	24	5	1	10	16	8	163	35	206	2	170	1	173	419
03:45 PM	25	4	5	34	9	3	7	19	14	165	23	202	2	179	0	181	436
Total	97	10	12	119	23	6	45	74	43	625	128	796	9	664	3	676	1665
04:00 PM	33	3	1	37	10	1	11	22	7	179	22	208	1	192	2	195	462

A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 347 (Friendship Rd) @
Deaton Creek Pkwy
7am - 7pm

File Name : 20230156
Site Code : 20230156
Start Date : 5/2/2023
Page No : 2

Groups Printed- Cars,Buses & Trucks

	Deaton Creek Pkwy Northbound				Deaton Creek Pkwy Southbound				SR 347 (Friendship Rd) Eastbound				SR 347 (Friendship 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
04:15 PM	30	3	2	35	13	2	9	24	13	182	37	232	1	189	1	191	482
04:30 PM	25	2	6	33	7	0	13	20	12	174	39	225	6	205	0	211	489
04:45 PM	29	1	1	31	11	1	18	30	17	197	25	239	4	236	1	241	541
Total	117	9	10	136	41	4	51	96	49	732	123	904	12	822	4	838	1974
05:00 PM	32	1	5	38	5	3	16	24	16	231	31	278	1	226	0	227	567
05:15 PM	38	3	4	45	9	2	12	23	14	217	20	251	1	176	0	177	496
05:30 PM	49	1	8	58	8	2	10	20	15	202	13	230	3	188	2	193	501
05:45 PM	45	2	3	50	5	1	10	16	21	210	38	269	0	218	0	218	553
Total	164	7	20	191	27	8	48	83	66	860	102	1028	5	808	2	815	2117
06:00 PM	42	1	3	46	7	0	12	19	16	198	33	247	1	208	0	209	521
06:15 PM	34	2	3	39	8	3	16	27	9	191	37	237	0	195	3	198	501
06:30 PM	30	2	2	34	5	2	11	18	19	186	38	243	1	184	2	187	482
06:45 PM	28	0	3	31	4	2	8	14	11	180	27	218	0	185	0	185	448
Total	134	5	11	150	24	7	47	78	55	755	135	945	2	772	5	779	1952
Grand Total	1563	83	129	1775	348	98	788	1234	510	7443	1574	9527	97	7436	117	7650	20186
Apprch %	88.1	4.7	7.3		28.2	7.9	63.9		5.4	78.1	16.5		1.3	97.2	1.5		
Total %	7.7	0.4	0.6	8.8	1.7	0.5	3.9	6.1	2.5	36.9	7.8	47.2	0.5	36.8	0.6	37.9	

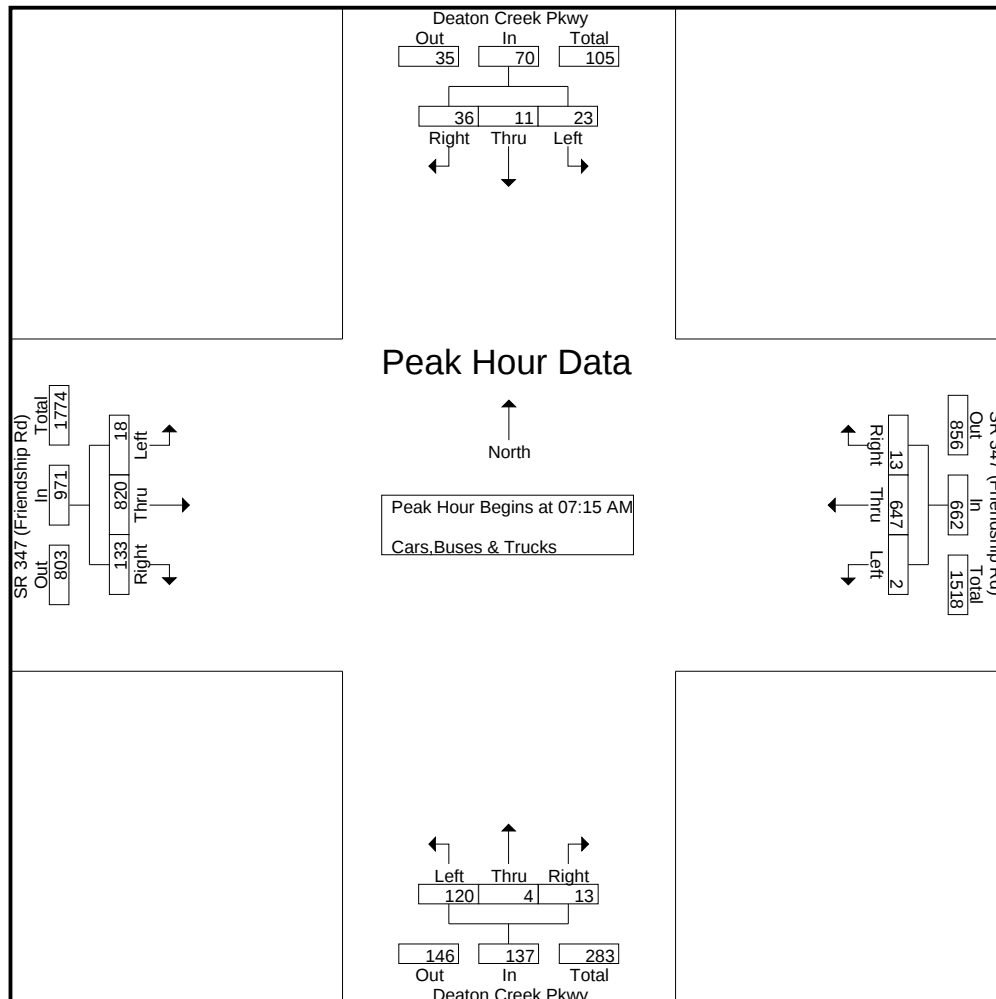
A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 347 (Friendship Rd) @
Deaton Creek Pkwy
7am - 7pm

File Name : 20230156
Site Code : 20230156
Start Date : 5/2/2023
Page No : 3

	Deaton Creek Pkwy Northbound				Deaton Creek Pkwy Southbound				SR 347 (Friendship Rd) Eastbound				SR 347 (Friendship 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 07:15 AM																	
07:15 AM	23	0	4	27	3	2	5	10	4	184	31	219	1	172	1	174	430
07:30 AM	35	0	2	37	8	3	8	19	2	224	30	256	0	181	4	185	497
07:45 AM	33	3	6	42	4	5	12	21	5	196	41	242	1	154	6	161	466
08:00 AM	29	1	1	31	8	1	11	20	7	216	31	254	0	140	2	142	447
Total Volume	120	4	13	137	23	11	36	70	18	820	133	971	2	647	13	662	1840
% App. Total	87.6	2.9	9.5		32.9	15.7	51.4		1.9	84.4	13.7		0.3	97.7	2		
PHF	.857	.333	.542	.815	.719	.550	.750	.833	.643	.915	.811	.948	.500	.894	.542	.895	.926



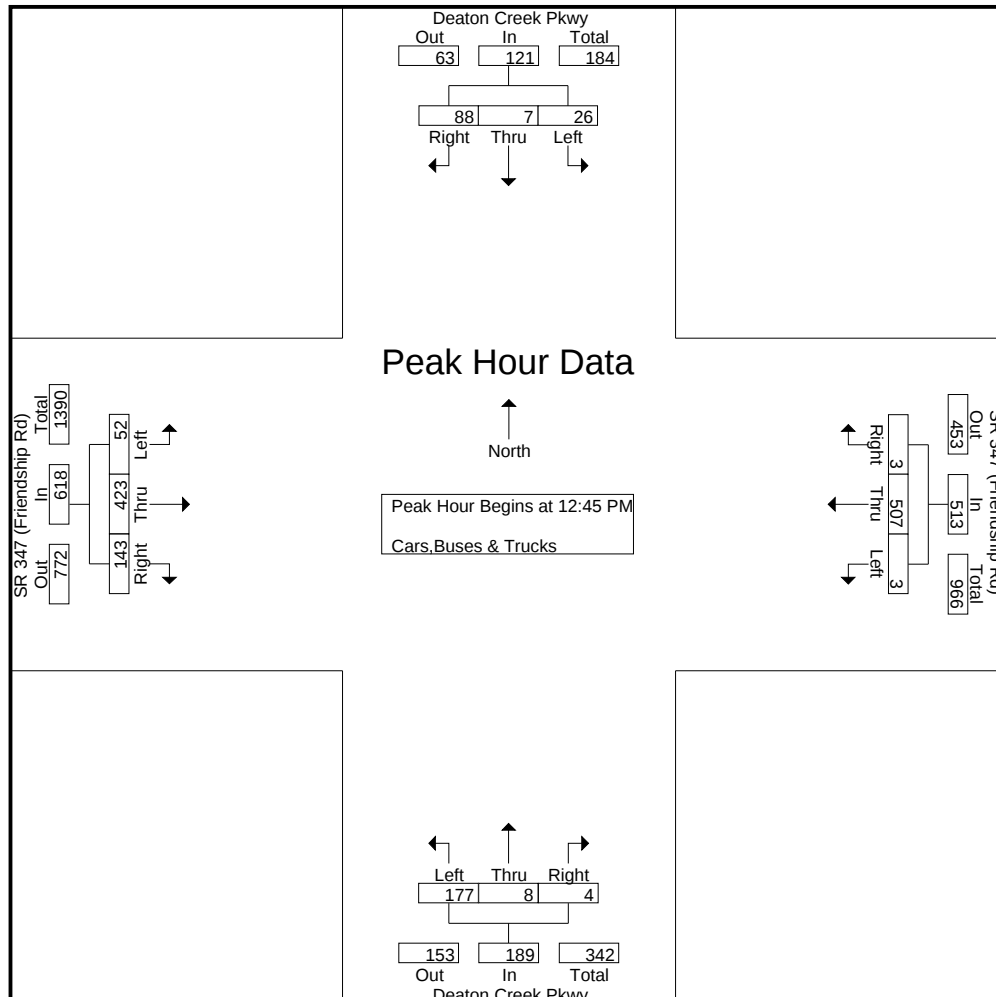
A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 347 (Friendship Rd) @
Deaton Creek Pkwy
7am - 7pm

File Name : 20230156
Site Code : 20230156
Start Date : 5/2/2023
Page No : 4

	Deaton Creek Pkwy Northbound				Deaton Creek Pkwy Southbound				SR 347 (Friendship Rd) Eastbound				SR 347 (Friendship 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 12:00 PM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	43	2	0	45	11	3	29	43	14	99	50	163	0	124	1	125	376
01:00 PM	49	1	1	51	7	1	24	32	9	104	41	154	1	125	0	126	363
01:15 PM	45	3	1	49	6	2	20	28	11	102	20	133	0	134	1	135	345
01:30 PM	40	2	2	44	2	1	15	18	18	118	32	168	2	124	1	127	357
Total Volume	177	8	4	189	26	7	88	121	52	423	143	618	3	507	3	513	1441
% App. Total	93.7	4.2	2.1		21.5	5.8	72.7		8.4	68.4	23.1		0.6	98.8	0.6		
PHF	.903	.667	.500	.926	.591	.583	.759	.703	.722	.896	.715	.920	.375	.946	.750	.950	.958



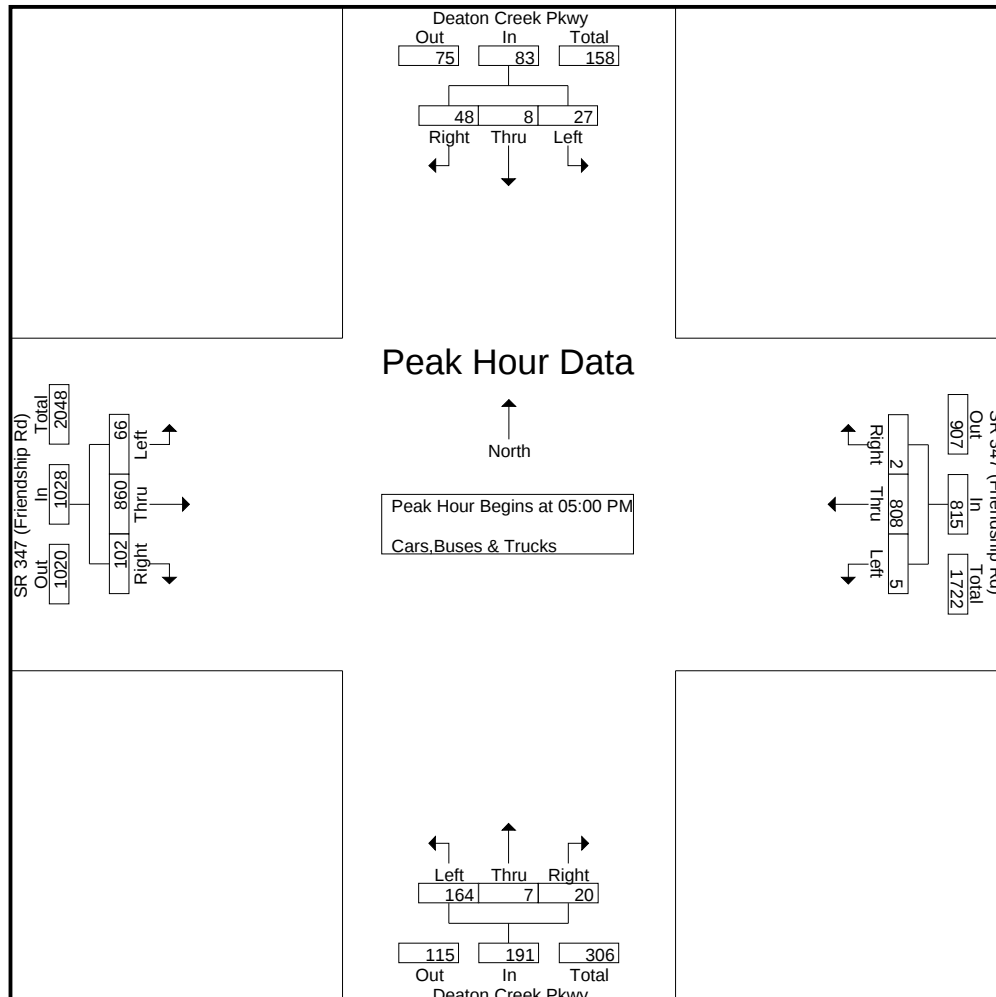
A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 347 (Friendship Rd) @
Deaton Creek Pkwy
7am - 7pm

File Name : 20230156
Site Code : 20230156
Start Date : 5/2/2023
Page No : 5

	Deaton Creek Pkwy Northbound				Deaton Creek Pkwy Southbound				SR 347 (Friendship Rd) Eastbound				SR 347 (Friendship 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	32	1	5	38	5	3	16	24	16	231	31	278	1	226	0	227	567
05:15 PM	38	3	4	45	9	2	12	23	14	217	20	251	1	176	0	177	496
05:30 PM	49	1	8	58	8	2	10	20	15	202	13	230	3	188	2	193	501
05:45 PM	45	2	3	50	5	1	10	16	21	210	38	269	0	218	0	218	553
Total Volume	164	7	20	191	27	8	48	83	66	860	102	1028	5	808	2	815	2117
% App. Total	85.9	3.7	10.5		32.5	9.6	57.8		6.4	83.7	9.9		0.6	99.1	0.2		
PHF	.837	.583	.625	.823	.750	.667	.750	.865	.786	.931	.671	.924	.417	.894	.250	.898	.933



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
Thompson Mill Rd @ Deaton Creek Pkwy
7-9 am | 4-6 pm

File Name : 20230157
Site Code : 20230157
Start Date : 5/2/2023
Page No : 1

Groups Printed- Cars,Buses & Trucks

Start Time	Northbound				Deaton Creek Pkwy Southbound				Thompson Mill Rd Eastbound				Thompson Mill Rd Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	0	0	20	0	1	21	1	0	0	1	0	0	36	36	58
07:15 AM	0	0	0	0	34	0	0	34	0	2	0	2	0	0	27	27	63
07:30 AM	0	0	0	0	33	0	0	33	1	0	0	1	0	0	36	36	70
07:45 AM	0	0	0	0	46	0	1	47	1	1	0	2	0	1	41	42	91
Total	0	0	0	0	133	0	2	135	3	3	0	6	0	1	140	141	282
08:00 AM	0	0	0	0	32	0	0	32	0	2	0	2	0	1	31	32	66
08:15 AM	0	0	0	0	49	0	0	49	2	0	0	2	0	2	42	44	95
08:30 AM	0	0	0	0	43	0	0	43	1	1	0	2	0	1	43	44	89
08:45 AM	0	0	0	0	48	0	2	50	1	0	0	1	0	0	52	52	103
Total	0	0	0	0	172	0	2	174	4	3	0	7	0	4	168	172	353
*** BREAK ***																	
04:00 PM	0	0	0	0	23	0	1	24	2	1	0	3	0	0	35	35	62
04:15 PM	0	0	0	0	39	0	1	40	1	1	0	2	0	0	34	34	76
04:30 PM	0	0	0	0	42	0	3	45	0	0	0	0	0	0	33	33	78
04:45 PM	0	0	0	0	29	0	1	30	0	0	0	0	0	0	31	31	61
Total	0	0	0	0	133	0	6	139	3	2	0	5	0	0	133	133	277
05:00 PM	0	0	0	0	33	0	2	35	1	2	0	3	0	1	37	38	76
05:15 PM	0	0	0	0	21	0	2	23	0	0	0	0	0	0	45	45	68
05:30 PM	0	0	0	0	18	0	0	18	2	0	0	2	0	3	56	59	79
05:45 PM	0	0	0	0	38	0	1	39	2	0	0	2	0	0	48	48	89
Total	0	0	0	0	110	0	5	115	5	2	0	7	0	4	186	190	312
Grand Total	0	0	0	0	548	0	15	563	15	10	0	25	0	9	627	636	1224
Apprch %	0	0	0		97.3	0	2.7		60	40	0		0	1.4	98.6		
Total %	0	0	0	0	44.8	0	1.2	46	1.2	0.8	0	2	0	0.7	51.2	52	

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Marietta, GA 30067

TMC DATA

Thompson Mill Rd @ Deaton Creek Pkwy
7-9 am | 4-6 pm

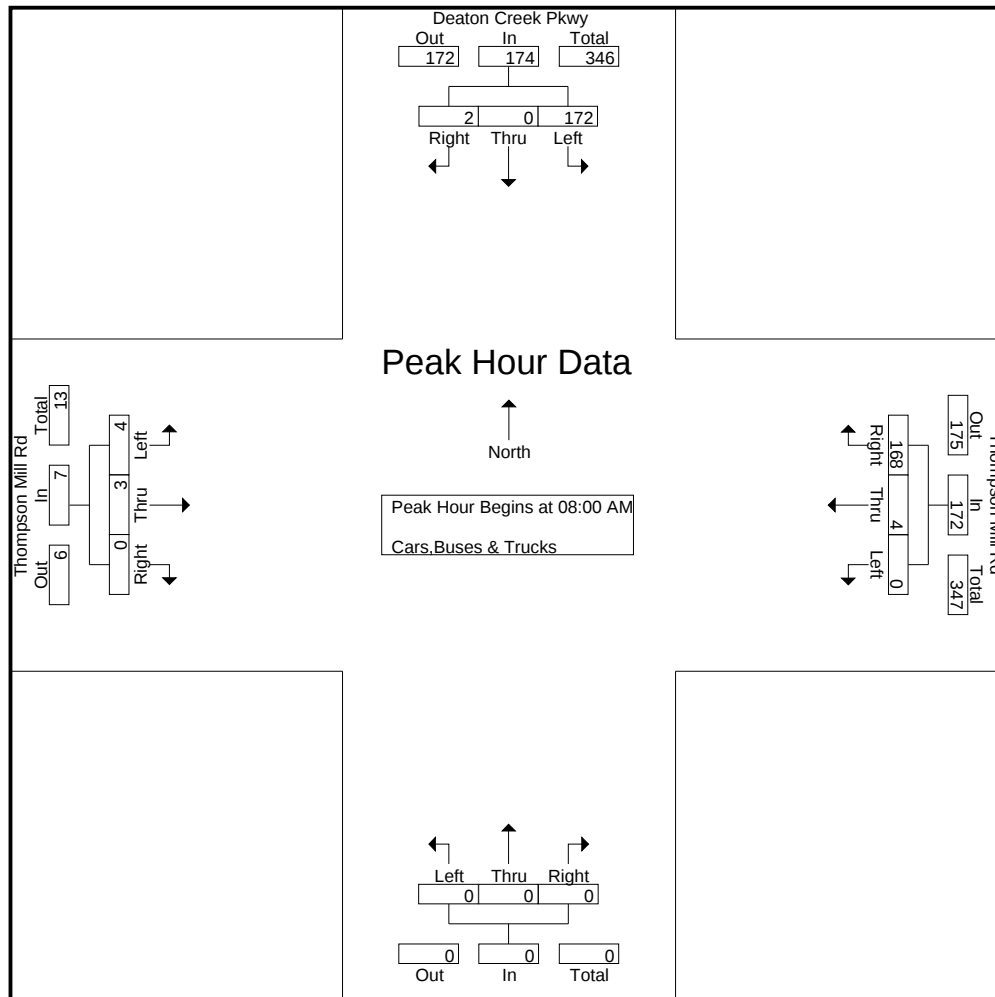
File Name : 20230157

Site Code : 20230157

Start Date : 5/2/2023

Page No : 2

	Northbound				Deaton Creek Pkwy Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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 08:00 AM																	
08:00 AM	0	0	0	0	32	0	0	32	0	2	0	2	0	1	31	32	66
08:15 AM	0	0	0	0	49	0	0	49	2	0	0	2	0	2	42	44	95
08:30 AM	0	0	0	0	43	0	0	43	1	1	0	2	0	1	43	44	89
08:45 AM	0	0	0	0	48	0	2	50	1	0	0	1	0	0	52	52	103
Total Volume	0	0	0	0	172	0	2	174	4	3	0	7	0	4	168	172	353
% App. Total	0	0	0		98.9	0	1.1		57.1	42.9	0		0	2.3	97.7		
PHF	.000	.000	.000	.000	.878	.000	.250	.870	.500	.375	.000	.875	.000	.500	.808	.827	.857



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TMC DATA

Thompson Mill Rd @ Deaton Creek Pkwy

7-9 am | 4-6 pm

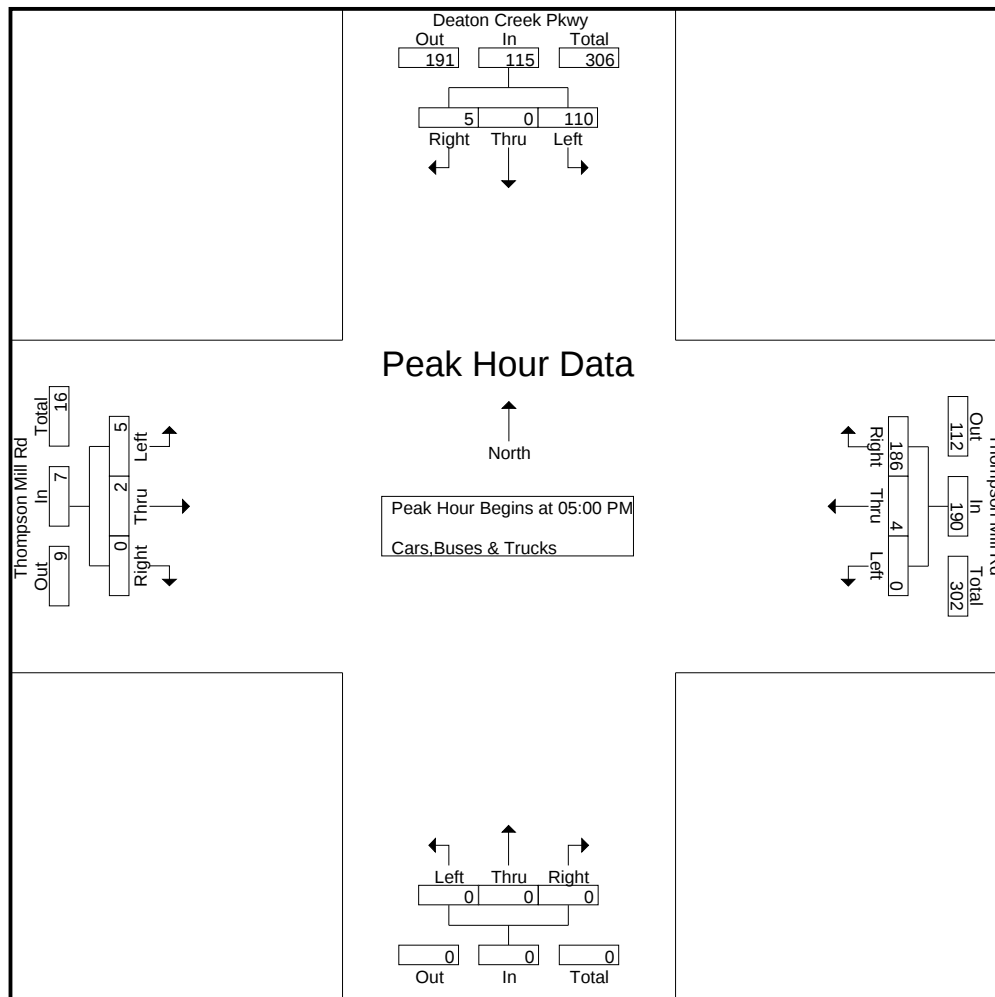
File Name : 20230157

Site Code : 20230157

Start Date : 5/2/2023

Page No : 3

	Northbound				Deaton Creek Pkwy Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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	0	0	0	0	33	0	2	35	1	2	0	3	0	1	37	38	76
05:15 PM	0	0	0	0	21	0	2	23	0	0	0	0	0	0	45	45	68
05:30 PM	0	0	0	0	18	0	0	18	2	0	0	2	0	3	56	59	79
05:45 PM	0	0	0	0	38	0	1	39	2	0	0	2	0	0	48	48	89
Total Volume	0	0	0	0	110	0	5	115	5	2	0	7	0	4	186	190	312
% App. Total	0	0	0		95.7	0	4.3		71.4	28.6	0		0	2.1	97.9		
PHF	.000	.000	.000	.000	.724	.000	.625	.737	.625	.250	.000	.583	.000	.333	.830	.805	.876



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TMC DATA
Thompson Mill Rd @ Retreat Point Pkwy
7-9 am | 4-6 pm

File Name : 20230158
Site Code : 20230158
Start Date : 5/2/2023
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Retreat Point Pkwy Northbound				Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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	6	8	0	0	0	0	0	23	0	23	1	26	0	27	58
07:15 AM	3	0	9	12	0	0	0	0	0	24	2	26	1	12	0	13	51
07:30 AM	2	0	6	8	0	0	0	0	0	40	1	41	1	22	0	23	72
07:45 AM	8	0	7	15	0	0	0	0	0	39	5	44	4	20	0	24	83
Total	15	0	28	43	0	0	0	0	0	126	8	134	7	80	0	87	264
08:00 AM	8	0	2	10	0	0	0	0	0	30	3	33	1	25	0	26	69
08:15 AM	5	0	4	9	0	0	0	0	0	33	7	40	2	32	0	34	83
08:30 AM	9	0	5	14	0	0	0	0	0	20	7	27	3	26	0	29	70
08:45 AM	3	0	5	8	0	0	0	0	0	36	3	39	2	32	0	34	81
Total	25	0	16	41	0	0	0	0	0	119	20	139	8	115	0	123	303
*** BREAK ***																	
04:00 PM	0	0	3	3	0	0	0	0	0	21	4	25	8	39	0	47	75
04:15 PM	4	0	1	5	0	0	0	0	0	26	9	35	4	29	0	33	73
04:30 PM	4	0	2	6	0	0	0	0	0	36	4	40	6	35	0	41	87
04:45 PM	4	0	3	7	0	0	0	0	0	22	2	24	4	32	0	36	67
Total	12	0	9	21	0	0	0	0	0	105	19	124	22	135	0	157	302
05:00 PM	3	0	1	4	0	0	0	0	0	12	8	20	2	26	0	28	52
05:15 PM	5	0	4	9	0	0	0	0	0	16	9	25	5	26	0	31	65
05:30 PM	2	0	2	4	0	0	0	0	0	12	6	18	6	37	0	43	65
05:45 PM	2	0	2	4	0	0	0	0	0	21	8	29	5	40	0	45	78
Total	12	0	9	21	0	0	0	0	0	61	31	92	18	129	0	147	260
Grand Total	64	0	62	126	0	0	0	0	0	411	78	489	55	459	0	514	1129
Apprch %	50.8	0	49.2		0	0	0		0	84	16		10.7	89.3	0		
Total %	5.7	0	5.5	11.2	0	0	0	0	0	36.4	6.9	43.3	4.9	40.7	0	45.5	

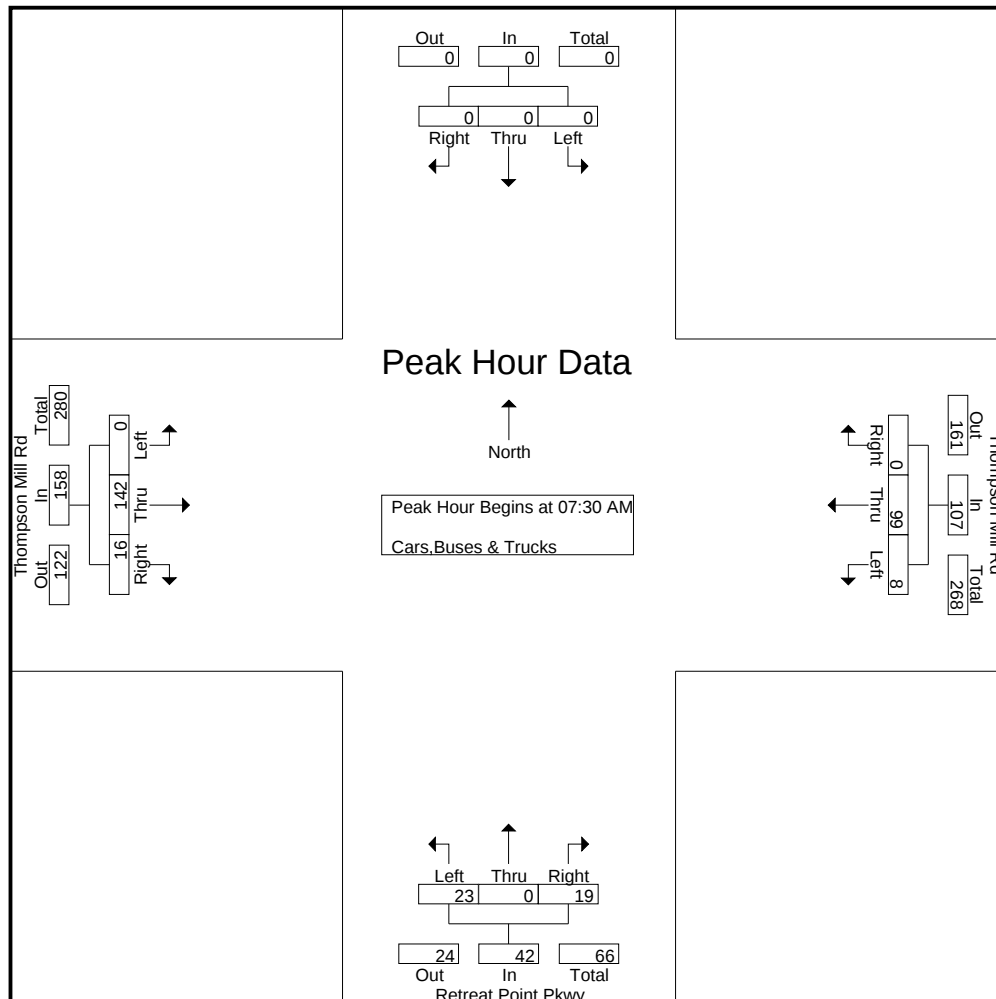
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Marietta, GA 30067

TMC DATA
Thompson Mill Rd @ Retreat Point Pkwy
7-9 am | 4-6 pm

File Name : 20230158
Site Code : 20230158
Start Date : 5/2/2023
Page No : 2

	Retreat Point Pkwy Northbound				Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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	2	0	6	8	0	0	0	0	0	40	1	41	1	22	0	23	72
07:45 AM	8	0	7	15	0	0	0	0	0	39	5	44	4	20	0	24	83
08:00 AM	8	0	2	10	0	0	0	0	0	30	3	33	1	25	0	26	69
08:15 AM	5	0	4	9	0	0	0	0	0	33	7	40	2	32	0	34	83
Total Volume	23	0	19	42	0	0	0	0	0	142	16	158	8	99	0	107	307
% App. Total	54.8	0	45.2		0	0	0		0	89.9	10.1		7.5	92.5	0		
PHF	.719	.000	.679	.700	.000	.000	.000	.000	.000	.888	.571	.898	.500	.773	.000	.787	.925



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TMC DATA

Thompson Mill Rd @ Retreat Point Pkwy

7-9 am | 4-6 pm

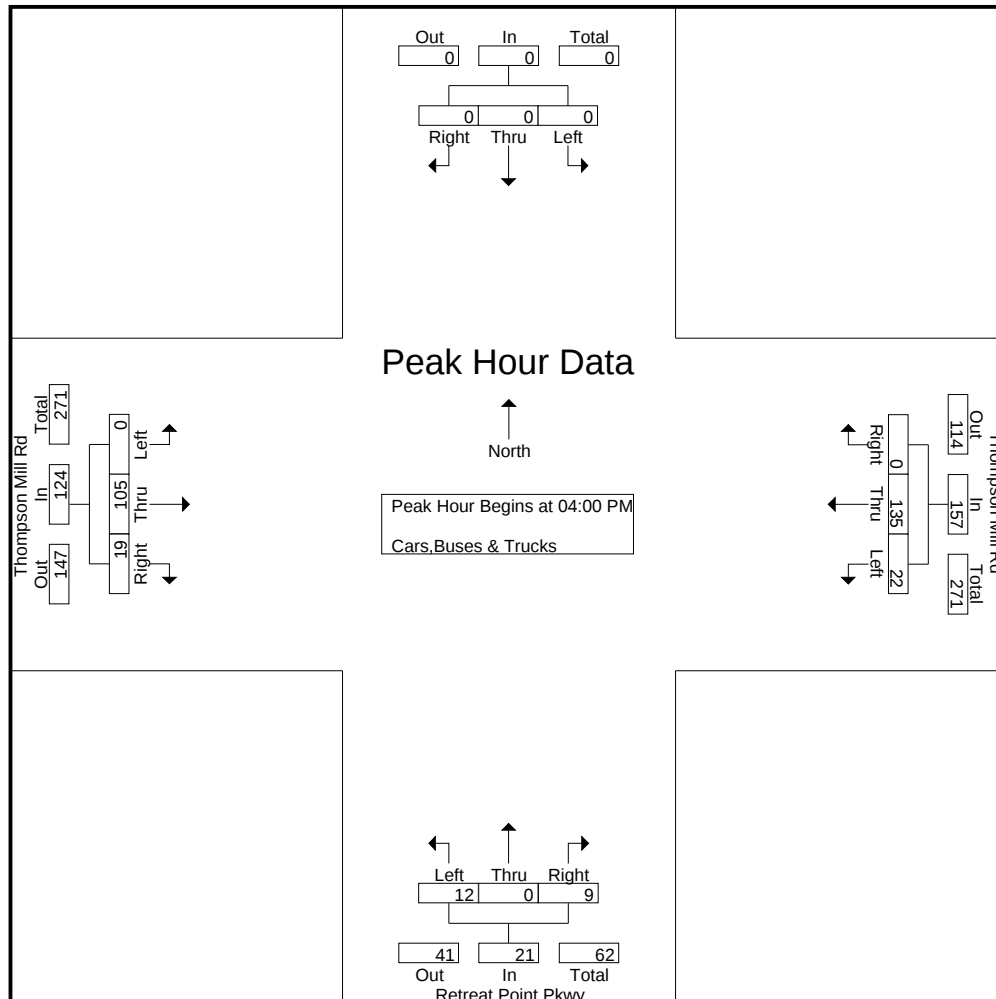
File Name : 20230158

Site Code : 20230158

Start Date : 5/2/2023

Page No : 3

	Retreat Point Pkwy Northbound				Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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 04:00 PM																	
04:00 PM	0	0	3	3	0	0	0	0	0	21	4	25	8	39	0	47	75
04:15 PM	4	0	1	5	0	0	0	0	0	26	9	35	4	29	0	33	73
04:30 PM	4	0	2	6	0	0	0	0	0	36	4	40	6	35	0	41	87
04:45 PM	4	0	3	7	0	0	0	0	0	22	2	24	4	32	0	36	67
Total Volume	12	0	9	21	0	0	0	0	0	105	19	124	22	135	0	157	302
% App. Total	57.1	0	42.9		0	0	0		0	84.7	15.3		14	86	0		
PHF	.750	.000	.750	.750	.000	.000	.000	.000	.000	.729	.528	.775	.688	.865	.000	.835	.868



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TMC DATA
Thompson Mill Rd @ SR 211
7-9 am | 4-6 pm

File Name : 20230159
Site Code : 20230159
Start Date : 5/2/2023
Page No : 1

Groups Printed- Cars,Buses & Trucks

	SR 211 Northbound				SR 211 Southbound				Thompson Mill Rd Eastbound				Grand Hickory Dr 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	35	223	14	272	1	163	3	167	11	7	22	40	31	7	7	45	524
07:15 AM	26	236	9	271	1	179	6	186	8	1	32	41	45	3	2	50	548
07:30 AM	40	222	17	279	1	178	4	183	15	2	29	46	41	2	8	51	559
07:45 AM	24	236	16	276	6	212	9	227	20	5	43	68	29	5	10	44	615
Total	125	917	56	1098	9	732	22	763	54	15	126	195	146	17	27	190	2246
08:00 AM	38	205	18	261	4	172	14	190	11	4	46	61	29	14	2	45	557
08:15 AM	33	225	15	273	2	179	11	192	11	5	23	39	13	4	5	22	526
08:30 AM	49	199	19	267	7	146	8	161	15	6	36	57	21	8	8	37	522
08:45 AM	39	215	18	272	9	182	13	204	9	5	33	47	31	7	8	46	569
Total	159	844	70	1073	22	679	46	747	46	20	138	204	94	33	23	150	2174
*** BREAK ***																	
04:00 PM	23	182	36	241	9	259	5	273	9	10	33	52	26	8	8	42	608
04:15 PM	26	158	38	222	8	225	18	251	12	5	65	82	41	10	9	60	615
04:30 PM	36	168	33	237	3	241	15	259	12	4	68	84	33	7	8	48	628
04:45 PM	52	181	40	273	15	245	5	265	10	5	58	73	27	3	4	34	645
Total	137	689	147	973	35	970	43	1048	43	24	224	291	127	28	29	184	2496
05:00 PM	36	178	32	246	6	234	3	243	7	7	67	81	34	12	10	56	626
05:15 PM	31	188	62	281	13	258	7	278	7	5	72	84	31	12	10	53	696
05:30 PM	36	196	39	271	4	258	6	268	6	9	43	58	41	7	7	55	652
05:45 PM	34	186	34	254	9	214	13	236	9	6	76	91	33	10	3	46	627
Total	137	748	167	1052	32	964	29	1025	29	27	258	314	139	41	30	210	2601
Grand Total	558	3198	440	4196	98	3345	140	3583	172	86	746	1004	506	119	109	734	9517
Apprch %	13.3	76.2	10.5		2.7	93.4	3.9		17.1	8.6	74.3		68.9	16.2	14.9		
Total %	5.9	33.6	4.6	44.1	1	35.1	1.5	37.6	1.8	0.9	7.8	10.5	5.3	1.3	1.1	7.7	

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TMC DATA

Thompson Mill Rd @ SR 211

7-9 am | 4-6 pm

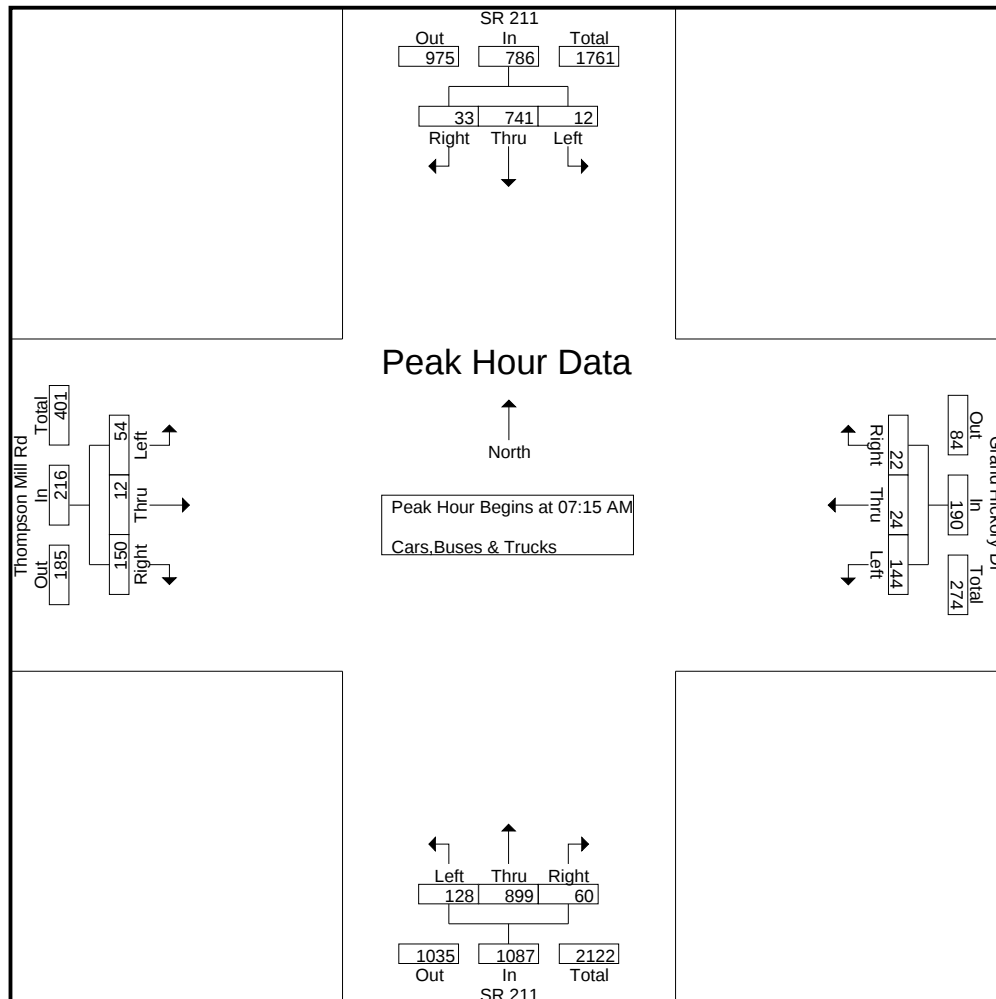
File Name : 20230159

Site Code : 20230159

Start Date : 5/2/2023

Page No : 2

	SR 211 Northbound				SR 211 Southbound				Thompson Mill Rd Eastbound				Grand Hickory Dr 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	26	236	9	271	1	179	6	186	8	1	32	41	45	3	2	50	548
07:30 AM	40	222	17	279	1	178	4	183	15	2	29	46	41	2	8	51	559
07:45 AM	24	236	16	276	6	212	9	227	20	5	43	68	29	5	10	44	615
08:00 AM	38	205	18	261	4	172	14	190	11	4	46	61	29	14	2	45	557
Total Volume	128	899	60	1087	12	741	33	786	54	12	150	216	144	24	22	190	2279
% App. Total	11.8	82.7	5.5		1.5	94.3	4.2		25	5.6	69.4		75.8	12.6	11.6		
PHF	.800	.952	.833	.974	.500	.874	.589	.866	.675	.600	.815	.794	.800	.429	.550	.931	.926



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TMC DATA

Thompson Mill Rd @ SR 211

7-9 am | 4-6 pm

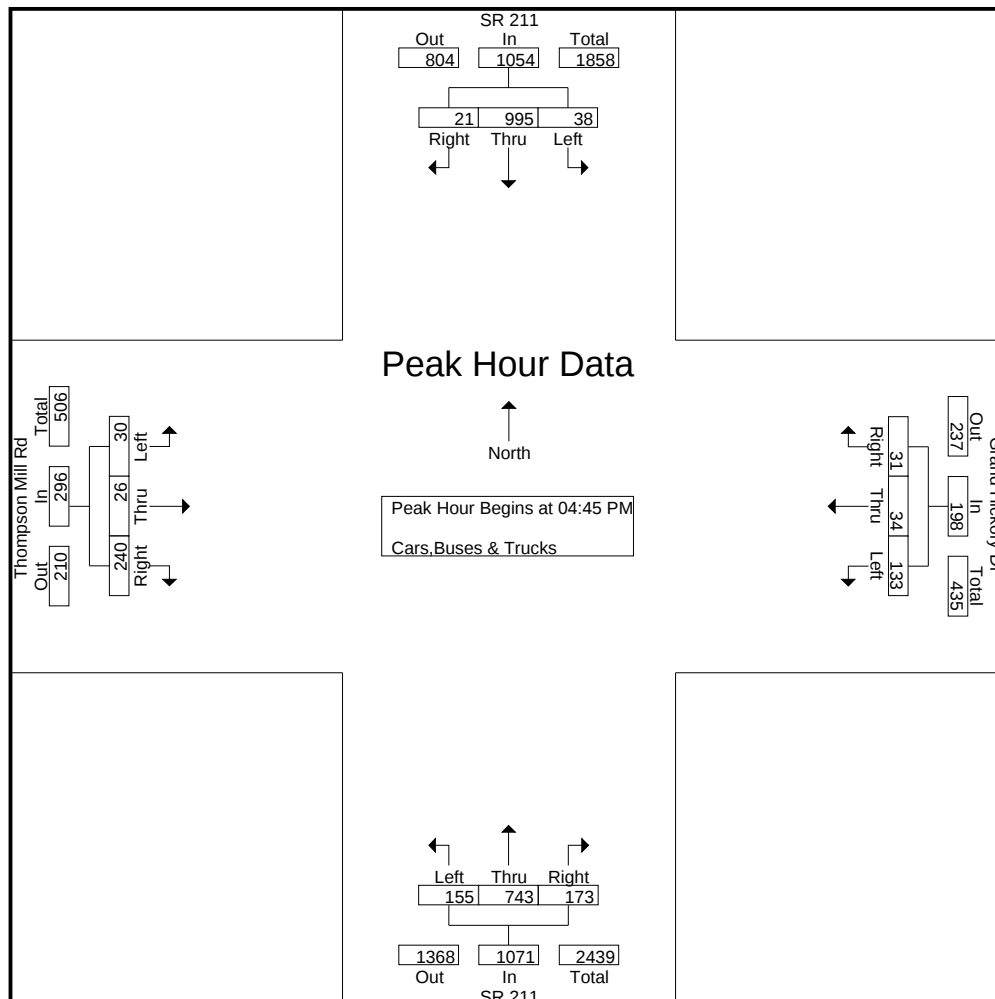
File Name : 20230159

Site Code : 20230159

Start Date : 5/2/2023

Page No : 3

	SR 211 Northbound				SR 211 Southbound				Thompson Mill Rd Eastbound				Grand Hickory Dr 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	52	181	40	273	15	245	5	265	10	5	58	73	27	3	4	34	645
05:00 PM	36	178	32	246	6	234	3	243	7	7	67	81	34	12	10	56	626
05:15 PM	31	188	62	281	13	258	7	278	7	5	72	84	31	12	10	53	696
05:30 PM	36	196	39	271	4	258	6	268	6	9	43	58	41	7	7	55	652
Total Volume	155	743	173	1071	38	995	21	1054	30	26	240	296	133	34	31	198	2619
% App. Total	14.5	69.4	16.2		3.6	94.4	2		10.1	8.8	81.1		67.2	17.2	15.7		
PHF	.745	.948	.698	.953	.633	.964	.750	.948	.750	.722	.833	.881	.811	.708	.775	.884	.941



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Marietta, GA 30067

TMC DATA

SR 211 @ Golf Club Dr-Liberty Church Rd

7-9 am | 4-6 pm

File Name : 20230160

Site Code : 20230160

Start Date : 05-02-2023

Page No : 1

Groups Printed- Cars,Buses & Trucks

	SR 211 Northbound				SR 211 Southbound				Golf Club Dr Eastbound				Liberty Church 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	8	175	15	198	45	192	3	240	1	3	41	45	62	0	92	154	637
07:15 AM	4	187	18	209	57	181	2	240	3	1	27	31	48	2	78	128	608
07:30 AM	6	185	21	212	63	166	6	235	2	2	31	35	52	1	83	136	618
07:45 AM	4	180	26	210	69	193	4	266	1	6	35	42	59	3	89	151	669
Total	22	727	80	829	234	732	15	981	7	12	134	153	221	6	342	569	2532
08:00 AM	9	154	24	187	72	148	4	224	3	4	38	45	54	2	96	152	608
08:15 AM	7	172	20	199	79	116	6	201	3	5	34	42	63	3	82	148	590
08:30 AM	8	168	17	193	64	125	3	192	2	3	29	34	55	0	76	131	550
08:45 AM	6	191	13	210	59	176	4	239	2	3	25	30	43	1	68	112	591
Total	30	685	74	789	274	565	17	856	10	15	126	151	215	6	322	543	2339
*** BREAK ***																	
04:00 PM	6	156	21	183	53	236	6	295	3	2	53	58	69	3	69	141	677
04:15 PM	9	127	26	162	59	249	8	316	1	6	59	66	72	1	75	148	692
04:30 PM	9	134	31	174	64	264	4	332	6	3	63	72	78	2	82	162	740
04:45 PM	11	168	38	217	71	245	6	322	2	4	66	72	83	5	89	177	788
Total	35	585	116	736	247	994	24	1265	12	15	241	268	302	11	315	628	2897
05:00 PM	15	136	42	193	79	245	5	329	4	1	75	80	85	3	96	184	786
05:15 PM	10	186	34	230	68	276	4	348	3	3	64	70	71	0	84	155	803
05:30 PM	7	186	28	221	57	260	6	323	5	4	52	61	64	1	73	138	743
05:45 PM	4	180	25	209	41	272	3	316	2	1	47	50	52	1	60	113	688
Total	36	688	129	853	245	1053	18	1316	14	9	238	261	272	5	313	590	3020
Grand Total	123	2685	399	3207	1000	3344	74	4418	43	51	739	833	1010	28	1292	2330	10788
Apprch %	3.8	83.7	12.4		22.6	75.7	1.7		5.2	6.1	88.7		43.3	1.2	55.5		
Total %	1.1	24.9	3.7	29.7	9.3	31	0.7	41	0.4	0.5	6.9	7.7	9.4	0.3	12	21.6	

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Marietta, GA 30067

TMC DATA

SR 211 @ Golf Club Dr-Liberty Church Rd

7-9 am | 4-6 pm

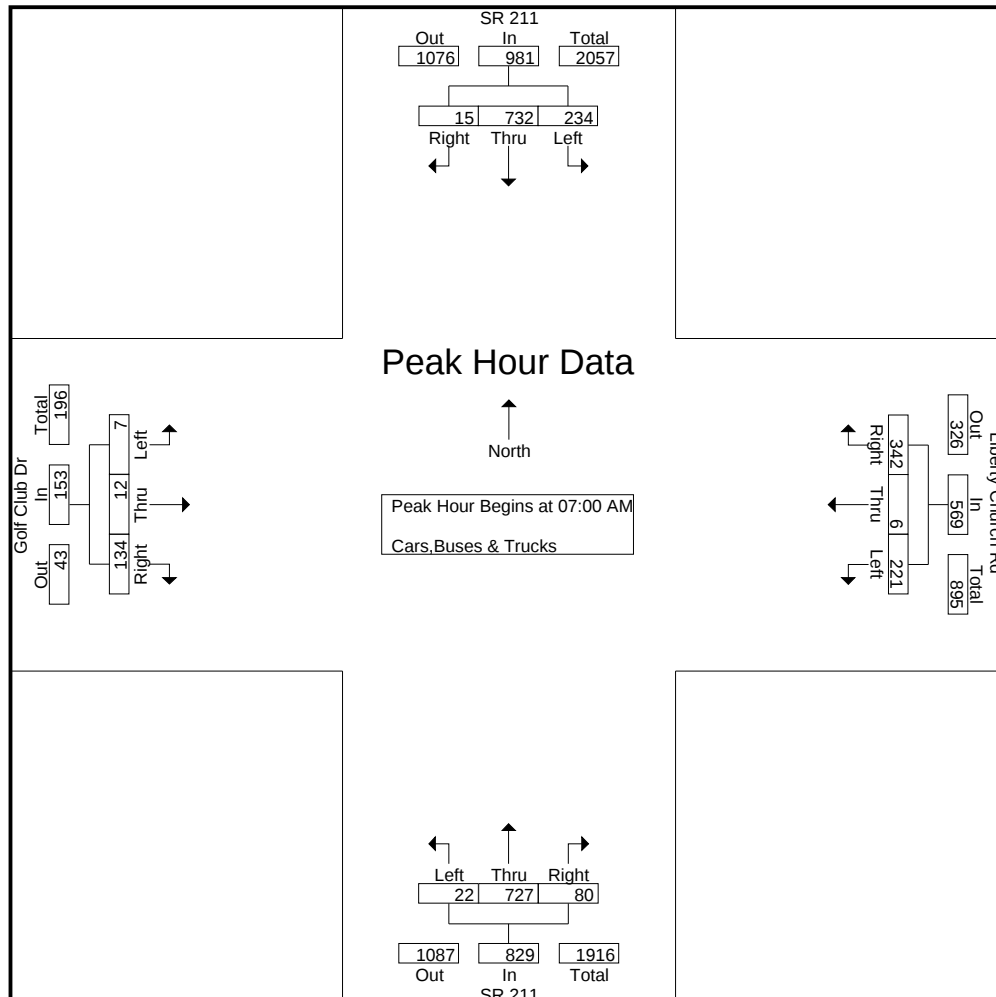
File Name : 20230160

Site Code : 20230160

Start Date : 05-02-2023

Page No : 2

	SR 211 Northbound				SR 211 Southbound				Golf Club Dr Eastbound				Liberty Church 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 07:00 AM																	
07:00 AM	8	175	15	198	45	192	3	240	1	3	41	45	62	0	92	154	637
07:15 AM	4	187	18	209	57	181	2	240	3	1	27	31	48	2	78	128	608
07:30 AM	6	185	21	212	63	166	6	235	2	2	31	35	52	1	83	136	618
07:45 AM	4	180	26	210	69	193	4	266	1	6	35	42	59	3	89	151	669
Total Volume	22	727	80	829	234	732	15	981	7	12	134	153	221	6	342	569	2532
% App. Total	2.7	87.7	9.7		23.9	74.6	1.5		4.6	7.8	87.6		38.8	1.1	60.1		
PHF	.688	.972	.769	.978	.848	.948	.625	.922	.583	.500	.817	.850	.891	.500	.929	.924	.946



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA

SR 211 @ Golf Club Dr-Liberty Church Rd

7-9 am | 4-6 pm

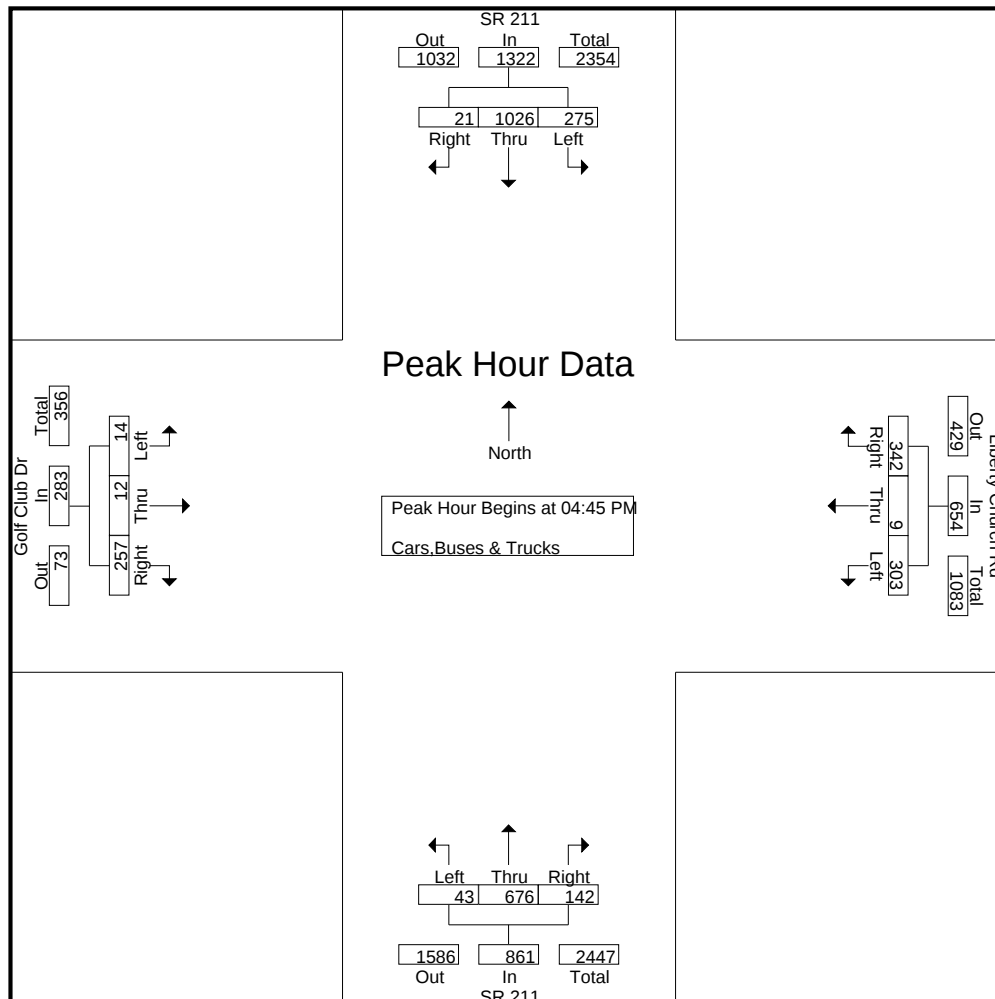
File Name : 20230160

Site Code : 20230160

Start Date : 05-02-2023

Page No : 3

	SR 211 Northbound				SR 211 Southbound				Golf Club Dr Eastbound				Liberty Church 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 04:45 PM																	
04:45 PM	11	168	38	217	71	245	6	322	2	4	66	72	83	5	89	177	788
05:00 PM	15	136	42	193	79	245	5	329	4	1	75	80	85	3	96	184	786
05:15 PM	10	186	34	230	68	276	4	348	3	3	64	70	71	0	84	155	803
05:30 PM	7	186	28	221	57	260	6	323	5	4	52	61	64	1	73	138	743
Total Volume	43	676	142	861	275	1026	21	1322	14	12	257	283	303	9	342	654	3120
% App. Total	5	78.5	16.5		20.8	77.6	1.6		4.9	4.2	90.8		46.3	1.4	52.3		
PHF	.717	.909	.845	.936	.870	.929	.875	.950	.700	.750	.857	.884	.891	.450	.891	.889	.971



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA

SR 347 (Friendship Road) @ SR 211

7-9 am | 4-6 pm

File Name : 20230169

Site Code : 20230169

Start Date : 5/2/2023

Page No : 1

Groups Printed- Cars,Buses & Trucks

	SR 211 Northbound				SR 211 Southbound				SR 347 (Friendship Road) Eastbound				Bayberry Dr 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	105	98	1	204	3	79	47	129	30	3	63	96	8	13	12	33	462
07:15 AM	132	127	2	261	2	93	78	173	39	6	88	133	10	15	11	36	603
07:30 AM	145	104	4	253	5	101	93	199	43	13	77	133	10	19	15	44	629
07:45 AM	127	90	4	221	12	111	105	228	34	8	77	119	12	14	10	36	604
Total	509	419	11	939	22	384	323	729	146	30	305	481	40	61	48	149	2298
08:00 AM	130	84	3	217	11	95	70	176	44	20	75	139	4	10	9	23	555
08:15 AM	131	82	1	214	7	110	53	170	50	15	76	141	8	19	13	40	565
08:30 AM	129	79	3	211	9	96	62	167	47	19	86	152	11	18	12	41	571
08:45 AM	111	63	1	175	3	82	48	133	42	11	65	118	6	12	8	26	452
Total	501	308	8	817	30	383	233	646	183	65	302	550	29	59	42	130	2143
*** BREAK ***																	
04:00 PM	81	101	8	190	7	90	45	142	81	24	131	236	12	10	6	28	596
04:15 PM	78	123	4	205	2	118	46	166	86	22	155	263	16	13	9	38	672
04:30 PM	69	143	6	218	6	115	39	160	93	43	173	309	19	19	2	40	727
04:45 PM	51	161	9	221	4	146	45	195	95	40	139	274	21	15	5	41	731
Total	279	528	27	834	19	469	175	663	355	129	598	1082	68	57	22	147	2726
05:00 PM	74	167	11	252	9	113	44	166	105	44	150	299	17	14	4	35	752
05:15 PM	59	137	5	201	10	109	42	161	111	40	150	301	12	10	8	30	693
05:30 PM	72	140	7	219	7	112	34	153	101	40	144	285	10	8	3	21	678
05:45 PM	70	147	4	221	6	86	44	136	94	34	124	252	9	5	6	20	629
Total	275	591	27	893	32	420	164	616	411	158	568	1137	48	37	21	106	2752
Grand Total	1564	1846	73	3483	103	1656	895	2654	1095	382	1773	3250	185	214	133	532	9919
Apprch %	44.9	53	2.1		3.9	62.4	33.7		33.7	11.8	54.6		34.8	40.2	25		
Total %	15.8	18.6	0.7	35.1	1	16.7	9	26.8	11	3.9	17.9	32.8	1.9	2.2	1.3	5.4	

A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA

SR 347 (Friendship Road) @ SR 211

7-9 am | 4-6 pm

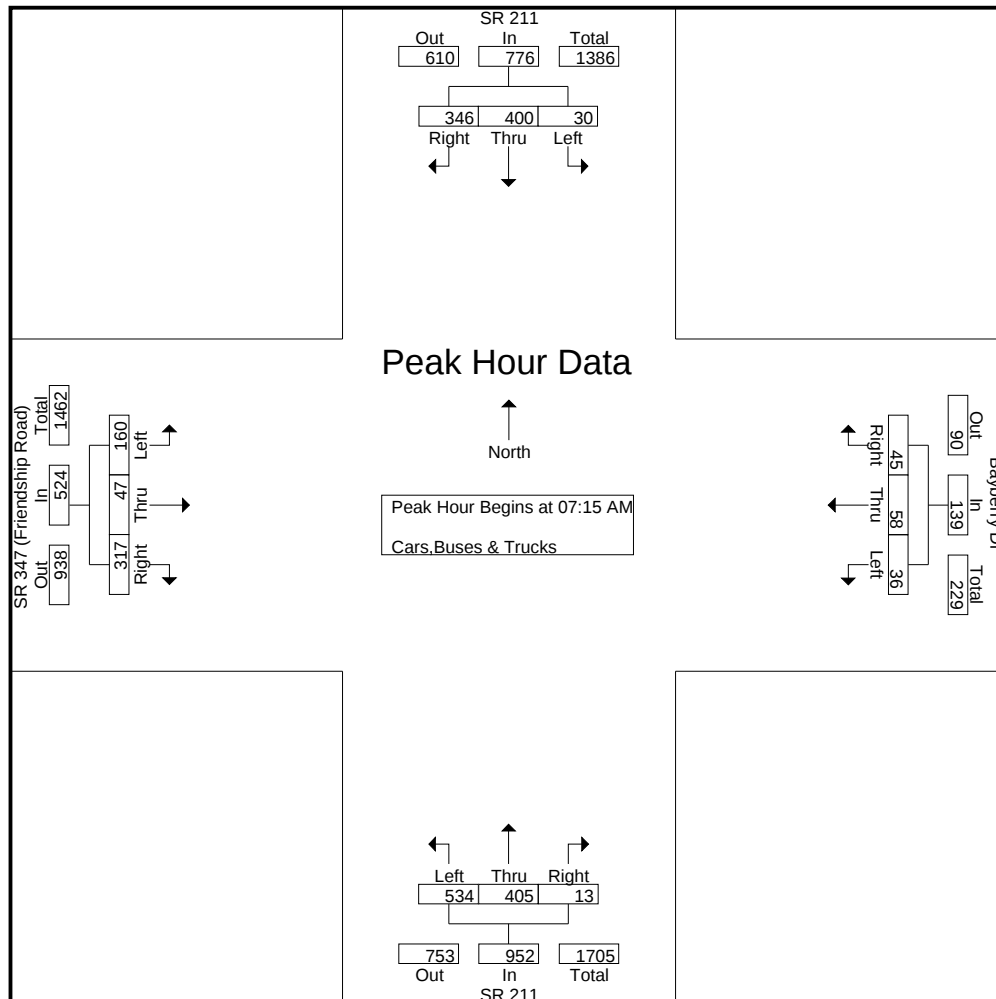
File Name : 20230169

Site Code : 20230169

Start Date : 5/2/2023

Page No : 2

	SR 211 Northbound				SR 211 Southbound				SR 347 (Friendship Road) Eastbound				Bayberry Dr 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	132	127	2	261	2	93	78	173	39	6	88	133	10	15	11	36	603
07:30 AM	145	104	4	253	5	101	93	199	43	13	77	133	10	19	15	44	629
07:45 AM	127	90	4	221	12	111	105	228	34	8	77	119	12	14	10	36	604
08:00 AM	130	84	3	217	11	95	70	176	44	20	75	139	4	10	9	23	555
Total Volume	534	405	13	952	30	400	346	776	160	47	317	524	36	58	45	139	2391
% App. Total	56.1	42.5	1.4		3.9	51.5	44.6		30.5	9	60.5		25.9	41.7	32.4		
PHF	.921	.797	.813	.912	.625	.901	.824	.851	.909	.588	.901	.942	.750	.763	.750	.790	.950



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA

SR 347 (Friendship Road) @ SR 211

7-9 am | 4-6 pm

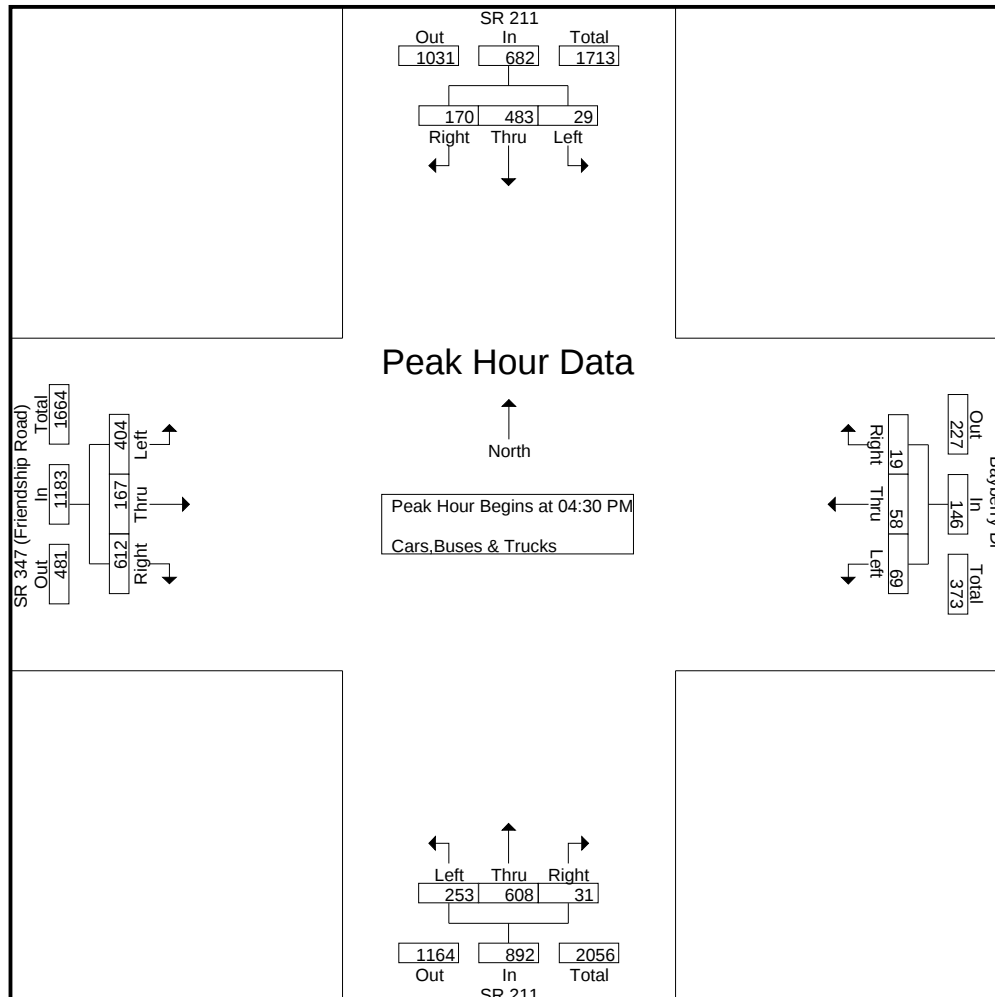
File Name : 20230169

Site Code : 20230169

Start Date : 5/2/2023

Page No : 3

	SR 211 Northbound				SR 211 Southbound				SR 347 (Friendship Road) Eastbound				Bayberry Dr Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	69	143	6	218	6	115	39	160	93	43	173	309	19	19	2	40	727
04:45 PM	51	161	9	221	4	146	45	195	95	40	139	274	21	15	5	41	731
05:00 PM	74	167	11	252	9	113	44	166	105	44	150	299	17	14	4	35	752
05:15 PM	59	137	5	201	10	109	42	161	111	40	150	301	12	10	8	30	693
Total Volume	253	608	31	892	29	483	170	682	404	167	612	1183	69	58	19	146	2903
% App. Total	28.4	68.2	3.5		4.3	70.8	24.9		34.2	14.1	51.7		47.3	39.7	13		
PHF	.855	.910	.705	.885	.725	.827	.944	.874	.910	.949	.884	.957	.821	.763	.594	.890	.965



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC Data
Thompson Mill Road @ Sardis Church Road
7-9 am | 4-6 pm

File Name : 20230171
Site Code : 20230171
Start Date : 05-02-2023
Page No : 1

Groups Printed- Cars, Buses & Trucks

	Sardis Church Road Northbound				Sardis Church Road Southbound				Thompson Mill Road Eastbound				Thompson Mill Road 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	26	17	19	62	1	43	5	49	0	13	9	22	28	31	0	59	192
07:15 AM	16	19	14	49	1	48	3	52	2	23	13	38	23	39	1	63	202
07:30 AM	21	21	19	61	4	59	11	74	2	17	11	30	20	39	0	59	224
07:45 AM	16	24	18	58	2	55	9	66	3	24	15	42	30	49	3	82	248
Total	79	81	70	230	8	205	28	241	7	77	48	132	101	158	4	263	866
08:00 AM	23	37	14	74	2	57	11	70	15	31	25	71	32	34	2	68	283
08:15 AM	17	35	20	72	0	42	0	42	10	28	29	67	25	23	1	49	230
08:30 AM	9	27	22	58	0	29	6	35	4	26	19	49	16	23	4	43	185
08:45 AM	11	24	22	57	1	31	11	43	1	15	5	21	32	19	5	56	177
Total	60	123	78	261	3	159	28	190	30	100	78	208	105	99	12	216	875
*** BREAK ***																	
04:00 PM	13	39	32	84	4	35	6	45	11	41	11	63	33	28	5	66	258
04:15 PM	4	43	40	87	0	58	5	63	11	30	33	74	26	30	3	59	283
04:30 PM	10	57	35	102	0	80	6	86	15	27	37	79	34	31	7	72	339
04:45 PM	10	53	37	100	0	77	4	81	2	36	31	69	47	21	5	73	323
Total	37	192	144	373	4	250	21	275	39	134	112	285	140	110	20	270	1203
05:00 PM	18	41	36	95	2	79	4	85	9	27	27	63	51	38	4	93	336
05:15 PM	19	38	31	88	3	79	4	86	8	27	37	72	56	31	6	93	339
05:30 PM	13	34	29	76	3	89	4	96	9	33	42	84	57	22	1	80	336
05:45 PM	14	38	24	76	3	66	6	75	7	32	37	76	41	33	3	77	304
Total	64	151	120	335	11	313	18	342	33	119	143	295	205	124	14	343	1315
Grand Total	240	547	412	1199	26	927	95	1048	109	430	381	920	551	491	50	1092	4259
Apprch %	20	45.6	34.4		2.5	88.5	9.1		11.8	46.7	41.4		50.5	45	4.6		
Total %	5.6	12.8	9.7	28.2	0.6	21.8	2.2	24.6	2.6	10.1	8.9	21.6	12.9	11.5	1.2	25.6	

A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC Data

Thompson Mill Road @ Sardis Church Road

7-9 am | 4-6 pm

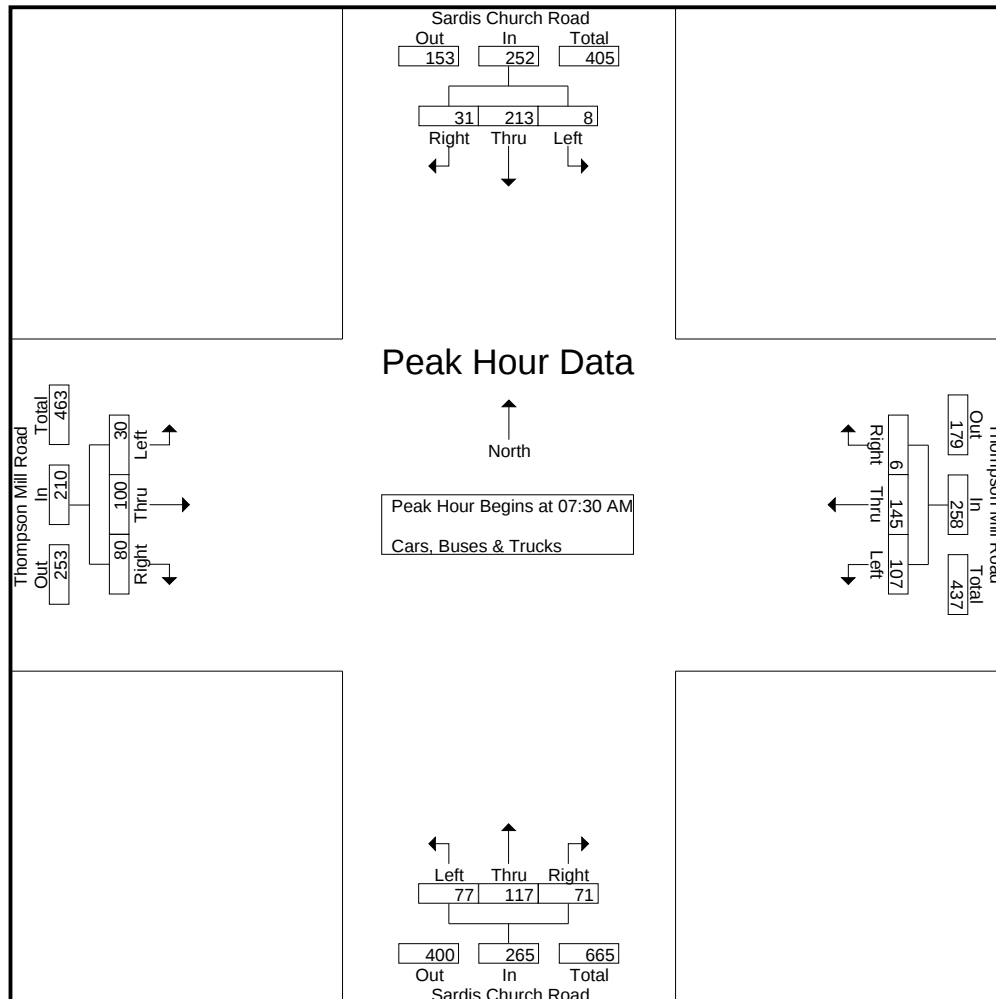
File Name : 20230171

Site Code : 20230171

Start Date : 05-02-2023

Page No : 2

	Sardis Church Road Northbound				Sardis Church Road Southbound				Thompson Mill Road Eastbound				Thompson Mill Road 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	21	21	19	61	4	59	11	74	2	17	11	30	20	39	0	59	224
07:45 AM	16	24	18	58	2	55	9	66	3	24	15	42	30	49	3	82	248
08:00 AM	23	37	14	74	2	57	11	70	15	31	25	71	32	34	2	68	283
08:15 AM	17	35	20	72	0	42	0	42	10	28	29	67	25	23	1	49	230
Total Volume	77	117	71	265	8	213	31	252	30	100	80	210	107	145	6	258	985
% App. Total	29.1	44.2	26.8		3.2	84.5	12.3		14.3	47.6	38.1		41.5	56.2	2.3		
PHF	.837	.791	.888	.895	.500	.903	.705	.851	.500	.806	.690	.739	.836	.740	.500	.787	.870



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC Data

Thompson Mill Road @ Sardis Church Road

7-9 am | 4-6 pm

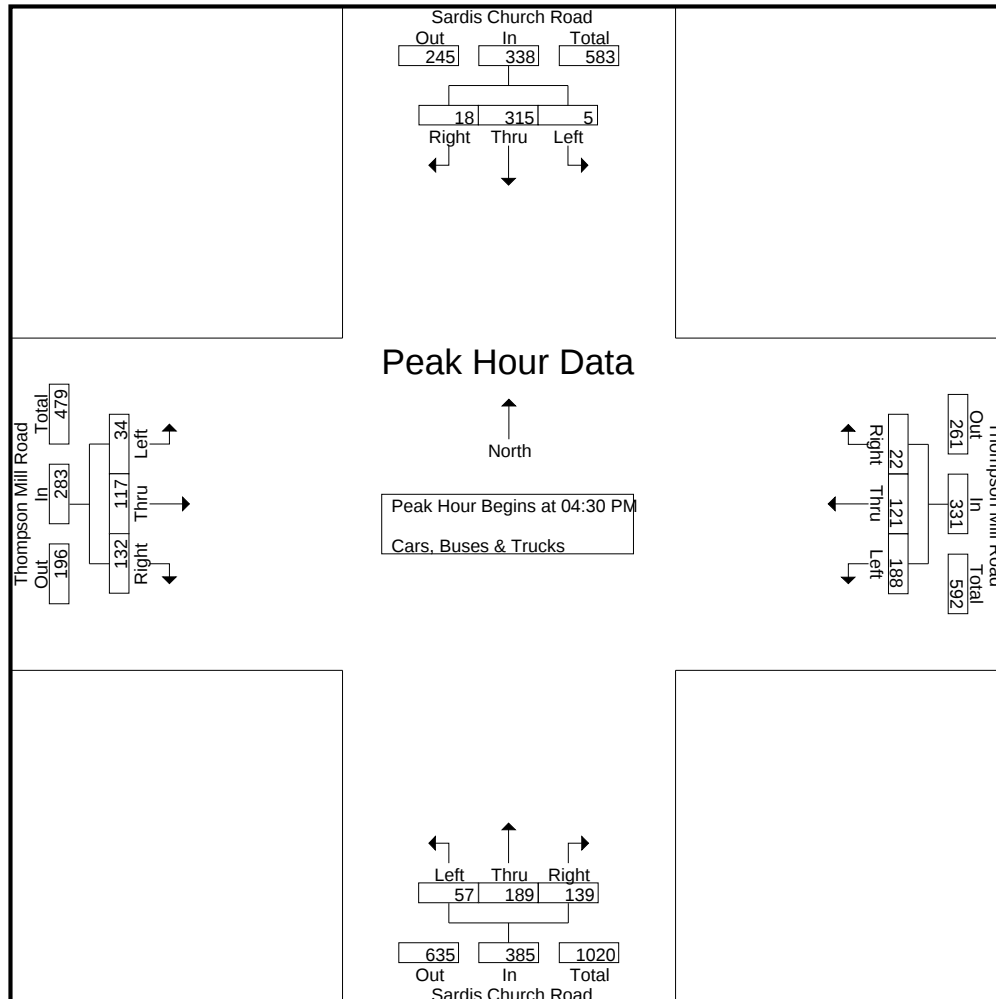
File Name : 20230171

Site Code : 20230171

Start Date : 05-02-2023

Page No : 3

	Sardis Church Road Northbound				Sardis Church Road Southbound				Thompson Mill Road Eastbound				Thompson Mill Road Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	10	57	35	102	0	80	6	86	15	27	37	79	34	31	7	72	339
04:45 PM	10	53	37	100	0	77	4	81	2	36	31	69	47	21	5	73	323
05:00 PM	18	41	36	95	2	79	4	85	9	27	27	63	51	38	4	93	336
05:15 PM	19	38	31	88	3	79	4	86	8	27	37	72	56	31	6	93	339
Total Volume	57	189	139	385	5	315	18	338	34	117	132	283	188	121	22	331	1337
% App. Total	14.8	49.1	36.1		1.5	93.2	5.3		12	41.3	46.6		56.8	36.6	6.6		
PHF	.750	.829	.939	.944	.417	.984	.750	.983	.567	.813	.892	.896	.839	.796	.786	.890	.986



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 211 @ SR 53
7-9 am | 4-6 pm

File Name : 20230172
Site Code : 20230172
Start Date : 5/2/2023
Page No : 1

Groups Printed- Cars,Buses & Trucks

	SR 211 Northbound				Southbound				SR 53 Eastbound				SR 53 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	90	0	15	105	0	0	0	0	0	85	77	162	25	160	0	185	452
07:15 AM	146	0	12	158	0	0	0	0	0	84	82	166	27	193	0	220	544
07:30 AM	130	0	5	135	0	0	0	0	0	120	104	224	47	244	0	291	650
07:45 AM	101	0	8	109	0	0	0	0	0	117	142	259	45	202	0	247	615
Total	467	0	40	507	0	0	0	0	0	406	405	811	144	799	0	943	2261
08:00 AM	90	0	13	103	0	0	0	0	0	94	124	218	34	165	0	199	520
08:15 AM	80	0	13	93	0	0	0	0	0	108	108	216	24	122	0	146	455
08:30 AM	79	0	11	90	0	0	0	0	0	112	102	214	21	131	0	152	456
08:45 AM	69	0	12	81	0	0	0	0	0	93	92	185	14	134	0	148	414
Total	318	0	49	367	0	0	0	0	0	407	426	833	93	552	0	645	1845
*** BREAK ***																	
04:00 PM	73	0	25	98	0	0	0	0	0	213	100	313	15	116	0	131	542
04:15 PM	92	0	19	111	0	0	0	0	0	172	98	270	25	117	0	142	523
04:30 PM	96	0	33	129	0	0	0	0	0	188	85	273	12	138	0	150	552
04:45 PM	82	0	29	111	0	0	0	0	0	223	97	320	24	110	0	134	565
Total	343	0	106	449	0	0	0	0	0	796	380	1176	76	481	0	557	2182
05:00 PM	89	0	32	121	0	0	0	0	0	239	106	345	29	118	0	147	613
05:15 PM	91	0	38	129	0	0	0	0	0	224	111	335	36	126	0	162	626
05:30 PM	84	0	31	115	0	0	0	0	0	210	102	312	27	114	0	141	568
05:45 PM	73	0	25	98	0	0	0	0	0	197	91	288	18	101	0	119	505
Total	337	0	126	463	0	0	0	0	0	870	410	1280	110	459	0	569	2312
Grand Total	1465	0	321	1786	0	0	0	0	0	2479	1621	4100	423	2291	0	2714	8600
Apprch %	82	0	18		0	0	0		0	60.5	39.5		15.6	84.4	0		
Total %	17	0	3.7	20.8	0	0	0	0	0	28.8	18.8	47.7	4.9	26.6	0	31.6	

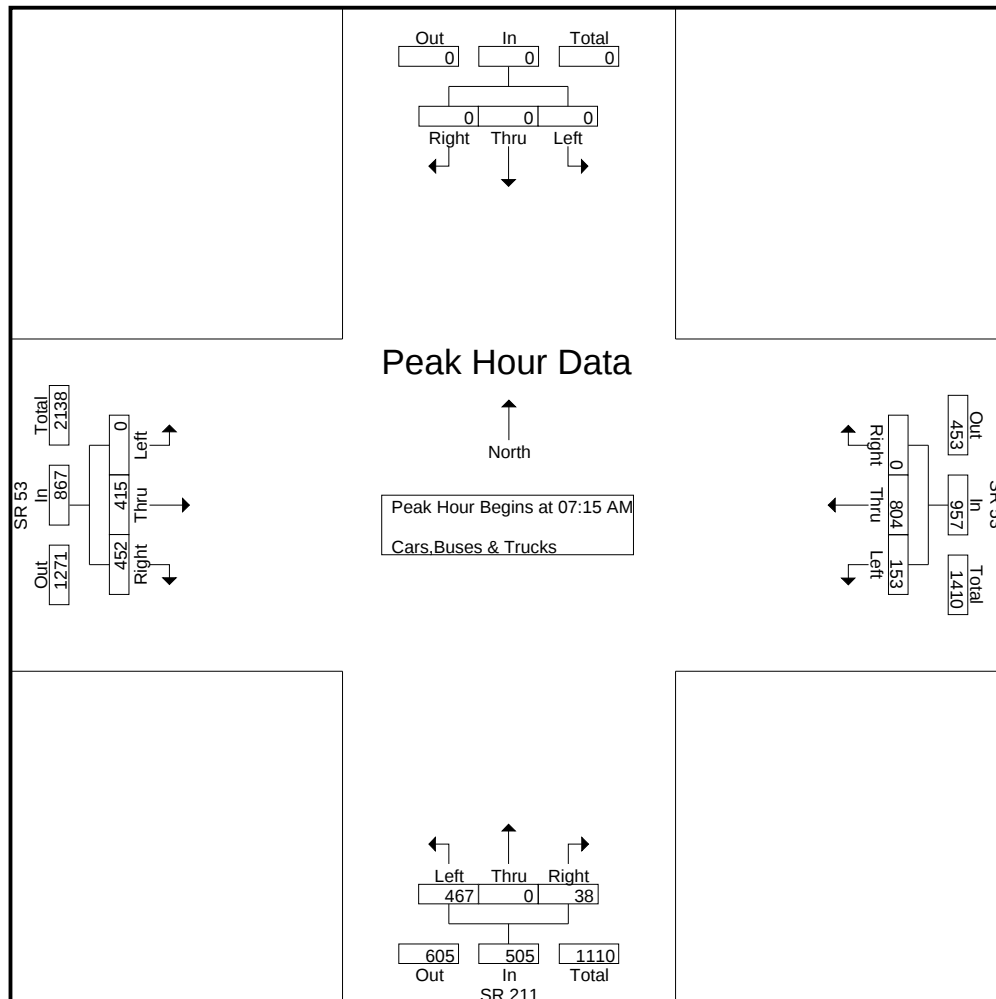
A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 211 @ SR 53
7-9 am | 4-6 pm

File Name : 20230172
Site Code : 20230172
Start Date : 5/2/2023
Page No : 2

	SR 211 Northbound				Southbound				SR 53 Eastbound				SR 53 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	146	0	12	158	0	0	0	0	0	84	82	166	27	193	0	220	544
07:30 AM	130	0	5	135	0	0	0	0	0	120	104	224	47	244	0	291	650
07:45 AM	101	0	8	109	0	0	0	0	0	117	142	259	45	202	0	247	615
08:00 AM	90	0	13	103	0	0	0	0	0	94	124	218	34	165	0	199	520
Total Volume	467	0	38	505	0	0	0	0	0	415	452	867	153	804	0	957	2329
% App. Total	92.5	0	7.5		0	0	0		0	47.9	52.1		16	84	0		
PHF	.800	.000	.731	.799	.000	.000	.000	.000	.000	.865	.796	.837	.814	.824	.000	.822	.896



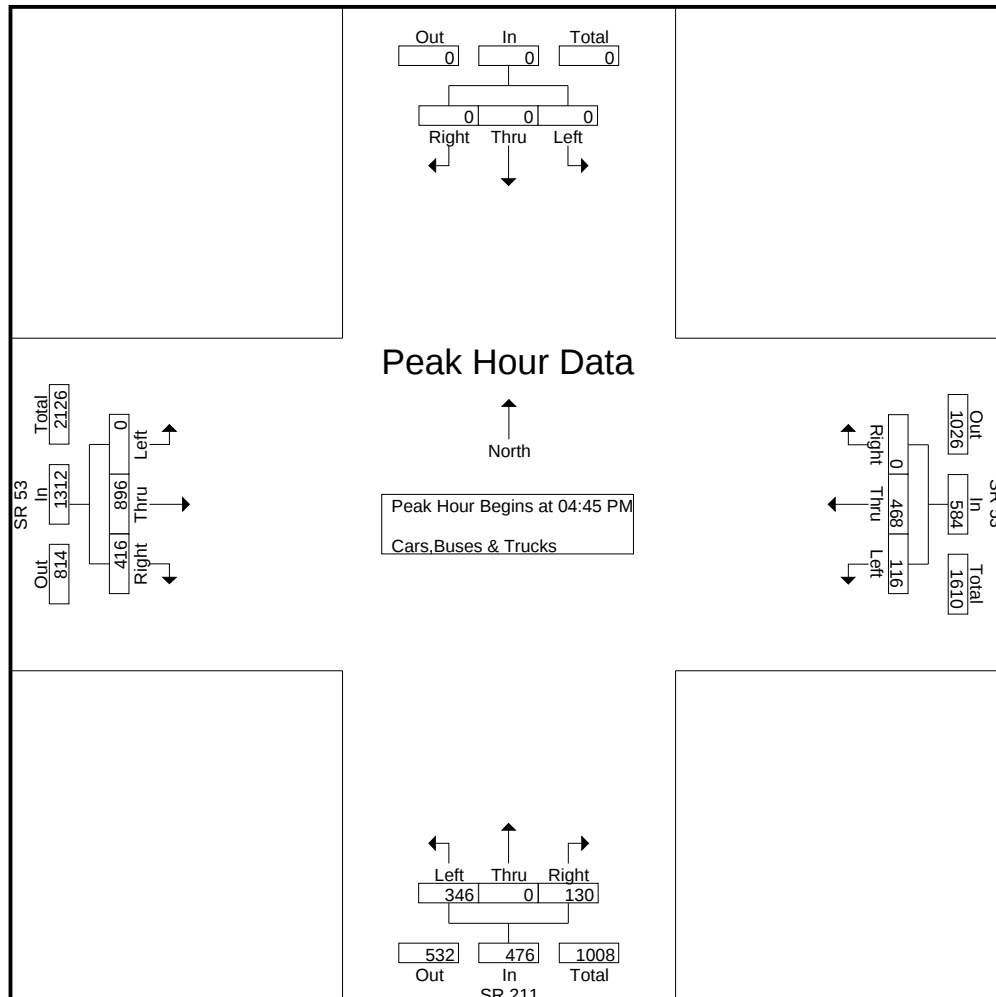
A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
SR 211 @ SR 53
7-9 am | 4-6 pm

File Name : 20230172
Site Code : 20230172
Start Date : 5/2/2023
Page No : 3

	SR 211 Northbound				Southbound				SR 53 Eastbound				SR 53 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	82	0	29	111	0	0	0	0	0	223	97	320	24	110	0	134	565
05:00 PM	89	0	32	121	0	0	0	0	0	239	106	345	29	118	0	147	613
05:15 PM	91	0	38	129	0	0	0	0	0	224	111	335	36	126	0	162	626
05:30 PM	84	0	31	115	0	0	0	0	0	210	102	312	27	114	0	141	568
Total Volume	346	0	130	476	0	0	0	0	0	896	416	1312	116	468	0	584	2372
% App. Total	72.7	0	27.3		0	0	0		0	68.3	31.7		19.9	80.1	0		
PHF	.951	.000	.855	.922	.000	.000	.000	.000	.000	.937	.937	.951	.806	.929	.000	.901	.947



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC Data
SR 347 (Friendship Road) @ Spout Springs
Road
7-9 am | 4-6 pm

File Name : 20230173
Site Code : 20230172
Start Date : 05-02-2023
Page No : 1

Groups Printed- Cars, Buses & Trucks

Start Time	Spout Springs Rd Northbound				Spout Springs Rd Southbound				SR 347 (Friendship Rd) Eastbound					SR 347 (Friendship Rd) Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	App. Total	Left	Thru	Right	App. Total	
07:00 AM	69	73	40	182	31	56	27	114	18	97	21	0	136	51	141	24	216	648
07:15 AM	69	85	43	197	36	76	49	161	35	111	23	2	171	56	135	19	210	739
07:30 AM	61	88	45	194	47	83	55	185	47	152	33	3	235	57	166	26	249	863
07:45 AM	51	97	56	204	28	79	30	137	45	128	40	0	213	59	151	38	248	802
Total	250	343	184	777	142	294	161	597	145	488	117	5	755	223	593	107	923	3052
08:00 AM	38	72	51	161	55	56	29	140	52	152	32	0	236	66	139	39	244	781
08:15 AM	53	84	40	177	56	97	30	183	38	140	35	1	214	57	118	30	205	779
08:30 AM	44	66	56	166	37	64	23	124	28	147	40	1	216	72	143	43	258	764
08:45 AM	38	59	59	156	46	100	20	166	33	89	30	2	154	71	95	32	198	674
Total	173	281	206	660	194	317	102	613	151	528	137	4	820	266	495	144	905	2998
*** BREAK ***																		
04:00 PM	47	73	47	167	54	95	15	164	66	187	77	0	330	67	125	25	217	878
04:15 PM	46	77	45	168	53	96	10	159	75	178	79	3	335	104	178	45	327	989
04:30 PM	45	92	27	164	58	95	14	167	82	214	62	4	362	63	140	37	240	933
04:45 PM	50	104	29	183	41	88	19	148	75	196	89	1	361	78	151	53	282	974
Total	188	346	148	682	206	374	58	638	298	775	307	8	1388	312	594	160	1066	3774
05:00 PM	53	90	31	174	48	93	12	153	71	242	55	4	372	79	185	43	307	1006
05:15 PM	47	94	33	174	56	114	12	182	72	172	64	2	310	68	157	33	258	924
05:30 PM	52	84	30	166	51	109	20	180	80	198	58	4	340	81	125	39	245	931
05:45 PM	50	71	28	149	46	80	14	140	77	245	53	4	379	56	119	34	209	877
Total	202	339	122	663	201	396	58	655	300	857	230	14	1401	284	586	149	1019	3738
Grand Total	813	1309	660	2782	743	1381	379	2503	894	2648	791	31	4364	1085	2268	560	3913	13562
Apprch %	29.2	47.1	23.7		29.7	55.2	15.1		20.5	60.7	18.1	0.7		27.7	58	14.3		
Total %	6	9.7	4.9	20.5	5.5	10.2	2.8	18.5	6.6	19.5	5.8	0.2	32.2	8	16.7	4.1	28.9	

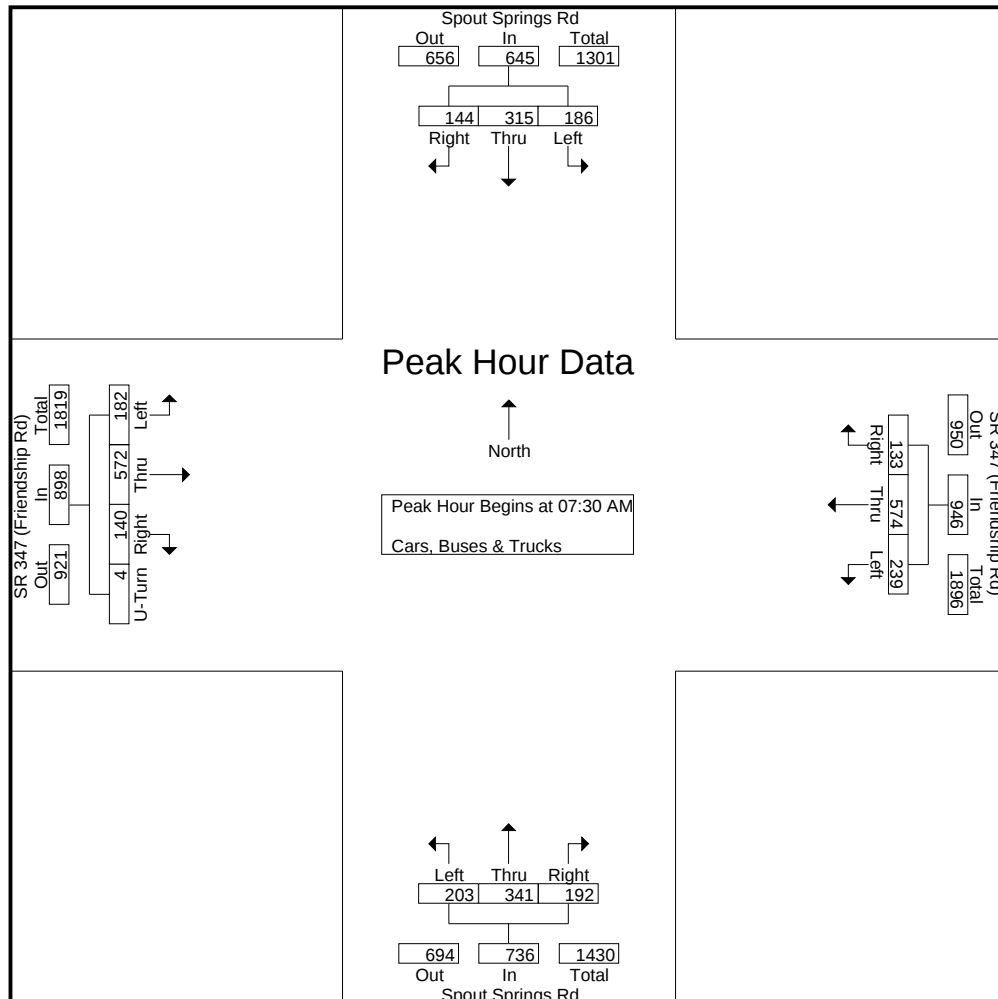
A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC Data
SR 347 (Friendship Road) @ Spout Springs
Road
7-9 am | 4-6 pm

File Name : 20230173
Site Code : 20230172
Start Date : 05-02-2023
Page No : 2

	Spout Springs Rd Northbound				Spout Springs Rd Southbound				SR 347 (Friendship Rd) Eastbound					SR 347 (Friendship Rd) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	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	61	88	45	194	47	83	55	185	47	152	33	3	235	57	166	26	249	863
07:45 AM	51	97	56	204	28	79	30	137	45	128	40	0	213	59	151	38	248	802
08:00 AM	38	72	51	161	55	56	29	140	52	152	32	0	236	66	139	39	244	781
08:15 AM	53	84	40	177	56	97	30	183	38	140	35	1	214	57	118	30	205	779
Total Volume	203	341	192	736	186	315	144	645	182	572	140	4	898	239	574	133	946	3225
% App. Total	27.6	46.3	26.1		28.8	48.8	22.3		20.3	63.7	15.6	0.4		25.3	60.7	14.1		
PHF	.832	.879	.857	.902	.830	.812	.655	.872	.875	.941	.875	.333	.951	.905	.864	.853	.950	.934



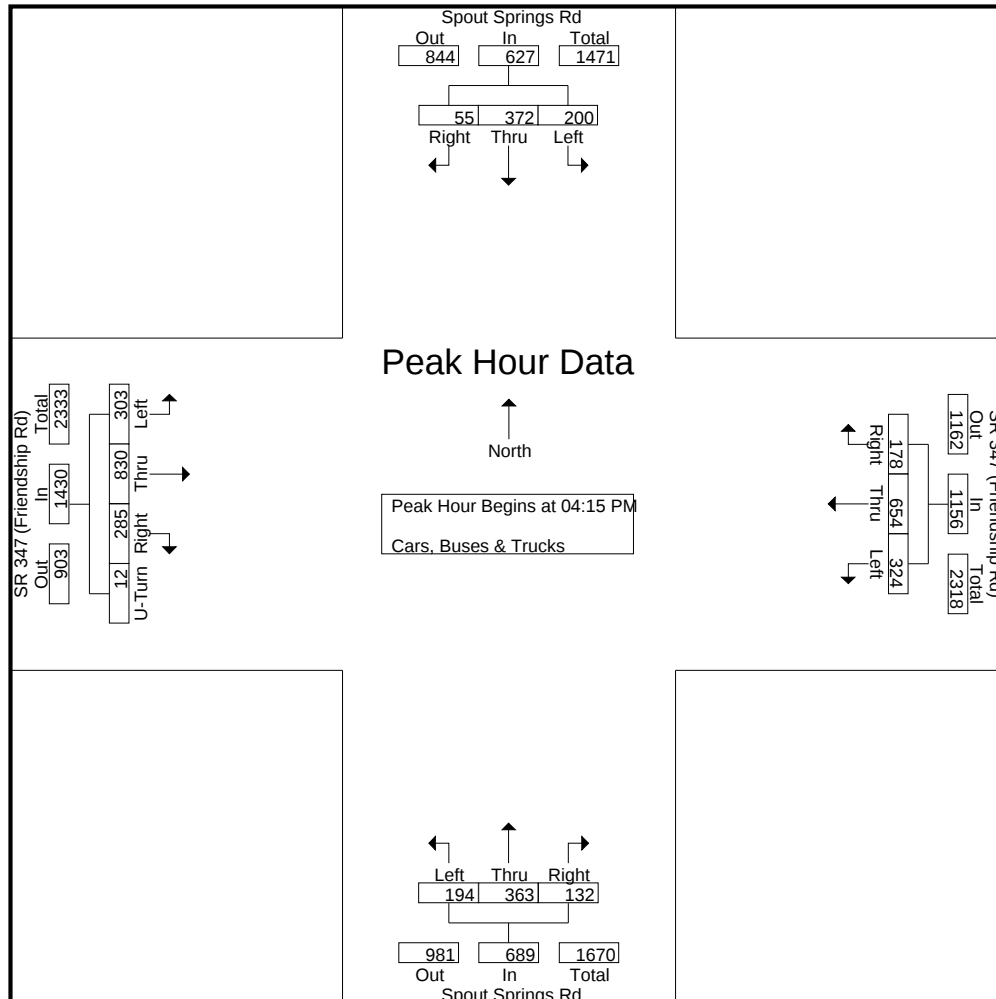
A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC Data
SR 347 (Friendship Road) @ Spout Springs
Road
7-9 am | 4-6 pm

File Name : 20230173
Site Code : 20230172
Start Date : 05-02-2023
Page No : 3

	Spout Springs Rd Northbound				Spout Springs Rd Southbound				SR 347 (Friendship Rd) Eastbound					SR 347 (Friendship Rd) Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	U-Turn	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	46	77	45	168	53	96	10	159	75	178	79	3	335	104	178	45	327	989
04:30 PM	45	92	27	164	58	95	14	167	82	214	62	4	362	63	140	37	240	933
04:45 PM	50	104	29	183	41	88	19	148	75	196	89	1	361	78	151	53	282	974
05:00 PM	53	90	31	174	48	93	12	153	71	242	55	4	372	79	185	43	307	1006
Total Volume	194	363	132	689	200	372	55	627	303	830	285	12	1430	324	654	178	1156	3902
% App. Total	28.2	52.7	19.2		31.9	59.3	8.8		21.2	58	19.9	0.8		28	56.6	15.4		
PHF	.915	.873	.733	.941	.862	.969	.724	.939	.924	.857	.801	.750	.961	.779	.884	.840	.884	.970



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC Data

Thompson Mill Road @ Spout Springs Road

7-9 am | 4-6 pm

File Name : 20230174

Site Code : 20230173

Start Date : 05-02-2023

Page No : 1

Groups Printed- Cars, Buses & Trucks

	Spout Springs Rd Northbound				Spout Springs Rd Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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	30	166	10	206	6	90	18	114	16	5	11	32	12	9	4	25	377
07:15 AM	26	178	5	209	1	91	19	111	23	6	17	46	3	8	6	17	383
07:30 AM	37	202	14	253	8	114	21	143	22	9	18	49	5	4	5	14	459
07:45 AM	41	178	12	231	4	100	25	129	30	9	17	56	18	9	7	34	450
Total	134	724	41	899	19	395	83	497	91	29	63	183	38	30	22	90	1669
08:00 AM	38	155	10	203	6	97	26	129	26	10	7	43	6	9	7	22	397
08:15 AM	25	149	13	187	13	84	10	107	23	10	11	44	9	12	12	33	371
08:30 AM	33	158	16	207	6	116	26	148	22	10	18	50	7	11	3	21	426
08:45 AM	26	120	11	157	16	102	23	141	26	13	10	49	11	11	6	28	375
Total	122	582	50	754	41	399	85	525	97	43	46	186	33	43	28	104	1569
*** BREAK ***																	
04:00 PM	23	151	10	184	9	165	26	200	29	21	21	71	13	10	10	33	488
04:15 PM	42	143	11	196	17	163	20	200	28	16	15	59	21	18	16	55	510
04:30 PM	25	150	19	194	8	143	29	180	42	28	16	86	16	16	18	50	510
04:45 PM	36	143	16	195	17	131	30	178	37	21	20	78	22	20	11	53	504
Total	126	587	56	769	51	602	105	758	136	86	72	294	72	64	55	191	2012
05:00 PM	37	142	16	195	14	152	30	196	35	18	16	69	21	19	13	53	513
05:15 PM	31	138	17	186	18	127	29	174	33	19	16	68	18	25	14	57	485
05:30 PM	25	134	13	172	8	148	24	180	26	10	21	57	14	17	14	45	454
05:45 PM	19	108	17	144	11	137	27	175	36	20	21	77	20	16	12	48	444
Total	112	522	63	697	51	564	110	725	130	67	74	271	73	77	53	203	1896
Grand Total	494	2415	210	3119	162	1960	383	2505	454	225	255	934	216	214	158	588	7146
Apprch %	15.8	77.4	6.7		6.5	78.2	15.3		48.6	24.1	27.3		36.7	36.4	26.9		
Total %	6.9	33.8	2.9	43.6	2.3	27.4	5.4	35.1	6.4	3.1	3.6	13.1	3	3	2.2	8.2	

A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC Data

Thompson Mill Road @ Spout Springs Road

7-9 am | 4-6 pm

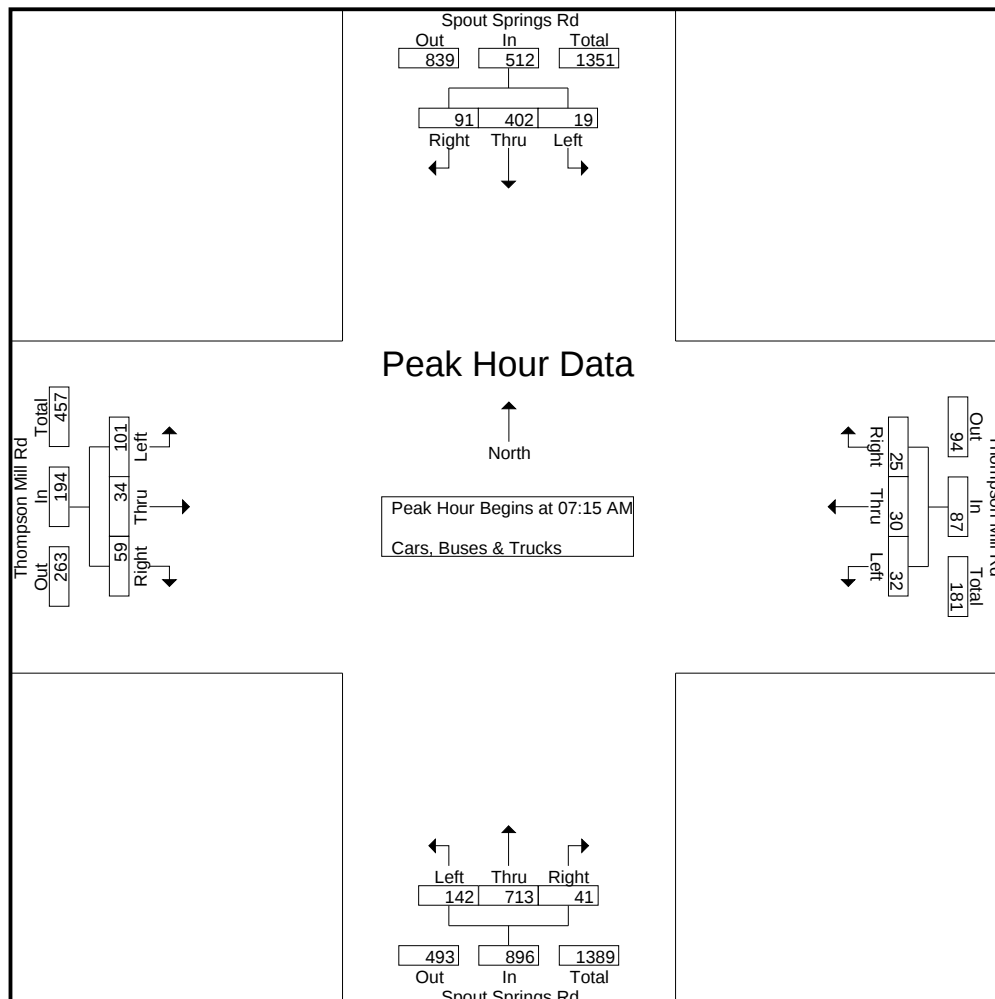
File Name : 20230174

Site Code : 20230173

Start Date : 05-02-2023

Page No : 2

	Spout Springs Rd Northbound				Spout Springs Rd Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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 07:15 AM																	
07:15 AM	26	178	5	209	1	91	19	111	23	6	17	46	3	8	6	17	383
07:30 AM	37	202	14	253	8	114	21	143	22	9	18	49	5	4	5	14	459
07:45 AM	41	178	12	231	4	100	25	129	30	9	17	56	18	9	7	34	450
08:00 AM	38	155	10	203	6	97	26	129	26	10	7	43	6	9	7	22	397
Total Volume	142	713	41	896	19	402	91	512	101	34	59	194	32	30	25	87	1689
% App. Total	15.8	79.6	4.6		3.7	78.5	17.8		52.1	17.5	30.4		36.8	34.5	28.7		
PHF	.866	.882	.732	.885	.594	.882	.875	.895	.842	.850	.819	.866	.444	.833	.893	.640	.920



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC Data

Thompson Mill Road @ Spout Springs Road

7-9 am | 4-6 pm

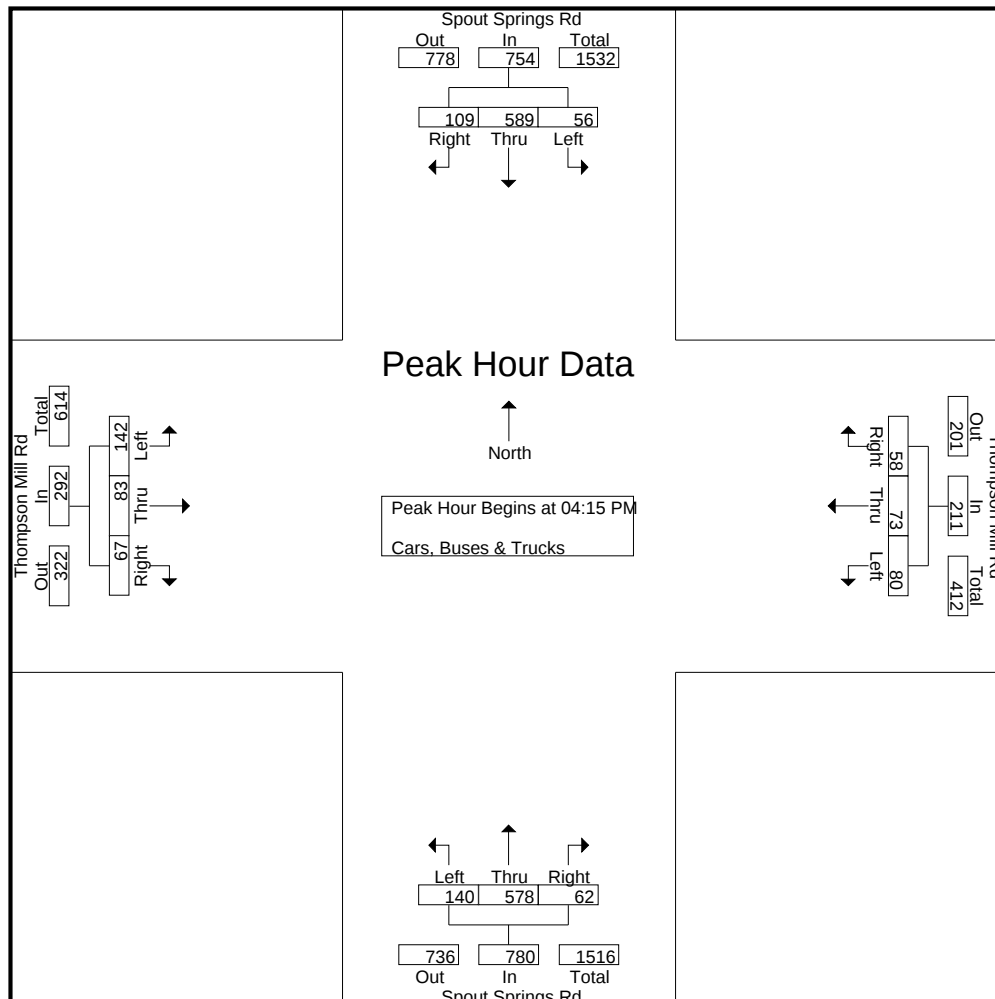
File Name : 20230174

Site Code : 20230173

Start Date : 05-02-2023

Page No : 3

	Spout Springs Rd Northbound				Spout Springs Rd Southbound				Thompson Mill Rd Eastbound				Thompson Mill 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	42	143	11	196	17	163	20	200	28	16	15	59	21	18	16	55	510
04:30 PM	25	150	19	194	8	143	29	180	42	28	16	86	16	16	18	50	510
04:45 PM	36	143	16	195	17	131	30	178	37	21	20	78	22	20	11	53	504
05:00 PM	37	142	16	195	14	152	30	196	35	18	16	69	21	19	13	53	513
Total Volume	140	578	62	780	56	589	109	754	142	83	67	292	80	73	58	211	2037
% App. Total	17.9	74.1	7.9		7.4	78.1	14.5		48.6	28.4	22.9		37.9	34.6	27.5		
PHF	.833	.963	.816	.995	.824	.903	.908	.943	.845	.741	.838	.849	.909	.913	.806	.959	.993



A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
Friendship Rd @ Sardis Church Rd
7-9 am | 4-6 pm

File Name : 20230175
Site Code : 20230175
Start Date : 5/11/2023
Page No : 1

Groups Printed- Cars,Buses & Trucks

	Sardis Church Rd Northbound				Southbound				Friendship Rd Eastbound				Friendship 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	15	0	22	37	0	0	0	0	0	102	13	115	18	195	0	213	365
07:15 AM	16	0	20	36	0	0	0	0	0	129	16	145	28	209	0	237	418
07:30 AM	29	0	30	59	0	0	0	0	0	163	24	187	32	226	0	258	504
07:45 AM	23	0	28	51	0	0	0	0	0	165	22	187	34	173	0	207	445
Total	83	0	100	183	0	0	0	0	0	559	75	634	112	803	0	915	1732
08:00 AM	15	0	34	49	0	0	0	0	0	152	19	171	21	186	0	207	427
08:15 AM	18	0	31	49	0	0	0	0	0	143	18	161	17	156	0	173	383
08:30 AM	20	0	27	47	0	0	0	0	0	130	22	152	20	148	0	168	367
08:45 AM	14	0	33	47	0	0	0	0	0	147	15	162	22	138	0	160	369
Total	67	0	125	192	0	0	0	0	0	572	74	646	80	628	0	708	1546
*** BREAK ***																	
04:00 PM	13	0	42	55	0	0	0	0	0	251	41	292	48	149	0	197	544
04:15 PM	18	0	47	65	0	0	0	0	0	265	48	313	52	181	0	233	611
04:30 PM	15	0	52	67	0	0	0	0	0	292	53	345	53	155	0	208	620
04:45 PM	21	0	56	77	0	0	0	0	0	276	57	333	59	148	0	207	617
Total	67	0	197	264	0	0	0	0	0	1084	199	1283	212	633	0	845	2392
05:00 PM	26	0	48	74	0	0	0	0	0	313	42	355	47	210	0	257	686
05:15 PM	24	0	39	63	0	0	0	0	0	253	38	291	41	199	0	240	594
05:30 PM	19	0	32	51	0	0	0	0	0	282	35	317	34	163	0	197	565
05:45 PM	13	0	25	38	0	0	0	0	0	316	26	342	27	155	0	182	562
Total	82	0	144	226	0	0	0	0	0	1164	141	1305	149	727	0	876	2407
Grand Total	299	0	566	865	0	0	0	0	0	3379	489	3868	553	2791	0	3344	8077
Apprch %	34.6	0	65.4		0	0	0		0	87.4	12.6		16.5	83.5	0		
Total %	3.7	0	7	10.7	0	0	0	0	0	41.8	6.1	47.9	6.8	34.6	0	41.4	

A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA

Friendship Rd @ Sardis Church Rd

7-9 am | 4-6 pm

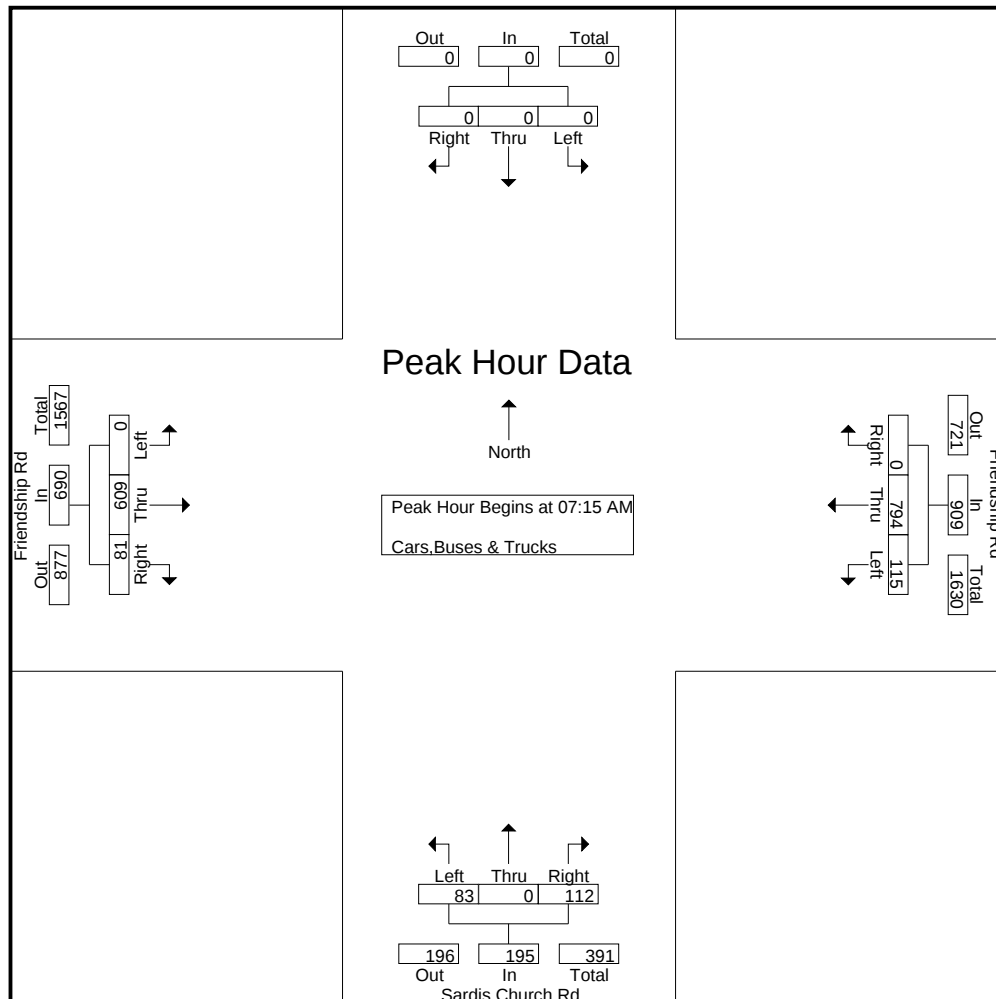
File Name : 20230175

Site Code : 20230175

Start Date : 5/11/2023

Page No : 2

	Sardis Church Rd Northbound				Southbound				Friendship Rd Eastbound				Friendship 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 07:15 AM																	
07:15 AM	16	0	20	36	0	0	0	0	0	129	16	145	28	209	0	237	418
07:30 AM	29	0	30	59	0	0	0	0	0	163	24	187	32	226	0	258	504
07:45 AM	23	0	28	51	0	0	0	0	0	165	22	187	34	173	0	207	445
08:00 AM	15	0	34	49	0	0	0	0	0	152	19	171	21	186	0	207	427
Total Volume	83	0	112	195	0	0	0	0	0	609	81	690	115	794	0	909	1794
% App. Total	42.6	0	57.4		0	0	0		0	88.3	11.7		12.7	87.3	0		
PHF	.716	.000	.824	.826	.000	.000	.000	.000	.000	.923	.844	.922	.846	.878	.000	.881	.890



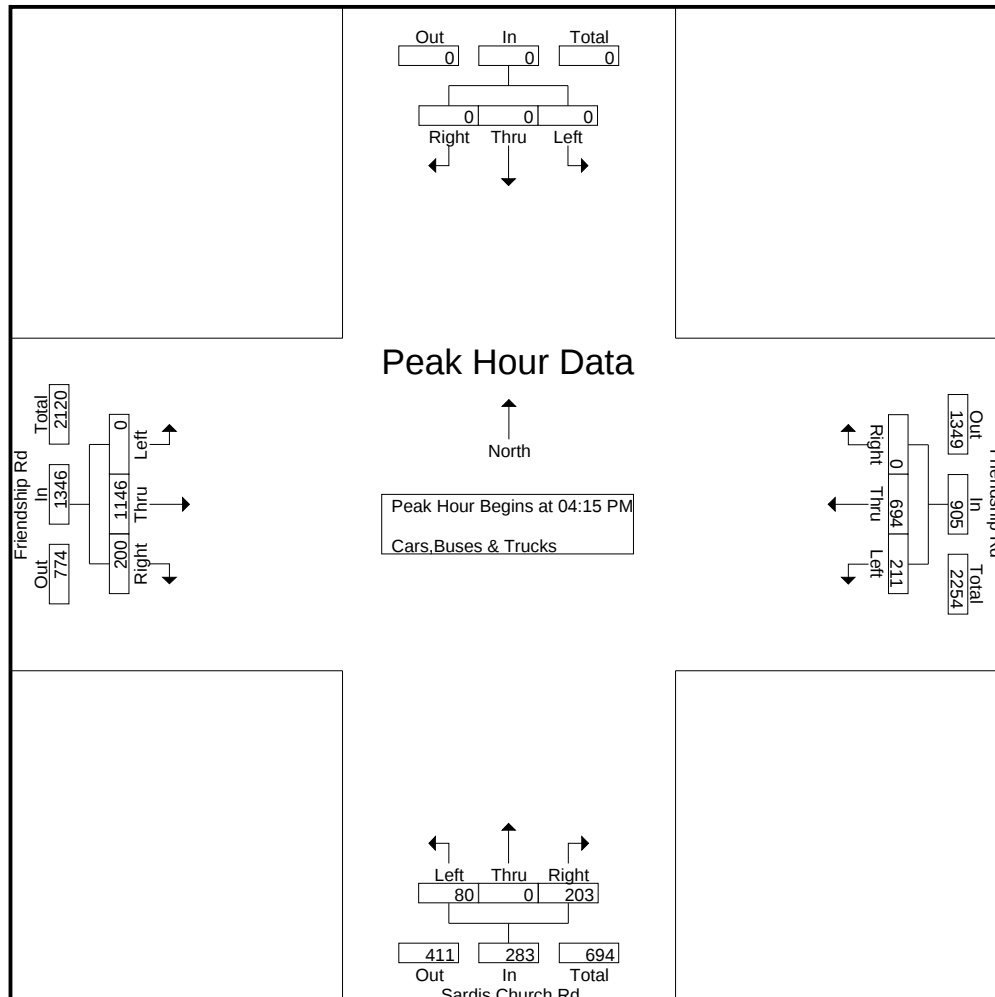
A & R Engineering, Inc.

2160 Kingston Court Suite 'O'
Marietta, GA 30067

TMC DATA
Friendship Rd @ Sardis Church Rd
7-9 am | 4-6 pm

File Name : 20230175
Site Code : 20230175
Start Date : 5/11/2023
Page No : 3

	Sardis Church Rd Northbound				Southbound				Friendship Rd Eastbound				Friendship 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	18	0	47	65	0	0	0	0	0	265	48	313	52	181	0	233	611
04:30 PM	15	0	52	67	0	0	0	0	0	292	53	345	53	155	0	208	620
04:45 PM	21	0	56	77	0	0	0	0	0	276	57	333	59	148	0	207	617
05:00 PM	26	0	48	74	0	0	0	0	0	313	42	355	47	210	0	257	686
Total Volume	80	0	203	283	0	0	0	0	0	1146	200	1346	211	694	0	905	2534
% App. Total	28.3	0	71.7		0	0	0		0	85.1	14.9		23.3	76.7	0		
PHF	.769	.000	.906	.919	.000	.000	.000	.000	.000	.915	.877	.948	.894	.826	.000	.880	.923



A & R Engineering, Inc.

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

TMC Data
SR 211 @ I-85 EB Ramps
7-9 am | 4-6 pm

File Name : 20230324
Site Code : 20230324
Start Date : 10-03-2023
Page No : 1

Groups Printed- Cars, Buses & Trucks

Start Time	SR 211 Northbound				SR 211 Southbound				I-85 EB Ramps Eastbound				I-85 EB Ramps Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	348	66	414	31	107	0	138	49	0	82	131	0	0	0	0	683
07:15 AM	0	325	46	371	32	132	0	164	53	0	69	122	0	0	0	0	657
07:30 AM	0	355	53	408	29	131	0	160	46	0	75	121	0	0	0	0	689
07:45 AM	0	312	64	376	32	139	0	171	58	0	74	132	0	0	0	0	679
Total	0	1340	229	1569	124	509	0	633	206	0	300	506	0	0	0	0	2708
08:00 AM	0	270	47	317	29	121	0	150	63	0	77	140	0	0	0	0	607
08:15 AM	0	269	63	332	25	144	0	169	46	0	78	124	0	0	0	0	625
08:30 AM	0	212	37	249	27	123	0	150	55	0	65	120	0	0	0	0	519
08:45 AM	0	254	43	297	30	108	0	138	55	0	66	121	0	0	0	0	556
Total	0	1005	190	1195	111	496	0	607	219	0	286	505	0	0	0	0	2307
*** BREAK ***																	
04:00 PM	0	200	37	237	38	179	0	217	92	0	160	252	0	0	0	0	706
04:15 PM	0	178	46	224	34	186	0	220	92	0	133	225	0	0	0	0	669
04:30 PM	0	191	48	239	51	183	0	234	93	0	118	211	0	0	0	0	684
04:45 PM	0	217	59	276	37	192	0	229	71	0	128	199	0	0	0	0	704
Total	0	786	190	976	160	740	0	900	348	0	539	887	0	0	0	0	2763
05:00 PM	0	215	56	271	43	182	0	225	100	0	160	260	0	0	0	0	756
05:15 PM	0	228	52	280	38	212	0	250	107	0	156	263	0	0	0	0	793
05:30 PM	0	225	57	282	44	233	0	277	77	0	126	203	0	0	0	0	762
05:45 PM	0	188	43	231	39	215	0	254	98	0	153	251	0	0	0	0	736
Total	0	856	208	1064	164	842	0	1006	382	0	595	977	0	0	0	0	3047
Grand Total	0	3987	817	4804	559	2587	0	3146	1155	0	1720	2875	0	0	0	0	10825
Apprch %	0	83	17		17.8	82.2	0		40.2	0	59.8		0	0	0		
Total %	0	36.8	7.5	44.4	5.2	23.9	0	29.1	10.7	0	15.9	26.6	0	0	0	0	

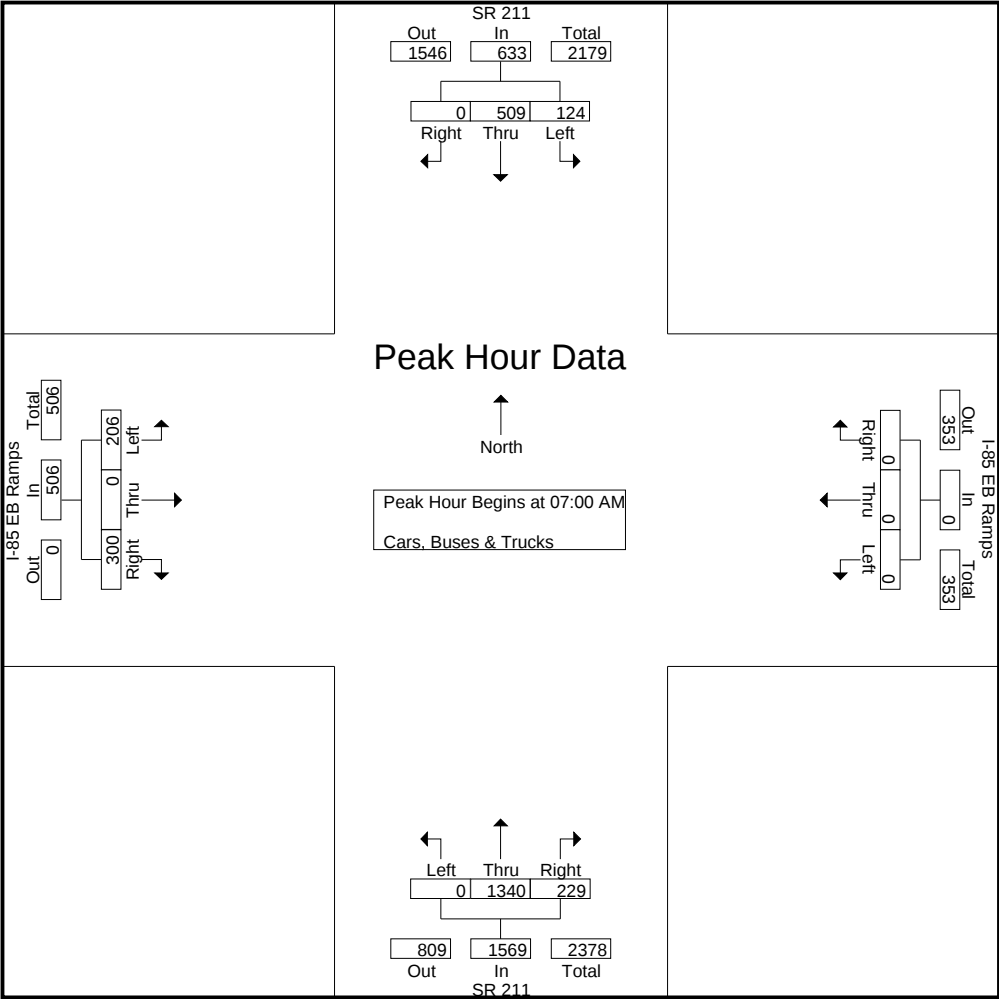
A & R Engineering, Inc.

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

TMC Data
SR 211 @ I-85 EB Ramps
7-9 am | 4-6 pm

File Name : 20230324
Site Code : 20230324
Start Date : 10-03-2023
Page No : 2

	SR 211 Northbound				SR 211 Southbound				I-85 EB Ramps Eastbound				I-85 EB Ramps Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	348	66	414	31	107	0	138	49	0	82	131	0	0	0	0	683
07:15 AM	0	325	46	371	32	132	0	164	53	0	69	122	0	0	0	0	657
07:30 AM	0	355	53	408	29	131	0	160	46	0	75	121	0	0	0	0	689
07:45 AM	0	312	64	376	32	139	0	171	58	0	74	132	0	0	0	0	679
Total Volume	0	1340	229	1569	124	509	0	633	206	0	300	506	0	0	0	0	2708
% App. Total	0	85.4	14.6		19.6	80.4	0		40.7	0	59.3		0	0	0		
PHF	.000	.944	.867	.947	.969	.915	.000	.925	.888	.000	.915	.958	.000	.000	.000	.000	.983



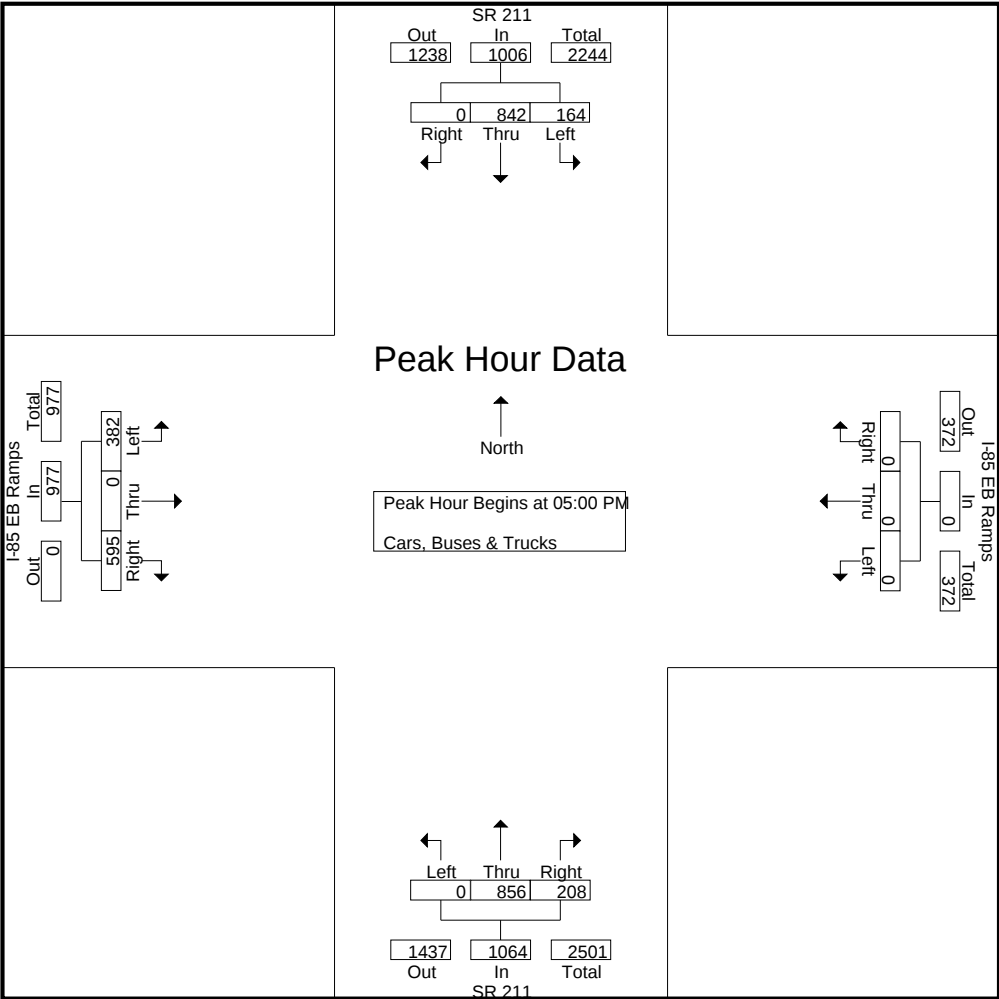
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TMC Data
SR 211 @ I-85 EB Ramps
7-9 am | 4-6 pm

File Name : 20230324
Site Code : 20230324
Start Date : 10-03-2023
Page No : 3

	SR 211 Northbound				SR 211 Southbound				I-85 EB Ramps Eastbound				I-85 EB Ramps 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	0	215	56	271	43	182	0	225	100	0	160	260	0	0	0	0	756
05:15 PM	0	228	52	280	38	212	0	250	107	0	156	263	0	0	0	0	793
05:30 PM	0	225	57	282	44	233	0	277	77	0	126	203	0	0	0	0	762
05:45 PM	0	188	43	231	39	215	0	254	98	0	153	251	0	0	0	0	736
Total Volume	0	856	208	1064	164	842	0	1006	382	0	595	977	0	0	0	0	3047
% App. Total	0	80.5	19.5		16.3	83.7	0		39.1	0	60.9		0	0	0		
PHF	.000	.939	.912	.943	.932	.903	.000	.908	.893	.000	.930	.929	.000	.000	.000	.000	.961



A & R Engineering, Inc.

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

TMC Data
SR 211 @ I-85 WB Ramps
7-9 am | 4-6 pm

File Name : 20230325
Site Code : 20230325
Start Date : 10-03-2023
Page No : 1

Groups Printed- Cars, Buses & Trucks

Start Time	SR 211 Northbound				SR 211 Southbound				I-85 WB Ramps Eastbound				I-85 WB Ramps Westbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	193	204	0	397	0	106	126	232	0	0	0	0	32	0	36	68	697
07:15 AM	168	210	0	378	0	126	153	279	0	0	0	0	38	0	40	78	735
07:30 AM	208	193	0	401	0	128	115	243	0	0	0	0	32	0	30	62	706
07:45 AM	181	189	0	370	0	139	123	262	0	0	0	0	32	0	31	63	695
Total	750	796	0	1546	0	499	517	1016	0	0	0	0	134	0	137	271	2833
08:00 AM	156	177	0	333	0	128	110	238	0	0	0	0	22	0	23	45	616
08:15 AM	134	181	0	315	0	134	113	247	0	0	0	0	35	0	21	56	618
08:30 AM	136	131	0	267	0	118	86	204	0	0	0	0	32	0	27	59	530
08:45 AM	99	210	0	309	0	104	80	184	0	0	0	0	34	0	33	67	560
Total	525	699	0	1224	0	484	389	873	0	0	0	0	123	0	104	227	2324
*** BREAK ***																	
04:00 PM	93	199	0	292	0	195	83	278	0	0	0	0	22	0	32	54	624
04:15 PM	77	193	0	270	0	180	80	260	0	0	0	0	40	0	47	87	617
04:30 PM	90	194	0	284	0	201	84	285	0	0	0	0	33	0	33	66	635
04:45 PM	86	202	0	288	0	198	113	311	0	0	0	0	31	0	23	54	653
Total	346	788	0	1134	0	774	360	1134	0	0	0	0	126	0	135	261	2529
05:00 PM	79	236	0	315	0	190	86	276	0	0	0	0	35	0	33	68	659
05:15 PM	86	249	0	335	0	221	77	298	0	0	0	0	29	0	29	58	691
05:30 PM	76	226	0	302	0	236	73	309	0	0	0	0	41	0	40	81	692
05:45 PM	92	194	0	286	0	208	69	277	0	0	0	0	46	0	33	79	642
Total	333	905	0	1238	0	855	305	1160	0	0	0	0	151	0	135	286	2684
Grand Total	1954	3188	0	5142	0	2612	1571	4183	0	0	0	0	534	0	511	1045	10370
Apprch %	38	62	0		0	62.4	37.6		0	0	0		51.1	0	48.9		
Total %	18.8	30.7	0	49.6	0	25.2	15.1	40.3	0	0	0	0	5.1	0	4.9	10.1	

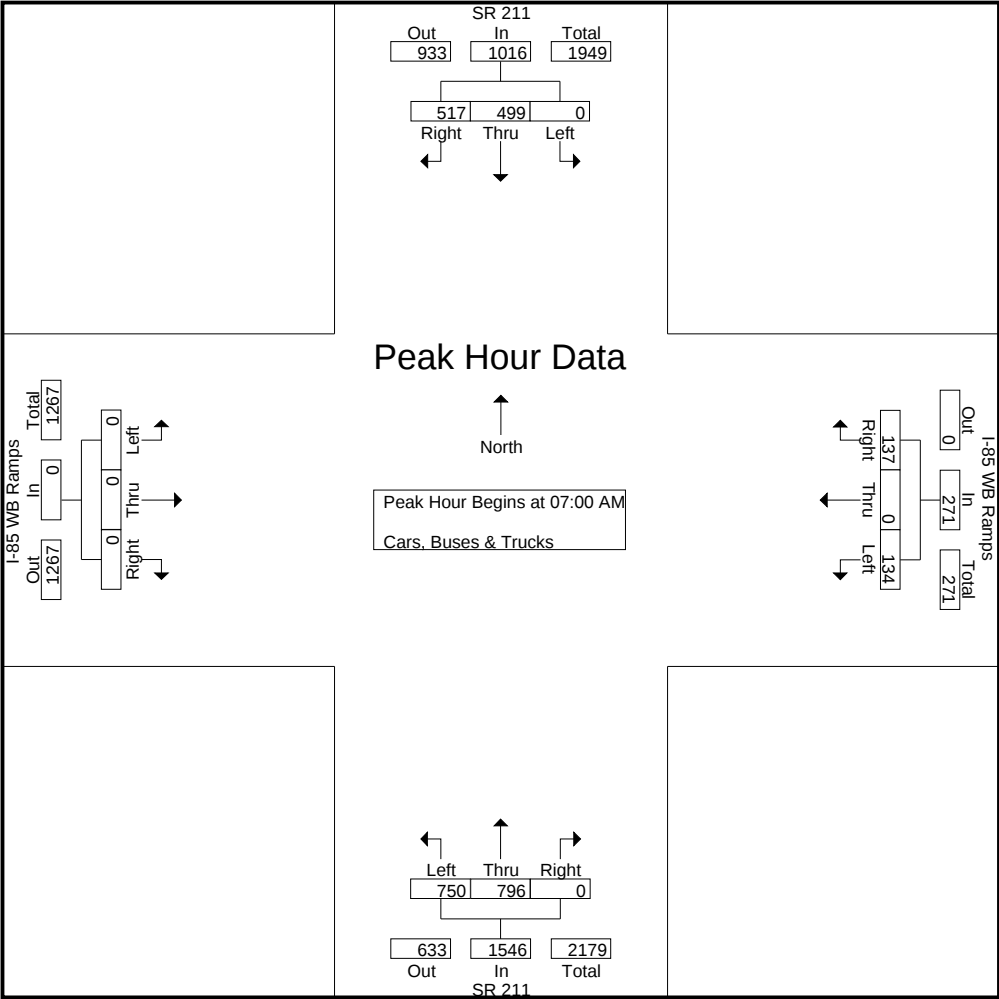
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	SR 211 Northbound				SR 211 Southbound				I-85 WB Ramps Eastbound				I-85 WB Ramps Westbound				
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Peak Hour for Entire Intersection Begins at 07:00 AM																	
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07:15 AM	168	210	0	378	0	126	153	279	0	0	0	0	38	0	40	78	735
07:30 AM	208	193	0	401	0	128	115	243	0	0	0	0	32	0	30	62	706
07:45 AM	181	189	0	370	0	139	123	262	0	0	0	0	32	0	31	63	695
Total Volume	750	796	0	1546	0	499	517	1016	0	0	0	0	134	0	137	271	2833
% App. Total	48.5	51.5	0		0	49.1	50.9		0	0	0		49.4	0	50.6		
PHF	.901	.948	.000	.964	.000	.897	.845	.910	.000	.000	.000	.000	.882	.000	.856	.869	.964



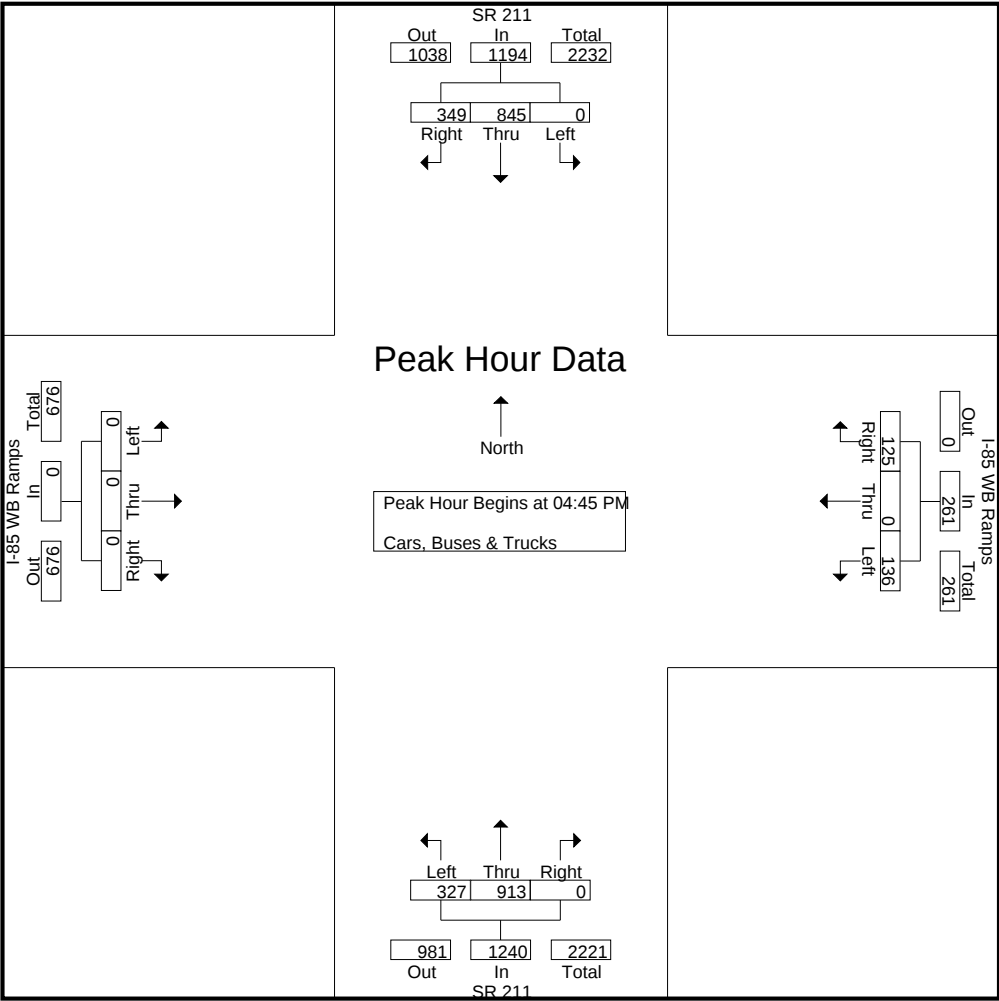
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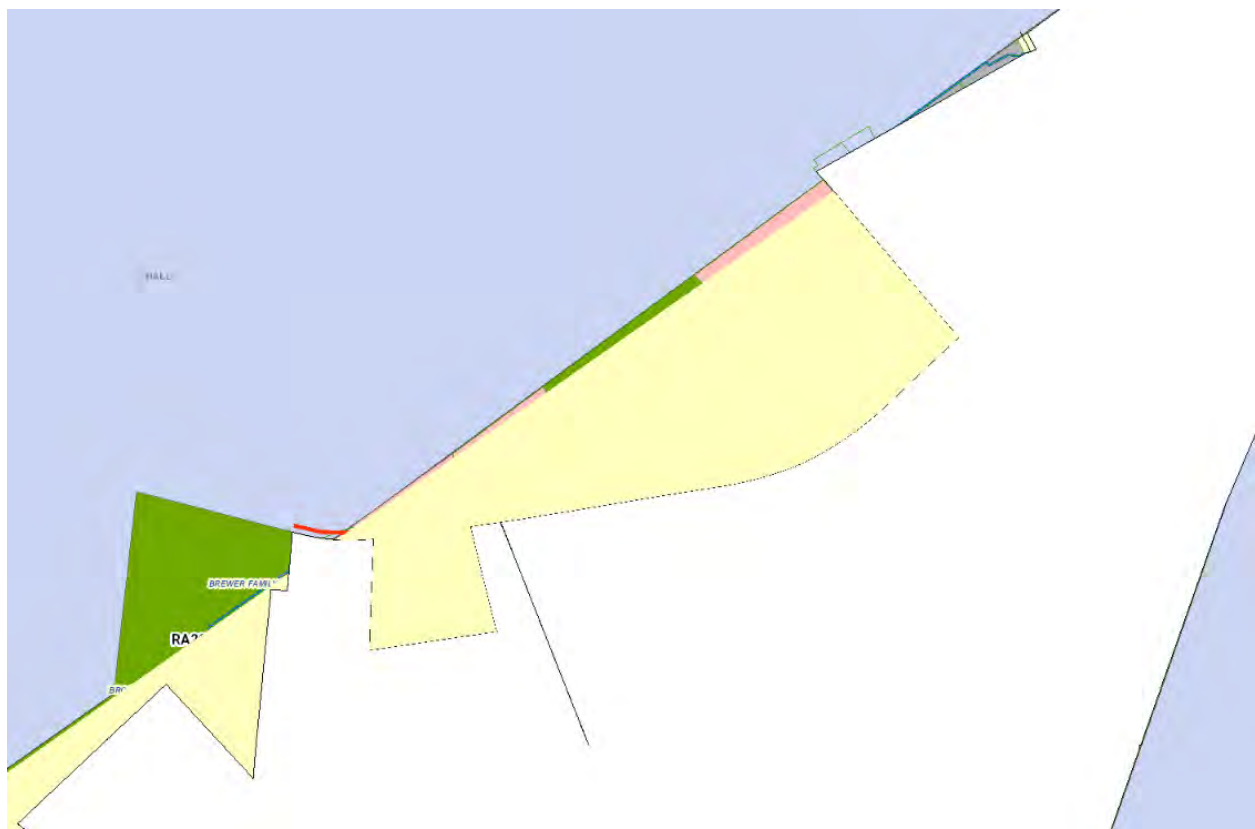
File Name : 20230325
Site Code : 20230325
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	SR 211 Northbound				SR 211 Southbound				I-85 WB Ramps Eastbound				I-85 WB Ramps Westbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	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	86	202	0	288	0	198	113	311	0	0	0	0	31	0	23	54	653
05:00 PM	79	236	0	315	0	190	86	276	0	0	0	0	35	0	33	68	659
05:15 PM	86	249	0	335	0	221	77	298	0	0	0	0	29	0	29	58	691
05:30 PM	76	226	0	302	0	236	73	309	0	0	0	0	41	0	40	81	692
Total Volume	327	913	0	1240	0	845	349	1194	0	0	0	0	136	0	125	261	2695
% App. Total	26.4	73.6	0		0	70.8	29.2		0	0	0		52.1	0	47.9		
PHF	.951	.917	.000	.925	.000	.895	.772	.960	.000	.000	.000	.000	.829	.000	.781	.806	.974



Character Areas

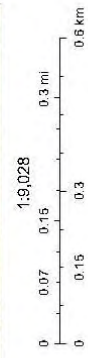
Gwinnet County's Land Use and Zoning Maps



2021 ARC Unified Growth Policy Map



- April 10, 2023
- Counties
 - Regional Areas - copy
 - Developing Suburbs
 - Rural Areas



Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, HERE, Garmin, Swire, GeoInformation, Inc., METNNA, USGS, EPA, NPS, US Census Bureau, USDA, NOAA

GRTA Letter of Understanding



LETTER OF UNDERSTANDING

January 9, 2024

Aaron Frampton
VDC
1500 Highway 124
Auburn, GA 30011

RE: **Thompson Mill Village (DRI#: 4098)**

Dear Aaron Frampton:

The purpose of this Letter of Understanding is to document the discussions during the Methodology Meeting held virtually on December 4, 2023 regarding **Thompson Mill Village** 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 between SR 347 (Friendship Road) and Thompson Mill Road and west of SR 211, in Hall and Gwinnett counties. In general, the site is located to the north of I-85 and south of I-985.
- The proposed development includes 141 townhomes, 460 apartments and condos, 939 age-restricted independent living units, 200 hotel rooms, 105,049 SF of general office, 254,200 SF of medical office, 374,218 SF of retail, and 50,000 SF of restaurant space.
- The projected build-out is one phase to be completed by 2028.
- The proposed development includes (9) site accesses along SR 347 (Friendship Road), Thompson Mill Road, and Deaton Creek Parkway.
- The DRI trigger for this development is a Revised Site Plan Submittal.
- The vehicular trip generation is estimated to be 23,415 net daily trips based on the *ITE Trip Generation Manual 11th edition*.
- The applicant is applying for approval under GRTA's non-expedited Traffic Impact Study review process.

STUDY NETWORK

1. SR 211 @ SR 347 (Friendship Road) / Bayberry Drive
2. SR 211 @ Thompson Mill Road / Grand Hickory Drive
3. SR 211 @ Golf Club Drive / Liberty Church Road
4. SR 211 @ I-85 Southbound Ramps
5. SR 211 @ I-85 Northbound Ramps
6. SR 211 @ SR 53
7. SR 347 (Friendship Road) @ Northeast Georgia Medical Center's main driveway/ Site Driveway 2
8. SR 347 (Friendship Road) @ River Place/ Site Driveway 1
9. SR 347 (Friendship Road) @ Deaton Creek Parkway
10. SR 347 (Friendship Road) @ Spout Springs Road
11. SR 347 (Friendship Road) @ Sardis Church Road
12. Sardis Church Road @ Thompson Mill Road
13. Spout Springs Road @ Thompson Mill Road
14. Thompson Mill Road @ Deaton Creek Parkway

15. Thompson Mill Road @ Autumn Maple Drive
16. Thompson Mill Road @ Retreat Point Parkway/ Site Driveway 3
17. Thompson Mill Road at Site Driveway 4
18. Thompson Mill Road at Site Driveway 5
19. Thompson Mill Road at Site Driveway 6
20. Deaton Creek Parkway at Site Driveway 7
21. Deaton Creek Parkway at Site Driveway 8
22. Thompson Mill Road at Site Driveway 9

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 2028.
- 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 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 3.6% 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,

Brittany Williams
Program Manager

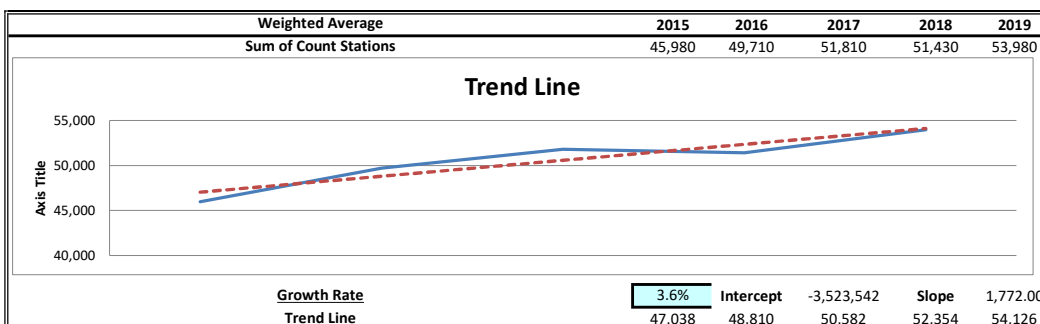
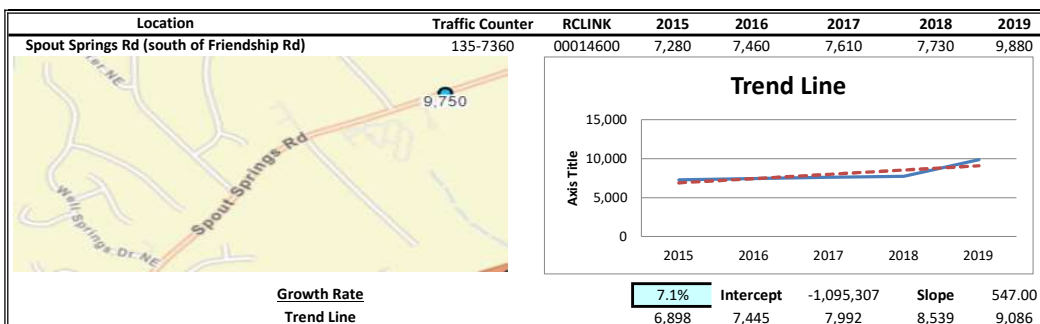
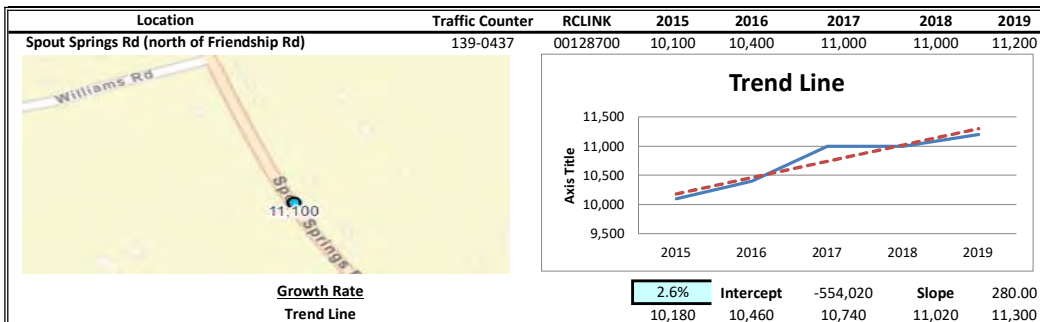
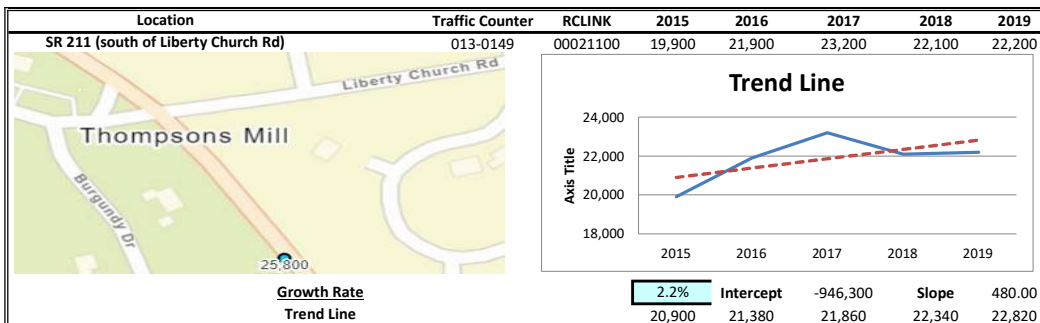
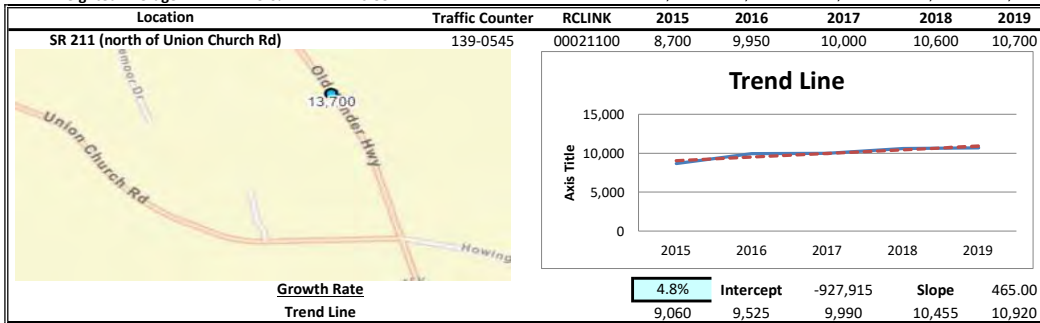
Cc:

Zane Grennell, DCA
Donald Shockey, ARC
Reginald James, ARC
Ranata Mattison, ARC
Carol Flaute, NE GA Regional Commission
Chirag Date, Modern Mobility Partners
Julia Billings, Modern Mobility Partners
Daniel Robinson, Gwinnett County
Randi Doveton, Hall County
Jason Dykes, GDOT District 1
Kelvin Mullins, GDOT District 1
Jonathan Peevy, GDOT District 1

Abdul Amer, A & R Engineering
Aaron Frampton, VDC
Bill Schmid, Rochester Associates
Bryan Day, Day Design Group
Taylor Pounds, Foley Design

Linear Regression of Daily Traffic

Location	Growth Rate	R Squared	Station ID	Route	2015	2016	2017	2018	2019
SR 211 (north of Union Church I	4.8%	0.85	139-0545	00021100	8,700	9,950	10,000	10,600	10,700
SR 211 (south of Liberty Church	2.2%	0.40	013-0149	00021100	19,900	21,900	23,200	22,100	22,200
Spout Springs Rd (north of Frier	2.6%	0.90	139-0437	00128700	10,100	10,400	11,000	11,000	11,200
Spout Springs Rd (south of Frier	7.1%	0.65	135-7360	00014600	7,280	7,460	7,610	7,730	9,880
Weighted Average	3.6%	0.88	Sum of Count Stations =		45,980	49,710	51,810	51,430	53,980



**Fact Sheets for Planned and Programmed
Improvements**



Interoffice Memo
Office of Design Policy & Support

DATE: 1/5/2021

FILE: P.I.# 0013988
Barrow County / GDOT District 1 - Gainesville
SR 211 from I-85 NB Ramps to CS 1274/Pinot Noir Drive
Widening & Improvements

FROM: *Dane Peters*
for R. Christopher Rudd, PE, State Design Policy Engineer

TO: SEE DISTRIBUTION

SUBJECT: APPROVED LOCATION & DESIGN REPORT

Attached is the approved Location and Design Report with Notice of Location & Design Approval for the above subject project.

Attachment

Distribution:

Hiral Patel, Director of Engineering
Joe Carpenter, Director of P3
Albert Shelby, Director of Program Delivery
Darryl VanMeter, Assistant Director of P3/State Innovative Delivery Administrator
Matthew Markham, Deputy Director of Planning
Kim Nesbitt, Program Delivery Administrator
Bobby Hilliard, Program Control Administrator
Eric Duff, State Environmental Administrator
Donn Digamon, State Bridge Engineer
Andrew Heath, State Traffic Engineer
Angela Robinson, Financial Management Administrator
Erik Rohde, State Project Review Engineer
Benny Walden, Statewide Location Bureau Chief
Kelvin Mullins, District Engineer
SueAnne Decker, District Preconstruction Engineer
Kim Coley, District Planning & Programming Coordinator
Shannon Giles, Area Manager - D1, A2
Oluchukwu Anyaebosi, Project Manager
BOARD MEMBER - 10th Congressional District



Interoffice Memo

FILE: P.I. 0013988, Barrow County
SR 211 FROM I-85 NB RAMP TO CS 1274/PINOT NOIR DRIVE

DATE: November 23, 2020 *Krystal Stovall-Dixon* For:

FROM: Kimberly W. Nesbitt, State Program Delivery Administrator

TO: Office of Design Policy and Support via ConceptReports@dot.ga.gov

SUBJECT: Submittal – Location and Design (L&D) Report

The Office of Program Delivery hereby submits the attached Location and Design (L&D) Report for your review and approval.

If any additional information is needed, please contact Oluchukwu Anyaebosi at (404) 631-1540 or oanyaebosi@dot.ga.gov.

KWN: KESD: CCJ: oea

Attachments: Preconstruction Status Report, Completed Location & Design approval request

cc: ProjectWise File



Location and Design Report

DATE: November 19, 2020

FILE: P.I.# 0013988
Barrow County / GDOT District 1 - Gainesville
SR 211 from I-85 NB Ramp to CS 1274/Pino Noir Drive

FROM: Kimberly W. Nesbitt, State Program Delivery Administrator

TO: R. Christopher Rudd, P.E., State Design Policy Engineer
Attn: Dave Peters, State Conceptual Design Group Manager

SUBJECT: Request for Location and Design Approval

Description and Project Proposal: Located entirely within the Town of Braselton, the proposed SR 211 widening will provide four 11- to 12-ft lanes with an urban typical section for a total project length of 0.94 miles. The SR 211 improvements will begin at the I-85 northbound exit/entrance ramps where dual left turn lanes will be provided on SR 211 to turn onto the I-85 northbound entrance ramp.

Limited changes to the existing SR 211 bridge over I-85 are proposed. The bridge crown will be relocated, and the bridge will be restriped to allow for two 11-ft lanes in each direction. A 2-ft shoulder will be provided along the southbound lanes (west side of bridge) and a 5.75-ft shoulder with a 5.5-ft sidewalk will be provided along the northbound lanes (east side of bridge). The parapet on the east side will be reconstructed to allow for a 5.5-foot sidewalk.

Multi-lane roundabouts are proposed at the intersections of SR 211 and the I-85 southbound ramp terminals and at the Braselton Parkway Extension and Tour De France/Chateau Elan Entrance. North of the Tour De France intersection, SR 211 will be improved to a four-lane urban section with a varying width (20-ft to 28-ft) raised median. State Route 211 will transition from the proposed typical section approximately 415-ft north of Pinot Noir Drive where it will then terminate into the existing SR 211 typical section approximately 100-ft north of the Tuscany Drive intersection.

Sidewalks will only be provided on the east side of SR 211. Between the I-85 northbound ramp terminals and the Tour De France/Braselton Parkway Extension roundabout, a 5-ft sidewalk with a varying buffer strip (2-ft to 6-ft) between the back of the curb and the edge of the sidewalk will be provided. North of Tour De France, a 10-ft side path with a 4.5-ft buffer strip between the back of the curb and edge of the side path will be provided. No sidewalks are proposed along the west side of SR 211.

Finally, the project also proposes to construct approximately 1,500-ft of the Braselton Parkway Extension. The Braselton Parkway Extension will ultimately tie into the existing Braselton Parkway north of the project at the Jesse Chronic Rd intersection. The proposed urban typical section will provide two 12-ft lanes separated by a 14-ft raised, landscaped median and a 10-ft side path on the north side separated from the curb by a 4.5-ft buffer strip. No sidewalks are proposed along the south side of the Braselton Parkway extension.

Concept Approval Date: February 24, 2020

Concept Update: No updates required.

Environmental Document Type: GEPA - No Document **Approval Date:** N/A

Projects that are state-funded and have a total project cost of less than \$100 million do not require a GEPA document.

Public Involvement: The Public Information Open House was held on June 16, 2011 at the Municipal Court Facility in Braselton, Georgia. Approximately seven comments from the open house were received and all were supportive of the project. Additional outreach is planned to occur virtually in early 2021.

Consistency with Approved Planning: The design description as presented herein and submitted for approval is consistent with the approved Concept Report.

Recommendations: Recommend that the location and design for the project be approved and that the attached Notice be approved for advertising.

Concur:



GDOT Director of Engineering

12/23/2020

Date

Approve:

David Norwood

Digitally signed by David Norwood
Date: 2020.12.28 08:27:34 -05'00'

For _____
GDOT Chief Engineer

12/28/2020

Date

DATE OF LOCATION AND DESIGN APPROVAL:

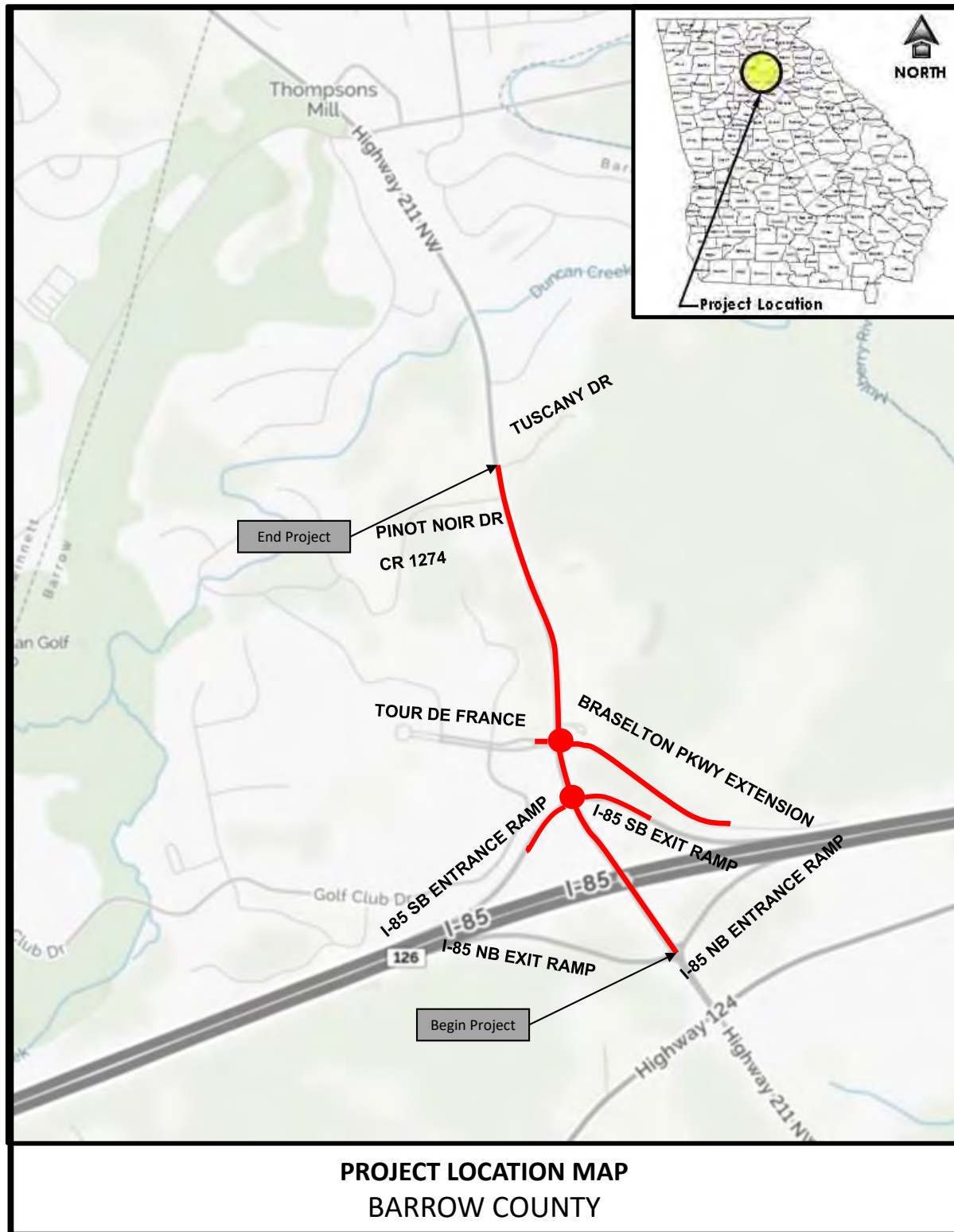
January 5, 2020 **DRP**

(To be entered by State Conceptual Design
Group Manager)

Attachments:

- Location Map
- Notice of Location and Design Approval

PROJECT LOCATION MAP



GDOT PI #0013988
SR 211 FROM I-85 NB RAMP TO CS 1274/PINO NOIR DRIVE

NOTICE OF LOCATION AND DESIGN APPROVAL

P. I. 0013988

BARROW COUNTY

Notice is hereby given in compliance with Georgia Code 22-2-109 and 32-3-5 that the Georgia Department of Transportation has approved the Location and Design of this project.

The date of location and design approval is: January 5, 2020

This project is located in Barrow County, in the Town of Braselton. The project is located in Georgia Militia District 1744.

This project widens SR 211 from the I-85 northbound ramp terminals through the intersection with CR 1274/Pinot Noir Dr. State Route 211 will be widened to four lanes (two lanes in each direction). In addition, a raised median, curb and gutter and sidewalk will be provided on the corridor. The project will provide intersection improvements consisting of two multi-lane roundabouts located at the intersection of the I-85 southbound ramp terminals and the intersection of the Tuscany Drive. Approximately 1,500-ft of the Braselton Parkway Extension will also be constructed with the project. The Braselton Pkwy extension will tie into the new SR 211 roundabout with Tuscany Drive.

The project includes roadway grade changes to the I-85 southbound exit ramps necessary to construct the new roundabout. The project will be constructed under traffic utilizing on-site temporary pavement. The anticipated construction time to complete the project is estimated at eighteen months.

Shannon Giles, Area Manager
District 1, Area 2
sgiles@dot.ga.gov
450 Old Hull Road,
Athens, GA 30601
706-583-2644

Any interested party may obtain a copy of the drawings or maps or plats or portions thereof by paying a nominal fee and requesting in writing to:

Kimberly Nesbitt
Office of Program Delivery
Attn: Oluchukwu Anyaebosi
oanyaebosi@dot.ga.gov
600 West Peachtree Street, 25th Floor
Atlanta, GA 30308
404-631-1540

Any written request or communication in reference to this project or notice SHOULD include the Project and P. I. Numbers as noted at the top of this notice.

Short Title

SR 211 WIDENING FROM FROM SR 124 IN GWINNETT COUNTY TO INTERSECTION WITH PROPOSED WINDER WEST BYPASS

GDOT Project No.

N/A

Federal ID No.

N/A

Status

Long Range

Service Type

Roadway / General Purpose Capacity

Sponsor

Barrow County

Jurisdiction

Barrow County

Analysis Level

In the Region's Air Quality Conformity Analysis

Existing Thru Lane

2

LCI

Planned Thru Lane

4

Flex

Network Year

2050

Corridor Length

7.2

 miles

Detailed Description and Justification

This project will add one general purpose lane in each direction along SR 211 between SR 124 in Gwinnett County and the proposed Winder West Bypass.

Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
ALL	Local Jurisdiction/Municipality Funds		LR 2041-2050	\$50,000,000	\$0,000	\$0,000	\$0,000	\$50,000,000
				\$50,000,000	\$0,000	\$0,000	\$0,000	\$50,000,000

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquisition
UTL: Utility relocation CST: Construction / Implementation ALL: Total estimated cost, inclusive of all phases

?

For additional information about this project, please call (404) 463-3100 or email transportation@atlantaregional.com.

Report Generated: 1/9/2023

ARC

Short Title

BRASELTON PARKWAY EXTENSION FROM SR 211 AT TOUR DE FRANCE TO JESSE CRONIC ROAD IN JACKSON COUNTY

GDOT Project No.

N/A

Federal ID No.

N/A

Status

Long Range

Service Type

Roadway / General Purpose Capacity

Sponsor

City of Braselton

Jurisdiction

Barrow County

Analysis Level

In the Region's Air Quality Conformity Analysis

Existing Thru Lane

0

LCI

☐

Planned Thru Lane

2

Flex

☐

Network Year

2030

Corridor Length

2.1 miles



Detailed Description and Justification

This project will extend Braselton Parkway westward to the intersection of SR 211 at Tour De France.

Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
ALL	Local Jurisdiction/Municipality Funds		LR 2029-2030	\$49,645,820	\$0,000	\$0,000	\$0,000	\$49,645,820
				\$49,645,820	\$0,000	\$0,000	\$0,000	\$49,645,820

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquisition
 UTL: Utility relocation CST: Construction / Implementation ALL: Total estimated cost, inclusive of all phases



For additional information about this project, please call (404) 463-3100 or email transportation@atlantaregional.com.



Short Title

SR 211 (OLD WINDER HIGHWAY) WIDENING - PHASE 2
FROM PINOT NOIR DRIVE TO SR 347

GDOT Project No.

0016089

Federal ID No.

N/A

Status

Programmed

Service Type

Roadway / General Purpose Capacity

Sponsor

City of Braselton

Jurisdiction

Barrow County,Gwinnett County

Analysis Level

In the Region's Air Quality Conformity Analysis

Existing Thru Lane

2

LCI

☐

Planned Thru Lane

4

Flex

☐

Network Year

2030

Corridor Length

1.6 miles

Detailed Description and Justification

This project will widen SR 211 from 2 to 4 lanes from Pinot Noir Drive to SR 347. This includes median work, new turn lanes, and signals where warranted as well as a widened bridge over I-85. The northern end of this project ties into the newly reconstructed SR 347/Friendship Road which serves the new Northeast Georgia Medical Center.



Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
PE	Transportation Funding Act (HB 170)	AUTH	2018	\$200,000	\$0,000	\$200,000	\$0,000	\$0,000
ROW	Transportation Funding Act (HB 170)		2024	\$17,104,176	\$0,000	\$17,104,176	\$0,000	\$0,000
UTL	Transportation Funding Act (HB 170)		2026	\$420,524	\$0,000	\$420,524	\$0,000	\$0,000
CST	Transportation Funding Act (HB 170)		2026	\$25,618,351	\$0,000	\$25,618,351	\$0,000	\$0,000
				\$43,343,051	\$0,000	\$43,343,051	\$0,000	\$0,000

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquisition
UTL: Utility relocation CST: Construction / Implementation ALL: Total estimated cost, inclusive of all phases

Short Title

SR 124 WIDENING FROM GWINNETT COUNTY LINE TO JACKSON COUNTY LINE

GDOT Project No.

0007833

Federal ID No.

N/A

Status

Long Range

Service Type

Roadway / General Purpose Capacity

Sponsor

GDOT

Jurisdiction

Barrow County

Analysis Level

In the Region's Air Quality Conformity Analysis

Existing Thru Lane

2

LCI

☐

Planned Thru Lane

4

Flex

☐

Network Year

2050

Corridor Length

2.3 miles



Detailed Description and Justification

This project will widen SR 124 in Barrow County from the Gwinnett County line to the Jackson County line.

Phase Status & Funding Information		Status	FISCAL YEAR	TOTAL PHASE COST	BREAKDOWN OF TOTAL PHASE COST BY FUNDING SOURCE			
					FEDERAL	STATE	BONDS	LOCAL/PRIVATE
ALL	Transportation Funding Act (HB 170)		LR 2041-2050	\$77,056,000	\$0,000	\$77,056,000	\$0,000	\$0,000
				\$77,056,000	\$0,000	\$77,056,000	\$0,000	\$0,000

SCP: Scoping PE: Preliminary engineering / engineering / design / planning PE-OV: GDOT oversight services for engineering ROW: Right-of-way Acquisition
 UTL: Utility relocation CST: Construction / Implementation ALL: Total estimated cost, inclusive of all phases



For additional information about this project, please call (404) 463-3100 or email transportation@atlantaregional.com.



Existing Intersection Analysis

Timings
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

1a. Existing AM
02/20/2024

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	160	47	317	36	58	534	405	30	400	346
Future Volume (vph)	160	47	317	36	58	534	405	30	400	346
Lane Group Flow (vph)	168	49	334	38	108	562	440	32	421	364
Turn Type	pm+pt	NA	Perm	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4			8	1	6	5	2	
Permitted Phases	4		4	8						2
Detector Phase	7	4	4	8	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	33.5	33.5	35.0	35.0	15.0	43.5	15.0	36.5	36.5
Total Split (s)	15.0	50.0	50.0	35.0	35.0	29.0	55.0	15.0	41.0	41.0
Total Split (%)	12.5%	41.7%	41.7%	29.2%	29.2%	24.2%	45.8%	12.5%	34.2%	34.2%
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	Lag
Lead-Lag Optimize?	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	0.70	0.13	0.55	0.31	0.59	0.79	0.39	0.28	0.53	0.40
Control Delay	47.8	31.4	8.9	55.9	49.4	58.0	16.0	59.2	29.5	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.8	31.4	8.9	55.9	49.4	58.0	16.0	59.2	29.5	4.1
Queue Length 50th (ft)	85	20	1	28	58	227	179	24	234	0
Queue Length 95th (ft)	173	40	95	62	114	292	221	56	387	63
Internal Link Dist (ft)		1136			834		1149		1213	
Turn Bay Length (ft)						400		250		450
Base Capacity (vph)	241	664	797	331	442	738	1119	142	794	899
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	0.70	0.07	0.42	0.11	0.24	0.76	0.39	0.23	0.53	0.40

Intersection Summary

Cycle Length: 120

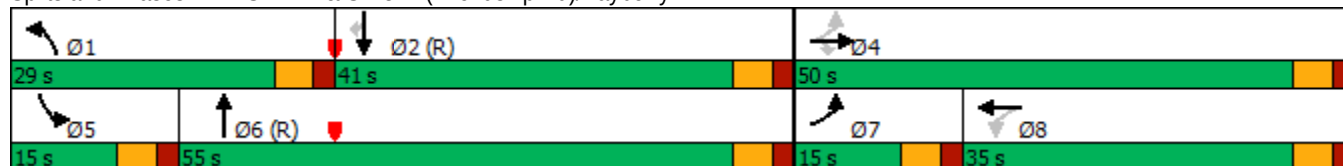
Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

Splits and Phases: 1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr



HCM 6th Signalized Intersection Summary
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

1a. Existing AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	47	317	36	58	45	534	405	13	30	400	346
Future Volume (veh/h)	160	47	317	36	58	45	534	405	13	30	400	346
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	1811	1870	1870	1811	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	168	49	0	38	61	47	562	426	0	32	421	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	6	2	2	6	2	2	5	2	2	5	2
Cap, veh/h	229	380		175	80	62	624	1142		49	862	
Arrive On Green	0.08	0.21	0.00	0.08	0.08	0.08	0.18	0.63	0.00	0.03	0.47	0.00
Sat Flow, veh/h	1781	1811	1585	1356	949	731	3456	1826	0	1781	1826	1585
Grp Volume(v), veh/h	168	49	0	38	0	108	562	426	0	32	421	0
Grp Sat Flow(s),veh/h/ln	1781	1811	1585	1356	0	1680	1728	1826	0	1781	1826	1585
Q Serve(g_s), s	9.5	2.6	0.0	3.2	0.0	7.5	19.1	13.7	0.0	2.1	19.0	0.0
Cycle Q Clear(g_c), s	9.5	2.6	0.0	3.2	0.0	7.5	19.1	13.7	0.0	2.1	19.0	0.0
Prop In Lane	1.00		1.00	1.00		0.44	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	229	380		175	0	143	624	1142		49	862	
V/C Ratio(X)	0.73	0.13		0.22	0.00	0.76	0.90	0.37		0.66	0.49	
Avail Cap(c_a), veh/h	229	672		393	0	413	677	1142		141	862	
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	0.00	1.00	0.58	0.58	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.6	38.5	0.0	51.7	0.0	53.7	48.1	11.0	0.0	57.8	21.7	0.0
Incr Delay (d2), s/veh	11.4	0.2	0.0	0.6	0.0	8.0	9.3	0.5	0.0	14.0	2.0	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	5.1	1.2	0.0	1.1	0.0	3.5	8.7	5.0	0.0	1.1	8.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.0	38.7	0.0	52.3	0.0	61.7	57.4	11.5	0.0	71.9	23.7	0.0
LnGrp LOS	E	D		D	A	E	E	B		E	C	
Approach Vol, veh/h	217			146			988			453		
Approach Delay, s/veh	52.9			59.2			37.6			27.1		
Approach LOS	D			E			D			C		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	27.2	62.2		30.7	8.8	80.5	15.0	15.7				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	23.5	35.5		44.5	9.5	49.5	9.5	29.5				
Max Q Clear Time (g_c+I1), s	21.1	21.0		4.6	4.1	15.7	11.5	9.5				
Green Ext Time (p_c), s	0.6	3.6		0.2	0.0	5.1	0.0	0.7				

Intersection Summary

HCM 6th Ctrl Delay 38.6

HCM 6th LOS D

Notes

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

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

Timings 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

1a. Existing AM
02/20/2024

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	54	12	144	24	128	899	60	12	741	33
Future Volume (vph)	54	12	144	24	128	899	60	12	741	33
Lane Group Flow (vph)	58	174	155	50	138	967	65	13	797	35
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4	3	8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	3	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	31.5	31.5	15.0	33.5	15.0	37.5	37.5	35.5	35.5	35.5
Total Split (s)	32.0	32.0	15.0	47.0	15.0	73.0	73.0	58.0	58.0	58.0
Total Split (%)	26.7%	26.7%	12.5%	39.2%	12.5%	60.8%	60.8%	48.3%	48.3%	48.3%
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	Lag	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.49	0.61	0.77	0.13	0.42	0.77	0.06	0.06	0.78	0.04
Control Delay	65.1	18.9	65.4	23.0	16.6	23.9	6.2	12.8	22.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.1	18.9	65.4	23.0	16.6	23.9	6.2	12.8	22.8	0.1
Queue Length 50th (ft)	44	9	104	16	43	370	6	4	257	0
Queue Length 95th (ft)	85	77	#179	48	m77	m609	m16	m8	#831	m0
Internal Link Dist (ft)		1758		625		1415			1149	
Turn Bay Length (ft)	95				130		200	300		
Base Capacity (vph)	297	478	202	613	341	1259	1123	224	1019	945
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	0.20	0.36	0.77	0.08	0.40	0.77	0.06	0.06	0.78	0.04

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: 120

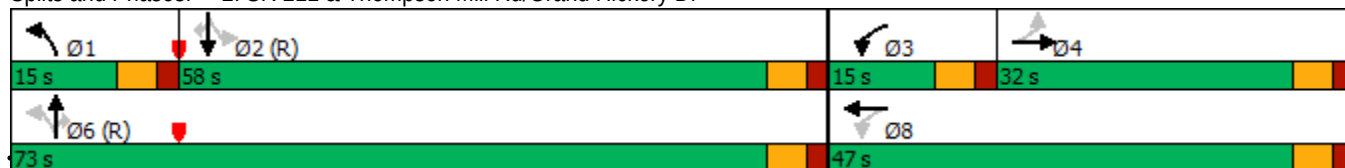
Control Type: Actuated-Coordinated

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: 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr



HCM 6th Signalized Intersection Summary

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

1a. Existing AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	12	150	144	24	22	128	899	60	12	741	33
Future Volume (veh/h)	54	12	150	144	24	22	128	899	60	12	741	33
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	1811	1870	1870	1870	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	58	13	161	155	26	24	138	967	65	13	797	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	240	15	191	229	231	213	526	1188	1031	201	1015	
Arrive On Green	0.13	0.13	0.13	0.08	0.26	0.26	0.05	0.65	0.65	1.00	1.00	0.00
Sat Flow, veh/h	1355	116	1437	1781	895	826	1781	1826	1585	547	1826	1585
Grp Volume(v), veh/h	58	0	174	155	0	50	138	967	65	13	797	0
Grp Sat Flow(s),veh/h/ln	1355	0	1553	1781	0	1722	1781	1826	1585	547	1826	1585
Q Serve(g_s), s	4.7	0.0	13.1	8.8	0.0	2.7	3.8	47.2	1.8	1.6	0.0	0.0
Cycle Q Clear(g_c), s	4.7	0.0	13.1	8.8	0.0	2.7	3.8	47.2	1.8	37.5	0.0	0.0
Prop In Lane	1.00		0.93	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	240	0	206	229	0	444	526	1188	1031	201	1015	
V/C Ratio(X)	0.24	0.00	0.84	0.68	0.00	0.11	0.26	0.81	0.06	0.06	0.79	
Avail Cap(c_a), veh/h	359	0	343	229	0	595	580	1188	1031	201	1015	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.83	0.83	0.00
Uniform Delay (d), s/veh	47.1	0.0	50.8	40.2	0.0	34.0	9.3	15.6	7.6	10.1	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	9.5	7.7	0.0	0.1	0.3	6.2	0.1	0.5	5.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	5.5	4.4	0.0	1.1	1.4	18.2	0.6	0.2	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.7	0.0	60.3	47.9	0.0	34.2	9.6	21.7	7.8	10.6	5.1	0.0
LnGrp LOS	D	A	E	D	A	C	A	C	A	B	A	
Approach Vol, veh/h	232			205			1170			810		
Approach Delay, s/veh	57.2			44.5			19.5			5.2		
Approach LOS	E			D			B			A		
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	11.4	72.2	15.0	21.4		83.6		36.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	52.5	9.5	26.5		67.5		41.5				
Max Q Clear Time (g_c+I1), s	5.8	39.5	10.8	15.1		49.2		4.7				
Green Ext Time (p_c), s	0.1	7.2	0.0	0.8		11.5		0.3				

Intersection Summary

HCM 6th Ctrl Delay	20.5
HCM 6th LOS	C

Notes

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

Timings 3: SR 211 & Golf Club Dr/Liberty Church Rd

1a. Existing AM
02/20/2024

	→	↘	↙	←	↖	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	12	134	221	6	22	727	80	234	732	15
Future Volume (vph)	12	134	221	6	22	727	80	234	732	15
Lane Group Flow (vph)	20	141	233	366	23	765	84	246	771	16
Turn Type	NA	Perm	Split	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	8	1	6		5	2	
Permitted Phases		4			6		6	2		2
Detector Phase	4	4	8	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	32.5	32.5	35.5	35.5	15.0	37.5	37.5	15.0	36.5	36.5
Total Split (s)	32.0	32.0	36.0	36.0	15.0	37.0	37.0	15.0	37.0	37.0
Total Split (%)	26.7%	26.7%	30.0%	30.0%	12.5%	30.8%	30.8%	12.5%	30.8%	30.8%
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	Lag
Lead-Lag Optimize?					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	0.17	0.60	0.73	0.63	0.09	1.11	0.12	0.62	0.77	0.02
Control Delay	54.8	19.5	59.2	9.5	14.7	101.8	6.1	28.9	40.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	19.5	59.2	9.5	14.7	101.8	6.1	28.9	40.7	0.0
Queue Length 50th (ft)	15	0	172	4	5	~503	7	141	564	0
Queue Length 95th (ft)	39	61	241	83	m16	#1071	m28	m212	#917	m0
Internal Link Dist (ft)	238			965		1320			1505	
Turn Bay Length (ft)			145		95		295	165		230
Base Capacity (vph)	404	459	449	671	305	689	679	398	1006	935
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	0.05	0.31	0.52	0.55	0.08	1.11	0.12	0.62	0.77	0.02

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: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

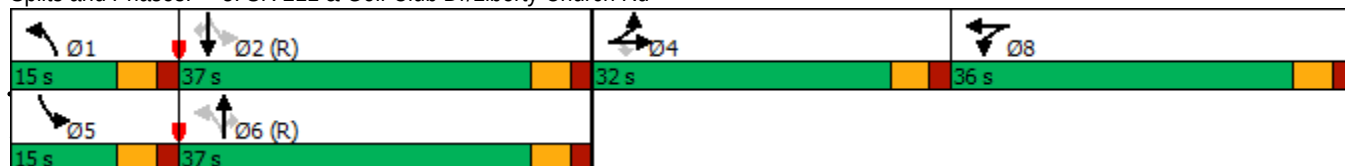
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

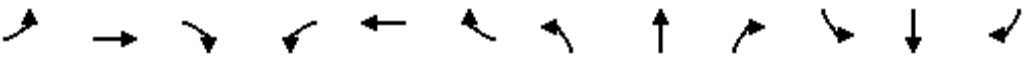
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: SR 211 & Golf Club Dr/Liberty Church Rd



HCM 6th Signalized Intersection Summary 3: SR 211 & Golf Club Dr/Liberty Church Rd

1a. Existing AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱	↰	↱		↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	7	12	134	221	6	342	22	727	80	234	732	15
Future Volume (veh/h)	7	12	134	221	6	342	22	727	80	234	732	15
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	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	7	13	0	233	6	360	23	765	0	246	771	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	16	29		438	6	385	223	853		259	957	
Arrive On Green	0.02	0.02	0.00	0.25	0.25	0.25	0.02	0.47	0.00	0.08	0.52	0.00
Sat Flow, veh/h	643	1195	1585	1781	26	1563	1781	1826	1585	1781	1826	1585
Grp Volume(v), veh/h	20	0	0	233	0	366	23	765	0	246	771	0
Grp Sat Flow(s),veh/h/ln	1838	0	1585	1781	0	1589	1781	1826	1585	1781	1826	1585
Q Serve(g_s), s	1.3	0.0	0.0	13.6	0.0	27.1	0.8	46.1	0.0	8.5	41.8	0.0
Cycle Q Clear(g_c), s	1.3	0.0	0.0	13.6	0.0	27.1	0.8	46.1	0.0	8.5	41.8	0.0
Prop In Lane	0.35		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	45	0		438	0	391	223	853		259	957	
V/C Ratio(X)	0.45	0.00		0.53	0.00	0.94	0.10	0.90		0.95	0.81	
Avail Cap(c_a), veh/h	406	0		453	0	404	324	853		259	957	
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.7	0.0	0.0	39.2	0.0	44.3	21.1	29.3	0.0	26.4	23.5	0.0
Incr Delay (d2), s/veh	6.8	0.0	0.0	1.1	0.0	28.7	0.2	14.1	0.0	42.1	7.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.0	5.9	0.0	13.4	0.3	21.4	0.0	6.1	17.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.6	0.0	0.0	40.3	0.0	73.0	21.3	43.4	0.0	68.5	30.8	0.0
LnGrp LOS	E	A		D	A	E	C	D		E	C	
Approach Vol, veh/h	20			599			788			1017		
Approach Delay, s/veh	64.6			60.3			42.8			39.9		
Approach LOS	E			E			D			D		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	68.4		8.4	15.0	61.5		35.0				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	31.5		26.5	9.5	31.5		30.5				
Max Q Clear Time (g_c+I1), s	2.8	43.8		3.3	10.5	48.1		29.1				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.5				

Intersection Summary

HCM 6th Ctrl Delay 46.1

HCM 6th LOS D

Notes

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

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

Timings 4: SR 211 & I-85 SB Ramps

1a. Existing AM
02/20/2024

						
Lane Group	WBL	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	134	137	750	796	499	517
Future Volume (vph)	134	137	750	796	499	517
Lane Group Flow (vph)	140	143	781	829	520	539
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	3		1	6	2	
Permitted Phases		8	6			2
Detector Phase	3	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	5.0	15.0	15.0	15.0
Minimum Split (s)	27.5	27.5	15.0	28.5	28.5	28.5
Total Split (s)	45.0	45.0	32.0	75.0	43.0	43.0
Total Split (%)	37.5%	37.5%	26.7%	62.5%	35.8%	35.8%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.64	0.45	0.98	0.59	0.92	0.68
Control Delay	62.7	11.7	63.9	6.7	61.0	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	11.7	63.9	6.7	61.0	17.5
Queue Length 50th (ft)	105	0	473	131	426	150
Queue Length 95th (ft)	164	57	#902	295	#598	272
Internal Link Dist (ft)				1370	1662	
Turn Bay Length (ft)	450					230
Base Capacity (vph)	565	602	794	1414	565	797
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.24	0.98	0.59	0.92	0.68

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 4: SR 211 & I-85 SB Ramps



HCM 6th Signalized Intersection Summary

4: SR 211 & I-85 SB Ramps

1a. Existing AM

02/20/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↰	↰	↱			↱	↰
Traffic Volume (veh/h)	0	0	0	134	0	137	750	796	0	0	499	517
Future Volume (veh/h)	0	0	0	134	0	137	750	796	0	0	499	517
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1826	0	1826	1826	1826	0	0	1826	1826
Adj Flow Rate, veh/h				140	0	0	781	829	0	0	520	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				5	0	5	5	5	0	0	5	5
Cap, veh/h				170	0		756	1480	0	0	993	
Arrive On Green				0.10	0.00	0.00	0.22	0.81	0.00	0.00	0.54	0.00
Sat Flow, veh/h				1739	0	1547	1739	1826	0	0	1826	1547
Grp Volume(v), veh/h				140	0	0	781	829	0	0	520	0
Grp Sat Flow(s),veh/h/ln				1739	0	1547	1739	1826	0	0	1826	1547
Q Serve(g_s), s				9.5	0.0	0.0	26.5	18.9	0.0	0.0	21.8	0.0
Cycle Q Clear(g_c), s				9.5	0.0	0.0	26.5	18.9	0.0	0.0	21.8	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				170	0		756	1480	0	0	993	
V/C Ratio(X)				0.82	0.00		1.03	0.56	0.00	0.00	0.52	
Avail Cap(c_a), veh/h				572	0		756	1480	0	0	993	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.71	0.71	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				53.1	0.0	0.0	18.4	3.9	0.0	0.0	17.4	0.0
Incr Delay (d2), s/veh				9.6	0.0	0.0	36.5	1.1	0.0	0.0	2.0	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
%ile BackOfQ(50%),veh/ln				4.5	0.0	0.0	19.1	4.6	0.0	0.0	9.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				62.7	0.0	0.0	54.8	5.0	0.0	0.0	19.4	0.0
LnGrp LOS				E	A		F	A	A	A	B	
Approach Vol, veh/h					140			1610			520	
Approach Delay, s/veh					62.7			29.2			19.4	
Approach LOS					E			C			B	
Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	32.0	70.8				102.8		17.2				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	26.5	37.5				69.5		39.5				
Max Q Clear Time (g_c+I1), s	28.5	23.8				20.9		11.5				
Green Ext Time (p_c), s	0.0	4.5				15.1		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				29.0								
HCM 6th LOS				C								
Notes												
Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 5: SR 211 & I-85 NB Ramps

1a. Existing AM
02/20/2024

												
Lane Group	EBL	EBR	NBT	NBR	SBL	SBT						
Lane Configurations												
Traffic Volume (vph)	206	300	1340	229	124	509						
Future Volume (vph)	206	300	1340	229	124	509						
Lane Group Flow (vph)	210	306	1367	234	127	519						
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA						
Protected Phases	3		6		5	2						
Permitted Phases		8		6	2							
Detector Phase	3	8	6	6	5	2						
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0						
Minimum Split (s)	34.5	34.5	28.5	28.5	15.0	28.5						
Total Split (s)	48.0	48.0	43.0	43.0	29.0	72.0						
Total Split (%)	40.0%	40.0%	35.8%	35.8%	24.2%	60.0%						
Yellow Time (s)	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						
Lost Time Adjust (s)	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						
Lead/Lag			Lag	Lag	Lead							
Lead-Lag Optimize?			Yes	Yes	Yes							
Recall Mode	None	None	C-Min	C-Min	None	C-Min						
v/c Ratio	0.73	0.60	0.64	0.23	0.47	0.20						
Control Delay	61.2	9.6	17.2	7.1	23.0	13.4						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	61.2	9.6	17.2	7.1	23.0	13.4						
Queue Length 50th (ft)	156	0	320	38	67	144						
Queue Length 95th (ft)	225	75	508	98	m100	m171						
Internal Link Dist (ft)			1253			1370						
Turn Bay Length (ft)		480		160	275							
Base Capacity (vph)	608	742	2143	998	458	2544						
Starvation Cap Reductn	0	0	0	0	0	0						
Spillback Cap Reductn	0	0	0	0	0	0						
Storage Cap Reductn	0	0	0	0	0	0						
Reduced v/c Ratio	0.35	0.41	0.64	0.23	0.28	0.20						

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

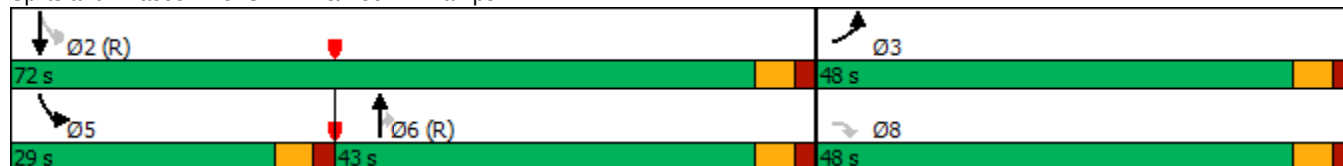
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Splits and Phases: 5: SR 211 & I-85 NB Ramps



HCM 6th Signalized Intersection Summary 5: SR 211 & I-85 NB Ramps

1a. Existing AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (veh/h)	206	0	300	0	0	0	0	1340	229	124	509	0
Future Volume (veh/h)	206	0	300	0	0	0	0	1340	229	124	509	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1826	1826	1826	1826	0
Adj Flow Rate, veh/h	210	0	0				0	1367	0	127	519	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	5	0	5				0	5	5	5	5	0
Cap, veh/h	242	0					0	2366		316	2668	0
Arrive On Green	0.14	0.00	0.00				0.00	0.68	0.00	0.08	1.00	0.00
Sat Flow, veh/h	1739	0	1547				0	3561	1547	1739	3561	0
Grp Volume(v), veh/h	210	0	0				0	1367	0	127	519	0
Grp Sat Flow(s),veh/h/ln	1739	0	1547				0	1735	1547	1739	1735	0
Q Serve(g_s), s	14.2	0.0	0.0				0.0	24.8	0.0	2.6	0.0	0.0
Cycle Q Clear(g_c), s	14.2	0.0	0.0				0.0	24.8	0.0	2.6	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	242	0					0	2366		316	2668	0
V/C Ratio(X)	0.87	0.00					0.00	0.58		0.40	0.19	0.00
Avail Cap(c_a), veh/h	616	0					0	2366		585	2668	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.39	0.39	0.00
Uniform Delay (d), s/veh	50.5	0.0	0.0				0.0	10.0	0.0	8.4	0.0	0.0
Incr Delay (d2), s/veh	9.0	0.0	0.0				0.0	1.0	0.0	0.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.0	0.0				0.0	8.3	0.0	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.6	0.0	0.0				0.0	11.0	0.0	8.7	0.1	0.0
LnGrp LOS	E	A					A	B		A	A	A
Approach Vol, veh/h	210						1367			646		
Approach Delay, s/veh	59.6						11.0			1.8		
Approach LOS	E						B			A		
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	97.8			10.4			87.3			22.2		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	66.5			23.5			37.5			42.5		
Max Q Clear Time (g_c+I1), s	2.0			4.6			26.8			16.2		
Green Ext Time (p_c), s	7.4			0.3			8.6			0.6		
Intersection Summary												
HCM 6th Ctrl Delay	12.9											
HCM 6th LOS	B											

Timings
6: SR 211 & SR 53

1a. Existing AM
02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↘	↘
Traffic Volume (vph)	415	452	153	804	467	38
Future Volume (vph)	415	452	153	804	467	38
Lane Group Flow (vph)	461	502	170	893	519	42
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	7	
Permitted Phases		6	2			7
Detector Phase	6	6	2	2	7	7
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	5.0
Minimum Split (s)	42.5	42.5	28.5	28.5	40.5	40.5
Total Split (s)	69.0	69.0	69.0	69.0	51.0	51.0
Total Split (%)	57.5%	57.5%	57.5%	57.5%	42.5%	42.5%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None
v/c Ratio	0.19	0.40	0.26	0.39	0.76	0.12
Control Delay	6.6	1.6	8.3	8.1	52.4	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	1.6	8.3	8.1	52.4	11.4
Queue Length 50th (ft)	56	0	42	130	197	0
Queue Length 95th (ft)	92	35	89	200	241	29
Internal Link Dist (ft)	1195			1463	749	
Turn Bay Length (ft)		180	190		260	
Base Capacity (vph)	2367	1267	642	2303	1301	626
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.40	0.26	0.39	0.40	0.07

Intersection Summary

Cycle Length: 120

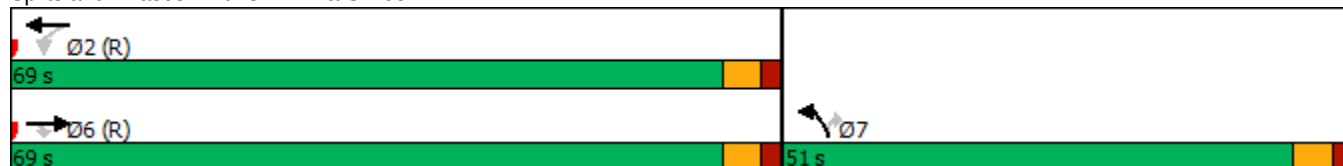
Actuated Cycle Length: 120

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

Natural Cycle: 85

Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 211 & SR 53



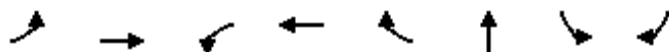
HCM 6th Signalized Intersection Summary
6: SR 211 & SR 53

1a. Existing AM
02/20/2024

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↖↗	↗
Traffic Volume (veh/h)	415	452	153	804	467	38
Future Volume (veh/h)	415	452	153	804	467	38
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1870	1870	1737	1870	1870
Adj Flow Rate, veh/h	461	502	170	893	519	42
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	8	2	2	11	2	2
Cap, veh/h	2471	1157	461	2409	616	283
Arrive On Green	0.73	0.73	0.73	0.73	0.18	0.18
Sat Flow, veh/h	3474	1585	583	3387	3456	1585
Grp Volume(v), veh/h	461	502	170	893	519	42
Grp Sat Flow(s),veh/h/ln	1692	1585	583	1650	1728	1585
Q Serve(g_s), s	5.1	15.0	15.4	12.0	17.4	2.7
Cycle Q Clear(g_c), s	5.1	15.0	20.5	12.0	17.4	2.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2471	1157	461	2409	616	283
V/C Ratio(X)	0.19	0.43	0.37	0.37	0.84	0.15
Avail Cap(c_a), veh/h	2471	1157	461	2409	1310	601
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	5.1	6.4	8.3	6.0	47.7	41.6
Incr Delay (d2), s/veh	0.2	1.2	2.3	0.4	3.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	21.6	1.9	3.5	7.5	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.2	7.6	10.5	6.4	50.9	41.9
LnGrp LOS	A	A	B	A	D	D
Approach Vol, veh/h	963			1063	561	
Approach Delay, s/veh	6.5			7.1	50.2	
Approach LOS	A			A	D	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		93.1		26.9		93.1
Change Period (Y+Rc), s		5.5		5.5		5.5
Max Green Setting (Gmax), s		63.5		45.5		63.5
Max Q Clear Time (g_c+l1), s		22.5		19.4		17.0
Green Ext Time (p_c), s		18.3		2.0		12.6
Intersection Summary						
HCM 6th Ctrl Delay			16.2			
HCM 6th LOS			B			

Timings
7: SR 347 (Friendship Rd) & NGMC Main Drwy

1a. Existing AM
02/20/2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBR
Lane Configurations								
Traffic Volume (vph)	139	613	1	709	135	0	37	36
Future Volume (vph)	139	613	1	709	135	0	37	36
Lane Group Flow (vph)	153	674	1	779	148	2	41	40
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	Perm
Protected Phases	1	6		2		8		
Permitted Phases	6		2		2		4	4
Detector Phase	1	6	2	2	2	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	46.5	46.5	46.5	54.5	56.5	56.5
Total Split (s)	17.0	63.0	46.0	46.0	46.0	57.0	57.0	57.0
Total Split (%)	14.2%	52.5%	38.3%	38.3%	38.3%	47.5%	47.5%	47.5%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead		Lag	Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.25	0.16	0.00	0.22	0.12	0.01	0.39	0.11
Control Delay	4.1	2.6	3.0	3.3	0.3	0.0	62.2	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.1	2.6	3.0	3.3	0.3	0.0	62.2	0.6
Queue Length 50th (ft)	21	24	0	34	0	0	31	0
Queue Length 95th (ft)	60	86	m0	39	m1	0	67	0
Internal Link Dist (ft)		1298		1964		114		
Turn Bay Length (ft)	1000		550		515		90	
Base Capacity (vph)	621	4212	519	3553	1190	789	605	839
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.16	0.00	0.22	0.12	0.00	0.07	0.05

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

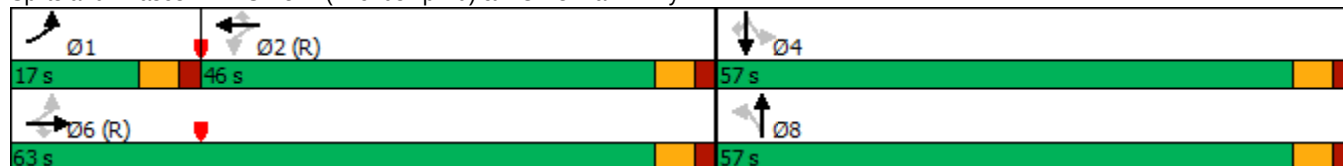
Offset: 48 (40%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

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

Splits and Phases: 7: SR 347 (Friendship Rd) & NGMC Main Drwy



HCM 6th Signalized Intersection Summary

7: SR 347 (Friendship Rd) & NGMC Main Drwy

1a. Existing AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	139	613	0	1	709	135	0	0	2	37	0	36
Future Volume (veh/h)	139	613	0	1	709	135	0	0	2	37	0	36
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	153	674	0	1	779	0	0	0	2	41	0	40
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	641	4259	1365	652	3828		0	0	74	125	88	74
Arrive On Green	0.08	1.00	0.00	0.77	0.77	0.00	0.00	0.00	0.05	0.05	0.00	0.05
Sat Flow, veh/h	1781	4944	1585	764	4944	1585	0	0	1585	1415	1870	1585
Grp Volume(v), veh/h	153	674	0	1	779	0	0	0	2	41	0	40
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	764	1648	1585	0	0	1585	1415	1870	1585
Q Serve(g_s), s	2.0	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.1	3.4	0.0	3.0
Cycle Q Clear(g_c), s	2.0	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.1	3.6	0.0	3.0
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	641	4259	1365	652	3828		0	0	74	125	88	74
V/C Ratio(X)	0.24	0.16	0.00	0.00	0.20		0.00	0.00	0.03	0.33	0.00	0.54
Avail Cap(c_a), veh/h	738	4259	1365	652	3828		0	0	680	666	803	680
HCM Platoon Ratio	2.00	2.00	2.00	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	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.0	0.0	0.0	3.1	3.6	0.0	0.0	0.0	54.6	56.3	0.0	55.9
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	1.5	0.0	5.9
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	0.4	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.1	1.3	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.2	0.1	0.0	3.1	3.8	0.0	0.0	0.0	54.7	57.8	0.0	61.9
LnGrp LOS	A	A	A	A	A		A	A	D	E	A	E
Approach Vol, veh/h	827				780				2			
Approach Delay, s/veh	0.5				3.7				54.7			
Approach LOS	A				A				D			
Timer - Assigned Phs												
	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.5	98.4		11.1		108.9		11.1				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	11.5	40.5		51.5		57.5		51.5				
Max Q Clear Time (g_c+l1), s	4.0	7.1		5.6		2.0		2.1				
Green Ext Time (p_c), s	0.2	10.7		0.2		10.1		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	4.9											
HCM 6th LOS	A											
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	110	746	651	94	6	11
Future Vol, veh/h	110	746	651	94	6	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	575	-	-	720	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	120	811	708	102	7	12
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	810	0	-	0	1272	354
Stage 1	-	-	-	-	708	-
Stage 2	-	-	-	-	564	-
Critical Hdwy	5.34	-	-	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	3.12	-	-	-	3.82	3.92
Pot Cap-1 Maneuver	483	-	-	-	226	548
Stage 1	-	-	-	-	363	-
Stage 2	-	-	-	-	486	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	483	-	-	-	170	548
Mov Cap-2 Maneuver	-	-	-	-	170	-
Stage 1	-	-	-	-	273	-
Stage 2	-	-	-	-	486	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.9	0		17.1		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	483	-	-	-	170	548
HCM Lane V/C Ratio	0.248	-	-	-	0.038	0.022
HCM Control Delay (s)	14.9	-	-	-	27	11.7
HCM Lane LOS	B	-	-	-	D	B
HCM 95th %tile O(veh)	1	-	-	-	0.1	0.1

Timings
9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

1a. Existing AM
02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	18	820	133	2	647	13	120	4	23	11	36
Future Volume (vph)	18	820	133	2	647	13	120	4	23	11	36
Lane Group Flow (vph)	19	882	143	2	696	14	129	18	25	12	39
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	3	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	15.0	43.5	43.5	15.0	47.5	50.5	50.5	50.5
Total Split (s)	15.0	51.0	51.0	15.0	51.0	51.0	24.0	54.0	30.0	30.0	30.0
Total Split (%)	12.5%	42.5%	42.5%	12.5%	42.5%	42.5%	20.0%	45.0%	25.0%	25.0%	25.0%
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	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.04	0.26	0.13	0.00	0.21	0.01	0.49	0.05	0.28	0.10	0.18
Control Delay	7.4	8.2	2.3	3.5	10.8	1.5	45.5	18.6	60.3	53.4	1.8
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	7.4	8.2	2.3	3.5	10.8	1.5	45.5	18.6	60.3	53.4	1.8
Queue Length 50th (ft)	4	75	3	1	142	0	83	2	19	9	0
Queue Length 95th (ft)	m10	114	m15	m2	201	6	132	m20	47	29	0
Internal Link Dist (ft)		1122			884			413		385	
Turn Bay Length (ft)	405		300	575		550	100		95		100
Base Capacity (vph)	558	3371	1135	486	3263	1096	320	673	283	380	421
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	0.26	0.13	0.00	0.21	0.01	0.40	0.03	0.09	0.03	0.09

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

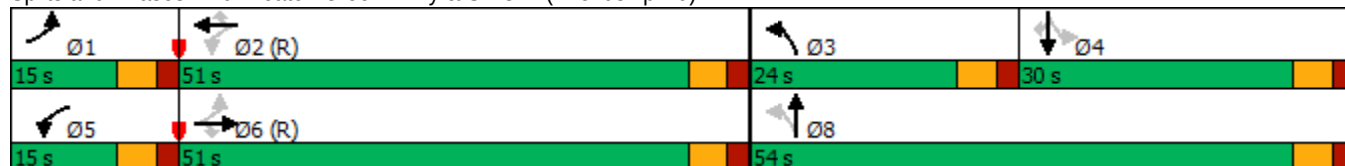
Offset: 86 (72%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

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

Splits and Phases: 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

1a. Existing AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	18	820	133	2	647	13	120	4	13	23	11	36
Future Volume (veh/h)	18	820	133	2	647	13	120	4	13	23	11	36
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	19	882	143	2	696	14	129	4	14	25	12	39
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	523	3375	1082	402	3291	1055	265	65	226	127	89	76
Arrive On Green	0.02	0.68	0.68	0.00	0.45	0.45	0.08	0.18	0.18	0.05	0.05	0.05
Sat Flow, veh/h	1781	4944	1585	1781	4944	1585	1781	365	1276	1395	1870	1585
Grp Volume(v), veh/h	19	882	143	2	696	14	129	0	18	25	12	39
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	1781	1648	1585	1781	0	1641	1395	1870	1585
Q Serve(g_s), s	0.4	8.3	3.8	0.0	10.3	0.6	8.0	0.0	1.1	2.1	0.7	2.9
Cycle Q Clear(g_c), s	0.4	8.3	3.8	0.0	10.3	0.6	8.0	0.0	1.1	2.1	0.7	2.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.78	1.00		1.00
Lane Grp Cap(c), veh/h	523	3375	1082	402	3291	1055	265	0	291	127	89	76
V/C Ratio(X)	0.04	0.26	0.13	0.00	0.21	0.01	0.49	0.00	0.06	0.20	0.13	0.51
Avail Cap(c_a), veh/h	629	3375	1082	539	3291	1055	391	0	663	345	382	324
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.5	7.4	6.6	6.8	14.0	11.3	47.0	0.0	41.1	55.4	54.7	55.8
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.0	0.1	0.0	1.4	0.0	0.1	0.8	0.7	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.6	1.2	0.0	3.9	0.2	3.7	0.0	0.5	0.8	0.4	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.5	7.5	6.9	6.8	14.1	11.3	48.4	0.0	41.2	56.1	55.4	61.1
LnGrp LOS	A	A	A	A	B	B	D	A	D	E	E	E
Approach Vol, veh/h		1044			712			147			76	
Approach Delay, s/veh		7.4			14.0			47.5			58.6	
Approach LOS		A			B			D			E	
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	7.8	85.4	15.5	11.2	5.8	87.4		26.8				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	45.5	18.5	24.5	9.5	45.5		48.5				
Max Q Clear Time (g_c+I1), s	2.4	12.3	10.0	4.9	2.0	10.3		3.1				
Green Ext Time (p_c), s	0.0	9.5	0.2	0.2	0.0	14.1		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			14.8									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

Timings
10: Spout Springs Rd & SR 347 (Friendship Rd)

1a. Existing AM
02/20/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	572	140	239	574	133	203	341	192	186	315	144
Future Volume (vph)	186	572	140	239	574	133	203	341	192	186	315	144
Lane Group Flow (vph)	200	615	151	257	617	143	218	367	206	200	339	155
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	15.0	35.5	35.5	15.0	33.5	33.5	15.0	42.5	42.5	15.0	40.5	40.5
Total Split (s)	19.0	36.0	36.0	24.0	41.0	41.0	19.0	43.0	43.0	17.0	41.0	41.0
Total Split (%)	15.8%	30.0%	30.0%	20.0%	34.2%	34.2%	15.8%	35.8%	35.8%	14.2%	34.2%	34.2%
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	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	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.50	0.51	0.23	0.61	0.48	0.21	0.75	0.81	0.40	0.76	0.79	0.33
Control Delay	21.8	34.5	6.3	35.7	24.9	8.0	36.7	52.4	15.0	44.2	56.9	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	34.5	6.3	35.7	24.9	8.0	36.7	52.4	15.0	44.2	56.9	10.2
Queue Length 50th (ft)	81	199	0	71	97	1	123	267	44	105	248	14
Queue Length 95th (ft)	146	295	52	251	233	49	161	367	134	146	328	63
Internal Link Dist (ft)		4090			4101			920			702	
Turn Bay Length (ft)	575		190	260		210	140		150	125		145
Base Capacity (vph)	424	1207	658	470	1275	682	298	582	612	267	551	561
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.51	0.23	0.55	0.48	0.21	0.73	0.63	0.34	0.75	0.62	0.28

Intersection Summary

Cycle Length: 120

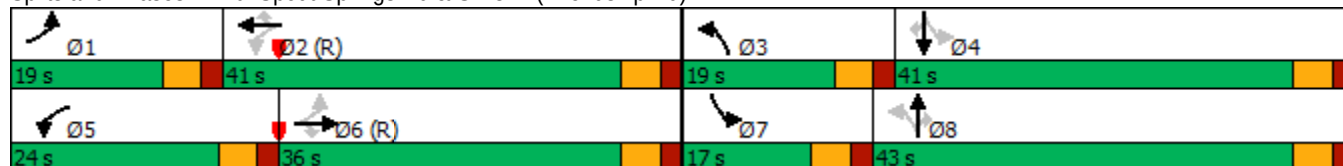
Actuated Cycle Length: 120

Offset: 72 (60%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Splits and Phases: 10: Spout Springs Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

10: Spout Springs Rd & SR 347 (Friendship Rd)

1a. Existing AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	572	140	239	574	133	203	341	192	186	315	144
Future Volume (veh/h)	186	572	140	239	574	133	203	341	192	186	315	144
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	200	615	151	257	617	0	218	367	0	200	339	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	442	1362	627	431	1432		289	413		262	383	
Arrive On Green	0.08	0.40	0.40	0.10	0.42	0.00	0.11	0.22	0.00	0.10	0.20	0.00
Sat Flow, veh/h	1781	3441	1585	1781	3441	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	200	615	151	257	617	0	218	367	0	200	339	0
Grp Sat Flow(s),veh/h/ln	1781	1721	1585	1781	1721	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.9	15.8	7.6	10.1	15.3	0.0	11.4	22.8	0.0	10.6	21.1	0.0
Cycle Q Clear(g_c), s	7.9	15.8	7.6	10.1	15.3	0.0	11.4	22.8	0.0	10.6	21.1	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	442	1362	627	431	1432		289	413		262	383	
V/C Ratio(X)	0.45	0.45	0.24	0.60	0.43		0.75	0.89		0.76	0.89	
Avail Cap(c_a), veh/h	493	1362	627	520	1432		290	584		262	553	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.2	26.7	24.2	19.2	24.9	0.0	34.2	45.3	0.0	35.3	46.3	0.0
Incr Delay (d2), s/veh	0.7	1.1	0.9	1.3	0.9	0.0	10.6	11.7	0.0	12.5	11.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	6.4	3.0	4.1	6.2	0.0	5.7	11.7	0.0	5.4	10.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	27.7	25.1	20.5	25.9	0.0	44.8	57.0	0.0	47.8	57.9	0.0
LnGrp LOS	B	C	C	C	C		D	E		D	E	
Approach Vol, veh/h	966				874			585			539	
Approach Delay, s/veh	25.7				24.3			52.5			54.2	
Approach LOS	C				C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.6	55.4	18.9	30.1	18.0	53.0	17.0	32.0				
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	13.5	35.5	13.5	35.5	18.5	30.5	11.5	37.5				
Max Q Clear Time (g_c+I1), s	9.9	17.3	13.4	23.1	12.1	17.8	12.6	24.8				
Green Ext Time (p_c), s	0.2	6.3	0.0	1.4	0.4	5.9	0.0	1.6				

Intersection Summary

HCM 6th Ctrl Delay 35.8

HCM 6th LOS D

Notes

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

Intersection						
Int Delay, s/veh	6.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Vol, veh/h	609	81	115	794	83	112
Future Vol, veh/h	609	81	115	794	83	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	385	-	0	80
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	684	91	129	892	93	126
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	775	0	1388	342
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	704	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	837	-	134	654
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	452	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	837	-	113	654
Mov Cap-2 Maneuver	-	-	-	-	113	-
Stage 1	-	-	-	-	462	-
Stage 2	-	-	-	-	382	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.3		55	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	113	654	-	-	837	-
HCM Lane V/C Ratio	0.825	0.192	-	-	0.154	-
HCM Control Delay (s)	113.2	11.8	-	-	10.1	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	4.8	0.7	-	-	0.5	-

Intersection	
Intersection Delay, s/veh	15.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	100	80	107	145	6	77	117	71	8	213	31
Future Vol, veh/h	30	100	80	107	145	6	77	117	71	8	213	31
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	115	92	123	167	7	89	134	82	9	245	36
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14	16.6	16.1	15.7
HCM LOS	B	C	C	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	14%	41%	3%
Vol Thru, %	44%	48%	56%	85%
Vol Right, %	27%	38%	2%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	210	258	252
LT Vol	77	30	107	8
Through Vol	117	100	145	213
RT Vol	71	80	6	31
Lane Flow Rate	305	241	297	290
Geometry Grp	1	1	1	1
Degree of Util (X)	0.527	0.424	0.53	0.506
Departure Headway (Hd)	6.226	6.321	6.437	6.291
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	579	567	558	571
Service Time	4.285	4.386	4.499	4.352
HCM Lane V/C Ratio	0.527	0.425	0.532	0.508
HCM Control Delay	16.1	14	16.6	15.7
HCM Lane LOS	C	B	C	C
HCM 95th-tile Q	3.1	2.1	3.1	2.8

Timings 13: Spout Springs Rd & Thompson Mill Rd

1a. Existing AM
02/20/2024

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	101	34	32	30	142	713	41	19	402	91
Future Volume (vph)	101	34	32	30	142	713	41	19	402	91
Lane Group Flow (vph)	110	101	35	60	154	775	45	21	437	99
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	31.5	15.0	30.5	15.0	35.5	35.5	15.0	34.5	34.5
Total Split (s)	15.0	32.0	15.0	32.0	15.0	58.0	58.0	15.0	58.0	58.0
Total Split (%)	12.5%	26.7%	12.5%	26.7%	12.5%	48.3%	48.3%	12.5%	48.3%	48.3%
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	0.54	0.44	0.19	0.41	0.24	0.60	0.04	0.05	0.38	0.10
Control Delay	52.0	28.1	40.8	40.5	6.6	14.8	0.1	3.8	11.4	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.0	28.1	40.8	40.5	6.6	14.8	0.1	3.8	11.4	2.4
Queue Length 50th (ft)	74	27	23	25	33	256	0	2	219	11
Queue Length 95th (ft)	122	82	49	66	64	580	0	m3	267	m28
Internal Link Dist (ft)		1809		565		751			337	
Turn Bay Length (ft)	155		223		228		112	100		110
Base Capacity (vph)	208	416	219	396	635	1293	1137	445	1137	1014
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	0.24	0.16	0.15	0.24	0.60	0.04	0.05	0.38	0.10

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 66 (55%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

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

Splits and Phases: 13: Spout Springs Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary 13: Spout Springs Rd & Thompson Mill Rd

1a. Existing AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	34	59	32	30	25	142	713	41	19	402	91
Future Volume (veh/h)	101	34	59	32	30	25	142	713	41	19	402	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	110	37	64	35	33	27	154	775	45	21	437	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	212	57	99	158	49	40	609	1254	1063	389	1206	1022
Arrive On Green	0.07	0.10	0.10	0.03	0.05	0.05	0.05	0.67	0.67	0.02	0.65	0.65
Sat Flow, veh/h	1781	596	1030	1781	921	754	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	110	0	101	35	0	60	154	775	45	21	437	99
Grp Sat Flow(s),veh/h/ln	1781	0	1626	1781	0	1675	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.8	0.0	7.2	2.2	0.0	4.2	3.5	28.0	1.2	0.5	13.0	2.8
Cycle Q Clear(g_c), s	6.8	0.0	7.2	2.2	0.0	4.2	3.5	28.0	1.2	0.5	13.0	2.8
Prop In Lane	1.00		0.63	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	212	0	157	158	0	89	609	1254	1063	389	1206	1022
V/C Ratio(X)	0.52	0.00	0.65	0.22	0.00	0.67	0.25	0.62	0.04	0.05	0.36	0.10
Avail Cap(c_a), veh/h	226	0	359	248	0	370	667	1254	1063	493	1206	1022
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.6	0.0	52.2	51.6	0.0	55.8	7.1	11.1	6.7	9.4	9.9	8.1
Incr Delay (d2), s/veh	2.0	0.0	4.4	0.7	0.0	8.4	0.2	2.3	0.1	0.1	0.8	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	3.1	0.0	3.0	1.0	0.0	1.9	1.2	10.9	0.4	0.2	5.1	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.6	0.0	56.6	52.3	0.0	64.1	7.3	13.4	6.8	9.5	10.7	8.3
LnGrp LOS	D	A	E	D	A	E	A	B	A	A	B	A
Approach Vol, veh/h	211			95			974			557		
Approach Delay, s/veh	52.9			59.8			12.1			10.2		
Approach LOS	D			E			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.1	82.9	8.9	17.1	8.0	86.0	14.1	11.9				
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	52.5	9.5	26.5	9.5	52.5	9.5	26.5				
Max Q Clear Time (g_c+I1), s	5.5	15.0	4.2	9.2	2.5	30.0	8.8	6.2				
Green Ext Time (p_c), s	0.1	6.6	0.0	0.4	0.0	10.4	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay	18.7											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	4.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	4	3	4	168	172	2
Future Vol, veh/h	4	3	4	168	172	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	255	-	-	210	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	5	3	5	195	200	2
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	5	0	-	0	18	5
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	13	-
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	1616	-	-	-	1000	1078
Stage 1	-	-	-	-	1018	-
Stage 2	-	-	-	-	1010	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1616	-	-	-	997	1078
Mov Cap-2 Maneuver	-	-	-	-	997	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1010	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.1	0		9.5		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1616	-	-	-	997	1078
HCM Lane V/C Ratio	0.003	-	-	-	0.201	0.002
HCM Control Delay (s)	7.2	-	-	-	9.5	8.3
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile O(veh)	0	-	-	-	0.7	0

Intersection						
Int Delay, s/veh	4.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	86	90	66	74	96	53
Future Vol, veh/h	86	90	66	74	96	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	225	400	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	95	99	73	81	105	58
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	194	0	322	95
Stage 1	-	-	-	-	95	-
Stage 2	-	-	-	-	227	-
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	-	-	1379	-	672	962
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	811	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1379	-	636	962
Mov Cap-2 Maneuver	-	-	-	-	636	-
Stage 1	-	-	-	-	929	-
Stage 2	-	-	-	-	768	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.7		10.8	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	636	962	-	-	1379	-
HCM Lane V/C Ratio	0.166	0.061	-	-	0.053	-
HCM Control Delay (s)	11.8	9	-	-	7.8	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile O(veh)	0.6	0.2	-	-	0.2	-

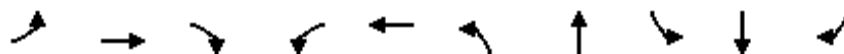
Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	
Traffic Vol, veh/h	142	16	8	99	23	19
Future Vol, veh/h	142	16	8	99	23	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	177	215	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	153	17	9	106	25	20
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	170	0	277	153
Stage 1	-	-	-	-	153	-
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	-	-	1407	-	713	893
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1407	-	709	893
Mov Cap-2 Maneuver	-	-	-	-	709	-
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	897	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.6		9.9	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	782	-	-	1407	-	
HCM Lane V/C Ratio	0.058	-	-	0.006	-	
HCM Control Delay (s)	9.9	-	-	7.6	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.2	-	-	0	-	

Timings

1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

1b. Existing PM

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	←	→	→	←	→	←	→	←	→	→
Traffic Volume (vph)	404	167	612	69	58	253	608	29	483	170
Future Volume (vph)	404	167	612	69	58	253	608	29	483	170
Lane Group Flow (vph)	421	174	638	72	80	264	665	30	503	177
Turn Type	pm+pt	NA	Perm	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4			8	1	6	5	2	
Permitted Phases	4		4	8						2
Detector Phase	7	4	4	8	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	33.5	33.5	34.5	34.5	15.0	43.5	15.0	36.5	36.5
Total Split (s)	27.0	54.0	54.0	27.0	27.0	17.0	51.0	15.0	49.0	49.0
Total Split (%)	22.5%	45.0%	45.0%	22.5%	22.5%	14.2%	42.5%	12.5%	40.8%	40.8%
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	Lag
Lead-Lag Optimize?	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	0.91	0.29	0.84	0.54	0.39	0.69	0.74	0.27	0.67	0.23
Control Delay	57.4	25.2	26.2	63.5	45.7	61.2	32.6	59.3	35.4	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.4	25.2	26.2	63.5	45.7	61.2	32.6	59.3	35.4	4.5
Queue Length 50th (ft)	323	115	312	54	50	101	419	23	314	0
Queue Length 95th (ft)	#427	132	427	96	93	#170	#752	54	479	47
Internal Link Dist (ft)		1136			834		1149		1213	
Turn Bay Length (ft)						400		250		450
Base Capacity (vph)	463	724	842	215	321	386	904	140	750	759
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	0.91	0.24	0.76	0.33	0.25	0.68	0.74	0.21	0.67	0.23

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

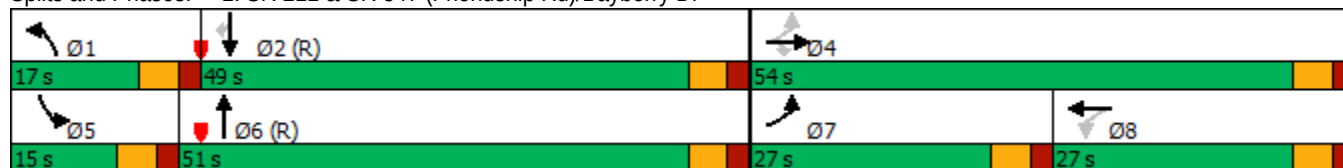
Natural Cycle: 110

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr



HCM 6th Signalized Intersection Summary
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

1b. Existing PM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	404	167	612	69	58	19	253	608	31	29	483	170
Future Volume (veh/h)	404	167	612	69	58	19	253	608	31	29	483	170
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	1811	1870	1870	1811	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	421	174	0	72	60	20	264	633	0	30	503	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	6	2	2	6	2	2	5	2	2	5	2
Cap, veh/h	424	550		156	103	34	318	972		47	852	
Arrive On Green	0.18	0.30	0.00	0.08	0.08	0.08	0.09	0.53	0.00	0.03	0.47	0.00
Sat Flow, veh/h	1781	1811	1585	1211	1300	433	3456	1826	0	1781	1826	1585
Grp Volume(v), veh/h	421	174	0	72	0	80	264	633	0	30	503	0
Grp Sat Flow(s),veh/h/ln	1781	1811	1585	1211	0	1733	1728	1826	0	1781	1826	1585
Q Serve(g_s), s	21.5	8.9	0.0	7.0	0.0	5.3	9.0	29.8	0.0	2.0	24.3	0.0
Cycle Q Clear(g_c), s	21.5	8.9	0.0	7.0	0.0	5.3	9.0	29.8	0.0	2.0	24.3	0.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	424	550		156	0	137	318	972		47	852	
V/C Ratio(X)	0.99	0.32		0.46	0.00	0.58	0.83	0.65		0.64	0.59	
Avail Cap(c_a), veh/h	424	732		277	0	311	331	972		141	852	
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	0.00	1.00	0.78	0.78	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.9	32.2	0.0	54.1	0.0	53.4	53.5	20.1	0.0	57.9	23.6	0.0
Incr Delay (d2), s/veh	41.4	0.3	0.0	2.1	0.0	3.9	12.5	2.7	0.0	13.6	3.0	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	6.8	3.8	0.0	2.2	0.0	2.5	4.3	12.2	0.0	1.1	10.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.3	32.5	0.0	56.3	0.0	57.3	66.1	22.8	0.0	71.4	26.6	0.0
LnGrp LOS	F	C		E	A	E	E	C		E	C	
Approach Vol, veh/h		595			152			897			533	
Approach Delay, s/veh		69.2			56.8			35.5			29.1	
Approach LOS		E			E			D			C	
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.6	61.5		42.0	8.7	69.4	27.0	15.0				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	11.5	43.5		48.5	9.5	45.5	21.5	21.5				
Max Q Clear Time (g_c+I1), s	11.0	26.3		10.9	4.0	31.8	23.5	9.0				
Green Ext Time (p_c), s	0.0	4.8		0.9	0.0	5.6	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	44.6
HCM 6th LOS	D

Notes

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

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

Timings

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

1b. Existing PM

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	30	26	133	34	155	743	173	38	995	21
Future Volume (vph)	30	26	133	34	155	743	173	38	995	21
Lane Group Flow (vph)	32	283	141	69	165	790	184	40	1059	22
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4	3	8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	3	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	31.5	31.5	15.0	33.5	15.0	37.5	37.5	35.5	35.5	35.5
Total Split (s)	32.0	32.0	15.0	47.0	15.0	103.0	103.0	88.0	88.0	88.0
Total Split (%)	21.3%	21.3%	10.0%	31.3%	10.0%	68.7%	68.7%	58.7%	58.7%	58.7%
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	Lag	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.23	0.84	0.88	0.18	0.71	0.60	0.16	0.11	1.01	0.02
Control Delay	61.6	43.1	95.4	28.2	53.7	14.0	2.5	16.7	60.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.6	43.1	95.4	28.2	53.7	14.0	2.5	16.7	60.6	0.0
Queue Length 50th (ft)	29	93	121	31	104	346	10	18	~1110	0
Queue Length 95th (ft)	60	192	#202	69	#282	596	42	40	#1402	0
Internal Link Dist (ft)		1758		625		1415			1149	
Turn Bay Length (ft)	95				130		200	300		
Base Capacity (vph)	234	438	161	500	231	1306	1182	368	1053	962
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	0.14	0.65	0.88	0.14	0.71	0.60	0.16	0.11	1.01	0.02

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

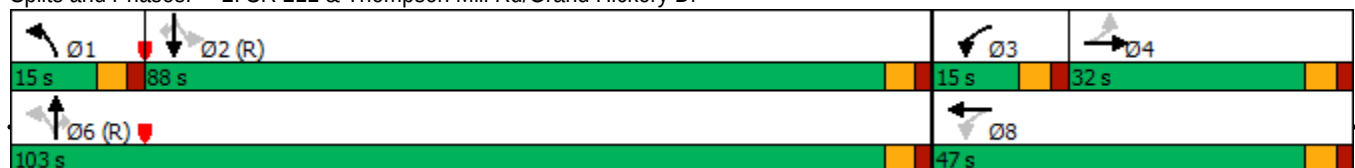
~ Volume exceeds capacity, queue is theoretically infinite.

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: 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr



23-016 Thompson Mill Village Mixed Use Development (DRI #4098)

Page 3

HCM 6th Signalized Intersection Summary

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

1b. Existing PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	26	240	133	34	31	155	743	173	38	995	21
Future Volume (veh/h)	30	26	240	133	34	31	155	743	173	38	995	21
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	1811	1870	1870	1870	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	32	28	255	141	36	33	165	790	184	40	1059	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	6	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	283	27	248	161	249	228	161	1187	1030	269	1004	
Arrive On Green	0.18	0.18	0.18	0.06	0.28	0.28	0.06	0.65	0.65	0.55	0.55	0.00
Sat Flow, veh/h	1332	154	1404	1781	898	824	1781	1826	1585	577	1826	1585
Grp Volume(v), veh/h	32	0	283	141	0	69	165	790	184	40	1059	0
Grp Sat Flow(s),veh/h/ln	1332	0	1558	1781	0	1722	1781	1826	1585	577	1826	1585
Q Serve(g_s), s	3.0	0.0	26.5	9.5	0.0	4.5	9.5	40.0	6.9	6.9	82.5	0.0
Cycle Q Clear(g_c), s	3.0	0.0	26.5	9.5	0.0	4.5	9.5	40.0	6.9	31.9	82.5	0.0
Prop In Lane	1.00		0.90	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	283	0	275	161	0	476	161	1187	1030	269	1004	
V/C Ratio(X)	0.11	0.00	1.03	0.88	0.00	0.14	1.03	0.67	0.18	0.15	1.05	
Avail Cap(c_a), veh/h	283	0	275	161	0	476	161	1187	1030	269	1004	
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.57	0.57	0.00
Uniform Delay (d), s/veh	52.1	0.0	61.8	48.4	0.0	40.9	52.1	16.2	10.4	30.7	33.7	0.0
Incr Delay (d2), s/veh	0.2	0.0	61.6	38.1	0.0	0.1	78.0	3.0	0.4	0.7	37.5	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	0.0	15.0	6.0	0.0	2.0	6.7	16.0	2.4	1.0	43.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	0.0	123.4	86.5	0.0	41.0	130.1	19.2	10.8	31.3	71.2	0.0
LnGrp LOS	D	A	F	F	A	D	F	B	B	C	F	
Approach Vol, veh/h	315			210			1139			1099		
Approach Delay, s/veh	116.2			71.5			33.9			69.8		
Approach LOS	F			E			C			E		
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	15.0	88.0	15.0	32.0		103.0		47.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	82.5	9.5	26.5		97.5		41.5				
Max Q Clear Time (g_c+I1), s	11.5	84.5	11.5	28.5		42.0		6.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0		16.4		0.4				
Intersection Summary												
HCM 6th Ctrl Delay	60.4											
HCM 6th LOS	E											
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 3: SR 211 & Golf Club Dr/Liberty Church Rd

1b. Existing PM
02/20/2024

	→	↘	↙	←	↖	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	12	257	303	9	43	676	142	275	1026	21
Future Volume (vph)	12	257	303	9	43	676	142	275	1026	21
Lane Group Flow (vph)	26	265	312	362	44	697	146	284	1058	22
Turn Type	NA	Perm	Split	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	8	1	6		5	2	
Permitted Phases		4			6		6	2		2
Detector Phase	4	4	8	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	32.5	32.5	35.5	35.5	15.0	37.5	37.5	15.0	36.5	36.5
Total Split (s)	32.0	32.0	36.0	36.0	15.0	37.0	37.0	15.0	37.0	37.0
Total Split (%)	26.7%	26.7%	30.0%	30.0%	12.5%	30.8%	30.8%	12.5%	30.8%	30.8%
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	Lag
Lead-Lag Optimize?					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	0.17	0.75	0.78	0.57	0.27	1.35	0.27	0.63	1.26	0.03
Control Delay	50.9	22.6	56.6	7.8	27.8	201.1	16.4	34.6	154.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.9	22.6	56.6	7.8	27.8	201.1	16.4	34.6	154.6	0.0
Queue Length 50th (ft)	20	19	228	6	13	~651	22	141	~1019	0
Queue Length 95th (ft)	45	100	302	78	m40	#975	m85	#407	#1544	0
Internal Link Dist (ft)	238			965		1320			1505	
Turn Bay Length (ft)			145		95		295	165		230
Base Capacity (vph)	400	536	467	679	201	518	541	450	843	803
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	0.07	0.49	0.67	0.53	0.22	1.35	0.27	0.63	1.26	0.03

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: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

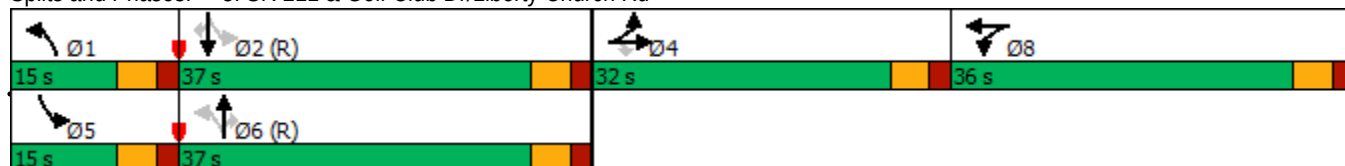
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

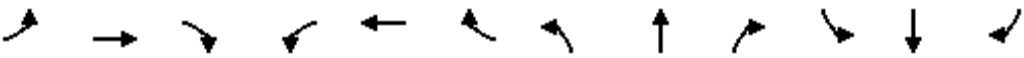
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: SR 211 & Golf Club Dr/Liberty Church Rd



HCM 6th Signalized Intersection Summary 3: SR 211 & Golf Club Dr/Liberty Church Rd

1b. Existing PM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩	↩	↩	↩		↩	↩	↩	↩	↩	↩
Traffic Volume (veh/h)	14	12	257	303	9	342	43	676	142	275	1026	21
Future Volume (veh/h)	14	12	257	303	9	342	43	676	142	275	1026	21
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	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	14	12	0	312	9	353	44	697	0	284	1058	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	28	24		435	10	379	117	847		301	933	
Arrive On Green	0.03	0.03	0.00	0.24	0.24	0.24	0.03	0.46	0.00	0.08	0.51	0.00
Sat Flow, veh/h	981	841	1585	1781	40	1552	1781	1826	1585	1781	1826	1585
Grp Volume(v), veh/h	26	0	0	312	0	362	44	697	0	284	1058	0
Grp Sat Flow(s),veh/h/ln	1821	0	1585	1781	0	1591	1781	1826	1585	1781	1826	1585
Q Serve(g_s), s	1.7	0.0	0.0	19.3	0.0	26.7	1.5	39.7	0.0	9.5	61.3	0.0
Cycle Q Clear(g_c), s	1.7	0.0	0.0	19.3	0.0	26.7	1.5	39.7	0.0	9.5	61.3	0.0
Prop In Lane	0.54		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	53	0		435	0	389	117	847		301	933	
V/C Ratio(X)	0.49	0.00		0.72	0.00	0.93	0.38	0.82		0.94	1.13	
Avail Cap(c_a), veh/h	402	0		453	0	404	201	847		301	933	
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.4	0.0	0.0	41.5	0.0	44.3	28.5	27.9	0.0	26.2	29.3	0.0
Incr Delay (d2), s/veh	6.9	0.0	0.0	5.1	0.0	27.6	2.0	8.9	0.0	37.3	73.5	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	0.9	0.0	0.0	8.8	0.0	13.1	0.6	17.7	0.0	6.7	42.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	0.0	46.7	0.0	71.9	30.5	36.7	0.0	63.5	102.8	0.0
LnGrp LOS	E	A		D	A	E	C	D		E	F	
Approach Vol, veh/h		26			674			741			1342	
Approach Delay, s/veh		64.3			60.2			36.4			94.5	
Approach LOS		E			E			D			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	66.8		9.0	15.0	61.2		34.8				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	31.5		26.5	9.5	31.5		30.5				
Max Q Clear Time (g_c+I1), s	3.5	63.3		3.7	11.5	41.7		28.7				
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	0.0		0.6				
Intersection Summary												
HCM 6th Ctrl Delay			70.4									
HCM 6th LOS			E									
Notes												
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 4: SR 211 & I-85 SB Ramps

1b. Existing PM
02/20/2024

						
Lane Group	WBL	WBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	136	125	327	913	845	349
Future Volume (vph)	136	125	327	913	845	349
Lane Group Flow (vph)	140	129	337	941	871	360
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	3		1	6	2	
Permitted Phases		8	6			2
Detector Phase	3	8	1	6	2	2
Switch Phase						
Minimum Initial (s)	6.0	6.0	5.0	15.0	15.0	15.0
Minimum Split (s)	27.5	27.5	15.0	28.5	28.5	28.5
Total Split (s)	46.0	46.0	32.0	74.0	42.0	42.0
Total Split (%)	38.3%	38.3%	26.7%	61.7%	35.0%	35.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.64	0.43	0.79	0.67	0.88	0.39
Control Delay	62.7	13.1	36.6	17.7	27.8	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.7	13.1	36.6	17.7	27.8	8.9
Queue Length 50th (ft)	105	3	188	416	566	100
Queue Length 95th (ft)	164	57	313	667	m#687	m167
Internal Link Dist (ft)				1370	1662	
Turn Bay Length (ft)	450					230
Base Capacity (vph)	580	601	491	1414	995	927
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.21	0.69	0.67	0.88	0.39

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 100

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: 4: SR 211 & I-85 SB Ramps



HCM 6th Signalized Intersection Summary 4: SR 211 & I-85 SB Ramps

1b. Existing PM
02/20/2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰		↰	↰	↱			↱	↰
Traffic Volume (veh/h)	0	0	0	136	0	125	327	913	0	0	845	349
Future Volume (veh/h)	0	0	0	136	0	125	327	913	0	0	845	349
Initial Q (Qb), veh				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
Parking Bus, Adj				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	
Adj Sat Flow, veh/h/ln				1826	0	1826	1826	1826	0	0	1826	1826
Adj Flow Rate, veh/h				140	0	0	337	941	0	0	871	0
Peak Hour Factor				0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %				5	0	5	5	5	0	0	5	5
Cap, veh/h				170	0		444	1480	0	0	1256	
Arrive On Green				0.10	0.00	0.00	0.08	0.81	0.00	0.00	0.69	0.00
Sat Flow, veh/h				1739	0	1547	1739	1826	0	0	1826	1547
Grp Volume(v), veh/h				140	0	0	337	941	0	0	871	0
Grp Sat Flow(s),veh/h/ln				1739	0	1547	1739	1826	0	0	1826	1547
Q Serve(g_s), s				9.5	0.0	0.0	6.3	24.2	0.0	0.0	34.1	0.0
Cycle Q Clear(g_c), s				9.5	0.0	0.0	6.3	24.2	0.0	0.0	34.1	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				170	0		444	1480	0	0	1256	
V/C Ratio(X)				0.82	0.00		0.76	0.64	0.00	0.00	0.69	
Avail Cap(c_a), veh/h				587	0		695	1480	0	0	1256	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.72	0.72	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				53.1	0.0	0.0	15.5	4.4	0.0	0.0	11.2	0.0
Incr Delay (d2), s/veh				9.6	0.0	0.0	2.0	1.5	0.0	0.0	3.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.5	0.0	0.0	5.0	6.0	0.0	0.0	12.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				62.7	0.0	0.0	17.4	6.0	0.0	0.0	14.3	0.0
LnGrp LOS				E	A		B	A	A	A	B	
Approach Vol, veh/h					140			1278			871	
Approach Delay, s/veh					62.7			9.0			14.3	
Approach LOS					E			A			B	
Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	14.7	88.1				102.8		17.2				
Change Period (Y+Rc), s	5.5	5.5				5.5		5.5				
Max Green Setting (Gmax), s	26.5	36.5				68.5		40.5				
Max Q Clear Time (g_c+I1), s	8.3	36.1				26.2		11.5				
Green Ext Time (p_c), s	0.9	0.3				18.0		0.4				
Intersection Summary												
HCM 6th Ctrl Delay				14.3								
HCM 6th LOS				B								
Notes												
Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings 5: SR 211 & I-85 NB Ramps

1b. Existing PM
02/20/2024

												
Lane Group	EBL	EBR	NBT	NBR	SBL	SBT						
Lane Configurations												
Traffic Volume (vph)	382	595	856	208	164	842						
Future Volume (vph)	382	595	856	208	164	842						
Lane Group Flow (vph)	398	620	892	217	171	877						
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA						
Protected Phases	3		6		5	2						
Permitted Phases		8		6	2							
Detector Phase	3	8	6	6	5	2						
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0						
Minimum Split (s)	34.5	34.5	28.5	28.5	15.0	28.5						
Total Split (s)	49.0	49.0	42.0	42.0	29.0	71.0						
Total Split (%)	40.8%	40.8%	35.0%	35.0%	24.2%	59.2%						
Yellow Time (s)	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						
Lost Time Adjust (s)	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						
Lead/Lag			Lag	Lag	Lead							
Lead-Lag Optimize?			Yes	Yes	Yes							
Recall Mode	None	None	C-Min	C-Min	None	C-Min						
v/c Ratio	0.65	0.98	0.64	0.31	0.54	0.46						
Control Delay	38.1	62.0	32.5	10.2	26.6	17.3						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	38.1	62.0	32.5	10.2	26.6	17.3						
Queue Length 50th (ft)	254	392	288	33	50	134						
Queue Length 95th (ft)	365	#642	397	98	m109	m225						
Internal Link Dist (ft)			1253			1370						
Turn Bay Length (ft)		480		160	275							
Base Capacity (vph)	623	641	1384	707	445	1897						
Starvation Cap Reductn	0	0	0	0	0	0						
Spillback Cap Reductn	0	0	0	0	0	0						
Storage Cap Reductn	0	0	0	0	0	0						
Reduced v/c Ratio	0.64	0.97	0.64	0.31	0.38	0.46						

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 90

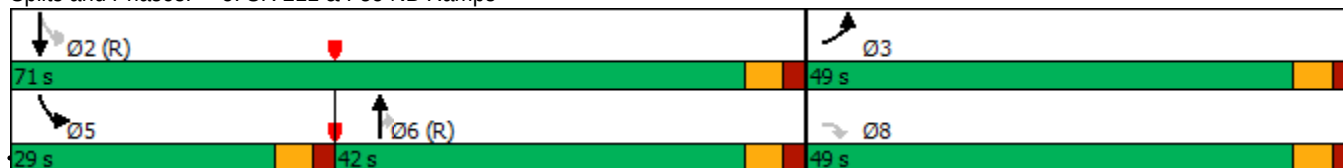
Control Type: Actuated-Coordinated

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: 5: SR 211 & I-85 NB Ramps



HCM 6th Signalized Intersection Summary 5: SR 211 & I-85 NB Ramps

1b. Existing PM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 			 	
Traffic Volume (veh/h)	382	0	595	0	0	0	0	856	208	164	842	0
Future Volume (veh/h)	382	0	595	0	0	0	0	856	208	164	842	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1826	1826	1826	1826	0
Adj Flow Rate, veh/h	398	0	0				0	892	0	171	877	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	0	5				0	5	5	5	5	0
Cap, veh/h	432	0					0	1916		409	2289	0
Arrive On Green	0.25	0.00	0.00				0.00	0.55	0.00	0.12	1.00	0.00
Sat Flow, veh/h	1739	0	1547				0	3561	1547	1739	3561	0
Grp Volume(v), veh/h	398	0	0				0	892	0	171	877	0
Grp Sat Flow(s),veh/h/ln	1739	0	1547				0	1735	1547	1739	1735	0
Q Serve(g_s), s	26.8	0.0	0.0				0.0	18.6	0.0	5.1	0.0	0.0
Cycle Q Clear(g_c), s	26.8	0.0	0.0				0.0	18.6	0.0	5.1	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	432	0					0	1916		409	2289	0
V/C Ratio(X)	0.92	0.00					0.00	0.47		0.42	0.38	0.00
Avail Cap(c_a), veh/h	630	0					0	1916		642	2289	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.42	0.42	0.00
Uniform Delay (d), s/veh	44.0	0.0	0.0				0.0	16.2	0.0	10.8	0.0	0.0
Incr Delay (d2), s/veh	14.6	0.0	0.0				0.0	0.8	0.0	0.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	0.0	0.0				0.0	7.0	0.0	1.6	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.5	0.0	0.0				0.0	17.0	0.0	11.0	0.2	0.0
LnGrp LOS	E	A					A	B		B	A	A
Approach Vol, veh/h	398						892			1048		
Approach Delay, s/veh	58.5						17.0			2.0		
Approach LOS	E						B			A		
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	84.7			12.9			71.8			35.3		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	65.5			23.5			36.5			43.5		
Max Q Clear Time (g_c+I1), s	2.0			7.1			20.6			28.8		
Green Ext Time (p_c), s	15.0			0.4			8.5			1.0		
Intersection Summary												
HCM 6th Ctrl Delay	17.3											
HCM 6th LOS	B											

Timings
6: SR 211 & SR 53

1b. Existing PM
02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↗	↗
Traffic Volume (vph)	896	416	116	468	346	130
Future Volume (vph)	896	416	116	468	346	130
Lane Group Flow (vph)	943	438	122	493	364	137
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	7	
Permitted Phases		6	2			7
Detector Phase	6	6	2	2	7	7
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	5.0
Minimum Split (s)	42.5	42.5	28.5	28.5	40.5	40.5
Total Split (s)	77.0	77.0	77.0	77.0	43.0	43.0
Total Split (%)	64.2%	64.2%	64.2%	64.2%	35.8%	35.8%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None
v/c Ratio	0.37	0.34	0.30	0.20	0.70	0.39
Control Delay	5.7	1.2	7.6	4.7	55.6	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.7	1.2	7.6	4.7	55.6	10.7
Queue Length 50th (ft)	111	0	25	48	139	1
Queue Length 95th (ft)	166	27	62	78	182	55
Internal Link Dist (ft)	1195			1463	749	
Turn Bay Length (ft)		180	190		260	
Base Capacity (vph)	2531	1305	402	2462	1072	587
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.34	0.30	0.20	0.34	0.23

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 85

Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 211 & SR 53



HCM 6th Signalized Intersection Summary 6: SR 211 & SR 53

1b. Existing PM
02/20/2024

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↗	↗
Traffic Volume (veh/h)	896	416	116	468	346	130
Future Volume (veh/h)	896	416	116	468	346	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1870	1870	1737	1870	1870
Adj Flow Rate, veh/h	943	438	122	493	364	137
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	8	2	2	11	2	2
Cap, veh/h	2626	1230	330	2560	458	210
Arrive On Green	0.78	0.78	0.78	0.78	0.13	0.13
Sat Flow, veh/h	3474	1585	392	3387	3456	1585
Grp Volume(v), veh/h	943	438	122	493	364	137
Grp Sat Flow(s),veh/h/ln	1692	1585	392	1650	1728	1585
Q Serve(g_s), s	10.4	10.3	16.8	4.7	12.3	9.8
Cycle Q Clear(g_c), s	10.4	10.3	27.2	4.7	12.3	9.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2626	1230	330	2560	458	210
V/C Ratio(X)	0.36	0.36	0.37	0.19	0.79	0.65
Avail Cap(c_a), veh/h	2626	1230	330	2560	1080	495
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	4.2	4.2	8.4	3.5	50.5	49.4
Incr Delay (d2), s/veh	0.4	0.8	3.2	0.2	3.2	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	18.1	1.5	1.2	5.4	4.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.6	5.0	11.6	3.7	53.6	52.8
LnGrp LOS	A	A	B	A	D	D
Approach Vol, veh/h	1381			615	501	
Approach Delay, s/veh	4.7			5.3	53.4	
Approach LOS	A			A	D	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		98.6		21.4		98.6
Change Period (Y+Rc), s		5.5		5.5		5.5
Max Green Setting (Gmax), s		71.5		37.5		71.5
Max Q Clear Time (g_c+I1), s		29.2		14.3		12.4
Green Ext Time (p_c), s		11.0		1.7		24.5
Intersection Summary						
HCM 6th Ctrl Delay			14.6			
HCM 6th LOS			B			

Timings
7: SR 347 (Friendship Rd) & NGMC Main Drwy

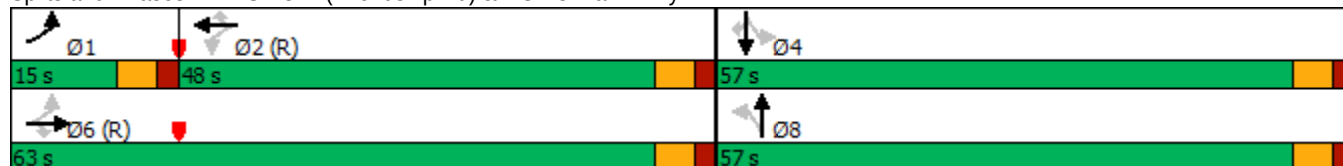
1b. Existing PM
02/20/2024

									
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBR
Lane Configurations		  			  		 		
Traffic Volume (vph)	22	875	1	1	683	33	0	142	112
Future Volume (vph)	22	875	1	1	683	33	0	142	112
Lane Group Flow (vph)	24	951	1	1	742	36	1	154	122
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	Perm
Protected Phases	1	6			2		8		
Permitted Phases	6		6	2		2		4	4
Detector Phase	1	6	6	2	2	2	8	4	4
Switch Phase									
Minimum Initial (s)	5.0	15.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	46.5	46.5	46.5	54.5	56.5	56.5
Total Split (s)	15.0	63.0	63.0	48.0	48.0	48.0	57.0	57.0	57.0
Total Split (%)	12.5%	52.5%	52.5%	40.0%	40.0%	40.0%	47.5%	47.5%	47.5%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead			Lag	Lag	Lag			
Lead-Lag Optimize?	Yes			Yes	Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.05	0.26	0.00	0.00	0.22	0.03	0.00	0.70	0.26
Control Delay	1.8	1.6	0.0	21.0	12.9	6.3	0.0	63.7	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.8	1.6	0.0	21.0	12.9	6.3	0.0	63.7	1.4
Queue Length 50th (ft)	1	15	0	0	63	0	0	115	0
Queue Length 95th (ft)	4	28	m0	m2	181	m9	0	175	0
Internal Link Dist (ft)		1298			1964		114		
Turn Bay Length (ft)	1000		630	550		515		90	
Base Capacity (vph)	552	3677	1195	371	3379	1115	735	605	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.26	0.00	0.00	0.22	0.03	0.00	0.25	0.15

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 108 (90%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: SR 347 (Friendship Rd) & NGMC Main Drwy



HCM 6th Signalized Intersection Summary

7: SR 347 (Friendship Rd) & NGMC Main Drwy

1b. Existing PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	22	875	1	1	683	33	0	0	1	142	0	112
Future Volume (veh/h)	22	875	1	1	683	33	0	0	1	142	0	112
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	951	1	1	742	0	0	0	1	154	0	122
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	573	3845	1233	478	3505		0	0	207	244	244	207
Arrive On Green	0.05	1.00	1.00	0.71	0.71	0.00	0.00	0.00	0.13	0.13	0.00	0.13
Sat Flow, veh/h	1781	4944	1585	589	4944	1585	0	0	1585	1416	1870	1585
Grp Volume(v), veh/h	24	951	1	1	742	0	0	0	1	154	0	122
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	589	1648	1585	0	0	1585	1416	1870	1585
Q Serve(g_s), s	0.4	0.0	0.0	0.1	6.2	0.0	0.0	0.0	0.1	12.7	0.0	8.7
Cycle Q Clear(g_c), s	0.4	0.0	0.0	0.1	6.2	0.0	0.0	0.0	0.1	12.8	0.0	8.7
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	573	3845	1233	478	3505		0	0	207	244	244	207
V/C Ratio(X)	0.04	0.25	0.00	0.00	0.21		0.00	0.00	0.00	0.63	0.00	0.59
Avail Cap(c_a), veh/h	673	3845	1233	478	3505		0	0	680	667	803	680
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.0	0.0	0.0	5.1	6.0	0.0	0.0	0.0	45.4	50.9	0.0	49.1
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	2.7	0.0	2.7
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	0.1	0.0	0.0	1.8	0.0	0.0	0.0	0.0	4.7	0.0	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.1	0.2	0.0	5.1	6.1	0.0	0.0	0.0	45.4	53.6	0.0	51.8
LnGrp LOS	A	A	A	A	A		A	A	D	D	A	D
Approach Vol, veh/h	976			743			1			276		
Approach Delay, s/veh	0.2			6.1			45.4			52.8		
Approach LOS	A			A			D			D		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.3	90.6		21.2		98.8		21.2				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		51.5		57.5		51.5				
Max Q Clear Time (g_c+I1), s	2.4	8.2		14.8		2.0		2.1				
Green Ext Time (p_c), s	0.0	10.2		0.9		15.9		0.0				

Intersection Summary

HCM 6th Ctrl Delay	9.7
HCM 6th LOS	A

Notes

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

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑↑↑	↑↑↑↑	↰	↰	↰
Traffic Vol, veh/h	21	846	783	12	52	73
Future Vol, veh/h	21	846	783	12	52	73
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	575	-	-	720	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	23	920	851	13	57	79
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	864	0	-	0	1265	426
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	414	-
Critical Hdwy	5.34	-	-	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	3.12	-	-	-	3.82	3.92
Pot Cap-1 Maneuver	455	-	-	-	228	493
Stage 1	-	-	-	-	298	-
Stage 2	-	-	-	-	581	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	455	-	-	-	216	493
Mov Cap-2 Maneuver	-	-	-	-	216	-
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	581	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.3	0		19.4		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	455	-	-	-	216	493
HCM Lane V/C Ratio	0.05	-	-	-	0.262	0.161
HCM Control Delay (s)	13.3	-	-	-	27.5	13.7
HCM Lane LOS	B	-	-	-	D	B
HCM 95th %tile Q(veh)	0.2	-	-	-	1	0.6

Timings
9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

1b. Existing PM
02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		  			  			 		 	
Traffic Volume (vph)	66	860	102	5	808	2	164	7	27	8	48
Future Volume (vph)	66	860	102	5	808	2	164	7	27	8	48
Lane Group Flow (vph)	71	925	110	5	869	2	176	30	29	9	52
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	3	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	15.0	43.5	43.5	15.0	47.5	50.5	50.5	50.5
Total Split (s)	15.0	50.0	50.0	15.0	50.0	50.0	17.0	55.0	38.0	38.0	38.0
Total Split (%)	12.5%	41.7%	41.7%	12.5%	41.7%	41.7%	14.2%	45.8%	31.7%	31.7%	31.7%
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	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.16	0.27	0.10	0.01	0.28	0.00	0.73	0.09	0.31	0.07	0.23
Control Delay	2.9	7.1	3.3	5.2	10.6	0.0	60.5	18.6	61.1	52.0	2.5
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	2.9	7.1	3.3	5.2	10.6	0.0	60.5	18.6	61.1	52.0	2.5
Queue Length 50th (ft)	8	77	7	1	138	0	121	5	22	7	0
Queue Length 95th (ft)	m16	m245	m40	m4	92	m0	187	30	53	23	0
Internal Link Dist (ft)		1122			884			413		385	
Turn Bay Length (ft)	405		300	575		550	100		95		100
Base Capacity (vph)	465	3423	1144	478	3072	1039	243	696	372	504	518
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	0.15	0.27	0.10	0.01	0.28	0.00	0.72	0.04	0.08	0.02	0.10

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

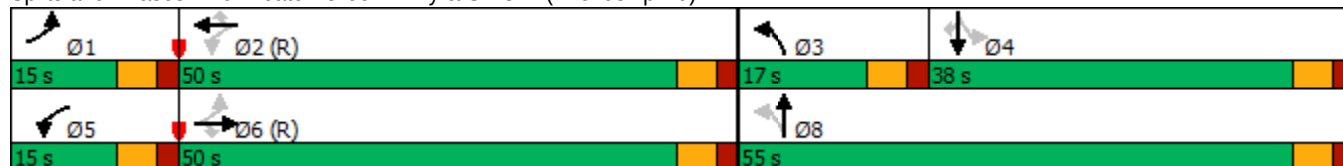
Offset: 99 (83%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

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

Splits and Phases: 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary
9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

1b. Existing PM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	860	102	5	808	2	164	7	20	27	8	48
Future Volume (veh/h)	66	860	102	5	808	2	164	7	20	27	8	48
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	71	925	110	5	869	2	176	8	22	29	9	52
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	530	3285	1053	391	3130	1003	292	84	232	129	94	79
Arrive On Green	0.04	0.66	0.66	0.01	1.00	1.00	0.10	0.19	0.19	0.05	0.05	0.05
Sat Flow, veh/h	1781	4944	1585	1781	4944	1585	1781	441	1212	1380	1870	1585
Grp Volume(v), veh/h	71	925	110	5	869	2	176	0	30	29	9	52
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	1781	1648	1585	1781	0	1652	1380	1870	1585
Q Serve(g_s), s	1.6	9.3	3.0	0.1	0.0	0.0	11.0	0.0	1.8	2.4	0.6	3.9
Cycle Q Clear(g_c), s	1.6	9.3	3.0	0.1	0.0	0.0	11.0	0.0	1.8	2.4	0.6	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.73	1.00		1.00
Lane Grp Cap(c), veh/h	530	3285	1053	391	3130	1003	292	0	317	129	94	79
V/C Ratio(X)	0.13	0.28	0.10	0.01	0.28	0.00	0.60	0.00	0.09	0.22	0.10	0.65
Avail Cap(c_a), veh/h	604	3285	1053	521	3130	1003	292	0	682	434	507	429
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.7	8.3	7.3	7.9	0.0	0.0	46.7	0.0	39.9	55.3	54.4	56.0
Incr Delay (d2), s/veh	0.1	0.2	0.2	0.0	0.2	0.0	3.5	0.0	0.1	0.9	0.4	8.8
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	0.6	3.0	1.0	0.0	0.1	0.0	5.2	0.0	0.8	0.9	0.3	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.8	8.5	7.5	7.9	0.2	0.0	50.2	0.0	40.0	56.2	54.8	64.8
LnGrp LOS	A	A	A	A	A	A	D	A	D	E	D	E
Approach Vol, veh/h		1106			876			206			90	
Approach Delay, s/veh		8.3			0.3			48.7			61.0	
Approach LOS		A			A			D			E	
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	81.5	17.0	11.5	6.3	85.2		28.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	44.5	11.5	32.5	9.5	44.5		49.5				
Max Q Clear Time (g_c+I1), s	3.6	2.0	13.0	5.9	2.1	11.3		3.8				
Green Ext Time (p_c), s	0.1	13.2	0.0	0.3	0.0	14.1		0.1				
Intersection Summary												
HCM 6th Ctrl Delay			11.0									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

Timings
10: Spout Springs Rd & SR 347 (Friendship Rd)

1b. Existing PM
02/20/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	315	830	285	324	654	178	194	363	132	200	372	55
Future Volume (vph)	315	830	285	324	654	178	194	363	132	200	372	55
Lane Group Flow (vph)	325	856	294	334	674	184	200	374	136	206	384	57
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	15.0	35.5	35.5	15.0	33.5	33.5	15.0	42.5	42.5	15.0	40.5	40.5
Total Split (s)	25.0	38.0	38.0	24.0	37.0	37.0	15.0	43.0	43.0	15.0	43.0	43.0
Total Split (%)	20.8%	31.7%	31.7%	20.0%	30.8%	30.8%	12.5%	35.8%	35.8%	12.5%	35.8%	35.8%
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	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	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.74	0.83	0.46	0.83	0.61	0.29	0.87	0.81	0.28	0.87	0.83	0.12
Control Delay	29.4	48.1	11.3	52.1	38.8	8.8	57.5	52.6	15.3	61.3	57.8	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.4	48.1	11.3	52.1	38.8	8.8	57.5	52.6	15.3	61.3	57.8	0.5
Queue Length 50th (ft)	139	340	37	176	269	35	115	279	29	112	282	0
Queue Length 95th (ft)	#250	#463	118	#424	349	m21	#178	362	84	#173	368	0
Internal Link Dist (ft)		4090			4101			920			702	
Turn Bay Length (ft)	575		190	260		210	140		150	125		145
Base Capacity (vph)	459	1030	640	400	1112	641	229	582	579	237	582	579
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.83	0.46	0.83	0.61	0.29	0.87	0.64	0.23	0.87	0.66	0.10

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 24 (20%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 110

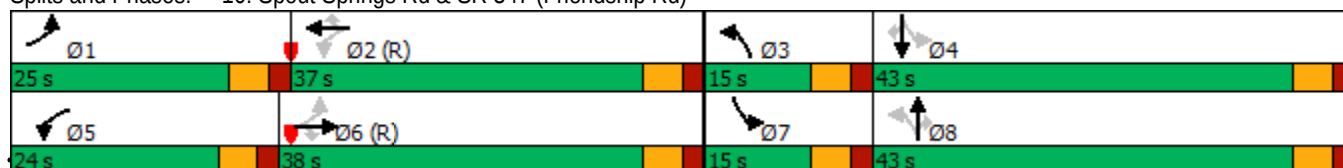
Control Type: Actuated-Coordinated

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: 10: Spout Springs Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

10: Spout Springs Rd & SR 347 (Friendship Rd)

1b. Existing PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	830	285	324	654	178	194	363	132	200	372	55
Future Volume (veh/h)	315	830	285	324	654	178	194	363	132	200	372	55
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	325	856	294	334	674	0	200	374	0	206	384	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	465	1292	595	379	1300		231	429		238	429	
Arrive On Green	0.13	0.38	0.38	0.13	0.38	0.00	0.08	0.23	0.00	0.08	0.23	0.00
Sat Flow, veh/h	1781	3441	1585	1781	3441	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	325	856	294	334	674	0	200	374	0	206	384	0
Grp Sat Flow(s),veh/h/ln	1781	1721	1585	1781	1721	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	13.2	24.8	17.1	13.6	18.2	0.0	9.5	23.1	0.0	9.5	23.9	0.0
Cycle Q Clear(g_c), s	13.2	24.8	17.1	13.6	18.2	0.0	9.5	23.1	0.0	9.5	23.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	465	1292	595	379	1300		231	429		238	429	
V/C Ratio(X)	0.70	0.66	0.49	0.88	0.52		0.86	0.87		0.87	0.89	
Avail Cap(c_a), veh/h	522	1292	595	417	1300		231	584		238	584	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.3	31.2	28.7	23.8	28.9	0.0	37.0	44.5	0.0	37.5	44.8	0.0
Incr Delay (d2), s/veh	3.6	2.7	2.9	18.2	1.5	0.0	27.1	10.5	0.0	26.6	13.0	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	5.6	10.3	6.8	7.2	7.5	0.0	6.2	11.7	0.0	6.3	12.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.8	33.8	31.7	42.0	30.4	0.0	64.1	55.0	0.0	64.1	57.8	0.0
LnGrp LOS	C	C	C	D	C		E	E		E	E	
Approach Vol, veh/h	1475			1008			574			590		
Approach Delay, s/veh	31.2			34.2			58.2			60.0		
Approach LOS	C			C			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.1	50.8	15.0	33.0	21.4	50.5	15.0	33.0				
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	19.5	31.5	9.5	37.5	18.5	32.5	9.5	37.5				
Max Q Clear Time (g_c+I1), s	15.2	20.2	11.5	25.9	15.6	26.8	11.5	25.1				
Green Ext Time (p_c), s	0.4	5.1	0.0	1.6	0.3	4.2	0.0	1.6				

Intersection Summary

HCM 6th Ctrl Delay 40.9

HCM 6th LOS D

Notes

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

Intersection						
Int Delay, s/veh	53.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	1146	200	211	694	80	203
Future Vol, veh/h	1146	200	211	694	80	203
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	385	-	0	80
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	1246	217	229	754	87	221
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1463	0	2081	623
Stage 1	-	-	-	-	1246	-
Stage 2	-	-	-	-	835	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	458	-	~ 46	429
Stage 1	-	-	-	-	234	-
Stage 2	-	-	-	-	386	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	458	-	~ 23	429
Mov Cap-2 Maneuver	-	-	-	-	~ 23	-
Stage 1	-	-	-	-	234	-
Stage 2	-	-	-	-	193	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		4.8		\$ 467.5	
HCM LOS					F	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	23	429	-	-	458	-
HCM Lane V/C Ratio	3.781	0.514	-	-	0.501	-
HCM Control Delay (s)	\$ 1598.2	21.9	-	-	20.5	-
HCM Lane LOS	F	C	-	-	C	-
HCM 95th %tile Q(veh)	11	2.9	-	-	2.7	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	28
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	34	117	132	188	121	22	57	189	139	5	315	18
Future Vol, veh/h	34	117	132	188	121	22	57	189	139	5	315	18
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	118	133	190	122	22	58	191	140	5	318	18
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	21.8	28.3	32.4	27.8
HCM LOS	C	D	D	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	12%	57%	1%
Vol Thru, %	49%	41%	37%	93%
Vol Right, %	36%	47%	7%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	385	283	331	338
LT Vol	57	34	188	5
Through Vol	189	117	121	315
RT Vol	139	132	22	18
Lane Flow Rate	389	286	334	341
Geometry Grp	1	1	1	1
Degree of Util (X)	0.787	0.605	0.718	0.718
Departure Headway (Hd)	7.281	7.616	7.73	7.567
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	498	472	468	478
Service Time	5.346	5.688	5.799	5.635
HCM Lane V/C Ratio	0.781	0.606	0.714	0.713
HCM Control Delay	32.4	21.8	28.3	27.8
HCM Lane LOS	D	C	D	D
HCM 95th-tile Q	7.2	3.9	5.7	5.7

Timings 13: Spout Springs Rd & Thompson Mill Rd

1b. Existing PM
02/20/2024

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	142	83	80	73	140	578	62	56	589	109
Future Volume (vph)	142	83	80	73	140	578	62	56	589	109
Lane Group Flow (vph)	143	152	81	133	141	584	63	57	595	110
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	31.5	15.0	30.5	15.0	35.5	35.5	15.0	34.5	34.5
Total Split (s)	15.0	32.0	15.0	32.0	15.0	58.0	58.0	15.0	58.0	58.0
Total Split (%)	12.5%	26.7%	12.5%	26.7%	12.5%	48.3%	48.3%	12.5%	48.3%	48.3%
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	0.58	0.33	0.60	0.32	0.54	0.06	0.13	0.59	0.12
Control Delay	46.9	47.6	38.6	49.1	10.0	19.3	0.1	5.1	14.1	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	46.9	47.6	38.6	49.1	10.0	19.3	0.1	5.1	14.1	1.2
Queue Length 50th (ft)	92	91	50	75	36	274	0	6	278	5
Queue Length 95th (ft)	142	154	87	134	71	444	0	m11	m358	m13
Internal Link Dist (ft)		1809		565		751			337	
Turn Bay Length (ft)	155		223		228		112	100		110
Base Capacity (vph)	249	399	261	399	439	1090	977	480	1007	912
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	0.38	0.31	0.33	0.32	0.54	0.06	0.12	0.59	0.12

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 4 (3%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

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

Splits and Phases: 13: Spout Springs Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary
13: Spout Springs Rd & Thompson Mill Rd

1b. Existing PM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	142	83	67	80	73	58	140	578	62	56	589	109
Future Volume (veh/h)	142	83	67	80	73	58	140	578	62	56	589	109
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	143	84	68	81	74	59	141	584	63	57	595	110
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	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	227	115	93	201	92	73	443	1129	957	455	1105	937
Arrive On Green	0.08	0.12	0.12	0.05	0.10	0.10	0.05	0.60	0.60	0.04	0.59	0.59
Sat Flow, veh/h	1781	926	750	1781	933	744	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	143	0	152	81	0	133	141	584	63	57	595	110
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1781	0	1677	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	8.6	0.0	10.5	4.8	0.0	9.3	3.7	21.6	2.0	1.5	22.9	3.7
Cycle Q Clear(g_c), s	8.6	0.0	10.5	4.8	0.0	9.3	3.7	21.6	2.0	1.5	22.9	3.7
Prop In Lane	1.00		0.45	1.00		0.44	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	0	208	201	0	165	443	1129	957	455	1105	937
V/C Ratio(X)	0.63	0.00	0.73	0.40	0.00	0.81	0.32	0.52	0.07	0.13	0.54	0.12
Avail Cap(c_a), veh/h	227	0	370	246	0	370	498	1129	957	533	1105	937
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	0.0	50.6	45.5	0.0	53.0	11.2	13.7	9.8	10.5	14.7	10.8
Incr Delay (d2), s/veh	5.5	0.0	4.9	1.3	0.0	8.9	0.4	1.7	0.1	0.1	1.9	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	4.0	0.0	4.6	2.2	0.0	4.2	1.4	8.9	0.7	0.5	9.6	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.0	0.0	55.5	46.8	0.0	61.8	11.6	15.4	10.0	10.6	16.6	11.0
LnGrp LOS	D	A	E	D	A	E	B	B	A	B	B	B
Approach Vol, veh/h		295			214			788			762	
Approach Delay, s/veh		52.8			56.1			14.3			15.4	
Approach LOS		D			E			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.3	76.4	11.9	20.4	9.8	77.9	15.0	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	52.5	9.5	26.5	9.5	52.5	9.5	26.5				
Max Q Clear Time (g_c+I1), s	5.7	24.9	6.8	12.5	3.5	23.6	10.6	11.3				
Green Ext Time (p_c), s	0.1	8.8	0.0	0.6	0.0	8.3	0.0	0.5				
Intersection Summary												
HCM 6th Ctrl Delay			24.6									
HCM 6th LOS			C									

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	2	4	186	110	5
Future Vol, veh/h	5	2	4	186	110	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	255	-	-	210	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	6	2	5	211	125	6
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	5	0	-	0	19	5
Stage 1	-	-	-	-	5	-
Stage 2	-	-	-	-	14	-
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	1616	-	-	-	998	1078
Stage 1	-	-	-	-	1018	-
Stage 2	-	-	-	-	1009	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1616	-	-	-	994	1078
Mov Cap-2 Maneuver	-	-	-	-	994	-
Stage 1	-	-	-	-	1014	-
Stage 2	-	-	-	-	1009	-
Approach	EB	WB		SB		
HCM Control Delay, s	5.2	0		9.1		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1616	-	-	-	994	1078
HCM Lane V/C Ratio	0.004	-	-	-	0.126	0.005
HCM Control Delay (s)	7.2	-	-	-	9.1	8.4
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile O(veh)	0	-	-	-	0.4	0

Intersection						
Int Delay, s/veh	4.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	39	75	46	95	92	53
Future Vol, veh/h	39	75	46	95	92	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	225	400	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	48	91	56	116	112	65
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	139	0	276	48
Stage 1	-	-	-	-	48	-
Stage 2	-	-	-	-	228	-
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	-	-	1445	-	714	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	810	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1445	-	686	1021
Mov Cap-2 Maneuver	-	-	-	-	686	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	778	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.5		10.4	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	686	1021	-	-	1445	-
HCM Lane V/C Ratio	0.164	0.063	-	-	0.039	-
HCM Control Delay (s)	11.3	8.8	-	-	7.6	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile O(veh)	0.6	0.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	
Traffic Vol, veh/h	105	19	22	135	12	9
Future Vol, veh/h	105	19	22	135	12	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	177	215	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	121	22	25	155	14	10
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	143	0	326	121
Stage 1	-	-	-	-	121	-
Stage 2	-	-	-	-	205	-
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	-	-	1440	-	668	930
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	829	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1440	-	657	930
Mov Cap-2 Maneuver	-	-	-	-	657	-
Stage 1	-	-	-	-	904	-
Stage 2	-	-	-	-	815	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.1		9.9	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	752	-	-	1440	-	
HCM Lane V/C Ratio	0.032	-	-	0.018	-	
HCM Control Delay (s)	9.9	-	-	7.5	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	

Future “No-Build” Intersection Analysis

Timings

1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

2a. No-Build 2028 AM

02/20/2024

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	189	55	374	42	68	630	478	35	472	408
Future Volume (vph)	189	55	374	42	68	630	478	35	472	408
Lane Group Flow (vph)	199	58	394	44	128	663	519	37	497	429
Turn Type	pm+pt	NA	Free	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4			8	1	6	5	2	
Permitted Phases	4		Free	8						2
Detector Phase	7	4		8	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0		6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	33.5		34.5	34.5	15.0	43.5	15.0	36.5	36.5
Total Split (s)	15.0	49.5		34.5	34.5	29.0	55.5	15.0	41.5	41.5
Total Split (%)	12.5%	41.3%		28.8%	28.8%	24.2%	46.3%	12.5%	34.6%	34.6%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.83	0.14	0.25	0.32	0.63	0.76	0.47	0.32	0.72	0.49
Control Delay	68.0	36.5	0.5	54.4	52.2	58.3	15.0	59.7	40.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.0	36.5	0.5	54.4	52.2	58.3	15.0	59.7	40.6	5.0
Queue Length 50th (ft)	118	33	1	32	73	269	167	28	324	0
Queue Length 95th (ft)	#224	76	7	68	132	m298	m225	62	#575	77
Internal Link Dist (ft)		1136			834		1149		1213	
Turn Bay Length (ft)						400		250		450
Base Capacity (vph)	240	657	1583	323	434	873	1095	143	688	868
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	0.83	0.09	0.25	0.14	0.29	0.76	0.47	0.26	0.72	0.49

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

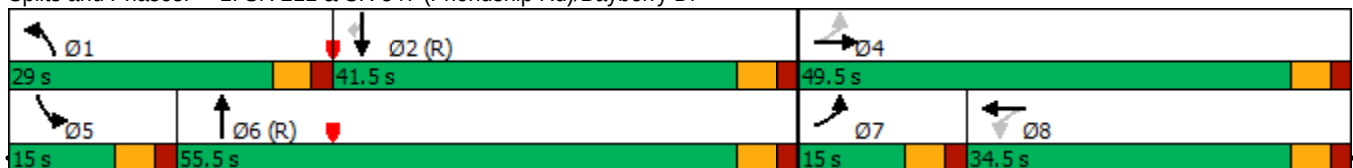
Control Type: Actuated-Coordinated

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 211 & SR 347 (Friendship Rd)/Bayberry Dr



HCM 6th Signalized Intersection Summary
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

2a. No-Build 2028 AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	55	374	42	68	53	630	478	15	35	472	408
Future Volume (veh/h)	189	55	374	42	68	53	630	478	15	35	472	408
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	1811	1870	1870	1811	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	199	58	0	44	72	56	663	503	0	37	497	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	6	2	2	6	2	2	5	2	2	5	2
Cap, veh/h	230	403		191	92	72	677	1115		53	811	
Arrive On Green	0.08	0.22	0.00	0.10	0.10	0.10	0.20	0.61	0.00	0.03	0.44	0.00
Sat Flow, veh/h	1781	1811	1585	1345	944	735	3456	1826	0	1781	1826	1585
Grp Volume(v), veh/h	199	58	0	44	0	128	663	503	0	37	497	0
Grp Sat Flow(s),veh/h/ln	1781	1811	1585	1345	0	1679	1728	1826	0	1781	1826	1585
Q Serve(g_s), s	9.5	3.1	0.0	3.7	0.0	8.9	22.9	17.8	0.0	2.5	24.9	0.0
Cycle Q Clear(g_c), s	9.5	3.1	0.0	3.7	0.0	8.9	22.9	17.8	0.0	2.5	24.9	0.0
Prop In Lane	1.00		1.00	1.00		0.44	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	403		191	0	164	677	1115		53	811	
V/C Ratio(X)	0.86	0.14		0.23	0.00	0.78	0.98	0.45		0.70	0.61	
Avail Cap(c_a), veh/h	230	664		385	0	406	677	1115		141	811	
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	0.00	1.00	0.32	0.32	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.7	37.5	0.0	50.5	0.0	52.9	48.0	12.6	0.0	57.7	25.5	0.0
Incr Delay (d2), s/veh	27.3	0.2	0.0	0.6	0.0	7.9	15.0	0.4	0.0	15.7	3.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	1.4	0.0	1.3	0.0	4.2	10.9	6.5	0.0	1.3	10.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.0	37.6	0.0	51.1	0.0	60.8	63.0	13.0	0.0	73.4	28.9	0.0
LnGrp LOS	E	D		D	A	E	E	B		E	C	
Approach Vol, veh/h	257			172			1166			534		
Approach Delay, s/veh	65.8			58.3			41.5			32.0		
Approach LOS	E			E			D			C		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.0	58.8		32.2	9.0	78.8	15.0	17.2				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	23.5	36.0		44.0	9.5	50.0	9.5	29.0				
Max Q Clear Time (g_c+I1), s	24.9	26.9		5.1	4.5	19.8	11.5	10.9				
Green Ext Time (p_c), s	0.0	3.2		0.2	0.0	6.1	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	43.4
HCM 6th LOS	D

Notes

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

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

Timings
2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

2a. No-Build 2028 AM

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	64	14	170	28	151	1061	71	14	874	39
Future Volume (vph)	64	14	170	28	151	1061	71	14	874	39
Lane Group Flow (vph)	69	205	183	58	162	1141	76	15	940	42
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4	3	8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	3	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	31.5	31.5	15.0	33.5	15.0	37.5	37.5	35.5	35.5	35.5
Total Split (s)	32.0	32.0	15.0	47.0	15.0	73.0	73.0	58.0	58.0	58.0
Total Split (%)	26.7%	26.7%	12.5%	39.2%	12.5%	60.8%	60.8%	48.3%	48.3%	48.3%
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	Lag	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.54	0.63	0.91	0.14	0.66	0.92	0.07	0.16	0.97	0.05
Control Delay	65.9	17.8	84.8	21.8	28.4	36.9	8.4	11.5	36.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.9	17.8	84.8	21.8	28.4	36.9	8.4	11.5	36.7	0.1
Queue Length 50th (ft)	52	11	124	19	97	661	11	3	550	0
Queue Length 95th (ft)	97	83	#198	52	m89	m571	m15	m7	#1087	m0
Internal Link Dist (ft)		1758		625		1415			1149	
Turn Bay Length (ft)	95				130		200	300		
Base Capacity (vph)	295	501	202	616	248	1243	1110	94	974	908
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	0.41	0.91	0.09	0.65	0.92	0.07	0.16	0.97	0.05

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: 140

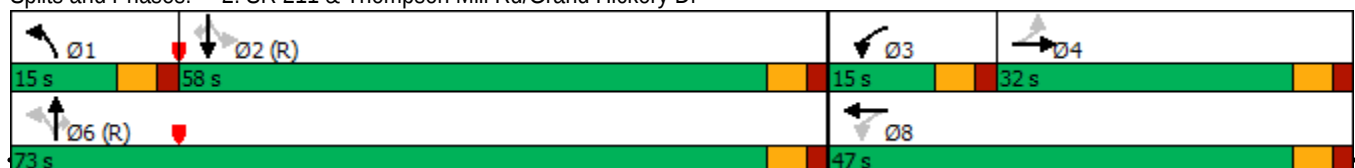
Control Type: Actuated-Coordinated

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: 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr



HCM 6th Signalized Intersection Summary

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

2a. No-Build 2028 AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	14	177	170	28	26	151	1061	71	14	874	39
Future Volume (veh/h)	64	14	177	170	28	26	151	1061	71	14	874	39
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	1811	1870	1870	1870	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	69	15	190	183	30	28	162	1141	76	15	940	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	265	17	220	229	247	231	476	1151	1000	67	964	
Arrive On Green	0.15	0.15	0.15	0.08	0.28	0.28	0.06	0.63	0.63	1.00	1.00	0.00
Sat Flow, veh/h	1345	114	1439	1781	890	831	1781	1826	1585	459	1826	1585
Grp Volume(v), veh/h	69	0	205	183	0	58	162	1141	76	15	940	0
Grp Sat Flow(s),veh/h/ln	1345	0	1552	1781	0	1721	1781	1826	1585	459	1826	1585
Q Serve(g_s), s	5.5	0.0	15.5	9.5	0.0	3.0	4.8	73.8	2.2	1.8	0.0	0.0
Cycle Q Clear(g_c), s	5.5	0.0	15.5	9.5	0.0	3.0	4.8	73.8	2.2	63.3	0.0	0.0
Prop In Lane	1.00		0.93	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	265	0	237	229	0	478	476	1151	1000	67	964	
V/C Ratio(X)	0.26	0.00	0.86	0.80	0.00	0.12	0.34	0.99	0.08	0.22	0.98	
Avail Cap(c_a), veh/h	357	0	343	229	0	595	516	1151	1000	67	964	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.85	0.85	0.00
Uniform Delay (d), s/veh	45.4	0.0	49.6	40.5	0.0	32.4	10.5	21.8	8.6	31.2	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	14.5	17.9	0.0	0.1	0.4	24.4	0.1	6.5	21.5	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	1.8	0.0	6.8	5.7	0.0	1.3	1.7	33.8	0.7	0.5	5.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.9	0.0	64.1	58.3	0.0	32.5	10.9	46.3	8.7	37.7	21.5	0.0
LnGrp LOS	D	A	E	E	A	C	B	D	A	D	C	
Approach Vol, veh/h	274			241			1379			955		
Approach Delay, s/veh	59.5			52.1			40.0			21.7		
Approach LOS	E			D			D			C		
Timer - Assigned Phs	1	2	3	4	6			8				
Phs Duration (G+Y+Rc), s	12.4	68.8	15.0	23.8	81.2			38.8				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5			5.5				
Max Green Setting (Gmax), s	9.5	52.5	9.5	26.5	67.5			41.5				
Max Q Clear Time (g_c+I1), s	6.8	65.3	11.5	17.5	75.8			5.0				
Green Ext Time (p_c), s	0.1	0.0	0.0	0.9	0.0			0.3				
Intersection Summary												
HCM 6th Ctrl Delay	36.8											
HCM 6th LOS	D											

Timings
3: SR 211 & Golf Club Dr/Liberty Church Rd

2a. No-Build 2028 AM

02/20/2024

	→	↘	↙	←	↖	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	14	158	261	7	26	858	94	276	864	18
Future Volume (vph)	14	158	261	7	26	858	94	276	864	18
Lane Group Flow (vph)	23	166	275	432	27	903	99	291	909	19
Turn Type	NA	Perm	Split	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4		8	8	1	6		5	2	
Permitted Phases		4			6		6	2		2
Detector Phase	4	4	8	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	32.5	32.5	35.5	35.5	15.0	37.5	37.5	15.0	36.5	36.5
Total Split (s)	32.0	32.0	36.0	36.0	15.0	37.0	37.0	15.0	37.0	37.0
Total Split (%)	26.7%	26.7%	30.0%	30.0%	12.5%	30.8%	30.8%	12.5%	30.8%	30.8%
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	Lag
Lead-Lag Optimize?					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	0.19	0.64	0.75	0.65	0.17	1.66	0.18	0.59	0.95	0.02
Control Delay	54.9	19.2	57.0	8.7	18.5	335.9	4.1	28.0	53.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	19.2	57.0	8.7	18.5	335.9	4.1	28.0	53.6	0.0
Queue Length 50th (ft)	17	0	202	4	8	~962	0	181	~722	0
Queue Length 95th (ft)	43	65	273	87	27	#1321	28	m227	m#1061	m0
Internal Link Dist (ft)	238			965		1320			1505	
Turn Bay Length (ft)			145		95		295	165		230
Base Capacity (vph)	404	478	458	726	202	543	561	491	952	891
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	0.06	0.35	0.60	0.60	0.13	1.66	0.18	0.59	0.95	0.02

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: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

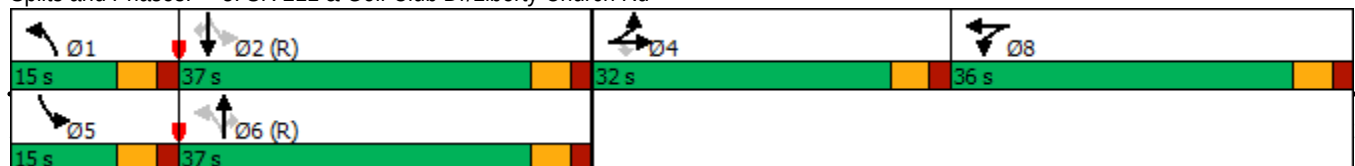
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

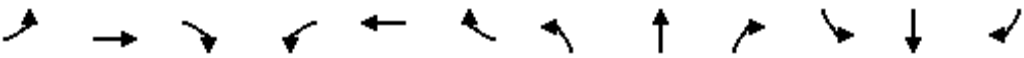
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: SR 211 & Golf Club Dr/Liberty Church Rd



HCM 6th Signalized Intersection Summary 3: SR 211 & Golf Club Dr/Liberty Church Rd

2a. No-Build 2028 AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱	↰	↱		↰	↱	↰	↱	↰	↱
Traffic Volume (veh/h)	8	14	158	261	7	404	26	858	94	276	864	18
Future Volume (veh/h)	8	14	158	261	7	404	26	858	94	276	864	18
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	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	8	15	0	275	7	0	27	903	0	291	909	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	17	32		307	323		220	983		254	1082	
Arrive On Green	0.03	0.03	0.00	0.17	0.17	0.00	0.02	0.54	0.00	0.08	0.59	0.00
Sat Flow, veh/h	639	1199	1585	1781	1870	0	1781	1826	1585	1781	1826	1585
Grp Volume(v), veh/h	23	0	0	275	7	0	27	903	0	291	909	0
Grp Sat Flow(s),veh/h/ln	1838	0	1585	1781	1870	0	1781	1826	1585	1781	1826	1585
Q Serve(g_s), s	1.5	0.0	0.0	18.1	0.4	0.0	0.8	54.2	0.0	9.5	48.5	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	18.1	0.4	0.0	0.8	54.2	0.0	9.5	48.5	0.0
Prop In Lane	0.35		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	49	0		307	323		220	983		254	1082	
V/C Ratio(X)	0.47	0.00		0.89	0.02		0.12	0.92		1.14	0.84	
Avail Cap(c_a), veh/h	406	0		453	475		317	983		254	1082	
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	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.6	0.0	0.0	48.6	41.2	0.0	19.3	25.3	0.0	32.5	19.8	0.0
Incr Delay (d2), s/veh	6.7	0.0	0.0	14.6	0.0	0.0	0.2	14.8	0.0	101.1	7.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.0	9.1	0.2	0.0	0.3	24.4	0.0	10.8	19.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	0.0	63.2	41.3	0.0	19.6	40.1	0.0	133.6	27.7	0.0
LnGrp LOS	E	A		E	D		B	D		F	C	
Approach Vol, veh/h		23			282			930			1200	
Approach Delay, s/veh		64.3			62.6			39.5			53.4	
Approach LOS		E			E			D			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	76.6		8.7	15.0	70.1		26.2				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	31.5		26.5	9.5	31.5		30.5				
Max Q Clear Time (g_c+I1), s	2.8	50.5		3.5	11.5	56.2		20.1				
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	0.0		0.6				

Intersection Summary

HCM 6th Ctrl Delay	49.3
HCM 6th LOS	D

Notes

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

Intersection						
Intersection Delay, s/veh12.0						
Intersection LOS B						
Approach	EB	WB	NB	SB		
Entry Lanes	0	4	2	2		
Conflicting Circle Lanes	2	2	1	2		
Adj Approach Flow, veh/h	0	0	1900	1249		
Demand Flow Rate, veh/h	0	0	1995	1312		
Vehicles Circulating, veh/h	818	1995	0	1141		
Vehicles Exiting, veh/h	968	0	818	1204		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	0.0	0.0	12.4	11.3		
Approach LOS	-	-	B	B		
Lane	Left	Right	Left	Right	Bypass	
Designated Moves	LT	TR	LT	TR	R	
Assumed Moves	LT	TR	LT	TR	R	
RT Channelized					Free	
Lane Util	0.470	0.530	0.470	0.530		
Follow-Up Headway, s	2.535	2.535	2.667	2.535		
Critical Headway, s	4.544	4.544	4.645	4.328	667	
Entry Flow, veh/h	938	1057	303	342	1995	
Cap Entry Lane, veh/h	1420	1420	473	538	0.952	
Entry HV Adj Factor	0.952	0.953	0.953	0.952	635	
Flow Entry, veh/h	893	1007	289	326	1900	
Cap Entry, veh/h	1352	1353	450	512	0.334	
V/C Ratio	0.661	0.744	0.641	0.635	0.0	
Control Delay, s/veh	11.0	13.7	24.4	21.6	A	
LOS	B	B	C	C	1	
95th %tile Queue, veh	5	7	4	4		

Timings
5: SR 211 & I-85 NB Ramps

2a. No-Build 2028 AM

02/20/2024

Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	243	354	1581	270	146	601
Future Volume (vph)	243	354	1581	270	146	601
Lane Group Flow (vph)	248	361	1613	276	149	613
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	3		6		5	2
Permitted Phases		8		6	2	
Detector Phase	3	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	34.5	34.5	28.5	28.5	15.0	28.5
Total Split (s)	44.0	44.0	61.0	61.0	15.0	76.0
Total Split (%)	36.7%	36.7%	50.8%	50.8%	12.5%	63.3%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.76	0.70	0.77	0.28	0.41	0.25
Control Delay	60.6	17.8	21.4	7.0	9.1	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	17.8	21.4	7.0	9.1	6.7
Queue Length 50th (ft)	184	54	448	44	15	75
Queue Length 95th (ft)	256	150	669	107	31	124
Internal Link Dist (ft)			1253			1370
Turn Bay Length (ft)		480		160	135	
Base Capacity (vph)	551	684	2107	994	427	2470
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.53	0.77	0.28	0.35	0.25

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 100

Control Type: Actuated-Coordinated

Splits and Phases: 5: SR 211 & I-85 NB Ramps



HCM 6th Signalized Intersection Summary 5: SR 211 & I-85 NB Ramps

2a. No-Build 2028 AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 		 	 	
Traffic Volume (veh/h)	243	0	354	0	0	0	0	1581	270	146	601	0
Future Volume (veh/h)	243	0	354	0	0	0	0	1581	270	146	601	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1826	1826	1826	1826	0
Adj Flow Rate, veh/h	248	0	0				0	1613	0	149	613	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	5	0	5				0	5	5	5	5	0
Cap, veh/h	281	0					0	2289		476	2591	0
Arrive On Green	0.16	0.00	0.00				0.00	0.66	0.00	0.04	0.75	0.00
Sat Flow, veh/h	1739	0	1547				0	3561	1547	3374	3561	0
Grp Volume(v), veh/h	248	0	0				0	1613	0	149	613	0
Grp Sat Flow(s),veh/h/ln	1739	0	1547				0	1735	1547	1687	1735	0
Q Serve(g_s), s	16.7	0.0	0.0				0.0	35.5	0.0	1.6	6.5	0.0
Cycle Q Clear(g_c), s	16.7	0.0	0.0				0.0	35.5	0.0	1.6	6.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	281	0					0	2289		476	2591	0
V/C Ratio(X)	0.88	0.00					0.00	0.70		0.31	0.24	0.00
Avail Cap(c_a), veh/h	558	0					0	2289		603	2591	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.2	0.0	0.0				0.0	13.0	0.0	12.8	4.7	0.0
Incr Delay (d2), s/veh	9.0	0.0	0.0				0.0	1.9	0.0	0.4	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	0.0				0.0	12.3	0.0	0.7	1.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.2	0.0	0.0				0.0	14.8	0.0	13.2	4.9	0.0
LnGrp LOS	E	A					A	B		B	A	A
Approach Vol, veh/h	248						1613			762		
Approach Delay, s/veh	58.2						14.8			6.5		
Approach LOS	E						B			A		
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	95.1			10.5			84.7			24.9		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	70.5			9.5			55.5			38.5		
Max Q Clear Time (g_c+I1), s	8.5			3.6			37.5			18.7		
Green Ext Time (p_c), s	9.1			0.2			15.0			0.6		
Intersection Summary												
HCM 6th Ctrl Delay	16.5											
HCM 6th LOS	B											

Timings
6: SR 211 & SR 53

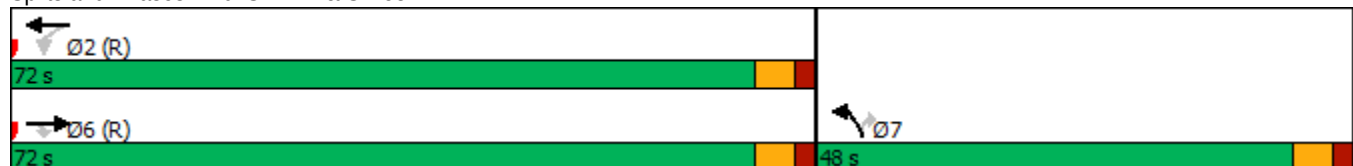
2a. No-Build 2028 AM
02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↗	↗
Traffic Volume (vph)	490	533	181	949	551	45
Future Volume (vph)	490	533	181	949	551	45
Lane Group Flow (vph)	544	592	201	1054	612	50
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	7	
Permitted Phases		6	2			7
Detector Phase	6	6	2	2	7	7
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	5.0
Minimum Split (s)	42.5	42.5	28.5	28.5	40.5	40.5
Total Split (s)	72.0	72.0	72.0	72.0	48.0	48.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None
v/c Ratio	0.24	0.47	0.36	0.48	0.78	0.13
Control Delay	8.2	2.0	11.4	10.5	50.8	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	2.0	11.4	10.5	50.8	9.8
Queue Length 50th (ft)	76	0	60	183	231	0
Queue Length 95th (ft)	121	41	125	274	276	30
Internal Link Dist (ft)	1195			1463	749	
Turn Bay Length (ft)		180	190		260	
Base Capacity (vph)	2275	1266	556	2212	1215	592
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.47	0.36	0.48	0.50	0.08

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 211 & SR 53



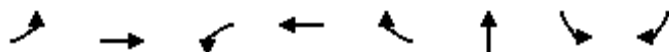
HCM 6th Signalized Intersection Summary 6: SR 211 & SR 53

2a. No-Build 2028 AM
02/20/2024

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖	↑↑	↖↗	↗
Traffic Volume (veh/h)	490	533	181	949	551	45
Future Volume (veh/h)	490	533	181	949	551	45
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1870	1870	1737	1870	1870
Adj Flow Rate, veh/h	544	592	201	1054	612	50
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	8	2	2	11	2	2
Cap, veh/h	2376	1113	379	2316	713	327
Arrive On Green	0.70	0.70	0.70	0.70	0.21	0.21
Sat Flow, veh/h	3474	1585	495	3387	3456	1585
Grp Volume(v), veh/h	544	592	201	1054	612	50
Grp Sat Flow(s),veh/h/ln	1692	1585	495	1650	1728	1585
Q Serve(g_s), s	6.9	21.3	29.1	16.8	20.5	3.1
Cycle Q Clear(g_c), s	6.9	21.3	36.0	16.8	20.5	3.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2376	1113	379	2316	713	327
V/C Ratio(X)	0.23	0.53	0.53	0.46	0.86	0.15
Avail Cap(c_a), veh/h	2376	1113	379	2316	1224	561
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.4	8.5	12.7	7.8	45.9	39.0
Incr Delay (d2), s/veh	0.2	1.8	5.2	0.6	3.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	26.2	3.4	5.1	8.8	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.6	10.3	18.0	8.5	49.0	39.2
LnGrp LOS	A	B	B	A	D	D
Approach Vol, veh/h	1136			1255	662	
Approach Delay, s/veh	8.5			10.0	48.3	
Approach LOS	A			A	D	
Timer - Assigned Phs	2		4		6	
Phs Duration (G+Y+Rc), s	89.7		30.3		89.7	
Change Period (Y+Rc), s	5.5		5.5		5.5	
Max Green Setting (Gmax), s	66.5		42.5		66.5	
Max Q Clear Time (g_c+I1), s	38.0		22.5		23.3	
Green Ext Time (p_c), s	18.5		2.3		15.6	
Intersection Summary						
HCM 6th Ctrl Delay			17.8			
HCM 6th LOS			B			

Timings 7: SR 347 (Friendship Rd) & NGMC Main Drwy

2a. No-Build 2028 AM
02/20/2024

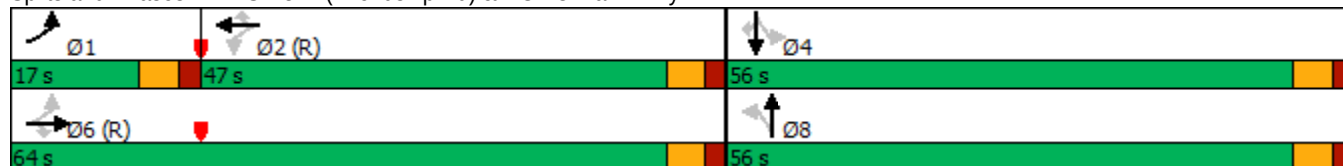


Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBR
Lane Configurations								
Traffic Volume (vph)	164	723	1	837	159	0	44	42
Future Volume (vph)	164	723	1	837	159	0	44	42
Lane Group Flow (vph)	180	795	1	920	175	2	48	46
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	Perm
Protected Phases	1	6		2		8		
Permitted Phases	6		2		2		4	4
Detector Phase	1	6	2	2	2	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	46.5	46.5	46.5	54.5	56.5	56.5
Total Split (s)	17.0	64.0	47.0	47.0	47.0	56.0	56.0	56.0
Total Split (%)	14.2%	53.3%	39.2%	39.2%	39.2%	46.7%	46.7%	46.7%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead		Lag	Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.33	0.19	0.00	0.26	0.15	0.01	0.42	0.13
Control Delay	4.6	0.5	9.0	4.9	1.7	0.0	63.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	0.5	9.0	4.9	1.7	0.0	63.0	0.7
Queue Length 50th (ft)	5	2	0	28	0	0	36	0
Queue Length 95th (ft)	48	13	m1	117	m16	0	74	0
Internal Link Dist (ft)		1298		1964		114		
Turn Bay Length (ft)	1000		550		515		90	
Base Capacity (vph)	552	4190	449	3489	1179	751	593	816
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.19	0.00	0.26	0.15	0.00	0.08	0.06

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 109 (91%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: SR 347 (Friendship Rd) & NGMC Main Drwy



HCM 6th Signalized Intersection Summary

7: SR 347 (Friendship Rd) & NGMC Main Drwy

2a. No-Build 2028 AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	164	723	0	1	837	159	0	0	2	44	0	42
Future Volume (veh/h)	164	723	0	1	837	159	0	0	2	44	0	42
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	795	0	1	920	0	0	0	2	48	0	46
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	569	4237	1358	586	3805		0	0	81	131	96	81
Arrive On Green	0.04	0.86	0.00	0.77	0.77	0.00	0.00	0.00	0.05	0.05	0.00	0.05
Sat Flow, veh/h	1781	4944	1585	683	4944	1585	0	0	1585	1415	1870	1585
Grp Volume(v), veh/h	180	795	0	1	920	0	0	0	2	48	0	46
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	683	1648	1585	0	0	1585	1415	1870	1585
Q Serve(g_s), s	2.3	3.3	0.0	0.0	6.3	0.0	0.0	0.0	0.1	4.0	0.0	3.4
Cycle Q Clear(g_c), s	2.3	3.3	0.0	0.0	6.3	0.0	0.0	0.0	0.1	4.1	0.0	3.4
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	569	4237	1358	586	3805		0	0	81	131	96	81
V/C Ratio(X)	0.32	0.19	0.00	0.00	0.24		0.00	0.00	0.02	0.37	0.00	0.57
Avail Cap(c_a), veh/h	666	4237	1358	586	3805		0	0	667	654	787	667
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	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.4	1.5	0.0	3.2	3.9	0.0	0.0	0.0	54.1	56.0	0.0	55.6
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.1	1.7	0.0	6.0
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	0.5	0.4	0.0	0.0	1.6	0.0	0.0	0.0	0.1	1.5	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.7	1.6	0.0	3.2	4.1	0.0	0.0	0.0	54.2	57.7	0.0	61.6
LnGrp LOS	A	A	A	A	A		A	A	D	E	A	E
Approach Vol, veh/h	975			921			2			94		
Approach Delay, s/veh	1.8			4.1			54.2			59.6		
Approach LOS	A			A			D			E		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.5	97.8		11.7		108.3		11.7				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	11.5	41.5		50.5		58.5		50.5				
Max Q Clear Time (g_c+I1), s	4.3	8.3		6.1		5.3		2.1				
Green Ext Time (p_c), s	0.3	12.9		0.3		12.4		0.0				

Intersection Summary

HCM 6th Ctrl Delay 5.6

HCM 6th LOS A

Notes

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

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

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	130	880	768	111	7	13
Future Vol, veh/h	130	880	768	111	7	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	575	-	-	720	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	141	957	835	121	8	14
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	956	0	-	0	1500	418
Stage 1	-	-	-	-	835	-
Stage 2	-	-	-	-	665	-
Critical Hdwy	5.34	-	-	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	3.12	-	-	-	3.82	3.92
Pot Cap-1 Maneuver	411	-	-	-	172	499
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	430	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	411	-	-	-	113	499
Mov Cap-2 Maneuver	-	-	-	-	113	-
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	430	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.4	0		21.7		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	411	-	-	-	113	499
HCM Lane V/C Ratio	0.344	-	-	-	0.067	0.028
HCM Control Delay (s)	18.3	-	-	-	39.1	12.4
HCM Lane LOS	C	-	-	-	E	B
HCM 95th %tile O(veh)	1.5	-	-	-	0.2	0.1

Timings 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

2a. No-Build 2028 AM
02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		  			  			 		 	
Traffic Volume (vph)	21	968	157	2	763	15	142	5	27	13	42
Future Volume (vph)	21	968	157	2	763	15	142	5	27	13	42
Lane Group Flow (vph)	23	1041	169	2	820	16	153	21	29	14	45
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	3	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	15.0	43.5	43.5	15.0	47.5	50.5	50.5	50.5
Total Split (s)	15.0	41.0	41.0	15.0	41.0	41.0	15.0	64.0	49.0	49.0	49.0
Total Split (%)	12.5%	34.2%	34.2%	12.5%	34.2%	34.2%	12.5%	53.3%	40.8%	40.8%	40.8%
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	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.05	0.30	0.14	0.01	0.25	0.01	0.71	0.07	0.31	0.11	0.20
Control Delay	5.0	6.4	1.6	8.0	8.2	0.0	61.3	19.8	60.9	53.1	2.0
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	5.0	6.4	1.6	8.0	8.2	0.0	61.3	19.8	60.9	53.1	2.0
Queue Length 50th (ft)	4	89	3	0	53	0	92	1	22	10	0
Queue Length 95th (ft)	m7	m131	m12	m1	71	0	m161	m22	53	31	0
Internal Link Dist (ft)		1122			884			413		385	
Turn Bay Length (ft)	405		300	575		550	100		95		100
Base Capacity (vph)	513	3501	1180	445	3304	1108	214	812	502	675	652
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	0.04	0.30	0.14	0.00	0.25	0.01	0.71	0.03	0.06	0.02	0.07

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

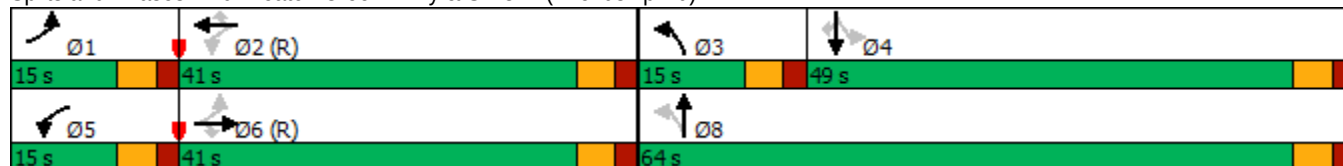
Offset: 20 (17%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

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

Splits and Phases: 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

2a. No-Build 2028 AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	21	968	157	2	763	15	142	5	15	27	13	42
Future Volume (veh/h)	21	968	157	2	763	15	142	5	15	27	13	42
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	1041	169	2	820	16	153	5	16	29	14	45
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	448	3392	1088	343	3295	1056	257	68	218	128	91	77
Arrive On Green	0.02	0.69	0.69	0.00	0.22	0.22	0.08	0.17	0.17	0.05	0.05	0.05
Sat Flow, veh/h	1781	4944	1585	1781	4944	1585	1781	392	1253	1391	1870	1585
Grp Volume(v), veh/h	23	1041	169	2	820	16	153	0	21	29	14	45
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	1781	1648	1585	1781	0	1645	1391	1870	1585
Q Serve(g_s), s	0.5	10.0	4.5	0.0	16.4	0.9	9.5	0.0	1.3	2.4	0.9	3.3
Cycle Q Clear(g_c), s	0.5	10.0	4.5	0.0	16.4	0.9	9.5	0.0	1.3	2.4	0.9	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.76	1.00		1.00
Lane Grp Cap(c), veh/h	448	3392	1088	343	3295	1056	257	0	286	128	91	77
V/C Ratio(X)	0.05	0.31	0.16	0.01	0.25	0.02	0.60	0.00	0.07	0.23	0.15	0.58
Avail Cap(c_a), veh/h	549	3392	1088	479	3295	1056	257	0	802	564	678	575
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.1	7.5	6.6	6.8	22.0	16.0	48.1	0.0	41.5	55.5	54.7	55.9
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.0	0.2	0.0	3.7	0.0	0.1	0.9	0.8	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.1	1.4	0.0	7.2	0.3	4.6	0.0	0.5	0.9	0.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.1	7.7	6.9	6.8	22.2	16.0	51.8	0.0	41.6	56.3	55.5	62.7
LnGrp LOS	A	A	A	A	C	B	D	A	D	E	E	E
Approach Vol, veh/h	1233			838			174			88		
Approach Delay, s/veh	7.6			22.0			50.6			59.5		
Approach LOS	A			C			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s	8.2	85.5	15.0	11.3	5.8	87.8	26.3					
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5					
Max Green Setting (Gmax), s	9.5	35.5	9.5	43.5	9.5	35.5	58.5					
Max Q Clear Time (g_c+I1), s	2.5	18.4	11.5	5.3	2.0	12.0	3.3					
Green Ext Time (p_c), s	0.0	8.2	0.0	0.3	0.0	13.6	0.1					
Intersection Summary												
HCM 6th Ctrl Delay	17.9											
HCM 6th LOS	B											
Notes												

Timings 10: Spout Springs Rd & SR 347 (Friendship Rd)

2a. No-Build 2028 AM
02/20/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	675	165	282	677	157	240	402	227	219	372	170
Future Volume (vph)	219	675	165	282	677	157	240	402	227	219	372	170
Lane Group Flow (vph)	235	726	177	303	728	169	258	432	244	235	400	183
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	15.0	35.5	35.5	15.0	33.5	33.5	15.0	42.5	42.5	15.0	40.5	40.5
Total Split (s)	17.0	36.0	36.0	24.0	43.0	43.0	18.0	42.0	42.0	18.0	42.0	42.0
Total Split (%)	14.2%	30.0%	30.0%	20.0%	35.8%	35.8%	15.0%	35.0%	35.0%	15.0%	35.0%	35.0%
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	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	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.72	0.73	0.30	0.82	0.63	0.26	0.90	0.87	0.44	0.90	0.80	0.33
Control Delay	35.3	44.5	7.0	51.2	32.5	6.2	47.1	50.4	14.2	61.0	53.4	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.3	44.5	7.0	51.2	32.5	6.2	47.1	50.4	14.2	61.0	53.4	7.2
Queue Length 50th (ft)	107	281	2	187	219	20	140	319	82	117	284	6
Queue Length 95th (ft)	#197	#361	58	#309	206	m14	m#226	437	m134	#248	391	59
Internal Link Dist (ft)		4090			4101			920			702	
Turn Bay Length (ft)	575		190	260		210	140		150	125		145
Base Capacity (vph)	329	998	586	382	1161	651	287	566	601	263	566	601
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.73	0.30	0.79	0.63	0.26	0.90	0.76	0.41	0.89	0.71	0.30

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

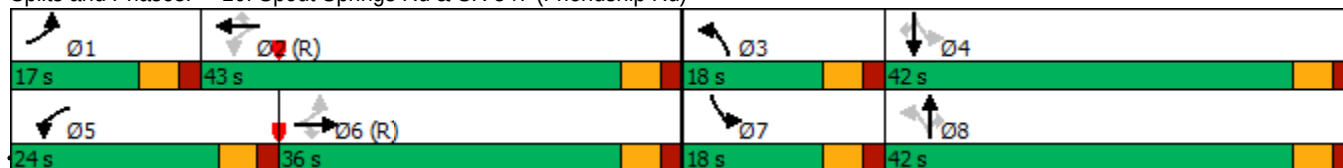
Control Type: Actuated-Coordinated

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: 10: Spout Springs Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

10: Spout Springs Rd & SR 347 (Friendship Rd)

2a. No-Build 2028 AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	219	675	165	282	677	157	240	402	227	219	372	170
Future Volume (veh/h)	219	675	165	282	677	157	240	402	227	219	372	170
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	235	726	177	303	728	0	258	432	0	235	400	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	371	1136	523	383	1251		295	474		273	474	
Arrive On Green	0.10	0.33	0.33	0.13	0.36	0.00	0.10	0.25	0.00	0.10	0.25	0.00
Sat Flow, veh/h	1781	3441	1585	1781	3441	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	235	726	177	303	728	0	258	432	0	235	400	0
Grp Sat Flow(s),veh/h/ln	1781	1721	1585	1781	1721	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	10.5	21.5	10.1	13.2	20.5	0.0	12.5	26.9	0.0	11.7	24.4	0.0
Cycle Q Clear(g_c), s	10.5	21.5	10.1	13.2	20.5	0.0	12.5	26.9	0.0	11.7	24.4	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	371	1136	523	383	1251		295	474		273	474	
V/C Ratio(X)	0.63	0.64	0.34	0.79	0.58		0.88	0.91		0.86	0.84	
Avail Cap(c_a), veh/h	371	1136	523	428	1251		295	569		273	569	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.4	34.1	30.3	24.7	30.8	0.0	33.1	43.5	0.0	32.2	42.6	0.0
Incr Delay (d2), s/veh	3.5	2.8	1.7	8.8	2.0	0.0	24.1	17.1	0.0	23.1	9.7	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	4.6	9.1	4.0	6.2	8.5	0.0	7.4	14.4	0.0	6.6	12.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.0	36.9	32.0	33.5	32.8	0.0	57.1	60.6	0.0	55.3	52.3	0.0
LnGrp LOS	C	D	C	C	C		E	E		E	D	
Approach Vol, veh/h	1138			1031			690			635		
Approach Delay, s/veh	34.3			33.0			59.3			53.4		
Approach LOS	C			C			E			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	49.1	18.0	35.9	21.0	45.1	18.0	35.9				
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	11.5	37.5	12.5	36.5	18.5	30.5	12.5	36.5				
Max Q Clear Time (g_c+I1), s	12.5	22.5	14.5	26.4	15.2	23.5	13.7	28.9				
Green Ext Time (p_c), s	0.0	6.7	0.0	1.6	0.3	4.3	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay 42.3

HCM 6th LOS D

Notes

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

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

Intersection						
Int Delay, s/veh	19.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	719	96	136	937	98	132
Future Vol, veh/h	719	96	136	937	98	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	385	-	0	80
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	808	108	153	1053	110	148
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	916	0	1641	404
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	833	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	740	-	~ 91	596
Stage 1	-	-	-	-	399	-
Stage 2	-	-	-	-	387	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	740	-	~ 72	596
Mov Cap-2 Maneuver	-	-	-	-	~ 72	-
Stage 1	-	-	-	-	399	-
Stage 2	-	-	-	-	307	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.4		175.6	
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	72	596	-	-	740	-
HCM Lane V/C Ratio	1.529	0.249	-	-	0.206	-
HCM Control Delay (s)	\$ 394.5	13	-	-	11.1	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	9.2	1	-	-	0.8	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Intersection	
Intersection Delay, s/veh	26.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	118	94	126	171	7	91	138	84	9	251	37
Future Vol, veh/h	35	118	94	126	171	7	91	138	84	9	251	37
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	136	108	145	197	8	105	159	97	10	289	43
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	21.4	29.2	28.6	26.8
HCM LOS	C	D	D	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	14%	41%	3%
Vol Thru, %	44%	48%	56%	85%
Vol Right, %	27%	38%	2%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	313	247	304	297
LT Vol	91	35	126	9
Through Vol	138	118	171	251
RT Vol	84	94	7	37
Lane Flow Rate	360	284	349	341
Geometry Grp	1	1	1	1
Degree of Util (X)	0.738	0.598	0.737	0.709
Departure Headway (Hd)	7.387	7.588	7.598	7.475
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	489	474	475	485
Service Time	5.444	5.651	5.656	5.532
HCM Lane V/C Ratio	0.736	0.599	0.735	0.703
HCM Control Delay	28.6	21.4	29.2	26.8
HCM Lane LOS	D	C	D	D
HCM 95th-tile Q	6.1	3.8	6	5.5

Timings

13: Spout Springs Rd & Thompson Mill Rd

2a. No-Build 2028 AM

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	119	40	38	35	168	841	48	22	474	107
Future Volume (vph)	119	40	38	35	168	841	48	22	474	107
Lane Group Flow (vph)	129	119	41	71	183	914	52	24	515	116
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	31.5	15.0	30.5	15.0	35.5	35.5	15.0	34.5	34.5
Total Split (s)	15.0	32.0	15.0	32.0	18.0	58.0	58.0	15.0	55.0	55.0
Total Split (%)	12.5%	26.7%	12.5%	26.7%	15.0%	48.3%	48.3%	12.5%	45.8%	45.8%
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	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	0.61	0.56	0.21	0.44	0.33	0.74	0.05	0.08	0.46	0.12
Control Delay	54.4	34.5	40.3	38.8	7.6	21.0	0.1	3.8	12.8	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	54.4	34.5	40.3	38.8	7.6	21.0	0.1	3.8	12.8	3.4
Queue Length 50th (ft)	88	38	27	29	40	493	0	1	245	16
Queue Length 95th (ft)	137	96	55	72	79	#885	0	m4	421	m30
Internal Link Dist (ft)		1809		565		751			337	
Turn Bay Length (ft)	155		223		228		112	100		110
Base Capacity (vph)	214	419	225	400	593	1243	1097	334	1119	1000
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	0.60	0.28	0.18	0.18	0.31	0.74	0.05	0.07	0.46	0.12

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: 130

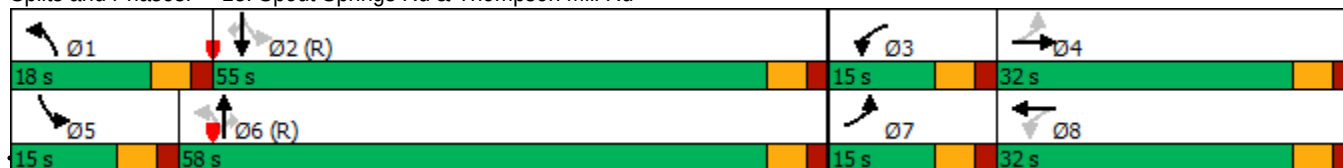
Control Type: Actuated-Coordinated

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: 13: Spout Springs Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary 13: Spout Springs Rd & Thompson Mill Rd

2a. No-Build 2028 AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	40	70	38	35	30	168	841	48	22	474	107
Future Volume (veh/h)	119	40	70	38	35	30	168	841	48	22	474	107
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	43	76	41	38	33	183	914	52	24	515	116
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	226	64	113	164	54	47	539	1224	1037	289	1163	986
Arrive On Green	0.08	0.11	0.11	0.03	0.06	0.06	0.06	0.65	0.65	0.02	0.62	0.62
Sat Flow, veh/h	1781	587	1037	1781	894	777	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	129	0	119	41	0	71	183	914	52	24	515	116
Grp Sat Flow(s),veh/h/ln	1781	0	1624	1781	0	1671	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.9	0.0	8.5	2.6	0.0	5.0	4.4	39.7	1.4	0.6	17.2	3.6
Cycle Q Clear(g_c), s	7.9	0.0	8.5	2.6	0.0	5.0	4.4	39.7	1.4	0.6	17.2	3.6
Prop In Lane	1.00		0.64	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	0	176	164	0	101	539	1224	1037	289	1163	986
V/C Ratio(X)	0.57	0.00	0.68	0.25	0.00	0.70	0.34	0.75	0.05	0.08	0.44	0.12
Avail Cap(c_a), veh/h	226	0	359	249	0	369	626	1224	1037	389	1163	986
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.3	0.0	51.5	50.7	0.0	55.3	8.5	14.0	7.4	13.2	11.8	9.2
Incr Delay (d2), s/veh	3.4	0.0	4.5	0.8	0.0	8.6	0.4	4.2	0.1	0.1	1.2	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	3.6	0.0	3.6	1.2	0.0	2.3	1.5	16.0	0.5	0.2	7.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.7	0.0	55.9	51.5	0.0	63.9	8.9	18.2	7.5	13.4	13.1	9.5
LnGrp LOS	D	A	E	D	A	E	A	B	A	B	B	A
Approach Vol, veh/h	248			112			1149			655		
Approach Delay, s/veh	52.7			59.4			16.3			12.4		
Approach LOS	D			E			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.1	80.1	9.2	18.5	8.3	84.0	15.0	12.7				
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	12.5	49.5	9.5	26.5	9.5	52.5	9.5	26.5				
Max Q Clear Time (g_c+I1), s	6.4	19.2	4.6	10.5	2.6	41.7	9.9	7.0				
Green Ext Time (p_c), s	0.2	7.7	0.0	0.5	0.0	7.4	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay	21.5											
HCM 6th LOS	C											

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	4	5	198	203	2
Future Vol, veh/h	5	4	5	198	203	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	255	-	-	210	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	6	5	6	230	236	2
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	6	0	-	0	23	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	17	-
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	1615	-	-	-	993	1077
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1006	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1615	-	-	-	989	1077
Mov Cap-2 Maneuver	-	-	-	-	989	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	1006	-
Approach	EB	WB		SB		
HCM Control Delay, s	4	0		9.8		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1615	-	-	-	989	1077
HCM Lane V/C Ratio	0.004	-	-	-	0.239	0.002
HCM Control Delay (s)	7.2	-	-	-	9.8	8.4
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	-	0.9	0

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	101	106	78	87	113	63
Future Vol, veh/h	101	106	78	87	113	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	225	400	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	111	116	86	96	124	69
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	227	0	379	111
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	268	-
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	-	-	1341	-	623	942
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	777	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1341	-	583	942
Mov Cap-2 Maneuver	-	-	-	-	583	-
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	727	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.7		11.5	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	583	942	-	-	1341	-
HCM Lane V/C Ratio	0.213	0.073	-	-	0.064	-
HCM Control Delay (s)	12.8	9.1	-	-	7.9	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile O(veh)	0.8	0.2	-	-	0.2	-

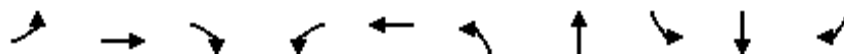
Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘	
Traffic Vol, veh/h	168	19	9	117	27	22
Future Vol, veh/h	168	19	9	117	27	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	177	215	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	181	20	10	126	29	24
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	201	0	327	181
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	146	-
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	-	-	1371	-	667	862
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	881	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1371	-	662	862
Mov Cap-2 Maneuver	-	-	-	-	662	-
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	875	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.5		10.2	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	739	-	-	1371	-	
HCM Lane V/C Ratio	0.071	-	-	0.007	-	
HCM Control Delay (s)	10.2	-	-	7.6	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.2	-	-	0	-	

Timings

1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

2b. No-Build 2028 PM

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	477	197	722	81	68	299	717	34	570	201
Future Volume (vph)	477	197	722	81	68	299	717	34	570	201
Lane Group Flow (vph)	497	205	752	84	94	311	786	35	594	209
Turn Type	pm+pt	NA	Free	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4			8	1	6	5	2	
Permitted Phases	4		Free	8						2
Detector Phase	7	4		8	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0		6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	33.5		34.5	34.5	15.0	43.5	15.0	36.5	36.5
Total Split (s)	29.0	55.0		26.0	26.0	16.0	50.0	15.0	49.0	49.0
Total Split (%)	24.2%	45.8%		21.7%	21.7%	13.3%	41.7%	12.5%	40.8%	40.8%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	1.01	0.32	0.48	0.62	0.44	0.70	0.91	0.31	0.87	0.29
Control Delay	67.9	19.0	2.5	69.0	48.3	73.0	36.5	60.1	50.9	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.9	19.0	2.5	69.0	48.3	73.0	36.5	60.1	50.9	4.6
Queue Length 50th (ft)	~215	71	0	63	60	130	440	26	433	0
Queue Length 95th (ft)	#311	100	200	112	108	m#200	#961	60	#653	50
Internal Link Dist (ft)		1136			834		1149		1213	
Turn Bay Length (ft)						400		250		450
Base Capacity (vph)	492	739	1583	200	307	446	863	141	679	724
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	1.01	0.28	0.48	0.42	0.31	0.70	0.91	0.25	0.87	0.29

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 140

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

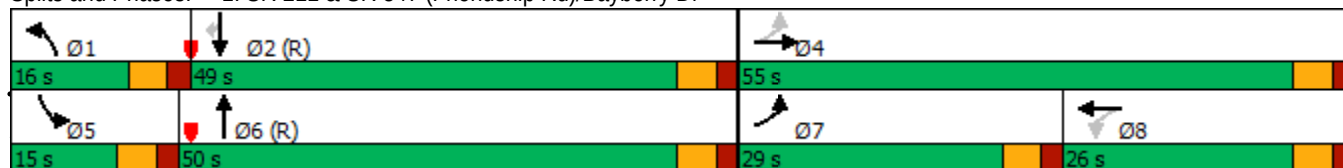
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr



HCM 6th Signalized Intersection Summary
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

2b. No-Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	477	197	722	81	68	22	299	717	37	34	570	201
Future Volume (veh/h)	477	197	722	81	68	22	299	717	37	34	570	201
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	1811	1870	1870	1811	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	497	205	0	84	71	23	311	747	0	35	594	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	6	2	2	6	2	2	5	2	2	5	2
Cap, veh/h	459	602		167	119	39	302	915		51	808	
Arrive On Green	0.20	0.33	0.00	0.09	0.09	0.09	0.09	0.50	0.00	0.03	0.44	0.00
Sat Flow, veh/h	1781	1811	1585	1177	1310	424	3456	1826	0	1781	1826	1585
Grp Volume(v), veh/h	497	205	0	84	0	94	311	747	0	35	594	0
Grp Sat Flow(s),veh/h/ln	1781	1811	1585	1177	0	1735	1728	1826	0	1781	1826	1585
Q Serve(g_s), s	23.5	10.2	0.0	8.4	0.0	6.2	10.5	41.4	0.0	2.3	32.3	0.0
Cycle Q Clear(g_c), s	23.5	10.2	0.0	8.4	0.0	6.2	10.5	41.4	0.0	2.3	32.3	0.0
Prop In Lane	1.00		1.00	1.00		0.24	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	459	602		167	0	158	302	915		51	808	
V/C Ratio(X)	1.08	0.34		0.50	0.00	0.60	1.03	0.82		0.68	0.74	
Avail Cap(c_a), veh/h	459	747		261	0	296	302	915		141	808	
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	0.00	1.00	0.52	0.52	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.0	30.1	0.0	53.4	0.0	52.4	54.8	25.3	0.0	57.7	27.7	0.0
Incr Delay (d2), s/veh	65.8	0.3	0.0	2.3	0.0	3.6	44.8	4.3	0.0	15.0	5.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	4.4	0.0	2.6	0.0	2.9	6.3	17.3	0.0	1.2	14.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	106.8	30.5	0.0	55.7	0.0	56.0	99.6	29.6	0.0	72.7	33.6	0.0
LnGrp LOS	F	C		E	A	E	F	C		E	C	
Approach Vol, veh/h	702			178			1058			629		
Approach Delay, s/veh	84.5			55.9			50.2			35.7		
Approach LOS	F			E			D			D		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	16.0	58.6		45.4	8.9	65.6	29.0	16.4				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	10.5	43.5		49.5	9.5	44.5	23.5	20.5				
Max Q Clear Time (g_c+I1), s	12.5	34.3		12.2	4.3	43.4	25.5	10.4				
Green Ext Time (p_c), s	0.0	4.0		1.1	0.0	0.7	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay 56.4

HCM 6th LOS E

Notes

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

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

Timings 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

2b. No-Build 2028 PM
02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	35	31	157	40	183	877	204	45	1174	25
Future Volume (vph)	35	31	157	40	183	877	204	45	1174	25
Lane Group Flow (vph)	37	334	167	82	195	933	217	48	1249	27
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4	3	8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	3	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	31.5	31.5	15.0	33.5	15.0	37.5	37.5	35.5	35.5	35.5
Total Split (s)	31.0	31.0	16.0	47.0	15.0	73.0	73.0	58.0	58.0	58.0
Total Split (%)	25.8%	25.8%	13.3%	39.2%	12.5%	60.8%	60.8%	48.3%	48.3%	48.3%
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	Lag	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.20	0.86	0.77	0.16	0.76	0.81	0.21	0.28	1.45	0.03
Control Delay	44.6	41.0	57.8	17.6	46.5	25.6	4.5	21.6	229.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.6	41.0	57.8	17.6	46.5	25.6	4.5	21.6	229.6	0.0
Queue Length 50th (ft)	26	111	103	25	94	515	20	20	~1363	0
Queue Length 95th (ft)	54	209	#163	59	#261	#932	62	m35	#1644	m0
Internal Link Dist (ft)		1758		625		1415			1149	
Turn Bay Length (ft)	95				130		200	300		
Base Capacity (vph)	278	491	216	623	258	1148	1056	171	864	820
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	0.13	0.68	0.77	0.13	0.76	0.81	0.21	0.28	1.45	0.03

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.

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

Splits and Phases: 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr



HCM 6th Signalized Intersection Summary

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

2b. No-Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	31	283	157	40	37	183	877	204	45	1174	25
Future Volume (veh/h)	35	31	283	157	40	37	183	877	204	45	1174	25
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	1811	1870	1870	1870	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	37	33	301	167	43	39	195	933	217	48	1249	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	6	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	340	33	298	215	312	283	201	1028	892	112	800	
Arrive On Green	0.21	0.21	0.21	0.09	0.35	0.35	0.08	0.56	0.56	0.58	0.58	0.00
Sat Flow, veh/h	1316	154	1404	1781	903	819	1781	1826	1585	489	1826	1585
Grp Volume(v), veh/h	37	0	334	167	0	82	195	933	217	48	1249	0
Grp Sat Flow(s),veh/h/ln	1316	0	1558	1781	0	1723	1781	1826	1585	489	1826	1585
Q Serve(g_s), s	2.7	0.0	25.5	8.5	0.0	3.9	9.0	54.8	8.3	11.6	52.6	0.0
Cycle Q Clear(g_c), s	2.7	0.0	25.5	8.5	0.0	3.9	9.0	54.8	8.3	51.4	52.6	0.0
Prop In Lane	1.00		0.90	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	340	0	331	215	0	595	201	1028	892	112	800	
V/C Ratio(X)	0.11	0.00	1.01	0.78	0.00	0.14	0.97	0.91	0.24	0.43	1.56	
Avail Cap(c_a), veh/h	340	0	331	216	0	596	201	1028	892	112	800	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.71	0.71	0.00
Uniform Delay (d), s/veh	38.3	0.0	47.3	34.1	0.0	27.0	36.4	23.4	13.3	44.5	25.1	0.0
Incr Delay (d2), s/veh	0.1	0.0	51.7	16.1	0.0	0.1	54.7	13.1	0.6	8.3	257.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	14.3	4.7	0.0	1.7	8.7	24.3	2.9	1.6	74.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.4	0.0	98.9	50.3	0.0	27.1	91.1	36.5	13.9	52.8	282.3	0.0
LnGrp LOS	D	A	F	D	A	C	F	D	B	D	F	
Approach Vol, veh/h	371			249			1345			1297		
Approach Delay, s/veh	92.9			42.6			40.8			273.8		
Approach LOS	F			D			D			F		
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	15.0	58.1	15.9	31.0		73.1		46.9				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	52.5	10.5	25.5		67.5		41.5				
Max Q Clear Time (g_c+I1), s	11.0	54.6	10.5	27.5		56.8		5.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0		7.8		0.5				

Intersection Summary

HCM 6th Ctrl Delay 139.5

HCM 6th LOS F

Notes

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

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

Timings 3: SR 211 & Golf Club Dr/Liberty Church Rd

2b. No-Build 2028 PM
02/20/2024

	→	↘	↙	←	↖	↑	↗	↘	↓	↙
Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	14	303	358	11	51	798	168	325	1211	25
Future Volume (vph)	14	303	358	11	51	798	168	325	1211	25
Lane Group Flow (vph)	32	312	369	427	53	823	173	335	1248	26
Turn Type	NA	Perm	Split	NA	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	4		8	8	1	6		5	2	
Permitted Phases		4			6		6			2
Detector Phase	4	4	8	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	32.5	32.5	35.5	35.5	15.0	37.5	37.5	15.0	36.5	36.5
Total Split (s)	32.0	32.0	36.0	36.0	15.0	65.0	65.0	17.0	67.0	67.0
Total Split (%)	21.3%	21.3%	24.0%	24.0%	10.0%	43.3%	43.3%	11.3%	44.7%	44.7%
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	Lag
Lead-Lag Optimize?					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	0.12	0.89	0.91	0.62	0.38	1.15	0.25	2.26	1.55	0.03
Control Delay	54.5	60.6	82.6	9.5	27.0	123.2	12.7	617.8	285.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	60.6	82.6	9.5	27.0	123.2	12.7	617.8	285.7	0.1
Queue Length 50th (ft)	27	168	357	9	26	~941	40	~542	~1757	0
Queue Length 95th (ft)	59	#303	#592	115	50	#1197	95	#745	#2047	0
Internal Link Dist (ft)	238			965		1320			1505	
Turn Bay Length (ft)			145		95		295	165		230
Base Capacity (vph)	320	398	406	686	161	717	692	148	804	757
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	0.10	0.78	0.91	0.62	0.33	1.15	0.25	2.26	1.55	0.03

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

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

Natural Cycle: 145

Control Type: Actuated-Coordinated

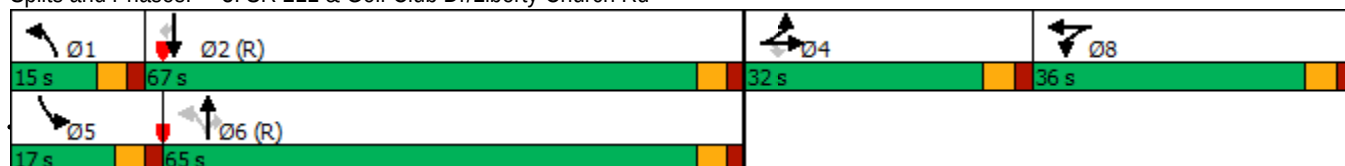
~ Volume exceeds capacity, queue is theoretically infinite.

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 211 & Golf Club Dr/Liberty Church Rd



HCM 6th Signalized Intersection Summary

3: SR 211 & Golf Club Dr/Liberty Church Rd

2b. No-Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	14	303	358	11	404	51	798	168	325	1211	25
Future Volume (veh/h)	17	14	303	358	11	404	51	798	168	325	1211	25
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	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	18	14	0	369	11	0	53	823	0	335	1248	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	30	23		362	380		101	993		137	1079	
Arrive On Green	0.03	0.03	0.00	0.20	0.20	0.00	0.03	0.54	0.00	0.08	0.59	0.00
Sat Flow, veh/h	1023	796	1585	1781	1870	0	1781	1826	1585	1781	1826	1585
Grp Volume(v), veh/h	32	0	0	369	11	0	53	823	0	335	1248	0
Grp Sat Flow(s),veh/h/ln	1819	0	1585	1781	1870	0	1781	1826	1585	1781	1826	1585
Q Serve(g_s), s	2.6	0.0	0.0	30.5	0.7	0.0	2.0	56.1	0.0	11.5	88.6	0.0
Cycle Q Clear(g_c), s	2.6	0.0	0.0	30.5	0.7	0.0	2.0	56.1	0.0	11.5	88.6	0.0
Prop In Lane	0.56		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	54	0		362	380		101	993		137	1079	
V/C Ratio(X)	0.60	0.00		1.02	0.03		0.53	0.83		2.45	1.16	
Avail Cap(c_a), veh/h	321	0		362	380		161	993		137	1079	
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	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	71.9	0.0	0.0	59.7	47.9	0.0	36.2	28.4	0.0	69.2	30.7	0.0
Incr Delay (d2), s/veh	10.2	0.0	0.0	52.1	0.0	0.0	4.2	8.0	0.0	675.4	81.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	18.7	0.3	0.0	1.1	24.7	0.0	30.7	58.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	82.1	0.0	0.0	111.9	47.9	0.0	40.4	36.4	0.0	744.7	111.9	0.0
LnGrp LOS	F	A		F	D		D	D		F	F	
Approach Vol, veh/h		32			380			876			1583	
Approach Delay, s/veh		82.1			110.0			36.6			245.8	
Approach LOS		F			F			D			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	94.1		9.9	17.0	87.1		36.0				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	61.5		26.5	11.5	59.5		30.5				
Max Q Clear Time (g_c+I1), s	4.0	90.6		4.6	13.5	58.1		32.5				
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	1.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			162.2									
HCM 6th LOS			F									
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection						
Intersection Delay, s/veh10.1						
Intersection LOS B						
Approach	EB	WB	NB	SB		
Entry Lanes	0	4	2	2		
Conflicting Circle Lanes	2	2	1	2		
Adj Approach Flow, veh/h	0	0	1508	1453		
Demand Flow Rate, veh/h	0	0	1584	1525		
Vehicles Circulating, veh/h	1252	1583	0	591		
Vehicles Exiting, veh/h	418	0	1252	1326		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	0.0	0.0	8.8	11.5		
Approach LOS	-	-	A	B		
Lane	Left Right		Left RightBypass			
Designated Moves	LT	TR	LT	TR	R	
Assumed Moves	LT	TR	LT	TR	R	
RT Channelized					Free	
Lane Util	0.470	0.530	0.470	0.530		
Follow-Up Headway, s	2.535	2.535	2.667	2.535		
Critical Headway, s	4.544	4.544	4.645	4.328	446	
Entry Flow, veh/h	744	840	507	572	1995	
Cap Entry Lane, veh/h	1420	1420	784	859	0.952	
Entry HV Adj Factor	0.953	0.952	0.953	0.952	425	
Flow Entry, veh/h	709	799	483	545	1900	
Cap Entry, veh/h	1353	1352	747	818	0.224	
V/C Ratio	0.524	0.592	0.647	0.666	0.0	
Control Delay, s/veh	8.2	9.4	16.4	16.0	A	
LOS	A	A	C	C	1	
95th %tile Queue, veh	3	4	5	5		

Timings 5: SR 211 & I-85 NB Ramps

2b. No-Build 2028 PM
02/20/2024

						
Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	451	702	1010	245	194	994
Future Volume (vph)	451	702	1010	245	194	994
Lane Group Flow (vph)	470	731	1052	255	202	1035
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	3		6		5	2
Permitted Phases		8		6	2	
Detector Phase	3	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	34.5	34.5	28.5	28.5	15.0	28.5
Total Split (s)	60.0	60.0	44.0	44.0	16.0	60.0
Total Split (%)	50.0%	50.0%	36.7%	36.7%	13.3%	50.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.60	0.99	0.93	0.42	0.53	0.66
Control Delay	28.6	60.9	53.6	15.1	24.5	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	60.9	53.6	15.1	24.5	28.2
Queue Length 50th (ft)	267	513	413	59	45	322
Queue Length 95th (ft)	380	#791	#558	135	69	397
Internal Link Dist (ft)			1253			1370
Turn Bay Length (ft)		480		160	135	
Base Capacity (vph)	780	738	1134	608	406	1561
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.99	0.93	0.42	0.50	0.66

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

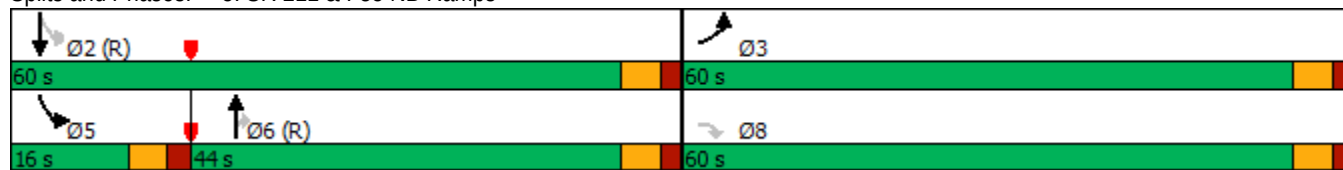
Natural Cycle: 110

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 5: SR 211 & I-85 NB Ramps



HCM 6th Signalized Intersection Summary 5: SR 211 & I-85 NB Ramps

2b. No-Build 2028 PM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 		 	 	
Traffic Volume (veh/h)	451	0	702	0	0	0	0	1010	245	194	994	0
Future Volume (veh/h)	451	0	702	0	0	0	0	1010	245	194	994	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1826	1826	1826	1826	0
Adj Flow Rate, veh/h	470	0	0				0	1052	0	202	1035	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	0	5				0	5	5	5	5	0
Cap, veh/h	506	0					0	1826		598	2142	0
Arrive On Green	0.29	0.00	0.00				0.00	0.53	0.00	0.05	0.62	0.00
Sat Flow, veh/h	1739	0	1547				0	3561	1547	3374	3561	0
Grp Volume(v), veh/h	470	0	0				0	1052	0	202	1035	0
Grp Sat Flow(s),veh/h/ln	1739	0	1547				0	1735	1547	1687	1735	0
Q Serve(g_s), s	31.5	0.0	0.0				0.0	24.7	0.0	3.1	19.5	0.0
Cycle Q Clear(g_c), s	31.5	0.0	0.0				0.0	24.7	0.0	3.1	19.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	506	0					0	1826		598	2142	0
V/C Ratio(X)	0.93	0.00					0.00	0.58		0.34	0.48	0.00
Avail Cap(c_a), veh/h	790	0					0	1826		741	2142	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.3	0.0	0.0				0.0	19.3	0.0	14.5	12.5	0.0
Incr Delay (d2), s/veh	12.3	0.0	0.0				0.0	1.3	0.0	0.3	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
%ile BackOfQ(50%),veh/ln	14.7	0.0	0.0				0.0	9.6	0.0	1.1	7.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.6	0.0	0.0				0.0	20.6	0.0	14.9	13.3	0.0
LnGrp LOS	D	A					A	C		B	B	A
Approach Vol, veh/h	470						1052			1237		
Approach Delay, s/veh	53.6						20.6			13.6		
Approach LOS	D						C			B		
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	79.6			10.9			68.7			40.4		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	54.5			10.5			38.5			54.5		
Max Q Clear Time (g_c+I1), s	21.5			5.1			26.7			33.5		
Green Ext Time (p_c), s	15.3			0.3			7.8			1.4		
Intersection Summary												
HCM 6th Ctrl Delay	23.1											
HCM 6th LOS	C											

Timings
6: SR 211 & SR 53

2b. No-Build 2028 PM
02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↘	↘
Traffic Volume (vph)	1057	491	137	552	408	153
Future Volume (vph)	1057	491	137	552	408	153
Lane Group Flow (vph)	1113	517	144	581	429	161
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	7	
Permitted Phases		6	2			7
Detector Phase	6	6	2	2	7	7
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	5.0
Minimum Split (s)	42.5	42.5	28.5	28.5	40.5	40.5
Total Split (s)	79.0	79.0	79.0	79.0	41.0	41.0
Total Split (%)	65.8%	65.8%	65.8%	65.8%	34.2%	34.2%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None
v/c Ratio	0.45	0.40	0.46	0.24	0.73	0.46
Control Delay	7.3	1.5	13.0	5.7	54.5	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	1.5	13.0	5.7	54.5	22.0
Queue Length 50th (ft)	155	0	39	65	164	43
Queue Length 95th (ft)	234	32	106	105	207	104
Internal Link Dist (ft)	1195			1463	749	
Turn Bay Length (ft)		180	190		260	
Base Capacity (vph)	2464	1302	313	2397	1015	537
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.40	0.46	0.24	0.42	0.30

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 211 & SR 53



HCM 6th Signalized Intersection Summary
6: SR 211 & SR 53

2b. No-Build 2028 PM
02/20/2024

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↗	↗
Traffic Volume (veh/h)	1057	491	137	552	408	153
Future Volume (veh/h)	1057	491	137	552	408	153
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1870	1870	1737	1870	1870
Adj Flow Rate, veh/h	1113	517	144	581	429	161
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	8	2	2	11	2	2
Cap, veh/h	2557	1198	256	2493	528	242
Arrive On Green	0.76	0.76	0.76	0.76	0.15	0.15
Sat Flow, veh/h	3474	1585	309	3387	3456	1585
Grp Volume(v), veh/h	1113	517	144	581	429	161
Grp Sat Flow(s),veh/h/ln	1692	1585	309	1650	1728	1585
Q Serve(g_s), s	14.4	14.2	38.2	6.3	14.4	11.5
Cycle Q Clear(g_c), s	14.4	14.2	52.6	6.3	14.4	11.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2557	1198	256	2493	528	242
V/C Ratio(X)	0.44	0.43	0.56	0.23	0.81	0.66
Avail Cap(c_a), veh/h	2557	1198	256	2493	1022	469
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	5.3	5.3	14.9	4.4	49.2	47.9
Incr Delay (d2), s/veh	0.5	1.1	8.6	0.2	3.1	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	21.8	2.9	1.7	6.3	4.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.9	6.5	23.6	4.6	52.2	51.1
LnGrp LOS	A	A	C	A	D	D
Approach Vol, veh/h	1630			725	590	
Approach Delay, s/veh	6.1			8.3	51.9	
Approach LOS	A			A	D	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		96.2		23.8		96.2
Change Period (Y+Rc), s		5.5		5.5		5.5
Max Green Setting (Gmax), s		73.5		35.5		73.5
Max Q Clear Time (g_c+I1), s		54.6		16.4		16.4
Green Ext Time (p_c), s		9.8		1.9		31.1
Intersection Summary						
HCM 6th Ctrl Delay			15.8			
HCM 6th LOS			B			

Timings 7: SR 347 (Friendship Rd) & NGMC Main Drwy

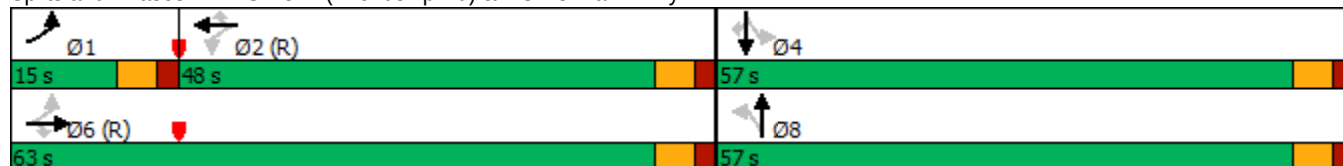
2b. No-Build 2028 PM
02/20/2024

									
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBR
Lane Configurations		  			  		 		
Traffic Volume (vph)	26	1033	1	1	806	39	0	168	132
Future Volume (vph)	26	1033	1	1	806	39	0	168	132
Lane Group Flow (vph)	28	1123	1	1	876	42	1	183	143
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	Perm
Protected Phases	1	6			2		8		
Permitted Phases	6		6	2		2		4	4
Detector Phase	1	6	6	2	2	2	8	4	4
Switch Phase									
Minimum Initial (s)	5.0	15.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	46.5	46.5	46.5	54.5	56.5	56.5
Total Split (s)	15.0	63.0	63.0	48.0	48.0	48.0	57.0	57.0	57.0
Total Split (%)	12.5%	52.5%	52.5%	40.0%	40.0%	40.0%	47.5%	47.5%	47.5%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead			Lag	Lag	Lag			
Lead-Lag Optimize?	Yes			Yes	Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.06	0.31	0.00	0.00	0.27	0.04	0.00	0.73	0.30
Control Delay	1.9	1.7	0.0	7.0	5.2	0.1	0.0	62.6	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	1.7	0.0	7.0	5.2	0.1	0.0	62.6	1.7
Queue Length 50th (ft)	1	21	0	0	56	0	0	135	0
Queue Length 95th (ft)	4	30	m0	m1	77	m0	0	200	0
Internal Link Dist (ft)		1298			1964		114		
Turn Bay Length (ft)	1000		630	550		515		90	
Base Capacity (vph)	477	3574	1162	300	3273	1083	733	605	811
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.31	0.00	0.00	0.27	0.04	0.00	0.30	0.18

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 31 (26%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: SR 347 (Friendship Rd) & NGMC Main Drwy



HCM 6th Signalized Intersection Summary

7: SR 347 (Friendship Rd) & NGMC Main Drwy

2b. No-Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	26	1033	1	1	806	39	0	0	1	168	0	132
Future Volume (veh/h)	26	1033	1	1	806	39	0	0	1	168	0	132
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1123	1	1	876	0	0	0	1	183	0	143
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	496	3740	1199	403	3389		0	0	241	274	284	241
Arrive On Green	0.05	1.00	1.00	0.69	0.69	0.00	0.00	0.00	0.15	0.15	0.00	0.15
Sat Flow, veh/h	1781	4944	1585	501	4944	1585	0	0	1585	1416	1870	1585
Grp Volume(v), veh/h	28	1123	1	1	876	0	0	0	1	183	0	143
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	501	1648	1585	0	0	1585	1416	1870	1585
Q Serve(g_s), s	0.5	0.0	0.0	0.1	8.1	0.0	0.0	0.0	0.1	15.1	0.0	10.1
Cycle Q Clear(g_c), s	0.5	0.0	0.0	0.1	8.1	0.0	0.0	0.0	0.1	15.2	0.0	10.1
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	496	3740	1199	403	3389		0	0	241	274	284	241
V/C Ratio(X)	0.06	0.30	0.00	0.00	0.26		0.00	0.00	0.00	0.67	0.00	0.59
Avail Cap(c_a), veh/h	592	3740	1199	403	3389		0	0	680	667	803	680
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	0.0	0.0	6.0	7.2	0.0	0.0	0.0	43.2	49.6	0.0	47.4
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	2.8	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	0.0	2.5	0.0	0.0	0.0	0.0	5.6	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.9	0.2	0.0	6.0	7.4	0.0	0.0	0.0	43.2	52.4	0.0	49.8
LnGrp LOS	A	A	A	A	A		A	A	D	D	A	D
Approach Vol, veh/h	1152				877		1				326	
Approach Delay, s/veh	0.3				7.4		43.2				51.3	
Approach LOS	A				A		D				D	
Timer - Assigned Phs	1	2	4		6		8					
Phs Duration (G+Y+Rc), s	8.5	87.7	23.7		96.3		23.7					
Change Period (Y+Rc), s	5.5	5.5	5.5		5.5		5.5					
Max Green Setting (Gmax), s	9.5	42.5	51.5		57.5		51.5					
Max Q Clear Time (g_c+I1), s	2.5	10.1	17.2		2.0		2.1					
Green Ext Time (p_c), s	0.0	12.1	1.0		20.2		0.0					
Intersection Summary												
HCM 6th Ctrl Delay	10.0											
HCM 6th LOS	B											

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰	↑↑↑↑	↑↑↑↑	↰	↰	↰
Traffic Vol, veh/h	25	998	924	14	61	86
Future Vol, veh/h	25	998	924	14	61	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	575	-	-	720	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	27	1085	1004	15	66	93
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1019	0	-	0	1492	502
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	5.34	-	-	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	3.12	-	-	-	3.82	3.92
Pot Cap-1 Maneuver	383	-	-	-	174	440
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	532	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	383	-	-	-	162	440
Mov Cap-2 Maneuver	-	-	-	-	162	-
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	532	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		26.4		
HCM LOS	D					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	383	-	-	-	162	440
HCM Lane V/C Ratio	0.071	-	-	-	0.409	0.212
HCM Control Delay (s)	15.1	-	-	-	41.8	15.4
HCM Lane LOS	C	-	-	-	E	C
HCM 95th %tile O(veh)	0.2	-	-	-	1.8	0.8

Timings 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

2b. No-Build 2028 PM
02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		  			  			 		 	
Traffic Volume (vph)	78	1015	120	6	953	2	194	8	32	9	57
Future Volume (vph)	78	1015	120	6	953	2	194	8	32	9	57
Lane Group Flow (vph)	84	1091	129	6	1025	2	209	35	34	10	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	3	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	15.0	43.5	43.5	15.0	47.5	50.5	50.5	50.5
Total Split (s)	15.0	41.0	41.0	15.0	41.0	41.0	15.0	64.0	49.0	49.0	49.0
Total Split (%)	12.5%	34.2%	34.2%	12.5%	34.2%	34.2%	12.5%	53.3%	40.8%	40.8%	40.8%
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	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.21	0.31	0.11	0.02	0.33	0.00	0.95	0.11	0.35	0.07	0.27
Control Delay	1.3	1.9	0.4	9.0	18.4	0.0	105.6	28.8	61.8	51.4	2.9
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	1.3	1.9	0.4	9.0	18.4	0.0	105.6	28.8	61.8	51.4	2.9
Queue Length 50th (ft)	2	9	0	2	183	0	158	7	26	7	0
Queue Length 95th (ft)	m3	m77	m5	m9	227	m0	m#263	m31	59	25	0
Internal Link Dist (ft)		1122			884			413		385	
Turn Bay Length (ft)	405		300	575		550	100		95		100
Base Capacity (vph)	416	3480	1163	427	3133	1057	219	820	495	675	652
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	0.20	0.31	0.11	0.01	0.33	0.00	0.95	0.04	0.07	0.01	0.09

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 17 (14%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 125

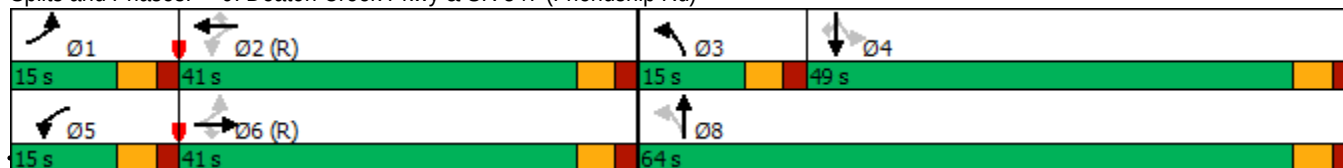
Control Type: Actuated-Coordinated

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: 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary
9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

2b. No-Build 2028 PM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	78	1015	120	6	953	2	194	8	24	32	9	57
Future Volume (veh/h)	78	1015	120	6	953	2	194	8	24	32	9	57
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	1091	129	6	1025	2	209	9	26	34	10	61
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	482	3329	1067	339	3172	1017	270	77	223	138	106	90
Arrive On Green	0.04	0.67	0.67	0.02	1.00	1.00	0.08	0.18	0.18	0.06	0.06	0.06
Sat Flow, veh/h	1781	4944	1585	1781	4944	1585	1781	424	1226	1373	1870	1585
Grp Volume(v), veh/h	84	1091	129	6	1025	2	209	0	35	34	10	61
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	1781	1648	1585	1781	0	1650	1373	1870	1585
Q Serve(g_s), s	1.9	11.1	3.5	0.1	0.0	0.0	9.5	0.0	2.1	2.9	0.6	4.5
Cycle Q Clear(g_c), s	1.9	11.1	3.5	0.1	0.0	0.0	9.5	0.0	2.1	2.9	0.6	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.74	1.00		1.00
Lane Grp Cap(c), veh/h	482	3329	1067	339	3172	1017	270	0	300	138	106	90
V/C Ratio(X)	0.17	0.33	0.12	0.02	0.32	0.00	0.77	0.00	0.12	0.25	0.09	0.68
Avail Cap(c_a), veh/h	553	3329	1067	467	3172	1017	270	0	804	558	678	575
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.3	8.2	7.0	7.6	0.0	0.0	49.8	0.0	41.0	54.7	53.7	55.5
Incr Delay (d2), s/veh	0.2	0.3	0.2	0.0	0.3	0.0	13.2	0.0	0.2	0.9	0.4	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.5	1.1	0.1	0.1	0.0	2.6	0.0	0.9	1.0	0.3	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.5	8.5	7.2	7.6	0.3	0.0	63.0	0.0	41.2	55.7	54.1	64.1
LnGrp LOS	A	A	A	A	A	A	E	A	D	E	D	E
Approach Vol, veh/h	1304		1033				244		105			
Approach Delay, s/veh	8.2		0.3				59.9		60.4			
Approach LOS	A		A				E		E			
Timer - Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s	10.2	82.5	15.0	12.3	6.4	86.3	27.3					
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5					
Max Green Setting (Gmax), s	9.5	35.5	9.5	43.5	9.5	35.5	58.5					
Max Q Clear Time (g_c+I1), s	3.9	2.0	11.5	6.5	2.1	13.1	4.1					
Green Ext Time (p_c), s	0.1	14.7	0.0	0.3	0.0	13.5	0.2					
Intersection Summary												
HCM 6th Ctrl Delay	11.9											
HCM 6th LOS	B											
Notes												

Timings 10: Spout Springs Rd & SR 347 (Friendship Rd)

2b. No-Build 2028 PM

02/20/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	372	979	336	382	772	210	229	428	156	236	439	65
Future Volume (vph)	372	979	336	382	772	210	229	428	156	236	439	65
Lane Group Flow (vph)	384	1009	346	394	796	216	236	441	161	243	453	67
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	15.0	35.5	35.5	15.0	33.5	33.5	15.0	42.5	42.5	15.0	40.5	40.5
Total Split (s)	26.0	39.0	39.0	23.0	36.0	36.0	16.0	42.0	42.0	16.0	42.0	42.0
Total Split (%)	21.7%	32.5%	32.5%	19.2%	30.0%	30.0%	13.3%	35.0%	35.0%	13.3%	35.0%	35.0%
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	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	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.92	1.06	0.57	1.06	0.92	0.39	1.05	0.86	0.31	1.04	0.89	0.13
Control Delay	62.0	88.9	15.9	98.8	60.7	17.0	91.8	52.6	14.3	97.0	61.8	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	88.9	15.9	98.8	60.7	17.0	91.8	52.6	14.3	97.0	61.8	0.6
Queue Length 50th (ft)	247	~452	69	~291	321	58	~141	324	42	~125	330	0
Queue Length 95th (ft)	#473	#585	168	m#511	m#426	m98	#287	#436	m100	#289	#480	2
Internal Link Dist (ft)		4090			4101			920			702	
Turn Bay Length (ft)	575		190	260		210	140		150	125		145
Base Capacity (vph)	417	950	609	373	865	547	225	566	567	234	566	567
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	1.06	0.57	1.06	0.92	0.39	1.05	0.78	0.28	1.04	0.80	0.12

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 70 (58%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

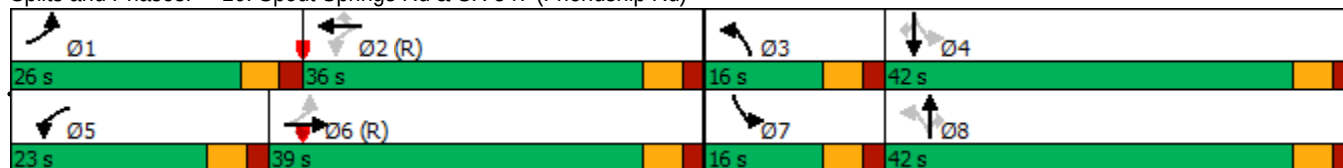
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Spout Springs Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

10: Spout Springs Rd & SR 347 (Friendship Rd)

2b. No-Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	372	979	336	382	772	210	229	428	156	236	439	65
Future Volume (veh/h)	372	979	336	382	772	210	229	428	156	236	439	65
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	384	1009	346	394	796	0	236	441	0	243	453	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	415	1101	507	335	1036		242	493		250	493	
Arrive On Green	0.16	0.32	0.32	0.15	0.30	0.00	0.09	0.26	0.00	0.09	0.26	0.00
Sat Flow, veh/h	1781	3441	1585	1781	3441	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	384	1009	346	394	796	0	236	441	0	243	453	0
Grp Sat Flow(s),veh/h/ln	1781	1721	1585	1781	1721	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	17.6	33.9	22.8	17.5	25.2	0.0	10.5	27.3	0.0	10.5	28.2	0.0
Cycle Q Clear(g_c), s	17.6	33.9	22.8	17.5	25.2	0.0	10.5	27.3	0.0	10.5	28.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	415	1101	507	335	1036		242	493		250	493	
V/C Ratio(X)	0.93	0.92	0.68	1.18	0.77		0.97	0.89		0.97	0.92	
Avail Cap(c_a), veh/h	426	1101	507	335	1036		242	569		250	569	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.4	39.3	35.5	34.3	38.1	0.0	35.5	42.6	0.0	36.0	43.0	0.0
Incr Delay (d2), s/veh	25.7	13.3	7.3	106.2	5.5	0.0	50.5	15.2	0.0	48.7	18.7	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	9.9	15.7	9.6	17.1	11.0	0.0	8.4	14.3	0.0	8.5	15.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.1	52.6	42.8	140.4	43.6	0.0	86.0	57.8	0.0	84.7	61.6	0.0
LnGrp LOS	D	D	D	F	D		F	E		F	E	
Approach Vol, veh/h	1739			1190			677			696		
Approach Delay, s/veh	50.5			75.7			67.6			69.7		
Approach LOS	D			E			E			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.2	41.6	16.0	37.1	23.0	43.9	16.0	37.1				
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	20.5	30.5	10.5	36.5	17.5	33.5	10.5	36.5				
Max Q Clear Time (g_c+I1), s	19.6	27.2	12.5	30.2	19.5	35.9	12.5	29.3				
Green Ext Time (p_c), s	0.1	2.1	0.0	1.4	0.0	0.0	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay 63.3

HCM 6th LOS E

Notes

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

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

Intersection						
Int Delay, s/veh	270.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	1352	236	249	819	94	240
Future Vol, veh/h	1352	236	249	819	94	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	385	-	0	80
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	1470	257	271	890	102	261
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1727	0	2457	735
Stage 1	-	-	-	-	1470	-
Stage 2	-	-	-	-	987	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	362	-	~ 25	362
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	322	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	362	-	~ 6	362
Mov Cap-2 Maneuver	-	-	-	-	~ 6	-
Stage 1	-	-	-	-	178	-
Stage 2	-	-	-	-	~ 81	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		9.1		\$ 2392.6	
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	6	362	-	-	362	-
HCM Lane V/C Ratio	17.029	0.721	-	-	0.748	-
HCM Control Delay (s)	\$ 8407.3	36.8	-	-	39.2	-
HCM Lane LOS	F	E	-	-	E	-
HCM 95th %tile Q(veh)	14.6	5.4	-	-	5.9	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	93.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	138	156	222	143	26	67	223	164	6	372	21
Future Vol, veh/h	40	138	156	222	143	26	67	223	164	6	372	21
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	139	158	224	144	26	68	225	166	6	376	21
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	54.8	86.6	132.4	88.6
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	15%	12%	57%	2%
Vol Thru, %	49%	41%	37%	93%
Vol Right, %	36%	47%	7%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	454	334	391	399
LT Vol	67	40	222	6
Through Vol	223	138	143	372
RT Vol	164	156	26	21
Lane Flow Rate	459	337	395	403
Geometry Grp	1	1	1	1
Degree of Util (X)	1.174	0.878	1.023	1.032
Departure Headway (Hd)	9.448	10.175	10.094	9.971
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	390	358	363	367
Service Time	7.448	8.175	8.094	7.971
HCM Lane V/C Ratio	1.177	0.941	1.088	1.098
HCM Control Delay	132.4	54.8	86.6	88.6
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	17.7	8.4	12.2	12.6

Timings 13: Spout Springs Rd & Thompson Mill Rd

2b. No-Build 2028 PM
02/20/2024

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	168	98	94	86	165	682	73	66	695	129
Future Volume (vph)	168	98	94	86	165	682	73	66	695	129
Lane Group Flow (vph)	170	179	95	156	167	689	74	67	702	130
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	31.5	15.0	30.5	15.0	35.5	35.5	15.0	34.5	34.5
Total Split (s)	15.0	32.0	15.0	32.0	15.0	58.0	58.0	15.0	58.0	58.0
Total Split (%)	12.5%	26.7%	12.5%	26.7%	12.5%	48.3%	48.3%	12.5%	48.3%	48.3%
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	0.67	0.70	0.41	0.63	0.48	0.65	0.08	0.19	0.73	0.15
Control Delay	50.3	55.0	39.1	49.9	13.7	24.1	0.7	5.7	19.7	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	55.0	39.1	49.9	13.7	24.1	0.7	5.7	19.7	2.0
Queue Length 50th (ft)	109	111	58	92	46	368	0	6	327	9
Queue Length 95th (ft)	160	179	97	155	88	598	6	m12	m565	m16
Internal Link Dist (ft)		1809		565		751			337	
Turn Bay Length (ft)	155		223		228		112	100		110
Base Capacity (vph)	254	399	242	400	350	1054	949	386	958	873
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	0.67	0.45	0.39	0.39	0.48	0.65	0.08	0.17	0.73	0.15

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 53 (44%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

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

Splits and Phases: 13: Spout Springs Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary 13: Spout Springs Rd & Thompson Mill Rd

2b. No-Build 2028 PM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	168	98	79	94	86	68	165	682	73	66	695	129
Future Volume (veh/h)	168	98	79	94	86	68	165	682	73	66	695	129
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	170	99	80	95	87	69	167	689	74	67	702	130
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	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	227	121	98	201	105	83	364	1099	932	371	1064	902
Arrive On Green	0.08	0.13	0.13	0.06	0.11	0.11	0.06	0.59	0.59	0.04	0.57	0.57
Sat Flow, veh/h	1781	927	749	1781	936	742	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	170	0	179	95	0	156	167	689	74	67	702	130
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1781	0	1678	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	9.5	0.0	12.5	5.6	0.0	10.9	4.7	28.8	2.4	1.8	31.1	4.6
Cycle Q Clear(g_c), s	9.5	0.0	12.5	5.6	0.0	10.9	4.7	28.8	2.4	1.8	31.1	4.6
Prop In Lane	1.00		0.45	1.00		0.44	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	0	219	201	0	189	364	1099	932	371	1064	902
V/C Ratio(X)	0.75	0.00	0.82	0.47	0.00	0.83	0.46	0.63	0.08	0.18	0.66	0.14
Avail Cap(c_a), veh/h	227	0	370	233	0	370	405	1099	932	445	1064	902
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	0.0	50.7	43.8	0.0	52.1	14.7	16.1	10.7	12.9	17.9	12.1
Incr Delay (d2), s/veh	12.7	0.0	7.2	1.7	0.0	8.8	0.9	2.7	0.2	0.2	3.2	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	5.2	0.0	5.5	2.5	0.0	4.9	1.8	12.2	0.8	0.7	13.4	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.4	0.0	58.0	45.5	0.0	60.9	15.6	18.8	10.9	13.2	21.1	12.5
LnGrp LOS	E	A	E	D	A	E	B	B	B	B	C	B
Approach Vol, veh/h	349			251			930			899		
Approach Delay, s/veh	57.7			55.1			17.6			19.2		
Approach LOS	E			E			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.2	73.8	12.8	21.2	10.0	76.0	15.0	19.0				
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	52.5	9.5	26.5	9.5	52.5	9.5	26.5				
Max Q Clear Time (g_c+I1), s	6.7	33.1	7.6	14.5	3.8	30.8	11.5	12.9				
Green Ext Time (p_c), s	0.1	9.0	0.0	0.6	0.0	9.0	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay	27.9											
HCM 6th LOS	C											

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	2	5	219	130	6
Future Vol, veh/h	6	2	5	219	130	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	255	-	-	210	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	7	2	6	249	148	7
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	6	0	-	0	22	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1615	-	-	-	995	1077
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1615	-	-	-	991	1077
Mov Cap-2 Maneuver	-	-	-	-	991	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	1007	-
Approach	EB	WB		SB		
HCM Control Delay, s	5.4	0		9.3		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1615	-	-	-	991	1077
HCM Lane V/C Ratio	0.004	-	-	-	0.149	0.006
HCM Control Delay (s)	7.2	-	-	-	9.3	8.4
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile O(veh)	0	-	-	-	0.5	0

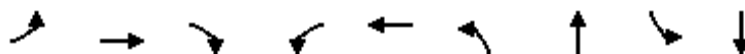
Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	46	89	54	112	109	63
Future Vol, veh/h	46	89	54	112	109	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	225	400	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	56	109	66	137	133	77
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	165	0	325	56
Stage 1	-	-	-	-	56	-
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	-	-	1413	-	669	1011
Stage 1	-	-	-	-	967	-
Stage 2	-	-	-	-	776	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1413	-	638	1011
Mov Cap-2 Maneuver	-	-	-	-	638	-
Stage 1	-	-	-	-	967	-
Stage 2	-	-	-	-	740	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.5		10.9	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	638	1011	-	-	1413	-
HCM Lane V/C Ratio	0.208	0.076	-	-	0.047	-
HCM Control Delay (s)	12.1	8.9	-	-	7.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile O(veh)	0.8	0.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	124	22	26	159	14	11
Future Vol, veh/h	124	22	26	159	14	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	177	215	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	143	25	30	183	16	13
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	168	0	386	143
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	243	-
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	-	-	1410	-	617	905
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	797	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1410	-	604	905
Mov Cap-2 Maneuver	-	-	-	-	604	-
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	780	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.1		10.3	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	708	-	-	1410	-	
HCM Lane V/C Ratio	0.041	-	-	0.021	-	
HCM Control Delay (s)	10.3	-	-	7.6	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	

Future “No-Build” Intersections Analysis with Improvements

Timings
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

2c. No-Build 2028 AM - Improved
02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←←	↑	→	←	→	←←	→	←	↑↑
Traffic Volume (vph)	189	55	374	42	68	630	478	35	472
Future Volume (vph)	189	55	374	42	68	630	478	35	472
Lane Group Flow (vph)	199	58	394	44	128	663	519	37	926
Turn Type	Prot	NA	Free	Perm	NA	Prot	NA	Prot	NA
Protected Phases	7	4			8	1	6	5	2
Permitted Phases			Free	8					
Detector Phase	7	4		8	8	1	6	5	2
Switch Phase									
Minimum Initial (s)	5.0	6.0		6.0	6.0	5.0	15.0	5.0	15.0
Minimum Split (s)	15.0	33.5		34.5	34.5	15.0	43.5	15.0	36.5
Total Split (s)	20.0	50.0		30.0	30.0	37.0	55.0	15.0	33.0
Total Split (%)	16.7%	41.7%		25.0%	25.0%	30.8%	45.8%	12.5%	27.5%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	C-Min	None	C-Min
v/c Ratio	0.58	0.13	0.25	0.32	0.63	0.82	0.49	0.32	0.70
Control Delay	76.7	35.5	0.8	54.2	53.1	72.6	7.7	59.7	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.7	35.5	0.8	54.2	53.1	72.6	7.7	59.7	30.7
Queue Length 50th (ft)	81	34	0	32	74	280	113	28	261
Queue Length 95th (ft)	123	40	17	68	134	298	112	62	#455
Internal Link Dist (ft)		1136			834		1149		1213
Turn Bay Length (ft)	250					400		250	
Base Capacity (vph)	414	664	1583	273	370	919	1055	143	1328
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.09	0.25	0.16	0.35	0.72	0.49	0.26	0.70

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 110

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr



HCM 6th Signalized Intersection Summary
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

2c. No-Build 2028 AM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	189	55	374	42	68	53	630	478	15	35	472	408
Future Volume (veh/h)	189	55	374	42	68	53	630	478	15	35	472	408
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	1811	1870	1870	1811	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	199	58	0	44	72	56	663	503	0	37	497	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	6	2	2	6	2	2	5	2	2	5	2
Cap, veh/h	261	395		190	91	71	745	1123		53	1488	
Arrive On Green	0.08	0.22	0.00	0.10	0.10	0.10	0.22	0.61	0.00	0.03	0.43	0.00
Sat Flow, veh/h	3456	1811	1585	1345	944	735	3456	1826	0	1781	3561	0
Grp Volume(v), veh/h	199	58	0	44	0	128	663	503	0	37	497	0
Grp Sat Flow(s),veh/h/ln	1728	1811	1585	1345	0	1679	1728	1826	0	1781	1735	0
Q Serve(g_s), s	6.8	3.1	0.0	3.7	0.0	8.9	22.3	17.6	0.0	2.5	11.5	0.0
Cycle Q Clear(g_c), s	6.8	3.1	0.0	3.7	0.0	8.9	22.3	17.6	0.0	2.5	11.5	0.0
Prop In Lane	1.00		1.00	1.00		0.44	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	261	395		190	0	162	745	1123		53	1488	
V/C Ratio(X)	0.76	0.15		0.23	0.00	0.79	0.89	0.45		0.70	0.33	
Avail Cap(c_a), veh/h	418	672		335	0	343	907	1123		141	1488	
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	0.00	1.00	0.85	0.85	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	54.4	37.9	0.0	50.6	0.0	53.0	45.7	12.3	0.0	57.7	22.8	0.0
Incr Delay (d2), s/veh	4.6	0.2	0.0	0.6	0.0	8.2	8.3	1.1	0.0	15.7	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	1.4	0.0	1.3	0.0	4.2	10.0	6.6	0.0	1.3	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	59.0	38.1	0.0	51.2	0.0	61.2	53.9	13.4	0.0	73.4	23.4	0.0
LnGrp LOS	E	D		D	A	E	D	B		E	C	
Approach Vol, veh/h	257				172				1166			
Approach Delay, s/veh	54.3				58.7				36.4			
Approach LOS	D				E				D			
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	31.4	57.0		31.7	9.0	79.3	14.6	17.1				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	31.5	27.5		44.5	9.5	49.5	14.5	24.5				
Max Q Clear Time (g_c+I1), s	24.3	13.5		5.1	4.5	19.6	8.8	10.9				
Green Ext Time (p_c), s	1.5	4.3		0.2	0.0	6.1	0.3	0.7				

Intersection Summary

HCM 6th Ctrl Delay 38.0

HCM 6th LOS D

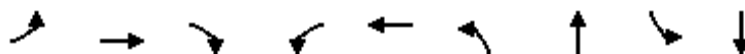
Notes

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

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

Timings 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

2c. No-Build 2028 AM - Improved
02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	64	14	177	170	28	151	1061	14	874
Future Volume (vph)	64	14	177	170	28	151	1061	14	874
Lane Group Flow (vph)	0	84	190	183	58	162	1217	15	982
Turn Type	Perm	NA	pm+ov	pm+pt	NA	pm+pt	NA	Perm	NA
Protected Phases		4	1	3	8	1	6		2
Permitted Phases	4		4	8		6		2	
Detector Phase	4	4	1	3	8	1	6	2	2
Switch Phase									
Minimum Initial (s)	6.0	6.0	5.0	5.0	6.0	5.0	15.0	15.0	15.0
Minimum Split (s)	31.5	31.5	15.0	15.0	33.5	15.0	37.5	35.5	35.5
Total Split (s)	37.0	37.0	20.0	15.0	52.0	20.0	68.0	48.0	48.0
Total Split (%)	30.8%	30.8%	16.7%	12.5%	43.3%	16.7%	56.7%	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
All-Red Time (s)	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
Total Lost Time (s)		5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min
v/c Ratio		0.59	0.45	0.72	0.15	0.42	0.51	0.06	0.51
Control Delay		67.1	20.4	56.7	21.3	20.8	25.7	13.2	13.4
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		67.1	20.4	56.7	21.3	20.8	25.7	13.2	13.4
Queue Length 50th (ft)		63	59	122	18	82	374	4	168
Queue Length 95th (ft)		112	113	183	51	m159	529	m14	273
Internal Link Dist (ft)		1758			625		1415		1149
Turn Bay Length (ft)			175			130		300	
Base Capacity (vph)		351	472	255	687	435	2386	242	1929
Starvation Cap Reductn		0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.24	0.40	0.72	0.08	0.37	0.51	0.06	0.51

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

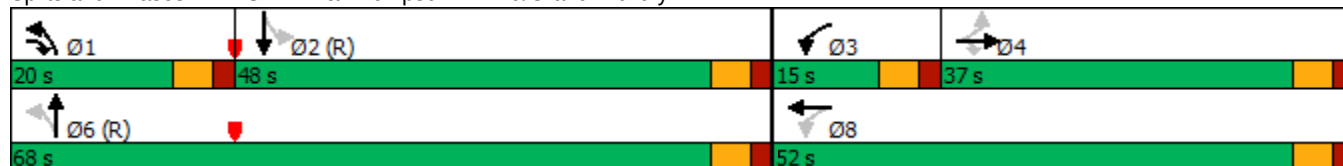
Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

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

Splits and Phases: 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr



HCM 6th Signalized Intersection Summary

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

2c. No-Build 2028 AM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	14	177	170	28	26	151	1061	71	14	874	39
Future Volume (veh/h)	64	14	177	170	28	26	151	1061	71	14	874	39
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	1811	1870	1870	1870	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	69	15	0	183	30	28	162	1141	76	15	940	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	143	19		347	181	169	426	2326	155	312	2108	
Arrive On Green	0.08	0.08	0.00	0.08	0.20	0.20	0.05	0.70	0.70	0.61	0.61	0.00
Sat Flow, veh/h	1126	245	1585	1781	890	831	1781	3301	220	459	3561	0
Grp Volume(v), veh/h	84	0	0	183	0	58	162	599	618	15	940	0
Grp Sat Flow(s),veh/h/ln	1371	0	1585	1781	0	1721	1781	1735	1786	459	1735	0
Q Serve(g_s), s	7.2	0.0	0.0	9.5	0.0	3.3	3.9	18.7	18.7	1.8	17.5	0.0
Cycle Q Clear(g_c), s	7.2	0.0	0.0	9.5	0.0	3.3	3.9	18.7	18.7	9.0	17.5	0.0
Prop In Lane	0.82		1.00	1.00		0.48	1.00		0.12	1.00		0.00
Lane Grp Cap(c), veh/h	163	0		347	0	351	426	1222	1259	312	2108	
V/C Ratio(X)	0.52	0.00		0.53	0.00	0.17	0.38	0.49	0.49	0.05	0.45	
Avail Cap(c_a), veh/h	415	0		347	0	667	551	1222	1259	312	2108	
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	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.81	0.81	0.00
Uniform Delay (d), s/veh	54.2	0.0	0.0	45.6	0.0	39.4	9.1	8.0	8.0	12.7	12.7	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	1.5	0.0	0.2	0.6	1.4	1.4	0.2	0.6	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	2.5	0.0	0.0	5.2	0.0	1.5	1.3	6.0	6.2	0.2	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.8	0.0	0.0	47.1	0.0	39.6	9.7	9.4	9.4	12.9	13.2	0.0
LnGrp LOS	E	A		D	A	D	A	A	A	B	B	
Approach Vol, veh/h	84			241			1379			955		
Approach Delay, s/veh	56.8			45.3			9.4			13.2		
Approach LOS	E			D			A			B		
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	11.6	78.4	15.0	15.0		90.0		30.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	14.5	42.5	9.5	31.5		62.5		46.5				
Max Q Clear Time (g_c+I1), s	5.9	19.5	11.5	9.2		20.7		5.3				
Green Ext Time (p_c), s	0.2	11.3	0.0	0.3		19.7		0.3				

Intersection Summary

HCM 6th Ctrl Delay 15.5

HCM 6th LOS B

Notes

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

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

Timings 3: SR 211 & Golf Club Dr/Liberty Church Rd

2c. No-Build 2028 AM - Improved
02/20/2024



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	14	158	261	7	404	26	858	276	864	18
Future Volume (vph)	14	158	261	7	404	26	858	276	864	18
Lane Group Flow (vph)	23	166	140	142	425	27	1002	291	909	19
Turn Type	NA	Perm	Split	NA	Free	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	4		8	8		1	6	5	2	
Permitted Phases		4			Free	6		2		2
Detector Phase	4	4	8	8		1	6	5	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0		5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	32.5	32.5	35.5	35.5		15.0	37.5	15.0	36.5	36.5
Total Split (s)	16.5	16.5	35.5	35.5		15.0	53.0	15.0	53.0	53.0
Total Split (%)	13.8%	13.8%	29.6%	29.6%		12.5%	44.2%	12.5%	44.2%	44.2%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Min	None	C-Min	C-Min
v/c Ratio	0.20	0.65	0.65	0.66	0.27	0.08	0.69	0.61	0.43	0.02
Control Delay	56.1	20.1	63.1	63.5	0.4	10.5	31.0	29.8	16.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.1	20.1	63.1	63.5	0.4	10.5	31.0	29.8	16.8	0.1
Queue Length 50th (ft)	17	0	110	111	0	6	307	138	218	0
Queue Length 95th (ft)	44	67	173	174	0	21	422	#296	295	m0
Internal Link Dist (ft)	238			965			1320		1505	
Turn Bay Length (ft)			145		175	95		165		230
Base Capacity (vph)	167	295	420	422	1583	389	1454	475	2095	1012
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	0.14	0.56	0.33	0.34	0.27	0.07	0.69	0.61	0.43	0.02

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: 135

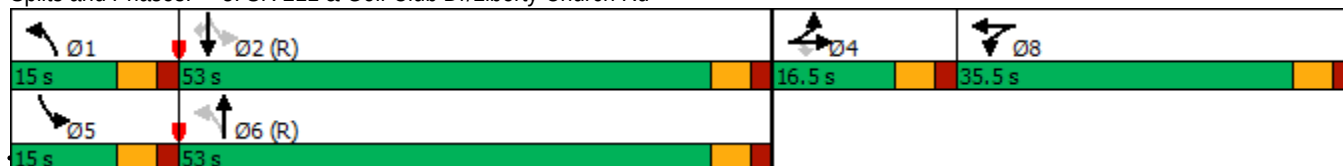
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

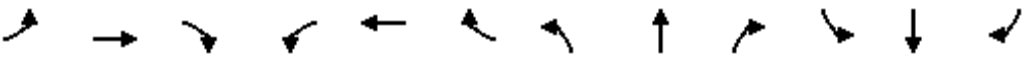
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: SR 211 & Golf Club Dr/Liberty Church Rd



HCM 6th Signalized Intersection Summary 3: SR 211 & Golf Club Dr/Liberty Church Rd

2c. No-Build 2028 AM - Improved
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶	↷	↶	↶	↷	↶	↶↷		↶	↶↷	↷
Traffic Volume (veh/h)	8	14	158	261	7	404	26	858	94	276	864	18
Future Volume (veh/h)	8	14	158	261	7	404	26	858	94	276	864	18
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	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	8	15	0	280	0	0	27	903	0	291	909	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	17	32		358	0		439	2133		489	2306	
Arrive On Green	0.03	0.03	0.00	0.10	0.00	0.00	0.02	0.61	0.00	0.07	0.66	0.00
Sat Flow, veh/h	639	1199	1585	3563	0	1585	1781	3561	0	1781	3469	1585
Grp Volume(v), veh/h	23	0	0	280	0	0	27	903	0	291	909	0
Grp Sat Flow(s),veh/h/ln	1838	0	1585	1781	0	1585	1781	1735	0	1781	1735	1585
Q Serve(g_s), s	1.5	0.0	0.0	9.2	0.0	0.0	0.7	16.3	0.0	6.9	14.3	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.0	9.2	0.0	0.0	0.7	16.3	0.0	6.9	14.3	0.0
Prop In Lane	0.35		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	49	0		358	0		439	2133		489	2306	
V/C Ratio(X)	0.47	0.00		0.78	0.00		0.06	0.42		0.60	0.39	
Avail Cap(c_a), veh/h	169	0		891	0		536	2133		497	2306	
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.6	0.0	0.0	52.7	0.0	0.0	8.2	12.0	0.0	8.8	9.1	0.0
Incr Delay (d2), s/veh	6.7	0.0	0.0	3.8	0.0	0.0	0.1	0.6	0.0	1.9	0.5	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	0.8	0.0	0.0	4.2	0.0	0.0	0.2	5.6	0.0	2.3	4.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.3	0.0	0.0	56.5	0.0	0.0	8.3	12.6	0.0	10.7	9.6	0.0
LnGrp LOS	E	A		E	A		A	B		B	A	
Approach Vol, veh/h		23			280			930			1200	
Approach Delay, s/veh		64.3			56.5			12.5			9.9	
Approach LOS		E			E			B			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	85.3		8.7	14.4	79.3		17.6				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	47.5		11.0	9.5	47.5		30.0				
Max Q Clear Time (g_c+I1), s	2.7	16.3		3.5	8.9	18.3		11.2				
Green Ext Time (p_c), s	0.0	12.2		0.0	0.1	11.7		0.8				

Intersection Summary

HCM 6th Ctrl Delay 16.8

HCM 6th LOS B

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Intersection						
Intersection Delay, s/veh12.4						
Intersection LOS B						
Approach	EB	WB	NB	SB		
Entry Lanes	0	4	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	0	0	1900	1249		
Demand Flow Rate, veh/h	0	0	1995	1312		
Vehicles Circulating, veh/h	818	1995	0	1141		
Vehicles Exiting, veh/h	968	0	818	1204		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	0.0	0.0	13.1	11.3		
Approach LOS	-	-	B	B		
Lane	Left	Right	Left	Right	Bypass	
Designated Moves	LT	TR	LT	TR	R	
Assumed Moves	LT	TR	LT	TR	R	
RT Channelized					Free	
Lane Util	0.470	0.530	0.470	0.530		
Follow-Up Headway, s	2.667	2.535	2.667	2.535		
Critical Headway, s	4.645	4.328	4.645	4.328	667	
Entry Flow, veh/h	938	1057	303	342	1995	
Cap Entry Lane, veh/h	1350	1420	473	538	0.952	
Entry HV Adj Factor	0.952	0.953	0.953	0.952	635	
Flow Entry, veh/h	893	1007	289	326	1900	
Cap Entry, veh/h	1285	1353	450	512	0.334	
V/C Ratio	0.695	0.744	0.641	0.635	0.0	
Control Delay, s/veh	12.4	13.7	24.4	21.6	A	
LOS	B	B	C	C	1	
95th %tile Queue, veh	6	7	4	4		

Timings 5: SR 211 & I-85 NB Ramps

2c. No-Build 2028 AM - Improved
02/20/2024

						
Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	243	354	1581	270	146	601
Future Volume (vph)	243	354	1581	270	146	601
Lane Group Flow (vph)	248	361	1613	276	149	613
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	3		6		5	2
Permitted Phases		8		6	2	
Detector Phase	3	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	34.5	34.5	28.5	28.5	15.0	28.5
Total Split (s)	40.0	40.0	65.0	65.0	15.0	80.0
Total Split (%)	33.3%	33.3%	54.2%	54.2%	12.5%	66.7%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.58	0.78	0.69	0.25	0.35	0.23
Control Delay	53.8	21.9	14.9	4.8	5.9	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	21.9	14.9	4.8	5.9	4.2
Queue Length 50th (ft)	95	42	349	32	10	52
Queue Length 95th (ft)	126	142	577	88	25	102
Internal Link Dist (ft)			1253			1370
Turn Bay Length (ft)		480		160	135	
Base Capacity (vph)	958	658	2324	1086	492	2678
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.55	0.69	0.25	0.30	0.23

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 8 (7%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Splits and Phases: 5: SR 211 & I-85 NB Ramps



HCM 6th Signalized Intersection Summary 5: SR 211 & I-85 NB Ramps

2c. No-Build 2028 AM - Improved
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	243	0	354	0	0	0	0	1581	270	146	601	0
Future Volume (veh/h)	243	0	354	0	0	0	0	1581	270	146	601	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1826	1826	1826	1826	0
Adj Flow Rate, veh/h	248	0	0				0	1613	0	149	613	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	5	0	5				0	5	5	5	5	0
Cap, veh/h	321	0					0	2519		550	2822	0
Arrive On Green	0.10	0.00	0.00				0.00	0.73	0.00	0.06	1.00	0.00
Sat Flow, veh/h	3374	0	1547				0	3561	1547	3374	3561	0
Grp Volume(v), veh/h	248	0	0				0	1613	0	149	613	0
Grp Sat Flow(s),veh/h/ln	1687	0	1547				0	1735	1547	1687	1735	0
Q Serve(g_s), s	8.6	0.0	0.0				0.0	28.6	0.0	1.2	0.0	0.0
Cycle Q Clear(g_c), s	8.6	0.0	0.0				0.0	28.6	0.0	1.2	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	321	0					0	2519		550	2822	0
V/C Ratio(X)	0.77	0.00					0.00	0.64		0.27	0.22	0.00
Avail Cap(c_a), veh/h	970	0					0	2519		677	2822	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.0	0.0	0.0				0.0	8.4	0.0	8.0	0.0	0.0
Incr Delay (d2), s/veh	4.0	0.0	0.0				0.0	1.3	0.0	0.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	0.0				0.0	8.8	0.0	0.5	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.0	0.0	0.0				0.0	9.7	0.0	8.2	0.2	0.0
LnGrp LOS	E	A					A	A		A	A	A
Approach Vol, veh/h	248						1613			762		
Approach Delay, s/veh	57.0						9.7			1.8		
Approach LOS	E						A			A		
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	103.1			10.5			92.6			16.9		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	74.5			9.5			59.5			34.5		
Max Q Clear Time (g_c+I1), s	2.0			3.2			30.6			10.6		
Green Ext Time (p_c), s	9.2			0.2			22.4			0.8		
Intersection Summary												
HCM 6th Ctrl Delay	11.9											
HCM 6th LOS	B											
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
6: SR 211 & SR 53

2c. No-Build 2028 AM - Improved
02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↘	↘
Traffic Volume (vph)	490	533	181	949	551	45
Future Volume (vph)	490	533	181	949	551	45
Lane Group Flow (vph)	544	592	201	1054	612	50
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	7	
Permitted Phases		6	2			7
Detector Phase	6	6	2	2	7	7
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	5.0
Minimum Split (s)	42.5	42.5	28.5	28.5	40.5	40.5
Total Split (s)	72.0	72.0	72.0	72.0	48.0	48.0
Total Split (%)	60.0%	60.0%	60.0%	60.0%	40.0%	40.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None
v/c Ratio	0.24	0.47	0.36	0.48	0.78	0.13
Control Delay	8.2	2.0	11.4	10.5	50.8	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	2.0	11.4	10.5	50.8	9.8
Queue Length 50th (ft)	76	0	60	183	231	0
Queue Length 95th (ft)	121	41	125	274	276	30
Internal Link Dist (ft)	1195			1463	749	
Turn Bay Length (ft)		180	190		260	
Base Capacity (vph)	2275	1266	556	2212	1215	592
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.47	0.36	0.48	0.50	0.08

Intersection Summary

Cycle Length: 120

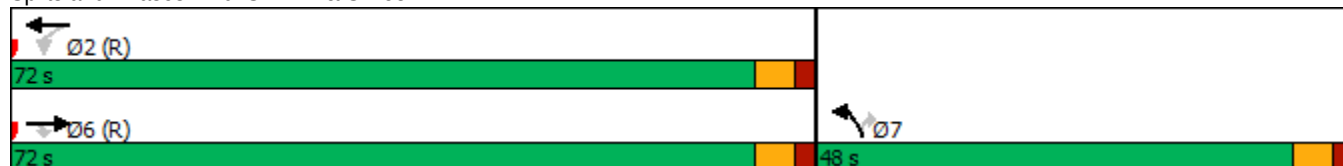
Actuated Cycle Length: 120

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

Natural Cycle: 85

Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 211 & SR 53



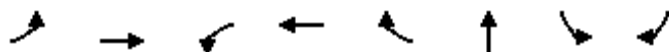
HCM 6th Signalized Intersection Summary
6: SR 211 & SR 53

2c. No-Build 2028 AM - Improved
02/20/2024

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↗	↗
Traffic Volume (veh/h)	490	533	181	949	551	45
Future Volume (veh/h)	490	533	181	949	551	45
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1870	1870	1737	1870	1870
Adj Flow Rate, veh/h	544	592	201	1054	612	50
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	8	2	2	11	2	2
Cap, veh/h	2376	1113	379	2316	713	327
Arrive On Green	0.70	0.70	0.70	0.70	0.21	0.21
Sat Flow, veh/h	3474	1585	495	3387	3456	1585
Grp Volume(v), veh/h	544	592	201	1054	612	50
Grp Sat Flow(s),veh/h/ln	1692	1585	495	1650	1728	1585
Q Serve(g_s), s	6.9	21.3	29.1	16.8	20.5	3.1
Cycle Q Clear(g_c), s	6.9	21.3	36.0	16.8	20.5	3.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2376	1113	379	2316	713	327
V/C Ratio(X)	0.23	0.53	0.53	0.46	0.86	0.15
Avail Cap(c_a), veh/h	2376	1113	379	2316	1224	561
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.4	8.5	12.7	7.8	45.9	39.0
Incr Delay (d2), s/veh	0.2	1.8	5.2	0.6	3.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	26.2	3.4	5.1	8.8	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	6.6	10.3	18.0	8.5	49.0	39.2
LnGrp LOS	A	B	B	A	D	D
Approach Vol, veh/h	1136			1255	662	
Approach Delay, s/veh	8.5			10.0	48.3	
Approach LOS	A			A	D	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		89.7		30.3		89.7
Change Period (Y+Rc), s		5.5		5.5		5.5
Max Green Setting (Gmax), s		66.5		42.5		66.5
Max Q Clear Time (g_c+l1), s		38.0		22.5		23.3
Green Ext Time (p_c), s		18.5		2.3		15.6
Intersection Summary						
HCM 6th Ctrl Delay			17.8			
HCM 6th LOS			B			

Timings
7: SR 347 (Friendship Rd) & NGMC Main Drwy

2c. No-Build 2028 AM - Improved
02/20/2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	SBL	SBR
Lane Configurations								
Traffic Volume (vph)	164	723	1	837	159	0	44	42
Future Volume (vph)	164	723	1	837	159	0	44	42
Lane Group Flow (vph)	180	795	1	920	175	2	48	46
Turn Type	pm+pt	NA	Perm	NA	Perm	NA	Perm	Perm
Protected Phases	1	6		2		8		
Permitted Phases	6		2		2		4	4
Detector Phase	1	6	2	2	2	8	4	4
Switch Phase								
Minimum Initial (s)	5.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	46.5	46.5	46.5	54.5	56.5	56.5
Total Split (s)	17.0	64.0	47.0	47.0	47.0	56.0	56.0	56.0
Total Split (%)	14.2%	53.3%	39.2%	39.2%	39.2%	46.7%	46.7%	46.7%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead		Lag	Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.33	0.19	0.00	0.26	0.15	0.01	0.42	0.13
Control Delay	5.0	1.7	6.0	7.5	2.5	0.0	63.0	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.0	1.7	6.0	7.5	2.5	0.0	63.0	0.7
Queue Length 50th (ft)	8	2	0	182	30	0	36	0
Queue Length 95th (ft)	67	85	m0	169	m35	0	74	0
Internal Link Dist (ft)		1298		1964		114		
Turn Bay Length (ft)	1000		550		515		90	
Base Capacity (vph)	552	4190	449	3489	1179	751	593	816
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.19	0.00	0.26	0.15	0.00	0.08	0.06

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

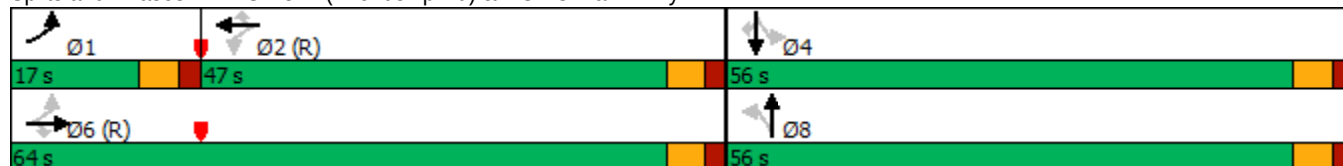
Offset: 56 (47%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

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

Splits and Phases: 7: SR 347 (Friendship Rd) & NGMC Main Drwy



HCM 6th Signalized Intersection Summary

7: SR 347 (Friendship Rd) & NGMC Main Drwy

2c. No-Build 2028 AM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	164	723	0	1	837	159	0	0	2	44	0	42
Future Volume (veh/h)	164	723	0	1	837	159	0	0	2	44	0	42
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	795	0	1	920	0	0	0	2	48	0	46
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	569	4237	1358	586	3805		0	0	81	131	96	81
Arrive On Green	0.08	1.00	0.00	0.77	0.77	0.00	0.00	0.00	0.05	0.05	0.00	0.05
Sat Flow, veh/h	1781	4944	1585	683	4944	1585	0	0	1585	1415	1870	1585
Grp Volume(v), veh/h	180	795	0	1	920	0	0	0	2	48	0	46
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	683	1648	1585	0	0	1585	1415	1870	1585
Q Serve(g_s), s	2.5	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.1	4.0	0.0	3.4
Cycle Q Clear(g_c), s	2.5	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.1	4.1	0.0	3.4
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	569	4237	1358	586	3805		0	0	81	131	96	81
V/C Ratio(X)	0.32	0.19	0.00	0.00	0.24		0.00	0.00	0.02	0.37	0.00	0.57
Avail Cap(c_a), veh/h	666	4237	1358	586	3805		0	0	667	654	787	667
HCM Platoon Ratio	2.00	2.00	2.00	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	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	2.3	0.0	0.0	3.2	3.9	0.0	0.0	0.0	54.1	56.0	0.0	55.6
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.1	1.7	0.0	6.0
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	0.5	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.1	1.5	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	2.6	0.1	0.0	3.2	4.1	0.0	0.0	0.0	54.2	57.7	0.0	61.6
LnGrp LOS	A	A	A	A	A		A	A	D	E	A	E
Approach Vol, veh/h	975			921			2			94		
Approach Delay, s/veh	0.6			4.1			54.2			59.6		
Approach LOS	A			A			D			E		
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	10.5	97.8		11.7		108.3		11.7				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	11.5	41.5		50.5		58.5		50.5				
Max Q Clear Time (g_c+I1), s	4.5	8.3		6.1		2.0		2.1				
Green Ext Time (p_c), s	0.2	12.9		0.3		12.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay 5.0

HCM 6th LOS A

Notes

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

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

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	130	880	768	111	7	13
Future Vol, veh/h	130	880	768	111	7	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	575	-	-	720	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	141	957	835	121	8	14
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	956	0	-	0	1500	418
Stage 1	-	-	-	-	835	-
Stage 2	-	-	-	-	665	-
Critical Hdwy	5.34	-	-	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	3.12	-	-	-	3.82	3.92
Pot Cap-1 Maneuver	411	-	-	-	172	499
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	430	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	411	-	-	-	113	499
Mov Cap-2 Maneuver	-	-	-	-	113	-
Stage 1	-	-	-	-	200	-
Stage 2	-	-	-	-	430	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.4	0		21.7		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	411	-	-	-	113	499
HCM Lane V/C Ratio	0.344	-	-	-	0.067	0.028
HCM Control Delay (s)	18.3	-	-	-	39.1	12.4
HCM Lane LOS	C	-	-	-	E	B
HCM 95th %tile Q(veh)	1.5	-	-	-	0.2	0.1

Timings
9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

2c. No-Build 2028 AM - Improved

02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		  			  			 		 	
Traffic Volume (vph)	21	968	157	2	763	15	142	5	27	13	42
Future Volume (vph)	21	968	157	2	763	15	142	5	27	13	42
Lane Group Flow (vph)	23	1041	169	2	820	16	153	21	29	14	45
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	3	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	15.0	43.5	43.5	15.0	47.5	50.5	50.5	50.5
Total Split (s)	15.0	53.0	53.0	15.0	53.0	53.0	21.0	52.0	31.0	31.0	31.0
Total Split (%)	12.5%	44.2%	44.2%	12.5%	44.2%	44.2%	17.5%	43.3%	25.8%	25.8%	25.8%
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	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.05	0.31	0.15	0.01	0.26	0.02	0.56	0.06	0.31	0.11	0.20
Control Delay	6.3	6.5	1.1	1.5	8.0	0.6	50.7	20.6	61.0	53.2	2.0
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	6.3	6.5	1.1	1.5	8.0	0.6	50.7	20.6	61.0	53.2	2.0
Queue Length 50th (ft)	4	72	1	0	176	0	102	3	22	10	0
Queue Length 95th (ft)	m8	110	m8	m0	194	4	163	m26	53	31	0
Internal Link Dist (ft)		1122			884			413		385	
Turn Bay Length (ft)	405		300	575		550	100		95		100
Base Capacity (vph)	488	3339	1133	425	3135	1058	296	649	294	395	433
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	0.05	0.31	0.15	0.00	0.26	0.02	0.52	0.03	0.10	0.04	0.10

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

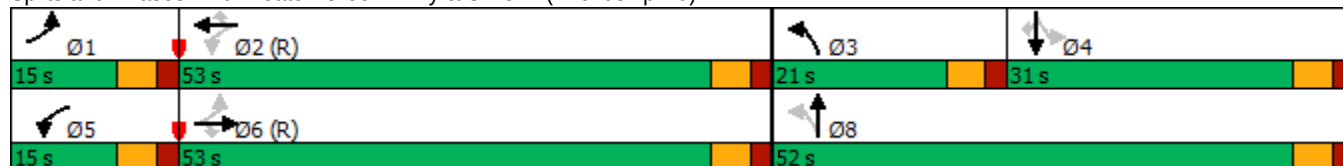
Offset: 87 (73%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

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

Splits and Phases: 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary
9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

2c. No-Build 2028 AM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	21	968	157	2	763	15	142	5	15	27	13	42
Future Volume (veh/h)	21	968	157	2	763	15	142	5	15	27	13	42
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	1041	169	2	820	16	153	5	16	29	14	45
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	527	3309	1061	333	3212	1030	287	75	239	128	91	77
Arrive On Green	0.02	0.67	0.67	0.01	1.00	1.00	0.10	0.19	0.19	0.05	0.05	0.05
Sat Flow, veh/h	1781	4944	1585	1781	4944	1585	1781	392	1253	1391	1870	1585
Grp Volume(v), veh/h	23	1041	169	2	820	16	153	0	21	29	14	45
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	1781	1648	1585	1781	0	1645	1391	1870	1585
Q Serve(g_s), s	0.5	10.6	4.7	0.0	0.0	0.0	9.5	0.0	1.3	2.4	0.9	3.3
Cycle Q Clear(g_c), s	0.5	10.6	4.7	0.0	0.0	0.0	9.5	0.0	1.3	2.4	0.9	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.76	1.00		1.00
Lane Grp Cap(c), veh/h	527	3309	1061	333	3212	1030	287	0	313	128	91	77
V/C Ratio(X)	0.04	0.31	0.16	0.01	0.26	0.02	0.53	0.00	0.07	0.23	0.15	0.58
Avail Cap(c_a), veh/h	628	3309	1061	469	3212	1030	346	0	637	356	397	337
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	6.5	8.3	7.3	7.5	0.0	0.0	46.2	0.0	39.8	55.5	54.7	55.9
Incr Delay (d2), s/veh	0.0	0.2	0.3	0.0	0.2	0.0	1.5	0.0	0.1	0.9	0.8	6.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.3	1.5	0.0	0.1	0.0	4.3	0.0	0.5	0.9	0.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.6	8.6	7.7	7.5	0.2	0.0	47.7	0.0	39.9	56.3	55.5	62.7
LnGrp LOS	A	A	A	A	A	A	D	A	D	E	E	E
Approach Vol, veh/h		1233			838			174			88	
Approach Delay, s/veh		8.4			0.2			46.8			59.5	
Approach LOS		A			A			D			E	
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	83.5	17.0	11.3	5.8	85.8		28.4				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	47.5	15.5	25.5	9.5	47.5		46.5				
Max Q Clear Time (g_c+I1), s	2.5	2.0	11.5	5.3	2.0	12.6		3.3				
Green Ext Time (p_c), s	0.0	12.6	0.1	0.2	0.0	17.1		0.1				

Intersection Summary

HCM 6th Ctrl Delay 10.2

HCM 6th LOS B

Notes

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

Timings 10: Spout Springs Rd & SR 347 (Friendship Rd)

2c. No-Build 2028 AM - Improved

02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	219	675	165	282	677	157	240	402	227	219	372
Future Volume (vph)	219	675	165	282	677	157	240	402	227	219	372
Lane Group Flow (vph)	235	726	177	303	728	169	258	432	244	235	583
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases			6			2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	35.5	35.5	15.0	33.5	33.5	15.0	42.5	42.5	15.0	40.5
Total Split (s)	17.0	34.0	34.0	24.0	41.0	41.0	23.0	42.0	42.0	20.0	39.0
Total Split (%)	14.2%	28.3%	28.3%	20.0%	34.2%	34.2%	19.2%	35.0%	35.0%	16.7%	32.5%
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	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.70	0.70	0.30	0.68	0.64	0.26	0.73	0.87	0.44	0.82	0.65
Control Delay	63.4	38.1	6.3	64.3	47.7	20.9	26.4	50.0	14.2	49.1	39.1
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	63.4	38.1	6.3	64.3	47.7	20.9	26.4	50.0	14.2	49.1	39.1
Queue Length 50th (ft)	70	270	33	112	247	40	129	316	82	113	188
Queue Length 95th (ft)	#125	#397	71	162	370	107	m143	437	m134	#226	245
Internal Link Dist (ft)		4090			4101			920			702
Turn Bay Length (ft)	575		190	260		210	140		150	125	
Base Capacity (vph)	344	1030	599	529	1137	641	373	566	601	292	985
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	0.68	0.70	0.30	0.57	0.64	0.26	0.69	0.76	0.41	0.80	0.59

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 68 (57%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Natural Cycle: 110

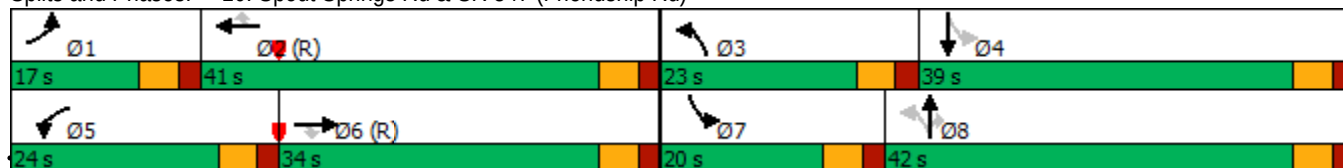
Control Type: Actuated-Coordinated

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: 10: Spout Springs Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

10: Spout Springs Rd & SR 347 (Friendship Rd)

2c. No-Build 2028 AM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		 	 						 	
Traffic Volume (veh/h)	219	675	165	282	677	157	240	402	227	219	372	170
Future Volume (veh/h)	219	675	165	282	677	157	240	402	227	219	372	170
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	235	726	177	303	728	0	258	432	0	235	400	183
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	292	1176	542	370	1254		356	474		292	577	261
Arrive On Green	0.08	0.34	0.34	0.11	0.36	0.00	0.13	0.25	0.00	0.11	0.24	0.24
Sat Flow, veh/h	3456	3441	1585	3456	3441	1585	1781	1870	1585	1781	2379	1075
Grp Volume(v), veh/h	235	726	177	303	728	0	258	432	0	235	297	286
Grp Sat Flow(s),veh/h/ln	1728	1721	1585	1728	1721	1585	1781	1870	1585	1781	1777	1677
Q Serve(g_s), s	8.0	21.1	9.9	10.3	20.5	0.0	12.8	26.9	0.0	11.7	18.3	18.6
Cycle Q Clear(g_c), s	8.0	21.1	9.9	10.3	20.5	0.0	12.8	26.9	0.0	11.7	18.3	18.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	292	1176	542	370	1254		356	474		292	431	407
V/C Ratio(X)	0.81	0.62	0.33	0.82	0.58		0.73	0.91		0.80	0.69	0.70
Avail Cap(c_a), veh/h	331	1176	542	533	1254		392	569		303	496	468
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)	0.94	0.94	0.94	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.0	32.9	29.3	52.5	30.8	0.0	30.1	43.5	0.0	31.9	41.3	41.5
Incr Delay (d2), s/veh	11.6	2.3	1.5	6.6	2.0	0.0	5.9	17.1	0.0	14.2	3.4	3.9
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	3.9	8.8	3.9	4.7	8.5	0.0	5.9	14.4	0.0	6.0	8.2	8.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.5	35.2	30.8	59.1	32.7	0.0	36.0	60.6	0.0	46.0	44.7	45.4
LnGrp LOS	E	D	C	E	C		D	E		D	D	D
Approach Vol, veh/h	1138			1031			690			818		
Approach Delay, s/veh	40.8			40.5			51.4			45.3		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.6	49.2	20.5	34.6	18.3	46.5	19.3	35.9				
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	11.5	35.5	17.5	33.5	18.5	28.5	14.5	36.5				
Max Q Clear Time (g_c+I1), s	10.0	22.5	14.8	20.6	12.3	23.1	13.7	28.9				
Green Ext Time (p_c), s	0.1	6.1	0.2	2.8	0.5	3.5	0.1	1.5				

Intersection Summary

HCM 6th Ctrl Delay 43.7

HCM 6th LOS D

Notes

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

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

Timings
11: Sardis Church Rd & SR 347 (Friendship Rd)

2c. No-Build 2028 AM - Improved
02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	719	96	136	937	98	132
Future Volume (vph)	719	96	136	937	98	132
Lane Group Flow (vph)	808	108	153	1053	110	148
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	5	2	8	8
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	6.0	6.0
Minimum Split (s)	23.5	23.5	15.0	23.5	23.5	23.5
Total Split (s)	65.0	65.0	23.0	88.0	32.0	32.0
Total Split (%)	54.2%	54.2%	19.2%	73.3%	26.7%	26.7%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.34	0.10	0.29	0.39	0.59	0.49
Control Delay	8.6	1.7	3.1	2.7	72.3	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	1.7	3.1	2.7	72.3	23.7
Queue Length 50th (ft)	120	0	15	72	78	8
Queue Length 95th (ft)	183	20	m31	109	m146	m82
Internal Link Dist (ft)	1687			4090	2052	
Turn Bay Length (ft)			385			80
Base Capacity (vph)	2351	1126	626	2731	390	464
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.10	0.24	0.39	0.28	0.32

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

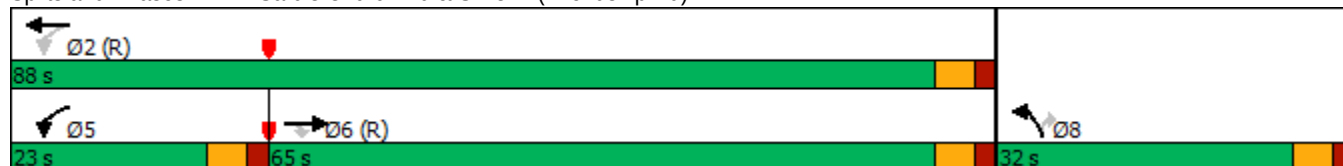
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

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

Splits and Phases: 11: Sardis Church Rd & SR 347 (Friendship Rd)



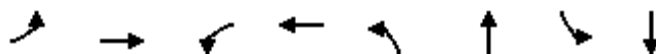
HCM 6th Signalized Intersection Summary
11: Sardis Church Rd & SR 347 (Friendship Rd)

2c. No-Build 2028 AM - Improved
02/20/2024

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↙	↗
Traffic Volume (veh/h)	719	96	136	937	98	132
Future Volume (veh/h)	719	96	136	937	98	132
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1870	1870	1811	1870	1870
Adj Flow Rate, veh/h	808	108	153	1053	110	148
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	6	2	2	6	2	2
Cap, veh/h	2436	1122	511	2736	202	180
Arrive On Green	0.71	0.71	0.04	0.80	0.11	0.11
Sat Flow, veh/h	3532	1585	1781	3532	1781	1585
Grp Volume(v), veh/h	808	108	153	1053	110	148
Grp Sat Flow(s),veh/h/ln	1721	1585	1781	1721	1781	1585
Q Serve(g_s), s	10.8	2.6	2.6	10.8	7.0	11.0
Cycle Q Clear(g_c), s	10.8	2.6	2.6	10.8	7.0	11.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2436	1122	511	2736	202	180
V/C Ratio(X)	0.33	0.10	0.30	0.38	0.55	0.82
Avail Cap(c_a), veh/h	2436	1122	697	2736	393	350
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.70	0.70	1.00	1.00
Uniform Delay (d), s/veh	6.7	5.5	4.5	3.6	50.3	52.0
Incr Delay (d2), s/veh	0.4	0.2	0.2	0.3	2.3	9.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.8	0.7	2.6	3.2	4.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.1	5.7	4.7	3.9	52.6	61.2
LnGrp LOS	A	A	A	A	D	E
Approach Vol, veh/h	916			1206	258	
Approach Delay, s/veh	6.9			4.0	57.5	
Approach LOS	A			A	E	
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	100.9		10.5		90.4	19.1
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	82.5		17.5		59.5	26.5
Max Q Clear Time (g_c+I1), s	12.8		4.6		12.8	13.0
Green Ext Time (p_c), s	20.3		0.3		13.9	0.6
Intersection Summary						
HCM 6th Ctrl Delay			10.9			
HCM 6th LOS			B			

Timings
12: Sardis Church Rd & Thompson Mill Rd

2c. No-Build 2028 AM - Improved
02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Traffic Volume (vph)	35	118	126	171	91	138	9	251
Future Volume (vph)	35	118	126	171	91	138	9	251
Lane Group Flow (vph)	0	284	0	350	0	361	0	342
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		6		2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	6	6	2	2
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0
Minimum Split (s)	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
Total Split (s)	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	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
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.5		5.5		5.5		5.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio		0.53		0.91		0.43		0.32
Control Delay		31.0		65.2		16.8		16.0
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		31.0		65.2		16.8		16.0
Queue Length 50th (ft)		156		271		139		135
Queue Length 95th (ft)		197		363		251		288
Internal Link Dist (ft)		730		2583		494		2249
Turn Bay Length (ft)								
Base Capacity (vph)		743		536		849		1059
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.38		0.65		0.43		0.32

Intersection Summary

Cycle Length: 120

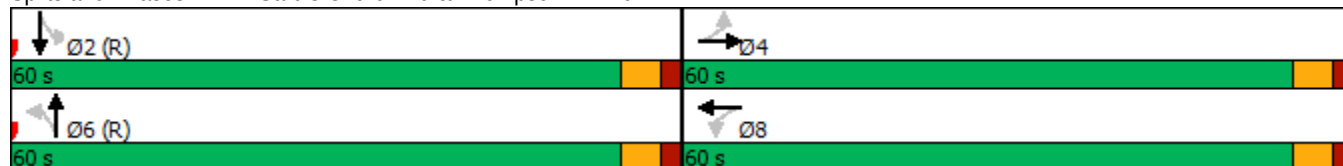
Actuated Cycle Length: 120

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

Natural Cycle: 50

Control Type: Actuated-Coordinated

Splits and Phases: 12: Sardis Church Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary 12: Sardis Church Rd & Thompson Mill Rd

2c. No-Build 2028 AM - Improved
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	118	94	126	171	7	91	138	84	9	251	37
Future Volume (veh/h)	35	118	94	126	171	7	91	138	84	9	251	37
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	40	136	0	145	197	8	105	159	97	10	289	43
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	340		197	227	9	299	448	260	45	1011	147
Arrive On Green	0.26	0.26	0.00	0.26	0.26	0.26	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	264	1296	0	589	864	34	404	693	403	22	1565	228
Grp Volume(v), veh/h	176	0	0	350	0	0	361	0	0	342	0	0
Grp Sat Flow(s),veh/h/ln	1560	0	0	1486	0	0	1500	0	0	1815	0	0
Q Serve(g_s), s	0.0	0.0	0.0	17.4	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.0	0.0	0.0	27.5	0.0	0.0	11.5	0.0	0.0	9.8	0.0	0.0
Prop In Lane	0.23		0.00	0.41		0.02	0.29		0.27	0.03		0.13
Lane Grp Cap(c), veh/h	446	0		432	0	0	1008	0	0	1203	0	0
V/C Ratio(X)	0.39	0.00		0.81	0.00	0.00	0.36	0.00	0.00	0.28	0.00	0.00
Avail Cap(c_a), veh/h	762	0		729	0	0	1008	0	0	1203	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	36.1	0.0	0.0	43.1	0.0	0.0	9.5	0.0	0.0	9.2	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	3.7	0.0	0.0	1.0	0.0	0.0	0.6	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	4.2	0.0	0.0	10.1	0.0	0.0	4.2	0.0	0.0	3.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.7	0.0	0.0	46.8	0.0	0.0	10.5	0.0	0.0	9.8	0.0	0.0
LnGrp LOS	D	A		D	A	A	B	A	A	A	A	A
Approach Vol, veh/h		176			350			361			342	
Approach Delay, s/veh		36.7			46.8			10.5			9.8	
Approach LOS		D			D			B			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		83.0		37.0		83.0		37.0				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		54.5		54.5		54.5		54.5				
Max Q Clear Time (g_c+I1), s		11.8		12.0		13.5		29.5				
Green Ext Time (p_c), s		4.5		1.0		5.2		2.0				
Intersection Summary												
HCM 6th Ctrl Delay				24.4								
HCM 6th LOS				C								
Notes												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

13: Spout Springs Rd & Thompson Mill Rd

2c. No-Build 2028 AM - Improved

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	119	40	38	35	168	841	48	22	474	107
Future Volume (vph)	119	40	38	35	168	841	48	22	474	107
Lane Group Flow (vph)	129	119	41	71	183	914	52	24	515	116
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	31.5	15.0	30.5	15.0	35.5	35.5	15.0	34.5	34.5
Total Split (s)	15.0	32.0	15.0	32.0	18.0	58.0	58.0	15.0	55.0	55.0
Total Split (%)	12.5%	26.7%	12.5%	26.7%	15.0%	48.3%	48.3%	12.5%	45.8%	45.8%
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	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	0.61	0.56	0.21	0.44	0.33	0.74	0.05	0.08	0.46	0.12
Control Delay	60.4	42.6	40.3	38.8	7.6	21.0	0.1	3.4	12.8	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	60.4	42.6	40.3	38.8	7.6	21.0	0.1	3.4	12.8	3.7
Queue Length 50th (ft)	98	45	27	29	40	493	0	1	207	16
Queue Length 95th (ft)	152	106	55	72	79	#885	0	m4	477	42
Internal Link Dist (ft)		1809		565		751			337	
Turn Bay Length (ft)	155		223		228		112	100		110
Base Capacity (vph)	214	419	225	400	593	1243	1097	334	1119	1000
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	0.60	0.28	0.18	0.18	0.31	0.74	0.05	0.07	0.46	0.12

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 68 (57%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 130

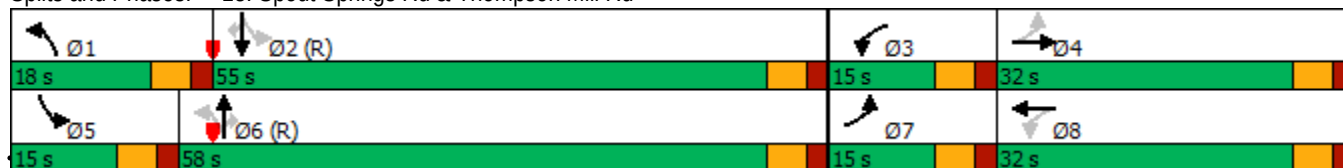
Control Type: Actuated-Coordinated

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: 13: Spout Springs Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary 13: Spout Springs Rd & Thompson Mill Rd

2c. No-Build 2028 AM - Improved
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	40	70	38	35	30	168	841	48	22	474	107
Future Volume (veh/h)	119	40	70	38	35	30	168	841	48	22	474	107
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	43	76	41	38	33	183	914	52	24	515	116
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	226	64	113	164	54	47	539	1224	1037	289	1163	986
Arrive On Green	0.08	0.11	0.11	0.03	0.06	0.06	0.06	0.65	0.65	0.02	0.62	0.62
Sat Flow, veh/h	1781	587	1037	1781	894	777	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	129	0	119	41	0	71	183	914	52	24	515	116
Grp Sat Flow(s),veh/h/ln	1781	0	1624	1781	0	1671	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	7.9	0.0	8.5	2.6	0.0	5.0	4.4	39.7	1.4	0.6	17.2	3.6
Cycle Q Clear(g_c), s	7.9	0.0	8.5	2.6	0.0	5.0	4.4	39.7	1.4	0.6	17.2	3.6
Prop In Lane	1.00		0.64	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	0	176	164	0	101	539	1224	1037	289	1163	986
V/C Ratio(X)	0.57	0.00	0.68	0.25	0.00	0.70	0.34	0.75	0.05	0.08	0.44	0.12
Avail Cap(c_a), veh/h	226	0	359	249	0	369	626	1224	1037	389	1163	986
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.3	0.0	51.5	50.7	0.0	55.3	8.5	14.0	7.4	13.2	11.8	9.2
Incr Delay (d2), s/veh	3.4	0.0	4.5	0.8	0.0	8.6	0.4	4.2	0.1	0.1	1.2	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	3.6	0.0	3.6	1.2	0.0	2.3	1.5	16.0	0.5	0.2	7.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.7	0.0	55.9	51.5	0.0	63.9	8.9	18.2	7.5	13.4	13.1	9.5
LnGrp LOS	D	A	E	D	A	E	A	B	A	B	B	A
Approach Vol, veh/h	248		112				1149				655	
Approach Delay, s/veh	52.7		59.4				16.3				12.4	
Approach LOS	D		E				B				B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.1	80.1	9.2	18.5	8.3	84.0	15.0	12.7				
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	12.5	49.5	9.5	26.5	9.5	52.5	9.5	26.5				
Max Q Clear Time (g_c+I1), s	6.4	19.2	4.6	10.5	2.6	41.7	9.9	7.0				
Green Ext Time (p_c), s	0.2	7.7	0.0	0.5	0.0	7.4	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay	21.5											
HCM 6th LOS	C											
Notes												

Intersection						
Int Delay, s/veh	4.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	4	5	198	203	2
Future Vol, veh/h	5	4	5	198	203	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	255	-	-	210	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	6	5	6	230	236	2
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	6	0	-	0	23	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	17	-
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	1615	-	-	-	993	1077
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1006	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1615	-	-	-	989	1077
Mov Cap-2 Maneuver	-	-	-	-	989	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	1006	-
Approach	EB	WB		SB		
HCM Control Delay, s	4	0		9.8		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1615	-	-	-	989	1077
HCM Lane V/C Ratio	0.004	-	-	-	0.239	0.002
HCM Control Delay (s)	7.2	-	-	-	9.8	8.4
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile O(veh)	0	-	-	-	0.9	0

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	101	106	78	87	113	63
Future Vol, veh/h	101	106	78	87	113	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	225	400	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	111	116	86	96	124	69
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	227	0	379	111
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	268	-
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	-	-	1341	-	623	942
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	777	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1341	-	583	942
Mov Cap-2 Maneuver	-	-	-	-	583	-
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	727	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.7		11.5	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	583	942	-	-	1341	-
HCM Lane V/C Ratio	0.213	0.073	-	-	0.064	-
HCM Control Delay (s)	12.8	9.1	-	-	7.9	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile O(veh)	0.8	0.2	-	-	0.2	-

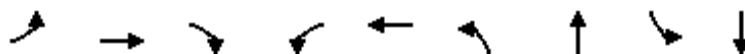
Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↘↗	
Traffic Vol, veh/h	168	19	9	117	27	22
Future Vol, veh/h	168	19	9	117	27	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	177	215	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	181	20	10	126	29	24
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	201	0	327	181
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	146	-
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	-	-	1371	-	667	862
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	881	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1371	-	662	862
Mov Cap-2 Maneuver	-	-	-	-	662	-
Stage 1	-	-	-	-	850	-
Stage 2	-	-	-	-	875	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.5		10.2	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	739	-	-	1371	-	
HCM Lane V/C Ratio	0.071	-	-	0.007	-	
HCM Control Delay (s)	10.2	-	-	7.6	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile O(veh)	0.2	-	-	0	-	

Timings

1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

2d. No-Build 2028 PM - Improved

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←←	↑	→	←	→	←←	→	←	↑↑
Traffic Volume (vph)	477	197	722	81	68	299	717	34	570
Future Volume (vph)	477	197	722	81	68	299	717	34	570
Lane Group Flow (vph)	492	203	744	84	93	308	777	35	795
Turn Type	Prot	NA	Free	Perm	NA	Prot	NA	Perm	NA
Protected Phases	7	4			8	1	6		2
Permitted Phases			Free	8				2	
Detector Phase	7	4		8	8	1	6	2	2
Switch Phase									
Minimum Initial (s)	5.0	6.0		6.0	6.0	5.0	15.0	15.0	15.0
Minimum Split (s)	15.0	33.5		34.5	34.5	15.0	43.5	36.5	36.5
Total Split (s)	27.0	65.0		38.0	38.0	19.0	40.0	36.0	36.0
Total Split (%)	22.5%	54.2%		31.7%	31.7%	15.8%	33.3%	30.0%	30.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.84	0.34	0.47	0.62	0.43	0.66	0.75	0.17	0.59
Control Delay	55.3	28.2	3.0	68.5	46.6	68.5	19.4	31.0	31.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.3	28.2	3.0	68.5	46.6	68.5	19.4	31.0	31.2
Queue Length 50th (ft)	193	129	58	63	58	126	207	18	244
Queue Length 95th (ft)	#221	119	152	112	105	176	#387	50	358
Internal Link Dist (ft)		1136			834		1149		1213
Turn Bay Length (ft)	250					400		250	
Base Capacity (vph)	615	888	1583	317	482	471	1037	207	1339
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.23	0.47	0.26	0.19	0.65	0.75	0.17	0.59

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

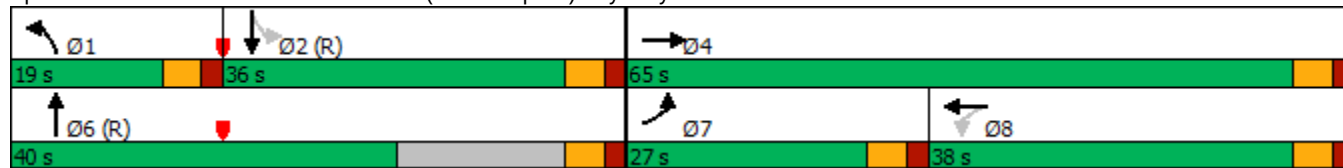
Natural Cycle: 105

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr



HCM 6th Signalized Intersection Summary
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

2d. No-Build 2028 PM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	477	197	722	81	68	22	299	717	37	34	570	201
Future Volume (veh/h)	477	197	722	81	68	22	299	717	37	34	570	201
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	1811	1870	1870	1811	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	492	203	0	84	70	23	308	739	0	35	588	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	6	2	2	6	2	2	5	2	2	5	2
Cap, veh/h	555	542		169	121	40	363	1112		307	1589	
Arrive On Green	0.16	0.30	0.00	0.09	0.09	0.09	0.11	0.61	0.00	0.46	0.46	0.00
Sat Flow, veh/h	3456	1811	1585	1179	1305	429	3456	1826	0	720	3561	0
Grp Volume(v), veh/h	492	203	0	84	0	93	308	739	0	35	588	0
Grp Sat Flow(s),veh/h/ln	1728	1811	1585	1179	0	1734	1728	1826	0	720	1735	0
Q Serve(g_s), s	16.7	10.6	0.0	8.3	0.0	6.2	10.5	31.9	0.0	4.0	13.3	0.0
Cycle Q Clear(g_c), s	16.7	10.6	0.0	8.3	0.0	6.2	10.5	31.9	0.0	17.8	13.3	0.0
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	555	542		169	0	161	363	1112		307	1589	
V/C Ratio(X)	0.89	0.37		0.50	0.00	0.58	0.85	0.66		0.11	0.37	
Avail Cap(c_a), veh/h	619	898		379	0	470	389	1112		307	1589	
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	0.00	1.00	0.82	0.82	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	49.3	33.2	0.0	53.2	0.0	52.2	52.7	15.4	0.0	27.2	21.2	0.0
Incr Delay (d2), s/veh	13.6	0.4	0.0	2.2	0.0	3.3	12.8	2.6	0.0	0.8	0.7	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	8.1	4.6	0.0	2.6	0.0	2.9	5.0	12.3	0.0	0.7	5.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	33.6	0.0	55.4	0.0	55.4	65.6	18.0	0.0	27.9	21.9	0.0
LnGrp LOS	E	C		E	A	E	E	B		C	C	
Approach Vol, veh/h	695			177			1047			623		
Approach Delay, s/veh	54.4			55.4			32.0			22.2		
Approach LOS	D			E			C			C		
Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	18.1	60.5		41.4		78.6	24.8	16.6				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5	5.5	5.5				
Max Green Setting (Gmax), s	13.5	30.5		59.5		34.5	21.5	32.5				
Max Q Clear Time (g_c+I1), s	12.5	19.8		12.6		33.9	18.7	10.3				
Green Ext Time (p_c), s	0.1	4.5		1.1		0.4	0.5	0.8				

Intersection Summary

HCM 6th Ctrl Delay 37.3

HCM 6th LOS D

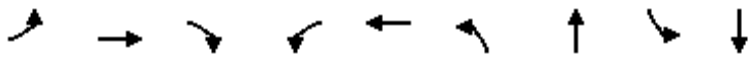
Notes

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

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

Timings 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

2d. No-Build 2028 PM - Improved
02/20/2024

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↰	↱	↰	↱	↰	↱	↰	↱
Traffic Volume (vph)	35	31	283	157	40	183	877	45	1174
Future Volume (vph)	35	31	283	157	40	183	877	45	1174
Lane Group Flow (vph)	0	70	301	167	82	195	1150	48	1276
Turn Type	Perm	NA	pt+ov	pm+pt	NA	pm+pt	NA	Perm	NA
Protected Phases		4	4 1	3	8	1	6		2
Permitted Phases	4			8		6		2	
Detector Phase	4	4	4 1	3	8	1	6	2	2
Switch Phase									
Minimum Initial (s)	6.0	6.0		5.0	6.0	5.0	15.0	15.0	15.0
Minimum Split (s)	31.5	31.5		15.0	33.5	15.0	37.5	35.5	35.5
Total Split (s)	31.5	31.5		15.0	46.5	17.0	73.5	56.5	56.5
Total Split (%)	26.3%	26.3%		12.5%	38.8%	14.2%	61.3%	47.1%	47.1%
Yellow Time (s)	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
Lost Time Adjust (s)		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
Lead/Lag	Lag	Lag		Lead		Lead		Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes		Yes		Yes	Yes
Recall Mode	None	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio		0.30	0.55	0.48	0.16	0.72	0.54	0.22	0.79
Control Delay		46.2	27.2	37.9	17.6	39.5	24.0	18.2	24.0
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		46.2	27.2	37.9	17.6	39.5	24.0	18.2	24.0
Queue Length 50th (ft)		49	134	102	25	113	313	13	446
Queue Length 95th (ft)		88	213	151	59	m#199	406	m34	587
Internal Link Dist (ft)		1758			625		1415		1149
Turn Bay Length (ft)			175			130		300	
Base Capacity (vph)		320	550	349	616	276	2115	217	1621
Starvation Cap Reductn		0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.22	0.55	0.48	0.13	0.71	0.54	0.22	0.79

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: 100

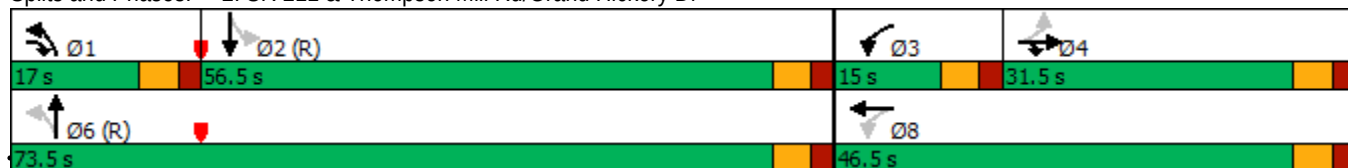
Control Type: Actuated-Coordinated

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: 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr



HCM 6th Signalized Intersection Summary

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

2d. No-Build 2028 PM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	31	283	157	40	37	183	877	204	45	1174	25
Future Volume (veh/h)	35	31	283	157	40	37	183	877	204	45	1174	25
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	1811	1870	1870	1870	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	37	33	0	167	43	39	195	933	217	48	1249	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	6	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	91	51		304	170	154	381	2012	467	343	2144	
Arrive On Green	0.06	0.06	0.00	0.08	0.19	0.19	0.06	0.72	0.72	0.82	0.82	0.00
Sat Flow, veh/h	709	804	1585	1781	903	819	1781	2795	649	489	3561	0
Grp Volume(v), veh/h	70	0	0	167	0	82	195	579	571	48	1249	0
Grp Sat Flow(s),veh/h/ln	1513	0	1585	1781	0	1723	1781	1735	1709	489	1735	0
Q Serve(g_s), s	4.7	0.0	0.0	9.5	0.0	4.9	4.6	16.8	16.9	3.1	14.8	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0	9.5	0.0	4.9	4.6	16.8	16.9	7.7	14.8	0.0
Prop In Lane	0.53		1.00	1.00		0.48	1.00		0.38	1.00		0.00
Lane Grp Cap(c), veh/h	142	0		304	0	324	381	1249	1231	343	2144	
V/C Ratio(X)	0.49	0.00		0.55	0.00	0.25	0.51	0.46	0.46	0.14	0.58	
Avail Cap(c_a), veh/h	369	0		304	0	589	451	1249	1231	343	2144	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.83	0.83	0.00
Uniform Delay (d), s/veh	55.1	0.0	0.0	46.8	0.0	41.5	8.5	7.1	7.1	5.4	5.4	0.0
Incr Delay (d2), s/veh	2.7	0.0	0.0	2.1	0.0	0.4	1.1	1.2	1.3	0.7	1.0	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	2.1	0.0	0.0	4.8	0.0	2.1	1.5	5.3	5.2	0.3	3.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.8	0.0	0.0	49.0	0.0	41.9	9.6	8.3	8.3	6.1	6.4	0.0
LnGrp LOS	E	A		D	A	D	A	A	A	A	A	
Approach Vol, veh/h		70			249			1345			1297	
Approach Delay, s/veh		57.8			46.6			8.5			6.4	
Approach LOS		E			D			A			A	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	12.3	79.7	15.0	13.1		91.9		28.1				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	11.5	51.0	9.5	26.0		68.0		41.0				
Max Q Clear Time (g_c+I1), s	6.6	16.8	11.5	7.4		18.9		6.9				
Green Ext Time (p_c), s	0.2	20.2	0.0	0.2		19.6		0.5				

Intersection Summary

HCM 6th Ctrl Delay 11.9

HCM 6th LOS B

Notes

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

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

Timings 3: SR 211 & Golf Club Dr/Liberty Church Rd

2d. No-Build 2028 PM - Improved
02/20/2024

	→	↘	↙	←	↖	↗	↑	↘	↓	↙
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	14	303	358	11	404	51	798	325	1211	25
Future Volume (vph)	14	303	358	11	404	51	798	325	1211	25
Lane Group Flow (vph)	32	312	188	192	416	53	996	335	1248	26
Turn Type	NA	Perm	Split	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	4		8	8		1	6	5	2	
Permitted Phases		4			8	6		2		2
Detector Phase	4	4	8	8	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	32.5	32.5	35.5	35.5	35.5	15.0	37.5	15.0	36.5	36.5
Total Split (s)	17.0	17.0	27.0	27.0	27.0	15.0	61.0	15.0	61.0	61.0
Total Split (%)	14.2%	14.2%	22.5%	22.5%	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	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	C-Min
v/c Ratio	0.18	1.07	0.73	0.74	0.78	0.24	0.63	1.01	0.69	0.03
Control Delay	52.8	99.3	64.3	65.2	21.3	13.3	26.0	77.0	29.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	99.3	64.3	65.2	21.3	13.3	26.0	77.0	29.5	0.0
Queue Length 50th (ft)	23	~151	145	148	53	16	293	~232	364	0
Queue Length 95th (ft)	56	#335	228	231	174	34	364	m#384	474	m0
Internal Link Dist (ft)	238			965			1320		1505	
Turn Bay Length (ft)			145		175	95		165		230
Base Capacity (vph)	173	291	301	302	561	258	1571	333	1810	892
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	0.18	1.07	0.62	0.64	0.74	0.21	0.63	1.01	0.69	0.03

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: 135

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

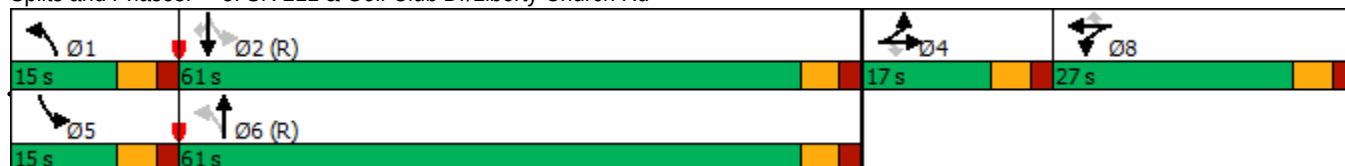
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: SR 211 & Golf Club Dr/Liberty Church Rd



HCM 6th Signalized Intersection Summary

3: SR 211 & Golf Club Dr/Liberty Church Rd

2d. No-Build 2028 PM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	14	303	358	11	404	51	798	168	325	1211	25
Future Volume (veh/h)	17	14	303	358	11	404	51	798	168	325	1211	25
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	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	18	14	0	377	0	0	53	823	0	335	1248	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	34	26		451	0		305	2006		498	2161	
Arrive On Green	0.03	0.03	0.00	0.13	0.00	0.00	0.03	0.58	0.00	0.08	0.62	0.00
Sat Flow, veh/h	1023	796	1585	3563	0	1585	1781	3561	0	1781	3469	1585
Grp Volume(v), veh/h	32	0	0	377	0	0	53	823	0	335	1248	0
Grp Sat Flow(s),veh/h/ln	1819	0	1585	1781	0	1585	1781	1735	0	1781	1735	1585
Q Serve(g_s), s	2.1	0.0	0.0	12.4	0.0	0.0	1.4	15.7	0.0	9.1	25.4	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	12.4	0.0	0.0	1.4	15.7	0.0	9.1	25.4	0.0
Prop In Lane	0.56		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	60	0		451	0		305	2006		498	2161	
V/C Ratio(X)	0.54	0.00		0.84	0.00		0.17	0.41		0.67	0.58	
Avail Cap(c_a), veh/h	174	0		638	0		384	2006		498	2161	
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.1	0.0	0.0	51.2	0.0	0.0	11.2	14.0	0.0	10.5	13.3	0.0
Incr Delay (d2), s/veh	7.3	0.0	0.0	6.7	0.0	0.0	0.3	0.6	0.0	3.5	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	5.8	0.0	0.0	0.5	5.6	0.0	3.3	8.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	0.0	0.0	57.9	0.0	0.0	11.4	14.6	0.0	14.0	14.5	0.0
LnGrp LOS	E	A		E	A		B	B		B	B	
Approach Vol, veh/h		32			377			876			1583	
Approach Delay, s/veh		64.4			57.9			14.4			14.4	
Approach LOS		E			E			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	80.2		9.4	15.0	74.9		20.7				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	55.5		11.5	9.5	55.5		21.5				
Max Q Clear Time (g_c+I1), s	3.4	27.4		4.1	11.1	17.7		14.4				
Green Ext Time (p_c), s	0.0	16.6		0.0	0.0	11.5		0.8				

Intersection Summary

HCM 6th Ctrl Delay	20.7
HCM 6th LOS	C

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Intersection						
Intersection Delay, s/veh10.3						
Intersection LOS B						
Approach	EB	WB	NB	SB		
Entry Lanes	0	4	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	0	0	1508	1453		
Demand Flow Rate, veh/h	0	0	1584	1525		
Vehicles Circulating, veh/h	1252	1583	0	591		
Vehicles Exiting, veh/h	418	0	1252	1326		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	0.0	0.0	9.2	11.5		
Approach LOS	-	-	A	B		
Lane	Left Right		Left RightBypass			
Designated Moves	LT	TR	LT	TR	R	
Assumed Moves	LT	TR	LT	TR	R	
RT Channelized					Free	
Lane Util	0.470	0.530	0.470	0.530		
Follow-Up Headway, s	2.667	2.535	2.667	2.535		
Critical Headway, s	4.645	4.328	4.645	4.328	446	
Entry Flow, veh/h	744	840	507	572	1995	
Cap Entry Lane, veh/h	1350	1420	784	859	0.952	
Entry HV Adj Factor	0.953	0.952	0.953	0.952	425	
Flow Entry, veh/h	709	799	483	545	1900	
Cap Entry, veh/h	1286	1352	747	818	0.224	
V/C Ratio	0.551	0.592	0.647	0.666	0.0	
Control Delay, s/veh	8.9	9.4	16.4	16.0	A	
LOS	A	A	C	C	1	
95th %tile Queue, veh	4	4	5	5		

Timings 5: SR 211 & I-85 NB Ramps

2d. No-Build 2028 PM - Improved
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Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	451	702	1010	245	194	994
Future Volume (vph)	451	702	1010	245	194	994
Lane Group Flow (vph)	470	731	1052	255	202	1035
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	3		6		5	2
Permitted Phases		8		6	2	
Detector Phase	3	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	34.5	34.5	28.5	28.5	15.0	28.5
Total Split (s)	60.0	60.0	45.0	45.0	15.0	60.0
Total Split (%)	50.0%	50.0%	37.5%	37.5%	12.5%	50.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.31	0.99	0.92	0.42	0.55	0.66
Control Delay	21.5	60.9	51.9	14.6	25.1	28.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.5	60.9	51.9	14.6	25.1	28.2
Queue Length 50th (ft)	116	513	412	57	45	322
Queue Length 95th (ft)	155	#791	#546	132	69	397
Internal Link Dist (ft)			1253			1370
Turn Bay Length (ft)		480		160	135	
Base Capacity (vph)	1514	738	1146	614	379	1561
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.99	0.92	0.42	0.53	0.66

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 21 (18%), Referenced to phase 2:SBTL and 6:NBT, Start of Green

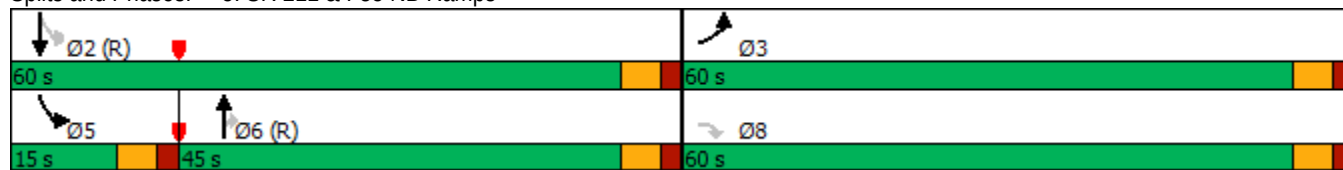
Natural Cycle: 110

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 5: SR 211 & I-85 NB Ramps



HCM 6th Signalized Intersection Summary 5: SR 211 & I-85 NB Ramps

2d. No-Build 2028 PM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 							 		 	 	
Traffic Volume (veh/h)	451	0	702	0	0	0	0	1010	245	194	994	0
Future Volume (veh/h)	451	0	702	0	0	0	0	1010	245	194	994	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1826	1826	1826	1826	0
Adj Flow Rate, veh/h	470	0	0				0	1052	0	202	1035	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	0	5				0	5	5	5	5	0
Cap, veh/h	559	0					0	2273		773	2576	0
Arrive On Green	0.17	0.00	0.00				0.00	0.66	0.00	0.04	0.74	0.00
Sat Flow, veh/h	3374	0	1547				0	3561	1547	3374	3561	0
Grp Volume(v), veh/h	470	0	0				0	1052	0	202	1035	0
Grp Sat Flow(s),veh/h/ln	1687	0	1547				0	1735	1547	1687	1735	0
Q Serve(g_s), s	16.2	0.0	0.0				0.0	18.0	0.0	2.2	13.1	0.0
Cycle Q Clear(g_c), s	16.2	0.0	0.0				0.0	18.0	0.0	2.2	13.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	559	0					0	2273		773	2576	0
V/C Ratio(X)	0.84	0.00					0.00	0.46		0.26	0.40	0.00
Avail Cap(c_a), veh/h	1532	0					0	2273		900	2576	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.5	0.0	0.0				0.0	10.2	0.0	7.3	5.7	0.0
Incr Delay (d2), s/veh	3.5	0.0	0.0				0.0	0.7	0.0	0.2	0.5	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
%ile BackOfQ(50%),veh/ln	6.9	0.0	0.0				0.0	6.2	0.0	0.7	3.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.0	0.0	0.0				0.0	10.9	0.0	7.5	6.1	0.0
LnGrp LOS	D	A					A	B		A	A	A
Approach Vol, veh/h	470						1052			1237		
Approach Delay, s/veh	52.0						10.9			6.4		
Approach LOS	D						B			A		
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	94.6			10.5			84.1			25.4		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	54.5			9.5			39.5			54.5		
Max Q Clear Time (g_c+I1), s	15.1			4.2			20.0			18.2		
Green Ext Time (p_c), s	16.6			0.3			11.4			1.7		
Intersection Summary												
HCM 6th Ctrl Delay	15.9											
HCM 6th LOS	B											

Timings
6: SR 211 & SR 53

2d. No-Build 2028 PM - Improved
02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↘	↘
Traffic Volume (vph)	1057	491	137	552	408	153
Future Volume (vph)	1057	491	137	552	408	153
Lane Group Flow (vph)	1113	517	144	581	429	161
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	7	
Permitted Phases		6	2			7
Detector Phase	6	6	2	2	7	7
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	5.0
Minimum Split (s)	42.5	42.5	28.5	28.5	40.5	40.5
Total Split (s)	79.0	79.0	79.0	79.0	41.0	41.0
Total Split (%)	65.8%	65.8%	65.8%	65.8%	34.2%	34.2%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None
v/c Ratio	0.45	0.40	0.46	0.24	0.73	0.46
Control Delay	7.3	1.5	13.0	5.7	54.5	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	1.5	13.0	5.7	54.5	22.0
Queue Length 50th (ft)	155	0	39	65	164	43
Queue Length 95th (ft)	234	32	106	105	207	104
Internal Link Dist (ft)	1195			1463	749	
Turn Bay Length (ft)		180	190		260	
Base Capacity (vph)	2464	1302	313	2397	1015	537
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.40	0.46	0.24	0.42	0.30

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 211 & SR 53



HCM 6th Signalized Intersection Summary
6: SR 211 & SR 53

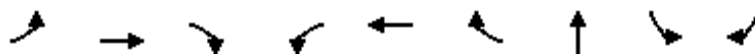
2d. No-Build 2028 PM - Improved
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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↵	↑↑	↵	↑
Traffic Volume (veh/h)	1057	491	137	552	408	153
Future Volume (veh/h)	1057	491	137	552	408	153
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1870	1870	1737	1870	1870
Adj Flow Rate, veh/h	1113	517	144	581	429	161
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	8	2	2	11	2	2
Cap, veh/h	2557	1198	256	2493	528	242
Arrive On Green	0.76	0.76	0.76	0.76	0.15	0.15
Sat Flow, veh/h	3474	1585	309	3387	3456	1585
Grp Volume(v), veh/h	1113	517	144	581	429	161
Grp Sat Flow(s),veh/h/ln	1692	1585	309	1650	1728	1585
Q Serve(g_s), s	14.4	14.2	38.2	6.3	14.4	11.5
Cycle Q Clear(g_c), s	14.4	14.2	52.6	6.3	14.4	11.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2557	1198	256	2493	528	242
V/C Ratio(X)	0.44	0.43	0.56	0.23	0.81	0.66
Avail Cap(c_a), veh/h	2557	1198	256	2493	1022	469
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	5.3	5.3	14.9	4.4	49.2	47.9
Incr Delay (d2), s/veh	0.5	1.1	8.6	0.2	3.1	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	21.8	2.9	1.7	6.3	4.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.9	6.5	23.6	4.6	52.2	51.1
LnGrp LOS	A	A	C	A	D	D
Approach Vol, veh/h	1630			725	590	
Approach Delay, s/veh	6.1			8.3	51.9	
Approach LOS	A			A	D	
Timer - Assigned Phs	2		4		6	
Phs Duration (G+Y+Rc), s	96.2		23.8		96.2	
Change Period (Y+Rc), s	5.5		5.5		5.5	
Max Green Setting (Gmax), s	73.5		35.5		73.5	
Max Q Clear Time (g_c+I1), s	54.6		16.4		16.4	
Green Ext Time (p_c), s	9.8		1.9		31.1	
Intersection Summary						
HCM 6th Ctrl Delay			15.8			
HCM 6th LOS			B			

Timings
7: SR 347 (Friendship Rd) & NGMC Main Drwy

2d. No-Build 2028 PM - Improved

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBR
Lane Configurations	←	↑↑↑	←	←	↑↑↑	←	↑↓	←	←
Traffic Volume (vph)	26	1033	1	1	806	39	0	168	132
Future Volume (vph)	26	1033	1	1	806	39	0	168	132
Lane Group Flow (vph)	28	1123	1	1	876	42	1	183	143
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	NA	Perm	Perm
Protected Phases	1	6			2		8		
Permitted Phases	6		6	2		2		4	4
Detector Phase	1	6	6	2	2	2	8	4	4
Switch Phase									
Minimum Initial (s)	5.0	15.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	46.5	46.5	46.5	54.5	56.5	56.5
Total Split (s)	15.0	63.0	63.0	48.0	48.0	48.0	57.0	57.0	57.0
Total Split (%)	12.5%	52.5%	52.5%	40.0%	40.0%	40.0%	47.5%	47.5%	47.5%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead			Lag	Lag	Lag			
Lead-Lag Optimize?	Yes			Yes	Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None
v/c Ratio	0.06	0.31	0.00	0.00	0.27	0.04	0.00	0.73	0.30
Control Delay	5.8	5.6	0.0	19.0	11.8	3.6	0.0	62.6	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.8	5.6	0.0	19.0	11.8	3.6	0.0	62.6	1.7
Queue Length 50th (ft)	5	87	0	0	92	0	0	135	0
Queue Length 95th (ft)	14	105	m0	m2	193	m9	0	200	0
Internal Link Dist (ft)		1298			1964		114		
Turn Bay Length (ft)	1000		630	550		515		90	
Base Capacity (vph)	477	3574	1162	300	3273	1083	733	605	811
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.31	0.00	0.00	0.27	0.04	0.00	0.30	0.18

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

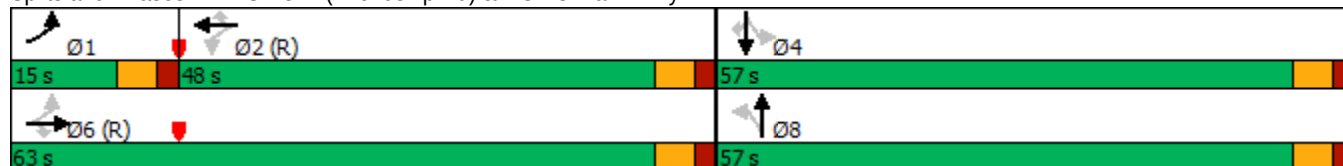
Offset: 102 (85%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

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

Splits and Phases: 7: SR 347 (Friendship Rd) & NGMC Main Drwy



HCM 6th Signalized Intersection Summary

7: SR 347 (Friendship Rd) & NGMC Main Drwy

2d. No-Build 2028 PM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	26	1033	1	1	806	39	0	0	1	168	0	132
Future Volume (veh/h)	26	1033	1	1	806	39	0	0	1	168	0	132
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1123	1	1	876	0	0	0	1	183	0	143
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	496	3740	1199	403	3389		0	0	241	274	284	241
Arrive On Green	0.05	1.00	1.00	0.69	0.69	0.00	0.00	0.00	0.15	0.15	0.00	0.15
Sat Flow, veh/h	1781	4944	1585	501	4944	1585	0	0	1585	1416	1870	1585
Grp Volume(v), veh/h	28	1123	1	1	876	0	0	0	1	183	0	143
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	501	1648	1585	0	0	1585	1416	1870	1585
Q Serve(g_s), s	0.5	0.0	0.0	0.1	8.1	0.0	0.0	0.0	0.1	15.1	0.0	10.1
Cycle Q Clear(g_c), s	0.5	0.0	0.0	0.1	8.1	0.0	0.0	0.0	0.1	15.2	0.0	10.1
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	496	3740	1199	403	3389		0	0	241	274	284	241
V/C Ratio(X)	0.06	0.30	0.00	0.00	0.26		0.00	0.00	0.00	0.67	0.00	0.59
Avail Cap(c_a), veh/h	592	3740	1199	403	3389		0	0	680	667	803	680
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	4.8	0.0	0.0	6.0	7.2	0.0	0.0	0.0	43.2	49.6	0.0	47.4
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	2.8	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	0.0	2.5	0.0	0.0	0.0	0.0	5.6	0.0	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.9	0.2	0.0	6.0	7.4	0.0	0.0	0.0	43.2	52.4	0.0	49.8
LnGrp LOS	A	A	A	A	A		A	A	D	D	A	D
Approach Vol, veh/h	1152				877				1			
Approach Delay, s/veh	0.3				7.4				43.2			
Approach LOS	A				A				D			
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	8.5	87.7		23.7		96.3		23.7				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		51.5		57.5		51.5				
Max Q Clear Time (g_c+I1), s	2.5	10.1		17.2		2.0		2.1				
Green Ext Time (p_c), s	0.0	12.1		1.0		20.2		0.0				

Intersection Summary

HCM 6th Ctrl Delay 10.0

HCM 6th LOS B

Notes

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

Intersection						
Int Delay, s/veh	2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	998	924	14	61	86
Future Vol, veh/h	25	998	924	14	61	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	575	-	-	720	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	27	1085	1004	15	66	93
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	1019	0	-	0	1492	502
Stage 1	-	-	-	-	1004	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	5.34	-	-	-	5.74	7.14
Critical Hdwy Stg 1	-	-	-	-	6.64	-
Critical Hdwy Stg 2	-	-	-	-	6.04	-
Follow-up Hdwy	3.12	-	-	-	3.82	3.92
Pot Cap-1 Maneuver	383	-	-	-	174	440
Stage 1	-	-	-	-	240	-
Stage 2	-	-	-	-	532	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	383	-	-	-	162	440
Mov Cap-2 Maneuver	-	-	-	-	162	-
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	532	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		26.4		
HCM LOS	D					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	383	-	-	-	162	440
HCM Lane V/C Ratio	0.071	-	-	-	0.409	0.212
HCM Control Delay (s)	15.1	-	-	-	41.8	15.4
HCM Lane LOS	C	-	-	-	E	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.8	0.8

Timings 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

2d. No-Build 2028 PM - Improved
02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		  			  						
Traffic Volume (vph)	78	1015	120	6	953	2	194	8	32	9	57
Future Volume (vph)	78	1015	120	6	953	2	194	8	32	9	57
Lane Group Flow (vph)	84	1091	129	6	1025	2	209	35	34	10	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	3	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	15.0	43.5	43.5	15.0	47.5	50.5	50.5	50.5
Total Split (s)	15.0	54.0	54.0	15.0	54.0	54.0	17.0	51.0	34.0	34.0	34.0
Total Split (%)	12.5%	45.0%	45.0%	12.5%	45.0%	45.0%	14.2%	42.5%	28.3%	28.3%	28.3%
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	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.22	0.32	0.11	0.02	0.34	0.00	0.84	0.10	0.35	0.08	0.27
Control Delay	7.5	8.6	2.0	5.7	12.9	0.0	73.2	19.9	61.9	51.6	2.9
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	7.5	8.6	2.0	5.7	12.9	0.0	73.2	19.9	61.9	51.6	2.9
Queue Length 50th (ft)	19	108	0	2	161	0	150	7	26	7	0
Queue Length 95th (ft)	39	194	26	m4	132	m0	m#234	m28	59	25	0
Internal Link Dist (ft)		1122			884			413		385	
Turn Bay Length (ft)	405		300	575		550	100		95		100
Base Capacity (vph)	403	3400	1139	417	3041	1030	248	644	324	442	469
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	0.21	0.32	0.11	0.01	0.34	0.00	0.84	0.05	0.10	0.02	0.13

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 92 (77%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 125

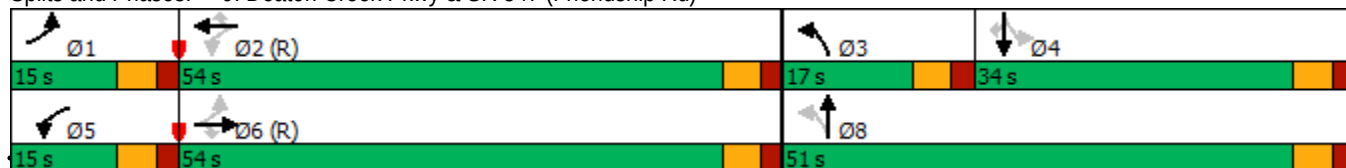
Control Type: Actuated-Coordinated

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: 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

2d. No-Build 2028 PM - Improved

02/20/2024

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  			  								
Traffic Volume (veh/h)	78	1015	120	6	953	2	194	8	24	32	9	57	
Future Volume (veh/h)	78	1015	120	6	953	2	194	8	24	32	9	57	
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870	
Adj Flow Rate, veh/h	84	1091	129	6	1025	2	209	9	26	34	10	61	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2	
Cap, veh/h	473	3248	1041	330	3092	991	299	84	243	137	105	89	
Arrive On Green	0.04	0.66	0.66	0.02	1.00	1.00	0.10	0.20	0.20	0.06	0.06	0.06	
Sat Flow, veh/h	1781	4944	1585	1781	4944	1585	1781	424	1226	1373	1870	1585	
Grp Volume(v), veh/h	84	1091	129	6	1025	2	209	0	35	34	10	61	
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	1781	1648	1585	1781	0	1650	1373	1870	1585	
Q Serve(g_s), s	2.0	11.7	3.6	0.1	0.0	0.0	11.5	0.0	2.1	2.9	0.6	4.5	
Cycle Q Clear(g_c), s	2.0	11.7	3.6	0.1	0.0	0.0	11.5	0.0	2.1	2.9	0.6	4.5	
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.74	1.00		1.00	
Lane Grp Cap(c), veh/h	473	3248	1041	330	3092	991	299	0	327	137	105	89	
V/C Ratio(X)	0.18	0.34	0.12	0.02	0.33	0.00	0.70	0.00	0.11	0.25	0.09	0.68	
Avail Cap(c_a), veh/h	544	3248	1041	457	3092	991	299	0	626	386	444	376	
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	7.0	9.1	7.7	8.3	0.0	0.0	47.4	0.0	39.4	54.8	53.7	55.6	
Incr Delay (d2), s/veh	0.2	0.3	0.2	0.0	0.3	0.0	7.0	0.0	0.1	0.9	0.4	8.9	
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	0.7	3.8	1.2	0.1	0.1	0.0	6.7	0.0	0.9	1.0	0.3	2.0	
Unsig. Movement Delay, s/veh													
LnGrp Delay(d),s/veh	7.2	9.3	7.9	8.3	0.3	0.0	54.4	0.0	39.6	55.7	54.1	64.4	
LnGrp LOS	A	A	A	A	A	A	D	A	D	E	D	E	
Approach Vol, veh/h	1304				1033				244				105
Approach Delay, s/veh	9.1				0.3				52.3				60.6
Approach LOS	A				A				D				E
Timer - Assigned Phs	1	2	3	4	5	6	8						
Phs Duration (G+Y+Rc), s	10.2	80.5	17.0	12.3	6.4	84.3	29.3						
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5						
Max Green Setting (Gmax), s	9.5	48.5	11.5	28.5	9.5	48.5	45.5						
Max Q Clear Time (g_c+I1), s	4.0	2.0	13.5	6.5	2.1	13.7	4.1						
Green Ext Time (p_c), s	0.1	16.8	0.0	0.3	0.0	17.5	0.2						
Intersection Summary													
HCM 6th Ctrl Delay	11.6												
HCM 6th LOS	B												
Notes													

Timings
10: Spout Springs Rd & SR 347 (Friendship Rd)

2d. No-Build 2028 PM - Improved

02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	372	979	336	382	772	210	229	428	156	236	439
Future Volume (vph)	372	979	336	382	772	210	229	428	156	236	439
Lane Group Flow (vph)	384	1009	346	394	796	216	236	441	161	243	520
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases			6			2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	35.5	35.5	15.0	33.5	33.5	15.0	42.5	42.5	15.0	40.5
Total Split (s)	32.0	34.0	34.0	32.0	34.0	34.0	32.0	53.0	53.0	21.0	42.0
Total Split (%)	22.9%	24.3%	24.3%	22.9%	24.3%	24.3%	22.9%	37.9%	37.9%	15.0%	30.0%
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	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.75	0.97	0.57	0.76	0.76	0.36	0.64	0.86	0.31	0.90	0.58
Control Delay	66.4	69.4	25.2	66.4	50.5	15.2	34.2	63.9	15.0	67.1	46.8
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	66.4	69.4	25.2	66.4	50.5	15.2	34.2	63.9	15.0	67.1	46.8
Queue Length 50th (ft)	175	483	126	179	348	40	139	379	38	144	212
Queue Length 95th (ft)	222	#793	266	227	#571	127	183	474	91	#285	262
Internal Link Dist (ft)		4090			4101			920			702
Turn Bay Length (ft)	575		190	260		210	140		150	125	
Base Capacity (vph)	649	1039	608	649	1049	595	453	632	606	272	948
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	0.59	0.97	0.57	0.61	0.76	0.36	0.52	0.70	0.27	0.89	0.55

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

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

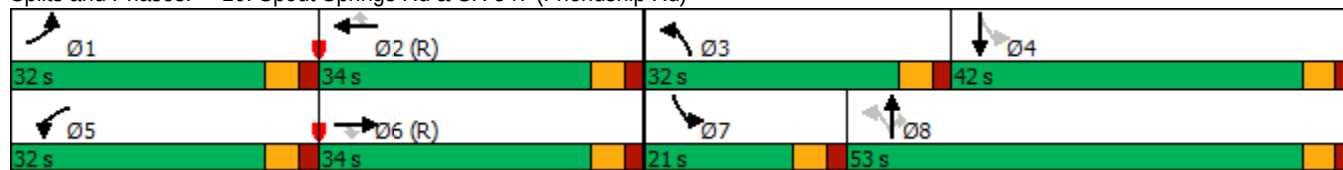
Natural Cycle: 110

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Spout Springs Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

10: Spout Springs Rd & SR 347 (Friendship Rd)

2d. No-Build 2028 PM - Improved

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	372	979	336	382	772	210	229	428	156	236	439	65
Future Volume (veh/h)	372	979	336	382	772	210	229	428	156	236	439	65
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	384	1009	346	394	796	0	236	441	0	243	453	67
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	448	1175	541	458	1185		366	483		276	792	116
Arrive On Green	0.13	0.34	0.34	0.13	0.34	0.00	0.11	0.26	0.00	0.11	0.25	0.25
Sat Flow, veh/h	3456	3441	1585	3456	3441	1585	1781	1870	1585	1781	3108	457
Grp Volume(v), veh/h	384	1009	346	394	796	0	236	441	0	243	258	262
Grp Sat Flow(s),veh/h/ln	1728	1721	1585	1728	1721	1585	1781	1870	1585	1781	1777	1788
Q Serve(g_s), s	15.2	38.3	25.7	15.6	27.6	0.0	13.5	32.0	0.0	14.0	17.7	17.9
Cycle Q Clear(g_c), s	15.2	38.3	25.7	15.6	27.6	0.0	13.5	32.0	0.0	14.0	17.7	17.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	448	1175	541	458	1185		366	483		276	453	456
V/C Ratio(X)	0.86	0.86	0.64	0.86	0.67		0.64	0.91		0.88	0.57	0.58
Avail Cap(c_a), veh/h	654	1175	541	654	1185		500	635		276	463	466
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)	0.65	0.65	0.65	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.7	43.0	38.8	59.5	39.2	0.0	33.7	50.4	0.0	36.9	45.5	45.5
Incr Delay (d2), s/veh	5.1	5.6	3.7	8.1	3.0	0.0	1.9	14.8	0.0	26.0	1.6	1.7
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	6.9	16.7	10.4	7.2	11.9	0.0	6.0	16.7	0.0	8.0	7.9	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.8	48.5	42.6	67.5	42.2	0.0	35.6	65.2	0.0	62.9	47.1	47.2
LnGrp LOS	E	D	D	E	D		D	E		E	D	D
Approach Vol, veh/h	1739			1190			677			763		
Approach Delay, s/veh	50.9			50.6			54.9			52.2		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.7	53.7	21.5	41.2	24.1	53.3	21.0	41.6				
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	26.5	28.5	26.5	36.5	26.5	28.5	15.5	47.5				
Max Q Clear Time (g_c+I1), s	17.2	29.6	15.5	19.9	17.6	40.3	16.0	34.0				
Green Ext Time (p_c), s	0.9	0.0	0.5	2.6	0.9	0.0	0.0	2.1				

Intersection Summary

HCM 6th Ctrl Delay 51.7

HCM 6th LOS D

Notes

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

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

Timings
11: Sardis Church Rd & SR 347 (Friendship Rd)

2d. No-Build 2028 PM - Improved
02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1352	236	249	819	94	240
Future Volume (vph)	1352	236	249	819	94	240
Lane Group Flow (vph)	1470	257	271	890	102	261
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	5	2	8	8
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	6.0	6.0
Minimum Split (s)	23.5	23.5	15.0	23.5	23.5	23.5
Total Split (s)	64.0	64.0	26.0	90.0	30.0	30.0
Total Split (%)	53.3%	53.3%	21.7%	75.0%	25.0%	25.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.71	0.25	0.69	0.32	0.57	0.66
Control Delay	20.7	3.8	27.4	3.6	76.3	27.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	3.8	27.4	3.6	76.3	27.5
Queue Length 50th (ft)	391	13	95	75	82	55
Queue Length 95th (ft)	618	61	186	121	m136	m121
Internal Link Dist (ft)	1687			4090	2052	
Turn Bay Length (ft)			385			80
Base Capacity (vph)	2067	1044	438	2746	361	530
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.25	0.62	0.32	0.28	0.49

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

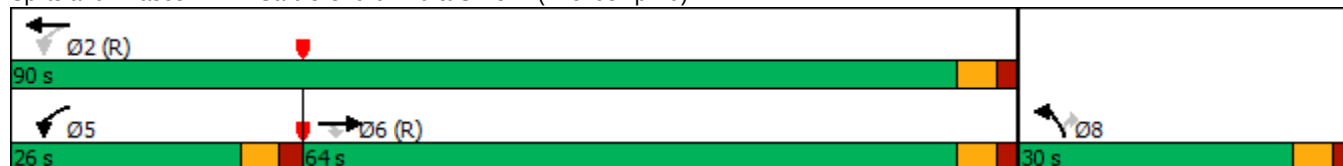
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

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

Splits and Phases: 11: Sardis Church Rd & SR 347 (Friendship Rd)



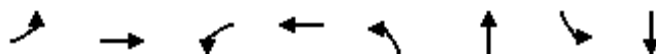
HCM 6th Signalized Intersection Summary
11: Sardis Church Rd & SR 347 (Friendship Rd)

2d. No-Build 2028 PM - Improved
02/20/2024

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (veh/h)	1352	236	249	819	94	240
Future Volume (veh/h)	1352	236	249	819	94	240
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1870	1870	1811	1870	1870
Adj Flow Rate, veh/h	1470	257	271	890	102	261
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	2	2	6	2	2
Cap, veh/h	2029	934	303	2502	323	287
Arrive On Green	0.59	0.59	0.09	0.73	0.18	0.18
Sat Flow, veh/h	3532	1585	1781	3532	1781	1585
Grp Volume(v), veh/h	1470	257	271	890	102	261
Grp Sat Flow(s),veh/h/ln	1721	1585	1781	1721	1781	1585
Q Serve(g_s), s	36.7	9.5	8.5	11.4	6.0	19.4
Cycle Q Clear(g_c), s	36.7	9.5	8.5	11.4	6.0	19.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2029	934	303	2502	323	287
V/C Ratio(X)	0.72	0.28	0.89	0.36	0.32	0.91
Avail Cap(c_a), veh/h	2029	934	444	2502	364	324
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.61	0.61	1.00	1.00
Uniform Delay (d), s/veh	17.6	12.1	27.5	6.0	42.7	48.1
Incr Delay (d2), s/veh	2.3	0.7	9.9	0.2	0.6	26.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.6	3.3	5.3	3.4	2.7	9.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.9	12.8	37.4	6.3	43.2	74.5
LnGrp LOS	B	B	D	A	D	E
Approach Vol, veh/h	1727			1161	363	
Approach Delay, s/veh	18.9			13.5	65.7	
Approach LOS	B			B	E	
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	92.7		16.5		76.2	27.3
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	84.5		20.5		58.5	24.5
Max Q Clear Time (g_c+I1), s	13.4		10.5		38.7	21.4
Green Ext Time (p_c), s	15.6		0.5		16.3	0.4
Intersection Summary						
HCM 6th Ctrl Delay			22.2			
HCM 6th LOS			C			

Timings 12: Sardis Church Rd & Thompson Mill Rd

2d. No-Build 2028 PM - Improved
02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Traffic Volume (vph)	40	138	222	143	67	223	6	372
Future Volume (vph)	40	138	222	143	67	223	6	372
Lane Group Flow (vph)	0	337	0	394	0	459	0	403
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		6		2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	6	6	2	2
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0
Minimum Split (s)	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
Total Split (s)	64.0	64.0	64.0	64.0	56.0	56.0	56.0	56.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%	46.7%	46.7%
Yellow Time (s)	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
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.5		5.5		5.5		5.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio		0.50		0.93		0.57		0.43
Control Delay		23.6		55.3		24.8		33.7
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		23.6		55.3		24.8		33.7
Queue Length 50th (ft)		157		222		231		240
Queue Length 95th (ft)		212		#395		391		413
Internal Link Dist (ft)		730		2583		494		2249
Turn Bay Length (ft)								
Base Capacity (vph)		809		510		807		930
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.42		0.77		0.57		0.43

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

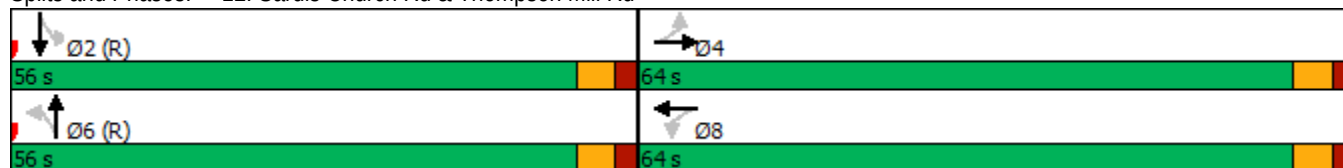
Natural Cycle: 50

Control Type: Actuated-Coordinated

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

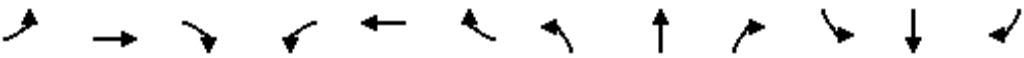
Queue shown is maximum after two cycles.

Splits and Phases: 12: Sardis Church Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary 12: Sardis Church Rd & Thompson Mill Rd

2d. No-Build 2028 PM - Improved
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Volume (veh/h)	40	138	156	222	143	26	67	223	164	6	372	21
Future Volume (veh/h)	40	138	156	222	143	26	67	223	164	6	372	21
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	40	139	0	224	144	26	68	225	166	6	376	21
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	129	429		293	158	29	151	491	344	35	1035	57
Arrive On Green	0.31	0.31	0.00	0.31	0.31	0.31	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	294	1363	0	781	502	91	195	827	579	8	1742	96
Grp Volume(v), veh/h	179	0	0	394	0	0	459	0	0	403	0	0
Grp Sat Flow(s),veh/h/ln	1658	0	0	1374	0	0	1602	0	0	1846	0	0
Q Serve(g_s), s	0.0	0.0	0.0	24.3	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.1	0.0	0.0	33.4	0.0	0.0	17.7	0.0	0.0	13.5	0.0	0.0
Prop In Lane	0.22		0.00	0.57		0.07	0.15		0.36	0.01		0.05
Lane Grp Cap(c), veh/h	558	0		479	0	0	986	0	0	1127	0	0
V/C Ratio(X)	0.32	0.00		0.82	0.00	0.00	0.47	0.00	0.00	0.36	0.00	0.00
Avail Cap(c_a), veh/h	847	0		729	0	0	986	0	0	1127	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.2	0.0	0.0	40.3	0.0	0.0	13.4	0.0	0.0	12.6	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	4.6	0.0	0.0	1.6	0.0	0.0	0.9	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	3.9	0.0	0.0	11.3	0.0	0.0	6.9	0.0	0.0	5.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.5	0.0	0.0	44.9	0.0	0.0	15.0	0.0	0.0	13.5	0.0	0.0
LnGrp LOS	C	A		D	A	A	B	A	A	B	A	A
Approach Vol, veh/h		179			394			459			403	
Approach Delay, s/veh		31.5			44.9			15.0			13.5	
Approach LOS		C			D			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		76.8		43.2		76.8		43.2				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		50.5		58.5		50.5		58.5				
Max Q Clear Time (g_c+I1), s		15.5		11.1		19.7		35.4				
Green Ext Time (p_c), s		5.3		1.0		6.4		2.3				
Intersection Summary												
HCM 6th Ctrl Delay				24.9								
HCM 6th LOS				C								
Notes												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

13: Spout Springs Rd & Thompson Mill Rd

2d. No-Build 2028 PM - Improved

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	168	98	94	86	165	682	73	66	695	129
Future Volume (vph)	168	98	94	86	165	682	73	66	695	129
Lane Group Flow (vph)	170	179	95	156	167	689	74	67	702	130
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	31.5	15.0	30.5	15.0	35.5	35.5	15.0	34.5	34.5
Total Split (s)	19.0	32.0	19.0	32.0	15.0	54.0	54.0	15.0	54.0	54.0
Total Split (%)	15.8%	26.7%	15.8%	26.7%	12.5%	45.0%	45.0%	12.5%	45.0%	45.0%
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	0.67	0.36	0.66	0.50	0.68	0.08	0.20	0.78	0.16
Control Delay	48.4	58.8	35.8	52.8	15.5	26.7	0.7	12.0	35.1	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	58.8	35.8	52.8	15.5	26.7	0.7	12.0	35.1	4.8
Queue Length 50th (ft)	124	118	56	94	49	387	0	19	449	3
Queue Length 95th (ft)	185	192	92	155	96	#686	6	44	#758	42
Internal Link Dist (ft)		1809		565		751			337	
Turn Bay Length (ft)	155		223		228		112	100		110
Base Capacity (vph)	302	399	310	400	334	1016	919	361	900	828
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	0.56	0.45	0.31	0.39	0.50	0.68	0.08	0.19	0.78	0.16

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 6 (5%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

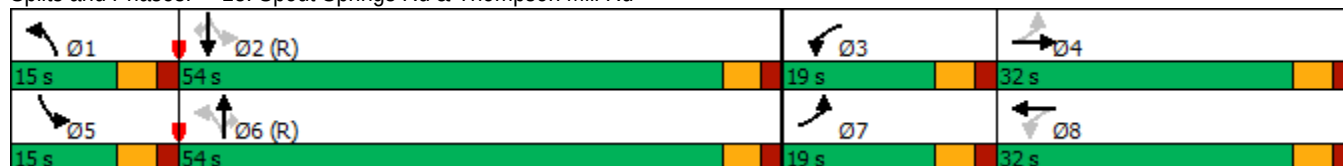
Natural Cycle: 100

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 13: Spout Springs Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary 13: Spout Springs Rd & Thompson Mill Rd

2d. No-Build 2028 PM - Improved
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	168	98	79	94	86	68	165	682	73	66	695	129
Future Volume (veh/h)	168	98	79	94	86	68	165	682	73	66	695	129
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	170	99	80	95	87	69	167	689	74	67	702	130
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	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	263	139	113	228	105	83	345	1062	900	348	1023	867
Arrive On Green	0.10	0.15	0.15	0.06	0.11	0.11	0.06	0.57	0.57	0.04	0.55	0.55
Sat Flow, veh/h	1781	927	749	1781	936	742	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	170	0	179	95	0	156	167	689	74	67	702	130
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1781	0	1678	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	9.9	0.0	12.2	5.6	0.0	10.9	4.9	30.2	2.5	2.0	32.7	4.9
Cycle Q Clear(g_c), s	9.9	0.0	12.2	5.6	0.0	10.9	4.9	30.2	2.5	2.0	32.7	4.9
Prop In Lane	1.00		0.45	1.00		0.44	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	263	0	252	228	0	189	345	1062	900	348	1023	867
V/C Ratio(X)	0.65	0.00	0.71	0.42	0.00	0.83	0.48	0.65	0.08	0.19	0.69	0.15
Avail Cap(c_a), veh/h	287	0	370	319	0	370	382	1062	900	423	1023	867
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	0.0	48.5	43.5	0.0	52.1	16.3	17.7	11.8	14.3	19.7	13.4
Incr Delay (d2), s/veh	4.4	0.0	3.7	1.2	0.0	8.8	1.1	3.1	0.2	0.3	3.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	5.2	2.5	0.0	4.9	1.9	13.0	0.9	0.8	14.3	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.4	0.0	52.2	44.8	0.0	60.9	17.3	20.8	11.9	14.6	23.5	13.8
LnGrp LOS	D	A	D	D	A	E	B	C	B	B	C	B
Approach Vol, veh/h		349			251			930			899	
Approach Delay, s/veh		48.9			54.8			19.5			21.4	
Approach LOS		D			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	71.1	12.8	23.5	10.0	73.6	17.4	19.0				
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	48.5	13.5	26.5	9.5	48.5	13.5	26.5				
Max Q Clear Time (g_c+I1), s	6.9	34.7	7.6	14.2	4.0	32.2	11.9	12.9				
Green Ext Time (p_c), s	0.1	7.2	0.1	0.7	0.0	7.6	0.1	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			28.1									
HCM 6th LOS			C									

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	2	5	219	130	6
Future Vol, veh/h	6	2	5	219	130	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	255	-	-	210	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	7	2	6	249	148	7
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	6	0	-	0	22	6
Stage 1	-	-	-	-	6	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1615	-	-	-	995	1077
Stage 1	-	-	-	-	1017	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1615	-	-	-	991	1077
Mov Cap-2 Maneuver	-	-	-	-	991	-
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	1007	-
Approach	EB	WB		SB		
HCM Control Delay, s	5.4	0		9.3		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1615	-	-	-	991	1077
HCM Lane V/C Ratio	0.004	-	-	-	0.149	0.006
HCM Control Delay (s)	7.2	-	-	-	9.3	8.4
HCM Lane LOS	A	-	-	-	A	A
HCM 95th %tile O(veh)	0	-	-	-	0.5	0

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	46	89	54	112	109	63
Future Vol, veh/h	46	89	54	112	109	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	225	400	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	56	109	66	137	133	77
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	165	0	325	56
Stage 1	-	-	-	-	56	-
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	-	-	1413	-	669	1011
Stage 1	-	-	-	-	967	-
Stage 2	-	-	-	-	776	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1413	-	638	1011
Mov Cap-2 Maneuver	-	-	-	-	638	-
Stage 1	-	-	-	-	967	-
Stage 2	-	-	-	-	740	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.5		10.9	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	638	1011	-	-	1413	-
HCM Lane V/C Ratio	0.208	0.076	-	-	0.047	-
HCM Control Delay (s)	12.1	8.9	-	-	7.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile O(veh)	0.8	0.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘↗	
Traffic Vol, veh/h	124	22	26	159	14	11
Future Vol, veh/h	124	22	26	159	14	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	177	215	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	143	25	30	183	16	13
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	168	0	386	143
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	243	-
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	-	-	1410	-	617	905
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	797	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1410	-	604	905
Mov Cap-2 Maneuver	-	-	-	-	604	-
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	780	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.1		10.3	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	708	-	-	1410	-	
HCM Lane V/C Ratio	0.041	-	-	0.021	-	
HCM Control Delay (s)	10.3	-	-	7.6	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile O(veh)	0.1	-	-	0.1	-	

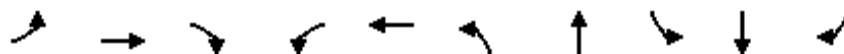
Future “Build” Intersections Analysis

Timings

3a. Build 2028 AM

1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	←	→	←	←	→	←	→	←	→	←
Traffic Volume (vph)	241	60	503	42	78	862	500	35	546	482
Future Volume (vph)	241	60	503	42	78	862	500	35	546	482
Lane Group Flow (vph)	254	63	529	44	138	907	542	37	575	507
Turn Type	pm+pt	NA	Perm	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4			8	1	6	5	2	
Permitted Phases	4		4	8						2
Detector Phase	7	4	4	8	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	33.5	33.5	34.5	34.5	15.0	43.5	15.0	36.5	36.5
Total Split (s)	18.0	52.0	52.0	34.0	34.0	36.0	53.0	15.0	32.0	32.0
Total Split (%)	15.0%	43.3%	43.3%	28.3%	28.3%	30.0%	44.2%	12.5%	26.7%	26.7%
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	Lag
Lead-Lag Optimize?	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	0.89	0.14	0.66	0.30	0.65	0.78	0.52	0.32	1.20	0.64
Control Delay	59.0	20.3	9.4	52.5	54.4	41.7	20.3	59.7	147.5	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.0	20.3	9.4	52.5	54.4	41.7	20.3	59.7	147.5	7.6
Queue Length 50th (ft)	150	24	237	32	83	326	267	28	~535	0
Queue Length 95th (ft)	#159	43	81	67	145	406	437	62	#826	99
Internal Link Dist (ft)		3184			834		1148		1213	
Turn Bay Length (ft)						400		250		450
Base Capacity (vph)	287	694	937	316	426	1156	1036	143	479	792
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	0.89	0.09	0.56	0.14	0.32	0.78	0.52	0.26	1.20	0.64

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 140

Control Type: Actuated-Coordinated

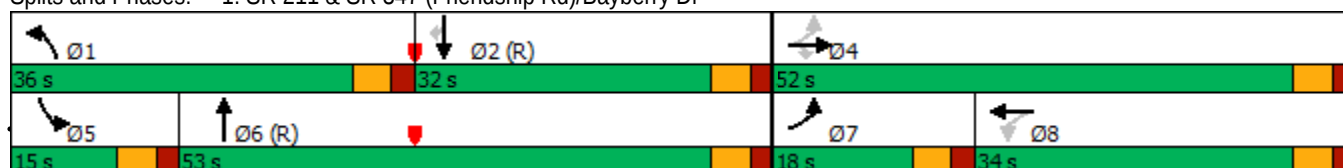
~ Volume exceeds capacity, queue is theoretically infinite.

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 211 & SR 347 (Friendship Rd)/Bayberry Dr



23-016 Thompson Mill Village Mixed Use Development (DRI #4098)

HCM 6th Signalized Intersection Summary
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

3a. Build 2028 AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	60	503	42	78	53	862	500	15	35	546	482
Future Volume (veh/h)	241	60	503	42	78	53	862	500	15	35	546	482
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	1811	1870	1870	1811	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	254	63	0	44	82	56	907	526	0	37	575	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	6	2	2	6	2	2	5	2	2	5	2
Cap, veh/h	275	459		198	103	71	878	1059		53	648	
Arrive On Green	0.10	0.25	0.00	0.10	0.10	0.10	0.25	0.58	0.00	0.03	0.36	0.00
Sat Flow, veh/h	1781	1811	1585	1339	1003	685	3456	1826	0	1781	1826	1585
Grp Volume(v), veh/h	254	63	0	44	0	138	907	526	0	37	575	0
Grp Sat Flow(s),veh/h/ln	1781	1811	1585	1339	0	1688	1728	1826	0	1781	1826	1585
Q Serve(g_s), s	12.5	3.2	0.0	3.7	0.0	9.6	30.5	20.4	0.0	2.5	35.6	0.0
Cycle Q Clear(g_c), s	12.5	3.2	0.0	3.7	0.0	9.6	30.5	20.4	0.0	2.5	35.6	0.0
Prop In Lane	1.00		1.00	1.00		0.41	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	275	459		198	0	174	878	1059		53	648	
V/C Ratio(X)	0.92	0.14		0.22	0.00	0.79	1.03	0.50		0.70	0.89	
Avail Cap(c_a), veh/h	275	702		378	0	401	878	1059		141	648	
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)	0.98	0.98	0.00	1.00	0.00	1.00	0.09	0.09	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.8	34.7	0.0	49.9	0.0	52.6	44.8	14.9	0.0	57.7	36.4	0.0
Incr Delay (d2), s/veh	34.4	0.1	0.0	0.6	0.0	7.9	19.2	0.2	0.0	15.7	16.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	1.4	0.0	1.3	0.0	4.5	14.7	7.6	0.0	1.3	17.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.2	34.8	0.0	50.5	0.0	60.4	63.9	15.0	0.0	73.4	52.9	0.0
LnGrp LOS	E	C		D	A	E	F	B		E	D	
Approach Vol, veh/h	317			182			1433			612		
Approach Delay, s/veh	70.4			58.0			46.0			54.1		
Approach LOS	E			E			D			D		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	36.0	48.1		35.9	9.0	75.1	18.0	17.9				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	30.5	26.5		46.5	9.5	47.5	12.5	28.5				
Max Q Clear Time (g_c+I1), s	32.5	37.6		5.2	4.5	22.4	14.5	11.6				
Green Ext Time (p_c), s	0.0	0.0		0.3	0.0	6.1	0.0	0.8				

Intersection Summary

HCM 6th Ctrl Delay	51.8
HCM 6th LOS	D

Notes

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

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

Timings 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

3a. Build 2028 AM
02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	86	19	170	38	434	1293	71	14	1003	113
Future Volume (vph)	86	19	170	38	434	1293	71	14	1003	113
Lane Group Flow (vph)	92	349	183	69	467	1390	76	15	1078	122
Turn Type	Perm	NA	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4	3	8	1	6			2	
Permitted Phases	4		8		6		6	2		2
Detector Phase	4	4	3	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	31.5	31.5	15.0	33.5	15.0	37.5	37.5	35.5	35.5	35.5
Total Split (s)	31.0	31.0	15.0	46.0	29.0	104.0	104.0	75.0	75.0	75.0
Total Split (%)	20.7%	20.7%	10.0%	30.7%	19.3%	69.3%	69.3%	50.0%	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	Lag	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.64	0.81	1.14	0.18	1.07	1.07	0.07	0.30	1.29	0.16
Control Delay	82.4	26.8	159.0	32.9	80.6	73.1	8.9	44.6	172.6	6.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.4	26.8	159.0	32.9	80.6	73.1	8.9	44.6	172.6	6.7
Queue Length 50th (ft)	88	53	~159	38	~457	~1184	19	9	~1336	13
Queue Length 95th (ft)	141	164	#275	76	m#283	m576	m12	34	#1602	51
Internal Link Dist (ft)		1761		625		1416			1148	
Turn Bay Length (ft)	95				130		200	300		
Base Capacity (vph)	225	513	161	488	435	1299	1152	50	838	786
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	0.41	0.68	1.14	0.14	1.07	1.07	0.07	0.30	1.29	0.16

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.

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

Splits and Phases: 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr



HCM 6th Signalized Intersection Summary

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

3a. Build 2028 AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	19	306	170	38	26	434	1293	71	14	1003	113
Future Volume (veh/h)	86	19	306	170	38	26	434	1293	71	14	1003	113
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	1811	1870	1870	1870	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	92	20	329	183	41	28	467	1390	76	15	1078	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	274	15	248	161	280	191	327	1199	1041	48	846	
Arrive On Green	0.17	0.17	0.17	0.06	0.27	0.27	0.16	0.66	0.66	0.46	0.46	0.00
Sat Flow, veh/h	1332	89	1460	1781	1036	707	1781	1826	1585	362	1826	1585
Grp Volume(v), veh/h	92	0	349	183	0	69	467	1390	76	15	1078	0
Grp Sat Flow(s),veh/h/ln	1332	0	1548	1781	0	1743	1781	1826	1585	362	1826	1585
Q Serve(g_s), s	9.2	0.0	25.5	9.5	0.0	4.5	23.5	98.5	2.6	0.0	69.5	0.0
Cycle Q Clear(g_c), s	9.2	0.0	25.5	9.5	0.0	4.5	23.5	98.5	2.6	69.5	69.5	0.0
Prop In Lane	1.00		0.94	1.00		0.41	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	274	0	263	161	0	471	327	1199	1041	48	846	
V/C Ratio(X)	0.34	0.00	1.33	1.14	0.00	0.15	1.43	1.16	0.07	0.31	1.27	
Avail Cap(c_a), veh/h	274	0	263	161	0	471	327	1199	1041	48	846	
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.28	0.28	0.00
Uniform Delay (d), s/veh	55.5	0.0	62.3	52.4	0.0	41.6	53.5	25.7	9.3	75.0	40.3	0.0
Incr Delay (d2), s/veh	0.7	0.0	170.6	112.9	0.0	0.1	209.4	81.3	0.1	4.7	126.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	22.3	6.6	0.0	2.0	30.7	63.8	0.9	0.6	58.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.2	0.0	232.8	165.2	0.0	41.8	262.9	107.1	9.4	79.7	166.4	0.0
LnGrp LOS	E	A	F	F	A	D	F	F	A	E	F	
Approach Vol, veh/h	441			252			1933			1093		
Approach Delay, s/veh	196.0			131.4			140.9			165.2		
Approach LOS	F			F			F			F		
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	29.0	75.0	15.0	31.0		104.0		46.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	23.5	69.5	9.5	25.5		98.5		40.5				
Max Q Clear Time (g_c+I1), s	25.5	71.5	11.5	27.5		100.5		6.5				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0		0.0		0.4				

Intersection Summary

HCM 6th Ctrl Delay 153.9

HCM 6th LOS F

Notes

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

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

Timings

3: SR 211 & Golf Club Dr/Liberty Church Rd

3a. Build 2028 AM

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	8	14	261	7	26	1344	94	286	1107	18
Future Volume (vph)	8	14	261	7	26	1344	94	286	1107	18
Lane Group Flow (vph)	8	181	275	453	27	1415	99	301	1165	19
Turn Type	Split	NA	Split	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4	4	8	8	1	6		5	2	
Permitted Phases					6		6	2		2
Detector Phase	4	4	8	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	32.5	32.5	35.5	35.5	15.0	37.5	37.5	15.0	36.5	36.5
Total Split (s)	32.0	32.0	36.0	36.0	15.0	65.0	65.0	17.0	67.0	67.0
Total Split (%)	21.3%	21.3%	24.0%	24.0%	10.0%	43.3%	43.3%	11.3%	44.7%	44.7%
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	Lag
Lead-Lag Optimize?					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	0.08	0.72	0.79	0.72	0.21	1.97	0.14	0.75	1.11	0.02
Control Delay	65.1	28.0	72.6	14.5	19.8	469.7	5.6	39.5	90.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.1	28.0	72.6	14.5	19.8	469.7	5.6	39.5	90.2	0.0
Queue Length 50th (ft)	8	14	259	44	9	~2142	1	256	~1309	0
Queue Length 95th (ft)	25	92	340	160	29	#2408	39	m#280	m#1216	m0
Internal Link Dist (ft)		238		965		1320			1505	
Turn Bay Length (ft)			145		95		295	165		230
Base Capacity (vph)	312	420	386	658	161	717	687	401	1053	962
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	0.03	0.43	0.71	0.69	0.17	1.97	0.14	0.75	1.11	0.02

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: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

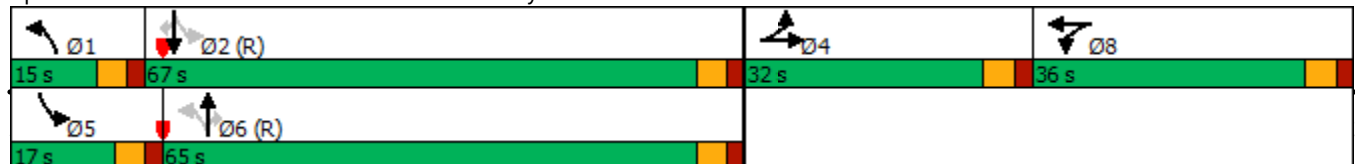
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: SR 211 & Golf Club Dr/Liberty Church Rd



HCM 6th Signalized Intersection Summary

3: SR 211 & Golf Club Dr/Liberty Church Rd

3a. Build 2028 AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	14	158	261	7	424	26	1344	94	286	1107	18
Future Volume (veh/h)	8	14	158	261	7	424	26	1344	94	286	1107	18
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	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	8	15	0	275	7	446	27	1415	0	301	1165	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	44	46		362	5	318	88	1002		185	1101	
Arrive On Green	0.02	0.02	0.00	0.20	0.20	0.20	0.02	0.55	0.00	0.08	0.60	0.00
Sat Flow, veh/h	1781	1870	0	1781	25	1564	1781	1826	1585	1781	1826	1585
Grp Volume(v), veh/h	8	15	0	275	0	453	27	1415	0	301	1165	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1589	1781	1826	1585	1781	1826	1585
Q Serve(g_s), s	0.7	1.2	0.0	21.8	0.0	30.5	1.0	82.3	0.0	11.5	90.4	0.0
Cycle Q Clear(g_c), s	0.7	1.2	0.0	21.8	0.0	30.5	1.0	82.3	0.0	11.5	90.4	0.0
Prop In Lane	1.00		0.00	1.00		0.98	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	44	46		362	0	323	88	1002		185	1101	
V/C Ratio(X)	0.18	0.33		0.76	0.00	1.40	0.31	1.41		1.63	1.06	
Avail Cap(c_a), veh/h	315	330		362	0	323	161	1002		185	1101	
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	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	71.7	71.9	0.0	56.3	0.0	59.8	36.6	33.8	0.0	53.7	29.8	0.0
Incr Delay (d2), s/veh	2.0	4.0	0.0	9.0	0.0	198.7	1.9	191.6	0.0	307.2	44.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.6	0.0	10.5	0.0	29.8	0.6	86.1	0.0	22.6	48.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	73.6	75.9	0.0	65.3	0.0	258.5	38.5	225.4	0.0	360.8	73.8	0.0
LnGrp LOS	E	E		E	A	F	D	F		F	F	
Approach Vol, veh/h	23			728			1442			1466		
Approach Delay, s/veh	75.1			185.5			221.9			132.7		
Approach LOS	E			F			F			F		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	95.9		9.2	17.0	87.8		36.0				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	61.5		26.5	11.5	59.5		30.5				
Max Q Clear Time (g_c+I1), s	3.0	92.4		3.2	13.5	84.3		32.5				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay 178.0

HCM 6th LOS F

Notes

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

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

Intersection						
Intersection Delay, s/veh18.1						
Intersection LOS C						
Approach	EB	WB	NB	SB		
Entry Lanes	0	4	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	0	0	2251	1502		
Demand Flow Rate, veh/h	0	0	2363	1577		
Vehicles Circulating, veh/h	931	2363	0	1141		
Vehicles Exiting, veh/h	968	0	931	1735		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	0.0	0.0	20.5	14.6		
Approach LOS	-	-	C	B		
Lane	Left Right		Left RightBypass			
Designated Moves	LT	TR	LT	TR	R	
Assumed Moves	LT	TR	LT	TR	R	
RT Channelized					Free	
Lane Util	0.470	0.530	0.470	0.530		
Follow-Up Headway, s	2.667	2.535	2.667	2.535		
Critical Headway, s	4.645	4.328	4.645	4.328	819	
Entry Flow, veh/h	1111	1252	356	402	1995	
Cap Entry Lane, veh/h	1350	1420	473	538	0.952	
Entry HV Adj Factor	0.952	0.953	0.953	0.952	780	
Flow Entry, veh/h	1058	1193	339	383	1900	
Cap Entry, veh/h	1285	1353	450	512	0.411	
V/C Ratio	0.823	0.882	0.753	0.747	0.0	
Control Delay, s/veh	18.3	22.4	32.4	28.7	A	
LOS	C	C	D	D	2	
95th %tile Queue, veh	10	13	6	6		

Timings 5: SR 211 & I-85 NB Ramps

3a. Build 2028 AM
02/20/2024



Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	520	354	1640	270	220	631
Future Volume (vph)	520	354	1640	270	220	631
Lane Group Flow (vph)	531	361	1673	276	224	644
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	3		6		5	2
Permitted Phases		8		6	2	
Detector Phase	3	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	34.5	34.5	28.5	28.5	15.0	28.5
Total Split (s)	42.0	42.0	63.0	63.0	15.0	78.0
Total Split (%)	35.0%	35.0%	52.5%	52.5%	12.5%	65.0%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	1.02	0.55	1.00	0.34	0.63	0.31
Control Delay	85.6	12.3	53.5	10.7	24.4	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.6	12.3	53.5	10.7	24.4	12.1
Queue Length 50th (ft)	~423	50	~673	61	36	120
Queue Length 95th (ft)	#651	145	#860	123	78	154
Internal Link Dist (ft)			1253			1370
Turn Bay Length (ft)		480		160	135	
Base Capacity (vph)	522	657	1671	816	380	2077
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.55	1.00	0.34	0.59	0.31

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 130

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: 5: SR 211 & I-85 NB Ramps



HCM 6th Signalized Intersection Summary 5: SR 211 & I-85 NB Ramps

3a. Build 2028 AM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								 		 	 	
Traffic Volume (veh/h)	520	0	354	0	0	0	0	1640	270	220	631	0
Future Volume (veh/h)	520	0	354	0	0	0	0	1640	270	220	631	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1826	1826	1826	1826	0
Adj Flow Rate, veh/h	531	0	0				0	1673	0	224	644	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	5	0	5				0	5	5	5	5	0
Cap, veh/h	529	0					0	1767		315	2096	0
Arrive On Green	0.30	0.00	0.00				0.00	0.51	0.00	0.05	0.60	0.00
Sat Flow, veh/h	1739	0	1547				0	3561	1547	3374	3561	0
Grp Volume(v), veh/h	531	0	0				0	1673	0	224	644	0
Grp Sat Flow(s),veh/h/ln	1739	0	1547				0	1735	1547	1687	1735	0
Q Serve(g_s), s	36.5	0.0	0.0				0.0	54.8	0.0	3.6	10.8	0.0
Cycle Q Clear(g_c), s	36.5	0.0	0.0				0.0	54.8	0.0	3.6	10.8	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	529	0					0	1767		315	2096	0
V/C Ratio(X)	1.00	0.00					0.00	0.95		0.71	0.31	0.00
Avail Cap(c_a), veh/h	529	0					0	1767		416	2096	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.8	0.0	0.0				0.0	27.9	0.0	27.8	11.5	0.0
Incr Delay (d2), s/veh	40.1	0.0	0.0				0.0	12.0	0.0	3.8	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	20.8	0.0	0.0				0.0	23.6	0.0	1.7	3.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	81.8	0.0	0.0				0.0	39.9	0.0	31.6	11.9	0.0
LnGrp LOS	F	A					A	D		C	B	A
Approach Vol, veh/h	531						1673			868		
Approach Delay, s/veh	81.8						39.9			17.0		
Approach LOS	F						D			B		
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	78.0			11.4			66.6			42.0		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	72.5			9.5			57.5			36.5		
Max Q Clear Time (g_c+I1), s	12.8			5.6			56.8			38.5		
Green Ext Time (p_c), s	9.7			0.3			0.6			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	40.7											
HCM 6th LOS	D											

Timings
6: SR 211 & SR 53

3a. Build 2028 AM
02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↘	↘
Traffic Volume (vph)	490	612	211	949	591	60
Future Volume (vph)	490	612	211	949	591	60
Lane Group Flow (vph)	544	680	234	1054	657	67
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	7	
Permitted Phases		6	2			7
Detector Phase	6	6	2	2	7	7
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	5.0
Minimum Split (s)	42.5	42.5	28.5	28.5	40.5	40.5
Total Split (s)	75.0	75.0	75.0	75.0	45.0	45.0
Total Split (%)	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None
v/c Ratio	0.24	0.53	0.43	0.48	0.80	0.16
Control Delay	8.7	2.4	13.3	11.3	50.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.7	2.4	13.3	11.3	50.5	8.4
Queue Length 50th (ft)	79	0	76	191	248	0
Queue Length 95th (ft)	125	44	159	284	293	34
Internal Link Dist (ft)	1195			1463	749	
Turn Bay Length (ft)		180	190		260	
Base Capacity (vph)	2236	1284	545	2175	1130	566
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.53	0.43	0.48	0.58	0.12

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 211 & SR 53



HCM 6th Signalized Intersection Summary 6: SR 211 & SR 53

3a. Build 2028 AM
02/20/2024

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖	↑↑	↖↗	↗
Traffic Volume (veh/h)	490	612	211	949	591	60
Future Volume (veh/h)	490	612	211	949	591	60
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1870	1870	1737	1870	1870
Adj Flow Rate, veh/h	544	680	234	1054	657	67
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	8	2	2	11	2	2
Cap, veh/h	2331	1092	347	2273	759	348
Arrive On Green	0.69	0.69	0.69	0.69	0.22	0.22
Sat Flow, veh/h	3474	1585	456	3387	3456	1585
Grp Volume(v), veh/h	544	680	234	1054	657	67
Grp Sat Flow(s),veh/h/ln	1692	1585	456	1650	1728	1585
Q Serve(g_s), s	7.2	28.1	47.0	17.5	22.0	4.1
Cycle Q Clear(g_c), s	7.2	28.1	54.1	17.5	22.0	4.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2331	1092	347	2273	759	348
V/C Ratio(X)	0.23	0.62	0.68	0.46	0.87	0.19
Avail Cap(c_a), veh/h	2331	1092	347	2273	1138	522
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.9	10.2	17.0	8.5	45.1	38.2
Incr Delay (d2), s/veh	0.2	2.7	10.1	0.7	4.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	30.5	5.2	5.5	9.6	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.2	12.9	27.1	9.2	49.9	38.4
LnGrp LOS	A	B	C	A	D	D
Approach Vol, veh/h	1224			1288	724	
Approach Delay, s/veh	10.3			12.5	48.8	
Approach LOS	B			B	D	
Timer - Assigned Phs	2		4		6	
Phs Duration (G+Y+Rc), s	88.1		31.9		88.1	
Change Period (Y+Rc), s	5.5		5.5		5.5	
Max Green Setting (Gmax), s	69.5		39.5		69.5	
Max Q Clear Time (g_c+I1), s	56.1		24.0		30.1	
Green Ext Time (p_c), s	10.6		2.4		16.7	
Intersection Summary						
HCM 6th Ctrl Delay			19.8			
HCM 6th LOS			B			

Timings

3a. Build 2028 AM

7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↗	↖	↑↑↑	↗	↖	↑	↖	↑	↗
Traffic Volume (vph)	164	793	131	236	918	159	74	5	44	10	42
Future Volume (vph)	164	793	131	236	918	159	74	5	44	10	42
Lane Group Flow (vph)	180	871	144	259	1009	175	81	135	48	11	46
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	1	6			2			8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	2	2	2	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	46.5	46.5	46.5	54.5	54.5	56.5	56.5	56.5
Total Split (s)	15.0	63.0	63.0	48.0	48.0	48.0	57.0	57.0	57.0	57.0	57.0
Total Split (%)	12.5%	52.5%	52.5%	40.0%	40.0%	40.0%	47.5%	47.5%	47.5%	47.5%	47.5%
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	Lag					
Lead-Lag Optimize?	Yes			Yes	Yes	Yes					
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.39	0.22	0.11	0.65	0.30	0.15	0.56	0.53	0.51	0.06	0.20
Control Delay	11.4	0.5	0.2	16.1	3.5	0.3	65.0	24.2	67.5	46.3	5.9
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	11.4	0.5	0.2	16.1	3.5	0.3	65.0	24.2	67.5	46.3	5.9
Queue Length 50th (ft)	26	4	0	23	30	0	61	27	36	8	0
Queue Length 95th (ft)	87	9	0	m124	69	m2	109	86	74	25	16
Internal Link Dist (ft)		1298			3184			467		266	
Turn Bay Length (ft)	1000		630	550		515	200		90		
Base Capacity (vph)	478	3937	1301	397	3327	1132	599	740	396	799	721
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	0.38	0.22	0.11	0.65	0.30	0.15	0.14	0.18	0.12	0.01	0.06

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

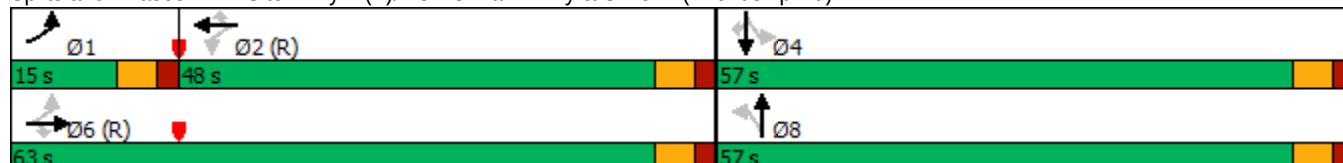
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

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

Splits and Phases: 7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary
7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)

3a. Build 2028 AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	164	793	131	236	918	159	74	5	118	44	10	42
Future Volume (veh/h)	164	793	131	236	918	159	74	5	118	44	10	42
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	871	144	259	1009	175	81	5	130	48	11	46
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	428	3814	1223	436	3346	1073	238	8	210	132	256	217
Arrive On Green	0.10	1.00	1.00	0.68	0.68	0.68	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	4944	1585	555	4944	1585	1346	59	1535	1254	1870	1585
Grp Volume(v), veh/h	180	871	144	259	1009	175	81	0	135	48	11	46
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	555	1648	1585	1346	0	1594	1254	1870	1585
Q Serve(g_s), s	3.7	0.0	0.0	33.9	9.9	4.8	6.7	0.0	9.6	4.5	0.6	3.1
Cycle Q Clear(g_c), s	3.7	0.0	0.0	33.9	9.9	4.8	7.3	0.0	9.6	14.1	0.6	3.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	1.00		1.00
Lane Grp Cap(c), veh/h	428	3814	1223	436	3346	1073	238	0	218	132	256	217
V/C Ratio(X)	0.42	0.23	0.12	0.59	0.30	0.16	0.34	0.00	0.62	0.36	0.04	0.21
Avail Cap(c_a), veh/h	482	3814	1223	436	3346	1073	631	0	684	498	803	680
HCM Platoon Ratio	2.00	2.00	2.00	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	0.62	0.62	0.62	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.1	0.0	0.0	11.8	7.9	7.0	48.1	0.0	48.8	55.5	45.0	46.0
Incr Delay (d2), s/veh	0.7	0.1	0.2	3.7	0.1	0.2	0.8	0.0	2.8	1.7	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.1	3.9	3.1	1.5	2.3	0.0	4.0	1.5	0.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.8	0.1	0.2	15.4	8.0	7.3	49.0	0.0	51.7	57.1	45.0	46.5
LnGrp LOS	A	A	A	B	A	A	D	A	D	E	D	D
Approach Vol, veh/h		1195			1443			216			105	
Approach Delay, s/veh		1.0			9.3			50.6			51.2	
Approach LOS		A			A			D			D	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.4	86.7		21.9		98.1		21.9				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		51.5		57.5		51.5				
Max Q Clear Time (g_c+I1), s	5.7	35.9		16.1		2.0		11.6				
Green Ext Time (p_c), s	0.2	5.7		0.4		16.1		1.2				
Intersection Summary												
HCM 6th Ctrl Delay				10.4								
HCM 6th LOS				B								

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	1044	77	68	856	111	26	0	37	7	0	13
Future Vol, veh/h	130	1044	77	68	856	111	26	0	37	7	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	575	-	640	720	-	720	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	6	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	141	1135	84	74	930	121	28	0	40	8	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1051	0	0	1219	0	0	1937	2616	568	1814	2579	465
Stage 1	-	-	-	-	-	-	1417	1417	-	1078	1078	-
Stage 2	-	-	-	-	-	-	520	1199	-	736	1501	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	370	-	-	306	-	-	69	24	399	83	25	465
Stage 1	-	-	-	-	-	-	101	201	-	176	293	-
Stage 2	-	-	-	-	-	-	463	257	-	342	183	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	370	-	-	306	-	-	39	11	399	43	12	465
Mov Cap-2 Maneuver	-	-	-	-	-	-	39	11	-	43	12	-
Stage 1	-	-	-	-	-	-	63	124	-	109	222	-
Stage 2	-	-	-	-	-	-	340	195	-	190	113	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.1			1.3			99.4			45.5		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	39	399	370	-	-	306	-	-	43	465
HCM Lane V/C Ratio	0.725	0.101	0.382	-	-	0.242	-	-	0.177	0.03
HCM Control Delay (s)	219.6	15	20.6	-	-	20.5	-	-	105.9	13
HCM Lane LOS	F	C	C	-	-	C	-	-	F	B
HCM 95th %tile Q(veh)	2.7	0.3	1.7	-	-	0.9	-	-	0.6	0.1

Timings 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

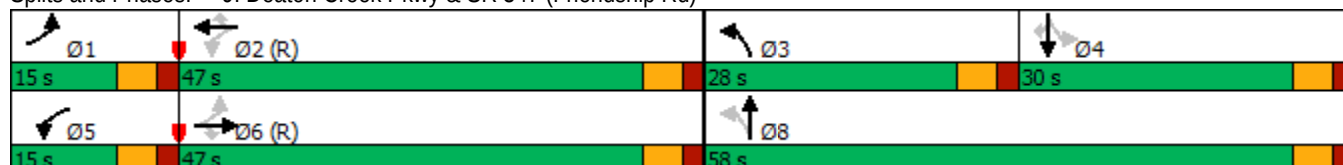
3a. Build 2028 AM
02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		  			  			 		 	
Traffic Volume (vph)	21	1161	221	15	856	22	178	7	42	18	42
Future Volume (vph)	21	1161	221	15	856	22	178	7	42	18	42
Lane Group Flow (vph)	23	1248	238	16	920	24	191	60	45	19	45
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	3	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	15.0	43.5	43.5	15.0	47.5	50.5	50.5	50.5
Total Split (s)	15.0	47.0	47.0	15.0	47.0	47.0	28.0	58.0	30.0	30.0	30.0
Total Split (%)	12.5%	39.2%	39.2%	12.5%	39.2%	39.2%	23.3%	48.3%	25.0%	25.0%	25.0%
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	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.06	0.41	0.22	0.06	0.31	0.02	0.57	0.14	0.42	0.13	0.19
Control Delay	13.7	23.7	12.2	9.8	18.0	0.0	43.3	10.2	63.8	51.6	1.7
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	13.7	23.7	12.2	9.8	18.0	0.0	43.3	10.2	63.8	51.6	1.7
Queue Length 50th (ft)	10	299	80	6	213	0	123	5	34	14	0
Queue Length 95th (ft)	m15	m353	m86	17	255	0	172	35	71	37	0
Internal Link Dist (ft)		1122			884			178		385	
Turn Bay Length (ft)	405		300	575		550	100		95		100
Base Capacity (vph)	425	3052	1076	332	2953	1004	394	738	272	380	421
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	0.05	0.41	0.22	0.05	0.31	0.02	0.48	0.08	0.17	0.05	0.11

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 91 (76%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

3a. Build 2028 AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	1161	221	15	856	22	178	7	48	42	18	42
Future Volume (veh/h)	21	1161	221	15	856	22	178	7	48	42	18	42
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	1248	238	16	920	24	191	8	52	45	19	45
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	471	3118	999	270	3092	991	325	46	301	130	97	82
Arrive On Green	0.02	0.63	0.63	0.03	1.00	1.00	0.12	0.21	0.21	0.05	0.05	0.05
Sat Flow, veh/h	1781	4944	1585	1781	4944	1585	1781	216	1402	1343	1870	1585
Grp Volume(v), veh/h	23	1248	238	16	920	24	191	0	60	45	19	45
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	1781	1648	1585	1781	0	1618	1343	1870	1585
Q Serve(g_s), s	0.6	15.0	7.8	0.4	0.0	0.0	11.7	0.0	3.6	3.9	1.2	3.3
Cycle Q Clear(g_c), s	0.6	15.0	7.8	0.4	0.0	0.0	11.7	0.0	3.6	3.9	1.2	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		1.00
Lane Grp Cap(c), veh/h	471	3118	999	270	3092	991	325	0	347	130	97	82
V/C Ratio(X)	0.05	0.40	0.24	0.06	0.30	0.02	0.59	0.00	0.17	0.35	0.20	0.55
Avail Cap(c_a), veh/h	572	3118	999	380	3092	991	450	0	708	334	382	324
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.5	11.0	9.6	8.5	0.0	0.0	44.6	0.0	38.4	55.8	54.5	55.5
Incr Delay (d2), s/veh	0.0	0.4	0.6	0.1	0.2	0.0	1.7	0.0	0.2	1.6	1.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.0	2.6	0.1	0.1	0.0	5.4	0.0	1.5	1.4	0.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.6	11.3	10.2	8.6	0.2	0.0	46.3	0.0	38.7	57.4	55.5	61.1
LnGrp LOS	A	B	B	A	A	A	D	A	D	E	E	E
Approach Vol, veh/h	1509				960				251		109	
Approach Delay, s/veh	11.1				0.4				44.5		58.6	
Approach LOS	B				A				D		E	
Timer - Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s	8.2	80.6	19.6	11.7	7.6	81.2	31.3					
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5					
Max Green Setting (Gmax), s	9.5	41.5	22.5	24.5	9.5	41.5	52.5					
Max Q Clear Time (g_c+I1), s	2.6	2.0	13.7	5.9	2.4	17.0	5.6					
Green Ext Time (p_c), s	0.0	14.1	0.3	0.3	0.0	16.8	0.4					
Intersection Summary												
HCM 6th Ctrl Delay			12.3									
HCM 6th LOS			B									
Notes												

Timings
10: Spout Springs Rd & SR 347 (Friendship Rd)

3a. Build 2028 AM

02/20/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	843	165	312	761	172	240	402	287	249	372	170
Future Volume (vph)	219	843	165	312	761	172	240	402	287	249	372	170
Lane Group Flow (vph)	235	906	177	335	818	185	258	432	309	268	400	183
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	15.0	35.5	35.5	15.0	33.5	33.5	15.0	42.5	42.5	15.0	40.5	40.5
Total Split (s)	18.0	34.0	34.0	23.0	39.0	39.0	21.0	43.0	43.0	20.0	42.0	42.0
Total Split (%)	15.0%	28.3%	28.3%	19.2%	32.5%	32.5%	17.5%	35.8%	35.8%	16.7%	35.0%	35.0%
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	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	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	0.79	1.09	0.37	0.89	0.79	0.31	0.80	0.85	0.52	0.91	0.80	0.35
Control Delay	45.0	99.6	14.8	52.2	43.9	9.4	31.9	47.7	15.7	60.2	53.6	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	99.6	14.8	52.2	43.9	9.4	31.9	47.7	15.7	60.2	53.6	12.0
Queue Length 50th (ft)	112	~425	31	169	322	66	124	314	116	132	285	28
Queue Length 95th (ft)	#258	#555	95	#396	#431	59	m144	m430	m188	#275	391	85
Internal Link Dist (ft)		4090			4090			920			702	
Turn Bay Length (ft)	575		190	260		210	140		150	125		145
Base Capacity (vph)	297	835	484	378	1036	598	330	582	644	298	566	574
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.79	1.09	0.37	0.89	0.79	0.31	0.78	0.74	0.48	0.90	0.71	0.32

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 120

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

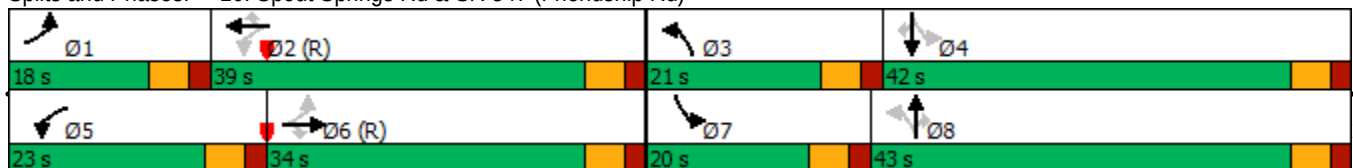
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Spout Springs Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

10: Spout Springs Rd & SR 347 (Friendship Rd)

3a. Build 2028 AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	219	843	165	312	761	172	240	402	287	249	372	170
Future Volume (veh/h)	219	843	165	312	761	172	240	402	287	249	372	170
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	235	906	177	335	818	0	258	432	0	268	400	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	333	1018	469	343	1162		327	475		304	471	
Arrive On Green	0.10	0.30	0.30	0.15	0.34	0.00	0.12	0.25	0.00	0.12	0.25	0.00
Sat Flow, veh/h	1781	3441	1585	1781	3441	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	235	906	177	335	818	0	258	432	0	268	400	0
Grp Sat Flow(s),veh/h/ln	1781	1721	1585	1781	1721	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	10.9	30.2	10.6	16.8	24.8	0.0	12.7	26.9	0.0	13.3	24.4	0.0
Cycle Q Clear(g_c), s	10.9	30.2	10.6	16.8	24.8	0.0	12.7	26.9	0.0	13.3	24.4	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	333	1018	469	343	1162		327	475		304	471	
V/C Ratio(X)	0.71	0.89	0.38	0.98	0.70		0.79	0.91		0.88	0.85	
Avail Cap(c_a), veh/h	333	1018	469	343	1162		338	584		304	569	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.4	40.4	33.5	32.5	34.5	0.0	30.7	43.4	0.0	31.4	42.7	0.0
Incr Delay (d2), s/veh	6.6	11.6	2.3	42.3	3.6	0.0	11.6	16.1	0.0	24.6	10.0	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	5.0	13.9	4.3	10.9	10.5	0.0	6.3	14.2	0.0	7.6	12.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.0	51.9	35.8	74.7	38.1	0.0	42.3	59.5	0.0	56.0	52.8	0.0
LnGrp LOS	C	D	D	E	D		D	E		E	D	
Approach Vol, veh/h	1318			1153			690			668		
Approach Delay, s/veh	46.6			48.8			53.1			54.1		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	46.0	20.3	35.7	23.0	41.0	20.0	36.0				
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	12.5	33.5	15.5	36.5	17.5	28.5	14.5	37.5				
Max Q Clear Time (g_c+I1), s	12.9	26.8	14.7	26.4	18.8	32.2	15.3	28.9				
Green Ext Time (p_c), s	0.0	4.1	0.1	1.6	0.0	0.0	0.0	1.6				

Intersection Summary

HCM 6th Ctrl Delay 49.7

HCM 6th LOS D

Notes

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

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

Intersection						
Int Delay, s/veh	36.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Vol, veh/h	838	96	161	996	98	181
Future Vol, veh/h	838	96	161	996	98	181
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	385	-	0	80
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	942	108	181	1119	110	203
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1050	0	1864	471
Stage 1	-	-	-	-	942	-
Stage 2	-	-	-	-	922	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	659	-	~ 64	539
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	348	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	659	-	~ 46	539
Mov Cap-2 Maneuver	-	-	-	-	~ 46	-
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	252	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.7		299.7	
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	46	539	-	-	659	-
HCM Lane V/C Ratio	2.394	0.377	-	-	0.275	-
HCM Control Delay (s)	\$ 824.2	15.7	-	-	12.5	-
HCM Lane LOS	F	C	-	-	B	-
HCM 95th %tile Q(veh)	11.6	1.7	-	-	1.1	-
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	56.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	118	94	141	171	7	91	178	114	9	271	42
Future Vol, veh/h	45	118	94	141	171	7	91	178	114	9	271	42
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	52	136	108	162	197	8	105	205	131	10	311	48
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	33.1	52.5	81.6	50.3
HCM LOS	D	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	24%	18%	44%	3%
Vol Thru, %	46%	46%	54%	84%
Vol Right, %	30%	37%	2%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	383	257	319	322
LT Vol	91	45	141	9
Through Vol	178	118	171	271
RT Vol	114	94	7	42
Lane Flow Rate	440	295	367	370
Geometry Grp	1	1	1	1
Degree of Util (X)	1.032	0.729	0.892	0.883
Departure Headway (Hd)	8.437	9.133	8.99	8.819
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	431	399	407	415
Service Time	6.437	7.133	6.99	6.819
HCM Lane V/C Ratio	1.021	0.739	0.902	0.892
HCM Control Delay	81.6	33.1	52.5	50.3
HCM Lane LOS	F	D	F	F
HCM 95th-tile Q	13.7	5.7	9.2	9

Timings

13: Spout Springs Rd & Thompson Mill Rd

3a. Build 2028 AM
02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	149	40	38	35	168	861	48	22	484	122
Future Volume (vph)	149	40	38	35	168	861	48	22	484	122
Lane Group Flow (vph)	162	119	41	71	183	936	52	24	526	133
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	31.5	15.0	30.5	15.0	35.5	35.5	15.0	34.5	34.5
Total Split (s)	21.0	32.0	21.0	32.0	18.0	52.0	52.0	15.0	49.0	49.0
Total Split (%)	17.5%	26.7%	17.5%	26.7%	15.0%	43.3%	43.3%	12.5%	40.8%	40.8%
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	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	0.45	0.22	0.47	0.35	0.79	0.05	0.11	0.50	0.14
Control Delay	47.6	27.8	37.6	41.3	9.4	26.1	0.1	4.3	12.3	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.6	27.8	37.6	41.3	9.4	26.1	0.1	4.3	12.3	3.0
Queue Length 50th (ft)	105	36	25	29	48	593	0	1	233	18
Queue Length 95th (ft)	162	93	53	74	87	#968	0	m3	m376	m30
Internal Link Dist (ft)		1809		565		751			337	
Turn Bay Length (ft)	155		223		228		112	100		110
Base Capacity (vph)	299	419	306	400	546	1182	1049	277	1047	943
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	0.54	0.28	0.13	0.18	0.34	0.79	0.05	0.09	0.50	0.14

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: 130

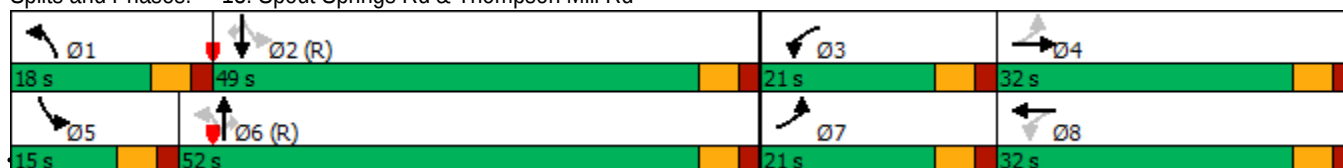
Control Type: Actuated-Coordinated

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: 13: Spout Springs Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary
13: Spout Springs Rd & Thompson Mill Rd

3a. Build 2028 AM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	40	70	38	35	30	168	861	48	22	484	122
Future Volume (veh/h)	149	40	70	38	35	30	168	861	48	22	484	122
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	162	43	76	41	38	33	183	936	52	24	526	133
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	262	76	134	192	54	47	505	1185	1004	253	1121	950
Arrive On Green	0.10	0.13	0.13	0.03	0.06	0.06	0.06	0.63	0.63	0.02	0.60	0.60
Sat Flow, veh/h	1781	587	1037	1781	894	777	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	162	0	119	41	0	71	183	936	52	24	526	133
Grp Sat Flow(s),veh/h/ln	1781	0	1624	1781	0	1671	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	9.9	0.0	8.3	2.6	0.0	5.0	4.6	44.0	1.5	0.6	18.8	4.4
Cycle Q Clear(g_c), s	9.9	0.0	8.3	2.6	0.0	5.0	4.6	44.0	1.5	0.6	18.8	4.4
Prop In Lane	1.00		0.64	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	262	0	210	192	0	101	505	1185	1004	253	1121	950
V/C Ratio(X)	0.62	0.00	0.57	0.21	0.00	0.70	0.36	0.79	0.05	0.09	0.47	0.14
Avail Cap(c_a), veh/h	315	0	359	367	0	369	589	1185	1004	353	1121	950
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	49.1	50.7	0.0	55.3	9.7	16.1	8.3	15.6	13.4	10.5
Incr Delay (d2), s/veh	2.6	0.0	2.4	0.6	0.0	8.6	0.4	5.4	0.1	0.2	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	4.4	0.0	3.4	1.1	0.0	2.3	1.7	18.4	0.5	0.2	7.8	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.6	0.0	51.5	51.2	0.0	63.9	10.1	21.5	8.4	15.8	14.8	10.8
LnGrp LOS	D	A	D	D	A	E	B	C	A	B	B	B
Approach Vol, veh/h	281				112				1171			
Approach Delay, s/veh	49.3				59.3				19.2			
Approach LOS	D				E				B			
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.4	77.4	9.2	21.0	8.3	81.5	17.5	12.7				
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	12.5	43.5	15.5	26.5	9.5	46.5	15.5	26.5				
Max Q Clear Time (g_c+I1), s	6.6	20.8	4.6	10.3	2.6	46.0	11.9	7.0				
Green Ext Time (p_c), s	0.2	7.2	0.0	0.5	0.0	0.4	0.1	0.2				

Intersection Summary

HCM 6th Ctrl Delay 23.4

HCM 6th LOS C

Notes

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

Intersection						
Int Delay, s/veh	5.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	7	10	244	260	7
Future Vol, veh/h	12	7	10	244	260	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	0	-	-	210	25	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	14	8	12	284	302	8
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	12	0	-	0	48	12
Stage 1	-	-	-	-	12	-
Stage 2	-	-	-	-	36	-
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	1607	-	-	-	962	1069
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	986	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1607	-	-	-	953	1069
Mov Cap-2 Maneuver	-	-	-	-	953	-
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	986	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.6	0		10.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1607	-	-	-	953	1069
HCM Lane V/C Ratio	0.009	-	-	-	0.317	0.008
HCM Control Delay (s)	7.3	-	-	-	10.5	8.4
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile O(veh)	0	-	-	-	1.4	0

Intersection						
Int Delay, s/veh	4.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	193	106	88	173	113	83
Future Vol, veh/h	193	106	88	173	113	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	225	75	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	212	116	97	190	124	91
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	328	0	596	212
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	384	-
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	-	-	1232	-	466	828
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1232	-	429	828
Mov Cap-2 Maneuver	-	-	-	-	429	-
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	634	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.8		13.9	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	429	828	-	-	1232	-
HCM Lane V/C Ratio	0.289	0.11	-	-	0.078	-
HCM Control Delay (s)	16.8	9.9	-	-	8.2	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile O(veh)	1.2	0.4	-	-	0.3	-

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	291	19	9	411	74	27	0	22	33	0	10
Future Vol, veh/h	13	291	19	9	411	74	27	0	22	33	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	177	215	-	175	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	6	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	14	313	20	10	442	80	29	0	24	35	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	522	0	0	333	0	0	849	883	313	825	823	442
Stage 1	-	-	-	-	-	-	341	341	-	462	462	-
Stage 2	-	-	-	-	-	-	508	542	-	363	361	-
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	1044	-	-	1226	-	-	281	285	727	292	309	615
Stage 1	-	-	-	-	-	-	674	639	-	580	565	-
Stage 2	-	-	-	-	-	-	547	520	-	656	626	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1044	-	-	1226	-	-	271	279	727	278	303	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	271	279	-	278	303	-
Stage 1	-	-	-	-	-	-	665	631	-	572	560	-
Stage 2	-	-	-	-	-	-	533	516	-	626	618	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			16.1			18.2		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	377	1044	-	-	1226	-	-	319
HCM Lane V/C Ratio	0.14	0.013	-	-	0.008	-	-	0.145
HCM Control Delay (s)	16.1	8.5	-	-	8	-	-	18.2
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.5

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	305	410	59	17	3
Future Vol, veh/h	8	305	410	59	17	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	9	332	446	64	18	3
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	510	0	-	0	796	446
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	350	-
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	1055	-	-	-	356	612
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1055	-	-	-	353	612
Mov Cap-2 Maneuver	-	-	-	-	353	-
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	713	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		15.1		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1055	-	-	-	377	
HCM Lane V/C Ratio	0.008	-	-	-	0.058	
HCM Control Delay (s)	8.4	-	-	-	15.1	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile O(veh)	0	-	-	-	0.2	

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	266	244	168	47	16
Future Vol, veh/h	33	266	244	168	47	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	36	289	265	183	51	17
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	448	0	-	0	626	265
Stage 1	-	-	-	-	265	-
Stage 2	-	-	-	-	361	-
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	1112	-	-	-	448	774
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	705	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1112	-	-	-	434	774
Mov Cap-2 Maneuver	-	-	-	-	434	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	705	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.9	0		13.6		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1112	-	-	-	488	
HCM Lane V/C Ratio	0.032	-	-	-	0.14	
HCM Control Delay (s)	8.3	-	-	-	13.6	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile O(veh)	0.1	-	-	-	0.5	

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	254	248	41	46	6
Future Vol, veh/h	13	254	248	41	46	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	14	276	270	45	50	7
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	315	0	-	0	574	270
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	304	-
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	1245	-	-	-	480	769
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1245	-	-	-	475	769
Mov Cap-2 Maneuver	-	-	-	-	475	-
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	748	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		13.2		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1245	-	-	-	497	
HCM Lane V/C Ratio	0.011	-	-	-	0.114	
HCM Control Delay (s)	7.9	-	-	-	13.2	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile O(veh)	0	-	-	-	0.4	

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	21	213	10	19	268
Future Vol, veh/h	5	21	213	10	19	268
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	-	-	-	25	-
Veh in Median Storage, #	1	-	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	5	23	232	11	21	291
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	571	238	0	0	243	0
Stage 1	238	-	-	-	-	-
Stage 2	333	-	-	-	-	-
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	482	801	-	-	1323	-
Stage 1	802	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	474	801	-	-	1323	-
Mov Cap-2 Maneuver	559	-	-	-	-	-
Stage 1	802	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.1	0	0.5			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	739	1323	-	
HCM Lane V/C Ratio	-	-	0.038	0.016	-	
HCM Control Delay (s)	-	-	10.1	7.8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	5	10	205	262	12
Future Vol, veh/h	18	5	10	205	262	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	5	11	223	285	13

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	537	292	298	0	-	0
Stage 1	292	-	-	-	-	-
Stage 2	245	-	-	-	-	-
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	747	1263	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	500	747	1263	-	-	-
Mov Cap-2 Maneuver	580	-	-	-	-	-
Stage 1	751	-	-	-	-	-
Stage 2	796	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1263	-	610	-	-
HCM Lane V/C Ratio	0.009	-	0.041	-	-
HCM Control Delay (s)	7.9	-	11.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

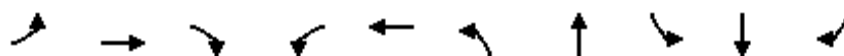
Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	7	10	9	0
Future Vol, veh/h	0	8	7	10	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	8	11	10	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	19	0	-	0	17	8
Stage 1	-	-	-	-	8	-
Stage 2	-	-	-	-	9	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1597	-	-	-	1001	1074
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1597	-	-	-	1001	1074
Mov Cap-2 Maneuver	-	-	-	-	1001	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1014	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.6		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1597	-	-	-	1001	
HCM Lane V/C Ratio	-	-	-	-	0.01	
HCM Control Delay (s)	0	-	-	-	8.6	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile O(veh)	0	-	-	-	0	

Timings

3b. Build 2028 PM

1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	←	→	→	←	→	←	→	←	→	→
Traffic Volume (vph)	604	209	1035	81	76	489	771	34	631	262
Future Volume (vph)	604	209	1035	81	76	489	771	34	631	262
Lane Group Flow (vph)	616	213	1056	83	100	499	825	35	644	267
Turn Type	pm+pt	NA	Perm	Perm	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4			8	1	6	5	2	
Permitted Phases	4		4	8						2
Detector Phase	7	4	4	8	8	1	6	5	2	2
Switch Phase										
Minimum Initial (s)	5.0	6.0	6.0	6.0	6.0	5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	15.0	33.5	33.5	34.5	34.5	15.0	43.5	15.0	36.5	36.5
Total Split (s)	41.0	74.0	74.0	33.0	33.0	29.0	61.0	15.0	47.0	47.0
Total Split (%)	27.3%	49.3%	49.3%	22.0%	22.0%	19.3%	40.7%	10.0%	31.3%	31.3%
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	Lag
Lead-Lag Optimize?	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	0.96	0.26	1.15	0.39	0.31	0.94	1.16	0.37	1.28	0.43
Control Delay	63.0	26.2	104.6	60.1	51.6	94.7	118.0	79.2	185.0	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.0	26.2	104.6	60.1	51.6	94.7	118.0	79.2	185.0	7.2
Queue Length 50th (ft)	496	127	~1007	72	79	260	~978	34	~799	4
Queue Length 95th (ft)	#815	187	#1274	129	138	m270	m#1032	73	#1042	76
Internal Link Dist (ft)		3184			834		1148		1213	
Turn Bay Length (ft)						400		250		450
Base Capacity (vph)	640	818	920	213	327	537	711	112	502	627
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	0.96	0.26	1.15	0.39	0.31	0.93	1.16	0.31	1.28	0.43

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

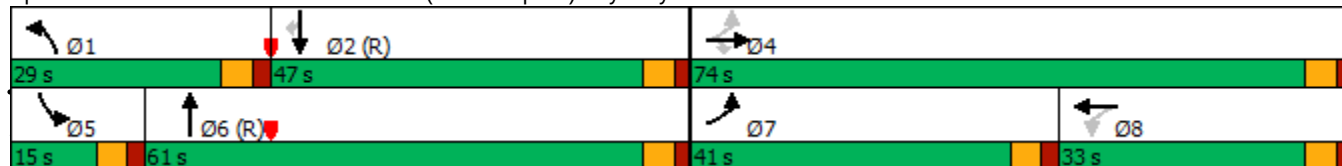
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr



HCM 6th Signalized Intersection Summary
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

3b. Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	604	209	1035	81	76	22	489	771	37	34	631	262
Future Volume (veh/h)	604	209	1035	81	76	22	489	771	37	34	631	262
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	1811	1870	1870	1811	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	616	213	0	83	78	22	499	787	0	35	644	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	6	2	2	6	2	2	5	2	2	5	2
Cap, veh/h	511	654		151	119	34	539	919		46	681	
Arrive On Green	0.24	0.36	0.00	0.09	0.09	0.09	0.16	0.50	0.00	0.03	0.37	0.00
Sat Flow, veh/h	1781	1811	1585	1168	1359	383	3456	1826	0	1781	1826	1585
Grp Volume(v), veh/h	616	213	0	83	0	100	499	787	0	35	644	0
Grp Sat Flow(s),veh/h/ln	1781	1811	1585	1168	0	1742	1728	1826	0	1781	1826	1585
Q Serve(g_s), s	35.5	12.8	0.0	10.5	0.0	8.3	21.4	56.4	0.0	2.9	51.3	0.0
Cycle Q Clear(g_c), s	35.5	12.8	0.0	10.5	0.0	8.3	21.4	56.4	0.0	2.9	51.3	0.0
Prop In Lane	1.00		1.00	1.00		0.22	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	511	654		151	0	153	539	919		46	681	
V/C Ratio(X)	1.20	0.33		0.55	0.00	0.65	0.93	0.86		0.77	0.95	
Avail Cap(c_a), veh/h	511	827		262	0	319	541	919		113	681	
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)	0.85	0.85	0.00	1.00	0.00	1.00	0.21	0.21	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.7	34.7	0.0	67.2	0.0	66.2	62.4	32.5	0.0	72.6	45.6	0.0
Incr Delay (d2), s/veh	107.3	0.2	0.0	3.1	0.0	4.7	6.4	2.4	0.0	23.1	23.5	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	32.5	5.6	0.0	3.3	0.0	3.9	9.6	24.0	0.0	1.6	26.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	154.9	34.9	0.0	70.3	0.0	70.9	68.9	34.9	0.0	95.8	69.1	0.0
LnGrp LOS	F	C		E	A	E	E	C		F	E	
Approach Vol, veh/h	829			183			1286			679		
Approach Delay, s/veh	124.1			70.6			48.1			70.4		
Approach LOS	F			E			D			E		
Timer - Assigned Phs	1	2		4	5	6	7	8				
Phs Duration (G+Y+Rc), s	28.9	61.4		59.7	9.3	81.0	41.0	18.7				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	23.5	41.5		68.5	9.5	55.5	35.5	27.5				
Max Q Clear Time (g_c+I1), s	23.4	53.3		14.8	4.9	58.4	37.5	12.5				
Green Ext Time (p_c), s	0.0	0.0		1.2	0.0	0.0	0.0	0.7				

Intersection Summary

HCM 6th Ctrl Delay 75.7

HCM 6th LOS E

Notes

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

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

Timings 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

3b. Build 2028 PM
02/20/2024

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	89	43	157	48	416	1067	204	45	1487	86
Future Volume (vph)	89	43	157	48	416	1067	204	45	1487	86
Lane Group Flow (vph)	95	680	167	90	443	1135	217	48	1582	91
Turn Type	Perm	NA	pm+pt	NA	Prot	NA	Perm	Perm	NA	Perm
Protected Phases		4	3	8	1	6			2	
Permitted Phases	4		8				6	2		2
Detector Phase	4	4	3	8	1	6	6	2	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	5.0	6.0	5.0	15.0	15.0	15.0	15.0	15.0
Minimum Split (s)	31.5	31.5	15.0	33.5	15.0	37.5	37.5	35.5	35.5	35.5
Total Split (s)	35.0	35.0	15.0	50.0	25.0	100.0	100.0	75.0	75.0	75.0
Total Split (%)	23.3%	23.3%	10.0%	33.3%	16.7%	66.7%	66.7%	50.0%	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	Lag	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	C-Min	C-Min	C-Min
v/c Ratio	0.37	1.36	1.04	0.17	1.93	1.00	0.21	0.96	1.89	0.12
Control Delay	57.1	203.7	123.7	28.5	450.5	46.6	13.1	71.8	425.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	203.7	123.7	28.5	450.5	46.6	13.1	71.8	425.7	4.5
Queue Length 50th (ft)	81	~682	~133	46	~674	820	73	47	~2384	1
Queue Length 95th (ft)	142	#931	#282	92	m#483	m514	m53	m34	m#1892	m1
Internal Link Dist (ft)		1761		625		1416			1148	
Turn Bay Length (ft)	95				130		200	300		
Base Capacity (vph)	256	500	161	535	230	1140	1038	50	838	786
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	0.37	1.36	1.04	0.17	1.93	1.00	0.21	0.96	1.89	0.12

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, 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.

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

Splits and Phases: 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr



HCM 6th Signalized Intersection Summary

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

3b. Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	43	596	157	48	37	416	1067	204	45	1487	86
Future Volume (veh/h)	89	43	596	157	48	37	416	1067	204	45	1487	86
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	1811	1870	1870	1870	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	95	46	634	167	51	39	443	1135	217	48	1582	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	6	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	305	21	284	161	292	223	232	1150	999	57	846	
Arrive On Green	0.20	0.20	0.20	0.06	0.30	0.30	0.13	0.63	0.63	0.46	0.46	0.00
Sat Flow, veh/h	1307	105	1446	1781	983	752	1781	1826	1585	403	1826	1585
Grp Volume(v), veh/h	95	0	680	167	0	90	443	1135	217	48	1582	0
Grp Sat Flow(s),veh/h/ln	1307	0	1551	1781	0	1735	1781	1826	1585	403	1826	1585
Q Serve(g_s), s	9.4	0.0	29.5	9.5	0.0	5.8	19.5	91.2	8.8	3.3	69.5	0.0
Cycle Q Clear(g_c), s	9.4	0.0	29.5	9.5	0.0	5.8	19.5	91.2	8.8	69.5	69.5	0.0
Prop In Lane	1.00		0.93	1.00		0.43	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	305	0	305	161	0	515	232	1150	999	57	846	
V/C Ratio(X)	0.31	0.00	2.23	1.04	0.00	0.17	1.91	0.99	0.22	0.84	1.87	
Avail Cap(c_a), veh/h	305	0	305	161	0	515	232	1150	999	57	846	
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.00
Uniform Delay (d), s/veh	52.2	0.0	60.3	49.6	0.0	39.1	65.3	27.1	11.9	74.7	40.3	0.0
Incr Delay (d2), s/veh	0.6	0.0	563.8	81.5	0.0	0.2	426.6	23.5	0.5	12.9	391.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	59.1	5.2	0.0	2.6	36.1	42.4	3.1	2.0	121.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.8	0.0	624.1	131.1	0.0	39.3	491.8	50.7	12.4	87.6	432.2	0.0
LnGrp LOS	D	A	F	F	A	D	F	D	B	F	F	
Approach Vol, veh/h	775			257			1795			1630		
Approach Delay, s/veh	554.0			98.9			154.9			422.0		
Approach LOS	F			F			F			F		
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	25.0	75.0	15.0	35.0		100.0		50.0				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	19.5	69.5	9.5	29.5		94.5		44.5				
Max Q Clear Time (g_c+I1), s	21.5	71.5	11.5	31.5		93.2		7.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0		1.2		0.5				

Intersection Summary

HCM 6th Ctrl Delay 318.8

HCM 6th LOS F

Notes

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

Timings

3: SR 211 & Golf Club Dr/Liberty Church Rd

3b. Build 2028 PM

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	17	14	358	11	51	1196	168	349	1801	25
Future Volume (vph)	17	14	358	11	51	1196	168	349	1801	25
Lane Group Flow (vph)	18	326	369	444	53	1233	173	360	1857	26
Turn Type	Split	NA	Split	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	4	4	8	8	1	6		5	2	
Permitted Phases					6		6	2		2
Detector Phase	4	4	8	8	1	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	5.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	32.5	32.5	35.5	35.5	15.0	37.5	37.5	15.0	36.5	36.5
Total Split (s)	32.0	32.0	36.0	36.0	15.0	65.0	65.0	17.0	67.0	67.0
Total Split (%)	21.3%	21.3%	24.0%	24.0%	10.0%	43.3%	43.3%	11.3%	44.7%	44.7%
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	Lag
Lead-Lag Optimize?					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	0.07	0.91	0.93	0.68	0.38	1.72	0.25	1.90	2.33	0.03
Control Delay	52.6	65.3	87.7	14.6	27.0	359.6	14.0	437.7	625.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	65.3	87.7	14.6	27.0	359.6	14.0	437.7	625.0	0.0
Queue Length 50th (ft)	15	190	~368	49	26	~1773	46	~498	~2998	0
Queue Length 95th (ft)	39	#349	#592	180	50	#2039	102	m#221	m#1567	m0
Internal Link Dist (ft)		238		965		1320			1505	
Turn Bay Length (ft)			145		95		295	165		230
Base Capacity (vph)	312	392	396	654	161	717	687	189	796	751
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	0.06	0.83	0.93	0.68	0.33	1.72	0.25	1.90	2.33	0.03

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: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

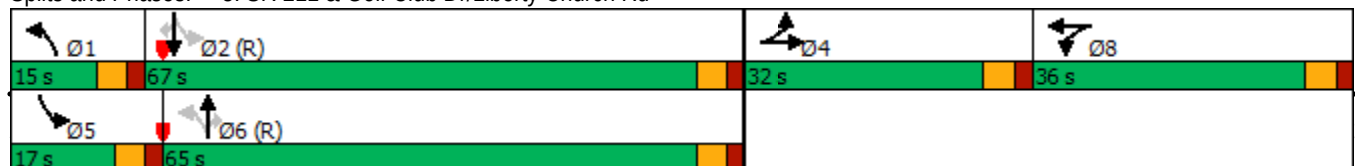
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: SR 211 & Golf Club Dr/Liberty Church Rd



HCM 6th Signalized Intersection Summary 3: SR 211 & Golf Club Dr/Liberty Church Rd

3b. Build 2028 PM
02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	14	303	358	11	420	51	1196	168	349	1801	25
Future Volume (veh/h)	17	14	303	358	11	420	51	1196	168	349	1801	25
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	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	18	14	0	369	11	433	53	1233	0	360	1857	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	52	55		362	8	316	101	993		185	1079	
Arrive On Green	0.03	0.03	0.00	0.20	0.20	0.20	0.03	0.54	0.00	0.08	0.59	0.00
Sat Flow, veh/h	1781	1870	0	1781	39	1552	1781	1826	1585	1781	1826	1585
Grp Volume(v), veh/h	18	14	0	369	0	444	53	1233	0	360	1857	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1591	1781	1826	1585	1781	1826	1585
Q Serve(g_s), s	1.5	1.1	0.0	30.5	0.0	30.5	2.0	81.6	0.0	11.5	88.6	0.0
Cycle Q Clear(g_c), s	1.5	1.1	0.0	30.5	0.0	30.5	2.0	81.6	0.0	11.5	88.6	0.0
Prop In Lane	1.00		0.00	1.00		0.98	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	52	55		362	0	324	101	993		185	1079	
V/C Ratio(X)	0.34	0.25		1.02	0.00	1.37	0.53	1.24		1.95	1.72	
Avail Cap(c_a), veh/h	315	330		362	0	324	161	993		185	1079	
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	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	71.4	71.2	0.0	59.7	0.0	59.8	36.2	34.2	0.0	53.5	30.7	0.0
Incr Delay (d2), s/veh	3.8	2.4	0.0	52.1	0.0	186.1	4.2	117.4	0.0	446.9	328.5	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	0.7	0.6	0.0	18.7	0.0	28.7	1.1	65.1	0.0	29.8	132.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.2	73.6	0.0	111.9	0.0	245.8	40.4	151.6	0.0	500.4	359.2	0.0
LnGrp LOS	E	E		F	A	F	D	F		F	F	
Approach Vol, veh/h	32			813			1286			2217		
Approach Delay, s/veh	74.5			185.0			147.0			382.1		
Approach LOS	E			F			F			F		
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	94.1		9.9	17.0	87.1		36.0				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	61.5		26.5	11.5	59.5		30.5				
Max Q Clear Time (g_c+I1), s	4.0	90.6		3.5	13.5	83.6		32.5				
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	0.0		0.0				

Intersection Summary

HCM 6th Ctrl Delay	273.4
HCM 6th LOS	F

Notes

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

Intersection						
Intersection Delay, s/veh14.3						
Intersection LOS B						
Approach	EB	WB	NB	SB		
Entry Lanes	0	4	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	0	0	1793	2061		
Demand Flow Rate, veh/h	0	0	1883	2164		
Vehicles Circulating, veh/h	1526	1883	0	591		
Vehicles Exiting, veh/h	418	0	1526	1757		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	0.0	0.0	11.7	16.4		
Approach LOS	-	-	B	C		
Lane	Left Right		Left RightBypass			
Designated Moves	LT	TR	LT	TR	R	
Assumed Moves	LT	TR	LT	TR	R	
RT Channelized					Free	
Lane Util	0.470	0.530	0.470	0.530		
Follow-Up Headway, s	2.667	2.535	2.667	2.535		
Critical Headway, s	4.645	4.328	4.645	4.328	811	
Entry Flow, veh/h	885	998	636	717	1995	
Cap Entry Lane, veh/h	1350	1420	784	859	0.952	
Entry HV Adj Factor	0.952	0.952	0.952	0.953	772	
Flow Entry, veh/h	843	950	606	683	1900	
Cap Entry, veh/h	1286	1352	746	818	0.406	
V/C Ratio	0.656	0.703	0.811	0.834	0.0	
Control Delay, s/veh	11.2	12.2	26.1	26.5	A	
LOS	B	B	D	D	2	
95th %tile Queue, veh	5	6	9	10		

Timings 5: SR 211 & I-85 NB Ramps

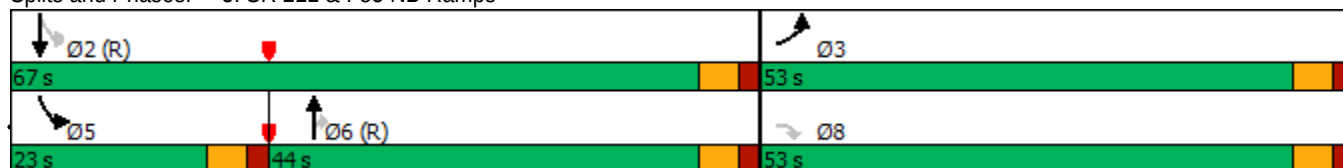
3b. Build 2028 PM
02/20/2024

												
Lane Group	EBL	EBR	NBT	NBR	SBL	SBT						
Lane Configurations												
Traffic Volume (vph)	679	702	1059	245	375	1066						
Future Volume (vph)	679	702	1059	245	375	1066						
Lane Group Flow (vph)	707	731	1103	255	391	1110						
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA						
Protected Phases	3		6		5	2						
Permitted Phases		8		6	2							
Detector Phase	3	8	6	6	5	2						
Switch Phase												
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0						
Minimum Split (s)	34.5	34.5	28.5	28.5	15.0	28.5						
Total Split (s)	53.0	53.0	44.0	44.0	23.0	67.0						
Total Split (%)	44.2%	44.2%	36.7%	36.7%	19.2%	55.8%						
Yellow Time (s)	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						
Lost Time Adjust (s)	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						
Lead/Lag			Lag	Lag	Lead							
Lead-Lag Optimize?			Yes	Yes	Yes							
Recall Mode	None	None	C-Min	C-Min	None	C-Min						
v/c Ratio	1.04	1.12	0.92	0.41	0.77	0.63						
Control Delay	81.3	105.0	51.2	15.3	35.8	23.1						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	81.3	105.0	51.2	15.3	35.8	23.1						
Queue Length 50th (ft)	~591	~617	430	61	101	314						
Queue Length 95th (ft)	#825	#858	#602	140	153	386						
Internal Link Dist (ft)			1253			1370						
Turn Bay Length (ft)		480		160	135							
Base Capacity (vph)	680	652	1198	629	595	1761						
Starvation Cap Reductn	0	0	0	0	0	0						
Spillback Cap Reductn	0	0	0	0	0	0						
Storage Cap Reductn	0	0	0	0	0	0						
Reduced v/c Ratio	1.04	1.12	0.92	0.41	0.66	0.63						

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:SBTL and 6:NBT, Start of Green
 Natural Cycle: 110
 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: 5: SR 211 & I-85 NB Ramps



HCM 6th Signalized Intersection Summary 5: SR 211 & I-85 NB Ramps

3b. Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	679	0	702	0	0	0	0	1059	245	375	1066	0
Future Volume (veh/h)	679	0	702	0	0	0	0	1059	245	375	1066	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1826	1826	1826	1826	0
Adj Flow Rate, veh/h	707	0	0				0	1103	0	391	1110	0
Peak Hour Factor	0.96	0.96	0.96				0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	0	5				0	5	5	5	5	0
Cap, veh/h	688	0					0	1302		510	1778	0
Arrive On Green	0.40	0.00	0.00				0.00	0.38	0.00	0.09	0.51	0.00
Sat Flow, veh/h	1739	0	1547				0	3561	1547	3374	3561	0
Grp Volume(v), veh/h	707	0	0				0	1103	0	391	1110	0
Grp Sat Flow(s),veh/h/ln	1739	0	1547				0	1735	1547	1687	1735	0
Q Serve(g_s), s	47.5	0.0	0.0				0.0	34.9	0.0	8.1	27.5	0.0
Cycle Q Clear(g_c), s	47.5	0.0	0.0				0.0	34.9	0.0	8.1	27.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	688	0					0	1302		510	1778	0
V/C Ratio(X)	1.03	0.00					0.00	0.85		0.77	0.62	0.00
Avail Cap(c_a), veh/h	688	0					0	1302		693	1778	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.2	0.0	0.0				0.0	34.3	0.0	26.3	21.0	0.0
Incr Delay (d2), s/veh	41.4	0.0	0.0				0.0	7.0	0.0	3.6	1.7	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
%ile BackOfQ(50%),veh/ln	26.8	0.0	0.0				0.0	15.2	0.0	3.3	10.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	77.6	0.0	0.0				0.0	41.3	0.0	29.8	22.6	0.0
LnGrp LOS	F	A					A	D		C	C	A
Approach Vol, veh/h							1103			1501		
Approach Delay, s/veh	77.6						41.3			24.5		
Approach LOS	E						D			C		
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	67.0			16.5			50.5			53.0		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	61.5			17.5			38.5			47.5		
Max Q Clear Time (g_c+I1), s	29.5			10.1			36.9			49.5		
Green Ext Time (p_c), s	16.3			0.8			1.3			0.0		

Intersection Summary

HCM 6th Ctrl Delay	41.4
HCM 6th LOS	D

Notes

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

Timings
6: SR 211 & SR 53

3b. Build 2028 PM
02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↘	↘
Traffic Volume (vph)	1057	556	161	552	504	189
Future Volume (vph)	1057	556	161	552	504	189
Lane Group Flow (vph)	1113	585	169	581	531	199
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	7	
Permitted Phases		6	2			7
Detector Phase	6	6	2	2	7	7
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	5.0
Minimum Split (s)	42.5	42.5	28.5	28.5	40.5	40.5
Total Split (s)	80.0	80.0	80.0	80.0	40.0	40.0
Total Split (%)	66.7%	66.7%	66.7%	66.7%	33.3%	33.3%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None
v/c Ratio	0.47	0.45	0.58	0.25	0.77	0.50
Control Delay	9.0	1.8	20.2	7.1	52.8	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	1.8	20.2	7.1	52.8	24.1
Queue Length 50th (ft)	176	0	58	74	202	65
Queue Length 95th (ft)	264	37	167	118	247	132
Internal Link Dist (ft)	1195			1463	749	
Turn Bay Length (ft)		180	190		260	
Base Capacity (vph)	2362	1290	291	2298	986	527
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.45	0.58	0.25	0.54	0.38

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 211 & SR 53



HCM 6th Signalized Intersection Summary 6: SR 211 & SR 53

3b. Build 2028 PM
02/20/2024

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (veh/h)	1057	556	161	552	504	189
Future Volume (veh/h)	1057	556	161	552	504	189
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1870	1870	1737	1870	1870
Adj Flow Rate, veh/h	1113	585	169	581	531	199
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	8	2	2	11	2	2
Cap, veh/h	2452	1148	230	2391	636	292
Arrive On Green	0.72	0.72	0.72	0.72	0.18	0.18
Sat Flow, veh/h	3474	1585	289	3387	3456	1585
Grp Volume(v), veh/h	1113	585	169	581	531	199
Grp Sat Flow(s),veh/h/ln	1692	1585	289	1650	1728	1585
Q Serve(g_s), s	16.2	19.3	69.4	7.1	17.8	14.1
Cycle Q Clear(g_c), s	16.2	19.3	85.6	7.1	17.8	14.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2452	1148	230	2391	636	292
V/C Ratio(X)	0.45	0.51	0.73	0.24	0.84	0.68
Avail Cap(c_a), veh/h	2452	1148	230	2391	994	456
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.8	7.2	24.4	5.5	47.2	45.7
Incr Delay (d2), s/veh	0.6	1.6	18.6	0.2	3.7	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	25.4	5.3	2.1	7.7	5.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.4	8.8	43.0	5.8	50.9	48.5
LnGrp LOS	A	A	D	A	D	D
Approach Vol, veh/h	1698			750	730	
Approach Delay, s/veh	7.9			14.2	50.3	
Approach LOS	A			B	D	
Timer - Assigned Phs	2		4		6	
Phs Duration (G+Y+Rc), s	92.4		27.6		92.4	
Change Period (Y+Rc), s	5.5		5.5		5.5	
Max Green Setting (Gmax), s	74.5		34.5		74.5	
Max Q Clear Time (g_c+l1), s	87.6		19.8		21.3	
Green Ext Time (p_c), s	0.0		2.3		31.4	
Intersection Summary						
HCM 6th Ctrl Delay			19.1			
HCM 6th LOS			B			
Notes						

Timings

3b. Build 2028 PM

7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↗	↖	↑↑↑	↗	↖	↑	↖	↑	↗
Traffic Volume (vph)	26	1169	143	218	849	39	200	12	168	8	132
Future Volume (vph)	26	1169	143	218	849	39	200	12	168	8	132
Lane Group Flow (vph)	28	1271	155	237	923	42	217	350	183	9	143
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	1	6			2			8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	2	2	2	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	46.5	46.5	46.5	54.5	54.5	56.5	56.5	56.5
Total Split (s)	15.0	63.0	63.0	48.0	48.0	48.0	57.0	57.0	57.0	57.0	57.0
Total Split (%)	12.5%	52.5%	52.5%	40.0%	40.0%	40.0%	47.5%	47.5%	47.5%	47.5%	47.5%
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	Lag					
Lead-Lag Optimize?	Yes			Yes	Yes	Yes					
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.08	0.41	0.15	1.10	0.33	0.05	0.55	0.74	1.16	0.02	0.26
Control Delay	14.7	13.1	4.4	121.1	17.1	1.6	40.3	44.4	158.7	25.1	5.2
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	14.7	13.1	4.4	121.1	17.1	1.6	40.3	44.4	158.7	25.1	5.2
Queue Length 50th (ft)	7	113	0	~219	145	0	143	227	~168	5	0
Queue Length 95th (ft)	m24	220	47	#422	231	8	187	283	#263	15	40
Internal Link Dist (ft)		1298			3184			467		266	
Turn Bay Length (ft)	1000		630	550		515	200		90		
Base Capacity (vph)	389	3067	1050	215	2765	926	601	701	241	799	761
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	0.07	0.41	0.15	1.10	0.33	0.05	0.36	0.50	0.76	0.01	0.19

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

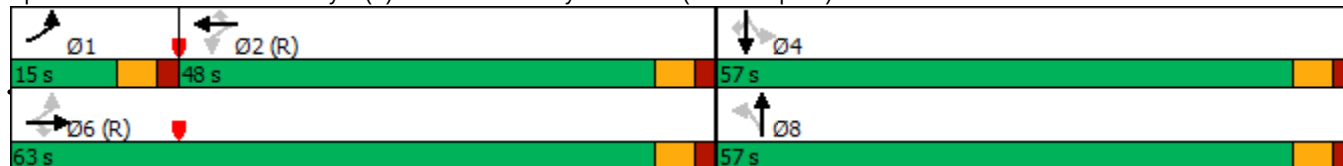
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary
7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)

3b. Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	1169	143	218	849	39	200	12	310	168	8	132
Future Volume (veh/h)	26	1169	143	218	849	39	200	12	310	168	8	132
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1271	155	237	923	42	217	13	337	183	9	143
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	304	2646	848	201	2294	735	517	22	573	263	698	592
Arrive On Green	0.03	0.54	0.54	0.46	0.46	0.46	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	4944	1585	376	4944	1585	1235	59	1535	1031	1870	1585
Grp Volume(v), veh/h	28	1271	155	237	923	42	217	0	350	183	9	143
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	376	1648	1585	1235	0	1594	1031	1870	1585
Q Serve(g_s), s	0.9	19.3	6.0	44.9	14.8	1.8	16.1	0.0	21.2	20.8	0.4	7.5
Cycle Q Clear(g_c), s	0.9	19.3	6.0	55.7	14.8	1.8	16.5	0.0	21.2	42.0	0.4	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	1.00		1.00
Lane Grp Cap(c), veh/h	304	2646	848	201	2294	735	517	0	595	263	698	592
V/C Ratio(X)	0.09	0.48	0.18	1.18	0.40	0.06	0.42	0.00	0.59	0.70	0.01	0.24
Avail Cap(c_a), veh/h	400	2646	848	201	2294	735	586	0	684	321	803	680
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	0.64	0.64	0.64	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	17.5	14.4	44.3	21.2	17.7	28.9	0.0	30.2	47.0	23.7	25.9
Incr Delay (d2), s/veh	0.1	0.6	0.5	109.6	0.3	0.1	0.5	0.0	1.0	4.9	0.0	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	0.4	6.9	2.2	12.1	5.5	0.6	4.9	0.0	8.3	5.7	0.2	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.2	18.1	14.8	153.8	21.5	17.8	29.4	0.0	31.2	52.0	23.7	26.1
LnGrp LOS	B	B	B	F	C	B	C	A	C	D	C	C
Approach Vol, veh/h	1454		1202			567			335			
Approach Delay, s/veh	17.7		47.5			30.5			40.2			
Approach LOS	B		D			C			D			
Timer - Assigned Phs	1	2	4		6		8					
Phs Duration (G+Y+Rc), s	8.5	61.2	50.3		69.7		50.3					
Change Period (Y+Rc), s	5.5	5.5	5.5		5.5		5.5					
Max Green Setting (Gmax), s	9.5	42.5	51.5		57.5		51.5					
Max Q Clear Time (g_c+I1), s	2.9	57.7	44.0		21.3		23.2					
Green Ext Time (p_c), s	0.0	0.0	0.8		21.3		3.5					
Intersection Summary												
HCM 6th Ctrl Delay			31.9									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	41.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	1158	91	76	1096	14	79	0	112	61	0	86
Future Vol, veh/h	25	1158	91	76	1096	14	79	0	112	61	0	86
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	575	-	640	720	-	720	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	6	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	27	1259	99	83	1191	15	86	0	122	66	0	93
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1206	0	0	1358	0	0	1955	2685	630	1915	2769	596
Stage 1	-	-	-	-	-	-	1313	1313	-	1357	1357	-
Stage 2	-	-	-	-	-	-	642	1372	-	558	1412	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	311	-	-	262	-	-	~ 68	22	364	72	19	383
Stage 1	-	-	-	-	-	-	120	226	-	112	215	-
Stage 2	-	-	-	-	-	-	391	212	-	439	203	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	311	-	-	262	-	-	~ 36	14	364	~ 34	12	383
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 36	14	-	~ 34	12	-
Stage 1	-	-	-	-	-	-	110	206	-	102	147	-
Stage 2	-	-	-	-	-	-	202	145	-	267	185	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			1.6			\$ 371			299.4		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	36 364		311	-	-	262	-	-	34	383		
HCM Lane V/C Ratio	2.385 0.334		0.087	-	-	0.315	-	-	1.95	0.244		
HCM Control Delay (s)	\$ 868.9		19.8	17.7	-	-	24.9	-	-	\$ 697		17.4
HCM Lane LOS	F		C	C	-	-	C	-	-	F		C
HCM 95th %tile Q(veh)	9.6		1.4	0.3	-	-	1.3	-	-	7.4		0.9
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Timings
9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

3b. Build 2028 PM
02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		  			  					 	
Traffic Volume (vph)	78	1167	180	22	1174	20	286	14	44	13	57
Future Volume (vph)	78	1167	180	22	1174	20	286	14	44	13	57
Lane Group Flow (vph)	84	1255	194	24	1262	22	308	134	47	14	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	3	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	15.0	43.5	43.5	15.0	47.5	50.5	50.5	50.5
Total Split (s)	15.0	45.0	45.0	15.0	45.0	45.0	30.0	60.0	30.0	30.0	30.0
Total Split (%)	12.5%	37.5%	37.5%	12.5%	37.5%	37.5%	25.0%	50.0%	25.0%	25.0%	25.0%
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	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.32	0.46	0.20	0.09	0.50	0.03	0.73	0.24	0.45	0.09	0.25
Control Delay	14.9	19.5	3.3	15.7	21.6	0.3	45.2	7.1	65.0	50.0	2.4
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	14.9	19.5	3.3	15.7	21.6	0.3	45.2	7.1	65.0	50.0	2.4
Queue Length 50th (ft)	27	238	0	6	184	0	194	8	35	10	0
Queue Length 95th (ft)	56	316	43	28	322	2	266	49	74	30	0
Internal Link Dist (ft)		1122			884			178		385	
Turn Bay Length (ft)	405		300	575		550	100		95		100
Base Capacity (vph)	287	2699	960	300	2532	878	449	798	255	380	421
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	0.29	0.46	0.20	0.08	0.50	0.03	0.69	0.17	0.18	0.04	0.14

Intersection Summary

Cycle Length: 120

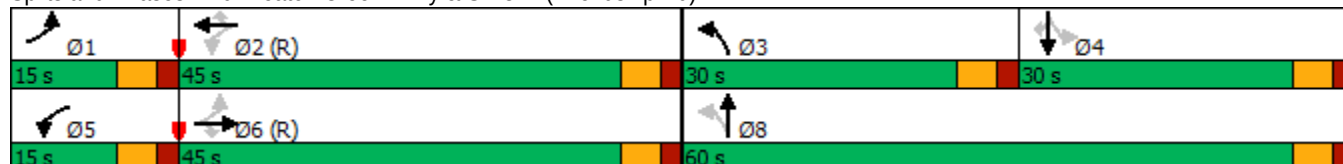
Actuated Cycle Length: 120

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

Natural Cycle: 125

Control Type: Actuated-Coordinated

Splits and Phases: 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary
9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

3b. Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  						 	
Traffic Volume (veh/h)	78	1167	180	22	1174	20	286	14	111	44	13	57
Future Volume (veh/h)	78	1167	180	22	1174	20	286	14	111	44	13	57
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	1255	194	24	1262	22	308	15	119	47	14	61
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	364	2770	888	252	2690	862	440	50	400	132	107	91
Arrive On Green	0.04	0.56	0.56	0.05	1.00	1.00	0.18	0.28	0.28	0.06	0.06	0.06
Sat Flow, veh/h	1781	4944	1585	1781	4944	1585	1781	181	1432	1256	1870	1585
Grp Volume(v), veh/h	84	1255	194	24	1262	22	308	0	134	47	14	61
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	1781	1648	1585	1781	0	1613	1256	1870	1585
Q Serve(g_s), s	2.5	18.0	7.4	0.7	0.0	0.0	18.8	0.0	7.8	4.4	0.9	4.5
Cycle Q Clear(g_c), s	2.5	18.0	7.4	0.7	0.0	0.0	18.8	0.0	7.8	4.4	0.9	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.89	1.00		1.00
Lane Grp Cap(c), veh/h	364	2770	888	252	2690	862	440	0	450	132	107	91
V/C Ratio(X)	0.23	0.45	0.22	0.10	0.47	0.03	0.70	0.00	0.30	0.36	0.13	0.67
Avail Cap(c_a), veh/h	435	2770	888	352	2690	862	490	0	732	316	382	324
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.9	15.6	13.2	12.2	0.0	0.0	40.8	0.0	34.0	55.4	53.7	55.5
Incr Delay (d2), s/veh	0.3	0.5	0.6	0.2	0.6	0.1	3.9	0.0	0.4	1.6	0.5	8.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	6.4	2.6	0.3	0.1	0.0	8.8	0.0	3.2	1.5	0.4	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.3	16.1	13.8	12.4	0.6	0.1	44.7	0.0	34.3	57.0	54.3	63.8
LnGrp LOS	B	B	B	B	A	A	D	A	C	E	D	E
Approach Vol, veh/h	1533		1308				442			122		
Approach Delay, s/veh	15.5		0.8				41.6			60.1		
Approach LOS	B		A				D			E		
Timer - Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s	10.2	70.8	26.7	12.4	8.3	72.7	39.0					
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5					
Max Green Setting (Gmax), s	9.5	39.5	24.5	24.5	9.5	39.5	54.5					
Max Q Clear Time (g_c+I1), s	4.5	2.0	20.8	6.5	2.7	20.0	9.8					
Green Ext Time (p_c), s	0.1	20.1	0.4	0.3	0.0	14.0	0.9					

Intersection Summary

HCM 6th Ctrl Delay 14.8

HCM 6th LOS B

Notes

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

Timings 10: Spout Springs Rd & SR 347 (Friendship Rd)

3b. Build 2028 PM

02/20/2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	372	1117	336	454	977	246	229	428	205	260	439	65
Future Volume (vph)	372	1117	336	454	977	246	229	428	205	260	439	65
Lane Group Flow (vph)	384	1152	346	468	1007	254	236	441	211	268	453	67
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	1	6		5	2		3	8		7	4	
Permitted Phases	6		6	2		2	8		8	4		4
Detector Phase	1	6	6	5	2	2	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0	6.0
Minimum Split (s)	15.0	35.5	35.5	15.0	33.5	33.5	15.0	42.5	42.5	15.0	40.5	40.5
Total Split (s)	32.0	54.5	54.5	34.0	56.5	56.5	19.0	42.5	42.5	19.0	42.5	42.5
Total Split (%)	21.3%	36.3%	36.3%	22.7%	37.7%	37.7%	12.7%	28.3%	28.3%	12.7%	28.3%	28.3%
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	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	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	5.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
v/c Ratio	1.05	1.04	0.55	1.22	0.87	0.39	1.13	0.96	0.45	1.29	0.99	0.14
Control Delay	104.6	85.4	23.1	158.9	55.7	14.9	140.6	88.6	26.3	195.2	94.5	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	104.6	85.4	23.1	158.9	55.7	14.9	140.6	88.6	26.3	195.2	94.5	3.2
Queue Length 50th (ft)	~352	~635	135	~509	485	62	~216	429	84	~282	445	0
Queue Length 95th (ft)	#566	#775	239	#735	580	140	#397	#648	166	#471	#676	17
Internal Link Dist (ft)		4090			4090			920			702	
Turn Bay Length (ft)	575		190	260		210	140		150	125		145
Base Capacity (vph)	366	1112	634	385	1158	646	208	459	471	208	459	464
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	1.04	0.55	1.22	0.87	0.39	1.13	0.96	0.45	1.29	0.99	0.14

Intersection Summary

Cycle Length: 150

Actuated Cycle Length: 150

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

Natural Cycle: 150

Control Type: Actuated-Coordinated

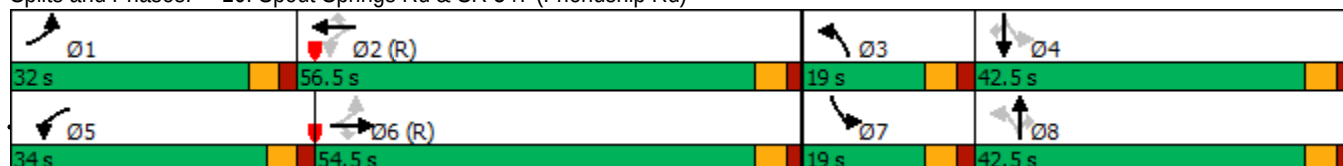
~ Volume exceeds capacity, queue is theoretically infinite.

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: 10: Spout Springs Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

10: Spout Springs Rd & SR 347 (Friendship Rd)

3b. Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 						 	
Traffic Volume (veh/h)	372	1117	336	454	977	246	229	428	205	260	439	65
Future Volume (veh/h)	372	1117	336	454	977	246	229	428	205	260	439	65
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	384	1152	346	468	1007	0	236	441	0	268	453	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	400	1124	518	386	1170		214	461		222	461	
Arrive On Green	0.18	0.33	0.33	0.19	0.34	0.00	0.09	0.25	0.00	0.09	0.25	0.00
Sat Flow, veh/h	1781	3441	1585	1781	3441	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	384	1152	346	468	1007	0	236	441	0	268	453	0
Grp Sat Flow(s),veh/h/ln	1781	1721	1585	1781	1721	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	24.8	49.0	28.2	28.5	41.0	0.0	13.5	34.9	0.0	13.5	36.1	0.0
Cycle Q Clear(g_c), s	24.8	49.0	28.2	28.5	41.0	0.0	13.5	34.9	0.0	13.5	36.1	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	400	1124	518	386	1170		214	461		222	461	
V/C Ratio(X)	0.96	1.02	0.67	1.21	0.86		1.10	0.96		1.21	0.98	
Avail Cap(c_a), veh/h	400	1124	518	386	1170		214	461		222	461	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	41.2	50.5	43.5	50.0	46.2	0.0	42.2	55.7	0.0	43.3	56.2	0.0
Incr Delay (d2), s/veh	34.5	33.3	6.7	116.7	8.4	0.0	92.0	30.8	0.0	128.1	37.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.2	25.6	11.9	22.3	18.4	0.0	11.4	20.1	0.0	14.0	21.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.7	83.8	50.2	166.7	54.6	0.0	134.2	86.5	0.0	171.4	93.2	0.0
LnGrp LOS	E	F	D	F	D		F	F		F	F	
Approach Vol, veh/h	1882			1475			677			721		
Approach Delay, s/veh	76.0			90.1			103.2			122.3		
Approach LOS	E			F			F			F		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	32.0	56.5	19.0	42.5	34.0	54.5	19.0	42.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	26.5	51.0	13.5	37.0	28.5	49.0	13.5	37.0				
Max Q Clear Time (g_c+I1), s	26.8	43.0	15.5	38.1	30.5	51.0	15.5	36.9				
Green Ext Time (p_c), s	0.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0				

Intersection Summary

HCM 6th Ctrl Delay 91.3

HCM 6th LOS F

Notes

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

Intersection							
Int Delay, s/veh	8.5						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑	↗	↖	↑↑	↖	↗	
Traffic Vol, veh/h	1450	236	309	964	94	281	
Future Vol, veh/h	1450	236	309	964	94	281	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	-	None	-	None	
Storage Length	-	0	385	-	0	80	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	6	2	2	6	2	2	
Mvmt Flow	1576	257	336	1048	102	305	
Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	1833	0	2772	788	
Stage 1	-	-	-	-	1576	-	
Stage 2	-	-	-	-	1196	-	
Critical Hdwy	-	-	4.14	-	6.84	6.94	
Critical Hdwy Stg 1	-	-	-	-	5.84	-	
Critical Hdwy Stg 2	-	-	-	-	5.84	-	
Follow-up Hdwy	-	-	2.22	-	3.52	3.32	
Pot Cap-1 Maneuver	-	-	~ 329	-	~ 15	334	
Stage 1	-	-	-	-	156	-	
Stage 2	-	-	-	-	249	-	
Platoon blocked, %	-	-	-	-	-	-	
Mov Cap-1 Maneuver	-	-	~ 329	-	0	334	
Mov Cap-2 Maneuver	-	-	-	-	0	-	
Stage 1	-	-	-	-	156	-	
Stage 2	-	-	-	-	0	-	
Approach	EB		WB		NB		
HCM Control Delay, s	0		22.3				
HCM LOS					-		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-		334	-	-	~ 329	-
HCM Lane V/C Ratio	-		0.914	-	-	1.021	-
HCM Control Delay (s)	-		65.9	-	-	91.7	-
HCM Lane LOS	-		F	-	-	F	-
HCM 95th %tile Q(veh)	-		9.1	-	-	11.7	-
Notes							
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon	

Intersection	
Intersection Delay, s/veh	134.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	48	138	156	258	143	26	67	255	188	6	420	33
Future Vol, veh/h	48	138	156	258	143	26	67	255	188	6	420	33
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
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	139	158	261	144	26	68	258	190	6	424	33
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	63.4	121.5	184.9	144.7
HCM LOS	F	F	F	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	14%	60%	1%
Vol Thru, %	50%	40%	33%	92%
Vol Right, %	37%	46%	6%	7%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	510	342	427	459
LT Vol	67	48	258	6
Through Vol	255	138	143	420
RT Vol	188	156	26	33
Lane Flow Rate	515	345	431	464
Geometry Grp	1	1	1	1
Degree of Util (X)	1.304	0.901	1.125	1.194
Departure Headway (Hd)	10.209	11.335	10.919	10.667
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	361	321	336	343
Service Time	8.209	9.335	8.919	8.667
HCM Lane V/C Ratio	1.427	1.075	1.283	1.353
HCM Control Delay	184.9	63.4	121.5	144.7
HCM Lane LOS	F	F	F	F
HCM 95th-tile Q	21.4	8.6	14.6	17

Timings 13: Spout Springs Rd & Thompson Mill Rd

3b. Build 2028 PM
02/20/2024

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	192	98	94	86	165	698	73	66	719	165
Future Volume (vph)	192	98	94	86	165	698	73	66	719	165
Lane Group Flow (vph)	194	179	95	156	167	705	74	67	726	167
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	31.5	15.0	30.5	15.0	35.5	35.5	15.0	34.5	34.5
Total Split (s)	18.0	32.0	18.0	32.0	15.0	55.0	55.0	15.0	55.0	55.0
Total Split (%)	15.0%	26.7%	15.0%	26.7%	12.5%	45.8%	45.8%	12.5%	45.8%	45.8%
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	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	0.68	0.67	0.37	0.66	0.53	0.69	0.08	0.21	0.80	0.20
Control Delay	47.5	52.4	36.2	51.9	16.8	26.9	0.7	11.8	36.1	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.5	52.4	36.2	51.9	16.8	26.9	0.7	11.8	36.1	7.2
Queue Length 50th (ft)	124	111	57	94	48	394	0	18	465	18
Queue Length 95th (ft)	175	179	93	155	99	#699	6	43	#786	65
Internal Link Dist (ft)		1809		565		751			337	
Turn Bay Length (ft)	155		223		228		112	100		110
Base Capacity (vph)	291	399	295	400	318	1020	922	352	905	832
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	0.67	0.45	0.32	0.39	0.53	0.69	0.08	0.19	0.80	0.20

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: 110

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 13: Spout Springs Rd & Thompson Mill Rd

				
Ø1	Ø2 (R)		Ø3	Ø4
15 s	55 s		18 s	32 s
				
Ø5	Ø6 (R)		Ø7	Ø8
15 s	55 s		18 s	32 s

HCM 6th Signalized Intersection Summary
13: Spout Springs Rd & Thompson Mill Rd

3b. Build 2028 PM

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	98	79	94	86	68	165	698	73	66	719	165
Future Volume (veh/h)	192	98	79	94	86	68	165	698	73	66	719	165
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	194	99	80	95	87	69	167	705	74	67	726	167
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	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	272	144	116	235	105	83	320	1053	892	333	1013	858
Arrive On Green	0.10	0.16	0.16	0.06	0.11	0.11	0.06	0.56	0.56	0.04	0.54	0.54
Sat Flow, veh/h	1781	927	749	1781	936	742	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	194	0	179	95	0	156	167	705	74	67	726	167
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1781	0	1678	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	11.3	0.0	12.1	5.6	0.0	10.9	5.0	31.7	2.6	2.0	34.9	6.5
Cycle Q Clear(g_c), s	11.3	0.0	12.1	5.6	0.0	10.9	5.0	31.7	2.6	2.0	34.9	6.5
Prop In Lane	1.00		0.45	1.00		0.44	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	0	261	235	0	189	320	1053	892	333	1013	858
V/C Ratio(X)	0.71	0.00	0.69	0.40	0.00	0.83	0.52	0.67	0.08	0.20	0.72	0.19
Avail Cap(c_a), veh/h	272	0	370	311	0	370	357	1053	892	408	1013	858
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	0.0	47.9	43.5	0.0	52.1	17.5	18.4	12.0	15.0	20.6	14.1
Incr Delay (d2), s/veh	8.5	0.0	3.2	1.1	0.0	8.8	1.3	3.4	0.2	0.3	4.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	5.2	2.5	0.0	4.9	2.0	13.7	0.9	0.8	15.4	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	0.0	51.1	44.6	0.0	60.9	18.8	21.8	12.2	15.3	25.0	14.6
LnGrp LOS	D	A	D	D	A	E	B	C	B	B	C	B
Approach Vol, veh/h		373			251			946			960	
Approach Delay, s/veh		50.1			54.8			20.5			22.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	70.5	12.8	24.2	10.0	73.0	18.0	19.0				
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	49.5	12.5	26.5	9.5	49.5	12.5	26.5				
Max Q Clear Time (g_c+I1), s	7.0	36.9	7.6	14.1	4.0	33.7	13.3	12.9				
Green Ext Time (p_c), s	0.1	7.2	0.1	0.7	0.0	7.6	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			29.0									
HCM 6th LOS			C									

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	8	9	299	193	10
Future Vol, veh/h	22	8	9	299	193	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	0	-	-	210	25	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	25	9	10	340	219	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	10	0	-	0	69	10
Stage 1	-	-	-	-	10	-
Stage 2	-	-	-	-	59	-
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	1610	-	-	-	936	1071
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	964	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1610	-	-	-	921	1071
Mov Cap-2 Maneuver	-	-	-	-	921	-
Stage 1	-	-	-	-	997	-
Stage 2	-	-	-	-	964	-
Approach	EB	WB		SB		
HCM Control Delay, s	5.3	0		10		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1610	-	-	-	921	1071
HCM Lane V/C Ratio	0.016	-	-	-	0.238	0.011
HCM Control Delay (s)	7.3	-	-	-	10.1	8.4
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile O(veh)	0	-	-	-	0.9	0

Intersection						
Int Delay, s/veh	4.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	217	89	78	213	109	79
Future Vol, veh/h	217	89	78	213	109	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	225	75	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	265	109	95	260	133	96
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	374	0	715	265
Stage 1	-	-	-	-	265	-
Stage 2	-	-	-	-	450	-
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	-	-	1184	-	397	774
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1184	-	365	774
Mov Cap-2 Maneuver	-	-	-	-	365	-
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	591	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.2		16.2	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	365	774	-	-	1184	-
HCM Lane V/C Ratio	0.364	0.124	-	-	0.08	-
HCM Control Delay (s)	20.4	10.3	-	-	8.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile O(veh)	1.6	0.4	-	-	0.3	-

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	423	22	26	400	61	14	0	11	81	0	25
Future Vol, veh/h	11	423	22	26	400	61	14	0	11	81	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	177	215	-	175	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	6	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	13	486	25	30	460	70	16	0	13	93	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	530	0	0	511	0	0	1082	1102	486	1051	1057	460
Stage 1	-	-	-	-	-	-	512	512	-	520	520	-
Stage 2	-	-	-	-	-	-	570	590	-	531	537	-
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	1037	-	-	1054	-	-	195	212	581	205	225	601
Stage 1	-	-	-	-	-	-	545	536	-	539	532	-
Stage 2	-	-	-	-	-	-	506	495	-	532	523	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1037	-	-	1054	-	-	180	203	581	194	216	601
Mov Cap-2 Maneuver	-	-	-	-	-	-	180	203	-	194	216	-
Stage 1	-	-	-	-	-	-	538	529	-	532	517	-
Stage 2	-	-	-	-	-	-	468	481	-	514	516	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.5			20.6			36.8		
HCM LOS							C			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	259	1037	-	-	1054	-	-	231
HCM Lane V/C Ratio	0.111	0.012	-	-	0.028	-	-	0.527
HCM Control Delay (s)	20.6	8.5	-	-	8.5	-	-	36.8
HCM Lane LOS	C	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.4	0	-	-	0.1	-	-	2.8

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	415	384	48	40	6
Future Vol, veh/h	6	415	384	48	40	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	7	451	417	52	43	7
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	469	0	-	0	882	417
Stage 1	-	-	-	-	417	-
Stage 2	-	-	-	-	465	-
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	1093	-	-	-	317	636
Stage 1	-	-	-	-	665	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1093	-	-	-	315	636
Mov Cap-2 Maneuver	-	-	-	-	315	-
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	632	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		17.5		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1093	-	-	-	337	
HCM Lane V/C Ratio	0.006	-	-	-	0.148	
HCM Control Delay (s)	8.3	-	-	-	17.5	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile O(veh)	0	-	-	-	0.5	

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	306	252	138	115	40
Future Vol, veh/h	27	306	252	138	115	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	29	333	274	150	125	43
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	424	0	-	0	665	274
Stage 1	-	-	-	-	274	-
Stage 2	-	-	-	-	391	-
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	1135	-	-	-	425	765
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1135	-	-	-	414	765
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	683	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.7	0		16.9		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1135	-	-	-	470	
HCM Lane V/C Ratio	0.026	-	-	-	0.358	
HCM Control Delay (s)	8.3	-	-	-	16.9	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile O(veh)	0.1	-	-	-	1.6	

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	194	292	33	112	16
Future Vol, veh/h	11	194	292	33	112	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	12	211	317	36	122	17
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	353	0	-	0	552	317
Stage 1	-	-	-	-	317	-
Stage 2	-	-	-	-	235	-
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	1206	-	-	-	495	724
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	804	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1206	-	-	-	490	724
Mov Cap-2 Maneuver	-	-	-	-	490	-
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	804	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		14.7		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1206	-	-	-	511	
HCM Lane V/C Ratio	0.01	-	-	-	0.272	
HCM Control Delay (s)	8	-	-	-	14.7	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile O(veh)	0	-	-	-	1.1	

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	56	354	8	22	194
Future Vol, veh/h	13	56	354	8	22	194
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	-	-	-	25	-
Veh in Median Storage, #	1	-	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	14	61	385	9	24	211
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	649	390	0	0	394	0
Stage 1	390	-	-	-	-	-
Stage 2	259	-	-	-	-	-
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	434	658	-	-	1165	-
Stage 1	684	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	425	658	-	-	1165	-
Mov Cap-2 Maneuver	523	-	-	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	768	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.5	0		0.8		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	627	1165	-	
HCM Lane V/C Ratio	-	-	0.12	0.021	-	
HCM Control Delay (s)	-	-	11.5	8.2	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-	

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	13	8	312	191	16
Future Vol, veh/h	50	13	8	312	191	16
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	-	25	-	-	-
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	54	14	9	339	208	17
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	574	217	225	0	-	0
Stage 1	217	-	-	-	-	-
Stage 2	357	-	-	-	-	-
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	480	823	1344	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	477	823	1344	-	-	-
Mov Cap-2 Maneuver	560	-	-	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.8	0.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1344	-	600	-	-	
HCM Lane V/C Ratio	0.006	-	0.114	-	-	
HCM Control Delay (s)	7.7	-	11.8	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.4	-	-	

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	11	8	22	0
Future Vol, veh/h	0	8	11	8	22	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	12	9	24	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	21	0	-	0	21	12
Stage 1	-	-	-	-	12	-
Stage 2	-	-	-	-	9	-
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	1595	-	-	-	996	1069
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1595	-	-	-	996	1069
Mov Cap-2 Maneuver	-	-	-	-	996	-
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	1014	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.7		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1595	-	-	-	996	
HCM Lane V/C Ratio	-	-	-	-	0.024	
HCM Control Delay (s)	0	-	-	-	8.7	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile O(veh)	0	-	-	-	0.1	

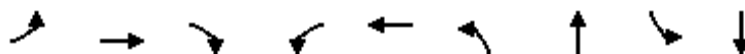
Future “Build” Intersections Analysis with System Improvements

Timings

3c. Build 2028 AM - System Improvements

1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	←←	↑	→	←	→	←←	↑↑	←	↑↑
Traffic Volume (vph)	241	60	503	42	78	862	500	35	546
Future Volume (vph)	241	60	503	42	78	862	500	35	546
Lane Group Flow (vph)	248	62	519	43	135	889	530	36	1060
Turn Type	Prot	NA	Free	Perm	NA	Prot	NA	Perm	NA
Protected Phases	7	4			8	1	6		2
Permitted Phases			Free	8				2	
Detector Phase	7	4		8	8	1	6	2	2
Switch Phase									
Minimum Initial (s)	5.0	6.0		6.0	6.0	5.0	15.0	15.0	15.0
Minimum Split (s)	15.0	33.5		34.5	34.5	15.0	43.5	36.5	36.5
Total Split (s)	25.0	55.0		30.0	30.0	37.0	65.0	28.0	28.0
Total Split (%)	20.8%	45.8%		25.0%	25.0%	30.8%	54.2%	23.3%	23.3%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.62	0.13	0.33	0.30	0.65	0.82	0.24	0.15	1.04
Control Delay	73.0	34.3	1.9	52.6	54.8	63.7	7.4	39.9	76.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.0	34.3	1.9	52.6	54.8	63.7	7.4	39.9	76.7
Queue Length 50th (ft)	97	38	0	31	82	328	25	21	~426
Queue Length 95th (ft)	135	43	153	65	143	373	101	57	#667
Internal Link Dist (ft)		3184			834		1148		1213
Turn Bay Length (ft)	250					400		250	
Base Capacity (vph)	557	739	1583	272	369	1080	2185	234	1015
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.08	0.33	0.16	0.37	0.82	0.24	0.15	1.04

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 135

Control Type: Actuated-Coordinated

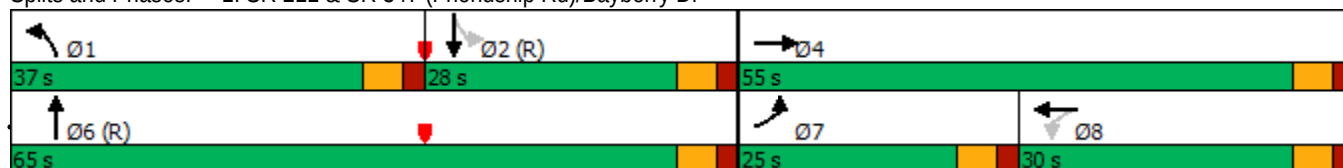
~ Volume exceeds capacity, queue is theoretically infinite.

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 211 & SR 347 (Friendship Rd)/Bayberry Dr



23-016 Thompson Mill Village Mixed Use Development (DRI #4098)

Page 1

HCM 6th Signalized Intersection Summary

1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

3c. Build 2028 AM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	241	60	503	42	78	53	862	500	15	35	546	482
Future Volume (veh/h)	241	60	503	42	78	53	862	500	15	35	546	482
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	1811	1870	1870	1811	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	248	62	0	43	80	55	889	515	0	36	563	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	6	2	2	6	2	2	5	2	2	5	2
Cap, veh/h	315	430		195	101	69	907	2327		381	1257	
Arrive On Green	0.09	0.24	0.00	0.10	0.10	0.10	0.26	0.67	0.00	0.36	0.36	0.00
Sat Flow, veh/h	3456	1811	1585	1340	1000	687	3456	3561	0	886	3561	0
Grp Volume(v), veh/h	248	62	0	43	0	135	889	515	0	36	563	0
Grp Sat Flow(s),veh/h/ln	1728	1811	1585	1340	0	1687	1728	1735	0	886	1735	0
Q Serve(g_s), s	8.4	3.2	0.0	3.6	0.0	9.4	30.7	6.9	0.0	3.2	14.8	0.0
Cycle Q Clear(g_c), s	8.4	3.2	0.0	3.6	0.0	9.4	30.7	6.9	0.0	3.2	14.8	0.0
Prop In Lane	1.00		1.00	1.00		0.41	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	315	430		195	0	170	907	2327		381	1257	
V/C Ratio(X)	0.79	0.14		0.22	0.00	0.80	0.98	0.22		0.09	0.45	
Avail Cap(c_a), veh/h	562	747		334	0	344	907	2327		381	1257	
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)	0.98	0.98	0.00	1.00	0.00	1.00	0.71	0.71	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	53.4	36.1	0.0	50.1	0.0	52.8	43.9	7.6	0.0	25.4	29.1	0.0
Incr Delay (d2), s/veh	4.3	0.1	0.0	0.6	0.0	8.2	20.4	0.2	0.0	0.5	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	1.4	0.0	1.2	0.0	4.4	15.0	2.2	0.0	0.7	6.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.6	36.3	0.0	50.7	0.0	61.0	64.4	7.8	0.0	25.9	30.3	0.0
LnGrp LOS	E	D		D	A	E	E	A		C	C	
Approach Vol, veh/h	310			178			1404			599		
Approach Delay, s/veh	53.4			58.5			43.6			30.0		
Approach LOS	D			E			D			C		
Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	37.0	49.0		34.0		86.0	16.5	17.6				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5	5.5	5.5				
Max Green Setting (Gmax), s	31.5	22.5		49.5		59.5	19.5	24.5				
Max Q Clear Time (g_c+I1), s	32.7	16.8		5.2		8.9	10.4	11.4				
Green Ext Time (p_c), s	0.0	2.6		0.3		7.0	0.5	0.7				

Intersection Summary

HCM 6th Ctrl Delay 42.6

HCM 6th LOS D

Notes

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

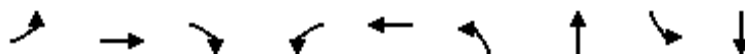
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Timings

3c. Build 2028 AM - System Improvements

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	86	19	306	170	38	434	1293	14	1003
Future Volume (vph)	86	19	306	170	38	434	1293	14	1003
Lane Group Flow (vph)	0	112	329	183	69	467	1466	15	1200
Turn Type	Perm	NA	pm+ov	pm+pt	NA	pm+pt	NA	Perm	NA
Protected Phases		4	1	3	8	1	6		2
Permitted Phases	4		4	8		6		2	
Detector Phase	4	4	1	3	8	1	6	2	2
Switch Phase									
Minimum Initial (s)	6.0	6.0	5.0	5.0	6.0	5.0	15.0	15.0	15.0
Minimum Split (s)	31.5	31.5	15.0	15.0	33.5	15.0	37.5	35.5	35.5
Total Split (s)	31.5	31.5	29.0	15.0	46.5	29.0	73.5	44.5	44.5
Total Split (%)	26.3%	26.3%	24.2%	12.5%	38.8%	24.2%	61.3%	37.1%	37.1%
Yellow Time (s)	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
Lost Time Adjust (s)		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
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min
v/c Ratio		0.66	0.43	0.64	0.15	0.83	0.65	0.14	1.08
Control Delay		67.0	18.4	47.2	21.4	33.8	33.8	24.8	77.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		67.0	18.4	47.2	21.4	33.8	33.8	24.8	77.8
Queue Length 50th (ft)		84	126	119	24	337	583	6	~521
Queue Length 95th (ft)		138	204	174	58	m#355	m575	m14	m#580
Internal Link Dist (ft)		1761			625		1416		1148
Turn Bay Length (ft)			250			130		300	
Base Capacity (vph)		287	767	288	616	565	2240	108	1111
Starvation Cap Reductn		0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.39	0.43	0.64	0.11	0.83	0.65	0.14	1.08

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: 130

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.

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

Splits and Phases: 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr



HCM 6th Signalized Intersection Summary

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

3c. Build 2028 AM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	86	19	306	170	38	26	434	1293	71	14	1003	113
Future Volume (veh/h)	86	19	306	170	38	26	434	1293	71	14	1003	113
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	1811	1870	1870	1870	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	92	20	0	183	41	28	467	1390	76	15	1078	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	167	24		379	233	159	485	2285	125	220	1531	
Arrive On Green	0.10	0.10	0.00	0.08	0.23	0.23	0.20	0.68	0.68	0.15	0.15	0.00
Sat Flow, veh/h	1117	243	1585	1781	1036	707	1781	3345	182	362	3561	0
Grp Volume(v), veh/h	112	0	0	183	0	69	467	719	747	15	1078	0
Grp Sat Flow(s),veh/h/ln	1359	0	1585	1781	0	1743	1781	1735	1793	362	1735	0
Q Serve(g_s), s	9.7	0.0	0.0	9.5	0.0	3.8	21.9	26.9	27.2	4.3	35.5	0.0
Cycle Q Clear(g_c), s	9.7	0.0	0.0	9.5	0.0	3.8	21.9	26.9	27.2	4.3	35.5	0.0
Prop In Lane	0.82		1.00	1.00		0.41	1.00		0.10	1.00		0.00
Lane Grp Cap(c), veh/h	191	0		379	0	393	485	1185	1225	220	1531	
V/C Ratio(X)	0.59	0.00		0.48	0.00	0.18	0.96	0.61	0.61	0.07	0.70	
Avail Cap(c_a), veh/h	349	0		379	0	596	485	1185	1225	220	1531	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.51	0.51	0.00
Uniform Delay (d), s/veh	52.9	0.0	0.0	43.2	0.0	37.5	30.9	10.3	10.3	30.5	43.8	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0	1.0	0.0	0.2	31.5	2.3	2.3	0.3	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.0	5.0	0.0	1.7	17.2	9.1	9.5	0.4	16.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.8	0.0	0.0	44.2	0.0	37.7	62.3	12.6	12.6	30.8	45.2	0.0
LnGrp LOS	E	A		D	A	D	E	B	B	C	D	
Approach Vol, veh/h		112			252			1933			1093	
Approach Delay, s/veh		55.8			42.4			24.6			45.0	
Approach LOS		E			D			C			D	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	29.0	58.5	15.0	17.5		87.5		32.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	23.5	39.0	9.5	26.0		68.0		41.0				
Max Q Clear Time (g_c+I1), s	23.9	37.5	11.5	11.7		29.2		5.8				
Green Ext Time (p_c), s	0.0	1.2	0.0	0.4		24.4		0.4				
Intersection Summary												
HCM 6th Ctrl Delay			33.5									
HCM 6th LOS			C									
Notes												
Unsignalized Delay for [EBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

3: SR 211 & Golf Club Dr/Liberty Church Rd

3c. Build 2028 AM - System Improvements

02/20/2024



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	14	158	261	7	424	26	1344	286	1107	18
Future Volume (vph)	14	158	261	7	424	26	1344	286	1107	18
Lane Group Flow (vph)	22	163	137	139	437	27	1483	295	1141	19
Turn Type	NA	Perm	Split	NA	Free	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	4		8	8		1	6	5	2	
Permitted Phases		4			Free	6		2		2
Detector Phase	4	4	8	8		1	6	5	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0		5.0	15.0	5.0	15.0	15.0
Minimum Split (s)	32.5	32.5	35.5	35.5		15.0	37.5	15.0	36.5	36.5
Total Split (s)	16.5	16.5	35.5	35.5		15.0	53.0	15.0	53.0	53.0
Total Split (%)	13.8%	13.8%	29.6%	29.6%		12.5%	44.2%	12.5%	44.2%	44.2%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None		None	C-Min	None	C-Min	C-Min
v/c Ratio	0.19	0.64	0.65	0.65	0.28	0.10	1.09	0.63	0.54	0.02
Control Delay	55.9	20.1	63.1	63.4	0.4	11.3	89.0	29.6	30.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.9	20.1	63.1	63.4	0.4	11.3	89.0	29.6	30.9	0.0
Queue Length 50th (ft)	17	0	107	109	0	6	~678	187	405	0
Queue Length 95th (ft)	43	66	170	172	0	21	#825	m213	m414	m0
Internal Link Dist (ft)	238			965			1320		1505	
Turn Bay Length (ft)			145		175	95		165		230
Base Capacity (vph)	167	293	420	422	1583	323	1356	468	2102	1015
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	0.13	0.56	0.33	0.33	0.28	0.08	1.09	0.63	0.54	0.02

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: 145

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

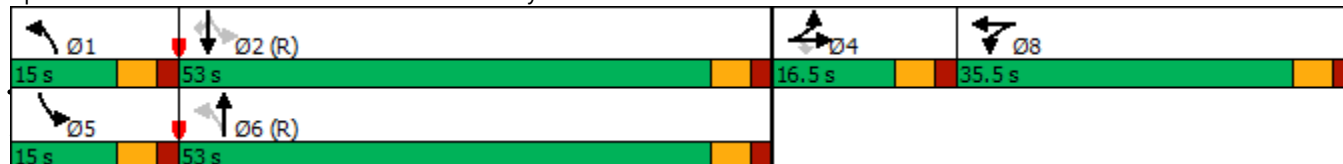
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

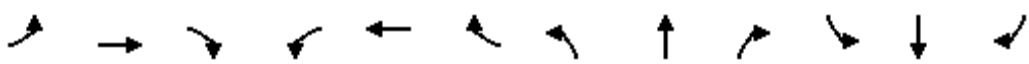
Splits and Phases: 3: SR 211 & Golf Club Dr/Liberty Church Rd



HCM 6th Signalized Intersection Summary 3: SR 211 & Golf Club Dr/Liberty Church Rd

3c. Build 2028 AM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱	↰	↰	↱	↰	↰	↰	↰	↰	↰
Traffic Volume (veh/h)	8	14	158	261	7	424	26	1344	94	286	1107	18
Future Volume (veh/h)	8	14	158	261	7	424	26	1344	94	286	1107	18
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	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	8	14	0	274	0	0	27	1386	0	295	1141	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	17	30		352	0		353	2141		335	2315	
Arrive On Green	0.03	0.03	0.00	0.10	0.00	0.00	0.02	0.62	0.00	0.07	0.67	0.00
Sat Flow, veh/h	668	1169	1585	3563	0	1585	1781	3561	0	1781	3469	1585
Grp Volume(v), veh/h	22	0	0	274	0	0	27	1386	0	295	1141	0
Grp Sat Flow(s),veh/h/ln	1837	0	1585	1781	0	1585	1781	1735	0	1781	1735	1585
Q Serve(g_s), s	1.4	0.0	0.0	9.0	0.0	0.0	0.7	30.6	0.0	6.9	19.6	0.0
Cycle Q Clear(g_c), s	1.4	0.0	0.0	9.0	0.0	0.0	0.7	30.6	0.0	6.9	19.6	0.0
Prop In Lane	0.36		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	48	0		352	0		353	2141		335	2315	
V/C Ratio(X)	0.46	0.00		0.78	0.00		0.08	0.65		0.88	0.49	
Avail Cap(c_a), veh/h	168	0		891	0		450	2141		342	2315	
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.6	0.0	0.0	52.8	0.0	0.0	8.6	14.7	0.0	19.8	9.9	0.0
Incr Delay (d2), s/veh	6.8	0.0	0.0	3.8	0.0	0.0	0.1	1.5	0.0	22.0	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	0.8	0.0	0.0	4.1	0.0	0.0	0.2	10.6	0.0	7.1	6.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	0.0	0.0	56.6	0.0	0.0	8.7	16.2	0.0	41.8	10.6	0.0
LnGrp LOS	E	A		E	A		A	B		D	B	
Approach Vol, veh/h		22			274			1413			1436	
Approach Delay, s/veh		64.4			56.6			16.0			17.1	
Approach LOS		E			E			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	85.6		8.6	14.5	79.5		17.3				
Change Period (Y+Rc), s	5.5	5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	47.5		11.0	9.5	47.5		30.0				
Max Q Clear Time (g_c+I1), s	2.7	21.6		3.4	8.9	32.6		11.0				
Green Ext Time (p_c), s	0.0	14.4		0.0	0.1	11.4		0.8				
Intersection Summary												
HCM 6th Ctrl Delay			20.4									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection						
Intersection Delay, s/veh18.1						
Intersection LOS C						
Approach	EB	WB	NB	SB		
Entry Lanes	0	4	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	0	0	2251	1502		
Demand Flow Rate, veh/h	0	0	2363	1577		
Vehicles Circulating, veh/h	931	2363	0	1141		
Vehicles Exiting, veh/h	968	0	931	1735		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	0.0	0.0	20.5	14.6		
Approach LOS	-	-	C	B		
Lane	Left Right		Left RightBypass			
Designated Moves	LT	TR	LT	TR	R	
Assumed Moves	LT	TR	LT	TR	R	
RT Channelized					Free	
Lane Util	0.470	0.530	0.470	0.530		
Follow-Up Headway, s	2.667	2.535	2.667	2.535		
Critical Headway, s	4.645	4.328	4.645	4.328	819	
Entry Flow, veh/h	1111	1252	356	402	1995	
Cap Entry Lane, veh/h	1350	1420	473	538	0.952	
Entry HV Adj Factor	0.952	0.953	0.953	0.952	780	
Flow Entry, veh/h	1058	1193	339	383	1900	
Cap Entry, veh/h	1285	1353	450	512	0.411	
V/C Ratio	0.823	0.882	0.753	0.747	0.0	
Control Delay, s/veh	18.3	22.4	32.4	28.7	A	
LOS	C	C	D	D	2	
95th %tile Queue, veh	10	13	6	6		

Timings 5: SR 211 & I-85 NB Ramps

3c. Build 2028 AM - System Improvements

02/20/2024

						
Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 		 	 
Traffic Volume (vph)	520	354	1640	270	220	631
Future Volume (vph)	520	354	1640	270	220	631
Lane Group Flow (vph)	531	361	1673	276	224	644
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	3		6		5	2
Permitted Phases		8		6	2	
Detector Phase	3	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	34.5	34.5	28.5	28.5	15.0	28.5
Total Split (s)	44.0	44.0	61.0	61.0	15.0	76.0
Total Split (%)	36.7%	36.7%	50.8%	50.8%	12.5%	63.3%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.78	0.69	0.83	0.29	0.62	0.27
Control Delay	53.2	19.3	26.1	8.2	24.2	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	19.3	26.1	8.2	24.2	7.2
Queue Length 50th (ft)	202	66	514	49	35	85
Queue Length 95th (ft)	248	167	#818	118	80	131
Internal Link Dist (ft)			1253			1370
Turn Bay Length (ft)		480		160	135	
Base Capacity (vph)	1069	671	2010	953	397	2418
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.54	0.83	0.29	0.56	0.27

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

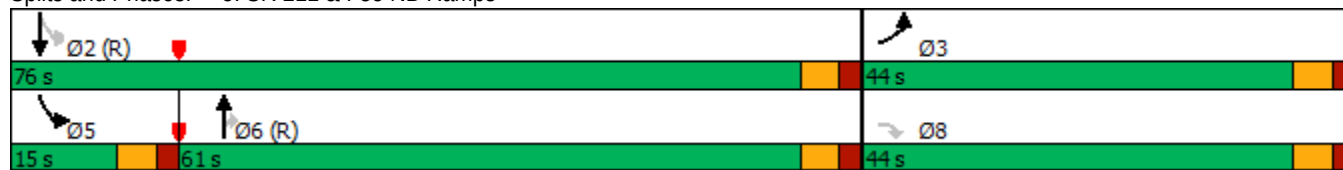
Natural Cycle: 100

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 5: SR 211 & I-85 NB Ramps



HCM 6th Signalized Intersection Summary 5: SR 211 & I-85 NB Ramps

3c. Build 2028 AM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 							 		 	 	
Traffic Volume (veh/h)	520	0	354	0	0	0	0	1640	270	220	631	0
Future Volume (veh/h)	520	0	354	0	0	0	0	1640	270	220	631	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1826	1826	1826	1826	0
Adj Flow Rate, veh/h	531	0	0				0	1673	0	224	644	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	5	0	5				0	5	5	5	5	0
Cap, veh/h	620	0					0	2210		428	2513	0
Arrive On Green	0.18	0.00	0.00				0.00	0.64	0.00	0.04	0.72	0.00
Sat Flow, veh/h	3374	0	1547				0	3561	1547	3374	3561	0
Grp Volume(v), veh/h	531	0	0				0	1673	0	224	644	0
Grp Sat Flow(s),veh/h/ln	1687	0	1547				0	1735	1547	1687	1735	0
Q Serve(g_s), s	18.3	0.0	0.0				0.0	40.6	0.0	2.6	7.5	0.0
Cycle Q Clear(g_c), s	18.3	0.0	0.0				0.0	40.6	0.0	2.6	7.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	620	0					0	2210		428	2513	0
V/C Ratio(X)	0.86	0.00					0.00	0.76		0.52	0.26	0.00
Avail Cap(c_a), veh/h	1082	0					0	2210		555	2513	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	47.4	0.0	0.0				0.0	15.3	0.0	18.5	5.6	0.0
Incr Delay (d2), s/veh	3.5	0.0	0.0				0.0	2.5	0.0	1.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	0.0				0.0	14.5	0.0	1.6	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.0	0.0	0.0				0.0	17.8	0.0	19.5	5.8	0.0
LnGrp LOS	D	A					A	B		B	A	A
Approach Vol, veh/h	531						1673			868		
Approach Delay, s/veh	51.0						17.8			9.4		
Approach LOS	D						B			A		
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	92.4			10.5			81.9			27.6		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	70.5			9.5			55.5			38.5		
Max Q Clear Time (g_c+I1), s	9.5			4.6			42.6			20.3		
Green Ext Time (p_c), s	9.7			0.3			11.4			1.8		
Intersection Summary												
HCM 6th Ctrl Delay	21.1											
HCM 6th LOS	C											
Notes												
User approved pedestrian interval to be less than phase max green.												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings
6: SR 211 & SR 53

3c. Build 2028 AM - System Improvements

02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↘	↘
Traffic Volume (vph)	490	612	211	949	591	60
Future Volume (vph)	490	612	211	949	591	60
Lane Group Flow (vph)	544	680	234	1054	657	67
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	7	
Permitted Phases		6	2			7
Detector Phase	6	6	2	2	7	7
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	5.0
Minimum Split (s)	42.5	42.5	28.5	28.5	40.5	40.5
Total Split (s)	75.0	75.0	75.0	75.0	45.0	45.0
Total Split (%)	62.5%	62.5%	62.5%	62.5%	37.5%	37.5%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None
v/c Ratio	0.24	0.53	0.43	0.48	0.80	0.16
Control Delay	8.7	2.4	13.3	11.3	50.5	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.7	2.4	13.3	11.3	50.5	8.4
Queue Length 50th (ft)	79	0	76	191	248	0
Queue Length 95th (ft)	125	44	159	284	293	34
Internal Link Dist (ft)	1195			1463	749	
Turn Bay Length (ft)		180	190		260	
Base Capacity (vph)	2236	1284	545	2175	1130	566
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.53	0.43	0.48	0.58	0.12
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green						
Natural Cycle: 85						
Control Type: Actuated-Coordinated						

Splits and Phases: 6: SR 211 & SR 53



HCM 6th Signalized Intersection Summary 6: SR 211 & SR 53

3c. Build 2028 AM - System Improvements

02/20/2024

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↖	↑↑	↖↗	↗
Traffic Volume (veh/h)	490	612	211	949	591	60
Future Volume (veh/h)	490	612	211	949	591	60
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1870	1870	1737	1870	1870
Adj Flow Rate, veh/h	544	680	234	1054	657	67
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	8	2	2	11	2	2
Cap, veh/h	2331	1092	347	2273	759	348
Arrive On Green	0.69	0.69	0.69	0.69	0.22	0.22
Sat Flow, veh/h	3474	1585	456	3387	3456	1585
Grp Volume(v), veh/h	544	680	234	1054	657	67
Grp Sat Flow(s),veh/h/ln	1692	1585	456	1650	1728	1585
Q Serve(g_s), s	7.2	28.1	47.0	17.5	22.0	4.1
Cycle Q Clear(g_c), s	7.2	28.1	54.1	17.5	22.0	4.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2331	1092	347	2273	759	348
V/C Ratio(X)	0.23	0.62	0.68	0.46	0.87	0.19
Avail Cap(c_a), veh/h	2331	1092	347	2273	1138	522
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.9	10.2	17.0	8.5	45.1	38.2
Incr Delay (d2), s/veh	0.2	2.7	10.1	0.7	4.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	30.5	5.2	5.5	9.6	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.2	12.9	27.1	9.2	49.9	38.4
LnGrp LOS	A	B	C	A	D	D
Approach Vol, veh/h	1224			1288	724	
Approach Delay, s/veh	10.3			12.5	48.8	
Approach LOS	B			B	D	
Timer - Assigned Phs	2		4		6	
Phs Duration (G+Y+Rc), s	88.1		31.9		88.1	
Change Period (Y+Rc), s	5.5		5.5		5.5	
Max Green Setting (Gmax), s	69.5		39.5		69.5	
Max Q Clear Time (g_c+I1), s	56.1		24.0		30.1	
Green Ext Time (p_c), s	10.6		2.4		16.7	
Intersection Summary						
HCM 6th Ctrl Delay			19.8			
HCM 6th LOS			B			

Timings

3c. Build 2028 AM - System Improvements

7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↑↑↑	↗	↖	↑↑↑	↗	↖	↑	↖	↑	↗
Traffic Volume (vph)	164	793	131	236	918	159	74	5	44	10	42
Future Volume (vph)	164	793	131	236	918	159	74	5	44	10	42
Lane Group Flow (vph)	180	871	144	259	1009	175	81	135	48	11	46
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	1	6			2			8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	2	2	2	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	46.5	46.5	46.5	54.5	54.5	56.5	56.5	56.5
Total Split (s)	15.0	63.0	63.0	48.0	48.0	48.0	57.0	57.0	57.0	57.0	57.0
Total Split (%)	12.5%	52.5%	52.5%	40.0%	40.0%	40.0%	47.5%	47.5%	47.5%	47.5%	47.5%
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	Lag					
Lead-Lag Optimize?	Yes			Yes	Yes	Yes					
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.39	0.22	0.11	0.65	0.30	0.15	0.56	0.53	0.51	0.06	0.20
Control Delay	5.9	2.8	1.6	24.4	9.6	2.7	65.0	24.2	67.5	46.3	5.9
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	5.9	2.8	1.6	24.4	9.6	2.7	65.0	24.2	67.5	46.3	5.9
Queue Length 50th (ft)	25	31	0	132	182	25	61	27	36	8	0
Queue Length 95th (ft)	71	99	35	m243	m179	m25	109	86	74	25	16
Internal Link Dist (ft)		1298			3184			467		266	
Turn Bay Length (ft)	1000		630	550		515	200		90		
Base Capacity (vph)	478	3937	1301	397	3327	1132	599	740	396	799	721
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	0.38	0.22	0.11	0.65	0.30	0.15	0.14	0.18	0.12	0.01	0.06

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

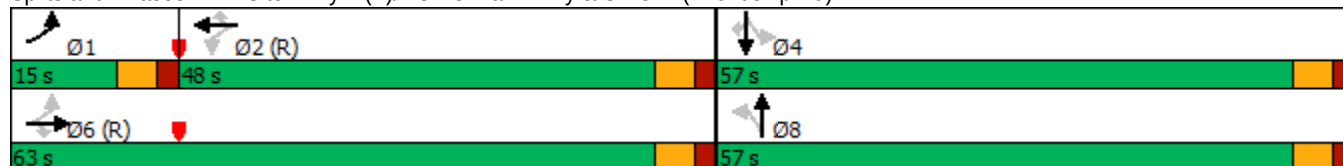
Offset: 54 (45%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

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

Splits and Phases: 7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

3c. Build 2028 AM - System Improvements

7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	164	793	131	236	918	159	74	5	118	44	10	42
Future Volume (veh/h)	164	793	131	236	918	159	74	5	118	44	10	42
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	871	144	259	1009	175	81	5	130	48	11	46
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	428	3814	1223	436	3346	1073	238	8	210	132	256	217
Arrive On Green	0.10	1.00	1.00	0.68	0.68	0.68	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1781	4944	1585	555	4944	1585	1346	59	1535	1254	1870	1585
Grp Volume(v), veh/h	180	871	144	259	1009	175	81	0	135	48	11	46
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	555	1648	1585	1346	0	1594	1254	1870	1585
Q Serve(g_s), s	3.7	0.0	0.0	33.9	9.9	4.8	6.7	0.0	9.6	4.5	0.6	3.1
Cycle Q Clear(g_c), s	3.7	0.0	0.0	33.9	9.9	4.8	7.3	0.0	9.6	14.1	0.6	3.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	1.00		1.00
Lane Grp Cap(c), veh/h	428	3814	1223	436	3346	1073	238	0	218	132	256	217
V/C Ratio(X)	0.42	0.23	0.12	0.59	0.30	0.16	0.34	0.00	0.62	0.36	0.04	0.21
Avail Cap(c_a), veh/h	482	3814	1223	436	3346	1073	631	0	684	498	803	680
HCM Platoon Ratio	2.00	2.00	2.00	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	0.50	0.50	0.50	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	5.1	0.0	0.0	11.8	7.9	7.0	48.1	0.0	48.8	55.5	45.0	46.0
Incr Delay (d2), s/veh	0.7	0.1	0.2	3.0	0.1	0.2	0.8	0.0	2.8	1.7	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.1	3.9	3.1	1.5	2.3	0.0	4.0	1.5	0.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.8	0.1	0.2	14.7	8.0	7.2	49.0	0.0	51.7	57.1	45.0	46.5
LnGrp LOS	A	A	A	B	A	A	D	A	D	E	D	D
Approach Vol, veh/h		1195			1443			216			105	
Approach Delay, s/veh		1.0			9.1			50.6			51.2	
Approach LOS		A			A			D			D	
Timer - Assigned Phs	1	2		4		6		8				
Phs Duration (G+Y+Rc), s	11.4	86.7		21.9		98.1		21.9				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s	9.5	42.5		51.5		57.5		51.5				
Max Q Clear Time (g_c+I1), s	5.7	35.9		16.1		2.0		11.6				
Green Ext Time (p_c), s	0.2	5.7		0.4		16.1		1.2				
Intersection Summary												
HCM 6th Ctrl Delay				10.4								
HCM 6th LOS				B								

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	1044	77	68	856	111	26	0	37	7	0	13
Future Vol, veh/h	130	1044	77	68	856	111	26	0	37	7	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	575	-	640	720	-	720	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	6	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	141	1135	84	74	930	121	28	0	40	8	0	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1051	0	0	1219	0	0	1937	2616	568	1814	2579	465
Stage 1	-	-	-	-	-	-	1417	1417	-	1078	1078	-
Stage 2	-	-	-	-	-	-	520	1199	-	736	1501	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	370	-	-	306	-	-	69	24	399	83	25	465
Stage 1	-	-	-	-	-	-	101	201	-	176	293	-
Stage 2	-	-	-	-	-	-	463	257	-	342	183	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	370	-	-	306	-	-	39	11	399	43	12	465
Mov Cap-2 Maneuver	-	-	-	-	-	-	39	11	-	43	12	-
Stage 1	-	-	-	-	-	-	63	124	-	109	222	-
Stage 2	-	-	-	-	-	-	340	195	-	190	113	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.1			1.3			99.4			45.5		
HCM LOS							F			E		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	
Capacity (veh/h)	39		399	370	-	-	306	-	-	43	465	
HCM Lane V/C Ratio	0.725		0.101	0.382	-	-	0.242	-	-	0.177	0.03	
HCM Control Delay (s)	219.6		15	20.6	-	-	20.5	-	-	105.9	13	
HCM Lane LOS	F		C	C	-	-	C	-	-	F	B	
HCM 95th %tile Q(veh)	2.7		0.3	1.7	-	-	0.9	-	-	0.6	0.1	

Timings

3c. Build 2028 AM - System Improvements

9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		  			  			 		 	
Traffic Volume (vph)	21	1161	221	15	856	22	178	7	42	18	42
Future Volume (vph)	21	1161	221	15	856	22	178	7	42	18	42
Lane Group Flow (vph)	23	1248	238	16	920	24	191	60	45	19	45
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	3	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	15.0	43.5	43.5	15.0	47.5	50.5	50.5	50.5
Total Split (s)	15.0	47.0	47.0	15.0	47.0	47.0	28.0	58.0	30.0	30.0	30.0
Total Split (%)	12.5%	39.2%	39.2%	12.5%	39.2%	39.2%	23.3%	48.3%	25.0%	25.0%	25.0%
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	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.06	0.41	0.22	0.06	0.31	0.02	0.57	0.14	0.42	0.13	0.19
Control Delay	8.5	9.7	1.0	5.2	12.0	1.0	43.3	10.2	63.8	51.6	1.7
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	8.5	9.7	1.0	5.2	12.0	1.0	43.3	10.2	63.8	51.6	1.7
Queue Length 50th (ft)	5	105	3	1	198	0	123	5	34	14	0
Queue Length 95th (ft)	m8	m141	m3	4	261	7	172	35	71	37	0
Internal Link Dist (ft)		1122			884			178		385	
Turn Bay Length (ft)	405		300	575		550	100		95		100
Base Capacity (vph)	425	3052	1076	332	2953	1004	394	738	272	380	421
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	0.05	0.41	0.22	0.05	0.31	0.02	0.48	0.08	0.17	0.05	0.11

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

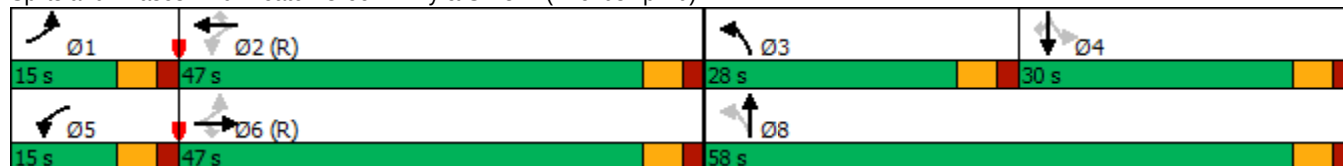
Offset: 91 (76%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

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

Splits and Phases: 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

3c. Build 2028 AM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	21	1161	221	15	856	22	178	7	48	42	18	42
Future Volume (veh/h)	21	1161	221	15	856	22	178	7	48	42	18	42
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	23	1248	238	16	920	24	191	8	52	45	19	45
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	446	3118	999	270	3092	991	325	46	301	130	97	82
Arrive On Green	0.02	0.63	0.63	0.02	0.83	0.83	0.12	0.21	0.21	0.05	0.05	0.05
Sat Flow, veh/h	1781	4944	1585	1781	4944	1585	1781	216	1402	1343	1870	1585
Grp Volume(v), veh/h	23	1248	238	16	920	24	191	0	60	45	19	45
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	1781	1648	1585	1781	0	1618	1343	1870	1585
Q Serve(g_s), s	0.6	15.0	7.8	0.4	5.0	0.3	11.7	0.0	3.6	3.9	1.2	3.3
Cycle Q Clear(g_c), s	0.6	15.0	7.8	0.4	5.0	0.3	11.7	0.0	3.6	3.9	1.2	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.87	1.00		1.00
Lane Grp Cap(c), veh/h	446	3118	999	270	3092	991	325	0	347	130	97	82
V/C Ratio(X)	0.05	0.40	0.24	0.06	0.30	0.02	0.59	0.00	0.17	0.35	0.20	0.55
Avail Cap(c_a), veh/h	548	3118	999	380	3092	991	450	0	708	334	382	324
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.6	11.0	9.6	8.6	4.2	3.8	44.6	0.0	38.4	55.8	54.5	55.5
Incr Delay (d2), s/veh	0.0	0.4	0.6	0.1	0.2	0.0	1.7	0.0	0.2	1.6	1.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.0	2.6	0.1	1.4	0.1	5.4	0.0	1.5	1.4	0.6	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	7.7	11.3	10.2	8.7	4.4	3.9	46.3	0.0	38.7	57.4	55.5	61.1
LnGrp LOS	A	B	B	A	A	A	D	A	D	E	E	E
Approach Vol, veh/h		1509			960			251			109	
Approach Delay, s/veh		11.1			4.5			44.5			58.6	
Approach LOS		B			A			D			E	
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	8.2	80.6	19.6	11.7	7.6	81.2		31.3				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s	9.5	41.5	22.5	24.5	9.5	41.5		52.5				
Max Q Clear Time (g_c+I1), s	2.6	7.0	13.7	5.9	2.4	17.0		5.6				
Green Ext Time (p_c), s	0.0	13.4	0.3	0.3	0.0	16.8		0.4				
Intersection Summary												
HCM 6th Ctrl Delay			13.7									
HCM 6th LOS			B									
Notes												
User approved pedestrian interval to be less than phase max green.												

Timings

3c. Build 2028 AM - System Improvements

10: Spout Springs Rd & SR 347 (Friendship Rd)

02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	219	843	165	312	761	172	240	402	287	249	372
Future Volume (vph)	219	843	165	312	761	172	240	402	287	249	372
Lane Group Flow (vph)	235	906	177	335	818	185	258	432	309	268	583
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases			6			2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	35.5	35.5	15.0	33.5	33.5	15.0	42.5	42.5	15.0	40.5
Total Split (s)	18.0	35.0	35.0	21.0	38.0	38.0	23.0	42.0	42.0	22.0	41.0
Total Split (%)	15.0%	29.2%	29.2%	17.5%	31.7%	31.7%	19.2%	35.0%	35.0%	18.3%	34.2%
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	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.68	0.93	0.32	0.77	0.77	0.30	0.70	0.86	0.53	0.85	0.61
Control Delay	70.7	53.5	10.6	68.7	54.5	25.1	22.6	48.1	13.9	50.2	36.4
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	70.7	53.5	10.6	68.7	54.5	25.1	22.6	48.1	13.9	50.2	36.4
Queue Length 50th (ft)	98	~409	16	132	294	35	106	325	115	128	181
Queue Length 95th (ft)	142	#526	56	#192	#444	132	m113	m420	m166	#261	238
Internal Link Dist (ft)		4090			4090			920			702
Turn Bay Length (ft)	575		190	260		210	140		150	125	
Base Capacity (vph)	363	979	545	452	1068	610	391	566	631	324	1042
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	0.65	0.93	0.32	0.74	0.77	0.30	0.66	0.76	0.49	0.83	0.56

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 68 (57%), Referenced to phase 2:WBT and 6:EBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

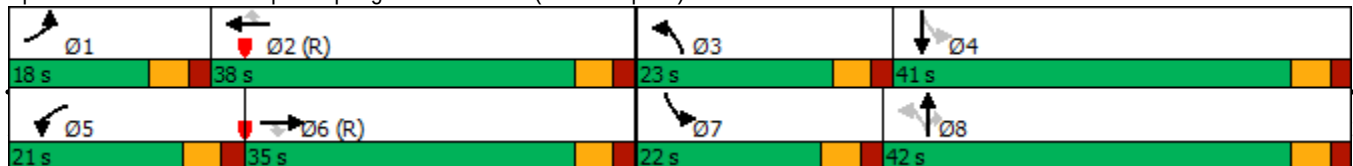
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Spout Springs Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

10: Spout Springs Rd & SR 347 (Friendship Rd)

3c. Build 2028 AM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	219	843	165	312	761	172	240	402	287	249	372	170
Future Volume (veh/h)	219	843	165	312	761	172	240	402	287	249	372	170
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	235	906	177	335	818	0	258	432	0	268	400	183
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	293	1109	511	394	1209		367	474		314	611	276
Arrive On Green	0.08	0.32	0.32	0.11	0.35	0.00	0.12	0.25	0.00	0.13	0.26	0.26
Sat Flow, veh/h	3456	3441	1585	3456	3441	1585	1781	1870	1585	1781	2379	1075
Grp Volume(v), veh/h	235	906	177	335	818	0	258	432	0	268	297	286
Grp Sat Flow(s),veh/h/ln	1728	1721	1585	1728	1721	1585	1781	1870	1585	1781	1777	1677
Q Serve(g_s), s	8.0	29.1	10.2	11.4	24.3	0.0	12.7	26.9	0.0	13.2	17.9	18.3
Cycle Q Clear(g_c), s	8.0	29.1	10.2	11.4	24.3	0.0	12.7	26.9	0.0	13.2	17.9	18.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.64
Lane Grp Cap(c), veh/h	293	1109	511	394	1209		367	474		314	456	430
V/C Ratio(X)	0.80	0.82	0.35	0.85	0.68		0.70	0.91		0.85	0.65	0.66
Avail Cap(c_a), veh/h	360	1109	511	446	1209		406	569		333	526	496
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)	0.90	0.90	0.90	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	37.4	31.0	52.2	33.1	0.0	29.2	43.5	0.0	30.8	39.8	40.0
Incr Delay (d2), s/veh	9.2	6.1	1.7	13.3	3.1	0.0	4.8	17.1	0.0	18.1	2.3	2.7
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	3.8	12.7	4.1	5.5	10.2	0.0	5.7	14.4	0.0	7.0	8.0	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.1	43.5	32.7	65.4	36.2	0.0	33.9	60.6	0.0	48.8	42.2	42.7
LnGrp LOS	E	D	C	E	D		C	E		D	D	D
Approach Vol, veh/h	1318			1153			690			851		
Approach Delay, s/veh	45.5			44.7			50.7			44.4		
Approach LOS	D			D			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.7	47.6	20.4	36.3	19.2	44.2	20.8	35.9				
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	12.5	32.5	17.5	35.5	15.5	29.5	16.5	36.5				
Max Q Clear Time (g_c+I1), s	10.0	26.3	14.7	20.3	13.4	31.1	15.2	28.9				
Green Ext Time (p_c), s	0.2	3.8	0.2	3.0	0.3	0.0	0.1	1.5				

Intersection Summary

HCM 6th Ctrl Delay 45.9

HCM 6th LOS D

Notes

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

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

Timings
11: Sardis Church Rd & SR 347 (Friendship Rd)

3c. Build 2028 AM - System Improvements

02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	838	96	161	996	98	181
Future Volume (vph)	838	96	161	996	98	181
Lane Group Flow (vph)	942	108	181	1119	110	203
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	5	2	8	8
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	6.0	6.0
Minimum Split (s)	23.5	23.5	15.0	23.5	23.5	23.5
Total Split (s)	67.0	67.0	22.0	89.0	31.0	31.0
Total Split (%)	55.8%	55.8%	18.3%	74.2%	25.8%	25.8%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.40	0.10	0.39	0.41	0.59	0.58
Control Delay	9.4	1.8	4.2	1.1	55.7	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	1.8	4.2	1.1	55.7	14.6
Queue Length 50th (ft)	150	0	6	20	84	36
Queue Length 95th (ft)	226	20	m22	36	m138	m96
Internal Link Dist (ft)	1687			4090	2052	
Turn Bay Length (ft)			385			80
Base Capacity (vph)	2337	1120	557	2731	376	496
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.10	0.32	0.41	0.29	0.41

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

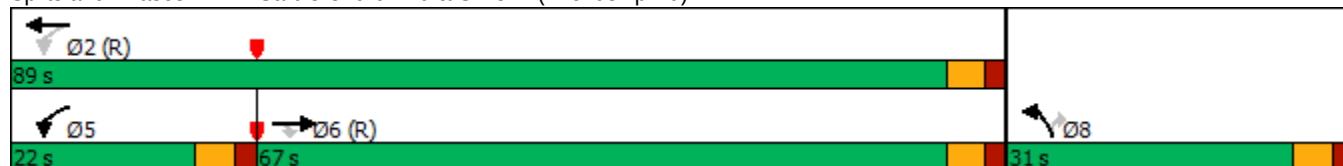
Offset: 28 (23%), Referenced to phase 2:WBTL and 6:EBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

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

Splits and Phases: 11: Sardis Church Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary
11: Sardis Church Rd & SR 347 (Friendship Rd)

3c. Build 2028 AM - System Improvements

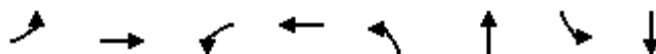
02/20/2024

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↙	↑↑	↙	↗
Traffic Volume (veh/h)	838	96	161	996	98	181
Future Volume (veh/h)	838	96	161	996	98	181
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1870	1870	1811	1870	1870
Adj Flow Rate, veh/h	942	108	181	1119	110	203
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	6	2	2	6	2	2
Cap, veh/h	2290	1055	438	2619	262	233
Arrive On Green	0.67	0.67	0.05	0.76	0.15	0.15
Sat Flow, veh/h	3532	1585	1781	3532	1781	1585
Grp Volume(v), veh/h	942	108	181	1119	110	203
Grp Sat Flow(s),veh/h/ln	1721	1585	1781	1721	1781	1585
Q Serve(g_s), s	15.1	2.9	3.6	13.8	6.7	15.0
Cycle Q Clear(g_c), s	15.1	2.9	3.6	13.8	6.7	15.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2290	1055	438	2619	262	233
V/C Ratio(X)	0.41	0.10	0.41	0.43	0.42	0.87
Avail Cap(c_a), veh/h	2290	1055	595	2619	379	337
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.58	0.58	1.00	1.00
Uniform Delay (d), s/veh	9.2	7.2	6.6	5.1	46.5	50.0
Incr Delay (d2), s/veh	0.5	0.2	0.4	0.3	1.1	15.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.9	1.1	3.8	3.0	6.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.8	7.4	7.0	5.4	47.6	65.4
LnGrp LOS	A	A	A	A	D	E
Approach Vol, veh/h	1050			1300	313	
Approach Delay, s/veh	9.5			5.6	59.1	
Approach LOS	A			A	E	
Timer - Assigned Phs		2			5	6
Phs Duration (G+Y+Rc), s		96.8			11.5	85.4
Change Period (Y+Rc), s		5.5			5.5	5.5
Max Green Setting (Gmax), s		83.5			16.5	61.5
Max Q Clear Time (g_c+l1), s		15.8			5.6	17.1
Green Ext Time (p_c), s		22.3			0.3	16.6
Intersection Summary						
HCM 6th Ctrl Delay			13.4			
HCM 6th LOS			B			

Timings
12: Sardis Church Rd & Thompson Mill Rd

3c. Build 2028 AM - System Improvements

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Traffic Volume (vph)	45	118	141	171	91	178	9	271
Future Volume (vph)	45	118	141	171	91	178	9	271
Lane Group Flow (vph)	0	296	0	367	0	441	0	369
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		6		2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	6	6	2	2
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0
Minimum Split (s)	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
Total Split (s)	58.0	58.0	58.0	58.0	62.0	62.0	62.0	62.0
Total Split (%)	48.3%	48.3%	48.3%	48.3%	51.7%	51.7%	51.7%	51.7%
Yellow Time (s)	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
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.5		5.5		5.5		5.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio		0.54		0.91		0.53		0.36
Control Delay		30.7		51.8		19.9		11.9
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		30.7		51.8		19.9		11.9
Queue Length 50th (ft)		163		234		192		100
Queue Length 95th (ft)		206		324		332		150
Internal Link Dist (ft)		730		2583		494		2249
Turn Bay Length (ft)								
Base Capacity (vph)		692		514		840		1024
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.43		0.71		0.53		0.36

Intersection Summary

Cycle Length: 120

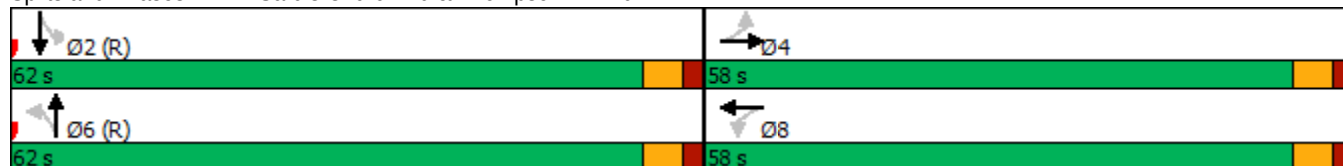
Actuated Cycle Length: 120

Offset: 90 (75%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Splits and Phases: 12: Sardis Church Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary
12: Sardis Church Rd & Thompson Mill Rd

3c. Build 2028 AM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	118	94	141	171	7	91	178	114	9	271	42
Future Volume (veh/h)	45	118	94	141	171	7	91	178	114	9	271	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	52	136	0	162	197	8	105	205	131	10	311	48
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	132	327		217	224	9	243	469	286	43	977	148
Arrive On Green	0.28	0.28	0.00	0.28	0.28	0.28	0.63	0.63	0.63	0.63	0.63	0.63
Sat Flow, veh/h	334	1162	0	616	794	31	329	749	456	19	1559	236
Grp Volume(v), veh/h	188	0	0	367	0	0	441	0	0	369	0	0
Grp Sat Flow(s),veh/h/ln	1496	0	0	1442	0	0	1534	0	0	1813	0	0
Q Serve(g_s), s	0.0	0.0	0.0	18.4	0.0	0.0	4.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	11.4	0.0	0.0	29.8	0.0	0.0	16.0	0.0	0.0	11.3	0.0	0.0
Prop In Lane	0.28		0.00	0.44		0.02	0.24		0.30	0.03		0.13
Lane Grp Cap(c), veh/h	459	0		449	0	0	998	0	0	1167	0	0
V/C Ratio(X)	0.41	0.00		0.82	0.00	0.00	0.44	0.00	0.00	0.32	0.00	0.00
Avail Cap(c_a), veh/h	710	0		688	0	0	998	0	0	1167	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	34.7	0.0	0.0	42.2	0.0	0.0	11.2	0.0	0.0	10.5	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	4.6	0.0	0.0	1.4	0.0	0.0	0.7	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	4.4	0.0	0.0	10.7	0.0	0.0	5.9	0.0	0.0	4.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.3	0.0	0.0	46.8	0.0	0.0	12.6	0.0	0.0	11.2	0.0	0.0
LnGrp LOS	D	A		D	A	A	B	A	A	B	A	A
Approach Vol, veh/h		188			367			441			369	
Approach Delay, s/veh		35.3			46.8			12.6			11.2	
Approach LOS		D			D			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		80.7		39.3		80.7		39.3				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		56.5		52.5		56.5		52.5				
Max Q Clear Time (g_c+I1), s		13.3		13.4		18.0		31.8				
Green Ext Time (p_c), s		5.0		1.0		6.6		2.0				
Intersection Summary												
HCM 6th Ctrl Delay				24.5								
HCM 6th LOS				C								
Notes												
Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.												

Timings

13: Spout Springs Rd & Thompson Mill Rd

3c. Build 2028 AM - System Improvements

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	149	40	38	35	168	861	48	22	484	122
Future Volume (vph)	149	40	38	35	168	861	48	22	484	122
Lane Group Flow (vph)	162	119	41	71	183	936	52	24	526	133
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	31.5	15.0	30.5	15.0	35.5	35.5	15.0	34.5	34.5
Total Split (s)	21.0	31.0	21.0	31.0	18.0	53.0	53.0	15.0	50.0	50.0
Total Split (%)	17.5%	25.8%	17.5%	25.8%	15.0%	44.2%	44.2%	12.5%	41.7%	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
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	0.46	0.22	0.47	0.35	0.79	0.05	0.11	0.50	0.14
Control Delay	42.9	21.8	37.6	41.3	9.5	26.1	0.1	4.0	16.2	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.9	21.8	37.6	41.3	9.5	26.1	0.1	4.0	16.2	5.1
Queue Length 50th (ft)	85	21	25	29	48	593	0	3	218	19
Queue Length 95th (ft)	143	72	53	74	87	#968	0	m7	508	m40
Internal Link Dist (ft)		1809		565		751			337	
Turn Bay Length (ft)	155		223		228		112	100		110
Base Capacity (vph)	299	405	306	386	545	1182	1049	277	1049	945
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	0.54	0.29	0.13	0.18	0.34	0.79	0.05	0.09	0.50	0.14

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 75 (63%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 130

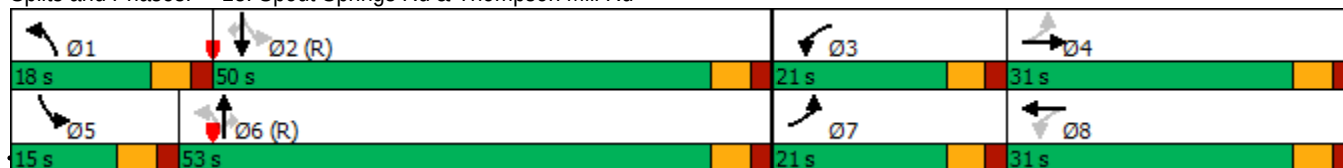
Control Type: Actuated-Coordinated

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: 13: Spout Springs Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary 13: Spout Springs Rd & Thompson Mill Rd

3c. Build 2028 AM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	40	70	38	35	30	168	861	48	22	484	122
Future Volume (veh/h)	149	40	70	38	35	30	168	861	48	22	484	122
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	162	43	76	41	38	33	183	936	52	24	526	133
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	262	76	134	192	54	47	505	1185	1005	253	1121	950
Arrive On Green	0.10	0.13	0.13	0.03	0.06	0.06	0.06	0.63	0.63	0.02	0.60	0.60
Sat Flow, veh/h	1781	587	1037	1781	894	777	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	162	0	119	41	0	71	183	936	52	24	526	133
Grp Sat Flow(s),veh/h/ln	1781	0	1624	1781	0	1671	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	9.9	0.0	8.3	2.6	0.0	5.0	4.6	44.0	1.5	0.6	18.8	4.4
Cycle Q Clear(g_c), s	9.9	0.0	8.3	2.6	0.0	5.0	4.6	44.0	1.5	0.6	18.8	4.4
Prop In Lane	1.00		0.64	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	262	0	209	192	0	101	505	1185	1005	253	1121	950
V/C Ratio(X)	0.62	0.00	0.57	0.21	0.00	0.70	0.36	0.79	0.05	0.09	0.47	0.14
Avail Cap(c_a), veh/h	315	0	345	367	0	355	589	1185	1005	353	1121	950
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	49.1	50.7	0.0	55.3	9.7	16.1	8.3	15.6	13.4	10.5
Incr Delay (d2), s/veh	2.6	0.0	2.4	0.6	0.0	8.6	0.4	5.4	0.1	0.2	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	4.4	0.0	3.4	1.1	0.0	2.3	1.7	18.4	0.5	0.2	7.8	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.6	0.0	51.5	51.3	0.0	64.0	10.1	21.5	8.4	15.8	14.8	10.8
LnGrp LOS	D	A	D	D	A	E	B	C	A	B	B	B
Approach Vol, veh/h	281			112			1171			683		
Approach Delay, s/veh	49.3			59.3			19.1			14.1		
Approach LOS	D			E			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.4	77.4	9.2	21.0	8.3	81.6	17.5	12.7				
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	12.5	44.5	15.5	25.5	9.5	47.5	15.5	25.5				
Max Q Clear Time (g_c+I1), s	6.6	20.8	4.6	10.3	2.6	46.0	11.9	7.0				
Green Ext Time (p_c), s	0.2	7.3	0.0	0.4	0.0	1.2	0.1	0.2				
Intersection Summary												
HCM 6th Ctrl Delay	23.4											
HCM 6th LOS	C											
Notes												

Intersection

Int Delay, s/veh 5.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	7	10	244	260	7
Future Vol, veh/h	12	7	10	244	260	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	Yield
Storage Length	0	-	-	210	25	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	14	8	12	284	302	8

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	12	0	0 48 12
Stage 1	-	-	- 12 -
Stage 2	-	-	- 36 -
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	1607	-	- 962 1069
Stage 1	-	-	- 1011 -
Stage 2	-	-	- 986 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1607	-	- 953 1069
Mov Cap-2 Maneuver	-	-	- 953 -
Stage 1	-	-	- 1002 -
Stage 2	-	-	- 986 -

Approach	EB	WB	SB
HCM Control Delay, s	4.6	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1607	-	-	-	953	1069
HCM Lane V/C Ratio	0.009	-	-	-	0.317	0.008
HCM Control Delay (s)	7.3	-	-	-	10.5	8.4
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	1.4	0

Intersection						
Int Delay, s/veh	4.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	193	106	88	173	113	83
Future Vol, veh/h	193	106	88	173	113	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	225	75	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	212	116	97	190	124	91
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	328	0	596	212
Stage 1	-	-	-	-	212	-
Stage 2	-	-	-	-	384	-
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	-	-	1232	-	466	828
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	688	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1232	-	429	828
Mov Cap-2 Maneuver	-	-	-	-	429	-
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	634	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.8		13.9	
HCM LOS	B					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	429	828	-	-	1232	-
HCM Lane V/C Ratio	0.289	0.11	-	-	0.078	-
HCM Control Delay (s)	16.8	9.9	-	-	8.2	-
HCM Lane LOS	C	A	-	-	A	-
HCM 95th %tile O(veh)	1.2	0.4	-	-	0.3	-

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	291	19	9	411	74	27	0	22	33	0	10
Future Vol, veh/h	13	291	19	9	411	74	27	0	22	33	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	235	-	177	215	-	175	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	6	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	14	313	20	10	442	80	29	0	24	35	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	522	0	0	333	0	0	849	883	313	825	823	442
Stage 1	-	-	-	-	-	-	341	341	-	462	462	-
Stage 2	-	-	-	-	-	-	508	542	-	363	361	-
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	1044	-	-	1226	-	-	281	285	727	292	309	615
Stage 1	-	-	-	-	-	-	674	639	-	580	565	-
Stage 2	-	-	-	-	-	-	547	520	-	656	626	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1044	-	-	1226	-	-	271	279	727	278	303	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	271	279	-	278	303	-
Stage 1	-	-	-	-	-	-	665	631	-	572	560	-
Stage 2	-	-	-	-	-	-	533	516	-	626	618	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.1			16.1			18.2		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	377	1044	-	-	1226	-	-	319
HCM Lane V/C Ratio	0.14	0.013	-	-	0.008	-	-	0.145
HCM Control Delay (s)	16.1	8.5	-	-	8	-	-	18.2
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.5

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	305	410	59	17	3
Future Vol, veh/h	8	305	410	59	17	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	175	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	9	332	446	64	18	3
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	510	0	-	0	796	446
Stage 1	-	-	-	-	446	-
Stage 2	-	-	-	-	350	-
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	1055	-	-	-	356	612
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1055	-	-	-	353	612
Mov Cap-2 Maneuver	-	-	-	-	353	-
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	713	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		15.1		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1055	-	-	-	377	
HCM Lane V/C Ratio	0.008	-	-	-	0.058	
HCM Control Delay (s)	8.4	-	-	-	15.1	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile O(veh)	0	-	-	-	0.2	

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	33	266	244	168	47	16
Future Vol, veh/h	33	266	244	168	47	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	36	289	265	183	51	17

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	448	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1112	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1112	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1112	-	-	-	488
HCM Lane V/C Ratio	0.032	-	-	-	0.14
HCM Control Delay (s)	8.3	-	-	-	13.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	254	248	41	46	6
Future Vol, veh/h	13	254	248	41	46	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	235	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	14	276	270	45	50	7
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	315	0	-	0	574	270
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	304	-
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	1245	-	-	-	480	769
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1245	-	-	-	475	769
Mov Cap-2 Maneuver	-	-	-	-	475	-
Stage 1	-	-	-	-	766	-
Stage 2	-	-	-	-	748	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.4	0		13.2		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1245	-	-	-	497	
HCM Lane V/C Ratio	0.011	-	-	-	0.114	
HCM Control Delay (s)	7.9	-	-	-	13.2	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile O(veh)	0	-	-	-	0.4	

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	21	213	10	19	268
Future Vol, veh/h	5	21	213	10	19	268
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	-	-	-	25	-
Veh in Median Storage, #	1	-	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	5	23	232	11	21	291
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	571	238	0	0	243	0
Stage 1	238	-	-	-	-	-
Stage 2	333	-	-	-	-	-
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	482	801	-	-	1323	-
Stage 1	802	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	474	801	-	-	1323	-
Mov Cap-2 Maneuver	559	-	-	-	-	-
Stage 1	802	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	10.1	0		0.5		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-		739	1323	-
HCM Lane V/C Ratio	-	-		0.038	0.016	-
HCM Control Delay (s)	-	-		10.1	7.8	-
HCM Lane LOS	-	-		B	A	-
HCM 95th %tile Q(veh)	-	-		0.1	0	-

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	5	10	205	262	12
Future Vol, veh/h	18	5	10	205	262	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	5	11	223	285	13
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	537	292	298	0	-	0
Stage 1	292	-	-	-	-	-
Stage 2	245	-	-	-	-	-
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	747	1263	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	500	747	1263	-	-	-
Mov Cap-2 Maneuver	580	-	-	-	-	-
Stage 1	751	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.2	0.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1263	-	610	-	-	
HCM Lane V/C Ratio	0.009	-	0.041	-	-	
HCM Control Delay (s)	7.9	-	11.2	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

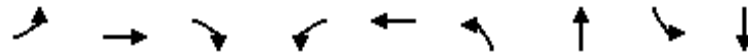
Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	7	10	9	0
Future Vol, veh/h	0	8	7	10	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	8	11	10	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	19	0	-	0	17	8
Stage 1	-	-	-	-	8	-
Stage 2	-	-	-	-	9	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1597	-	-	-	1001	1074
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1597	-	-	-	1001	1074
Mov Cap-2 Maneuver	-	-	-	-	1001	-
Stage 1	-	-	-	-	1015	-
Stage 2	-	-	-	-	1014	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.6		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1597	-	-	-	1001	
HCM Lane V/C Ratio	-	-	-	-	0.01	
HCM Control Delay (s)	0	-	-	-	8.6	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0	

Timings

3d. Build 2028 PM - System Improvements

1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔↔	↑	↗	↖	↖	↗↗	↑↑	↖	↑↑
Traffic Volume (vph)	604	209	1035	81	76	489	771	34	631
Future Volume (vph)	604	209	1035	81	76	489	771	34	631
Lane Group Flow (vph)	623	215	1067	84	101	504	833	35	921
Turn Type	Prot	NA	Free	Perm	NA	Prot	NA	Perm	NA
Protected Phases	7	4			8	1	6		2
Permitted Phases			Free	8				2	
Detector Phase	7	4		8	8	1	6	2	2
Switch Phase									
Minimum Initial (s)	5.0	6.0		6.0	6.0	5.0	15.0	15.0	15.0
Minimum Split (s)	15.0	33.5		34.5	34.5	15.0	43.5	36.5	36.5
Total Split (s)	37.0	71.0		34.0	34.0	24.0	49.0	25.0	25.0
Total Split (%)	30.8%	59.2%		28.3%	28.3%	20.0%	40.8%	20.8%	20.8%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	None		None	None	None	C-Min	C-Min	C-Min
v/c Ratio	0.82	0.31	0.67	0.62	0.47	0.74	0.46	0.20	0.96
Control Delay	55.5	24.8	4.7	69.0	49.5	72.3	14.6	43.4	63.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	24.8	4.7	69.0	49.5	72.3	14.6	43.4	63.0
Queue Length 50th (ft)	256	123	100	63	65	209	80	21	359
Queue Length 95th (ft)	312	m147	360	112	115	248	223	59	#657
Internal Link Dist (ft)		3184			834		1148		1213
Turn Bay Length (ft)	250					400		250	
Base Capacity (vph)	901	978	1583	275	424	683	1792	175	957
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.22	0.67	0.31	0.24	0.74	0.46	0.20	0.96

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 125

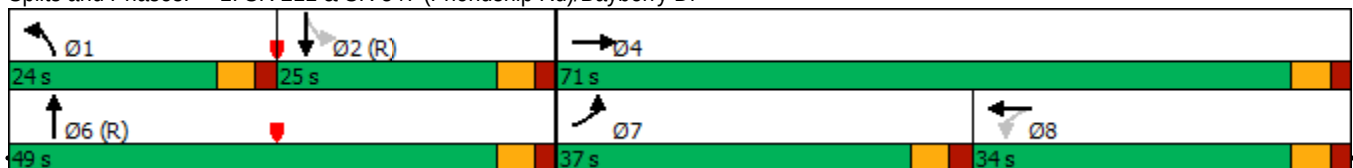
Control Type: Actuated-Coordinated

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 211 & SR 347 (Friendship Rd)/Bayberry Dr



HCM 6th Signalized Intersection Summary
1: SR 211 & SR 347 (Friendship Rd)/Bayberry Dr

3d. Build 2028 PM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	604	209	1035	81	76	22	489	771	37	34	631	262
Future Volume (veh/h)	604	209	1035	81	76	22	489	771	37	34	631	262
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	1811	1870	1870	1811	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	623	215	0	84	78	23	504	795	0	35	651	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	6	2	2	6	2	2	5	2	2	5	2
Cap, veh/h	707	623		169	126	37	533	1958		309	1264	
Arrive On Green	0.20	0.34	0.00	0.09	0.09	0.09	0.15	0.56	0.00	0.36	0.36	0.00
Sat Flow, veh/h	3456	1811	1585	1166	1344	396	3456	3561	0	683	3561	0
Grp Volume(v), veh/h	623	215	0	84	0	101	504	795	0	35	651	0
Grp Sat Flow(s),veh/h/ln	1728	1811	1585	1166	0	1740	1728	1735	0	683	1735	0
Q Serve(g_s), s	21.0	10.6	0.0	8.4	0.0	6.7	17.3	15.5	0.0	4.1	17.6	0.0
Cycle Q Clear(g_c), s	21.0	10.6	0.0	8.4	0.0	6.7	17.3	15.5	0.0	4.1	17.6	0.0
Prop In Lane	1.00		1.00	1.00		0.23	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	707	623		169	0	163	533	1958		309	1264	
V/C Ratio(X)	0.88	0.35		0.50	0.00	0.62	0.95	0.41		0.11	0.52	
Avail Cap(c_a), veh/h	907	989		337	0	413	533	1958		309	1264	
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)	0.85	0.85	0.00	1.00	0.00	1.00	0.76	0.76	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.3	29.3	0.0	53.1	0.0	52.3	50.3	14.8	0.0	25.6	29.8	0.0
Incr Delay (d2), s/veh	7.2	0.3	0.0	2.2	0.0	3.8	21.7	0.5	0.0	0.7	1.5	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	9.4	4.5	0.0	2.6	0.0	3.1	8.8	5.7	0.0	0.7	7.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	29.6	0.0	55.4	0.0	56.2	72.0	15.3	0.0	26.3	31.3	0.0
LnGrp LOS	D	C		E	A	E	E	B		C	C	
Approach Vol, veh/h	838			185			1299			686		
Approach Delay, s/veh	47.3			55.8			37.3			31.1		
Approach LOS	D			E			D			C		
Timer - Assigned Phs	1	2		4		6	7	8				
Phs Duration (G+Y+Rc), s	24.0	49.2		46.8		73.2	30.1	16.7				
Change Period (Y+Rc), s	5.5	5.5		5.5		5.5	5.5	5.5				
Max Green Setting (Gmax), s	18.5	19.5		65.5		43.5	31.5	28.5				
Max Q Clear Time (g_c+I1), s	19.3	19.6		12.6		17.5	23.0	10.4				
Green Ext Time (p_c), s	0.0	0.0		1.2		9.8	1.6	0.8				

Intersection Summary

HCM 6th Ctrl Delay 39.8

HCM 6th LOS D

Notes

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

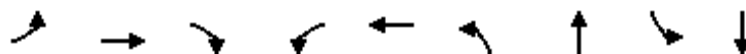
Unsignalized Delay for [NBR, EBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Timings

3d. Build 2028 PM - System Improvements

2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	89	43	596	157	48	416	1067	45	1487
Future Volume (vph)	89	43	596	157	48	416	1067	45	1487
Lane Group Flow (vph)	0	138	621	164	89	433	1324	47	1639
Turn Type	Perm	NA	pm+ov	pm+pt	NA	pm+pt	NA	Perm	NA
Protected Phases		4	1	3	8	1	6		2
Permitted Phases	4		4	8		6		2	
Detector Phase	4	4	1	3	8	1	6	2	2
Switch Phase									
Minimum Initial (s)	6.0	6.0	5.0	5.0	6.0	5.0	15.0	15.0	15.0
Minimum Split (s)	31.5	31.5	15.0	15.0	33.5	15.0	37.5	35.5	35.5
Total Split (s)	31.5	31.5	26.0	15.0	46.5	26.0	73.5	47.5	47.5
Total Split (%)	26.3%	26.3%	21.7%	12.5%	38.8%	21.7%	61.3%	39.6%	39.6%
Yellow Time (s)	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
Lost Time Adjust (s)		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
Lead/Lag	Lag	Lag	Lead	Lead		Lead		Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	C-Min
v/c Ratio		0.70	0.85	0.57	0.18	0.88	0.61	0.35	1.37
Control Delay		66.6	40.0	42.6	20.2	41.4	31.8	22.5	195.0
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		66.6	40.0	42.6	20.2	41.4	31.8	22.5	195.0
Queue Length 50th (ft)		103	383	102	31	304	497	17	~893
Queue Length 95th (ft)		163	#607	152	67	m#438	m567	m23	m#1005
Internal Link Dist (ft)		1761			625		1416		1148
Turn Bay Length (ft)			250			130		300	
Base Capacity (vph)		296	727	288	618	491	2164	135	1198
Starvation Cap Reductn		0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.47	0.85	0.57	0.14	0.88	0.61	0.35	1.37

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.

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

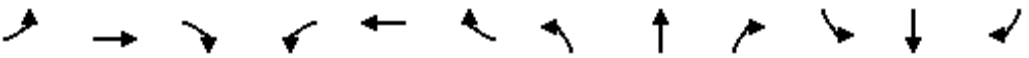
Splits and Phases: 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr



HCM 6th Signalized Intersection Summary 2: SR 211 & Thompson Mill Rd/Grand Hickory Dr

3d. Build 2028 PM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↶	↷	↶	↷		↶	↷		↶	↷	
Traffic Volume (veh/h)	89	43	596	157	48	37	416	1067	204	45	1487	86
Future Volume (veh/h)	89	43	596	157	48	37	416	1067	204	45	1487	86
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	1811	1870	1870	1870	1870	1870	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	93	45	0	164	50	39	433	1111	212	47	1549	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	6	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	161	53		373	235	184	367	1939	368	247	1561	
Arrive On Green	0.12	0.12	0.00	0.08	0.24	0.24	0.17	0.67	0.67	0.60	0.60	0.00
Sat Flow, veh/h	946	458	1585	1781	974	760	1781	2908	553	415	3561	0
Grp Volume(v), veh/h	138	0	0	164	0	89	433	661	662	47	1549	0
Grp Sat Flow(s),veh/h/ln	1404	0	1585	1781	0	1734	1781	1735	1726	415	1735	0
Q Serve(g_s), s	11.6	0.0	0.0	9.5	0.0	4.9	20.5	24.6	24.9	6.4	53.0	0.0
Cycle Q Clear(g_c), s	11.6	0.0	0.0	9.5	0.0	4.9	20.5	24.6	24.9	6.4	53.0	0.0
Prop In Lane	0.67		1.00	1.00		0.44	1.00		0.32	1.00		0.00
Lane Grp Cap(c), veh/h	214	0		373	0	419	367	1156	1151	247	1561	
V/C Ratio(X)	0.64	0.00		0.44	0.00	0.21	1.18	0.57	0.58	0.19	0.99	
Avail Cap(c_a), veh/h	354	0		373	0	592	367	1156	1151	247	1561	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.50	0.50	0.00
Uniform Delay (d), s/veh	51.9	0.0	0.0	41.0	0.0	36.4	40.5	10.8	10.8	14.5	23.9	0.0
Incr Delay (d2), s/veh	3.2	0.0	0.0	0.8	0.0	0.3	105.4	2.1	2.1	0.9	14.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	0.0	4.3	0.0	2.2	21.2	8.5	8.5	0.6	19.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.1	0.0	0.0	41.8	0.0	36.6	146.0	12.8	12.9	15.4	38.3	0.0
LnGrp LOS	E	A		D	A	D	F	B	B	B	D	
Approach Vol, veh/h		138			253			1756			1596	
Approach Delay, s/veh		55.1			40.0			45.7			37.6	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2	3	4		6		8				
Phs Duration (G+Y+Rc), s	26.0	59.5	15.0	19.5		85.5		34.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5		5.5		5.5				
Max Green Setting (Gmax), s	20.5	42.0	9.5	26.0		68.0		41.0				
Max Q Clear Time (g_c+I1), s	22.5	55.0	11.5	13.6		26.9		6.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.5		22.2		0.5				

Intersection Summary

HCM 6th Ctrl Delay 42.2

HCM 6th LOS D

Notes

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

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

Timings

3: SR 211 & Golf Club Dr/Liberty Church Rd

3d. Build 2028 PM - System Improvements

02/20/2024



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	14	303	358	11	420	51	1196	349	1801	25
Future Volume (vph)	14	303	358	11	420	51	1196	349	1801	25
Lane Group Flow (vph)	32	312	188	192	433	53	1406	360	1857	26
Turn Type	NA	Perm	Split	NA	Perm	Perm	NA	pm+pt	NA	Perm
Protected Phases	4		8	8			6	5	2	
Permitted Phases		4			8	6		2		2
Detector Phase	4	4	8	8	8	6	6	5	2	2
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	15.0	15.0	5.0	15.0	15.0
Minimum Split (s)	32.5	32.5	35.5	35.5	35.5	37.5	37.5	15.0	36.5	36.5
Total Split (s)	16.0	16.0	31.0	31.0	31.0	58.0	58.0	15.0	73.0	73.0
Total Split (%)	13.3%	13.3%	25.8%	25.8%	25.8%	48.3%	48.3%	12.5%	60.8%	60.8%
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						Lag	Lag	Lead		
Lead-Lag Optimize?						Yes	Yes	Yes		
Recall Mode	None	None	None	None	None	C-Min	C-Min	None	C-Min	C-Min
v/c Ratio	0.20	1.25	0.66	0.67	0.86	0.85	0.94	1.29	0.89	0.03
Control Delay	54.3	167.9	57.3	57.8	33.8	115.1	45.6	164.5	32.4	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.3	167.9	57.3	57.8	33.8	115.1	45.6	164.5	32.4	2.4
Queue Length 50th (ft)	23	~209	143	146	118	36	533	~322	641	0
Queue Length 95th (ft)	56	#393	217	222	244	#122	#696	m#309	m502	m0
Internal Link Dist (ft)	238			965			1320		1505	
Turn Bay Length (ft)			145		175	95		165		230
Base Capacity (vph)	158	250	357	359	558	62	1491	279	2082	987
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	0.20	1.25	0.53	0.53	0.78	0.85	0.94	1.29	0.89	0.03

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: 145

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.

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

Splits and Phases: 3: SR 211 & Golf Club Dr/Liberty Church Rd



HCM 6th Signalized Intersection Summary

3: SR 211 & Golf Club Dr/Liberty Church Rd

3d. Build 2028 PM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	14	303	358	11	420	51	1196	168	349	1801	25
Future Volume (veh/h)	17	14	303	358	11	420	51	1196	168	349	1801	25
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	1826	1870	1870	1826	1870
Adj Flow Rate, veh/h	18	14	0	377	0	0	53	1233	0	360	1857	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	5	2	2	5	2
Cap, veh/h	34	26		456	0		149	2000		356	2434	
Arrive On Green	0.03	0.03	0.00	0.13	0.00	0.00	0.58	0.58	0.00	0.08	0.70	0.00
Sat Flow, veh/h	1023	796	1585	3563	0	1585	248	3561	0	1781	3469	1585
Grp Volume(v), veh/h	32	0	0	377	0	0	53	1233	0	360	1857	0
Grp Sat Flow(s),veh/h/ln	1819	0	1585	1781	0	1585	248	1735	0	1781	1735	1585
Q Serve(g_s), s	2.1	0.0	0.0	12.4	0.0	0.0	21.0	28.0	0.0	9.5	41.2	0.0
Cycle Q Clear(g_c), s	2.1	0.0	0.0	12.4	0.0	0.0	47.2	28.0	0.0	9.5	41.2	0.0
Prop In Lane	0.56		1.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	60	0		456	0		149	2000		356	2434	
V/C Ratio(X)	0.54	0.00		0.83	0.00		0.36	0.62		1.01	0.76	
Avail Cap(c_a), veh/h	159	0		757	0		149	2000		356	2434	
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.1	0.0	0.0	51.0	0.0	0.0	31.5	16.7	0.0	21.0	11.5	0.0
Incr Delay (d2), s/veh	7.3	0.0	0.0	3.9	0.0	0.0	6.6	1.4	0.0	50.5	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	5.6	0.0	0.0	1.4	10.1	0.0	10.7	12.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.4	0.0	0.0	54.9	0.0	0.0	38.0	18.1	0.0	71.5	13.8	0.0
LnGrp LOS	E	A		D	A		D	B		F	B	
Approach Vol, veh/h		32			377			1286			2217	
Approach Delay, s/veh		64.4			54.9			18.9			23.2	
Approach LOS		E			D			B			C	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		89.7		9.4	15.0	74.7		20.9				
Change Period (Y+Rc), s		5.5		5.5	5.5	5.5		5.5				
Max Green Setting (Gmax), s		67.5		10.5	9.5	52.5		25.5				
Max Q Clear Time (g_c+I1), s		43.2		4.1	11.5	49.2		14.4				
Green Ext Time (p_c), s		20.9		0.0	0.0	2.8		1.0				
Intersection Summary												
HCM 6th Ctrl Delay			25.2									
HCM 6th LOS			C									
Notes												
User approved pedestrian interval to be less than phase max green.												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.												

Intersection						
Intersection Delay, s/veh14.3						
Intersection LOS B						
Approach	EB	WB	NB	SB		
Entry Lanes	0	4	2	2		
Conflicting Circle Lanes	2	2	2	2		
Adj Approach Flow, veh/h	0	0	1793	2061		
Demand Flow Rate, veh/h	0	0	1883	2164		
Vehicles Circulating, veh/h	1526	1883	0	591		
Vehicles Exiting, veh/h	418	0	1526	1757		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	0.0	0.0	11.7	16.4		
Approach LOS	-	-	B	C		
Lane	Left		Right		Left RightBypass	
Designated Moves	LT		TR		LT TR R	
Assumed Moves	LT		TR		LT TR R	
RT Channelized					Free	
Lane Util	0.470	0.530	0.470	0.530		
Follow-Up Headway, s	2.667	2.535	2.667	2.535		
Critical Headway, s	4.645	4.328	4.645	4.328	811	
Entry Flow, veh/h	885	998	636	717	1995	
Cap Entry Lane, veh/h	1350	1420	784	859	0.952	
Entry HV Adj Factor	0.952	0.952	0.952	0.953	772	
Flow Entry, veh/h	843	950	606	683	1900	
Cap Entry, veh/h	1286	1352	746	818	0.406	
V/C Ratio	0.656	0.703	0.811	0.834	0.0	
Control Delay, s/veh	11.2	12.2	26.1	26.5	A	
LOS	B		B		D D	2
95th %tile Queue, veh	5	6	9	10		

Timings 5: SR 211 & I-85 NB Ramps

3d. Build 2028 PM - System Improvements

02/20/2024



Lane Group	EBL	EBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	679	702	1059	245	375	1066
Future Volume (vph)	679	702	1059	245	375	1066
Lane Group Flow (vph)	700	724	1092	253	387	1099
Turn Type	Prot	Perm	NA	Perm	pm+pt	NA
Protected Phases	3		6		5	2
Permitted Phases		8		6	2	
Detector Phase	3	8	6	6	5	2
Switch Phase						
Minimum Initial (s)	5.0	5.0	15.0	15.0	5.0	15.0
Minimum Split (s)	34.5	34.5	28.5	28.5	15.0	28.5
Total Split (s)	53.0	53.0	43.0	43.0	24.0	67.0
Total Split (%)	44.2%	44.2%	35.8%	35.8%	20.0%	55.8%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag			Lag	Lag	Lead	
Lead-Lag Optimize?			Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
v/c Ratio	0.53	1.11	0.91	0.40	0.76	0.62
Control Delay	29.5	101.2	50.3	15.4	34.9	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.5	101.2	50.3	15.4	34.9	22.9
Queue Length 50th (ft)	210	~606	422	60	99	310
Queue Length 95th (ft)	269	#844	#605	140	151	381
Internal Link Dist (ft)			1253			1370
Turn Bay Length (ft)		480		160	135	
Base Capacity (vph)	1320	652	1196	627	620	1761
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	1.11	0.91	0.40	0.62	0.62

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 100

Control Type: Actuated-Coordinated

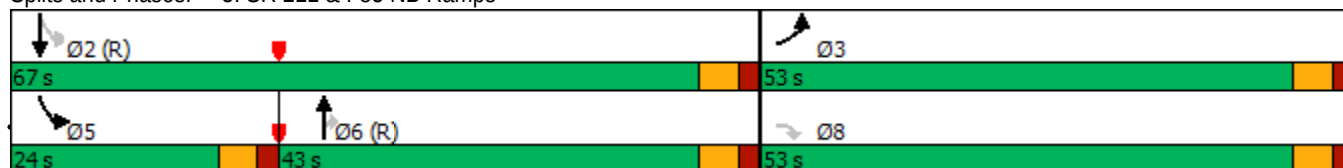
~ Volume exceeds capacity, queue is theoretically infinite.

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: 5: SR 211 & I-85 NB Ramps



HCM 6th Signalized Intersection Summary 5: SR 211 & I-85 NB Ramps

3d. Build 2028 PM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	679	0	702	0	0	0	0	1059	245	375	1066	0
Future Volume (veh/h)	679	0	702	0	0	0	0	1059	245	375	1066	0
Initial Q (Qb), veh	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
Parking Bus, Adj	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		
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1826	1826	1826	1826	0
Adj Flow Rate, veh/h	700	0	0				0	1092	0	387	1099	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	5	0	5				0	5	5	5	5	0
Cap, veh/h	801	0					0	1920		702	2328	0
Arrive On Green	0.24	0.00	0.00				0.00	0.55	0.00	0.07	0.67	0.00
Sat Flow, veh/h	3374	0	1547				0	3561	1547	3374	3561	0
Grp Volume(v), veh/h	700	0	0				0	1092	0	387	1099	0
Grp Sat Flow(s),veh/h/ln	1687	0	1547				0	1735	1547	1687	1735	0
Q Serve(g_s), s	24.0	0.0	0.0				0.0	24.6	0.0	5.6	18.3	0.0
Cycle Q Clear(g_c), s	24.0	0.0	0.0				0.0	24.6	0.0	5.6	18.3	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	801	0					0	1920		702	2328	0
V/C Ratio(X)	0.87	0.00					0.00	0.57		0.55	0.47	0.00
Avail Cap(c_a), veh/h	1335	0					0	1920		981	2328	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.0	0.0	0.0				0.0	17.5	0.0	13.6	9.5	0.0
Incr Delay (d2), s/veh	3.7	0.0	0.0				0.0	1.2	0.0	0.7	0.7	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
%ile BackOfQ(50%),veh/ln	10.1	0.0	0.0				0.0	9.3	0.0	1.9	6.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.8	0.0	0.0				0.0	18.7	0.0	14.3	10.2	0.0
LnGrp LOS	D	A					A	B		B	B	A
Approach Vol, veh/h	700						1092			1486		
Approach Delay, s/veh	47.8						18.7			11.3		
Approach LOS	D						B			B		
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	86.0			14.1			71.9			34.0		
Change Period (Y+Rc), s	5.5			5.5			5.5			5.5		
Max Green Setting (Gmax), s	61.5			18.5			37.5			47.5		
Max Q Clear Time (g_c+I1), s	20.3			7.6			26.6			26.0		
Green Ext Time (p_c), s	18.3			1.0			7.6			2.5		
Intersection Summary												
HCM 6th Ctrl Delay	21.5											
HCM 6th LOS	C											

Notes

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

Timings
6: SR 211 & SR 53

3d. Build 2028 PM - System Improvements

02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘↘	↘
Traffic Volume (vph)	1057	556	161	552	504	189
Future Volume (vph)	1057	556	161	552	504	189
Lane Group Flow (vph)	1113	585	169	581	531	199
Turn Type	NA	Perm	Perm	NA	Prot	Perm
Protected Phases	6			2	7	
Permitted Phases		6	2			7
Detector Phase	6	6	2	2	7	7
Switch Phase						
Minimum Initial (s)	15.0	15.0	15.0	15.0	5.0	5.0
Minimum Split (s)	42.5	42.5	28.5	28.5	40.5	40.5
Total Split (s)	79.0	79.0	79.0	79.0	41.0	41.0
Total Split (%)	65.8%	65.8%	65.8%	65.8%	34.2%	34.2%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None
v/c Ratio	0.47	0.45	0.58	0.25	0.77	0.50
Control Delay	9.0	1.8	20.2	7.1	52.8	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.0	1.8	20.2	7.1	52.8	24.8
Queue Length 50th (ft)	176	0	58	74	202	68
Queue Length 95th (ft)	264	37	167	118	247	134
Internal Link Dist (ft)	1195			1463	749	
Turn Bay Length (ft)		180	190		260	
Base Capacity (vph)	2362	1290	291	2298	1015	537
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.45	0.58	0.25	0.52	0.37

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 95

Control Type: Actuated-Coordinated

Splits and Phases: 6: SR 211 & SR 53



HCM 6th Signalized Intersection Summary 6: SR 211 & SR 53

3d. Build 2028 PM - System Improvements

02/20/2024

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑	↓	↑
Traffic Volume (veh/h)	1057	556	161	552	504	189
Future Volume (veh/h)	1057	556	161	552	504	189
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1781	1870	1870	1737	1870	1870
Adj Flow Rate, veh/h	1113	585	169	581	531	199
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	8	2	2	11	2	2
Cap, veh/h	2451	1148	230	2390	637	292
Arrive On Green	0.72	0.72	0.72	0.72	0.18	0.18
Sat Flow, veh/h	3474	1585	289	3387	3456	1585
Grp Volume(v), veh/h	1113	585	169	581	531	199
Grp Sat Flow(s),veh/h/ln	1692	1585	289	1650	1728	1585
Q Serve(g_s), s	16.2	19.4	69.5	7.1	17.8	14.1
Cycle Q Clear(g_c), s	16.2	19.4	85.7	7.1	17.8	14.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2451	1148	230	2390	637	292
V/C Ratio(X)	0.45	0.51	0.73	0.24	0.83	0.68
Avail Cap(c_a), veh/h	2451	1148	230	2390	1022	469
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.8	7.2	24.4	5.5	47.2	45.7
Incr Delay (d2), s/veh	0.6	1.6	18.7	0.2	3.3	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	25.4	5.3	2.1	7.7	5.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.4	8.9	43.1	5.8	50.5	48.4
LnGrp LOS	A	A	D	A	D	D
Approach Vol, veh/h	1698			750	730	
Approach Delay, s/veh	7.9			14.2	50.0	
Approach LOS	A			B	D	
Timer - Assigned Phs	2		4		6	
Phs Duration (G+Y+Rc), s	92.4		27.6		92.4	
Change Period (Y+Rc), s	5.5		5.5		5.5	
Max Green Setting (Gmax), s	73.5		35.5		73.5	
Max Q Clear Time (g_c+I1), s	87.7		19.8		21.4	
Green Ext Time (p_c), s	0.0		2.3		31.0	
Intersection Summary						
HCM 6th Ctrl Delay			19.1			
HCM 6th LOS			B			

Timings

3d. Build 2028 PM - System Improvements

7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)

02/20/2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	26	1169	143	218	849	39	200	12	168	8	132
Future Volume (vph)	26	1169	143	218	849	39	200	12	168	8	132
Lane Group Flow (vph)	28	1271	155	237	923	42	217	350	183	9	143
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases	1	6			2			8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	2	2	2	8	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	15.0	15.0	15.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	46.5	46.5	46.5	54.5	54.5	56.5	56.5	56.5
Total Split (s)	15.0	63.0	63.0	48.0	48.0	48.0	57.0	57.0	57.0	57.0	57.0
Total Split (%)	12.5%	52.5%	52.5%	40.0%	40.0%	40.0%	47.5%	47.5%	47.5%	47.5%	47.5%
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	Lag					
Lead-Lag Optimize?	Yes			Yes	Yes	Yes					
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.08	0.41	0.15	1.10	0.33	0.05	0.55	0.74	1.16	0.02	0.26
Control Delay	4.0	3.5	0.3	113.3	10.0	1.1	40.3	44.4	158.7	25.1	5.2
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	4.0	3.5	0.3	113.3	10.0	1.1	40.3	44.4	158.7	25.1	5.2
Queue Length 50th (ft)	2	41	0	~204	180	2	143	227	~168	5	0
Queue Length 95th (ft)	m7	63	0	m#366	m223	m5	187	283	#263	15	40
Internal Link Dist (ft)		1298			3184			467		266	
Turn Bay Length (ft)	1000		630	550		515	200		90		
Base Capacity (vph)	389	3067	1050	215	2765	926	601	701	241	799	761
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	0.07	0.41	0.15	1.10	0.33	0.05	0.36	0.50	0.76	0.01	0.19

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 37 (31%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

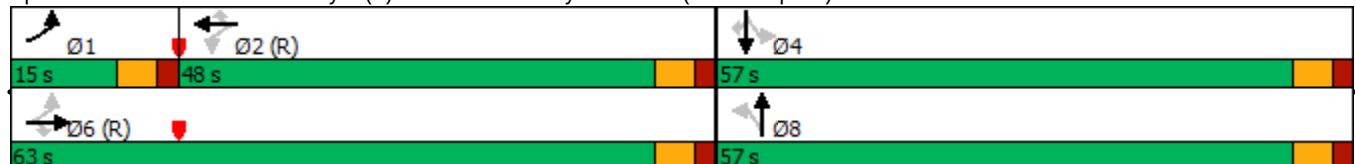
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

3d. Build 2028 PM - System Improvements

7: Site Drwy 2 (E)/NGMC Main Drwy & SR 347 (Friendship Rd)

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 			 	
Traffic Volume (veh/h)	26	1169	143	218	849	39	200	12	310	168	8	132
Future Volume (veh/h)	26	1169	143	218	849	39	200	12	310	168	8	132
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	28	1271	155	237	923	42	217	13	337	183	9	143
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	304	2646	848	234	2294	735	517	22	573	263	698	592
Arrive On Green	0.05	1.00	1.00	0.46	0.46	0.46	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1781	4944	1585	376	4944	1585	1235	59	1535	1031	1870	1585
Grp Volume(v), veh/h	28	1271	155	237	923	42	217	0	350	183	9	143
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	376	1648	1585	1235	0	1594	1031	1870	1585
Q Serve(g_s), s	0.9	0.0	0.0	55.7	14.8	1.8	16.1	0.0	21.2	20.8	0.4	7.5
Cycle Q Clear(g_c), s	0.9	0.0	0.0	55.7	14.8	1.8	16.5	0.0	21.2	42.0	0.4	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.96	1.00		1.00
Lane Grp Cap(c), veh/h	304	2646	848	234	2294	735	517	0	595	263	698	592
V/C Ratio(X)	0.09	0.48	0.18	1.01	0.40	0.06	0.42	0.00	0.59	0.70	0.01	0.24
Avail Cap(c_a), veh/h	400	2646	848	234	2294	735	586	0	684	321	803	680
HCM Platoon Ratio	2.00	2.00	2.00	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	0.66	0.66	0.66	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	0.0	39.3	21.2	17.7	28.9	0.0	30.2	47.0	23.7	25.9
Incr Delay (d2), s/veh	0.1	0.6	0.5	50.7	0.3	0.1	0.5	0.0	1.0	4.9	0.0	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	0.4	0.2	0.1	10.3	5.5	0.6	4.9	0.0	8.3	5.7	0.2	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.8	0.6	0.5	90.0	21.5	17.8	29.4	0.0	31.2	52.0	23.7	26.1
LnGrp LOS	B	A	A	F	C	B	C	A	C	D	C	C
Approach Vol, veh/h	1454		1202			567			335			
Approach Delay, s/veh	0.9		34.9			30.5			40.2			
Approach LOS	A		C			C			D			
Timer - Assigned Phs	1	2	4		6		8					
Phs Duration (G+Y+Rc), s	8.5	61.2	50.3		69.7		50.3					
Change Period (Y+Rc), s	5.5	5.5	5.5		5.5		5.5					
Max Green Setting (Gmax), s	9.5	42.5	51.5		57.5		51.5					
Max Q Clear Time (g_c+I1), s	2.9	57.7	44.0		2.0		23.2					
Green Ext Time (p_c), s	0.0	0.0	0.8		26.8		3.5					
Intersection Summary												
HCM 6th Ctrl Delay			20.8									
HCM 6th LOS			C									

Intersection												
Int Delay, s/veh	41.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑↑	↱	↰	↑↑↑	↱		↰	↱		↰	↱
Traffic Vol, veh/h	25	1158	91	76	1096	14	79	0	112	61	0	86
Future Vol, veh/h	25	1158	91	76	1096	14	79	0	112	61	0	86
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	None
Storage Length	575	-	640	720	-	720	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	6	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	27	1259	99	83	1191	15	86	0	122	66	0	93
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1206	0	0	1358	0	0	1955	2685	630	1915	2769	596
Stage 1	-	-	-	-	-	-	1313	1313	-	1357	1357	-
Stage 2	-	-	-	-	-	-	642	1372	-	558	1412	-
Critical Hdwy	5.34	-	-	5.34	-	-	6.44	6.54	7.14	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	7.34	5.54	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.54	-	6.74	5.54	-
Follow-up Hdwy	3.12	-	-	3.12	-	-	3.82	4.02	3.92	3.82	4.02	3.92
Pot Cap-1 Maneuver	311	-	-	262	-	-	~ 68	22	364	72	19	383
Stage 1	-	-	-	-	-	-	120	226	-	112	215	-
Stage 2	-	-	-	-	-	-	391	212	-	439	203	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	311	-	-	262	-	-	~ 36	14	364	~ 34	12	383
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 36	14	-	~ 34	12	-
Stage 1	-	-	-	-	-	-	110	206	-	102	147	-
Stage 2	-	-	-	-	-	-	202	145	-	267	185	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			1.6			\$ 371			299.4		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	36	364	311	-	-	262	-	-	34	383		
HCM Lane V/C Ratio	2.385	0.334	0.087	-	-	0.315	-	-	1.95	0.244		
HCM Control Delay (s)	\$ 868.9	19.8	17.7	-	-	24.9	-	-	\$ 697	17.4		
HCM Lane LOS	F	C	C	-	-	C	-	-	F	C		
HCM 95th %tile Q(veh)	9.6	1.4	0.3	-	-	1.3	-	-	7.4	0.9		
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Timings

3d. Build 2028 PM - System Improvements

9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations		  			  			 		 	
Traffic Volume (vph)	78	1167	180	22	1174	20	286	14	44	13	57
Future Volume (vph)	78	1167	180	22	1174	20	286	14	44	13	57
Lane Group Flow (vph)	84	1255	194	24	1262	22	308	134	47	14	61
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	NA	Perm
Protected Phases	1	6		5	2		3	8		4	
Permitted Phases	6		6	2		2	8		4		4
Detector Phase	1	6	6	5	2	2	3	8	4	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	6.0	6.0
Minimum Split (s)	15.0	31.5	31.5	15.0	43.5	43.5	15.0	47.5	50.5	50.5	50.5
Total Split (s)	15.0	48.0	48.0	15.0	48.0	48.0	27.0	57.0	30.0	30.0	30.0
Total Split (%)	12.5%	40.0%	40.0%	12.5%	40.0%	40.0%	22.5%	47.5%	25.0%	25.0%	25.0%
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	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.31	0.45	0.20	0.09	0.48	0.02	0.77	0.25	0.45	0.09	0.25
Control Delay	20.4	23.6	9.3	14.7	27.8	0.9	50.0	7.7	65.0	50.0	2.4
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	20.4	23.6	9.3	14.7	27.8	0.9	50.0	7.7	65.0	50.0	2.4
Queue Length 50th (ft)	37	223	25	11	304	0	200	8	35	10	0
Queue Length 95th (ft)	m37	m210	m22	30	388	5	277	51	74	30	0
Internal Link Dist (ft)		1122			884			178		385	
Turn Bay Length (ft)	405		300	575		550	100		95		100
Base Capacity (vph)	294	2767	979	307	2603	900	410	761	255	380	421
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	0.29	0.45	0.20	0.08	0.48	0.02	0.75	0.18	0.18	0.04	0.14

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

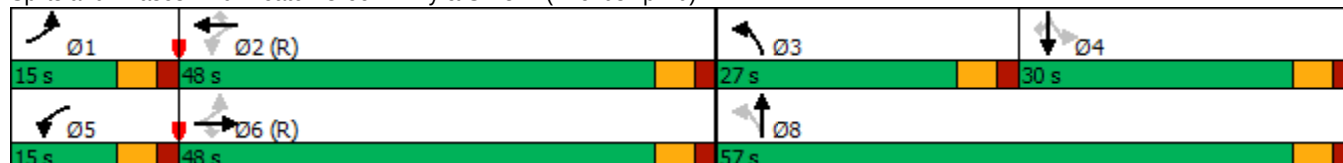
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green

Natural Cycle: 125

Control Type: Actuated-Coordinated

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

Splits and Phases: 9: Deaton Creek Pkwy & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary
9: Deaton Creek Pkwy & SR 347 (Friendship Rd)

3d. Build 2028 PM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  							
Traffic Volume (veh/h)	78	1167	180	22	1174	20	286	14	111	44	13	57
Future Volume (veh/h)	78	1167	180	22	1174	20	286	14	111	44	13	57
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	84	1255	194	24	1262	22	308	15	119	47	14	61
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	298	2779	891	253	2699	865	437	50	397	132	107	91
Arrive On Green	0.04	0.56	0.56	0.02	0.55	0.55	0.17	0.28	0.28	0.06	0.06	0.06
Sat Flow, veh/h	1781	4944	1585	1781	4944	1585	1781	181	1432	1256	1870	1585
Grp Volume(v), veh/h	84	1255	194	24	1262	22	308	0	134	47	14	61
Grp Sat Flow(s),veh/h/ln	1781	1648	1585	1781	1648	1585	1781	0	1613	1256	1870	1585
Q Serve(g_s), s	2.5	17.9	7.3	0.7	18.7	0.8	18.9	0.0	7.9	4.4	0.9	4.5
Cycle Q Clear(g_c), s	2.5	17.9	7.3	0.7	18.7	0.8	18.9	0.0	7.9	4.4	0.9	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.89	1.00		1.00
Lane Grp Cap(c), veh/h	298	2779	891	253	2699	865	437	0	447	132	107	91
V/C Ratio(X)	0.28	0.45	0.22	0.09	0.47	0.03	0.70	0.00	0.30	0.36	0.13	0.67
Avail Cap(c_a), veh/h	369	2779	891	353	2699	865	445	0	692	316	382	324
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.6	15.4	13.1	12.4	16.6	12.5	41.0	0.0	34.2	55.4	53.7	55.5
Incr Delay (d2), s/veh	0.5	0.5	0.6	0.2	0.6	0.1	4.9	0.0	0.4	1.6	0.5	8.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	6.3	2.6	0.3	6.7	0.3	8.9	0.0	3.2	1.5	0.4	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	15.9	13.7	12.6	17.2	12.6	45.9	0.0	34.5	57.0	54.3	63.8
LnGrp LOS	B	B	B	B	B	B	D	A	C	E	D	E
Approach Vol, veh/h	1533			1308			442			122		
Approach Delay, s/veh	15.5			17.0			42.5			60.1		
Approach LOS	B			B			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s	10.2	71.0	26.4	12.4	8.3	73.0	38.8					
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5					
Max Green Setting (Gmax), s	9.5	42.5	21.5	24.5	9.5	42.5	51.5					
Max Q Clear Time (g_c+I1), s	4.5	20.7	20.9	6.5	2.7	19.9	9.9					
Green Ext Time (p_c), s	0.1	14.3	0.1	0.3	0.0	15.6	0.9					

Intersection Summary

HCM 6th Ctrl Delay	21.2
HCM 6th LOS	C

Notes

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

Timings

3d. Build 2028 PM - System Improvements

10: Spout Springs Rd & SR 347 (Friendship Rd)

02/20/2024

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	372	1117	336	454	977	246	229	428	205	260	439
Future Volume (vph)	372	1117	336	454	977	246	229	428	205	260	439
Lane Group Flow (vph)	384	1152	346	468	1007	254	236	441	211	268	520
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA
Protected Phases	1	6		5	2		3	8		7	4
Permitted Phases			6			2	8		8	4	
Detector Phase	1	6	6	5	2	2	3	8	8	7	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	6.0	6.0	5.0	6.0
Minimum Split (s)	15.0	35.5	35.5	15.0	33.5	33.5	15.0	42.5	42.5	15.0	40.5
Total Split (s)	25.0	39.5	39.5	23.0	37.5	37.5	15.0	42.5	42.5	15.0	42.5
Total Split (%)	20.8%	32.9%	32.9%	19.2%	31.3%	31.3%	12.5%	35.4%	35.4%	12.5%	35.4%
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
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	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None
v/c Ratio	0.76	1.10	0.55	0.87	0.93	0.40	0.78	0.87	0.39	1.22	0.54
Control Delay	49.9	88.5	15.9	71.4	51.2	14.1	46.7	61.6	21.8	162.5	37.9
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	49.9	88.5	15.9	71.4	51.2	14.1	46.7	61.6	21.8	162.5	37.9
Queue Length 50th (ft)	128	~574	162	197	~199	18	145	364	68	~182	172
Queue Length 95th (ft)	m165	#717	m228	#295	#581	m103	#222	469	m136	#348	221
Internal Link Dist (ft)		4090			4090			920			702
Turn Bay Length (ft)	575		190	260		210	140		150	125	
Base Capacity (vph)	557	1044	628	541	1081	628	301	574	588	219	1080
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	0.69	1.10	0.55	0.87	0.93	0.40	0.78	0.77	0.36	1.22	0.48

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

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

Natural Cycle: 140

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

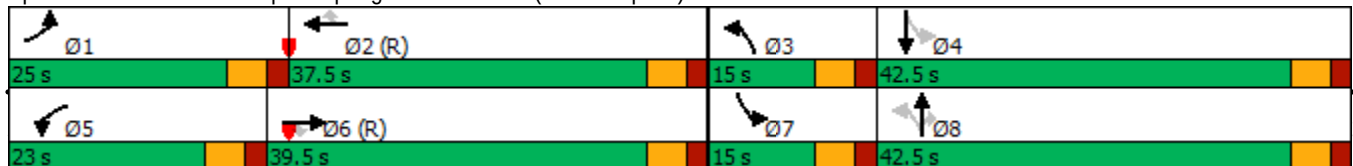
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 10: Spout Springs Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary

10: Spout Springs Rd & SR 347 (Friendship Rd)

3d. Build 2028 PM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	372	1117	336	454	977	246	229	428	205	260	439	65
Future Volume (veh/h)	372	1117	336	454	977	246	229	428	205	260	439	65
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	384	1152	346	468	1007	0	236	441	0	268	453	67
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	450	1148	529	504	1202		316	483		229	802	118
Arrive On Green	0.13	0.33	0.33	0.15	0.35	0.00	0.08	0.26	0.00	0.08	0.26	0.26
Sat Flow, veh/h	3456	3441	1585	3456	3441	1585	1781	1870	1585	1781	3108	457
Grp Volume(v), veh/h	384	1152	346	468	1007	0	236	441	0	268	258	262
Grp Sat Flow(s),veh/h/ln	1728	1721	1585	1728	1721	1585	1781	1870	1585	1781	1777	1788
Q Serve(g_s), s	13.0	40.0	22.3	16.1	32.3	0.0	9.5	27.5	0.0	9.5	15.1	15.3
Cycle Q Clear(g_c), s	13.0	40.0	22.3	16.1	32.3	0.0	9.5	27.5	0.0	9.5	15.1	15.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.26
Lane Grp Cap(c), veh/h	450	1148	529	504	1202		316	483		229	459	461
V/C Ratio(X)	0.85	1.00	0.65	0.93	0.84		0.75	0.91		1.17	0.56	0.57
Avail Cap(c_a), veh/h	562	1148	529	504	1202		316	577		229	548	551
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)	0.50	0.50	0.50	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.1	40.0	34.1	50.6	35.9	0.0	35.0	43.2	0.0	37.8	38.6	38.7
Incr Delay (d2), s/veh	5.4	19.7	3.2	23.7	7.1	0.0	9.3	17.2	0.0	113.8	1.1	1.1
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	5.8	19.2	8.8	8.4	14.1	0.0	2.7	14.6	0.0	9.4	6.6	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.5	59.6	37.2	74.4	43.0	0.0	44.3	60.4	0.0	151.5	39.7	39.8
LnGrp LOS	E	F	D	E	D		D	E		F	D	D
Approach Vol, veh/h	1882			1475			677			788		
Approach Delay, s/veh	54.9			52.9			54.8			77.8		
Approach LOS	D			D			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.1	47.4	15.0	36.5	23.0	45.5	15.0	36.5				
Change Period (Y+Rc), s	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5				
Max Green Setting (Gmax), s	19.5	32.0	9.5	37.0	17.5	34.0	9.5	37.0				
Max Q Clear Time (g_c+I1), s	15.0	34.3	11.5	17.3	18.1	42.0	11.5	29.5				
Green Ext Time (p_c), s	0.6	0.0	0.0	2.8	0.0	0.0	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay 58.0

HCM 6th LOS E

Notes

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

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

Timings
11: Sardis Church Rd & SR 347 (Friendship Rd)

3d. Build 2028 PM - System Improvements

02/20/2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↘	↑↑	↘	↑
Traffic Volume (vph)	1450	236	309	964	94	281
Future Volume (vph)	1450	236	309	964	94	281
Lane Group Flow (vph)	1576	257	336	1048	102	305
Turn Type	NA	Perm	pm+pt	NA	Prot	Perm
Protected Phases	6		5	2	8	
Permitted Phases		6	2			8
Detector Phase	6	6	5	2	8	8
Switch Phase						
Minimum Initial (s)	15.0	15.0	5.0	15.0	6.0	6.0
Minimum Split (s)	23.5	23.5	15.0	23.5	23.5	23.5
Total Split (s)	59.0	59.0	28.0	87.0	33.0	33.0
Total Split (%)	49.2%	49.2%	23.3%	72.5%	27.5%	27.5%
Yellow Time (s)	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
Lost Time Adjust (s)	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
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Min	C-Min	None	C-Min	None	None
v/c Ratio	0.82	0.26	0.81	0.38	0.57	0.70
Control Delay	27.3	5.8	33.8	9.5	49.5	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.3	5.8	33.8	9.5	49.5	12.8
Queue Length 50th (ft)	498	24	225	230	77	73
Queue Length 95th (ft)	#810	83	m257	m272	m104	m78
Internal Link Dist (ft)	1687			4090	2052	
Turn Bay Length (ft)			385			80
Base Capacity (vph)	1930	977	444	2745	405	597
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.26	0.76	0.38	0.25	0.51

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 23 (19%), Referenced to phase 2:WBTL and 6:EBT, Start of Green

Natural Cycle: 90

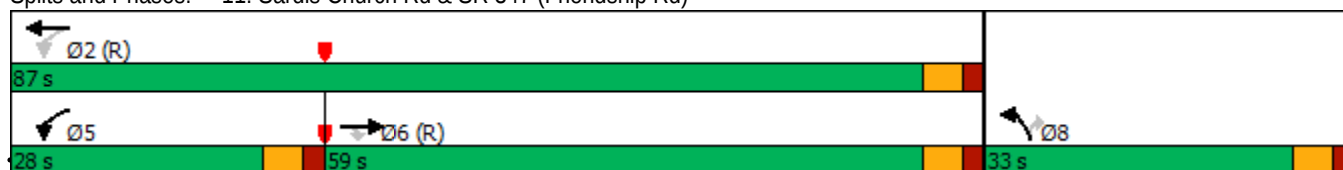
Control Type: Actuated-Coordinated

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: 11: Sardis Church Rd & SR 347 (Friendship Rd)



HCM 6th Signalized Intersection Summary
11: Sardis Church Rd & SR 347 (Friendship Rd)

3d. Build 2028 PM - System Improvements

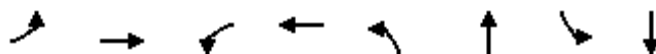
02/20/2024

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑	↑↑	↑	↑
Traffic Volume (veh/h)	1450	236	309	964	94	281
Future Volume (veh/h)	1450	236	309	964	94	281
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1870	1870	1811	1870	1870
Adj Flow Rate, veh/h	1576	257	336	1048	102	305
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	2	2	6	2	2
Cap, veh/h	1692	780	364	2407	372	331
Arrive On Green	0.49	0.49	0.16	0.70	0.21	0.21
Sat Flow, veh/h	3532	1585	1781	3532	1781	1585
Grp Volume(v), veh/h	1576	257	336	1048	102	305
Grp Sat Flow(s),veh/h/ln	1721	1585	1781	1721	1781	1585
Q Serve(g_s), s	51.5	11.8	17.1	15.8	5.8	22.6
Cycle Q Clear(g_c), s	51.5	11.8	17.1	15.8	5.8	22.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1692	780	364	2407	372	331
V/C Ratio(X)	0.93	0.33	0.92	0.44	0.27	0.92
Avail Cap(c_a), veh/h	1692	780	410	2407	408	363
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.31	0.31	1.00	1.00
Uniform Delay (d), s/veh	28.6	18.5	38.3	7.8	39.8	46.5
Incr Delay (d2), s/veh	10.7	1.1	10.1	0.2	0.4	27.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.0	4.3	10.5	4.9	2.6	11.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.3	19.6	48.4	8.0	40.2	73.6
LnGrp LOS	D	B	D	A	D	E
Approach Vol, veh/h	1833			1384	407	
Approach Delay, s/veh	36.5			17.8	65.3	
Approach LOS	D			B	E	
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	89.5		24.9		64.5	30.5
Change Period (Y+Rc), s	5.5		5.5		5.5	5.5
Max Green Setting (Gmax), s	81.5		22.5		53.5	27.5
Max Q Clear Time (g_c+I1), s	17.8		19.1		53.5	24.6
Green Ext Time (p_c), s	19.8		0.3		0.0	0.4
Intersection Summary						
HCM 6th Ctrl Delay			32.6			
HCM 6th LOS			C			

Timings
12: Sardis Church Rd & Thompson Mill Rd

3d. Build 2028 PM - System Improvements

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕		↕
Traffic Volume (vph)	48	138	258	143	67	255	6	420
Future Volume (vph)	48	138	258	143	67	255	6	420
Lane Group Flow (vph)	0	345	0	431	0	516	0	463
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		6		2
Permitted Phases	4		8		6		2	
Detector Phase	4	4	8	8	6	6	2	2
Switch Phase								
Minimum Initial (s)	6.0	6.0	6.0	6.0	15.0	15.0	15.0	15.0
Minimum Split (s)	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.5
Total Split (s)	63.0	63.0	63.0	63.0	57.0	57.0	57.0	57.0
Total Split (%)	52.5%	52.5%	52.5%	52.5%	47.5%	47.5%	47.5%	47.5%
Yellow Time (s)	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
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		5.5		5.5		5.5		5.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
v/c Ratio		0.49		0.95		0.69		0.53
Control Delay		22.2		57.5		30.7		21.8
Queue Delay		0.0		0.0		0.0		0.0
Total Delay		22.2		57.5		30.7		21.8
Queue Length 50th (ft)		151		286		304		327
Queue Length 95th (ft)		226		#474		461		400
Internal Link Dist (ft)		730		2583		494		2249
Turn Bay Length (ft)								
Base Capacity (vph)		777		501		745		870
Starvation Cap Reductn		0		0		0		0
Spillback Cap Reductn		0		0		0		0
Storage Cap Reductn		0		0		0		0
Reduced v/c Ratio		0.44		0.86		0.69		0.53

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 87 (73%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

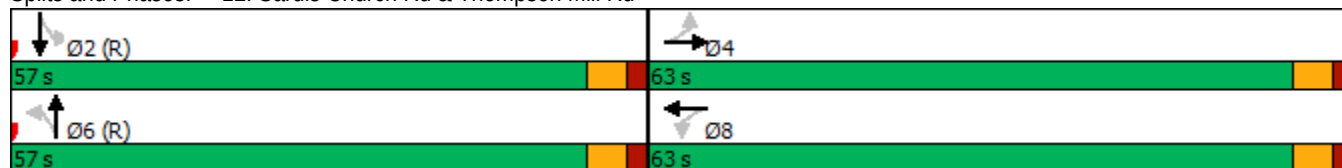
Natural Cycle: 55

Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

Splits and Phases: 12: Sardis Church Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary
12: Sardis Church Rd & Thompson Mill Rd

3d. Build 2028 PM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	138	156	258	143	26	67	255	188	6	420	33
Future Volume (veh/h)	48	138	156	258	143	26	67	255	188	6	420	33
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	48	139	0	261	144	26	68	258	190	6	424	33
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	160	444		332	156	28	129	481	335	34	960	74
Arrive On Green	0.34	0.34	0.00	0.34	0.34	0.34	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	355	1289	0	823	454	82	168	852	595	7	1702	131
Grp Volume(v), veh/h	187	0	0	431	0	0	516	0	0	463	0	0
Grp Sat Flow(s),veh/h/ln	1644	0	0	1359	0	0	1615	0	0	1840	0	0
Q Serve(g_s), s	0.0	0.0	0.0	27.6	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.3	0.0	0.0	36.9	0.0	0.0	22.3	0.0	0.0	17.5	0.0	0.0
Prop In Lane	0.26		0.00	0.61		0.06	0.13		0.37	0.01		0.07
Lane Grp Cap(c), veh/h	604	0		516	0	0	945	0	0	1068	0	0
V/C Ratio(X)	0.31	0.00		0.84	0.00	0.00	0.55	0.00	0.00	0.43	0.00	0.00
Avail Cap(c_a), veh/h	825	0		708	0	0	945	0	0	1068	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.7	0.0	0.0	38.6	0.0	0.0	16.2	0.0	0.0	15.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	6.3	0.0	0.0	2.3	0.0	0.0	1.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.0	0.0	12.5	0.0	0.0	8.9	0.0	0.0	7.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.0	0.0	0.0	44.9	0.0	0.0	18.4	0.0	0.0	16.5	0.0	0.0
LnGrp LOS	C	A		D	A	A	B	A	A	B	A	A
Approach Vol, veh/h		187			431			516			463	
Approach Delay, s/veh		29.0			44.9			18.4			16.5	
Approach LOS		C			D			B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		73.2		46.8		73.2		46.8				
Change Period (Y+Rc), s		5.5		5.5		5.5		5.5				
Max Green Setting (Gmax), s		51.5		57.5		51.5		57.5				
Max Q Clear Time (g_c+I1), s		19.5		11.3		24.3		38.9				
Green Ext Time (p_c), s		6.2		1.0		7.2		2.4				

Intersection Summary

HCM 6th Ctrl Delay	26.3
HCM 6th LOS	C

Notes

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

Timings 13: Spout Springs Rd & Thompson Mill Rd

3d. Build 2028 PM - System Improvements

02/20/2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	192	98	94	86	165	698	73	66	719	165
Future Volume (vph)	192	98	94	86	165	698	73	66	719	165
Lane Group Flow (vph)	194	179	95	156	167	705	74	67	726	167
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	31.5	15.0	30.5	15.0	35.5	35.5	15.0	34.5	34.5
Total Split (s)	18.0	32.0	18.0	32.0	15.0	55.0	55.0	15.0	55.0	55.0
Total Split (%)	15.0%	26.7%	15.0%	26.7%	12.5%	45.8%	45.8%	12.5%	45.8%	45.8%
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	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	0.68	0.67	0.37	0.66	0.53	0.69	0.08	0.21	0.80	0.20
Control Delay	50.9	56.3	36.2	51.9	16.8	26.9	0.7	9.0	23.7	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	50.9	56.3	36.2	51.9	16.8	26.9	0.7	9.0	23.7	2.8
Queue Length 50th (ft)	144	119	57	94	48	394	0	12	330	7
Queue Length 95th (ft)	m208	m188	93	155	99	#699	6	m21	m#762	m17
Internal Link Dist (ft)		1809		565		751			337	
Turn Bay Length (ft)	155		223		228		112	100		110
Base Capacity (vph)	291	399	295	400	318	1020	922	352	905	832
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	0.67	0.45	0.32	0.39	0.53	0.69	0.08	0.19	0.80	0.20

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 89 (74%), Referenced to phase 2:SBTL and 6:NBTL, Start of Green

Natural Cycle: 110

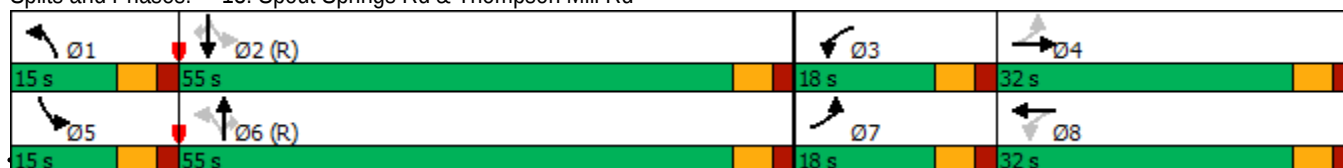
Control Type: Actuated-Coordinated

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: 13: Spout Springs Rd & Thompson Mill Rd



HCM 6th Signalized Intersection Summary 13: Spout Springs Rd & Thompson Mill Rd

3d. Build 2028 PM - System Improvements

02/20/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	98	79	94	86	68	165	698	73	66	719	165
Future Volume (veh/h)	192	98	79	94	86	68	165	698	73	66	719	165
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	1811	1870	1870	1811	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	194	99	80	95	87	69	167	705	74	67	726	167
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	6	2	2	6	2	2	2	2	2	2	2
Cap, veh/h	272	144	116	235	105	83	320	1053	892	333	1013	858
Arrive On Green	0.10	0.16	0.16	0.06	0.11	0.11	0.06	0.56	0.56	0.04	0.54	0.54
Sat Flow, veh/h	1781	927	749	1781	936	742	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	194	0	179	95	0	156	167	705	74	67	726	167
Grp Sat Flow(s),veh/h/ln	1781	0	1676	1781	0	1678	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	11.3	0.0	12.1	5.6	0.0	10.9	5.0	31.7	2.6	2.0	34.9	6.5
Cycle Q Clear(g_c), s	11.3	0.0	12.1	5.6	0.0	10.9	5.0	31.7	2.6	2.0	34.9	6.5
Prop In Lane	1.00		0.45	1.00		0.44	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	0	261	235	0	189	320	1053	892	333	1013	858
V/C Ratio(X)	0.71	0.00	0.69	0.40	0.00	0.83	0.52	0.67	0.08	0.20	0.72	0.19
Avail Cap(c_a), veh/h	272	0	370	311	0	370	357	1053	892	408	1013	858
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	0.0	47.9	43.5	0.0	52.1	17.5	18.4	12.0	15.0	20.6	14.1
Incr Delay (d2), s/veh	8.5	0.0	3.2	1.1	0.0	8.8	1.3	3.4	0.2	0.3	4.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	5.2	2.5	0.0	4.9	2.0	13.7	0.9	0.8	15.4	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	0.0	51.1	44.6	0.0	60.9	18.8	21.8	12.2	15.3	25.0	14.6
LnGrp LOS	D	A	D	D	A	E	B	C	B	B	C	B
Approach Vol, veh/h		373			251			946			960	
Approach Delay, s/veh		50.1			54.8			20.5			22.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.5	70.5	12.8	24.2	10.0	73.0	18.0	19.0				
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	49.5	12.5	26.5	9.5	49.5	12.5	26.5				
Max Q Clear Time (g_c+I1), s	7.0	36.9	7.6	14.1	4.0	33.7	13.3	12.9				
Green Ext Time (p_c), s	0.1	7.2	0.1	0.7	0.0	7.6	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			29.0									
HCM 6th LOS			C									

Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	8	9	299	193	10
Future Vol, veh/h	22	8	9	299	193	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	0	-	-	210	25	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	25	9	10	340	219	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	10	0	-	0	69	10
Stage 1	-	-	-	-	10	-
Stage 2	-	-	-	-	59	-
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	1610	-	-	-	936	1071
Stage 1	-	-	-	-	1013	-
Stage 2	-	-	-	-	964	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1610	-	-	-	921	1071
Mov Cap-2 Maneuver	-	-	-	-	921	-
Stage 1	-	-	-	-	997	-
Stage 2	-	-	-	-	964	-
Approach	EB	WB		SB		
HCM Control Delay, s	5.3	0		10		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1610	-	-	-	921	1071
HCM Lane V/C Ratio	0.016	-	-	-	0.238	0.011
HCM Control Delay (s)	7.3	-	-	-	10.1	8.4
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.9	0

Intersection						
Int Delay, s/veh	4.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	217	89	78	213	109	79
Future Vol, veh/h	217	89	78	213	109	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Yield
Storage Length	-	225	75	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	6	2	2	6	2	2
Mvmt Flow	265	109	95	260	133	96
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	374	0	715	265
Stage 1	-	-	-	-	265	-
Stage 2	-	-	-	-	450	-
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	-	-	1184	-	397	774
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	642	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1184	-	365	774
Mov Cap-2 Maneuver	-	-	-	-	365	-
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	591	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.2		16.2	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	365	774	-	-	1184	-
HCM Lane V/C Ratio	0.364	0.124	-	-	0.08	-
HCM Control Delay (s)	20.4	10.3	-	-	8.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile O(veh)	1.6	0.4	-	-	0.3	-

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	423	22	26	400	61	14	0	11	81	0	25
Future Vol, veh/h	11	423	22	26	400	61	14	0	11	81	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	235	-	177	215	-	175	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	6	2	2	6	2	2	2	2	2	2	2
Mvmt Flow	13	486	25	30	460	70	16	0	13	93	0	29
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	530	0	0	511	0	0	1082	1102	486	1051	1057	460
Stage 1	-	-	-	-	-	-	512	512	-	520	520	-
Stage 2	-	-	-	-	-	-	570	590	-	531	537	-
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	1037	-	-	1054	-	-	195	212	581	205	225	601
Stage 1	-	-	-	-	-	-	545	536	-	539	532	-
Stage 2	-	-	-	-	-	-	506	495	-	532	523	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1037	-	-	1054	-	-	180	203	581	194	216	601
Mov Cap-2 Maneuver	-	-	-	-	-	-	180	203	-	194	216	-
Stage 1	-	-	-	-	-	-	538	529	-	532	517	-
Stage 2	-	-	-	-	-	-	468	481	-	514	516	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.2			0.5			20.6			36.8		
HCM LOS							C			E		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	259	1037	-	-	1054	-	-	231				
HCM Lane V/C Ratio	0.111	0.012	-	-	0.028	-	-	0.527				
HCM Control Delay (s)	20.6	8.5	-	-	8.5	-	-	36.8				
HCM Lane LOS	C	A	-	-	A	-	-	E				
HCM 95th %tile O(veh)	0.4	0	-	-	0.1	-	-	2.8				

Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	415	384	48	40	6
Future Vol, veh/h	6	415	384	48	40	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	175	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	7	451	417	52	43	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	469	0	0 882 417
Stage 1	-	-	- 417 -
Stage 2	-	-	- 465 -
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	1093	-	- 317 636
Stage 1	-	-	- 665 -
Stage 2	-	-	- 632 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1093	-	- 315 636
Mov Cap-2 Maneuver	-	-	- 315 -
Stage 1	-	-	- 661 -
Stage 2	-	-	- 632 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1093	-	-	-	337
HCM Lane V/C Ratio	0.006	-	-	-	0.148
HCM Control Delay (s)	8.3	-	-	-	17.5
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.5

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	306	252	138	115	40
Future Vol, veh/h	27	306	252	138	115	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	75	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	29	333	274	150	125	43
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	424	0	-	0	665	274
Stage 1	-	-	-	-	274	-
Stage 2	-	-	-	-	391	-
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	1135	-	-	-	425	765
Stage 1	-	-	-	-	772	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1135	-	-	-	414	765
Mov Cap-2 Maneuver	-	-	-	-	414	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	683	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.7	0		16.9		
HCM LOS	C					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1135	-	-	-	-	470
HCM Lane V/C Ratio	0.026	-	-	-	-	0.358
HCM Control Delay (s)	8.3	-	-	-	-	16.9
HCM Lane LOS	A	-	-	-	-	C
HCM 95th %tile O(veh)	0.1	-	-	-	-	1.6

Intersection

Int Delay, s/veh 3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	194	292	33	112	16
Future Vol, veh/h	11	194	292	33	112	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	235	-	-	175	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	6	6	2	2	2
Mvmt Flow	12	211	317	36	122	17

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	353	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1206	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1206	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	14.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1206	-	-	-	511
HCM Lane V/C Ratio	0.01	-	-	-	0.272
HCM Control Delay (s)	8	-	-	-	14.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	1.1

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	56	354	8	22	194
Future Vol, veh/h	13	56	354	8	22	194
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	-	-	-	25	-
Veh in Median Storage, #	1	-	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	14	61	385	9	24	211
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	649	390	0	0	394	0
Stage 1	390	-	-	-	-	-
Stage 2	259	-	-	-	-	-
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	434	658	-	-	1165	-
Stage 1	684	-	-	-	-	-
Stage 2	784	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	425	658	-	-	1165	-
Mov Cap-2 Maneuver	523	-	-	-	-	-
Stage 1	684	-	-	-	-	-
Stage 2	768	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11.5	0		0.8		
HCM LOS	B					
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)		-	-	627	1165	-
HCM Lane V/C Ratio		-	-	0.12	0.021	-
HCM Control Delay (s)		-	-	11.5	8.2	-
HCM Lane LOS		-	-	B	A	-
HCM 95th %tile O(veh)		-	-	0.4	0.1	-

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	13	8	312	191	16
Future Vol, veh/h	50	13	8	312	191	16
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	-	25	-	-	-
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	54	14	9	339	208	17
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	574	217	225	0	-	0
Stage 1	217	-	-	-	-	-
Stage 2	357	-	-	-	-	-
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	480	823	1344	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	477	823	1344	-	-	-
Mov Cap-2 Maneuver	560	-	-	-	-	-
Stage 1	813	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.8	0.2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1344	-	600	-	-	
HCM Lane V/C Ratio	0.006	-	0.114	-	-	
HCM Control Delay (s)	7.7	-	11.8	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0	-	0.4	-	-	

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	11	8	22	0
Future Vol, veh/h	0	8	11	8	22	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	35	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	12	9	24	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	21	0	-	0	21	12
Stage 1	-	-	-	-	12	-
Stage 2	-	-	-	-	9	-
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	1595	-	-	-	996	1069
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1595	-	-	-	996	1069
Mov Cap-2 Maneuver	-	-	-	-	996	-
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	1014	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.7		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1595	-	-	-	996	
HCM Lane V/C Ratio	-	-	-	-	0.024	
HCM Control Delay (s)	0	-	-	-	8.7	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile O(veh)	0	-	-	-	0.1	

Intersection: 15: Autumn Maple Dr & Thompson Mill Rd

Movement	WB	NB
Directions Served	L	L
Maximum Queue (ft)	27	53
Average Queue (ft)	11	31
95th Queue (ft)	32	54
Link Distance (ft)		177
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	75	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Retreat Point Pkwy/Site Drwy 3 (E) & Thompson Mill Rd

Movement	EB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	26	42	27
Average Queue (ft)	5	25	11
95th Queue (ft)	23	39	32
Link Distance (ft)		629	508
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	235		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Thompson Mill Rd & Site Drwy 4

Movement	SB
Directions Served	LR
Maximum Queue (ft)	22
Average Queue (ft)	13
95th Queue (ft)	30
Link Distance (ft)	163
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 18: Thompson Mill Rd & Site Drwy 5

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	27	21
Average Queue (ft)	5	20
95th Queue (ft)	23	22
Link Distance (ft)		360
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	75	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: Thompson Mill Rd & Site Drwy 6 (W)

Movement	SB
Directions Served	LR
Maximum Queue (ft)	42
Average Queue (ft)	27
95th Queue (ft)	39
Link Distance (ft)	326
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 20: Deaton Creek Pkwy & Site Drwy 7 (N)

Movement	WB
Directions Served	LR
Maximum Queue (ft)	30
Average Queue (ft)	30
95th Queue (ft)	30
Link Distance (ft)	417
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Autumn Maple Dr & Thompson Mill Rd

Movement	WB	NB
Directions Served	L	L
Maximum Queue (ft)	31	63
Average Queue (ft)	12	41
95th Queue (ft)	35	70
Link Distance (ft)		177
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	75	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Retreat Point Pkwy/Site Drwy 3 (E) & Thompson Mill Rd

Movement	EB	NB	SB
Directions Served	L	LTR	LTR
Maximum Queue (ft)	26	18	67
Average Queue (ft)	10	4	45
95th Queue (ft)	31	15	72
Link Distance (ft)		629	508
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	235		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 17: Thompson Mill Rd & Site Drwy 4

Movement	SB
Directions Served	LR
Maximum Queue (ft)	49
Average Queue (ft)	27
95th Queue (ft)	65
Link Distance (ft)	163
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 18: Thompson Mill Rd & Site Drwy 5

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	26	88
Average Queue (ft)	5	47
95th Queue (ft)	23	84
Link Distance (ft)		360
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	75	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: Thompson Mill Rd & Site Drwy 6 (W)

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	28	49
Average Queue (ft)	6	38
95th Queue (ft)	24	58
Link Distance (ft)		326
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	235	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: Deaton Creek Pkwy & Site Drwy 7 (N)

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	54	30	31
Average Queue (ft)	40	17	6
95th Queue (ft)	59	41	27
Link Distance (ft)	417	18	
Upstream Blk Time (%)		6	
Queuing Penalty (veh)		23	
Storage Bay Dist (ft)			25
Storage Blk Time (%)			1
Queuing Penalty (veh)			1

Traffic Volume Worksheets

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

1. SR 211 @ Friendship

A.M. Peak Hour

Condition	SR 211				SR 211				SR 347 (Friendship Road)				Bayberry Drive			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	534	405	13	952	30	400	346	776	160	47	317	524	36	58	45	139
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	630	478	15	1123	35	472	408	915	189	55	374	618	42	68	53	163
Total New Trips:	232	22	0	254	0	74	74	148	52	5	129	186	0	10	0	10
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	862	500	15	1377	35	546	482	1063	241	60	503	804	42	78	53	173

P.M. Peak Hour

Condition	SR 211				SR 211				SR 347 (Friendship Road)				Bayberry Drive			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	253	608	31	892	29	483	170	682	404	167	612	1183	69	58	19	146
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	299	717	37	1053	34	570	201	805	477	197	722	1396	81	68	22	171
Total New Trips:	190	54	0	244	0	61	61	122	127	12	313	452	0	8	0	8
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	489	771	37	1297	34	631	262	927	604	209	1035	1848	81	76	22	179

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

2. SR 211 @ Thompson Mill

A.M. Peak Hour

Condition	SR 211			SR 211			Thompson Mill Road			Grand Hickory Drive		
	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	128	899	60	1087	12	741	33	786	54	12	150	216
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	151	1061	71	1283	14	874	39	927	64	14	177	255
Total New Trips:	283	232	0	515	0	129	74	203	22	5	129	156
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	434	1293	71	1798	14	1003	113	1130	86	19	306	411

P.M. Peak Hour

Condition	SR 211			SR 211			Thompson Mill Road			Grand Hickory Drive		
	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	155	743	173	1071	38	995	21	1054	30	26	240	296
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	183	877	204	1264	45	1174	25	1244	35	31	283	349
Total New Trips:	233	190	0	423	0	313	61	374	54	12	313	379
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	416	1067	204	1687	45	1487	86	1618	89	43	596	728

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

3. SR 211 @ Liberty Church

A.M. Peak Hour

Condition	SR 211				SR 211				Golf Club Drive				Liberty Church Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	22	727	80	829	234	732	15	981	7	12	134	153	221	6	342	569
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	26	858	94	978	276	864	18	1158	8	14	158	180	261	7	404	672
Total New Trips:	0	486	0	486	10	243	0	253	0	0	0	0	0	0	20	20
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	26	1344	94	1464	286	1107	18	1411	8	14	158	180	261	7	424	692

P.M. Peak Hour

Condition	SR 211				SR 211				Golf Club Drive				Liberty Church Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	43	676	142	861	275	1026	21	1322	14	12	257	283	303	9	342	654
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	51	798	168	1017	325	1211	25	1561	17	14	303	334	358	11	404	773
Total New Trips:	0	398	0	398	24	590	0	614	0	0	0	0	0	0	16	16
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	51	1196	168	1415	349	1801	25	2175	17	14	303	334	358	11	420	789

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

4. SR 211 @ I-85 SB Ramps

A.M. Peak Hour

Condition	SR 211				SR 211				I-85 Southbound On-Ramp				I-85 Southbound Off-Ramp			
	Northbound				Southbound				Eastbound				Westbound			
Existing Traffic Counts:	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
	750	796	0	1546	0	499	517	1016	0	0	0	0	134	0	137	271
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	885	939	0	1824	0	589	610	1199	0	0	0	0	158	0	162	320
Total New Trips:	0	337	0	337	0	104	139	243	0	0	0	0	0	0	149	149
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	885	1276	0	2161	0	693	749	1442	0	0	0	0	158	0	311	469

P.M. Peak Hour

Condition	SR 211				SR 211				I-85 Southbound On-Ramp				I-85 Southbound Off-Ramp			
	Northbound				Southbound				Eastbound				Westbound			
Existing Traffic Counts:	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
	327	913	0	1240	0	845	349	1194	0	0	0	0	136	0	125	261
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	386	1077	0	1463	0	997	412	1409	0	0	0	0	160	0	148	308
Total New Trips:	0	276	0	276	0	253	337	590	0	0	0	0	0	0	122	122
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	386	1353	0	1739	0	1250	749	1999	0	0	0	0	160	0	270	430

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

5. SR 211 @ I-85 NB Ramps

A.M. Peak Hour

Condition	SR 211 Northbound				SR 211 Southbound				I-85 Northbound Off-Ramp				I-85 Northbound On-Ramp			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	1340	229	1569	124	509	0	633	206	0	300	506	0	0	0	0
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	1581	270	1851	146	601	0	747	243	0	354	597	0	0	0	0
Total New Trips:	0	59	0	59	74	30	0	104	277	0	0	277	0	0	0	0
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	1640	270	1910	220	631	0	851	520	0	354	874	0	0	0	0

P.M. Peak Hour

Condition	SR 211 Northbound				SR 211 Southbound				I-85 Northbound Off-Ramp				I-85 Northbound On-Ramp			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	856	208	1064	164	842	0	1006	382	0	595	977	0	0	0	0
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	1010	245	1255	194	994	0	1188	451	0	702	1153	0	0	0	0
Total New Trips:	0	49	0	49	181	72	0	253	228	0	0	228	0	0	0	0
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	1059	245	1304	375	1066	0	1441	679	0	702	1381	0	0	0	0

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

6. SR 211 @ SR 53

A.M. Peak Hour

Condition	SR 211				-				SR 53				SR 53			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	467	0	38	505	0	0	0	0	0	415	452	867	153	804	0	957
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	551	0	45	596	0	0	0	0	0	490	533	1023	181	949	0	1130
Total New Trips:	40	0	15	55	0	0	0	0	0	0	79	79	30	0	0	30
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	591	0	60	651	0	0	0	0	0	490	612	1102	211	949	0	1160

P.M. Peak Hour

Condition	SR 211				-				SR 53				SR 53			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	346	0	130	476	0	0	0	0	0	896	416	1312	116	468	0	584
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	408	0	153	561	0	0	0	0	0	1057	491	1548	137	552	0	689
Total New Trips:	96	0	36	132	0	0	0	0	0	0	65	65	24	0	0	24
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	504	0	189	693	0	0	0	0	0	1057	556	1613	161	552	0	713

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

7. Friendship @ Medical Ctr-Drw2

A.M. Peak Hour

Condition	Site Driveway 2 (Middle)				Northeast Georgia Medical Center Main Driveway				SR 347 (Friendship Road)				SR 347 (Friendship Road)			
	Northbound				Southbound				Eastbound				Westbound			
Existing Traffic Counts:	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Growth Factor (%):	0	0	2	2	3.6	3.6	3.6	73	139	613	0	752	1	709	135	845
No-Build 2028 Volumes:	0	0	2	2	0	0	42	86	3.6	3.6	3.6		3.6	3.6	3.6	
Total New Trips:	74	5	116	195	44	0	10	10	164	723	0	887	1	837	159	997
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	235	81	0	316
Future 2028 Traffic Volumes:	74	5	118	197	44	10	42	96	164	793	131	1088	236	918	159	1313

P.M. Peak Hour

Condition	Site Driveway 2 (Middle)				Northeast Georgia Medical Center Main Driveway				SR 347 (Friendship Road)				SR 347 (Friendship Road)			
	Northbound				Southbound				Eastbound				Westbound			
Existing Traffic Counts:	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Growth Factor (%):	0	0	1	1	142	0	112	254	22	875	1	898	1	683	33	717
No-Build 2028 Volumes:	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
Total New Trips:	0	0	1	1	168	0	132	300	26	1033	1	1060	1	806	39	846
Pass-by Trips:	181	12	281	474	0	8	0	8	0	171	107	278	193	67	0	260
Future 2028 Traffic Volumes:	19	0	28	47	0	0	0	0	0	-35	35	0	24	-24	0	0
	200	12	310	522	168	8	132	308	26	1169	143	1338	218	849	39	1106

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

8. Friendship @ River Pl-Drwy1

A.M. Peak Hour

Condition	Site Driveway 1 (Western)				River Place				SR 347 (Friendship Road)				SR 347 (Friendship Road)			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	6	0	11	17	110	746	0	856	0	651	94	745
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	0	0	0	7	0	13	20	130	880	0	1010	0	768	111	879
Total New Trips:	26	0	37	63	0	0	0	0	0	164	77	241	68	88	0	156
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	26	0	37	63	7	0	13	20	130	1044	77	1251	68	856	111	1035

P.M. Peak Hour

Condition	Site Driveway 1 (Western)				River Place				SR 347 (Friendship Road)				SR 347 (Friendship Road)			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	52	0	73	125	21	846	0	867	0	783	12	795
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	0	0	0	61	0	86	147	25	998	0	1023	0	924	14	938
Total New Trips:	63	0	90	153	0	0	0	0	0	188	63	251	56	192	0	248
Pass-by Trips:	16	0	22	38	0	0	0	0	0	-28	28	0	20	-20	0	0
Future 2028 Traffic Volumes:	79	0	112	191	61	0	86	147	25	1158	91	1274	76	1096	14	1186

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

9, Friendship @ Deaton Creek

A.M. Peak Hour

Condition	Deaton Creek Parkway				Deaton Creek Parkway				SR 347 (Friendship Road)				SR 347 (Friendship Road)			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	120	4	13	137	23	11	36	70	18	820	133	971	2	647	13	662
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	142	5	15	162	27	13	42	82	21	968	157	1146	2	763	15	780
Total New Trips:	36	2	33	71	15	5	0	20	0	193	64	257	13	93	7	113
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	178	7	48	233	42	18	42	102	21	1161	221	1403	15	856	22	893

P.M. Peak Hour

Condition	Deaton Creek Parkway				Deaton Creek Parkway				SR 347 (Friendship Road)				SR 347 (Friendship Road)			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	164	7	20	191	27	8	48	83	66	860	102	1028	5	808	2	815
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	194	8	24	226	32	9	57	98	78	1015	120	1213	6	953	2	961
Total New Trips:	88	6	81	175	12	4	0	16	0	159	53	212	11	226	18	255
Pass-by Trips:	4	0	6	10	0	0	0	0	0	-7	7	0	5	-5	0	0
Future 2028 Traffic Volumes:	286	14	111	411	44	13	57	114	78	1167	180	1425	22	1174	20	1216

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

10. Friendship @ Spout Springs

A.M. Peak Hour

Condition	Spout Springs Road				Spout Springs Road				SR 347 (Friendship Road)				SR 347 (Friendship Road)			
	Northbound				Southbound				Eastbound				Westbound			
Existing Traffic Counts:	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
	203	341	192	736	186	315	144	645	186	572	140	898	239	574	133	946
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	240	402	227	869	219	372	170	761	219	675	165	1059	282	677	157	1116
Total New Trips:	0	0	60	60	30	0	0	30	0	168	0	168	30	84	15	129
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	240	402	287	929	249	372	170	791	219	843	165	1227	312	761	172	1245

P.M. Peak Hour

Condition	Spout Springs Road				Spout Springs Road				SR 347 (Friendship Road)				SR 347 (Friendship Road)			
	Northbound				Southbound				Eastbound				Westbound			
Existing Traffic Counts:	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
	194	363	132	689	200	372	55	627	315	830	285	1430	324	654	178	1156
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	229	428	156	813	236	439	65	740	372	979	336	1687	382	772	210	1364
Total New Trips:	0	0	49	49	24	0	0	24	0	138	0	138	72	205	36	313
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	229	428	205	862	260	439	65	764	372	1117	336	1825	454	977	246	1677

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

11. Friendship @ Sardis Church

A.M. Peak Hour

Condition	Sardis Church Road				-				SR 347 (Friendship Road)				SR 347 (Friendship Road)			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	83	0	112	195	0	0	0	0	0	609	81	690	115	794	0	909
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	98	0	132	230	0	0	0	0	0	719	96	815	136	937	0	1073
Total New Trips:	0	0	49	49	0	0	0	0	0	119	0	119	25	59	0	84
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	98	0	181	279	0	0	0	0	0	838	96	934	161	996	0	1157

P.M. Peak Hour

Condition	Sardis Church Road				-				SR 347 (Friendship Road)				SR 347 (Friendship Road)			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	80	0	203	283	0	0	0	0	0	1146	200	1346	211	694	0	905
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	94	0	240	334	0	0	0	0	0	1352	236	1588	249	819	0	1068
Total New Trips:	0	0	41	41	0	0	0	0	0	98	0	98	60	145	0	205
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	94	0	281	375	0	0	0	0	0	1450	236	1686	309	964	0	1273

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Traffic Volumes February 2024

12. Sardis Ch. @ Thompson Mill

A.M. Peak Hour

Condition	Sardis Church Road					Sardis Church Road					Thompson Mill Road					Thompson Mill Road				
	Northbound					Southbound					Eastbound					Westbound				
	L	T	R	Tot		L	T	R	Tot		L	T	R	Tot		L	T	R	Tot	
Existing Traffic Counts:	77	117	71	265		8	213	31	252		30	100	80	210		107	145	6	258	
Growth Factor (%):	3.6	3.6	3.6			3.6	3.6	3.6			3.6	3.6	3.6			3.6	3.6	3.6		
No-Build 2028 Volumes:	91	138	84	313		9	251	37	297		35	118	94	247		126	171	7	304	
Total New Trips:	0	40	30	70		0	20	5	25		10	0	0	10		15	0	0	15	
Pass-by Trips:	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
Future 2028 Traffic Volumes:	91	178	114	383		9	271	42	322		45	118	94	257		141	171	7	319	

P.M. Peak Hour

Condition	Sardis Church Road					Sardis Church Road					Thompson Mill Road					Thompson Mill Road				
	Northbound					Southbound					Eastbound					Westbound				
	L	T	R	Tot		L	T	R	Tot		L	T	R	Tot		L	T	R	Tot	
Existing Traffic Counts:	57	189	139	385		5	315	18	338		34	117	132	283		188	121	22	331	
Growth Factor (%):	3.6	3.6	3.6			3.6	3.6	3.6			3.6	3.6	3.6			3.6	3.6	3.6		
No-Build 2028 Volumes:	67	223	164	454		6	372	21	399		40	138	156	334		222	143	26	391	
Total New Trips:	0	32	24	56		0	48	12	60		8	0	0	8		36	0	0	36	
Pass-by Trips:	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
Future 2028 Traffic Volumes:	67	255	188	510		6	420	33	459		48	138	156	342		258	143	26	427	

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13. Spout Sp. @ Thompson Mill

A.M. Peak Hour

Condition	Spout Springs Road				Spout Springs Road				Thompson Mill Road				Thompson Mill Road			
	Northbound				Southbound				Eastbound				Westbound			
Existing Traffic Counts:	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Growth Factor (%):	142	713	41	896	19	402	91	512	101	34	59	194	32	30	25	87
No-Build 2028 Volumes:	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
Total New Trips:	168	841	48	1057	22	474	107	603	119	40	70	229	38	35	30	103
Pass-by Trips:	0	20	0	20	0	10	15	25	30	0	0	30	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	168	861	48	1077	22	484	122	628	149	40	70	259	38	35	30	103

P.M. Peak Hour

Condition	Spout Springs Road				Spout Springs Road				Thompson Mill Road				Thompson Mill Road			
	Northbound				Southbound				Eastbound				Westbound			
Existing Traffic Counts:	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Growth Factor (%):	140	578	62	780	56	589	109	754	142	83	67	292	80	73	58	211
No-Build 2028 Volumes:	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
Total New Trips:	165	682	73	920	66	695	129	890	168	98	79	345	94	86	68	248
Pass-by Trips:	0	16	0	16	0	24	36	60	24	0	0	24	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	165	698	73	936	66	719	165	950	192	98	79	369	94	86	68	248

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Traffic Volumes February 2024

14. Thompson Mill @ Deaton Crk

A.M. Peak Hour

Condition	-				Deaton Creek Parkway				Thompson Mill Road				Thompson Mill Road			
	Northbound				L	T	R	Tot	Southbound				L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	0	0	0	0	172	0	2	174	4	3	0	7
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	0	0	0	203	0	2	205	0	0	0	0	5	4	0	9
Total New Trips:	0	0	0	0	57	0	5	62	0	0	0	0	7	3	0	10
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	260	0	7	267	0	0	0	0	12	7	0	19

P.M. Peak Hour

Condition	-				Deaton Creek Parkway				Thompson Mill Road				Thompson Mill Road			
	Northbound				L	T	R	Tot	Southbound				L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	110	0	5	115	3.6	3.6	3.6		5	2	0	7
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	0	0	0	130	0	6	136	0	0	0	0	6	2	0	8
Total New Trips:	0	0	0	0	63	0	4	67	0	0	0	0	16	6	0	22
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	193	0	10	203	0	0	0	0	22	8	0	30

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Traffic Volumes February 2024

15. Thompson Mill @ Autumn Mple

A.M. Peak Hour

Condition	Autumn Maple Drive			-			Thompson Mill Road			Thompson Mill Road		
	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Traffic Counts:	96	0	53	149	0	0	0	0	0	66	74	0
Growth Factor (%):	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
No-Build 2028 Volumes:	113	0	63	176	0	0	0	0	0	78	87	0
Total New Trips:	0	0	20	20	0	0	0	0	0	10	86	0
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	113	0	83	196	0	0	0	0	0	88	173	0

P.M. Peak Hour

Condition	Autumn Maple Drive			-			Thompson Mill Road			Thompson Mill Road		
	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Existing Traffic Counts:	92	0	53	145	0	0	0	0	0	46	95	0
Growth Factor (%):	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
No-Build 2028 Volumes:	109	0	63	172	0	0	0	0	0	54	112	0
Total New Trips:	0	0	16	16	0	0	0	0	0	24	101	0
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	109	0	79	188	0	0	0	0	0	78	213	0

23-016 VDC Mixed-Use Dev at Friendship Road and Thompson Mill Road, Gwinnett & Hall Counties, A&R Engineering
Traffic Volumes February 2024

16. Thompson @ Retreat Pt-Drwy3

A.M. Peak Hour

Condition	Retreat Point Parkway			Site Driveway 3			Thompson Mill Road			Thompson Mill Road		
	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	23	0	19	42	0	0	0	0	0	142	16	158
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	27	0	22	49	0	0	0	0	0	168	19	187
Total New Trips:	0	0	0	0	33	0	10	43	13	123	0	136
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	27	0	22	49	33	0	10	43	13	291	19	323

P.M. Peak Hour

Condition	Retreat Point Parkway			Site Driveway 3			Thompson Mill Road			Thompson Mill Road		
	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	12	0	9	21	0	0	0	0	0	105	19	124
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	14	0	11	25	0	0	0	0	0	124	22	146
Total New Trips:	0	0	0	0	81	0	25	106	11	299	0	310
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	14	0	11	25	81	0	25	106	11	423	22	456

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Traffic Volumes February 2024

17. Thompson Mill @ Drwy 4

A.M. Peak Hour

Condition	-				Site Driveway 4				Thompson Mill Road				Thompson Mill Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	0	0	0	0	0	158	0	158	0	140	0	140
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	0	0	0	0	0	0	0	0	186	0	186	0	165	0	165
Total New Trips:	0	0	0	0	17	0	3	20	8	119	0	127	0	245	59	304
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	17	0	3	20	8	305	0	313	0	410	59	469

P.M. Peak Hour

Condition	-				Site Driveway 4				Thompson Mill Road				Thompson Mill Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	0	0	0	0	0	124	0	124	0	141	0	141
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	0	0	0	0	0	0	0	0	146	0	146	0	166	0	166
Total New Trips:	0	0	0	0	40	0	6	46	6	269	0	275	0	218	48	266
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	40	0	6	46	6	415	0	421	0	384	48	432

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Traffic Volumes February 2024

18. Thompson Mill @ Drwy 5

A.M. Peak Hour

Condition	-				Site Driveway 5				Thompson Mill Road				Thompson Mill Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	0	0	0	0	0	158	0	158	0	140	0	140
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	0	0	0	0	0	0	0	0	186	0	186	0	165	0	165
Total New Trips:	0	0	0	0	47	0	16	63	33	80	0	113	0	79	168	247
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	47	0	16	63	33	266	0	299	0	244	168	412

P.M. Peak Hour

Condition	-				Site Driveway 5				Thompson Mill Road				Thompson Mill Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	0	0	0	0	0	124	0	124	0	141	0	141
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	0	0	0	0	0	0	0	0	146	0	146	0	166	0	166
Total New Trips:	0	0	0	0	115	0	40	155	27	160	0	187	0	86	138	224
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	115	0	40	155	27	306	0	333	0	252	138	390

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19. Thompson Mill @ Drwy 6W

A.M. Peak Hour

Condition	-				Site Driveway 6 (Western)				Thompson Mill Road				Thompson Mill Road			
	Northbound				L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	0	0	0	0	0	176	0	176	0	172	0	172
Growth Factor (%):	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
No-Build 2028 Volumes:	0	0	0	0	0	0	0	0	0	208	0	208	0	203	0	203
Total New Trips:	0	0	0	0	46	0	6	52	13	46	0	59	0	45	41	86
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	46	0	6	52	13	254	0	267	0	248	41	289

P.M. Peak Hour

Condition	-				Site Driveway 6 (Western)				Thompson Mill Road				Thompson Mill Road			
	Northbound				L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	0	0	0	0	0	114	0	114	0	190	0	190
Growth Factor (%):	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
No-Build 2028 Volumes:	0	0	0	0	0	0	0	0	0	135	0	135	0	224	0	224
Total New Trips:	0	0	0	0	112	0	16	128	11	59	0	70	0	68	33	101
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	112	0	16	128	11	194	0	205	0	292	33	325

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Traffic Volumes February 2024

20. Deaton Creek @ Drwy 7N

A.M. Peak Hour

Condition	Deaton Creek Parkway					Deaton Creek Parkway					-					Site Driveway 7 (Northern)				
	Northbound					Southbound					Eastbound					Westbound				
	L	T	R	Tot		L	T	R	Tot		L	T	R	Tot		L	T	R	Tot	
Existing Traffic Counts:	0	137	0	137		0	174	0	174		0	0	0	0		0	0	0	0	
Growth Factor (%):	3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6	
No-Build 2028 Volumes:	0	162	0	162		0	205	0	205		0	0	0	0		0	0	0	0	
Total New Trips:	0	51	10	61		19	63	0	82		0	0	0	0		5	0	21	26	
Pass-by Trips:	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
Future 2028 Traffic Volumes:	0	213	10	223		19	268	0	287		0	0	0	0		5	0	21	26	

P.M. Peak Hour

Condition	Deaton Creek Parkway					Deaton Creek Parkway					-					Site Driveway 7 (Northern)				
	Northbound					Southbound					Eastbound					Westbound				
	L	T	R	Tot		L	T	R	Tot		L	T	R	Tot		L	T	R	Tot	
Existing Traffic Counts:	0	191	0	191		0	115	0	115		0	0	0	0		0	0	0	0	
Growth Factor (%):	3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6	
No-Build 2028 Volumes:	0	225	0	225		0	136	0	136		0	0	0	0		0	0	0	0	
Total New Trips:	0	124	8	132		16	52	0	68		0	0	0	0		13	0	51	64	
Pass-by Trips:	0	5	0	5		6	6	0	12		0	0	0	0		0	0	5	5	
Future 2028 Traffic Volumes:	0	354	8	362		22	194	0	216		0	0	0	0		13	0	56	69	

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21. Deaton Creek @ Drwy 8S

A.M. Peak Hour

Condition	Deaton Creek Parkway					Deaton Creek Parkway					Site Driveway 8 (Southern)					-				
	Northbound					Southbound					Eastbound					Westbound				
	L	T	R	Tot		L	T	R	Tot		L	T	R	Tot		L	T	R	Tot	
Existing Traffic Counts:	0	137	0	137		0	174	0	174		0	0	0	0		0	0	0	0	
Growth Factor (%):	3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6	
No-Build 2028 Volumes:	0	162	0	162		0	205	0	205		0	0	0	0		0	0	0	0	
Total New Trips:	10	43	0	53		0	57	12	69		18	0	5	23		0	0	0	0	
Pass-by Trips:	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0	
Future 2028 Traffic Volumes:	10	205	0	215		0	262	12	274		18	0	5	23		0	0	0	0	

P.M. Peak Hour

Condition	Deaton Creek Parkway					Deaton Creek Parkway					Site Driveway 8 (Southern)					-				
	Northbound					Southbound					Eastbound					Westbound				
	L	T	R	Tot		L	T	R	Tot		L	T	R	Tot		L	T	R	Tot	
Existing Traffic Counts:	0	191	0	191		0	115	0	115		0	0	0	0		0	0	0	0	
Growth Factor (%):	3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6		3.6	3.6	3.6	3.6	
No-Build 2028 Volumes:	0	225	0	225		0	136	0	136		0	0	0	0		0	0	0	0	
Total New Trips:	8	87	0	95		0	55	10	65		45	0	13	58		0	0	0	0	
Pass-by Trips:	0	0	0	0		0	0	6	6		5	0	0	5		0	0	0	0	
Future 2028 Traffic Volumes:	8	312	0	320		0	191	16	207		50	0	13	63		0	0	0	0	

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Traffic Volumes February 2024

22. Thompson Mill @ Drwy 9

A.M. Peak Hour

Condition	-				Site Driveway 9				Thompson Mill Road				Thompson Mill Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	0	0	0	0	0	7	0	7	0	6	0	6
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	0	0	0	0	0	0	0	0	8	0	8	0	7	0	7
Total New Trips:	0	0	0	0	9	0	0	9	0	0	0	0	0	0	10	10
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	9	0	0	9	0	8	0	8	0	7	10	17

P.M. Peak Hour

Condition	-				Site Driveway 9				Thompson Mill Road				Thompson Mill Road			
	Northbound				Southbound				Eastbound				Westbound			
	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot	L	T	R	Tot
Existing Traffic Counts:	0	0	0	0	0	0	0	0	0	7	0	7	0	9	0	9
Growth Factor (%):	3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6		3.6	3.6	3.6	
No-Build 2028 Volumes:	0	0	0	0	0	0	0	0	0	8	0	8	0	11	0	11
Total New Trips:	0	0	0	0	22	0	0	22	0	0	0	0	0	0	8	8
Pass-by Trips:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Future 2028 Traffic Volumes:	0	0	0	0	22	0	0	22	0	8	0	8	0	11	8	19