

Open Parkways Beach Drive Traffic Study

Evaluation of Friday Closure from Knowles Avenue to Cedar Lane

April 2024

Prepared for:

Montgomery Parks



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1. Introduction

Montgomery Parks, in concurrence with Montgomery County’s Vision Zero initiative, has implemented strategies to improve public safety, including traffic calming along Parkways and enhanced trail crossings. In 2020, Montgomery Parks initiated the Open Parkways Program, which closed a 2.9 mile section of Beach Drive to vehicles from MD 185 (Connecticut Avenue) to Knowles Avenue during Saturdays and Sundays to provide additional outdoor recreational space. Montgomery Parks is proposing to revise the closure of Beach Drive to be from Cedar Lane to Knowles Avenue on Fridays, Saturdays, and Sundays, as shown in **Figure 1**. The purpose of this study is to evaluate the potential traffic impacts to neighborhood roadways of a Beach Drive closure from Cedar Lane to Knowles Avenue on Fridays. Given the modified limits of the closure, traffic conditions are anticipated to operate comparable to or better than the existing closure on Saturdays and Sundays, thus analysis for these days were not included in this study.

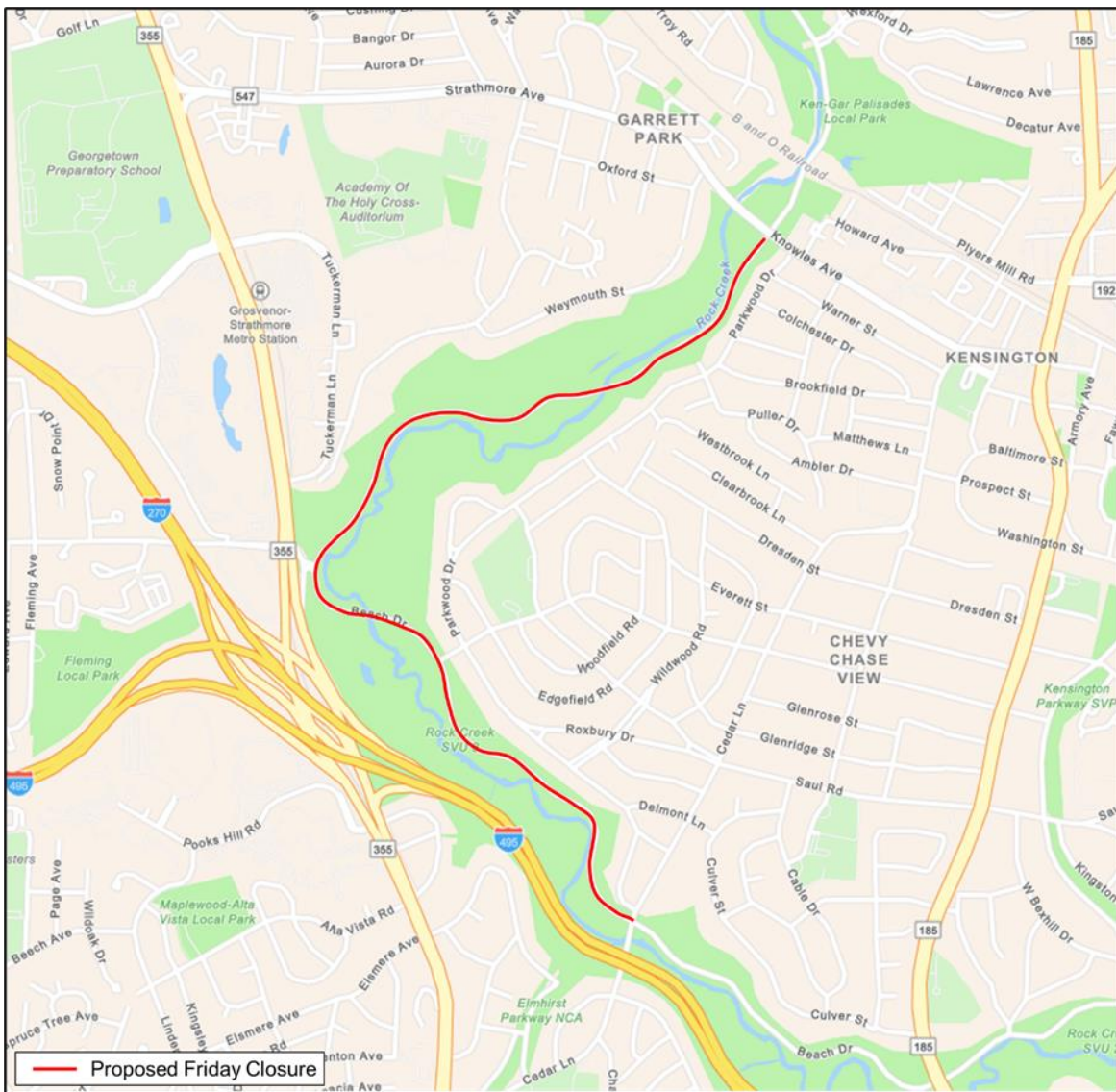


Figure 1: Study Area





2. Existing Traffic Data

The roadway network surrounding Beach Drive was examined to determine which intersections may be impacted by the Beach Drive closure. The following intersections were identified as being on potential detour routes:

1. Beach Dr at Wexford Dr
2. Beach Dr at MD 547 (Knowles Ave)
3. Beach Dr at Grosvenor Ln
4. Beach Dr at Cedar Ln
5. Beach Dr at MD 185 (Connecticut Ave)
6. Saul Rd at MD 185 (Connecticut Ave)
7. Saul Rd at Cedar Ln
8. MD 185 (Connecticut Ave) at MD 547 (Knowles Ave)
9. MD 547 (Knowles Ave) at Summit Ave
10. MD 547 (Knowles Ave) at Parkwood Dr
11. MD 355 (Rockville Pike) at Strathmore Ave
12. MD 355 (Rockville Pike) at Grosvenor Ln

13-hour turning movement counts were conducted on Friday, March 22, 2024 while schools were in session at the above study intersections. Intersection volumes were balanced between adjacent intersections where additional traffic generators or other intersections are not present, such as along Beach Drive between Knowles Avenue and Grosvenor Lane, as well as on Knowles Avenue between Beach Drive and Parkwood Drive. Turning movement counts are provided in **Appendix A**. Balanced AM and PM peak hour volumes at the study intersections on a Friday are shown in **Appendix B**.

The turning movement counts indicate that traffic volumes on Beach Drive are significantly higher on the northern section between Knowles Avenue and Grosvenor Lane (approximate peak hour volume of 410 AM and 576 PM vehicles) than on the southern section between Grosvenor Lane and Cedar Lane (approximate peak hour volume of 196 AM and 248 PM vehicles). This distribution of traffic indicates that both northbound and southbound Beach Drive between Knowles Avenue and Cedar Lane is primarily being used to access MD 355 via Grosvenor Lane. Additionally, traffic accessing Beach Drive from Grosvenor Lane is primarily heading northbound towards Knowles Avenue.

3. Existing Capacity Analysis

A Synchro network was created based on existing lane configurations, turn lane lengths, Friday peak hour volumes, and traffic signal timings. Synchro is a macroscopic analysis program used to model and evaluate traffic conditions based on the methodology from the Highway Capacity Manual (HCM). The selected measures of effectiveness (MOEs) considered as part of this evaluation include LOS and seconds of delay. Due to limitations of HCM 7th Edition methodology regarding analyzing non-NEMA traffic signal phasing, some intersections were evaluated using the HCM 2000 methodology. For stop-controlled intersections, delay and LOS are only provided for the stop-controlled approaches. **Table 1** summarizes the existing LOS and delay at each of the study intersections. Synchro summary sheets are provided in **Appendix C**.



Table 1: Existing Conditions HCM Summary

Node	Intersection	Control	Approach	Existing Conditions			
				AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
1	Beach Dr at Wexford Dr	Stop-Controlled**	WB	63.8	F	108.3	F
2	Beach Dr at Knowles Ave	Signalized	Overall	30.9	C	32.0	C
			EB	16.6	B	25.9	C
			WB	19.2	B	26.7	C
			NB	45.9	D	49.9	D
			SB	47.5	D	30.8	C
3	Beach Dr at Grosvenor Ln	Stop-Controlled**	Overall	9.1	A	13.5	B
			EB	9.2	A	16.0	C
			NB	8.9	A	10.4	B
			SB	9.1	A	9.4	A
4	Cedar Ln at Beach Dr	Signalized	Overall	11.2	B	8.6	A
			EB	29.2	C	31.8	C
			WB	32.3	C	34.0	C
			NB	4.2	A	6.1	A
			SB	6.8	A	3.6	A
5	MD 185 at Beach Dr	Signalized	Overall	7.2	A	17.7	B
			EB	76.6	E	69.5	E
			WB	82.4	F	49.8	D
			NB	3.3	A	12.1	B
			SB	0.7	A	0.6	A
6	MD 185 at Saul Rd*	Signalized	Overall	18.2	B	17.0	B
			EB	86.8	F	68.2	E
			WB	88.1	F	72.2	E
			NB	11.1	B	12.4	B
			SB	14.4	B	12.6	B
7	Cedar Ln at Saul Rd	Signalized	Overall	11.9	B	12.4	B
			EB	21.7	C	21.5	C
			WB	22.9	C	21.3	C
			NB	7.4	A	12.7	B
			SB	10.4	B	7.9	A
8	MD 185 at Knowles Ave*	Signalized	Overall	25.1	C	41.5	D
			EB	83.9	F	83.4	F
			WB	86.1	F	86.6	F
			NB	13.6	B	21.0	C
			SB	15.5	B	30.2	C
9	Summit Ave at Knowles Ave	Signalized	Overall	35.5	D	29.1	C
			EB	47.0	D	48.4	D
			WB	39.4	D	27.8	C
			NB	14.6	B	17.6	B
			SB	22.2	C	18.9	B
10	Parkwood Dr at Knowles Ave	Stop-Controlled**	NB	20.7	C	29.3	D



Node	Intersection	Control	Approach	Existing Conditions			
				AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
11	MD 355 at Strathmore Ave*	Signalized	Overall	19.2	B	28.8	C
			EB	71.7	E	71.5	E
			WB	37.5	D	37.4	D
			NB	18.8	B	29.8	C
			SB	13.3	B	23.3	C
12	MD 355 at Grosvenor Ln	Signalized	Overall	18.4	B	16.8	B
			EB	76.1	E	74.9	E
			WB	61.5	E	62.5	E
			NB	7.3	A	9.2	A
			SB	8.2	A	8.6	A

* HCM 2000 used due to limitations of HCM 7th ed.

**Delay for stop controlled intersections is only reported for the stop-controlled approach

As shown above, all signalized intersections operate at overall LOS D or better during the AM and PM peak hours. At unsignalized study intersections, only the westbound approach of the Beach Drive at Wexford Drive intersection operates at unacceptable LOS F during both AM and PM peak hours.

4. Potential Detours

As previously noted, the turning movement counts indicate that both northbound and southbound Beach Drive traffic is primarily utilizing Beach Drive to access MD 355 via Grosvenor Lane. The following sections summarize the existing traffic distributions for Beach Drive traffic as well as the anticipated detour routes. Additionally, potential neighborhood cut-through traffic options were evaluated to determine the likelihood of a Friday closure impacting neighborhood streets.

4.1. Northbound Beach Drive

The majority of northbound Beach Drive traffic is accessing Beach Drive from MD 355 northbound via the Grosvenor Lane intersection. From the Grosvenor Lane intersection, 70% of northbound traffic during the AM peak hour and 87% of the northbound traffic during the PM peak hour is continuing northbound on Beach Drive at the Knowles Avenue intersection. Based on a comparison of volumes on Beach Drive between the Cedar Lane and Grosvenor Lane intersections, Franklin Street appears to be generating a significant amount of the northbound Beach Drive traffic south of Grosvenor Lane. From the Cedar Lane intersection and Franklin Street, 90% AM and 66% PM northbound Beach Drive traffic is turning left onto Grosvenor Lane to access MD 355 or westbound Grosvenor Lane, as shown in **Figure 2**. Given the high distribution of traffic turning onto MD 355 southbound from Grosvenor Lane, it is likely that a significant amount of the traffic originating at Franklin Street is destined for MD 355 southbound or to I-495 via MD 355 southbound. As such, the primary detour route for northbound Beach Drive traffic is likely to utilize MD 355, as the majority of northbound Beach Drive traffic is destined to or originating from the MD 355 corridor. The anticipated primary detour route for Beach Drive traffic is shown in **Figure 2**. Franklin Street traffic destined for MD 355 may utilize Cedar Lane as an alternative detour with the closure of Beach Drive. Additional detour figures are provided in **Appendix D**.



Figure 2: Northbound Beach Drive – Primary Detour Route

4.2. Southbound Beach Drive

The majority of southbound Beach Drive traffic is accessing Beach Drive via the Knowles Avenue intersection. From the Knowles Avenue intersection, 86% of southbound traffic during the AM peak hour and 70% of the southbound traffic during the PM peak hour is turning southbound right onto Grosvenor Lane to either turn left onto MD 355 or continue westbound on Grosvenor Lane, as shown in **Figure 3**. As such, potential detour routes for this traffic are unlikely to utilize roadways east of Beach Drive, as this traffic is destined for MD 355 and points west. Therefore, this traffic is likely to detour to MD 355 when Beach Drive is closed as shown in **Figure 3**.

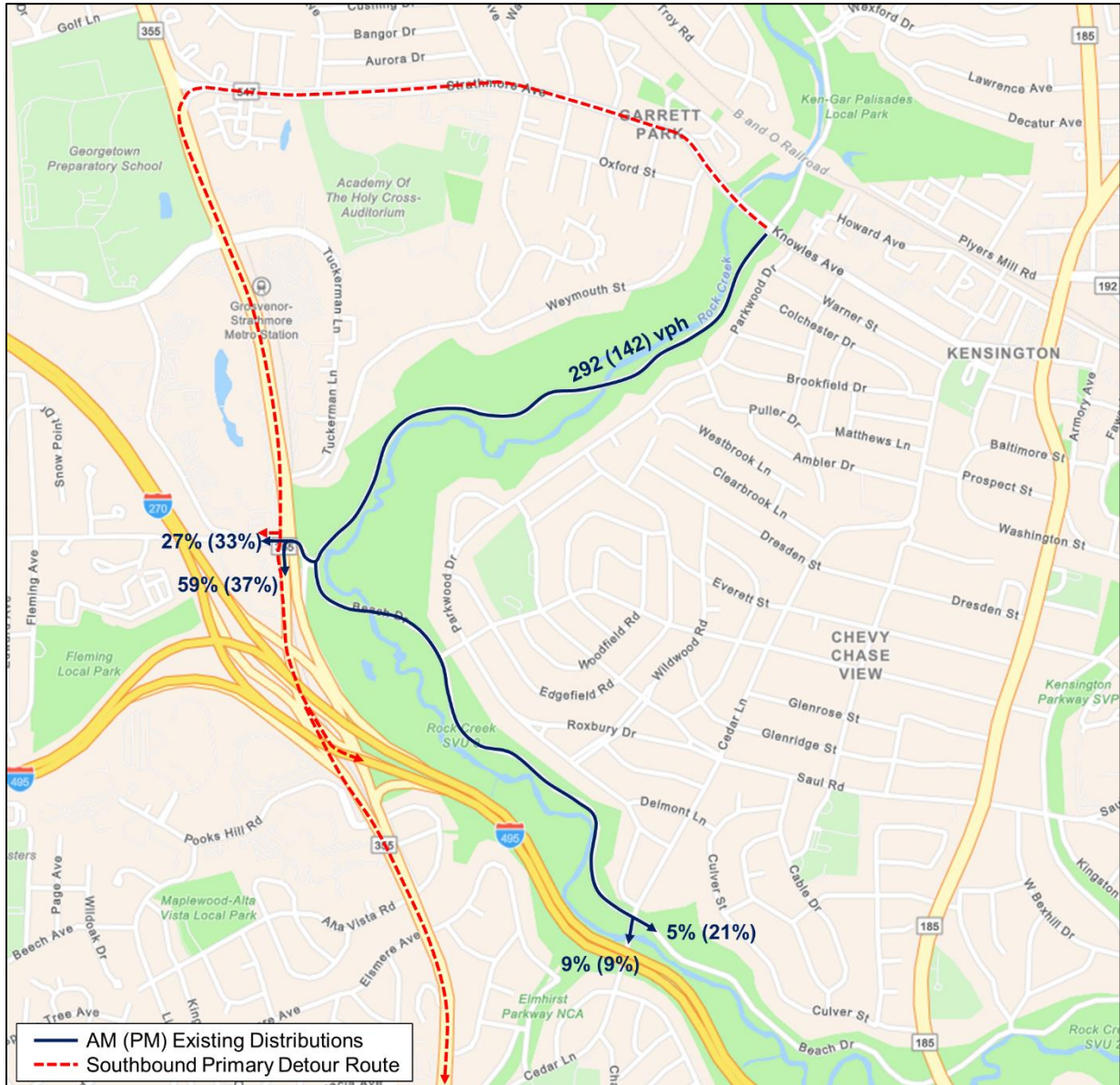


Figure 3: Southbound Beach Drive – Primary Detour Route

4.3. Neighborhood Cut-Through Traffic

Due to the prevalence of personal GPS devices used while driving, it is likely that drivers will rely on mapping applications to find fastest or shortest routes while not taking into consideration the context of the roadways chosen by these applications. Parkwood Drive runs parallel to Beach Drive from Knowles Avenue to Cedar Lane and is classified as a Neighborhood Connector north of Saul Road and a Neighborhood Street south of Saul Road in the Montgomery County Complete Streets Design Guide. Due to the similar travel path of Parkwood Drive to Beach Drive, it is possible that mapping applications may identify this roadway as an alternative to Beach Drive during Friday closures.



4.3.1. Northbound Beach Drive

For the northbound direction, existing traffic distributions indicate that there are approximately 15 AM and 55 PM northbound Beach Drive vehicles traversing through the Beach Drive at Grosvenor Lane intersection. Based on the turning movement count at the Cedar Lane at Beach Drive intersection, it is likely that a portion of this traffic originates from Beach Drive east of Cedar Lane. Based on the turning movement count at the Beach Drive at Knowles Avenue intersection, these vehicles are likely continuing northbound on Beach Drive through the Knowles Avenue intersection. Google Maps was utilized to determine the current reported “preferred route” to travel from Cedar Lane to Beach Drive north of Knowles Avenue by the application during Friday AM and PM peak hours in the event that Beach Drive is closed to further evaluate the likelihood of cut-through traffic. During both peak hours, Google Maps identifies Cedar Lane to Summit Avenue as the fastest and shortest route; however, during the PM peak hour, an alternative route of Cedar Lane to Everett Street to Parkwood Drive is identified and estimated to be approximately 2 minutes longer. As such, the portion of the approximate 55 PM northbound Beach Drive vehicles originating from east of Cedar Lane may split between the Parkwood Drive route and the Cedar Lane route if their destination is on Beach Drive north of Knowles Avenue.

4.3.2. Southbound Beach Drive

For the southbound direction, existing traffic distributions indicate that there are approximately 40 southbound Beach Drive vehicles during both peak hours traversing from Knowles Avenue to Cedar Lane that may not utilize MD 355. Based on the turning movement count at the Beach Drive at Cedar Lane intersection, these 40 vehicles are primarily making an eastbound right onto Cedar Lane in the AM to continue southbound (66%) or continuing eastbound on Beach Drive in the PM (70%). Southbound Beach Drive traffic destined for points east of Cedar Lane (estimated at 13 AM vehicles and 28 PM vehicles based on existing count data) are likely to continue on Knowles Avenue and utilize Summit Avenue or MD 185 depending on their destination, as utilizing Parkwood Drive would increase travel time and distance for destinations east of Cedar Lane. Southbound Beach Drive traffic heading to southbound Cedar Lane (estimated at 27 AM vehicles and 12 PM vehicles based on existing count data) may be inclined to split between Parkwood Drive and Summit Avenue based on similar travel times and distances provided by mapping applications.

Google Maps was utilized to determine the current reported “preferred route” to travel from Knowles Avenue to Cedar Lane south of Beach Drive by the application during Friday AM and PM peak hours in the event that Beach Drive is closed to further evaluate the likelihood of cut-through traffic. During the AM peak hour, Google Maps identifies Summit Avenue as the fastest and shortest route; however, during the PM peak hour, both Summit Avenue and Parkwood Drive have equal travel times due to congestion at the Knowles Avenue at Summit Avenue intersection. This may result in minimal cut-through traffic utilizing Parkwood Drive in the southbound direction; however, the existing speed humps on Parkwood Drive between Knowles Avenue and Saul Road may deter repeated cut-through traffic.

Wexford Drive, which is a known cut-through route connecting Beach Drive and MD 185, is unlikely to be impacted by the Beach Drive closure. Southbound Beach Drive traffic originating north of Wexford Drive that is destined to the MD 185 corridor is likely already



using Wexford Drive, and would therefore not be impacted by the Friday closure of Beach Drive, or would use Knowles Avenue, as Google Maps indicates both routes are shorter and faster than Beach Drive during both peak hours.

5. Friday Closure Capacity Analysis

Based on the potential detour routes discussed above, the existing volumes shown in Appendix B were reassigned at the study intersections to reflect the Friday closure of Beach Drive, as shown in Appendix D. It should be noted that the volumes were reassigned assuming Parkwood Drive was not being used. Additionally, the estimated 40 vehicles per hour during both peak hours that may seek alternative detour routes depending on their destination, as discussed in Section 4.3, were assumed to utilize the primary detour route along MD 355 in order to provide the most conservative analysis along the detour route. The Synchro model built as part of the existing conditions capacity analysis was updated to reflect the Friday closure volumes from Appendix D. Signal timing splits and cycle lengths were maintained under closure conditions in order to identify where signal timing changes may be needed to accommodate the closure. **Table 2** summarizes the Friday closure LOS and delay at each of the study intersections along the detour routes. Synchro summary sheets are provided in **Appendix E**.

Table 2: Friday Closure Conditions HCM Summary

Node	Intersection	Control	Approach	Friday Closure			
				AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
2	Beach Dr at Knowles Ave	Signalized	Overall	29.5	C	32.5	C
			EB	15.8	B	39.5	D
			WB	22.5	C	10.2	B
			NB	-	-	-	-
			SB	47.6	D	56.2	E
4	Cedar Ln at Beach Dr	Signalized	Overall	10.5	B	8.9	A
			EB	-	-	-	-
			WB	32.4	C	33.3	C
			NB	4.4	A	7.2	A
			SB	8.2	A	4.6	A
5	MD 185 at Beach Dr	Signalized	Overall	7.4	A	17.6	B
			EB	77.1	E	69.5	E
			WB	82.4	F	49.8	D
			NB	3.3	A	12.0	B
			SB	0.7	A	0.6	A
7	Cedar Ln at Saul Rd	Signalized	Overall	12.6	B	12.9	B
			EB	21.7	C	21.5	C
			WB	22.9	C	21.3	C
			NB	7.4	A	13.7	B
			SB	11.8	B	8.3	A
11	MD 355 at Strathmore Ave*	Signalized	Overall	30.0	C	37.1	D
			EB	71.7	E	71.5	E
			WB	45.9	D	43.4	D
			NB	28.7	C	40.9	D
			SB	23.0	C	28.0	C



Node	Intersection	Control	Approach	Friday Closure			
				AM Peak Hour		PM Peak Hour	
				Delay	LOS	Delay	LOS
12	MD 355 at Grosvenor Ln	Signalized	Overall	11.1	B	13.9	B
			EB	76.1	E	74.9	E
			WB	66.3	E	64.5	E
			NB	5.1	A	8.9	A
			SB	6.0	A	7.2	A

* HCM 2000 used due to limitations of HCM 7th ed.

As shown above, all impacted study intersections continue to operate at overall LOS D or better during both peak hours under Friday closure conditions. At the intersection of Beach Drive at Knowles Avenue, the southbound approach degrades from LOS C to LOS E during the PM peak hour as a result of southbound through movements being detoured to southbound right turns.

Signal timing changes were evaluated for the Beach Drive at Knowles Drive intersection in order to mitigate impacts of the detour during the PM peak hour. **Table 3** summarizes the Friday closure LOS and delay at the Beach Drive at Knowles Avenue with optimized signal splits and maintaining the existing cycle length. Synchro summary sheets are provided in **Appendix F**.

Table 3: Friday Closure Conditions HCM Summary - Mitigated

Node	Intersection	Control	Approach	Existing Conditions – PM Peak Hour		Friday Closure – PM Peak Hour			
				Delay	LOS	Existing Timings		Optimized Splits	
						Delay	LOS	Delay	LOS
2	Beach Dr at Knowles Ave	Signalized	Overall	32.0	C	32.5	C	32.7	C
			EB	25.9	C	39.5	D	30.2	C
			WB	26.7	C	10.2	B	32.0	C
			NB	49.9	D	-	-	-	-
			SB	30.8	C	56.2	E	42.3	D

As shown above, the southbound Beach Drive approach improves from LOS E to LOS D during the PM peak hour when signal splits are optimized to accommodate the Friday closure of Beach Drive.

6. Summary of Impacts

In 2020, Montgomery Parks initiated the Open Parkways Program, which closed a 2.9 mile section of Beach Drive to vehicles from MD 185 (Connecticut Avenue) to Knowles Avenue during Saturdays and Sundays to provide additional outdoor recreational space. To mitigate neighborhood cut-through traffic and continue to provide additional outdoor recreational space, Montgomery Parks is proposing to revise the closure of Beach Drive to be from Cedar Lane to Knowles Avenue on Fridays, Saturdays, and Sundays. The Beach Drive closure from Cedar Lane to Knowles Avenue was evaluated for Friday AM and PM peak hours to determine the potential impacts on surrounding roadways. Given the modified limits of the closure, traffic conditions are anticipated to operate comparable to or better than the existing closure on Saturdays and Sundays, thus analysis for these days were not included in this study. The following summarizes the gathered data and projected impacts of a Friday closure:



- Turning movement counts were conducted on Friday, March 22, 2024 while schools were in session at 12 intersections along Beach Drive and the surrounding roadways that have the potential of being impacted by the closure of Beach Drive.
- Traffic volumes on Beach Drive are significantly higher north of Grosvenor Lane (approximate hourly volume of 410 AM and 576 PM vehicles) than south of Grosvenor Lane (approximate hourly volume of 196 AM and 248 PM vehicles).
- Traffic distributions indicate that Beach Drive is primarily being used to access MD 355 via Grosvenor Lane.
- Existing capacity analysis shows that all signalized intersections operate at overall LOS D or better during the AM and PM peak hours. At unsignalized study intersections, only the westbound approach of the Beach Drive at Wexford Drive intersection operates at unacceptable LOS F during both AM and PM peak hours.
- The anticipated primary detour routes for both northbound and southbound Beach Drive traffic utilize MD 355.
- Friday Closure capacity analysis shows that all impacted study intersections continue to operate at overall LOS D or better during both peak hours.
 - At the intersection of Beach Drive at Knowles Avenue, the southbound approach degrades from LOS C to LOS E during the PM peak hour. This impact can be mitigated with signal split optimization while maintaining the existing cycle length.
- It is anticipated that Parkwood Drive, which runs parallel to Beach Drive, would see minimal impact under a Friday Closure scenario, though mapping applications may identify Parkwood Drive as an alternative route particularly for southbound Beach Drive traffic destined to Cedar Lane south of Beach Drive (estimated at 27 AM vehicles and 12 PM vehicles based on existing count data).
- Wexford Drive, which connects Beach Drive and MD 185, is unlikely to be impacted by the Friday Beach Drive closure, as mapping applications currently identify Knowles Avenue as the shorter and faster route to destinations along the MD 185 corridor.

APPENDIX

A

Turning Movement Counts

Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: BEACH DR AT WEXFORD DR
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd): 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start 07:30, End 08:30, Volume 1024, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start 16:00, End 17:00, Volume 1373, LOS, V/C.

Main data table with columns: Street Name, HOUR ENDING, BEACH DR (From North, From South), WEXFORD DR (From East, From West), and GRAND TOTAL. Rows include hourly data from 00:15 to 00:00 and a final TOTAL row.

Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: BEACH DR AT WEXFORD DR
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd) : 15
 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start 07:30	End 08:30	Volume 1024	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start 16:00	End 17:00	Volume 1373	LOS	V/C
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Hour	BEACH DR Southbound Approach NO X-WALK		BEACH DR Northbound Approach NO X-walk		WEXFORD DR Eastbound Approach NO X-walk		WEXFORD DR Westbound Approach X-walk	
	J-WALKERS		J-WALKERS		J-WALKERS		Pedestrians	
00:15	0		0		0		0	
00:30	0		0		0		0	
00:45	0		0		0		0	
01:00	0		0		0		0	
01:15	0		0		0		0	
01:30	0		0		0		0	
01:45	0		0		0		0	
02:00	0		0		0		0	
02:15	0		0		0		0	
02:30	0		0		0		0	
02:45	0		0		0		0	
03:00	0		0		0		0	
03:15	0		0		0		0	
03:30	0		0		0		0	
03:45	0		0		0		0	
04:00	0		0		0		0	
04:15	0		0		0		0	
04:30	0		0		0		0	
04:45	0		0		0		0	
05:00	0		0		0		0	
05:15	0		0		0		0	
05:30	0		0		0		0	
05:45	0		0		0		0	
06:00	0		0		0		0	
06:15	0		0		0		1	
06:30	0		0		0		1	
06:45	0		0		0		0	
07:00	0		0		0		3	
07:15	0		0		0		4	
07:30	0		0		0		6	
07:45	0		0		0		5	
08:00	0		0		0		3	
08:15	0		0		0		6	
08:30	0		0		0		7	
08:45	0		0		0		6	
09:00	0		0		0		13	
09:15	0		0		0		7	
09:30	0		0		0		6	
09:45	0		0		0		8	
10:00	0		0		0		6	
10:15	0		0		0		2	
10:30	0		0		0		12	
10:45	0		0		0		7	
11:00	0		0		0		6	
11:15	0		0		0		4	
11:30	0		0		0		7	
11:45	0		0		0		5	
12:00	0		0		0		4	
12:15	0		0		0		12	
12:30	0		0		0		13	
12:45	0		0		0		6	
13:00	0		0		0		6	
13:15	0		0		0		5	
13:30	0		0		0		2	
13:45	0		0		0		5	
14:00	0		0		0		11	
14:15	0		0		0		5	
14:30	0		0		0		9	
14:45	0		0		0		5	
15:00	0		0		0		3	
15:15	0		0		0		4	
15:30	0		0		0		6	
15:45	0		0		0		9	
16:00	0		0		0		5	
16:15	0		0		0		9	
16:30	0		0		0		10	
16:45	0		0		0		11	
17:00	0		0		0		4	
17:15	0		0		0		14	
17:30	0		0		0		12	
17:45	0		0		0		12	
18:00	0		0		0		11	
18:15	0		0		0		17	
18:30	0		0		0		4	
18:45	0		0		0		4	
19:00	0		0		0		4	
19:15	0		0		0		0	
19:30	0		0		0		0	
19:45	0		0		0		0	
20:00	0		0		0		0	
20:15	0		0		0		0	
20:30	0		0		0		0	
20:45	0		0		0		0	
21:00	0		0		0		0	
21:15	0		0		0		0	
21:30	0		0		0		0	
21:45	0		0		0		0	
22:00	0		0		0		0	
22:15	0		0		0		0	
22:30	0		0		0		0	
22:45	0		0		0		0	
23:00	0		0		0		0	
23:15	0		0		0		0	
23:30	0		0		0		0	
23:45	0		0		0		0	
00:00	0		0		0		0	
TOTAL	0		0		0		347	
AM Peak Vol	0		0		0		21	
PM Peak Vol	0		0		0		34	

Turning Movement Counts - Field Sheet

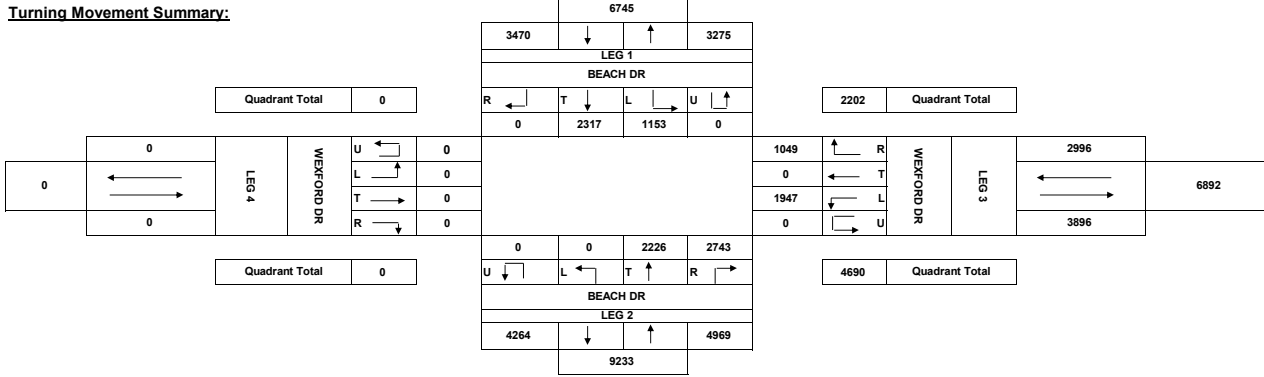
Job No.: 17-01

Location: BEACH DR AT WEXFORD DR
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

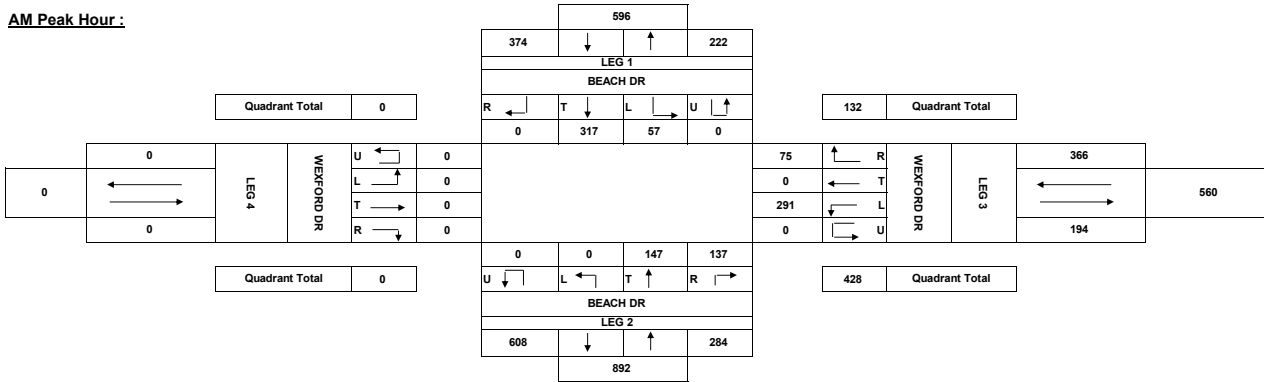
PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			07:30	08:30	1024					16:00	17:00	1373		

Turning Movement Summary:

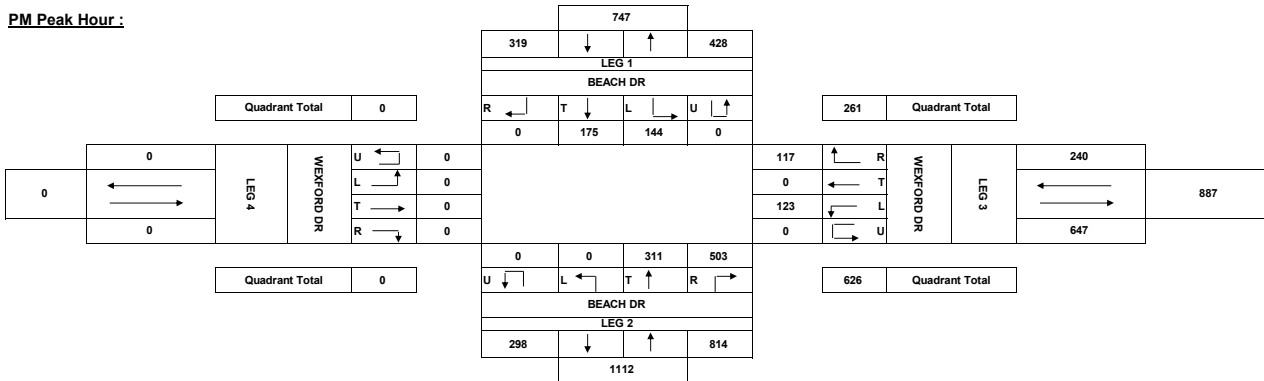


Comments:

AM Peak Hour :



PM Peak Hour :



Job No.:

17-01

Turning Movement Counts - Field Sheet

Location:

BEACH DR AT KNOWLES AVE

County:

Montgomery

Date:

3/22/2024 Friday

Town:

Kensington

Recorder:
Interval (dd)
(In Minutes)

CSS
15

Weather:

Clear / Sunny

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start	End	Volume	LOS	V/C
		07:30	08:30					1644	16:00			

Street Name--> HOUR ENDING	BEACH DR					BEACH DR					KNOWLES AVE					KNOWLES AVE					GRAND TOTAL	
	From North					From South					From East					From West						
	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total		
00:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	10	20	2	32	0	0	3	0	3	0	3	18	5	26	0	2	8	0	0	10	71
06:30	0	10	16	8	34	0	0	0	0	0	0	2	19	6	27	0	2	11	0	0	13	108
06:45	0	19	18	10	47	0	0	2	6	8	0	6	29	3	38	0	1	44	0	0	15	163
07:00	0	29	30	21	80	0	0	3	4	7	0	2	35	3	40	0	7	28	1	1	36	178
07:15	0	27	28	18	73	0	0	10	1	11	0	5	34	6	45	0	8	36	5	49	280	
07:30	0	26	49	52	127	0	0	11	4	15	0	13	54	7	74	0	16	47	1	64	374	
07:45	0	33	55	69	147	0	1	13	4	18	0	13	84	29	126	0	25	55	3	83	453	
08:00	0	34	60	63	157	0	2	25	12	39	0	8	97	21	126	0	37	93	1	125	418	
08:15	0	44	65	35	144	0	0	18	10	28	0	6	76	20	102	0	28	96	1	112	351	
08:30	0	60	67	36	163	0	0	21	6	27	0	10	86	20	96	0	22	101	3	102	331	
08:45	0	37	43	26	106	0	3	21	9	33	0	13	67	20	100	0	28	87	3	91	331	
09:00	0	43	47	35	125	0	2	15	7	24	0	11	66	23	100	0	16	83	3	91	331	
09:15	0	42	36	38	116	0	1	19	4	24	0	11	64	25	102	0	21	67	3	91	331	
09:30	0	41	33	22	96	0	0	16	5	21	0	3	71	28	102	0	25	94	0	119	281	
09:45	0	29	22	15	66	0	0	14	9	23	0	7	64	28	97	0	20	74	1	95	272	
10:00	0	25	37	22	84	0	0	7	5	12	0	5	66	24	95	0	27	85	2	86	268	
10:15	0	31	25	16	72	0	0	15	3	18	0	8	69	19	96	0	15	69	2	86	268	
10:30	0	34	20	22	76	0	0	10	10	20	0	11	63	15	89	0	18	62	3	83	298	
10:45	0	19	25	18	62	0	0	20	5	25	0	9	86	21	116	0	16	77	2	95	294	
11:00	0	22	29	20	70	0	2	12	5	19	0	10	83	32	135	0	14	54	2	108	304	
11:15	0	28	27	15	70	0	0	7	6	13	0	15	86	32	113	0	18	88	2	108	304	
11:30	0	29	24	31	84	0	2	8	7	17	0	7	75	28	110	0	19	73	2	94	321	
11:45	0	16	28	26	70	0	0	17	11	28	0	10	85	28	123	0	20	78	2	100	343	
12:00	0	20	21	19	60	0	1	13	5	19	0	11	96	37	144	0	25	94	1	120	389	
12:15	0	37	26	26	89	0	1	22	11	34	0	7	89	29	125	0	26	111	4	141	339	
12:30	0	33	15	18	66	0	0	22	9	31	0	12	80	29	121	0	26	93	2	121	350	
12:45	0	25	25	32	82	0	2	20	6	28	0	7	94	34	135	0	23	82	0	105	369	
13:00	0	25	27	15	67	0	0	22	6	28	0	19	97	37	153	0	28	92	1	121	395	
13:15	0	39	21	23	83	0	3	17	15	46	0	8	100	30	138	0	17	109	2	128	363	
13:30	0	39	21	18	78	0	3	17	7	27	0	14	95	27	136	0	31	90	1	122	377	
13:45	0	35	19	19	73	0	1	26	6	33	0	9	89	38	138	0	43	90	2	135	358	
14:00	0	32	19	27	78	0	3	29	7	39	0	6	71	37	114	0	25	98	4	127	386	
14:15	0	33	17	32	82	0	1	33	13	47	0	13	79	35	127	0	29	100	1	109	366	
14:30	0	27	20	20	67	0	1	36	16	53	0	8	77	52	137	0	26	82	1	109	419	
14:45	0	26	29	22	77	0	0	60	8	68	0	7	86	36	129	0	31	111	3	145	497	
15:00	0	44	23	39	106	0	0	52	22	74	0	17	108	40	165	0	45	129	3	177	454	
15:15	0	21	33	23	77	0	0	71	7	78	0	9	95	46	150	0	52	136	1	189	453	
15:30	0	23	27	19	69	0	1	67	18	86	0	5	89	33	127	0	46	120	3	171	499	
15:45	0	28	23	27	78	0	0	80	16	96	0	9	89	43	141	0	42	136	6	184	466	
16:00	0	34	24	27	85	0	2	78	18	98	0	13	84	41	138	0	39	100	6	145	508	
16:15	0	27	11	20	58	0	1	93	16	110	0	12	103	55	170	0	54	107	9	170	497	
16:30	0	28	21	20	69	0	1	98	9	108	0	6	94	62	162	0	41	115	4	160	504	
16:45	0	37	23	26	86	0	1	86	13	100	0	4	85	65	154	0	62	101	1	164	509	
17:00	0	28	19	34	81	0	4	100	12	116	0	9	98	65	172	0	35	102	3	140	490	
17:15	0	30	28	18	76	0	2	67	10	79	0	8	98	61	167	0	48	119	1	168	477	
17:30	0	27	24	22	73	0	0	76	13	89	0	9	81	61	151	0	46	118	0	164	521	
17:45	0	33	13	33	79	0	3	69	9	81	0	8	88	57	153	0	45	112	1	158	450	
18:00	0	30	17	17	64	0	3	68	9	80	0	10	94	50	154	0	41	109	2	152	458	
18:15	0	37	18	15	70	0	2	55	14	71	0	11	94	57	162	0	45					

Turning Movement Counts - Field Sheet

Job No.:

17-01

Location:

BEACH DR AT KNOWLES AVE

County:

Montgomery

Date:

3/22/2024 Friday

Town:

Kensington

Recorder:

CSS

Weather:

Clear / Sunny

Interval (dd) :
(In Minutes)

15

Hour	PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start 07:30	End 08:30	Volume 1644	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start 16:00	End 17:00	Volume 2018	LOS	V/C
Ending	J-WALKERS	PEDESTRIANS		J-WALKERS	PEDESTRIANS		J-WALKERS	PEDESTRIANS					
00:15	0	0		0	0		0	0					
00:30	0	0		0	0		0	0					
00:45	0	0		0	0		0	0					
01:00	0	0		0	0		0	0					
01:15	0	0		0	0		0	0					
01:30	0	0		0	0		0	0					
01:45	0	0		0	0		0	0					
02:00	0	0		0	0		0	0					
02:15	0	0		0	0		0	0					
02:30	0	0		0	0		0	0					
02:45	0	0		0	0		0	0					
03:00	0	0		0	0		0	0					
03:15	0	0		0	0		0	0					
03:30	0	0		0	0		0	0					
03:45	0	0		0	0		0	0					
04:00	0	0		0	0		0	0					
04:15	0	0		0	0		0	0					
04:30	0	0		0	0		0	0					
04:45	0	0		0	0		0	0					
05:00	0	0		0	0		0	0					
05:15	0	0		0	0		0	0					
05:30	0	0		0	0		0	0					
05:45	0	0		0	0		0	0					
06:00	0	0		0	0		0	0					
06:15	0	0		0	0		0	3					
06:30	0	0		1	0		0	2					
06:45	0	0		0	0		0	0					
07:00	0	0		1	0		0	1					
07:15	0	0		3	0		0	4					
07:30	0	0		1	0		0	2					
07:45	0	0		4	0		0	3					
08:00	0	0		1	0		0	3					
08:15	0	0		1	0		0	3					
08:30	0	0		2	0		0	6					
08:45	0	0		0	0		0	3					
09:00	0	0		1	0		0	13					
09:15	0	0		2	0		0	3					
09:30	0	0		1	0		0	2					
09:45	0	0		3	0		0	2					
10:00	0	0		2	0		0	10					
10:15	0	0		0	0		0	2					
10:30	0	0		5	0		0	11					
10:45	0	0		2	0		0	7					
11:00	0	0		1	0		0	5					
11:15	0	0		0	0		0	0					
11:30	0	0		0	0		0	3					
11:45	0	0		2	0		0	3					
12:00	0	0		1	0		0	4					
12:15	0	0		2	0		0	4					
12:30	0	0		3	0		0	7					
12:45	0	0		3	0		0	8					
13:00	0	0		3	0		0	2					
13:15	0	0		1	0		0	4					
13:30	0	0		1	0		0	1					
13:45	0	0		3	0		0	1					
14:00	0	0		1	0		0	4					
14:15	0	0		4	0		0	7					
14:30	0	0		5	0		0	1					
14:45	0	0		4	0		0	4					
15:00	0	0		2	0		0	6					
15:15	0	0		2	0		0	3					
15:30	0	0		3	0		0	3					
15:45	0	0		2	0		0	1					
16:00	0	0		2	0		0	4					
16:15	0	0		2	0		0	2					
16:30	0	0		2	0		0	5					
16:45	0	0		7	0		0	7					
17:00	0	0		1	0		0	3					
17:15	0	0		4	0		0	8					
17:30	0	0		4	0		0	6					
17:45	0	0		3	0		0	6					
18:00	0	0		5	0		0	13					
18:15	0	0		3	0		0	7					
18:30	0	0		1	0		0	7					
18:45	0	0		2	0		0	4					
19:00	0	0		1	0		0	2					
19:15	0	0		0	0		0	0					
19:30	0	0		0	0		0	0					
19:45	0	0		0	0		0	0					
20:00	0	0		0	0		0	0					
20:15	0	0		0	0		0	0					
20:30	0	0		0	0		0	0					
20:45	0	0		0	0		0	0					
21:00	0	0		0	0		0	0					
21:15	0	0		0	0		0	0					
21:30	0	0		0	0		0	0					
21:45	0	0		0	0		0	0					
22:00	0	0		0	0		0	0					
22:15	0	0		0	0		0	0					
22:30	0	0		0	0		0	0					
22:45	0	0		0	0		0	0					
23:00	0	0		0	0		0	0					
23:15	0	0		0	0		0	0					
23:30	0	0		0	0		0	0					
23:45	0	0		0	0		0	0					
00:00	0	0		0	0		0	0					
TOTAL	0			110			0	225					
AM Peak Vol	0			8			0	15					
PM Peak Vol	0			12			0	17					

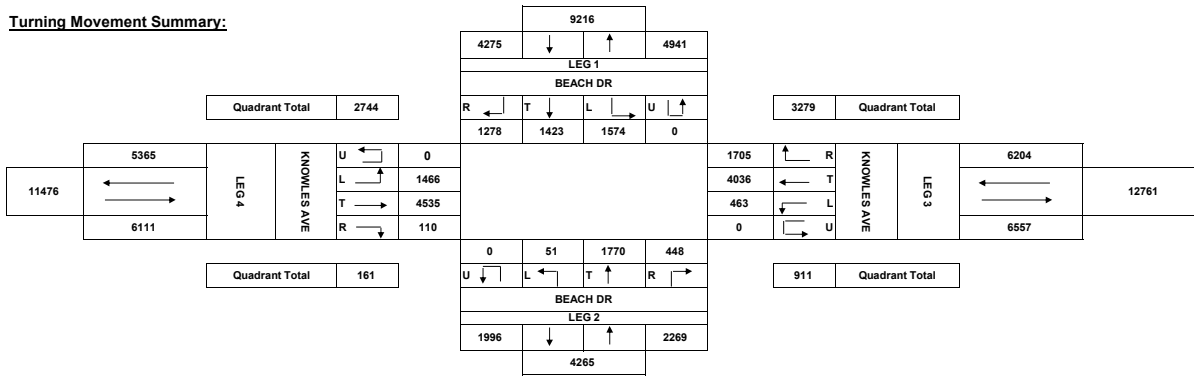
Turning Movement Counts - Field Sheet

Job No.: 17-01
 Location: BEACH DR AT KNOWLES AVE
 Date: 3/22/2024 Friday
 Recorder: CCS
 Interval (dd): 15 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

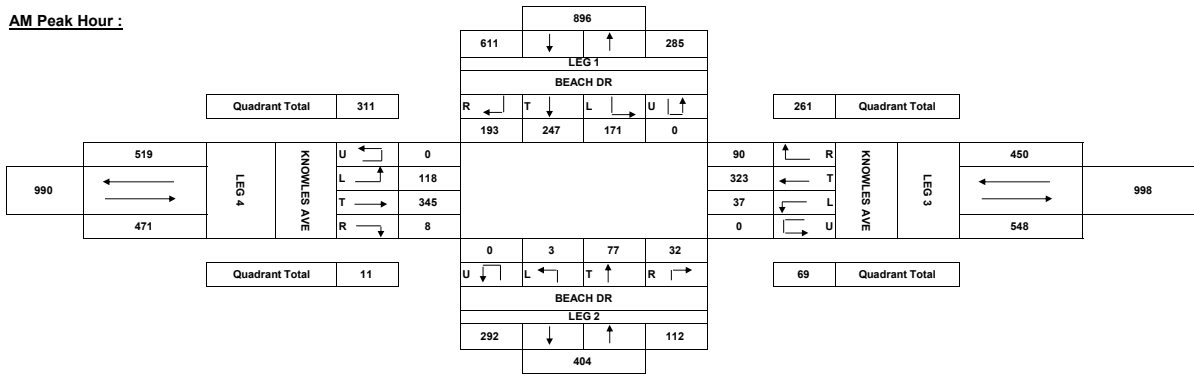
PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			07:30	08:30	1644					16:00	17:00	2018		

Turning Movement Summary:

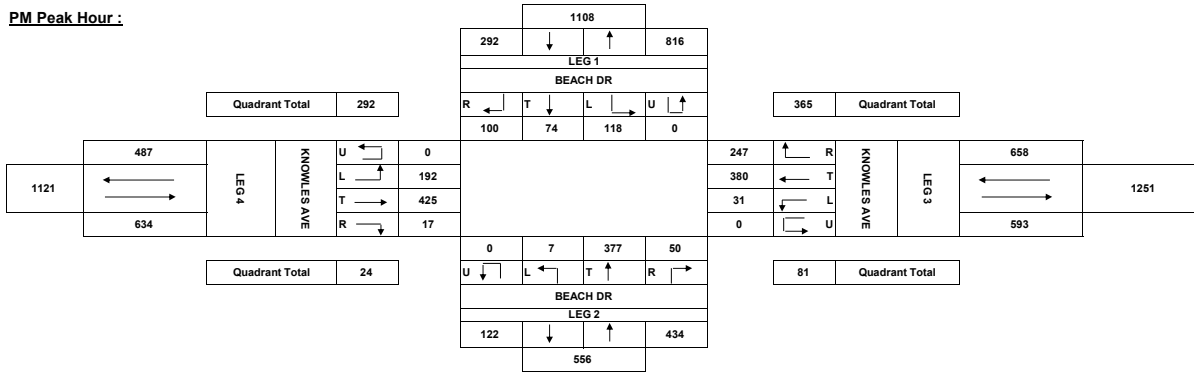


Comments:

AM Peak Hour:



PM Peak Hour:



Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: BEACH DR AT KNOWLES AVE
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 9 and 29.

Main data table with columns: Street Name, HOUR ENDING, BEACH DR (U turn, Left, Through, Right, Total), BEACH DR (U turn, Left, Through, Right, Total), KNOWLES AVE (U turn, Left, Through, Right, Total), KNOWLES AVE (U turn, Left, Through, Right, Total), GRAND TOTAL. Rows include time intervals from 00:15 to 00:00 and a final TOTAL row.

Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: BEACH AT GROSVENOR
Date: 3/22/2024
Recorder: CSS
Interval (dd): 15

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 650 and 714.

Main data table with columns: Street Name, HOUR, BEACH (From North, From South), GROSVENOR (From East, From West), and GRAND TOTAL. Rows represent time intervals from 00:15 to 00:00.

Job No.: 17-01

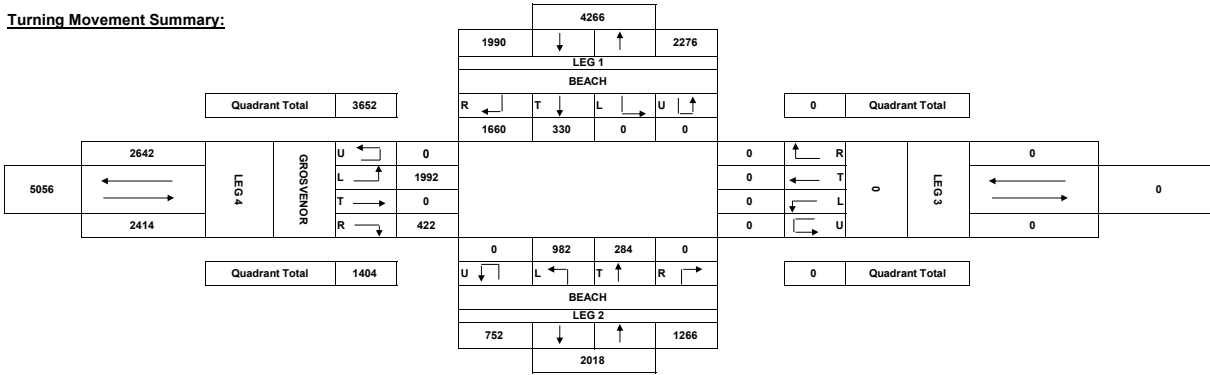
Turning Movement Counts - Field Sheet

Location: BEACH AT GROSVENOR
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15
 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

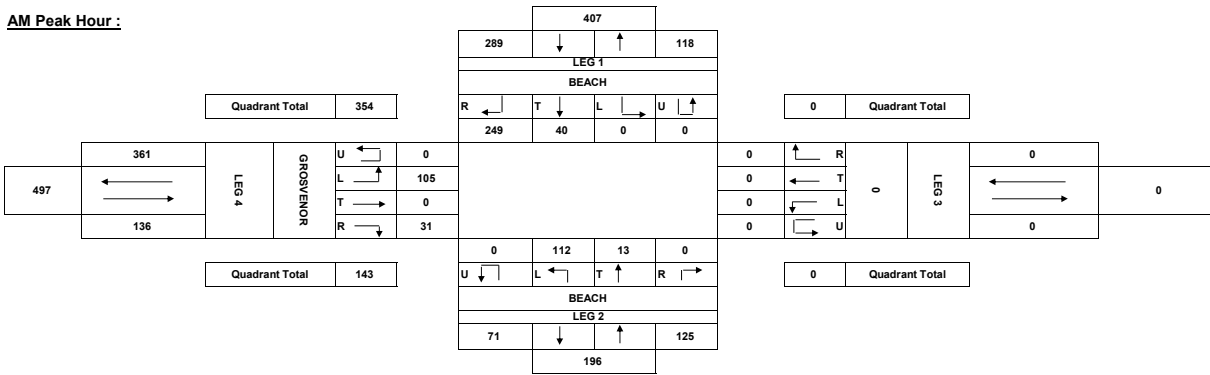
PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			07:30	08:30	650					15:30	16:30	714		

Turning Movement Summary:

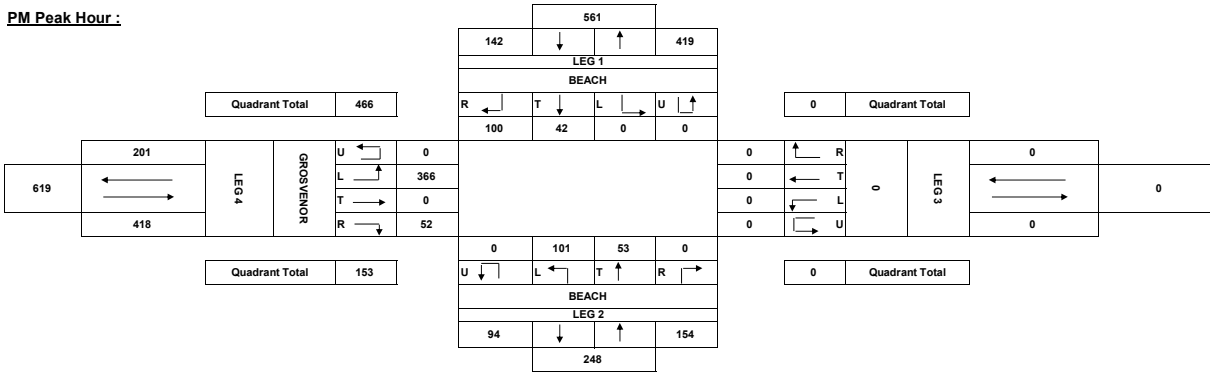


Comments:

AM Peak Hour :



PM Peak Hour :



Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: BEACH AT GROSVENOR
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 13 and 37.

Main data table with columns: Street Name, HOUR ENDING, BEACH (U turn, Left, Through, Right, Total), BEACH (U turn, Left, Through, Right, Total), 0, BEACH (U turn, Left, Through, Right, Total), GROSVENOR (U turn, Left, Through, Right, Total), GRAND TOTAL. Rows include time intervals from 00:15 to 00:00 and a final TOTAL row.

Job No.:

17-01

Turning Movement Counts - Field Sheet

Location:

BEACH DR AT CEDAR LN

County:

Montgomery

Date:

3/22/2024 Friday

Town:

Kensington

Recorder:

CSS

Weather:

Clear / Sunny

Interval (dd) :
(In Minutes)

15

Street Name-> HOUR ENDING	AM PERIOD 6:00AM - 12:00PM					PM PERIOD 12:00PM - 7:00PM					AM PERIOD 6:00AM - 12:00PM					PM PERIOD 12:00PM - 7:00PM					GRAND TOTAL					
	PEAK HOURS	Start 06:00	End 09:00	Volume 1199	LOS	V/C	Start 15:30	End 16:30	Volume 1703	LOS	V/C	Start 06:00	End 09:00	Volume 1199	LOS	V/C	Start 15:30	End 16:30	Volume 1703	LOS		V/C				
	BEACH DR	BEACH DR				CEDAR LN				CEDAR LN				BEACH DR				CEDAR LN								
	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	
00:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	0	3	1	4	0	50	1	0	51	0	0	55	0	55	0	0	0	21	3	24	0	0	0	0	134
06:30	0	0	1	5	6	0	56	0	1	57	0	0	84	0	84	0	0	18	1	19	0	0	0	0	0	166
06:45	0	0	2	6	8	0	43	2	0	45	0	1	160	0	161	0	0	12	3	15	0	0	0	0	0	229
07:00	0	0	9	9	18	0	58	2	0	60	0	157	1	158	0	0	15	2	17	0	0	0	0	0	0	244
07:15	0	0	4	4	8	0	37	1	1	39	0	6	144	0	150	0	0	26	7	33	0	0	0	0	0	230
07:30	0	0	5	10	15	0	40	3	2	45	0	2	166	0	168	0	1	44	10	55	0	0	0	0	0	283
07:45	0	0	5	15	20	0	26	4	1	31	0	4	151	1	156	0	2	46	6	54	0	0	0	0	0	261
08:00	0	0	8	19	27	0	34	3	1	38	0	152	0	152	0	2	53	17	72	0	0	0	0	0	0	289
08:15	0	0	3	17	20	0	38	2	0	40	0	4	141	1	146	0	3	59	17	76	0	0	0	0	0	285
08:30	0	0	12	12	24	0	40	5	1	46	0	4	150	2	156	0	6	49	25	80	0	0	0	0	0	306
08:45	0	1	6	8	15	0	47	7	3	57	0	3	151	2	156	0	3	67	8	78	0	0	0	0	0	306
09:00	0	0	5	14	19	0	34	5	3	42	0	5	163	0	168	0	0	71	12	83	0	0	0	0	0	302
09:15	0	0	7	10	17	0	26	6	1	33	0	0	111	2	113	0	0	56	13	69	0	0	0	0	0	232
09:30	0	0	8	8	16	0	26	9	7	42	0	1	122	3	126	0	1	59	5	65	0	0	0	0	0	250
09:45	0	0	6	4	10	0	21	6	1	28	0	12	108	0	121	0	1	69	7	77	0	0	0	0	0	236
10:00	0	0	3	6	9	0	15	9	0	24	0	0	87	4	91	0	4	53	4	61	0	0	0	0	0	185
10:15	0	0	3	3	6	0	12	9	1	22	0	2	79	2	83	0	2	65	7	74	0	0	0	0	0	185
10:30	0	0	7	3	10	0	20	7	0	27	0	1	83	0	84	0	2	70	14	86	0	0	0	0	0	207
10:45	0	0	4	2	6	0	18	7	1	26	0	0	117	0	117	0	4	55	7	66	0	0	0	0	0	215
11:00	0	0	6	4	10	0	16	2	1	19	0	0	80	1	81	0	2	69	12	83	0	0	0	0	0	234
11:15	0	1	4	2	7	0	12	5	1	18	0	0	65	0	66	0	3	74	8	85	0	0	0	0	0	176
11:30	0	1	5	4	10	0	6	4	1	11	0	4	71	1	76	0	3	78	9	90	0	0	0	0	0	187
11:45	0	0	0	3	3	0	27	4	0	31	0	6	78	0	84	0	2	73	8	83	0	0	0	0	0	201
12:00	0	0	2	6	8	0	17	7	1	25	0	2	74	1	77	0	2	80	12	94	0	0	0	0	0	204
12:15	0	0	5	3	8	0	9	4	3	16	0	1	81	0	82	0	3	116	14	133	0	0	0	0	0	224
12:30	0	2	2	4	8	0	7	5	2	14	0	3	79	1	83	0	1	95	16	112	0	0	0	0	0	217
12:45	0	0	4	6	10	0	7	6	1	14	0	3	81	8	92	0	3	104	10	117	0	0	0	0	0	233
13:00	0	0	3	2	5	0	10	4	3	17	0	2	70	1	73	0	9	107	10	126	0	0	0	0	0	221
13:15	0	0	2	7	9	0	8	7	1	16	0	2	55	4	61	0	4	95	9	108	0	0	0	0	0	194
13:30	0	0	5	3	8	0	9	10	2	21	0	2	81	1	84	0	3	95	13	111	0	0	0	0	0	234
13:45	0	1	7	2	10	0	18	11	0	29	0	1	68	0	69	0	7	88	11	108	0	0	0	0	0	234
14:00	0	0	7	5	12	0	21	7	3	31	0	1	63	0	64	0	7	59	16	120	0	0	0	0	0	227
14:15	0	1	7	1	9	0	10	12	1	23	0	1	78	1	80	0	2	106	40	148	0	0	0	0	0	260
14:30	0	0	2	5	7	0	15	7	3	25	0	0	80	0	80	0	4	124	59	187	0	0	0	0	0	299
14:45	0	0	8	4	12	0	14	10	1	25	0	1	72	1	74	0	6	163	73	242	0	0	0	0	0	353
15:00	0	3	7	8	18	0	21	10	4	35	0	1	92	1	94	0	7	181	64	246	0	0	0	0	0	339
15:15	0	0	5	0	5	0	14	11	1	26	0	1	79	3	83	0	7	166	90	277	0	0	0	0	0	377
15:30	0	0	6	5	11	0	14	8	4	26	0	3	72	2	77	0	14	180	177	281	0	0	0	0	0	385
15:45	0	0	12	4	16	0	23	11	2	36	0	1	76	0</												

Turning Movement Counts - Field Sheet

Job No.:

17-01

Location:

BEACH DR AT CEDAR LN

County:

Montgomery

Date:

3/22/2024 Friday

Town:

Kensington

Recorder:

CSS

Weather:

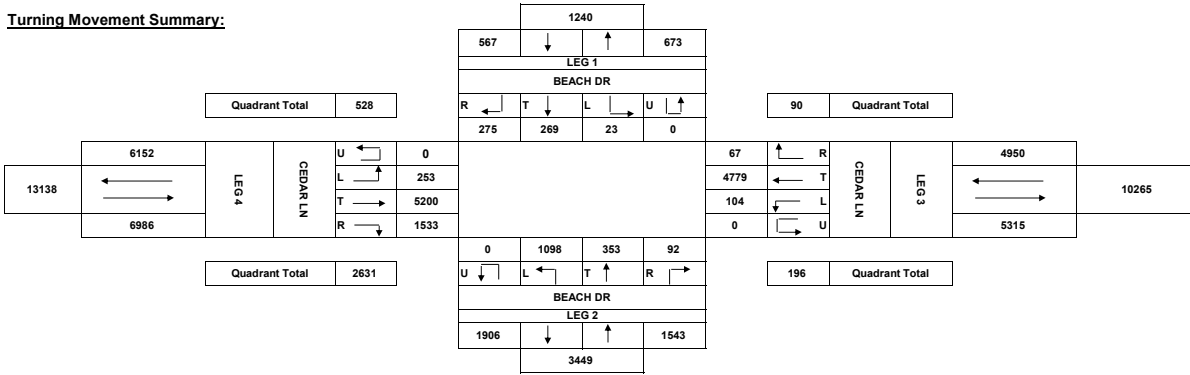
Clear / Sunny

Interval (dd):
(In Minutes)

15

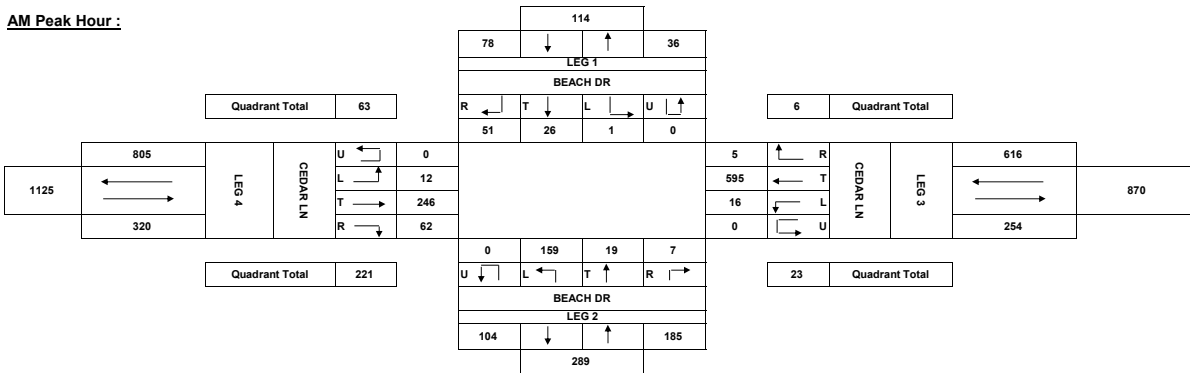
PEAK HOURS	AM PERIOD	6:00AM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM	Start	End	Volume	LOS	V/C
	12:00PM		08:00	09:00	1199			7:00PM		15:30	16:30	1703		

Turning Movement Summary:

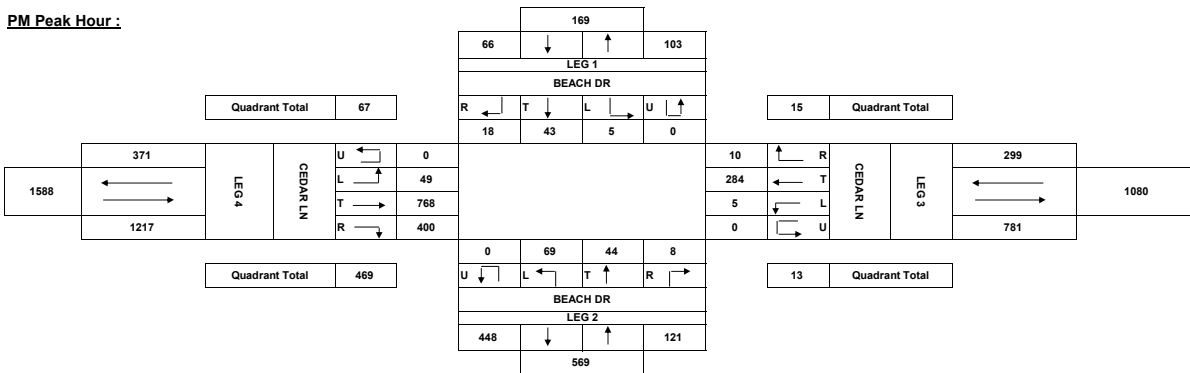


Comments:

AM Peak Hour:



PM Peak Hour:



Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: BEACH DR AT CEDAR LN
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 12 and 29.

Main data table with columns: Street Name, HOUR ENDING, BEACH DR (U turn, Left, Through, Right, Total), BEACH DR (U turn, Left, Through, Right, Total), CEDAR LN (U turn, Left, Through, Right, Total), CEDAR LN (U turn, Left, Through, Right, Total), GRAND TOTAL. Rows represent hourly intervals from 00:15 to 00:00.

Job No.:

17-01

Turning Movement Counts - Field Sheet

Location:

BEACH DR AT CONNECTICUT

County:

Montgomery

Date:

3/22/2024 Friday

Town:

Kensington

Recorder:

CSS

Weather:

Clear / Sunny

Interval (dd):

15

(In Minutes)

PEAK HOURS	AM PERIOD 6:00AM - 12:00PM		Start 07:15	End 08:15	Volume 2910	LOS	V/C	PM PERIOD 12:00PM - 7:00PM		Start 15:30	End 16:30	Volume 3284	LOS	V/C
	Start	End						Start	End					

Street Name-->	CONNECTICUT AVE					CONNECTICUT AVE					BEACH DR					BEACH DR					GRAND TOTAL	
	HOURLY ENDING	From North				From South				From East				From West								
		U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	U turn	Left	Through	Right	Total	U turn	Left	Through	Right		Total
00:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	0	2	206	1	209	0	36	50	4	90	0	2	2	0	4	0	0	0	0	5	5	308
06:30	0	2	348	1	351	0	52	56	4	112	0	9	0	0	9	0	0	0	2	0	2	474
06:45	0	2	411	1	414	0	42	83	5	130	0	5	5	1	11	0	0	0	1	7	8	553
07:00	0	1	448	0	449	0	52	80	11	143	0	5	4	0	9	0	0	0	0	2	2	603
07:15	0	2	456	1	459	0	40	121	9	170	0	9	5	0	14	0	0	0	1	11	12	655
07:30	0	4	518	5	527	0	35	146	14	195	0	16	4	2	22	0	0	5	10	15	759	
07:45	0	3	465	1	469	1	24	148	24	197	0	29	4	2	35	0	0	7	11	18	719	
08:00	0	4	400	3	407	0	30	169	33	232	0	20	7	2	29	0	1	4	19	24	649	
08:15	0	4	423	0	427	0	31	190	27	248	0	26	6	4	36	0	1	8	20	28	740	
08:30	0	2	407	2	411	1	42	188	41	272	0	14	11	15	40	0	2	14	19	35	758	
08:45	1	4	370	1	376	1	35	189	35	260	0	20	11	2	33	0	0	11	11	22	691	
09:00	0	1	363	0	364	0	34	198	33	265	0	16	7	2	25	0	0	5	14	19	673	
09:15	0	2	357	3	362	3	34	181	29	247	0	12	4	6	22	0	0	13	9	22	653	
09:30	0	3	360	1	364	4	27	214	26	271	0	12	7	1	20	0	1	6	9	16	671	
09:45	0	3	336	3	342	3	15	187	15	220	0	11	5	2	28	0	0	7	12	19	610	
10:00	0	5	331	1	337	3	15	204	21	243	0	14	6	1	21	0	0	4	9	13	614	
10:15	0	1	281	1	283	2	16	158	13	189	0	11	9	4	24	0	2	3	4	9	505	
10:30	0	1	274	1	276	4	19	190	23	236	0	17	5	4	26	0	0	9	11	20	558	
10:45	0	3	360	2	365	4	16	185	26	231	0	18	5	4	27	0	1	7	7	15	638	
11:00	0	3	296	3	302	1	11	179	16	207	0	11	5	2	18	0	0	5	7	14	541	
11:15	0	1	291	1	293	0	15	211	14	240	0	22	4	2	28	0	0	2	9	11	572	
11:30	0	1	291	0	292	2	10	200	25	237	0	26	3	2	31	0	2	7	10	19	579	
11:45	0	1	287	1	289	0	21	234	20	275	0	22	8	2	32	0	1	7	9	17	613	
12:00	0	4	224	2	230	0	16	267	6	289	0	12	5	1	18	0	2	5	9	16	553	
12:15	0	4	301	0	305	2	11	261	17	291	0	23	5	5	33	0	2	2	16	20	649	
12:30	0	2	269	1	272	1	8	228	24	261	0	16	5	4	25	0	0	8	11	19	577	
12:45	0	4	366	1	371	2	11	214	32	259	0	20	4	3	27	0	0	11	8	19	676	
13:00	0	7	256	2	265	3	12	259	23	297	0	17	4	4	25	0	3	4	11	18	605	
13:15	0	4	280	1	285	1	5	236	24	266	0	24	10	2	36	0	2	3	11	16	603	
13:30	0	4	247	2	253	3	16	272	18	309	0	35	5	4	44	0	0	3	15	18	624	
13:45	0	2	324	1	327	3	18	324	15	351	0	28	10	4	42	0	0	5	7	12	753	
14:00	0	3	263	2	268	0	23	215	29	267	0	24	6	2	33	0	0	2	21	23	590	
14:15	0	3	284	0	287	3	15	266	25	309	0	27	4	2	33	0	1	5	33	39	668	
14:30	0	3	273	3	279	4	20	368	21	413	0	29	4	2	35	0	1	8	48	57	784	
14:45	0	4	315	3	322	2	15	333	25	375	0	22	7	3	32	0	2	21	59	82	811	
15:00	0	2	259	4	265	1	22	342	23	386	0	17	12	5	34	0	3	19	58	80	841	
15:15	1	5	252	2	260	2	18	363	39	422	0	19	10	15	43	0	5	23	51	79	804	
15:30	0	4	267	2	273	4	16	336	21	377	0	14	5	7	28	0	3	25	69	97	773	
15:45	0	6	243	2	251	12	31	350	46	439	0	11	7	5	23	0	2	26	81	109	822	
16:00	0	9	307	2	318	10	15	315	40	380	0	11	11	3	25	0	1	38	95	134	857	
16:15	0	3	245	1	249	8	22	352	52	434	0	23	9	7	39	0	0	21	77	96	820	
16:30	0	5	240	2	247	3	17	328	47	395	0	19	5	5	29	0	3	31	80	114	785	
16:45	0	2	252	1	255	8	14	329	41	392	0	19	8	1	28	0	0	22	59	81	756	
17:00	0	3	272	2	277	6	10	313	33	362	0	12	7	1	20	0	0	19	53	72	731	
17:15	0	3	288	1	292	4	22	318	42	386	0	18	6	4	28	0	2	16	39	57	763	
17:30	0	1	276	2	279	5	24	400	42	471	0	15	7	4	26	0	4	27	34	65	841	
17:45	0	3	240	0	243	10	15	379	54	458	0	11	9	2	22	0	2	11	31	44	769	
18:00	0	2	232	0	234	5	25	346	44	420	0	10	7	3	20	0	0	19	29	48	722	
18:15	0	0	220	0	2																	

Job No.:

17-01

Turning Movement Counts - Field Sheet

Location:

BEACH DR AT CONNECTICUT

County:

Montgomery

Date:

3/22/2024 Friday

Town:

Kensington

Recorder:

CSS

Weather:

Clear / Sunny

Interval (dd) :
(In Minutes)

15

Hour	PEAK HOURS	AM PERIOD 6:00AM 12:00PM	Start 07:15	End 08:15	Volume 2910	LOS	V/C	PM PERIOD 12:00PM 7:00PM	Start 15:30	End 16:30	Volume 3284	LOS	V/C	
														PEDESTRIANS
		MD 355	MD 355				Ridge Rd				Ridge Road			
		Southbound Approach NO X-WALK	Northbound Approach X-walk				Eastbound Approach X-walk				Westbound Approach X-walk			
		Pedestrians	Pedestrians				Pedestrians				Pedestrians			
00:15		0	0	0	0	0	0	0	0	0	0	0	0	
00:30		0	0	0	0	0	0	0	0	0	0	0	0	
00:45		0	0	0	0	0	0	0	0	0	0	0	0	
01:00		0	0	0	0	0	0	0	0	0	0	0	0	
01:15		0	0	0	0	0	0	0	0	0	0	0	0	
01:30		0	0	0	0	0	0	0	0	0	0	0	0	
01:45		0	0	0	0	0	0	0	0	0	0	0	0	
02:00		0	0	0	0	0	0	0	0	0	0	0	0	
02:15		0	0	0	0	0	0	0	0	0	0	0	0	
02:30		0	0	0	0	0	0	0	0	0	0	0	0	
02:45		0	0	0	0	0	0	0	0	0	0	0	0	
03:00		0	0	0	0	0	0	0	0	0	0	0	0	
03:15		0	0	0	0	0	0	0	0	0	0	0	0	
03:30		0	0	0	0	0	0	0	0	0	0	0	0	
03:45		0	0	0	0	0	0	0	0	0	0	0	0	
04:00		0	0	0	0	0	0	0	0	0	0	0	0	
04:15		0	0	0	0	0	0	0	0	0	0	0	0	
04:30		0	0	0	0	0	0	0	0	0	0	0	0	
04:45		0	0	0	0	0	0	0	0	0	0	0	0	
05:00		0	0	0	0	0	0	0	0	0	0	0	0	
05:15		0	0	0	0	0	0	0	0	0	0	0	0	
05:30		0	0	0	0	0	0	0	0	0	0	0	0	
05:45		0	0	0	0	0	0	0	0	0	0	0	0	
06:00		0	0	0	0	0	0	0	0	0	0	0	0	
06:15		0	0	0	0	0	0	0	0	0	0	0	0	
06:30		0	0	1	0	0	0	0	0	0	0	0	0	
06:45		0	0	0	0	0	0	0	0	0	0	0	0	
07:00		0	0	0	0	0	0	0	0	0	0	0	0	
07:15		0	0	0	0	0	1	0	0	0	0	0	0	
07:30		0	0	1	0	0	1	0	0	0	0	0	0	
07:45		0	0	1	0	0	1	0	0	0	0	0	0	
08:00		0	0	0	0	0	0	0	0	0	0	0	0	
08:15		0	0	0	0	0	0	0	0	0	0	0	0	
08:30		0	0	0	0	0	0	0	0	0	0	0	0	
08:45		0	0	0	0	0	1	0	0	0	0	0	0	
09:00		0	0	1	0	0	0	0	0	0	0	0	0	
09:15		0	0	2	0	0	0	0	0	0	0	0	0	
09:30		0	0	1	0	0	2	0	0	0	0	0	0	
09:45		0	0	0	0	0	2	0	1	0	0	0	0	
10:00		0	0	0	0	0	0	0	0	0	0	0	0	
10:15		0	0	2	0	0	0	0	0	0	0	0	0	
10:30		0	0	0	1	0	1	0	0	0	0	0	0	
10:45		0	0	1	0	0	0	0	0	0	0	0	0	
11:00		0	0	1	0	0	0	0	0	0	0	0	0	
11:15		0	0	1	0	0	0	0	0	0	0	0	0	
11:30		0	0	0	0	0	0	0	1	0	0	0	0	
11:45		0	0	2	0	0	0	0	0	0	0	0	0	
12:00		0	0	0	0	0	0	0	0	0	0	0	0	
12:15		0	0	0	0	0	0	0	0	0	0	0	0	
12:30		0	0	1	0	0	0	0	0	0	0	0	0	
12:45		0	0	2	0	0	0	0	0	0	0	0	0	
13:00		0	0	1	0	0	0	0	0	0	0	0	0	
13:15		0	0	1	0	0	0	0	0	0	0	0	0	
13:30		0	0	1	0	0	1	0	0	0	0	0	0	
13:45		0	0	0	0	0	0	0	1	0	0	0	0	
14:00		0	0	0	0	0	0	0	0	0	0	0	0	
14:15		0	0	1	0	0	1	0	0	0	0	0	0	
14:30		0	0	0	0	0	0	0	0	0	0	0	0	
14:45		0	0	0	0	0	0	0	0	0	0	0	0	
15:00		0	0	0	0	0	1	0	0	0	0	0	0	
15:15		0	0	0	0	0	0	0	0	0	0	0	0	
15:30		0	0	0	0	0	0	0	0	0	0	0	0	
15:45		0	0	0	0	0	2	0	0	0	0	0	0	
16:00		0	0	0	1	0	1	0	0	0	0	0	0	
16:15		0	0	0	0	0	2	0	0	0	0	0	0	
16:30		0	0	0	0	0	0	0	0	0	0	0	0	
16:45		0	0	0	0	0	0	0	0	0	0	0	0	
17:00		0	0	0	0	0	1	0	0	0	0	0	0	
17:15		0	0	0	0	0	1	0	0	0	0	0	0	
17:30		0	0	2	0	0	0	0	0	0	0	0	0	
17:45		0	0	0	0	0	0	0	1	0	0	0	0	
18:00		0	0	0	0	0	0	0	0	0	0	0	0	
18:15		0	0	0	0	0	0	0	0	0	0	0	0	
18:30		0	0	0	0	0	0	0	0	0	0	0	0	
18:45		0	0	2	0	0	0	0	0	0	0	0	0	
19:00		0	0	0	0	0	0	0	0	0	0	0	0	
19:15		0	0	0	0	0	0	0	0	0	0	0	0	
19:30		0	0	0	0	0	0	0	0	0	0	0	0	
19:45		0	0	0	0	0	0	0	0	0	0	0	0	
20:00		0	0	0	0	0	0	0	0	0	0	0	0	
20:15		0	0	0	0	0	0	0	0	0	0	0	0	
20:30		0	0	0	0	0	0	0	0	0	0	0	0	
20:45		0	0	0	0	0	0	0	0	0	0	0	0	
21:00		0	0	0	0	0	0	0	0	0	0	0	0	
21:15		0	0	0	0	0	0	0	0	0	0	0	0	
21:30		0	0	0	0	0	0	0	0	0	0	0	0	
21:45		0	0	0	0	0	0	0	0	0	0	0	0	
22:00		0	0	0	0	0	0	0	0	0	0	0	0	
22:15		0	0	0	0	0	0	0	0	0	0	0	0	
22:30		0	0	0	0	0	0	0	0	0	0	0	0	
22:45		0	0	0	0	0	0	0	0	0	0	0	0	
23:00		0	0	0	0	0	0	0	0	0	0	0	0	
23:15		0	0	0	0	0	0	0	0	0	0	0	0	
23:30		0	0	0	0	0	0	0	0	0	0	0	0	
23:45		0	0	0	0	0	0	0	0	0	0	0	0	
00:00		0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL		0			26			18			4			
AM Peak Vol		0			2			1			0			
PM Peak Vol		0			1			5			0			

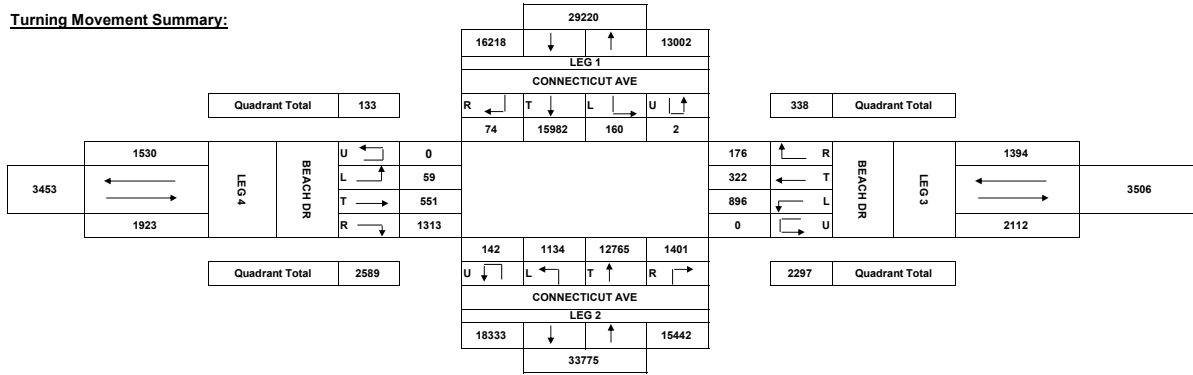
Turning Movement Counts - Field Sheet

Job No.: 17-01
 Location: BEACH DR AT CONNECTICUT
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

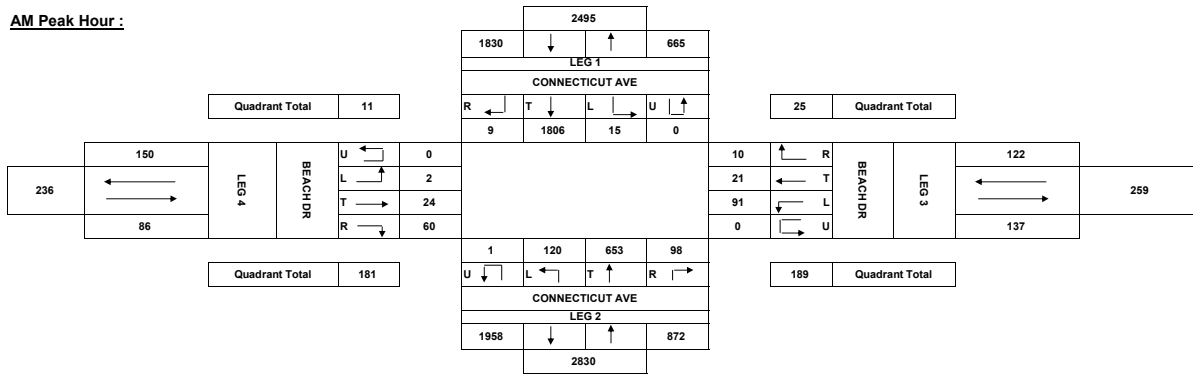
PEAK HOURS	AM PERIOD 6:00AM	Start	End	Volume	LOS	V/C	PM PERIOD 12:00PM	Start	End	Volume	LOS	V/C
	12:00PM	07:15	08:15	2910			7:00PM	15:30	16:30	3284		

Turning Movement Summary:

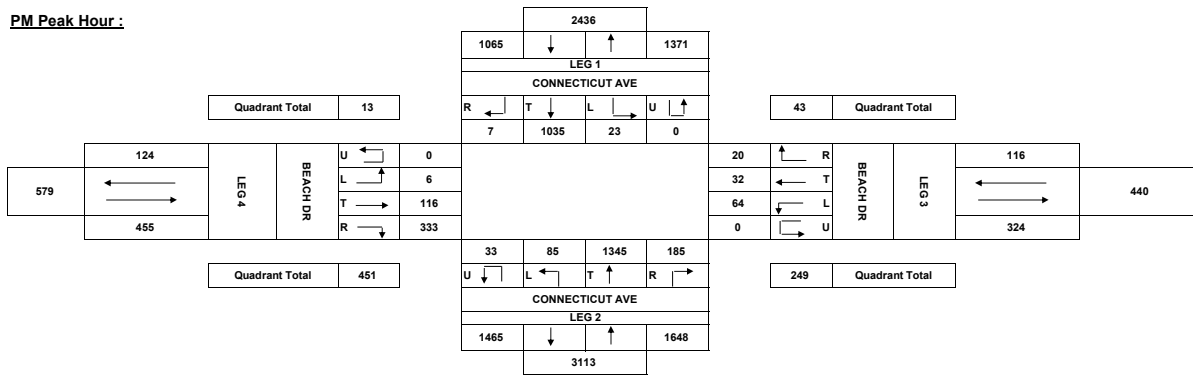


Comments:

AM Peak Hour :



PM Peak Hour :



Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: BEACH DR AT CONNECTICUT
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values: 11, 26.

Main data table with columns: Street Name, HOUR ENDING, and movement counts for CONNECTICUT AVE, BEACH DR, and BEACH DR. Includes a TOTAL row at the bottom.

Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: SAUL AND CONNECTICUT
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd): 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 2573 and 2680.

Main data table with columns: Street Name, HOUR, CONNECTICUT (From North, From South), SAUL (From East, From West), and GRAND TOTAL. Rows represent time intervals from 00:15 to 00:00.

Job No.:

17-01

Turning Movement Counts - Field Sheet

Location: SAUL AND CONNECTICUT
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15 (in Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start 07:15	End 08:15	Volume 2573	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start 14:15	End 15:15	Volume 2680	LOS	V/C
------------	--------------------------	-------------	-----------	-------------	-----	-----	--------------------------	-------------	-----------	-------------	-----	-----

Hour Ending	CONNECTICUT Southbound Approach NO X-WALK		CONNECTICUT Northbound Approach X-walk		SAUL Eastbound Approach NO X-walk		SAUL Wstbound Approach X-walk	
	J-WALKERS		Pedestrians		J-WALKERS		Pedestrians	
00:15	0		0		0		0	
00:30	0		0		0		0	
00:45	0		0		0		0	
01:00	0		0		0		0	
01:15	0		0		0		0	
01:30	0		0		0		0	
01:45	0		0		0		0	
02:00	0		0		0		0	
02:15	0		0		0		0	
02:30	0		0		0		0	
02:45	0		0		0		0	
03:00	0		0		0		0	
03:15	0		0		0		0	
03:30	0		0		0		0	
03:45	0		0		0		0	
04:00	0		0		0		0	
04:15	0		0		0		0	
04:30	0		0		0		0	
04:45	0		0		0		0	
05:00	0		0		0		0	
05:15	0		0		0		0	
05:30	0		0		0		0	
05:45	0		0		0		0	
06:00	0		0		0		0	
06:15	0		0		0		0	
06:30	0		0		0		0	
06:45	0		0		0		0	
07:00	0		0		0		0	
07:15	0		1		0		0	
07:30	0		0		0		0	
07:45	0		3		0		0	
08:00	0		1		1		1	
08:15	0		0		0		0	
08:30	0		1		0		0	
08:45	0		1		1		1	
09:00	0		0		1		0	
09:15	0		1		0		1	
09:30	0		1		0		0	
09:45	0		0		0		2	
10:00	0		0		0		0	
10:15	0		0		1		0	
10:30	0		0		0		1	
10:45	0		1		0		0	
11:00	0		1		1		0	
11:15	0		1		0		0	
11:30	0		0		0		0	
11:45	0		0		0		0	
12:00	0		2		0		0	
12:15	0		2		0		0	
12:30	0		1		0		0	
12:45	0		2		0		0	
13:00	0		1		1		1	
13:15	0		0		0		1	
13:30	0		0		0		0	
13:45	0		0		1		1	
14:00	0		1		0		0	
14:15	0		1		0		1	
14:30	0		2		0		0	
14:45	0		2		0		0	
15:00	0		2		0		1	
15:15	0		0		1		0	
15:30	0		1		0		0	
15:45	0		0		0		0	
16:00	0		1		1		0	
16:15	0		0		0		0	
16:30	0		1		0		1	
16:45	0		0		0		0	
17:00	0		1		1		0	
17:15	0		1		1		0	
17:30	0		3		0		0	
17:45	0		1		0		0	
18:00	0		0		0		1	
18:15	0		0		0		0	
18:30	0		1		0		0	
18:45	0		0		0		0	
19:00	0		0		0		0	
19:15	0		0		0		0	
19:30	0		0		0		0	
19:45	0		0		0		0	
20:00	0		0		0		0	
20:15	0		0		0		0	
20:30	0		0		0		0	
20:45	0		0		0		0	
21:00	0		0		0		0	
21:15	0		0		0		0	
21:30	0		0		0		0	
21:45	0		0		0		0	
22:00	0		0		0		0	
22:15	0		0		0		0	
22:30	0		0		0		0	
22:45	0		0		0		0	
23:00	0		0		0		0	
23:15	0		0		0		0	
23:30	0		0		0		0	
23:45	0		0		0		0	
00:00	0		0		0		0	
TOTAL	0		40		14		13	
AM Peak Vol			5		1		1	
PM Peak Vol			6		2		1	

Job No.: 17-01

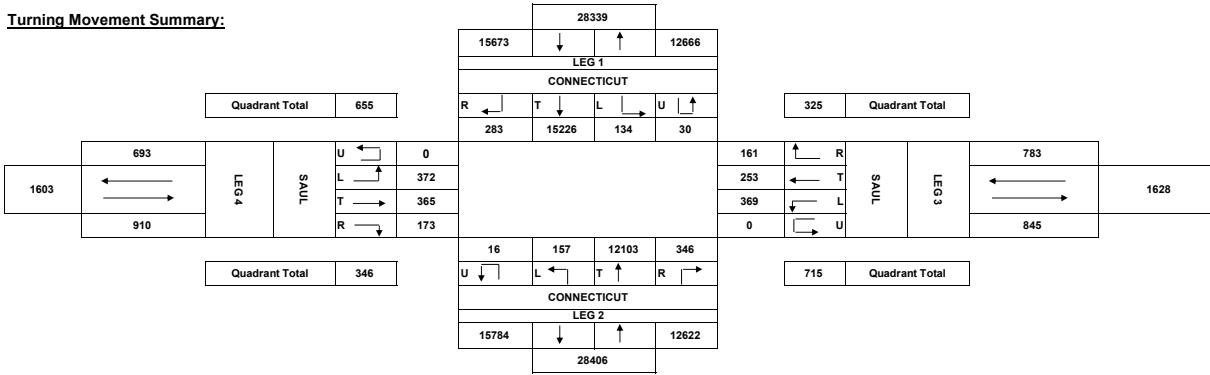
Turning Movement Counts - Field Sheet

Location: SAUL AND CONNECTICUT
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15
 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

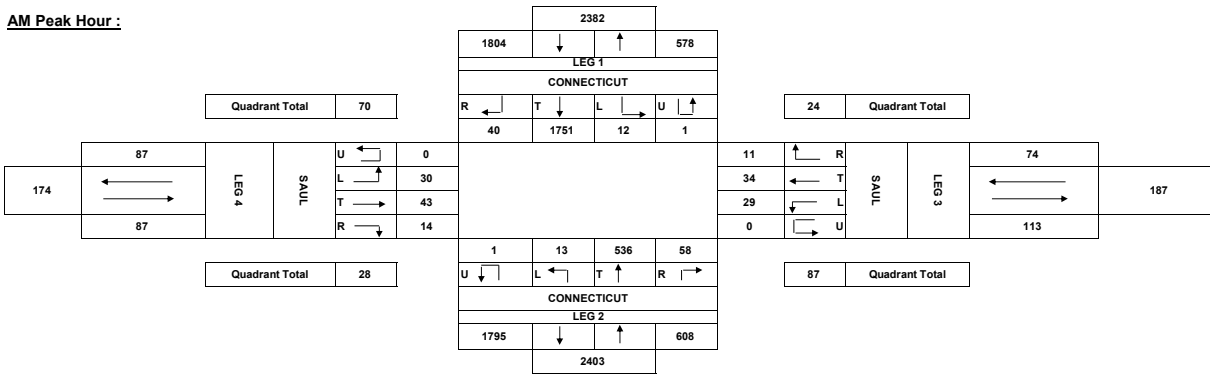
PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			07:15	08:15	2573					14:15	15:15	2680		

Turning Movement Summary:

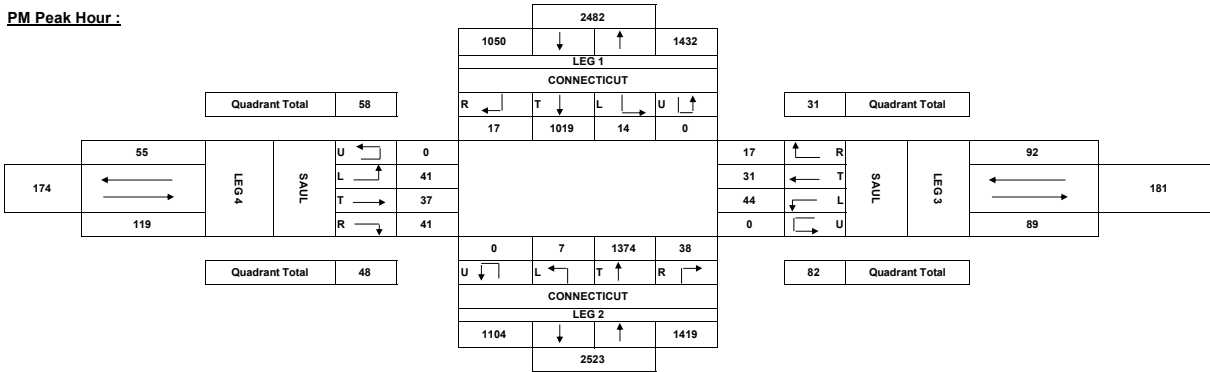


Comments:

AM Peak Hour :



PM Peak Hour :



Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: SAUL RD AT CEDAR LN
Date: 3/22/2024
Recorder: CSS
Interval (dd): 15

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 951 and 1160.

Main data table with columns: Street Name, HOUR, ENDING, CEDAR LN (From North, From South), SAUL RD (From East, From West), and GRAND TOTAL. Rows represent time intervals from 00:15 to 00:00.

Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: SAUL RD AT CEDAR LN
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15 (in Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start 08:00	End 09:00	Volume 951	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start 15:15	End 16:15	Volume 1150	LOS	V/C
------------	--------------------------	-------------	-----------	------------	-----	-----	--------------------------	-------------	-----------	-------------	-----	-----

Hour	Ending
00:15	
00:30	
00:45	
01:00	
01:15	
01:30	
01:45	
02:00	
02:15	
02:30	
02:45	
03:00	
03:15	
03:30	
03:45	
04:00	
04:15	
04:30	
04:45	
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21:15	
21:30	
21:45	
22:00	
22:15	
22:30	
22:45	
23:00	
23:15	
23:30	
23:45	
00:00	
TOTAL	
AM Peak Vol	
PM Peak Vol	

CEDAR LN	
Southbound Approach X-walk	Pedestrians
00:15	0
00:30	0
00:45	0
01:00	0
01:15	0
01:30	0
01:45	0
02:00	0
02:15	0
02:30	0
02:45	0
03:00	0
03:15	0
03:30	0
03:45	0
04:00	0
04:15	0
04:30	0
04:45	0
05:00	0
05:15	0
05:30	0
05:45	0
06:00	0
06:15	0
06:30	0
06:45	1
07:00	0
07:15	0
07:30	0
07:45	0
08:00	1
08:15	1
08:30	0
08:45	0
09:00	0
09:15	0
09:30	0
09:45	0
10:00	1
10:15	1
10:30	0
10:45	0
11:00	1
11:15	2
11:30	0
11:45	1
12:00	1
12:15	1
12:30	1
12:45	2
13:00	0
13:15	0
13:30	0
13:45	1
14:00	1
14:15	1
14:30	0
14:45	0
15:00	2
15:15	4
15:30	0
15:45	0
16:00	0
16:15	0
16:30	4
16:45	0
17:00	1
17:15	1
17:30	1
17:45	1
18:00	3
18:15	0
18:30	0
18:45	0
19:00	2
19:15	0
19:30	0
19:45	0
20:00	0
20:15	0
20:30	0
20:45	0
21:00	0
21:15	0
21:30	0
21:45	0
22:00	0
22:15	0
22:30	0
22:45	0
23:00	0
23:15	0
23:30	0
23:45	0
00:00	0
TOTAL	38
AM Peak Vol	1
PM Peak Vol	1

CEDAR LN	
Northbound Approach X-walk	Pedestrians
00:15	0
00:30	0
00:45	0
01:00	0
01:15	0
01:30	0
01:45	0
02:00	0
02:15	0
02:30	0
02:45	0
03:00	0
03:15	0
03:30	0
03:45	0
04:00	0
04:15	0
04:30	0
04:45	0
05:00	0
05:15	0
05:30	0
05:45	0
06:00	0
06:15	1
06:30	0
06:45	0
07:00	0
07:15	0
07:30	1
07:45	2
08:00	1
08:15	2
08:30	1
08:45	1
09:00	1
09:15	2
09:30	0
09:45	3
10:00	1
10:15	0
10:30	0
10:45	0
11:00	3
11:15	1
11:30	0
11:45	1
12:00	1
12:15	0
12:30	2
12:45	0
13:00	1
13:15	1
13:30	3
13:45	2
14:00	1
14:15	3
14:30	1
14:45	0
15:00	1
15:15	2
15:30	4
15:45	1
16:00	0
16:15	0
16:30	1
16:45	2
17:00	1
17:15	1
17:30	0
17:45	2
18:00	1
18:15	3
18:30	4
18:45	1
19:00	0
19:15	0
19:30	0
19:45	0
20:00	0
20:15	0
20:30	0
20:45	0
21:00	0
21:15	0
21:30	0
21:45	0
22:00	0
22:15	0
22:30	0
22:45	0
23:00	0
23:15	0
23:30	0
23:45	0
00:00	0
TOTAL	59
AM Peak Vol	4
PM Peak Vol	5

SAUL RD	
Eastbound Approach X-walk	Pedestrians
00:15	0
00:30	0
00:45	0
01:00	0
01:15	0
01:30	0
01:45	0
02:00	0
02:15	0
02:30	0
02:45	0
03:00	0
03:15	0
03:30	0
03:45	0
04:00	0
04:15	0
04:30	0
04:45	0
05:00	0
05:15	0
05:30	0
05:45	0
06:00	0
06:15	0
06:30	0
06:45	0
07:00	0
07:15	1
07:30	2
07:45	1
08:00	2
08:15	0
08:30	0
08:45	0
09:00	0
09:15	0
09:30	0
09:45	0
10:00	0
10:15	1
10:30	2
10:45	0
11:00	1
11:15	0
11:30	0
11:45	1
12:00	1
12:15	0
12:30	1
12:45	1
13:00	1
13:15	0
13:30	0
13:45	1
14:00	1
14:15	0
14:30	0
14:45	0
15:00	2
15:15	0
15:30	0
15:45	2
16:00	1
16:15	0
16:30	4
16:45	3
17:00	1
17:15	0
17:30	2
17:45	0
18:00	2
18:15	0
18:30	0
18:45	1
19:00	0
19:15	0
19:30	0
19:45	0
20:00	0
20:15	0
20:30	0
20:45	0
21:00	0
21:15	0
21:30	0
21:45	0
22:00	0
22:15	0
22:30	0
22:45	0
23:00	0
23:15	0
23:30	0
23:45	0
00:00	0
TOTAL	36
AM Peak Vol	0
PM Peak Vol	2

SAUL RD	
Westbound Approach X-walk	Pedestrians
00:15	0
00:30	0
00:45	0
01:00	0
01:15	0
01:30	0
01:45	0
02:00	0
02:15	0
02:30	0
02:45	0
03:00	0
03:15	0
03:30	0
03:45	0
04:00	0
04:15	0
04:30	0
04:45	0
05:00	0
05:15	0
05:30	0
05:45	0
06:00	0
06:15	2
06:30	0
06:45	0
07:00	2
07:15	0
07:30	0
07:45	1
08:00	0
08:15	0
08:30	2
08:45	3
09:00	0
09:15	1
09:30	0
09:45	1
10:00	0
10:15	0
10:30	0
10:45	1
11:00	0
11:15	0
11:30	0
11:45	1
12:00	2
12:15	0
12:30	1
12:45	1
13:00	1
13:15	1
13:30	1
13:45	1
14:00	0
14:15	0
14:30	0
14:45	0
15:00	2
15:15	0
15:30	1
15:45	3
16:00	1
16:15	1
16:30	0
16:45	0
17:00	1
17:15	0
17:30	0
17:45	1
18:00	2
18:15	0
18:30	0
18:45	0
19:00	0
19:15	0
19:30	0
19:45	0
20:00	0
20:15	0
20:30	0
20:45	0
21:00	0
21:15	0
21:30	0
21:45	0
22:00	0
22:15	0
22:30	0
22:45	0
23:00	0
23:15	0
23:30	0
23:45	0
00:00	0
TOTAL	25
AM Peak Vol	5
PM Peak Vol	6

Job No.: 17-01

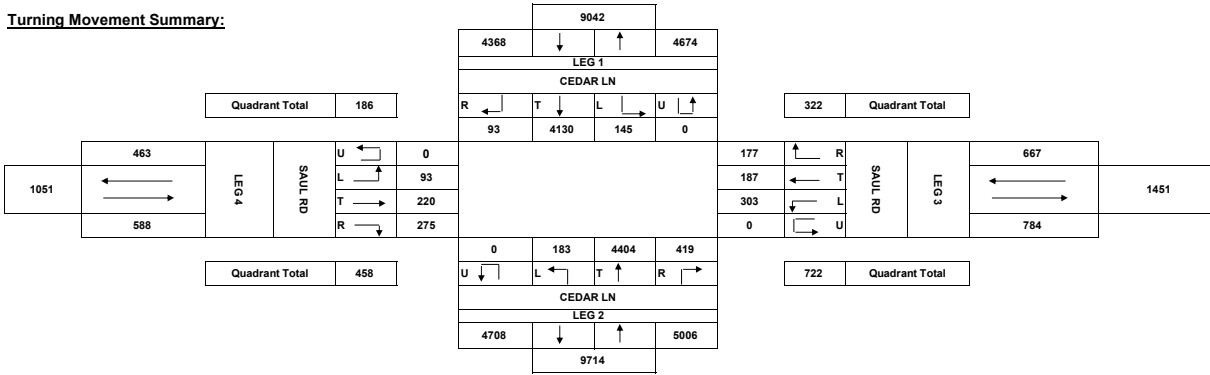
Turning Movement Counts - Field Sheet

Location: SAUL RD AT CEDAR LN
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15
 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

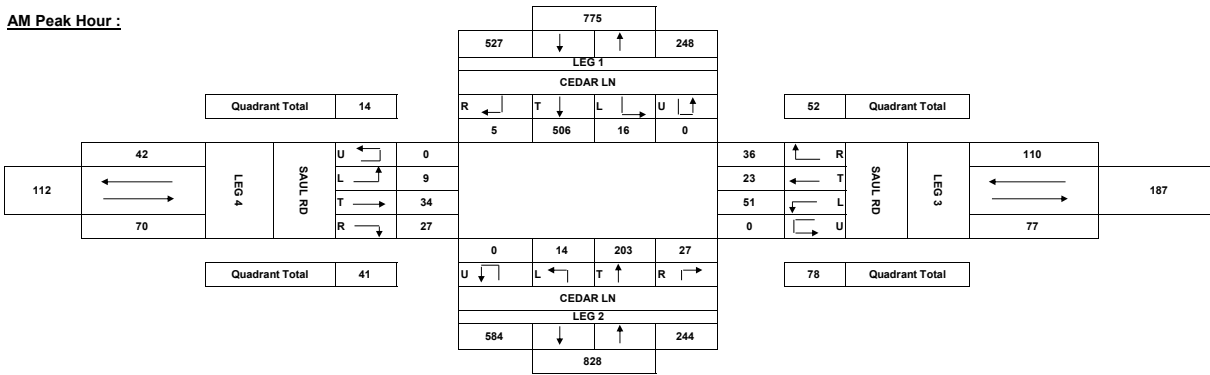
PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			08:00	09:00	951					15:15	16:15	1150		

Turning Movement Summary:

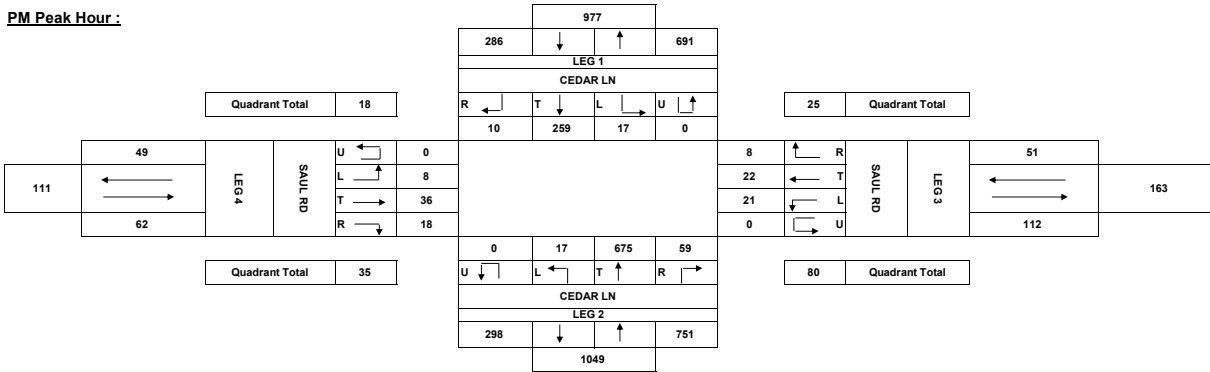


Comments:

AM Peak Hour :



PM Peak Hour :



Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: CONNECTICUT AT KNOWLES
Date: 3/22/2024
Recorder: CSS
Interval (dd) : 15
(In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 3239 and 3664.

Main data table with columns: Street Name, HOUR ENDING, and movement counts for CONNECTICUT (From North, From South) and KNOWLES (From East, From West). Includes a GRAND TOTAL column on the right. Rows range from 00:15 to 00:00.

Job No.:

17-01

Turning Movement Counts - Field Sheet

Location:
Date:
Recorder:
Interval (dd) -
(In Minutes)

CONNECTICUT AT KNOWLES
3/22/2024 Friday
CSS
15

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			07:15	08:15	3239					14:30	15:30	3664		

Hour	CONNECTICUT		CONNECTICUT		KNOWLES		KNOWLES	
	Southbound Approach NO X-WALK	J-WALKERS	Northbound Approach X-walk	Pedestrians	Eastbound Approach X-walk	Pedestrians	Westbound Approach X-walk	Pedestrians
00:15				0		0		0
00:30				0		0		0
00:45				0		0		0
01:00				0		0		0
01:15				0		0		0
01:30				0		0		0
01:45				0		0		0
02:00				0		0		0
02:15				0		0		0
02:30				0		0		0
02:45				0		0		0
03:00				0		0		0
03:15				0		0		0
03:30				0		0		0
03:45				0		0		0
04:00				0		0		0
04:15				0		0		0
04:30				0		0		0
04:45				0		0		0
05:00				0		0		0
05:15				0		0		0
05:30				0		0		0
05:45				0		0		0
06:00				0		0		0
06:15				2		0		0
06:30				2		0		0
06:45				0		0		0
07:00				0		0		0
07:15				0		0		0
07:30				0		0		0
07:45				0		0		0
08:00				1		0		0
08:15				2		2		0
08:30				4		1		1
08:45				3		2		0
09:00				0		0		0
09:15				2		3		2
09:30				4		1		4
09:45				5		2		1
10:00				2		2		0
10:15				2		3		1
10:30				1		2		0
10:45				0		2		0
11:00				1		3		0
11:15				1		4		1
11:30				0		1		2
11:45				3		1		0
12:00				0		2		0
12:15				0		6		0
12:30				2		3		2
12:45				3		3		2
13:00				4		12		1
13:15				5		5		3
13:30				3		2		1
13:45				12		5		4
14:00				3		8		2
14:15				1		1		3
14:30				3		0		1
14:45				0		3		0
15:00				3		0		2
15:15				4		2		4
15:30				0		2		0
15:45				4		3		2
16:00				10		5		2
16:15				2		4		1
16:30				1		1		0
16:45				7		2		7
17:00				0		3		2
17:15				0		4		2
17:30				3		11		4
17:45				5		6		3
18:00				3		2		1
18:15				2		5		3
18:30				0		4		0
18:45				8		9		4
19:00				2		4		0
19:15				0		0		0
19:30				0		0		0
19:45				0		0		0
20:00				0		0		0
20:15				0		0		0
20:30				0		0		0
20:45				0		0		0
21:00				0		0		0
21:15				0		0		0
21:30				0		0		0
21:45				0		0		0
22:00				0		0		0
22:15				0		0		0
22:30				0		0		0
22:45				0		0		0
23:00				0		0		0
23:15				0		0		0
23:30				0		0		0
23:45				0		0		0
00:00				0		0		0
TOTAL		6		128		137		68
AM Peak Vol		0		3		3		0
PM Peak Vol		1		8		7		6

Job No.: 17-01

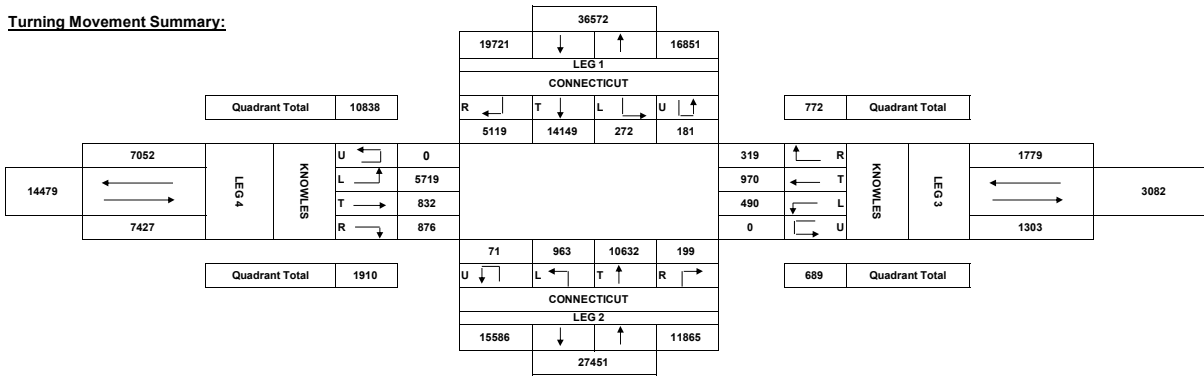
Turning Movement Counts - Field Sheet

Location: CONNECTICUT AT KNOWLES
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15
 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

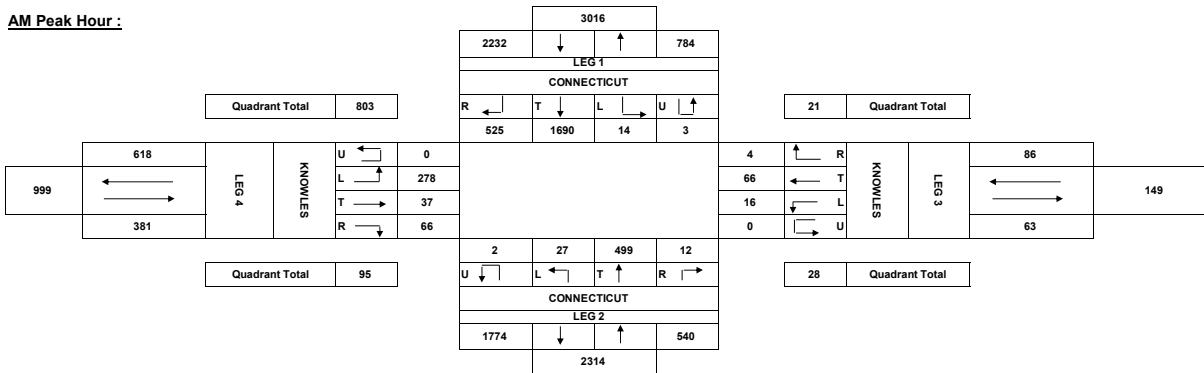
PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			07:15	08:15	3239					14:30	15:30	3664		

Turning Movement Summary:

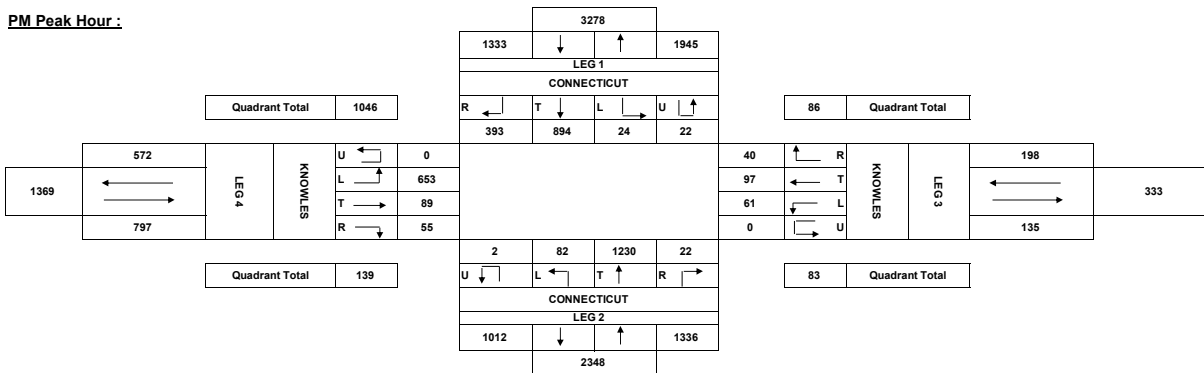


Comments:

AM Peak Hour :



PM Peak Hour :



Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: CONNECTICUT AT KNOWLES
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 2 for Volume and 2 for V/C.

Main data table with columns: Street Name, HOUR ENDING, and movement counts for CONNECTICUT and KNOWLES streets. Includes a TOTAL row at the bottom.

Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: SUMMIT AT KNOWLES
Date: 3/22/2024
Recorder: CSS
Interval (dd): 15

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C

Main data table with columns: Street Name, HOUR, SUMMIT (From North, From South), KNOWLES (From East, From West), GRAND TOTAL. Includes rows for various hours from 00:15 to 00:00 and a final TOTAL row.

Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: SUMMIT AT KNOWLES
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15 (in Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start 07:45	End 08:45	Volume 1404	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start 14:45	End 15:45	Volume 1800	LOS	V/C
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Hour Ending	SUMMIT Southbound Approach X-WALK		SUMMIT Northbound Approach NO X-walk		KNOWLES Eastbound Approach X-walk		KNOWLES Westbound Approach X-walk	
	Pedestrians	J-WALKERS	Pedestrians	X-walk	Pedestrians	X-walk	Pedestrians	X-walk
00:15	0	0	0	0	0	0	0	0
00:30	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0
06:45	0	0	0	0	0	0	0	0
07:00	0	0	0	0	1	0	0	0
07:15	1	0	0	0	0	0	0	0
07:30	0	0	0	0	2	2	2	2
07:45	0	0	0	0	1	0	0	0
08:00	0	0	0	0	0	0	0	0
08:15	0	0	0	0	1	4	0	0
08:30	0	0	0	0	0	2	0	0
08:45	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0
09:15	0	0	1	0	1	0	0	0
09:30	0	0	1	0	1	0	0	0
09:45	0	0	0	0	0	0	0	0
10:00	0	0	0	0	2	2	2	2
10:15	0	0	0	0	4	0	0	0
10:30	0	0	1	0	1	0	0	0
10:45	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0
12:00	2	0	0	0	0	0	0	0
12:15	0	0	0	0	2	0	0	0
12:30	1	0	0	0	0	0	0	0
12:45	0	0	0	0	0	2	0	0
13:00	2	0	0	0	0	0	0	0
13:15	1	0	0	0	0	1	0	0
13:30	0	0	0	0	1	0	0	0
13:45	1	0	0	0	0	3	0	0
14:00	1	0	0	0	0	0	0	0
14:15	0	0	0	0	0	2	0	0
14:30	0	0	0	0	0	0	0	0
14:45	2	0	0	0	0	0	0	0
15:00	0	0	0	0	0	1	0	0
15:15	2	0	0	0	1	2	0	0
15:30	0	0	0	0	1	2	0	0
15:45	1	0	0	0	0	3	0	0
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	2	0	0
16:45	0	0	0	0	0	3	0	0
17:00	1	0	0	0	1	0	0	0
17:15	1	0	0	0	1	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	1	0	0	0
18:00	1	0	0	0	1	0	0	0
18:15	1	0	0	0	1	0	0	0
18:30	3	0	0	0	2	0	0	0
18:45	0	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0	0
19:15	0	0	0	0	0	0	0	0
19:30	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0
20:15	0	0	0	0	0	0	0	0
20:30	0	0	0	0	0	0	0	0
20:45	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0
21:15	0	0	0	0	0	0	0	0
21:30	0	0	0	0	0	0	0	0
21:45	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0
22:15	0	0	0	0	0	0	0	0
22:30	0	0	0	0	0	0	0	0
22:45	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0
23:15	0	0	0	0	0	0	0	0
23:30	0	0	0	0	0	0	0	0
23:45	0	0	0	0	0	0	0	0
00:00	0	0	0	0	0	0	0	0
TOTAL	25	0	0	0	26	29	6	6
AM Peak Vol	0	0	0	0	1	6	6	6
PM Peak Vol	3	0	0	0	2	6	6	6

Job No.: 17-01

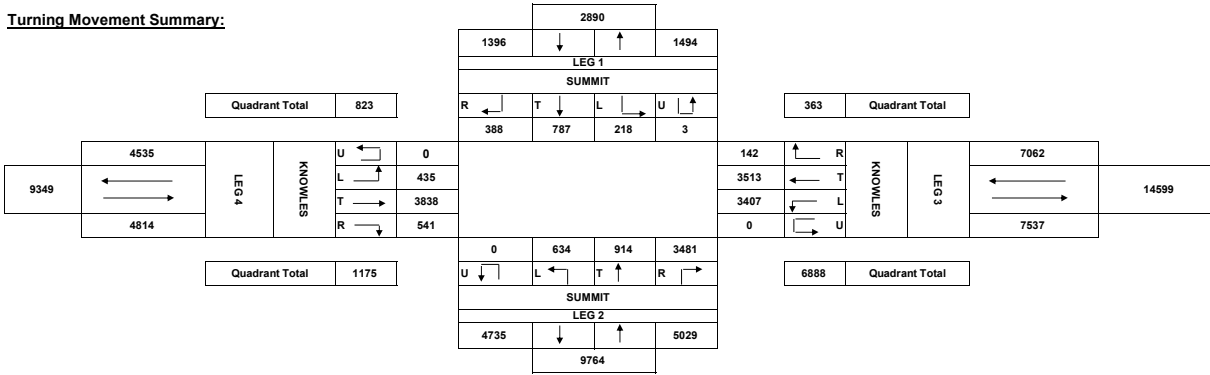
Turning Movement Counts - Field Sheet

Location: SUMMIT AT KNOWLES
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15
 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

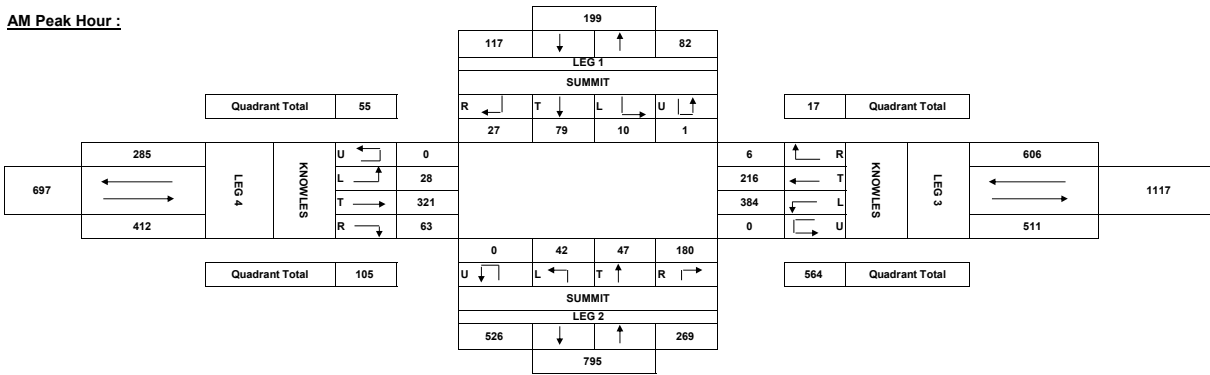
PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			07:45	08:45	1404					14:45	15:45	1800		

Turning Movement Summary:

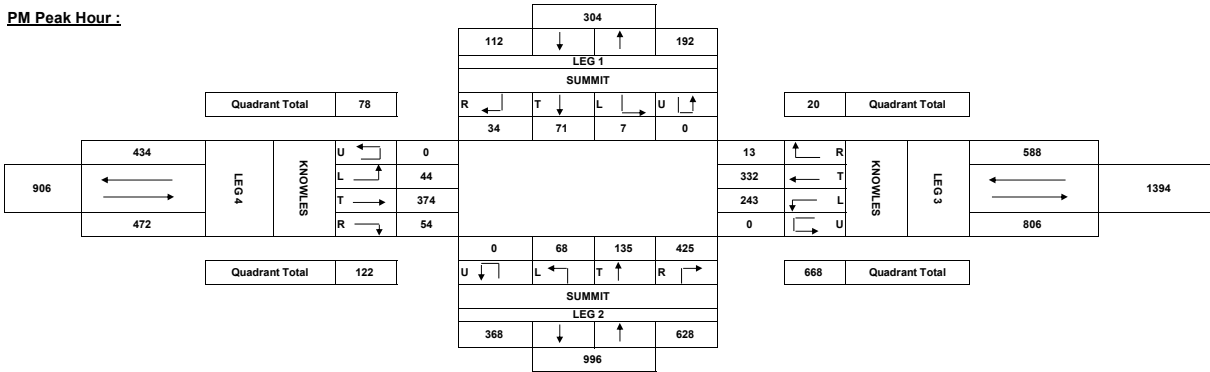


Comments:

AM Peak Hour :



PM Peak Hour :



Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: SUMMIT AT KNOWLES
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 2 for Volume and 2 for PM Volume.

Main data table with columns: Street Name, HOUR ENDING, SUMMIT (U turn, Left, Through, Right, Total), KNOWLES (U turn, Left, Through, Right, Total), and GRAND TOTAL. Rows list hourly counts from 00:15 to 00:00.

Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: PARKWOOD DR AT KNOWLES AVE
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd): 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start/End/Volume/LOS/V/C, PM PERIOD 12:00PM-7:00PM, Start/End/Volume/LOS/V/C. Values include 1055 and 1302.

Main data table with columns: Street Name, HOUR, ENDING, PARKWOOD (From North, From South), KNOWLES (From East, From West), GRAND TOTAL. Rows include time intervals from 00:15 to 00:00 and a final TOTAL row.

Job No.: 17-01

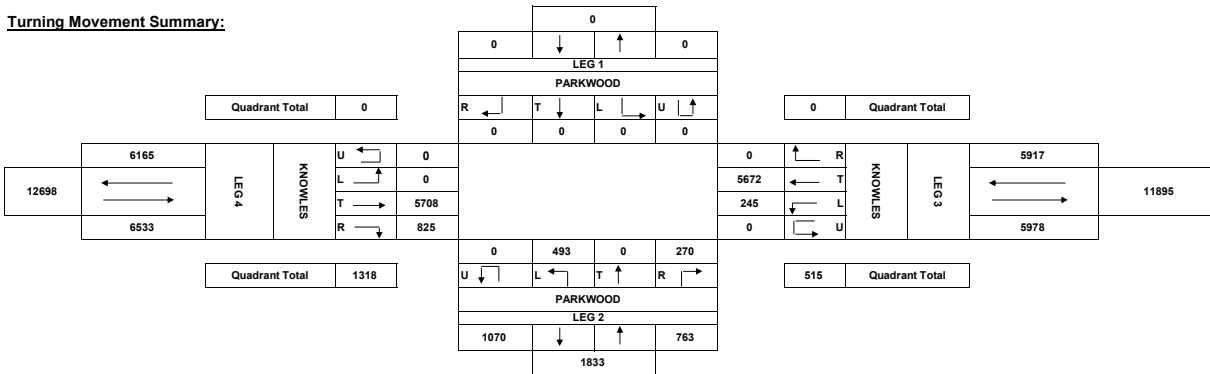
Turning Movement Counts - Field Sheet

Location: PARKWOOD DR AT KNOWLES AVE
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15
 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

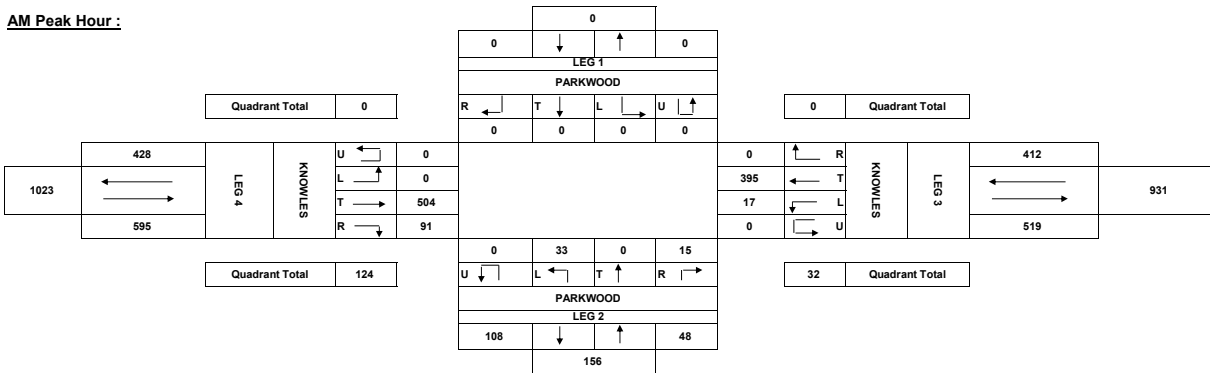
PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			07:45	08:45	1055					14:45	15:45	1302		

Turning Movement Summary:

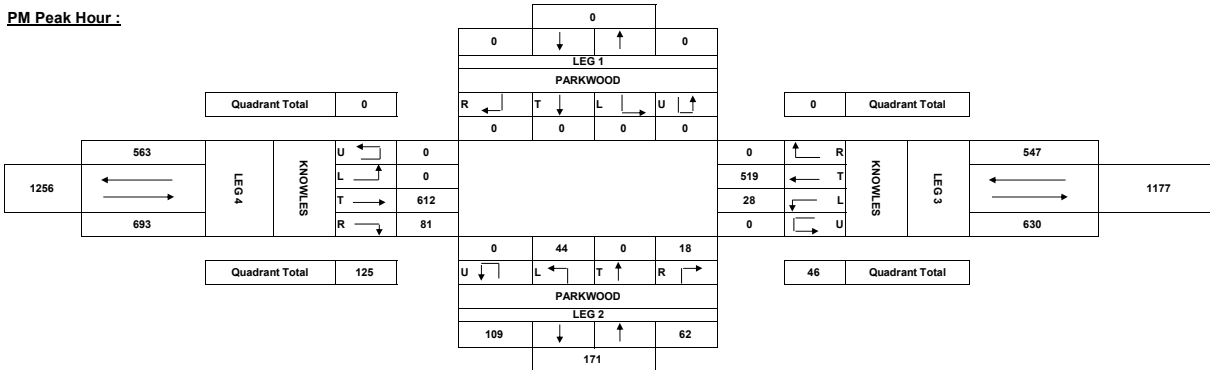


Comments:

AM Peak Hour :



PM Peak Hour :



Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: PARKWOOD DR AT KNOWLES AVE
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 4 and 3.

Main data table with columns: Street Name, HOUR ENDING, and movement counts for PARKWOOD and KNOWLES streets. Includes a TOTAL row at the bottom.

Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: STRATHMORE AND MD 355
Date: 3/22/2024
Recorder: CSS
Interval (dd): 15

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 3520 and 4224.

Main data table with columns: Street Name, HOUR, MD 355 (From North, From South), STRATHMORE (From East, From West), and GRAND TOTAL. Rows represent hourly intervals from 00:15 to 00:00.

Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: STRATHMORE AND MD 355
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15 (in Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

PEAK HOURS	AM PERIOD 6:00AM-12:00PM	Start 08:15	End 09:15	Volume 3520	LOS	V/C	PM PERIOD 12:00PM-7:00PM	Start 14:45	End 15:45	Volume 4224	LOS	V/C
------------	--------------------------	-------------	-----------	-------------	-----	-----	--------------------------	-------------	-----------	-------------	-----	-----

Hour Ending	MD 355 Southbound Approach X-WALK		MD 355 Northbound Approach NO X-walk		STRATHMORE Eastbound Approach X-walk		STRATHMORE Wstbound Approach X-walk	
	Pedestrians	J-WALKERS	Pedestrians	X-walk	Pedestrians	X-walk	Pedestrians	X-walk
00:15	0	0	0	0	0	0	0	0
00:30	0	0	0	0	0	0	0	0
00:45	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0
01:15	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0
02:15	0	0	0	0	0	0	0	0
02:30	0	0	0	0	0	0	0	0
02:45	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0
03:15	0	0	0	0	0	0	0	0
03:30	0	0	0	0	0	0	0	0
03:45	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0
04:15	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0
04:45	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	0	0
05:30	0	0	0	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0
06:15	0	0	0	0	0	0	0	0
06:30	0	0	0	0	0	0	0	0
06:45	1	0	0	0	0	0	0	0
07:00	0	0	0	0	0	0	1	0
07:15	0	0	0	0	1	0	2	0
07:30	0	0	0	0	1	0	1	0
07:45	0	0	0	0	0	2	0	0
08:00	0	0	0	0	0	0	1	0
08:15	0	0	0	0	0	0	0	0
08:30	1	0	0	0	0	0	1	0
08:45	0	0	0	0	0	0	1	0
09:00	0	0	0	0	2	0	0	0
09:15	2	0	0	0	0	2	0	0
09:30	0	0	0	0	1	0	0	0
09:45	0	0	0	0	3	0	0	0
10:00	1	0	0	0	0	0	0	0
10:15	0	0	0	0	1	0	0	0
10:30	0	0	0	0	0	0	0	0
10:45	0	0	0	0	3	0	0	0
11:00	0	0	0	0	1	0	0	0
11:15	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0
11:45	1	0	0	0	1	0	1	0
12:00	1	0	0	0	0	0	0	0
12:15	1	0	0	0	1	0	0	0
12:30	0	0	0	0	2	0	0	0
12:45	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0
13:45	1	0	0	0	2	0	1	0
14:00	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0
14:30	0	0	0	0	1	0	0	0
14:45	0	0	0	0	1	2	0	0
15:00	0	0	0	0	1	0	0	0
15:15	0	0	0	0	1	1	0	0
15:30	3	0	0	0	2	2	0	0
15:45	4	0	0	0	1	0	0	0
16:00	2	0	0	0	1	0	1	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	1	0	0	0
16:45	3	0	0	0	0	0	0	0
17:00	3	0	0	0	0	2	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	1	0	0	0
18:00	0	0	0	0	1	1	0	0
18:15	0	0	0	0	0	0	0	0
18:30	1	0	0	0	0	4	0	0
18:45	0	0	0	0	0	0	0	0
19:00	0	0	0	0	1	2	0	0
19:15	0	0	0	0	0	0	0	0
19:30	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0
20:15	0	0	0	0	0	0	0	0
20:30	0	0	0	0	0	0	0	0
20:45	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0
21:15	0	0	0	0	0	0	0	0
21:30	0	0	0	0	0	0	0	0
21:45	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0
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22:30	0	0	0	0	0	0	0	0
22:45	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0
23:15	0	0	0	0	0	0	0	0
23:30	0	0	0	0	0	0	0	0
23:45	0	0	0	0	0	0	0	0
00:00	0	0	0	0	0	0	0	0
TOTAL	26	0	0	0	30	28	4	3
AM Peak Vol	3	0	0	0	2	0	0	0
PM Peak Vol	7	0	0	0	5	3	0	0

Job No.: 17-01

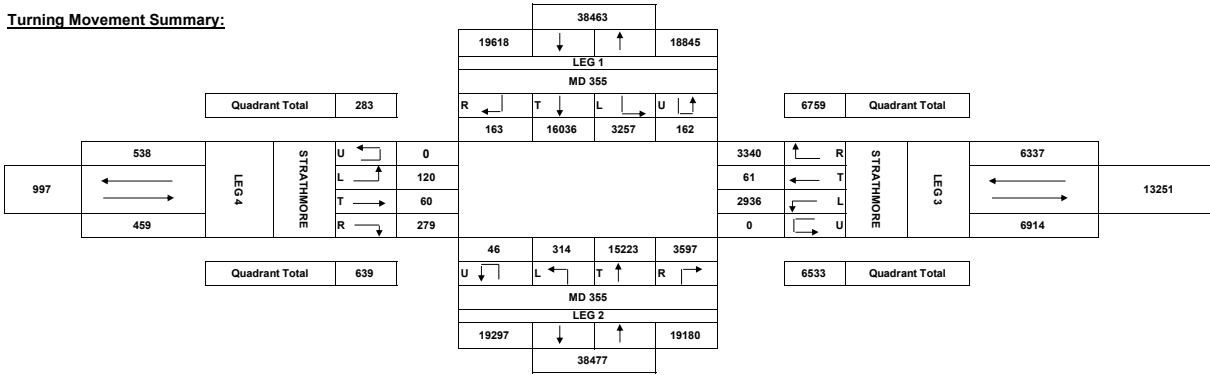
Turning Movement Counts - Field Sheet

Location: STRATHMORE AND MD 355
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd): 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

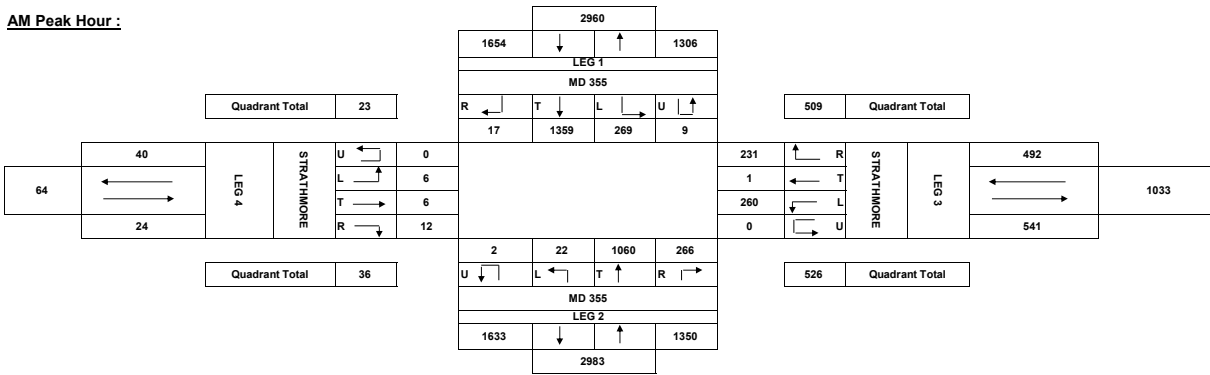
PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			08:15	09:15	3520					14:45	15:45	4224		

Turning Movement Summary:

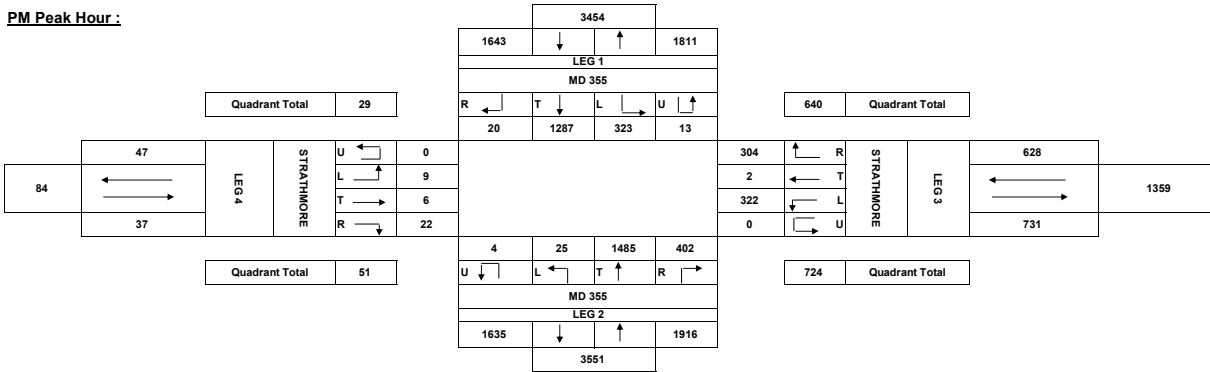


Comments:

AM Peak Hour :



PM Peak Hour :



Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: STRATHMORE AND MD 355
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 1 for Volume and 1 for V/C.

Main data table with columns: Street Name, HOUR ENDING, and movement counts for MD 355 (From North, From South) and STRATHMORE (From East, From West). Includes a GRAND TOTAL column and a summary row at the bottom.

Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: MD 355 AT GROSVENOR
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd): 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 3335 and 3636.

Main data table with columns: Street Name, HOUR, ENDING, MD 355 (From North, From South), GROSVENOR (From East, From West), and GRAND TOTAL. Rows represent hourly intervals from 00:15 to 00:00.

Job No.: 17-01

Turning Movement Counts - Field Sheet

Location: MD 355 AT GROSVENOR
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd): 15 (in Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start 08:15, End 09:15, Volume 3335, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start 14:45, End 15:45, Volume 3636, LOS, V/C.

Hour Ending table with rows from 00:15 to 00:00 and summary rows for AM Peak Vol and PM Peak Vol.

MD 355 Southbound Approach X-WALK table with columns: Pedestrians, J-WALKERS and rows for each hour.

MD 355 Northbound Approach NO X-walk table with columns: J-WALKERS and rows for each hour.

GROSVENOR Eastbound Approach X-walk table with columns: Pedestrians, J-WALKERS and rows for each hour.

GROSVENOR Westbound Approach NO X-walk table with columns: J-WALKERS and rows for each hour.

Job No.: 17-01

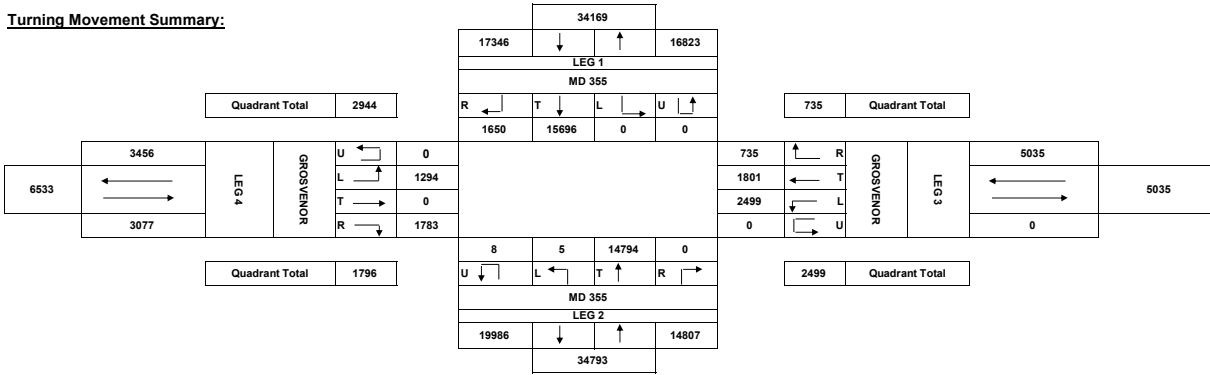
Turning Movement Counts - Field Sheet

Location: MD 355 AT GROSVENOR
 Date: 3/22/2024 Friday
 Recorder: CSS
 Interval (dd): 15
 (In Minutes)

County: Montgomery
 Town: Kensington
 Weather: Clear / Sunny

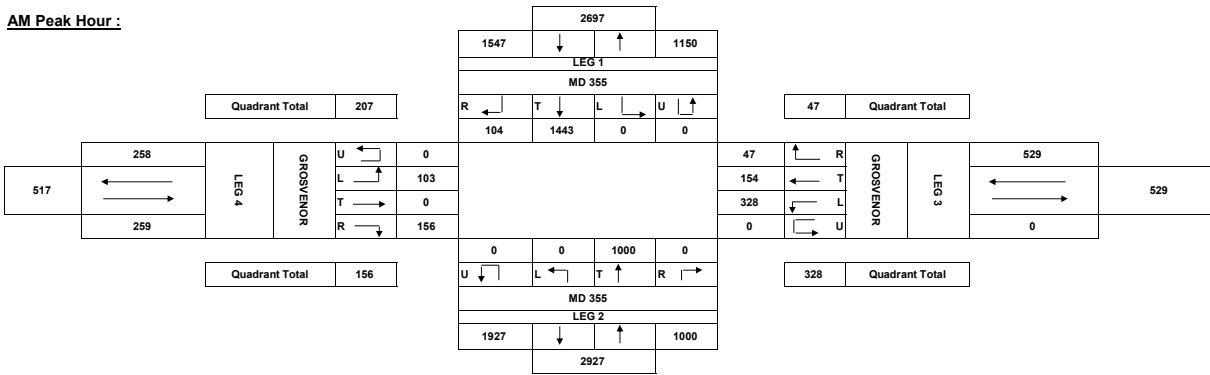
PEAK HOURS	AM PERIOD	6:00AM-12:00PM	Start	End	Volume	LOS	V/C	PM PERIOD	12:00PM-7:00PM	Start	End	Volume	LOS	V/C
			08:15	09:15	3335					14:45	15:45	3636		

Turning Movement Summary:

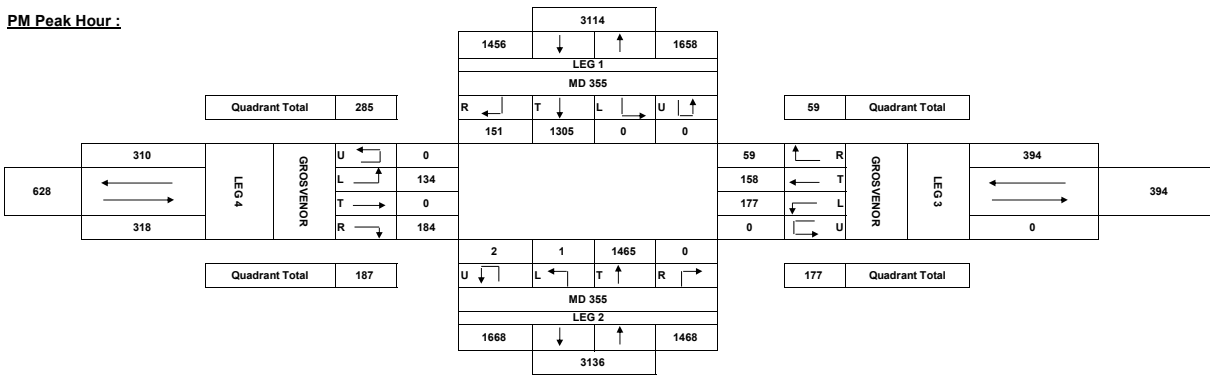


Comments:

AM Peak Hour :



PM Peak Hour :



Turning Movement Counts - Field Sheet

Job No.: 17-01

Location: MD 355 AT GROSVENOR
Date: 3/22/2024 Friday
Recorder: CSS
Interval (dd) : 15 (In Minutes)

County: Montgomery
Town: Kensington
Weather: Clear / Sunny

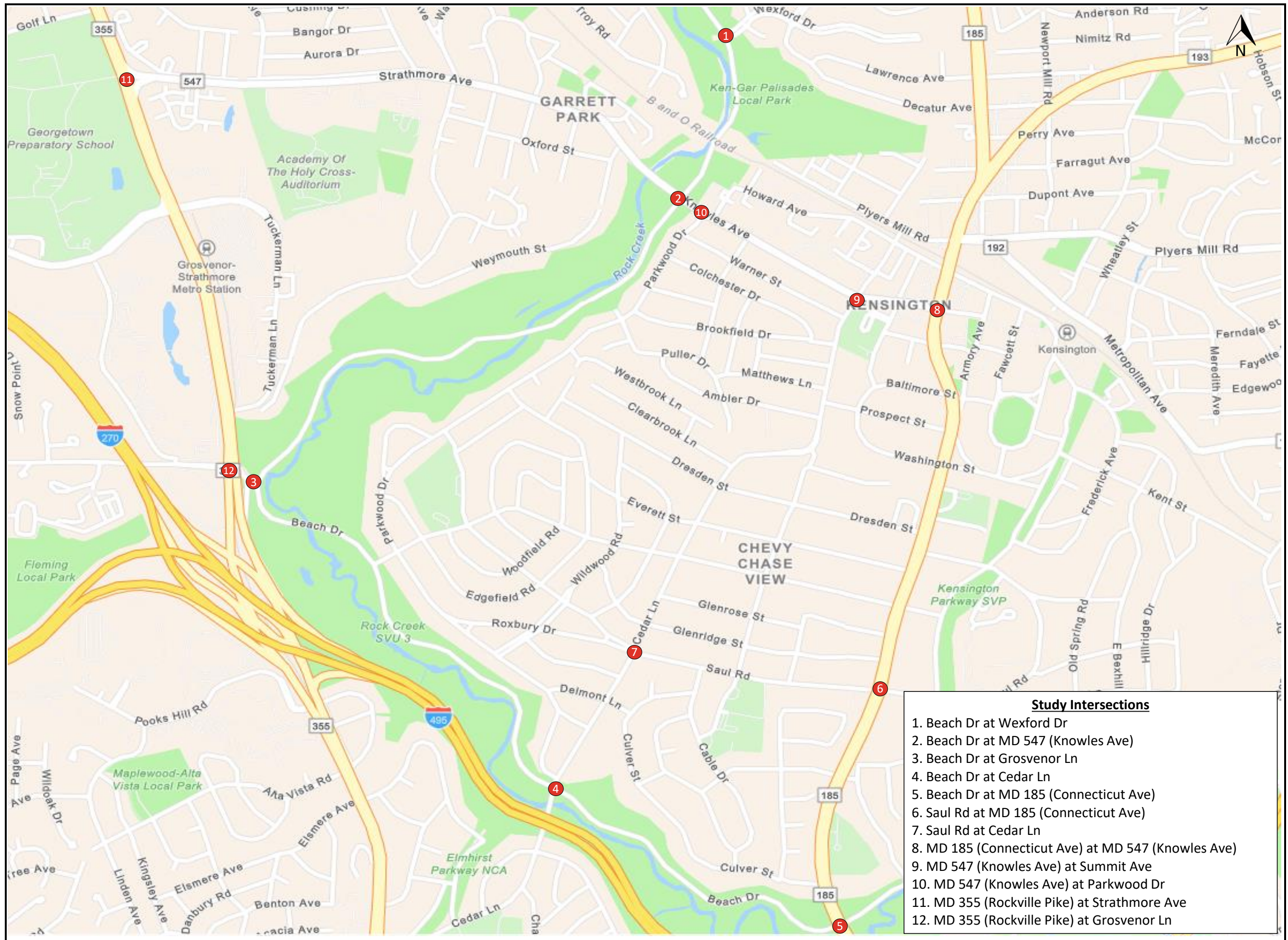
Summary table with columns: PEAK HOURS, AM PERIOD 6:00AM-12:00PM, Start, End, Volume, LOS, V/C, PM PERIOD 12:00PM-7:00PM, Start, End, Volume, LOS, V/C. Values include 3 for AM volume and 2 for PM volume.

Main data table with columns: Street Name, HOUR ENDING, MD 355 (From North, From South), GROSVENOR (From East, From West), and GRAND TOTAL. Rows list hourly counts from 00:15 to 00:00.

APPENDIX

B

Existing Balanced Peak Hour Volumes




Study Intersections


1. Beach Dr at Wexford Dr
2. Beach Dr at MD 547 (Knowles Ave)
3. Beach Dr at Grosvenor Ln
4. Beach Dr at Cedar Ln
5. Beach Dr at MD 185 (Connecticut Ave)
6. Saul Rd at MD 185 (Connecticut Ave)
7. Saul Rd at Cedar Ln
8. MD 185 (Connecticut Ave) at MD 547 (Knowles Ave)
9. MD 547 (Knowles Ave) at Summit Ave
10. MD 547 (Knowles Ave) at Parkwood Dr
11. MD 355 (Rockville Pike) at Strathmore Ave
12. MD 355 (Rockville Pike) at Grosvenor Ln

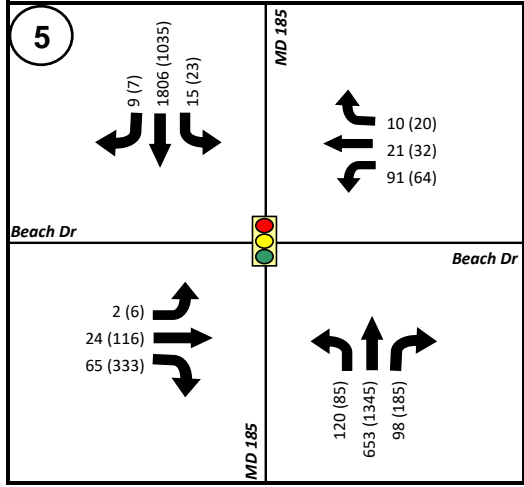
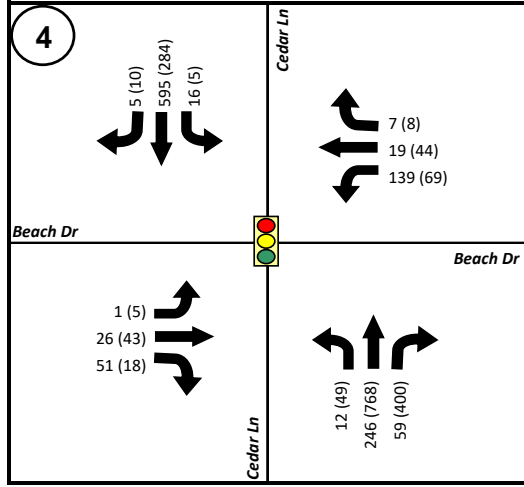
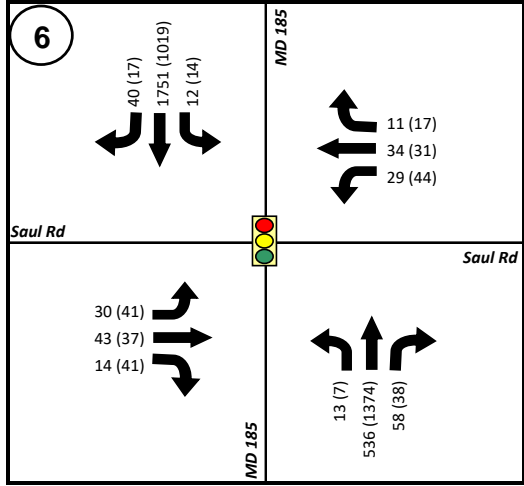
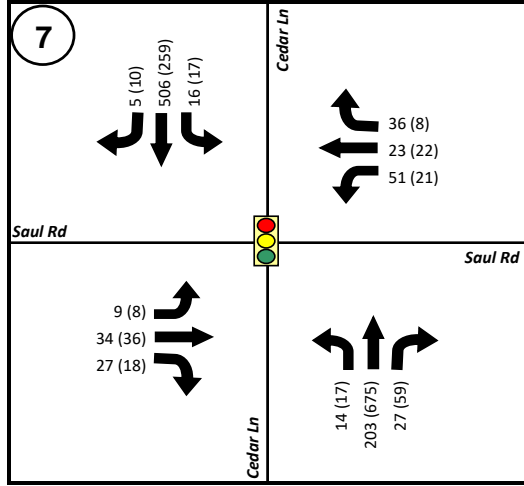
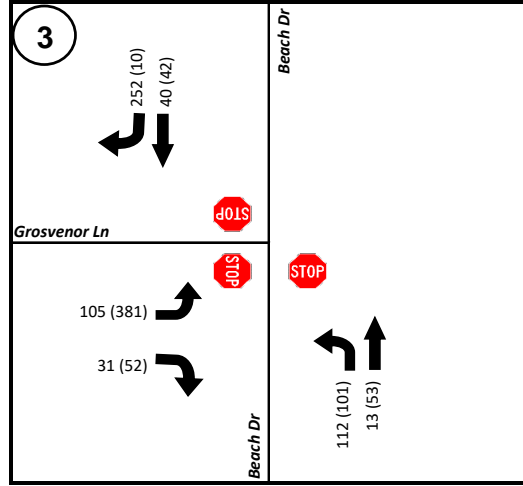
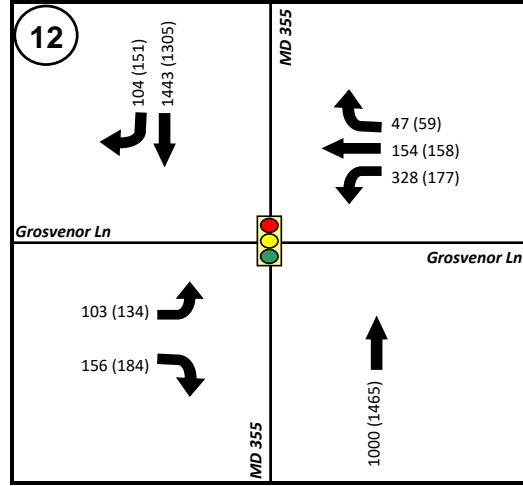
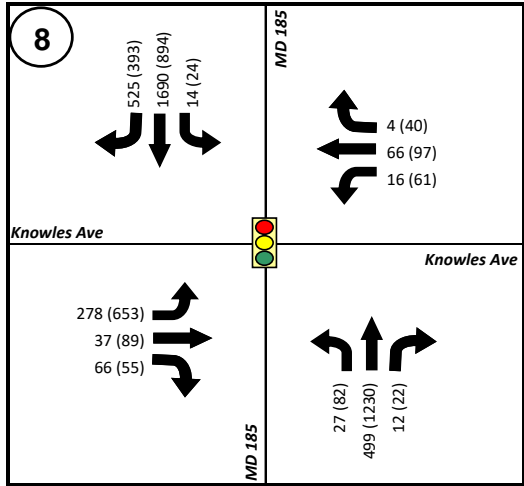
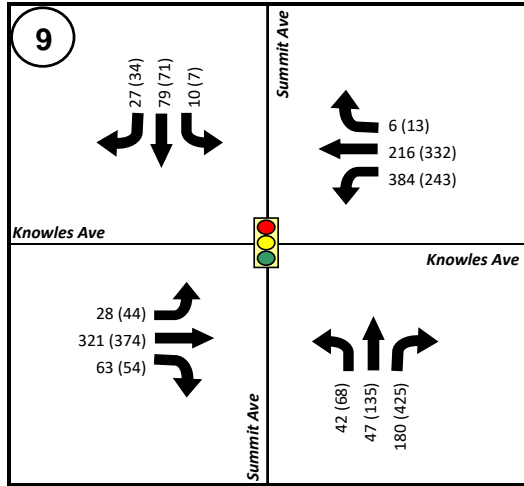
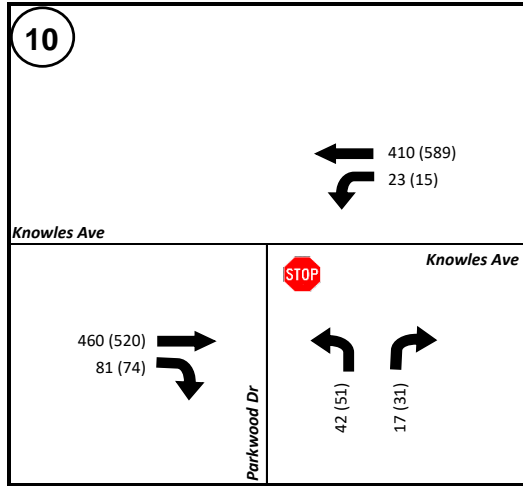
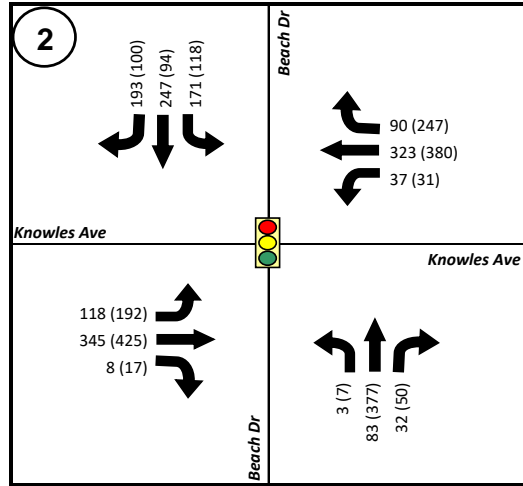
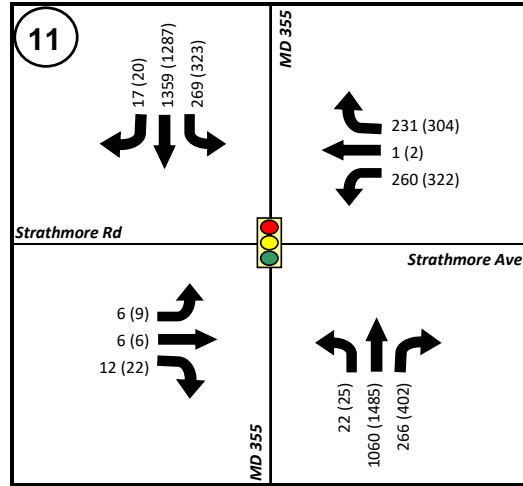
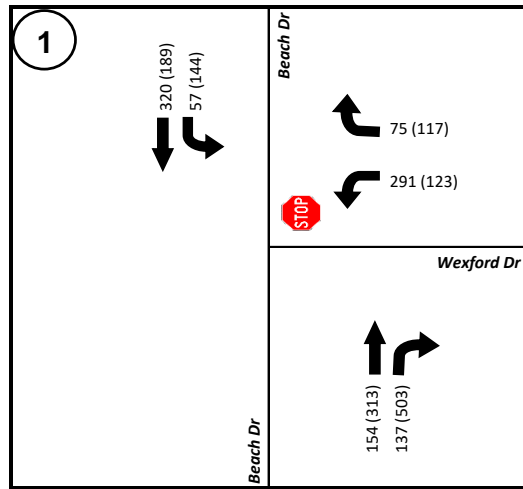
Existing Balanced Peak Hour Volumes

LEGEND

← AM (PM) Peak Hour Vehicular Volume

 Signalized Intersection

 Stop Controlled Intersection



APPENDIX

C

Existing Conditions Synchro Outputs

HCM 7th TWSC
1: Beach Dr & Wexford Dr

04/22/2024

Intersection						
Int Delay, s/veh	23					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	291	75	154	137	57	320
Future Vol, veh/h	291	75	154	137	57	320
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	316	82	167	149	62	348

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	714	242	0	0	316
Stage 1	242	-	-	-	-
Stage 2	472	-	-	-	-
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	398	797	-	-	1244
Stage 1	798	-	-	-	-
Stage 2	628	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	374	797	-	-	1244
Mov Cap-2 Maneuver	374	-	-	-	-
Stage 1	798	-	-	-	-
Stage 2	589	-	-	-	-























Approach	WB	NB	SB
HCM Control Delay, s/v	63.77	0	1.22
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	419	272
HCM Lane V/C Ratio	-	-	0.949	0.05
HCM Control Delay (s/veh)	-	-	63.8	8
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	11	0.2

HCM 7th Signalized Intersection Summary

2: Beach Dr & Knowles Ave

04/22/2024

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	345	8	37	323	90	3	83	32	171	247	193
Future Volume (veh/h)	118	345	8	37	323	90	3	83	32	171	247	193
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	128	375	9	40	351	98	3	90	35	186	268	210
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	553	970	23	526	883	927	33	273	235	392	298	234
Arrive On Green	0.09	0.53	0.53	0.03	0.47	0.47	0.15	0.15	0.15	0.11	0.31	0.31
Sat Flow, veh/h	1781	1819	44	1781	1870	1585	16	1838	1585	1781	972	761
Grp Volume(v), veh/h	128	0	384	40	351	98	93	0	35	186	0	478
Grp Sat Flow(s),veh/h/ln	1781	0	1863	1781	1870	1585	1854	0	1585	1781	0	1733
Q Serve(g_s), s	3.9	0.0	14.5	1.4	14.6	3.3	0.0	0.0	2.3	10.1	0.0	31.7
Cycle Q Clear(g_c), s	3.9	0.0	14.5	1.4	14.6	3.3	5.3	0.0	2.3	10.1	0.0	31.7
Prop In Lane	1.00		0.02	1.00		1.00	0.03		1.00	1.00		0.44
Lane Grp Cap(c), veh/h	553	0	993	526	883	927	306	0	235	392	0	532
V/C Ratio(X)	0.23	0.00	0.39	0.08	0.40	0.11	0.30	0.00	0.15	0.47	0.00	0.90
Avail Cap(c_a), veh/h	553	0	993	635	883	927	520	0	423	392	0	737
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	0.0	16.5	15.4	20.6	11.0	45.8	0.0	44.5	35.2	0.0	39.8
Incr Delay (d2), s/veh	1.0	0.0	1.1	0.1	1.3	0.2	0.6	0.0	0.3	4.1	0.0	10.9
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	1.7	0.0	6.4	0.6	6.7	1.2	2.6	0.0	0.9	4.9	0.0	15.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.7	0.0	17.6	15.4	21.9	11.3	46.3	0.0	44.8	39.3	0.0	50.7
LnGrp LOS	B		B	B	C	B	D		D	D		D
Approach Vol, veh/h		512			489			128				664
Approach Delay, s/veh		16.6			19.2			45.9				47.5
Approach LOS		B			B			D				D
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	62.2	19.0	22.8	8.7	69.5		41.8				
Change Period (Y+Rc), s	5.0	5.5	5.5	5.0	5.0	5.5		5.0				
Max Green Setting (Gmax), s	11.0	42.5	13.5	32.0	11.0	42.5		51.0				
Max Q Clear Time (g_c+I1), s	5.9	16.6	12.1	7.3	3.4	16.5		33.7				
Green Ext Time (p_c), s	0.1	2.5	0.1	0.6	0.0	2.5		3.1				
Intersection Summary												
HCM 7th Control Delay, s/veh			30.9									
HCM 7th LOS			C									

Intersection

Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	105	31	112	13	40	252
Future Vol, veh/h	105	31	112	13	40	252
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	34	122	14	43	274
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	SB		
Conflicting Lanes Left	1	1	0
Conflicting Approach Right		NB	EB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	9.2	8.9	9.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	90%	77%	0%
Vol Thru, %	10%	0%	14%
Vol Right, %	0%	23%	86%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	125	136	292
LT Vol	112	105	0
Through Vol	13	0	40
RT Vol	0	31	252
Lane Flow Rate	136	148	317
Geometry Grp	1	1	1
Degree of Util (X)	0.181	0.201	0.349
Departure Headway (Hd)	4.802	4.903	3.955
Convergence, Y/N	Yes	Yes	Yes
Cap	747	730	911
Service Time	2.832	2.944	1.976
HCM Lane V/C Ratio	0.182	0.203	0.348
HCM Control Delay, s/veh	8.9	9.2	9.1
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.7	1.6

HCM 7th Signalized Intersection Summary

4: Cedar Ln & Beach Dr

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕↕			↕	↕
Traffic Volume (veh/h)	1	26	51	139	19	7	12	246	59	16	595	5
Future Volume (veh/h)	1	26	51	139	19	7	12	246	59	16	595	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	1	28	55	151	21	8	13	267	64	17	647	5
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	49	85	162	274	26	10	100	1847	432	62	1273	1097
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.69	0.69	0.69	0.69	0.69	0.69
Sat Flow, veh/h	5	573	1097	1260	175	67	70	2668	624	18	1838	1585
Grp Volume(v), veh/h	84	0	0	180	0	0	181	0	163	664	0	5
Grp Sat Flow(s),veh/h/ln	1675	0	0	1502	0	0	1772	0	1590	1856	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.0	2.6	0.0	0.0	0.1
Cycle Q Clear(g_c), s	3.4	0.0	0.0	8.5	0.0	0.0	2.5	0.0	2.6	12.7	0.0	0.1
Prop In Lane	0.01		0.65	0.84		0.04	0.07		0.39	0.03		1.00
Lane Grp Cap(c), veh/h	296	0	0	310	0	0	1279	0	1101	1335	0	1097
V/C Ratio(X)	0.28	0.00	0.00	0.58	0.00	0.00	0.14	0.00	0.15	0.50	0.00	0.00
Avail Cap(c_a), veh/h	494	0	0	473	0	0	1279	0	1101	1335	0	1097
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.7	0.0	0.0	30.6	0.0	0.0	3.9	0.0	4.0	5.5	0.0	3.6
Incr Delay (d2), s/veh	0.5	0.0	0.0	1.7	0.0	0.0	0.2	0.0	0.3	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	1.4	0.0	0.0	3.2	0.0	0.0	0.8	0.0	0.7	4.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.2	0.0	0.0	32.3	0.0	0.0	4.2	0.0	4.2	6.8	0.0	3.6
LnGrp LOS	C			C			A		A	A		A
Approach Vol, veh/h		84			180			344			669	
Approach Delay, s/veh		29.2			32.3			4.2			6.8	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		57.9		17.1		57.9		17.1				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		43.0		20.0		43.0		20.0				
Max Q Clear Time (g_c+I1), s		4.6		5.4		14.7		10.5				
Green Ext Time (p_c), s		2.3		0.3		5.2		0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh				11.2								
HCM 7th LOS				B								

HCM 7th Signalized Intersection Summary

5: MD 185 & Beach Dr

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↘		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (veh/h)	2	24	65	91	21	10	120	653	98	15	1806	9
Future Volume (veh/h)	2	24	65	91	21	10	120	653	98	15	1806	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2	26	71	99	23	11	130	710	107	16	1963	10
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	186	163	155	123	59	260	3751	560	563	4099	21
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.03	0.84	0.84	1.00	1.00	1.00
Sat Flow, veh/h	39	1817	1585	1298	1196	572	1781	4484	669	669	5243	27
Grp Volume(v), veh/h	28	0	71	99	0	34	130	537	280	16	1274	699
Grp Sat Flow(s),veh/h/ln	1856	0	1585	1298	0	1767	1781	1702	1750	669	1702	1866
Q Serve(g_s), s	0.0	0.0	7.6	13.5	0.0	3.2	2.6	5.5	5.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	7.6	16.0	0.0	3.2	2.6	5.5	5.6	0.0	0.0	0.0
Prop In Lane	0.07		1.00	1.00		0.32	1.00		0.38	1.00		0.01
Lane Grp Cap(c), veh/h	212	0	163	155	0	181	260	2847	1463	563	2661	1459
V/C Ratio(X)	0.13	0.00	0.44	0.64	0.00	0.19	0.50	0.19	0.19	0.03	0.48	0.48
Avail Cap(c_a), veh/h	471	0	387	340	0	432	411	2847	1463	563	2661	1459
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.83	0.83	0.83
Uniform Delay (d), s/veh	73.6	0.0	75.9	80.9	0.0	73.9	3.2	2.9	2.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	1.8	4.3	0.0	0.5	1.5	0.1	0.3	0.1	0.5	0.9
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	1.2	0.0	3.2	4.8	0.0	1.5	0.9	1.7	1.8	0.0	0.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.9	0.0	77.7	85.1	0.0	74.4	4.7	3.0	3.2	0.1	0.5	0.9
LnGrp LOS	E		E	F		E	A	A	A	A	A	A
Approach Vol, veh/h		99			133			947			1989	
Approach Delay, s/veh		76.6			82.4			3.3			0.7	
Approach LOS		E			F			A			A	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		155.5		24.5	9.8	145.7		24.5				
Change Period (Y+Rc), s		5.0		6.0	5.0	5.0		6.0				
Max Green Setting (Gmax), s		125.0		44.0	20.0	100.0		44.0				
Max Q Clear Time (g_c+I1), s		7.6		9.6	4.6	2.0		18.0				
Green Ext Time (p_c), s		6.3		0.4	0.3	29.1		0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh			7.2									
HCM 7th LOS			A									

HCM Signalized Intersection Capacity Analysis

6: MD 185 & Saul Rd

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕	↗		↔		↖	↑↑↑		↘	↑↑↑		
Traffic Volume (vph)	30	43	14	29	34	11	13	536	58	12	1751	40	
Future Volume (vph)	30	43	14	29	34	11	13	536	58	12	1751	40	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0		
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91		
Frt		1.00	0.85		0.98		1.00	0.99		1.00	1.00		
Flt Protected		0.98	1.00		0.98		0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1825	1583		1790		1770	5011		1770	5068		
Flt Permitted		0.98	1.00		0.98		0.95	1.00		0.95	1.00		
Satd. Flow (perm)		1825	1583		1790		1770	5011		1770	5068		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	33	47	15	32	37	12	14	583	63	13	1903	43	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	80	15	0	81	0	14	646	0	13	1946	0	
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA		
Protected Phases	4	4		3	3		5	2		1	6		
Permitted Phases			4										
Actuated Green, G (s)		13.2	13.2		13.5		3.4	126.0		3.3	125.9		
Effective Green, g (s)		13.2	13.2		13.5		3.4	126.0		3.3	125.9		
Actuated g/C Ratio		0.07	0.07		0.08		0.02	0.70		0.02	0.70		
Clearance Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0		
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)		133	116		134		33	3507		32	3544		
v/s Ratio Prot		c0.04			c0.05		c0.01	0.13		0.01	c0.38		
v/s Ratio Perm			0.01										
v/c Ratio		0.60	0.13		0.60		0.42	0.18		0.41	0.55		
Uniform Delay, d1		80.9	78.0		80.7		87.3	9.3		87.4	13.2		
Progression Factor		1.00	1.00		1.00		0.98	0.99		1.00	1.00		
Incremental Delay, d2		7.5	0.5		7.5		8.5	0.1		8.2	0.6		
Delay (s)		88.3	78.5		88.1		94.4	9.3		95.6	13.8		
Level of Service		F	E		F		F	A		F	B		
Approach Delay (s/veh)		86.8			88.1			11.1			14.4		
Approach LOS		F			F			B			B		
Intersection Summary													
HCM 2000 Control Delay (s/veh)			18.2									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.55										
Actuated Cycle Length (s)			180.0									Sum of lost time (s)	24.0
Intersection Capacity Utilization			58.1%									ICU Level of Service	B
Analysis Period (min)			15										

c Critical Lane Group

HCM 7th Signalized Intersection Summary

7: Cedar Ln & Saul Rd

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	↔
Traffic Volume (veh/h)	9	34	27	51	23	36	14	203	27	16	506	5
Future Volume (veh/h)	9	34	27	51	23	36	14	203	27	16	506	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	10	37	29	55	25	39	15	221	29	17	550	5
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	253	174	234	111	134	83	1039	940	62	1089	940
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	110	947	652	615	418	504	54	1751	1585	21	1835	1585
Grp Volume(v), veh/h	76	0	0	119	0	0	236	0	29	567	0	5
Grp Sat Flow(s),veh/h/ln	1709	0	0	1537	0	0	1806	0	1585	1856	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.1
Cycle Q Clear(g_c), s	2.5	0.0	0.0	4.2	0.0	0.0	4.4	0.0	0.6	13.3	0.0	0.1
Prop In Lane	0.13		0.38	0.46		0.33	0.06		1.00	0.03		1.00
Lane Grp Cap(c), veh/h	510	0	0	480	0	0	1122	0	940	1151	0	940
V/C Ratio(X)	0.15	0.00	0.00	0.25	0.00	0.00	0.21	0.00	0.03	0.49	0.00	0.01
Avail Cap(c_a), veh/h	510	0	0	480	0	0	1122	0	940	1151	0	940
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.1	0.0	0.0	21.7	0.0	0.0	7.1	0.0	6.3	8.9	0.0	6.2
Incr Delay (d2), s/veh	0.6	0.0	0.0	1.2	0.0	0.0	0.4	0.0	0.1	1.5	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.8	0.0	0.0	1.6	0.0	0.2	5.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.7	0.0	0.0	22.9	0.0	0.0	7.5	0.0	6.4	10.4	0.0	6.2
LnGrp LOS	C			C			A		A	B		A
Approach Vol, veh/h		76			119			265				572
Approach Delay, s/veh		21.7			22.9			7.4				10.4
Approach LOS		C			C			A				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		50.0		25.0		50.0		25.0				
Change Period (Y+Rc), s		5.5		5.0		5.5		5.0				
Max Green Setting (Gmax), s		44.5		20.0		44.5		20.0				
Max Q Clear Time (g_c+I1), s		6.4		4.5		15.3		6.2				
Green Ext Time (p_c), s		1.6		0.3		4.2		0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh				11.9								
HCM 7th LOS				B								

HCM Signalized Intersection Capacity Analysis

8: MD 185 & Knowles Ave

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	278	37	66	16	66	4	27	499	12	14	1690	525
Future Volume (vph)	278	37	66	16	66	4	27	499	12	14	1690	525
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		5.0	5.0		5.0	5.0	
Lane Util. Factor	0.91	0.91		1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	0.92		1.00	0.99		1.00	1.00		1.00	0.96	
Flt Protected	0.95	0.99		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3221	1550		1770	1848		1770	5067		1770	4904	
Flt Permitted	0.95	0.99		0.95	1.00		0.04	1.00		0.41	1.00	
Satd. Flow (perm)	3221	1550		1770	1848		79	5067		758	4904	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	302	40	72	17	72	4	29	542	13	15	1837	571
RTOR Reduction (vph)	0	0	0	0	1	0	0	1	0	0	25	0
Lane Group Flow (vph)	272	142	0	17	75	0	29	554	0	15	2383	0
Turn Type	Split	NA		Split	NA		Perm	NA		pm+pt	NA	
Protected Phases	4	4		3	3			2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	22.2	22.2		12.6	12.6		119.4	119.4		128.2	128.2	
Effective Green, g (s)	22.2	22.2		12.6	12.6		119.4	119.4		128.2	128.2	
Actuated g/C Ratio	0.12	0.12		0.07	0.07		0.66	0.66		0.71	0.71	
Clearance Time (s)	6.0	6.0		6.0	6.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	397	191		123	129		52	3361		561	3492	
v/s Ratio Prot	0.08	c0.09		0.01	c0.04			0.11		0.00	c0.49	
v/s Ratio Perm							0.37			0.02		
v/c Ratio	0.69	0.74		0.14	0.58		0.56	0.16		0.03	0.68	
Uniform Delay, d1	75.6	76.2		78.6	81.1		16.2	11.5		7.7	14.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.8	14.5		0.5	6.5		36.8	0.1		0.0	1.1	
Delay (s)	80.4	90.6		79.1	87.7		53.0	11.6		7.7	15.6	
Level of Service	F	F		E	F		D	B		A	B	
Approach Delay (s/veh)		83.9			86.1			13.6			15.5	
Approach LOS		F			F			B			B	

Intersection Summary

HCM 2000 Control Delay (s/veh)	25.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary

9: Summit Ave & Knowles Ave

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	321	63	384	216	6	42	47	180	10	79	27
Future Volume (veh/h)	28	321	63	384	216	6	42	47	180	10	79	27
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	30	349	68	417	235	7	46	51	196	11	86	29
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	397	77	444	896	27	321	342	973	472	563	190
Arrive On Green	0.26	0.26	0.26	0.19	0.50	0.50	0.42	0.42	0.42	0.42	0.42	0.42
Sat Flow, veh/h	1138	1521	296	1781	1807	54	658	812	1585	1133	1338	451
Grp Volume(v), veh/h	30	0	417	417	0	242	97	0	196	11	0	115
Grp Sat Flow(s),veh/h/ln	1138	0	1817	1781	0	1861	1470	0	1585	1133	0	1789
Q Serve(g_s), s	2.4	0.0	26.4	20.8	0.0	9.0	2.1	0.0	6.5	0.7	0.0	4.8
Cycle Q Clear(g_c), s	2.4	0.0	26.4	20.8	0.0	9.0	6.9	0.0	6.5	7.7	0.0	4.8
Prop In Lane	1.00		0.16	1.00		0.03	0.47		1.00	1.00		0.25
Lane Grp Cap(c), veh/h	357	0	474	444	0	922	663	0	973	472	0	753
V/C Ratio(X)	0.08	0.00	0.88	0.94	0.00	0.26	0.15	0.00	0.20	0.02	0.00	0.15
Avail Cap(c_a), veh/h	582	0	833	471	0	1318	663	0	973	472	0	753
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	0.79	0.00	0.79	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.7	0.0	42.5	29.6	0.0	17.5	22.0	0.0	10.2	24.6	0.0	21.5
Incr Delay (d2), s/veh	0.1	0.0	5.5	22.5	0.0	0.1	0.5	0.0	0.5	0.1	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	12.5	11.5	0.0	3.9	1.8	0.0	2.4	0.2	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	33.8	0.0	48.0	52.1	0.0	17.7	22.4	0.0	10.7	24.6	0.0	21.9
LnGrp LOS	C		D	D		B	C		B	C		C
Approach Vol, veh/h		447			659			293				126
Approach Delay, s/veh		47.0			39.4			14.6				22.2
Approach LOS		D			D			B				C
Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		55.5	28.2	36.3		55.5		64.5				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		25.0	25.0	55.0		25.0		85.0				
Max Q Clear Time (g_c+I1), s		8.9	22.8	28.4		9.7		11.0				
Green Ext Time (p_c), s		1.1	0.3	2.9		0.5		1.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			35.5									
HCM 7th LOS			D									

Intersection						
Int Delay, s/veh	1.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	460	81	23	410	42	17
Future Vol, veh/h	460	81	23	410	42	17
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	-
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	500	88	25	446	46	18

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	588	0	1040 544
Stage 1	-	-	-	-	544 -
Stage 2	-	-	-	-	496 -
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	-	-	987	-	255 539
Stage 1	-	-	-	-	582 -
Stage 2	-	-	-	-	612 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	987	-	247 539
Mov Cap-2 Maneuver	-	-	-	-	247 -
Stage 1	-	-	-	-	582 -
Stage 2	-	-	-	-	592 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.46	20.74
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	292	-	-	96	-
HCM Lane V/C Ratio	0.219	-	-	0.025	-
HCM Control Delay (s/veh)	20.7	-	-	8.7	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

HCM Signalized Intersection Capacity Analysis

11: MD 355 & Strathmore Ave

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↑↑↑	↗	↖	↑↑↑	
Traffic Volume (vph)	6	6	12	260	1	231	22	1060	266	269	1359	17
Future Volume (vph)	6	6	12	260	1	231	22	1060	266	269	1359	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.5	6.5	4.0	5.0	5.5	5.5	5.0	5.5	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Fl _t Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1817	1583	1681	1686	1583	1770	5085	1583	1770	5076	
Fl _t Permitted		0.98	1.00	0.95	0.95	1.00	0.16	1.00	1.00	0.18	1.00	
Satd. Flow (perm)		1817	1583	1681	1686	1583	297	5085	1583	338	5076	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	7	13	283	1	251	24	1152	289	292	1477	18
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	128	0	0	0
Lane Group Flow (vph)	0	14	0	141	143	251	24	1152	161	292	1495	0
Turn Type	Split	NA	Perm	Split	NA	Free	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			Free	6		6	2		
Actuated Green, G (s)		5.1	5.1	19.1	19.1	150.0	87.6	83.6	83.6	107.8	98.8	
Effective Green, g (s)		5.1	5.1	19.1	19.1	150.0	87.6	83.6	83.6	107.8	98.8	
Actuated g/C Ratio		0.03	0.03	0.13	0.13	1.00	0.58	0.56	0.56	0.72	0.66	
Clearance Time (s)		6.0	6.0	6.5	6.5		5.0	5.5	5.5	5.0	5.5	
Vehicle Extension (s)		4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		61	53	214	214	1583	212	2834	882	426	3343	
v/s Ratio Prot		0.01		0.08	c0.08		0.00	0.23		c0.09	0.29	
v/s Ratio Perm			0.00			c0.16	0.06		0.10	c0.40		
v/c Ratio		0.23	0.01	0.66	0.67	0.16	0.11	0.41	0.18	0.69	0.45	
Uniform Delay, d ₁		70.5	70.0	62.3	62.4	0.0	13.2	19.0	16.4	11.1	12.4	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂		2.6	0.1	7.9	8.4	0.2	0.2	0.4	0.5	4.5	0.4	
Delay (s)		73.2	70.1	70.2	70.8	0.2	13.4	19.4	16.8	15.6	12.8	
Level of Service		E	E	E	E	A	B	B	B	B	B	
Approach Delay (s/veh)		71.7			37.5			18.8			13.3	
Approach LOS		E			D			B			B	

Intersection Summary

HCM 2000 Control Delay (s/veh)	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary

12: MD 355 & Grosvenor Ln

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔		↗	↔↔	↑	↗		↑↑↑			↑↑↑	↗
Traffic Volume (veh/h)	103	0	156	328	154	47	0	1000	0	0	1443	104
Future Volume (veh/h)	103	0	156	328	154	47	0	1000	0	0	1443	104
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	0	1870	1870	1870	1870	0	1870	0	0	1870	1870
Adj Flow Rate, veh/h	112	0	0	357	167	0	0	1087	0	0	1568	113
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	0	2	2	2	2	0	2	0	0	2	2
Cap, veh/h	159	0		665	199		0	3716	0	0	3716	1153
Arrive On Green	0.05	0.00	0.00	0.19	0.11	0.00	0.00	0.73	0.00	0.00	0.73	0.73
Sat Flow, veh/h	3456	112		3456	1870	1585	0	5443	0	0	5274	1585
Grp Volume(v), veh/h	112	76.1		357	167	0	0	1087	0	0	1568	113
Grp Sat Flow(s),veh/h/ln	1728	E		1728	1870	1585	0	1702	0	0	1702	1585
Q Serve(g_s), s	4.8			14.0	13.1	0.0	0.0	11.0	0.0	0.0	18.1	3.1
Cycle Q Clear(g_c), s	4.8			14.0	13.1	0.0	0.0	11.0	0.0	0.0	18.1	3.1
Prop In Lane	1.00			1.00		1.00	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	159			665	199		0	3716	0	0	3716	1153
V/C Ratio(X)	0.70			0.54	0.84		0.00	0.29	0.00	0.00	0.42	0.10
Avail Cap(c_a), veh/h	346			1267	424		0	3716	0	0	3716	1153
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	70.5			54.6	65.8	0.0	0.0	7.1	0.0	0.0	8.0	6.0
Incr Delay (d2), s/veh	5.6			0.7	9.1	0.0	0.0	0.2	0.0	0.0	0.4	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
%ile BackOfQ(50%),veh/ln	2.3			6.2	6.8	0.0	0.0	3.8	0.0	0.0	6.2	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.1			55.2	74.9	0.0	0.0	7.3	0.0	0.0	8.4	6.2
LnGrp LOS	E			E	E			A			A	A
Approach Vol, veh/h					524			1087			1681	
Approach Delay, s/veh					61.5			7.3			8.2	
Approach LOS					E			A			A	
Timer - Assigned Phs		2	3	4		6	7					
Phs Duration (G+Y+Rc), s		115.2	12.9	21.9		115.2	34.8					
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0					
Max Green Setting (Gmax), s		83.0	15.0	34.0		83.0	55.0					
Max Q Clear Time (g_c+I1), s		13.0	6.8	15.1		20.1	16.0					
Green Ext Time (p_c), s		9.5	0.2	0.8		18.1	1.3					

Intersection Summary

HCM 7th Control Delay, s/veh	18.4
HCM 7th LOS	B

Notes

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

HCM 7th TWSC
1: Beach Dr & Wexford Dr

04/22/2024

Intersection						
Int Delay, s/veh	19.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	123	117	313	503	144	189
Future Vol, veh/h	123	117	313	503	144	189
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	134	127	340	547	157	205

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1132	614	0	0	887
Stage 1	614	-	-	-	-
Stage 2	518	-	-	-	-
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	225	492	-	-	763
Stage 1	540	-	-	-	-
Stage 2	598	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	173	492	-	-	763
Mov Cap-2 Maneuver	173	-	-	-	-
Stage 1	540	-	-	-	-
Stage 2	459	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/veh	0.33	0	4.73
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	253	676
HCM Lane V/C Ratio	-	-	1.033	0.205
HCM Control Delay (s/veh)	-	-	108.3	10.9
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	10.4	0.8

HCM 7th Signalized Intersection Summary

2: Beach Dr & Knowles Ave

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	192	425	17	31	380	247	7	377	50	118	94	100
Future Volume (veh/h)	192	425	17	31	380	247	7	377	50	118	94	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	209	462	18	34	413	268	8	410	54	128	102	109
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	393	820	32	358	739	765	34	463	397	247	317	339
Arrive On Green	0.09	0.46	0.46	0.03	0.40	0.40	0.25	0.25	0.25	0.09	0.38	0.38
Sat Flow, veh/h	1781	1788	70	1781	1870	1585	13	1850	1585	1781	827	884
Grp Volume(v), veh/h	209	0	480	34	413	268	418	0	54	128	0	211
Grp Sat Flow(s),veh/h/ln	1781	0	1858	1781	1870	1585	1863	0	1585	1781	0	1711
Q Serve(g_s), s	7.9	0.0	22.6	1.3	20.6	12.6	6.6	0.0	3.2	6.0	0.0	10.4
Cycle Q Clear(g_c), s	7.9	0.0	22.6	1.3	20.6	12.6	26.0	0.0	3.2	6.0	0.0	10.4
Prop In Lane	1.00		0.04	1.00		1.00	0.02		1.00	1.00		0.52
Lane Grp Cap(c), veh/h	393	0	852	358	739	765	497	0	397	247	0	657
V/C Ratio(X)	0.53	0.00	0.56	0.10	0.56	0.35	0.84	0.00	0.14	0.52	0.00	0.32
Avail Cap(c_a), veh/h	393	0	852	470	739	765	620	0	502	247	0	770
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	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.7	0.0	23.7	21.3	28.2	19.3	43.4	0.0	34.9	30.7	0.0	26.0
Incr Delay (d2), s/veh	5.1	0.0	2.7	0.1	3.0	1.3	8.4	0.0	0.2	7.5	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	10.4	0.6	9.8	5.0	13.2	0.0	1.3	3.1	0.0	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.7	0.0	26.4	21.4	31.2	20.6	51.8	0.0	35.1	38.2	0.0	26.3
LnGrp LOS	C		C	C	C	C	D		D	D		C
Approach Vol, veh/h		689			715			472				339
Approach Delay, s/veh		25.9			26.7			49.9				30.8
Approach LOS		C			C			D				C
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	52.9	16.0	35.1	8.4	60.6		51.1				
Change Period (Y+Rc), s	5.0	5.5	5.5	5.0	5.0	5.5		5.0				
Max Green Setting (Gmax), s	11.0	39.5	10.5	38.0	11.0	39.5		54.0				
Max Q Clear Time (g_c+I1), s	9.9	22.6	8.0	28.0	3.3	24.6		12.4				
Green Ext Time (p_c), s	0.1	3.3	0.1	2.1	0.0	2.7		1.5				
Intersection Summary												
HCM 7th Control Delay, s/veh			32.0									
HCM 7th LOS			C									

Intersection

Intersection Delay, s/veh 13.5
Intersection LOS B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	381	52	101	53	42	100
Future Vol, veh/h	381	52	101	53	42	100
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	414	57	110	58	46	109
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left SB		EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right NB			EB
Conflicting Lanes Right	1	0	1
HCM Control Delay, s/veh	16	10.4	9.4
HCM LOS	C	B	A

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	66%	88%	0%
Vol Thru, %	34%	0%	30%
Vol Right, %	0%	12%	70%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	154	433	142
LT Vol	101	381	0
Through Vol	53	0	42
RT Vol	0	52	100
Lane Flow Rate	167	471	154
Geometry Grp	1	1	1
Degree of Util (X)	0.254	0.633	0.212
Departure Headway (Hd)	5.458	4.84	4.942
Convergence, Y/N	Yes	Yes	Yes
Cap	651	739	718
Service Time	3.55	2.912	3.034
HCM Lane V/C Ratio	0.257	0.637	0.214
HCM Control Delay, s/veh	10.4	16	9.4
HCM Lane LOS	B	C	A
HCM 95th-tile Q	1	4.6	0.8

HCM 7th Signalized Intersection Summary

4: Cedar Ln & Beach Dr

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕↕			↕	↕
Traffic Volume (veh/h)	5	43	18	69	44	8	49	768	400	5	284	10
Future Volume (veh/h)	5	43	18	69	44	8	49	768	400	5	284	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	5	47	20	75	48	9	53	835	435	5	309	11
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	133	53	166	72	12	114	1569	794	53	1352	1160
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.73	0.73	0.73	0.73	0.73	0.73
Sat Flow, veh/h	54	1232	495	842	665	110	85	2143	1085	6	1846	1585
Grp Volume(v), veh/h	72	0	0	132	0	0	719	0	604	314	0	11
Grp Sat Flow(s),veh/h/ln	1781	0	0	1618	0	0	1806	0	1507	1852	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	13.5	0.0	0.0	0.1
Cycle Q Clear(g_c), s	2.8	0.0	0.0	5.8	0.0	0.0	12.5	0.0	13.5	4.1	0.0	0.1
Prop In Lane	0.07		0.28	0.57		0.07	0.07		0.72	0.02		1.00
Lane Grp Cap(c), veh/h	244	0	0	250	0	0	1373	0	1103	1404	0	1160
V/C Ratio(X)	0.30	0.00	0.00	0.53	0.00	0.00	0.52	0.00	0.55	0.22	0.00	0.01
Avail Cap(c_a), veh/h	473	0	0	449	0	0	1373	0	1103	1404	0	1160
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.1	0.0	0.0	32.3	0.0	0.0	4.4	0.0	4.5	3.2	0.0	2.7
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.7	0.0	0.0	1.4	0.0	2.0	0.4	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	2.4	0.0	0.0	3.7	0.0	3.3	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	31.8	0.0	0.0	34.0	0.0	0.0	5.8	0.0	6.5	3.6	0.0	2.7
LnGrp LOS	C			C			A		A	A		A
Approach Vol, veh/h		72			132			1323				325
Approach Delay, s/veh		31.8			34.0			6.1				3.6
Approach LOS		C			C			A				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		60.9		14.1		60.9		14.1				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		45.0		18.0		45.0		18.0				
Max Q Clear Time (g_c+I1), s		15.5		4.8		6.1		7.8				
Green Ext Time (p_c), s		12.0		0.2		2.2		0.4				
Intersection Summary												
HCM 7th Control Delay, s/veh				8.6								
HCM 7th LOS				A								

HCM 7th Signalized Intersection Summary

5: MD 185 & Beach Dr

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↘		↖	↕↕↕		↖	↕↕↕	
Traffic Volume (veh/h)	6	116	333	64	32	20	85	1345	185	23	1035	7
Future Volume (veh/h)	6	116	333	64	32	20	85	1345	185	23	1035	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	126	362	70	35	22	92	1462	201	25	1125	8
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	34	448	390	219	264	166	411	3089	424	206	3218	23
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.03	0.68	0.68	1.00	1.00	1.00
Sat Flow, veh/h	37	1819	1585	908	1074	675	1781	4539	623	299	5231	37
Grp Volume(v), veh/h	133	0	362	70	0	57	92	1096	567	25	732	401
Grp Sat Flow(s),veh/h/ln	1856	0	1585	908	0	1749	1781	1702	1758	299	1702	1864
Q Serve(g_s), s	0.0	0.0	33.5	10.2	0.0	3.8	2.8	22.8	22.8	2.0	0.0	0.0
Cycle Q Clear(g_c), s	8.7	0.0	33.5	18.8	0.0	3.8	2.8	22.8	22.8	15.0	0.0	0.0
Prop In Lane	0.05		1.00	1.00		0.39	1.00		0.35	1.00		0.02
Lane Grp Cap(c), veh/h	482	0	390	219	0	430	411	2317	1197	206	2094	1147
V/C Ratio(X)	0.28	0.00	0.93	0.32	0.00	0.13	0.22	0.47	0.47	0.12	0.35	0.35
Avail Cap(c_a), veh/h	569	0	465	262	0	513	532	2317	1197	206	2094	1147
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	0.96	0.96	0.96
Uniform Delay (d), s/veh	45.9	0.0	55.2	53.5	0.0	44.1	9.1	11.3	11.3	1.1	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	22.8	0.8	0.0	0.1	0.3	0.7	1.3	1.2	0.4	0.8
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	4.2	0.0	16.0	2.4	0.0	1.7	1.1	8.5	9.0	0.1	0.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.2	0.0	78.0	54.4	0.0	44.2	9.4	12.0	12.6	2.2	0.4	0.8
LnGrp LOS	D		E	D		D	A	B	B	A	A	A
Approach Vol, veh/h		495			127			1755			1158	
Approach Delay, s/veh		69.5			49.8			12.1			0.6	
Approach LOS		E			D			B			A	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		107.1		42.9	9.8	97.3		42.9				
Change Period (Y+Rc), s		5.0		6.0	5.0	5.0		6.0				
Max Green Setting (Gmax), s		95.0		44.0	15.0	75.0		44.0				
Max Q Clear Time (g_c+I1), s		24.8		35.5	4.8	17.0		20.8				
Green Ext Time (p_c), s		19.3		1.4	0.1	10.7		0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			17.7									
HCM 7th LOS			B									

HCM Signalized Intersection Capacity Analysis

6: MD 185 & Saul Rd

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↔		↖	↑↑↑		↙	↑↑↑	
Traffic Volume (vph)	41	37	41	44	31	17	7	1374	38	14	1019	17
Future Volume (vph)	41	37	41	44	31	17	7	1374	38	14	1019	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91		1.00	0.91	
Frt		1.00	0.85		0.98		1.00	1.00		1.00	1.00	
Flt Protected		0.97	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1815	1583		1775		1770	5065		1770	5073	
Flt Permitted		0.97	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1815	1583		1775		1770	5065		1770	5073	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	45	40	45	48	34	18	8	1493	41	15	1108	18
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	85	45	0	100	0	8	1534	0	15	1126	0
Turn Type	Split	NA	Perm	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)		12.3	12.3		13.8		1.5	96.7		3.2	98.4	
Effective Green, g (s)		12.3	12.3		13.8		1.5	96.7		3.2	98.4	
Actuated g/C Ratio		0.08	0.08		0.09		0.01	0.64		0.02	0.66	
Clearance Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		148	129		163		17	3265		37	3327	
v/s Ratio Prot		c0.05			c0.06		0.00	c0.30		c0.01	0.22	
v/s Ratio Perm			0.03									
v/c Ratio		0.57	0.35		0.61		0.47	0.47		0.41	0.34	
Uniform Delay, d1		66.3	65.1		65.5		73.9	13.6		72.5	11.4	
Progression Factor		0.97	0.97		1.00		1.00	0.85		1.00	1.00	
Incremental Delay, d2		5.3	1.6		6.7		17.9	0.5		7.1	0.3	
Delay (s)		69.9	65.1		72.2		91.5	12.0		79.6	11.7	
Level of Service		E	E		E		F	B		E	B	
Approach Delay (s/veh)		68.2			72.2			12.4			12.6	
Approach LOS		E			E			B			B	

Intersection Summary

HCM 2000 Control Delay (s/veh)	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary

7: Cedar Ln & Saul Rd

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Volume (veh/h)	8	36	18	21	22	8	17	675	59	17	259	10
Future Volume (veh/h)	8	36	18	21	22	8	17	675	59	17	259	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	9	39	20	23	24	9	18	734	64	18	282	11
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	297	136	215	212	69	60	1092	940	79	1031	940
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	113	1113	511	553	795	258	18	1840	1585	48	1738	1585
Grp Volume(v), veh/h	68	0	0	56	0	0	752	0	64	300	0	11
Grp Sat Flow(s),veh/h/ln	1738	0	0	1607	0	0	1858	0	1585	1786	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.2
Cycle Q Clear(g_c), s	2.2	0.0	0.0	1.7	0.0	0.0	20.5	0.0	1.3	5.8	0.0	0.2
Prop In Lane	0.13		0.29	0.41		0.16	0.02		1.00	0.06		1.00
Lane Grp Cap(c), veh/h	518	0	0	496	0	0	1151	0	940	1111	0	940
V/C Ratio(X)	0.13	0.00	0.00	0.11	0.00	0.00	0.65	0.00	0.07	0.27	0.00	0.01
Avail Cap(c_a), veh/h	518	0	0	496	0	0	1151	0	940	1111	0	940
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	0.0	20.8	0.0	0.0	10.4	0.0	6.5	7.4	0.0	6.2
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.5	0.0	0.0	2.9	0.0	0.1	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	1.0	0.0	0.0	0.8	0.0	0.0	8.0	0.0	0.4	2.2	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.5	0.0	0.0	21.3	0.0	0.0	13.3	0.0	6.6	8.0	0.0	6.3
LnGrp LOS	C			C			B		A	A		A
Approach Vol, veh/h		68			56			816				311
Approach Delay, s/veh		21.5			21.3			12.7				7.9
Approach LOS		C			C			B				A
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		50.0		25.0		50.0		25.0				
Change Period (Y+Rc), s		5.5		5.0		5.5		5.0				
Max Green Setting (Gmax), s		44.5		20.0		44.5		20.0				
Max Q Clear Time (g_c+I1), s		22.5		4.2		7.8		3.7				
Green Ext Time (p_c), s		5.9		0.2		2.1		0.2				
Intersection Summary												
HCM 7th Control Delay, s/veh				12.4								
HCM 7th LOS				B								

HCM Signalized Intersection Capacity Analysis

8: MD 185 & Knowles Ave

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	653	89	55	61	97	40	82	1230	22	24	894	393
Future Volume (vph)	653	89	55	61	97	40	82	1230	22	24	894	393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		6.0	6.0		4.5	5.0		5.0	5.0	
Lane Util. Factor	0.91	0.91		1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	0.97		1.00	0.96		1.00	1.00		1.00	0.95	
Flt Protected	0.95	0.98		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3221	1606		1770	1782		1770	5072		1770	4852	
Flt Permitted	0.95	0.98		0.95	1.00		0.12	1.00		0.17	1.00	
Satd. Flow (perm)	3221	1606		1770	1782		218	5072		315	4852	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	710	97	60	66	105	43	89	1337	24	26	972	427
RTOR Reduction (vph)	0	0	0	0	9	0	0	1	0	0	40	0
Lane Group Flow (vph)	582	285	0	66	139	0	89	1360	0	26	1359	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		3	3		5	2			6	
Permitted Phases							2			6		
Actuated Green, G (s)	37.3	37.3		19.2	19.2		106.5	106.5		92.7	92.7	
Effective Green, g (s)	37.3	37.3		19.2	19.2		106.5	106.5		92.7	92.7	
Actuated g/C Ratio	0.21	0.21		0.11	0.11		0.59	0.59		0.52	0.52	
Clearance Time (s)	6.0	6.0		6.0	6.0		4.5	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	667	332		188	190		209	3000		162	2498	
v/s Ratio Prot	c0.18	0.18		0.04	c0.08		0.02	c0.27			c0.28	
v/s Ratio Perm							0.23			0.08		
v/c Ratio	0.87	0.86		0.35	0.73		0.43	0.45		0.16	0.54	
Uniform Delay, d1	69.0	68.8		74.6	77.9		20.2	20.5		23.1	29.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.1	19.2		1.1	13.5		1.4	0.5		2.1	0.9	
Delay (s)	81.1	88.0		75.8	91.4		21.6	21.0		25.2	30.3	
Level of Service	F	F		E	F		C	C		C	C	
Approach Delay (s/veh)		83.4			86.6			21.0			30.2	
Approach LOS		F			F			C			C	

Intersection Summary

HCM 2000 Control Delay (s/veh)	41.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	180.0	Sum of lost time (s)	21.5
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary

9: Summit Ave & Knowles Ave

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	374	54	243	332	13	68	135	425	7	71	34
Future Volume (veh/h)	44	374	54	243	332	13	68	135	425	7	71	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	407	59	264	361	14	74	147	462	8	77	37
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	349	458	66	316	804	31	273	525	933	372	557	268
Arrive On Green	0.29	0.29	0.29	0.12	0.45	0.45	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1008	1597	232	1781	1789	69	500	1125	1585	812	1194	574
Grp Volume(v), veh/h	48	0	466	264	0	375	221	0	462	8	0	114
Grp Sat Flow(s),veh/h/ln	1008	0	1829	1781	0	1858	1625	0	1585	812	0	1767
Q Serve(g_s), s	4.3	0.0	29.3	12.0	0.0	16.7	5.5	0.0	20.3	0.7	0.0	4.4
Cycle Q Clear(g_c), s	4.3	0.0	29.3	12.0	0.0	16.7	9.9	0.0	20.3	10.6	0.0	4.4
Prop In Lane	1.00		0.13	1.00		0.04	0.33		1.00	1.00		0.32
Lane Grp Cap(c), veh/h	349	0	524	316	0	836	799	0	933	372	0	825
V/C Ratio(X)	0.14	0.00	0.89	0.84	0.00	0.45	0.28	0.00	0.50	0.02	0.00	0.14
Avail Cap(c_a), veh/h	480	0	762	471	0	1239	799	0	933	372	0	825
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	0.74	0.00	0.74	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.1	0.0	41.0	28.4	0.0	22.8	19.6	0.0	14.3	23.0	0.0	18.2
Incr Delay (d2), s/veh	0.2	0.0	9.1	6.2	0.0	0.3	0.9	0.0	1.9	0.1	0.0	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	14.4	5.6	0.0	7.3	4.0	0.0	7.5	0.2	0.0	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.2	0.0	50.1	34.6	0.0	23.0	20.5	0.0	16.2	23.1	0.0	18.6
LnGrp LOS	C		D	C		C	C		B	C		B
Approach Vol, veh/h		514			639			683				122
Approach Delay, s/veh		48.4			27.8			17.6				18.9
Approach LOS		D			C			B				B
Timer - Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		61.0	19.6	39.4		61.0		59.0				
Change Period (Y+Rc), s		5.0	5.0	5.0		5.0		5.0				
Max Green Setting (Gmax), s		30.0	25.0	50.0		30.0		80.0				
Max Q Clear Time (g_c+I1), s		22.3	14.0	31.3		12.6		18.7				
Green Ext Time (p_c), s		2.0	0.6	3.1		0.6		2.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			29.1									
HCM 7th LOS			C									

Intersection						
Int Delay, s/veh	2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Traffic Vol, veh/h	520	74	15	589	51	31
Future Vol, veh/h	520	74	15	589	51	31
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	-
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	565	80	16	640	55	34

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	646	0	1278 605
Stage 1	-	-	-	-	605 -
Stage 2	-	-	-	-	673 -
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	-	-	940	-	183 497
Stage 1	-	-	-	-	545 -
Stage 2	-	-	-	-	507 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	940	-	178 497
Mov Cap-2 Maneuver	-	-	-	-	178 -
Stage 1	-	-	-	-	545 -
Stage 2	-	-	-	-	493 -

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.22	29.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	236	-	-	45	-
HCM Lane V/C Ratio	0.378	-	-	0.017	-
HCM Control Delay (s/veh)	29.3	-	-	8.9	0
HCM Lane LOS	D	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0.1	-

HCM Signalized Intersection Capacity Analysis

11: MD 355 & Strathmore Ave

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↑↑↑	↗	↖	↑↑↑	
Traffic Volume (vph)	9	6	22	322	2	304	25	1485	402	323	1287	20
Future Volume (vph)	9	6	22	322	2	304	25	1485	402	323	1287	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.5	6.5	4.0	5.0	5.5	5.5	5.0	5.5	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Fr _t		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Fl _t Protected		0.97	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1810	1583	1681	1686	1583	1770	5085	1583	1770	5073	
Fl _t Permitted		0.97	1.00	0.95	0.95	1.00	0.18	1.00	1.00	0.07	1.00	
Satd. Flow (perm)		1810	1583	1681	1686	1583	328	5085	1583	135	5073	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	7	24	350	2	330	27	1614	437	351	1399	22
RTOR Reduction (vph)	0	0	23	0	0	0	0	0	228	0	0	0
Lane Group Flow (vph)	0	17	1	175	177	330	27	1614	209	351	1421	0
Turn Type	Split	NA	Perm	Split	NA	Free	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			Free	6		6	2		
Actuated Green, G (s)		5.3	5.3	21.7	21.7	150.0	75.6	71.6	71.6	105.0	96.0	
Effective Green, g (s)		5.3	5.3	21.7	21.7	150.0	75.6	71.6	71.6	105.0	96.0	
Actuated g/C Ratio		0.04	0.04	0.14	0.14	1.00	0.50	0.48	0.48	0.70	0.64	
Clearance Time (s)		6.0	6.0	6.5	6.5		5.0	5.5	5.5	5.0	5.5	
Vehicle Extension (s)		4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		63	55	243	243	1583	203	2427	755	404	3246	
v/s Ratio Prot		0.01		0.10	c0.10		0.00	0.32		c0.16	0.28	
v/s Ratio Perm			0.00			c0.21	0.06		0.13	c0.44		
v/c Ratio		0.27	0.02	0.72	0.73	0.21	0.13	0.67	0.28	0.87	0.44	
Uniform Delay, d ₁		70.5	69.8	61.3	61.3	0.0	18.7	30.0	23.6	43.6	13.5	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d ₂		3.1	0.2	10.7	11.1	0.3	0.3	1.5	0.9	17.6	0.4	
Delay (s)		73.6	70.0	71.9	72.4	0.3	19.0	31.5	24.5	61.2	13.9	
Level of Service		E	E	E	E	A	B	C	C	E	B	
Approach Delay (s/veh)		71.5			37.4			29.8			23.3	
Approach LOS		E			D			C			C	

Intersection Summary

HCM 2000 Control Delay (s/veh)	28.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary

12: MD 355 & Grosvenor Ln

04/22/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔		↗	↔↔	↑	↗		↑↑↑			↑↑↑	↗
Traffic Volume (veh/h)	134	0	184	177	158	59	0	1465	0	0	1305	151
Future Volume (veh/h)	134	0	184	177	158	59	0	1465	0	0	1305	151
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	0	1870	1870	1870	1870	0	1870	0	0	1870	1870
Adj Flow Rate, veh/h	146	0	0	192	172	0	0	1592	0	0	1418	164
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	0	2	2	2	2	0	2	0	0	2	2
Cap, veh/h	198	0		709	202		0	3650	0	0	3650	1133
Arrive On Green	0.06	0.00	0.00	0.21	0.11	0.00	0.00	0.71	0.00	0.00	0.71	0.71
Sat Flow, veh/h	3456	146		3456	1870	1585	0	5443	0	0	5274	1585
Grp Volume(v), veh/h	146	74.9		192	172	0	0	1592	0	0	1418	164
Grp Sat Flow(s),veh/h/ln	1728	E		1728	1870	1585	0	1702	0	0	1702	1585
Q Serve(g_s), s	6.2			7.0	13.6	0.0	0.0	19.4	0.0	0.0	16.4	4.9
Cycle Q Clear(g_c), s	6.2			7.0	13.6	0.0	0.0	19.4	0.0	0.0	16.4	4.9
Prop In Lane	1.00			1.00		1.00	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	198			709	202		0	3650	0	0	3650	1133
V/C Ratio(X)	0.74			0.27	0.85		0.00	0.44	0.00	0.00	0.39	0.14
Avail Cap(c_a), veh/h	530			1290	337		0	3650	0	0	3650	1133
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	69.6			50.2	65.7	0.0	0.0	8.9	0.0	0.0	8.4	6.8
Incr Delay (d2), s/veh	5.3			0.2	10.4	0.0	0.0	0.4	0.0	0.0	0.3	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
%ile BackOfQ(50%),veh/ln	2.9			3.1	7.1	0.0	0.0	6.7	0.0	0.0	5.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	74.9			50.4	76.1	0.0	0.0	9.2	0.0	0.0	8.8	7.1
LnGrp LOS	E			D	E			A			A	A
Approach Vol, veh/h					364			1592			1582	
Approach Delay, s/veh					62.5			9.2			8.6	
Approach LOS					E			A			A	
Timer - Assigned Phs		2	3	4		6	7					
Phs Duration (G+Y+Rc), s		113.2	14.6	22.2		113.2	36.8					
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0					
Max Green Setting (Gmax), s		82.0	23.0	27.0		82.0	56.0					
Max Q Clear Time (g_c+I1), s		21.4	8.2	15.6		18.4	9.0					
Green Ext Time (p_c), s		17.5	0.4	0.6		15.7	0.7					

Intersection Summary

HCM 7th Control Delay, s/veh	16.8
HCM 7th LOS	B

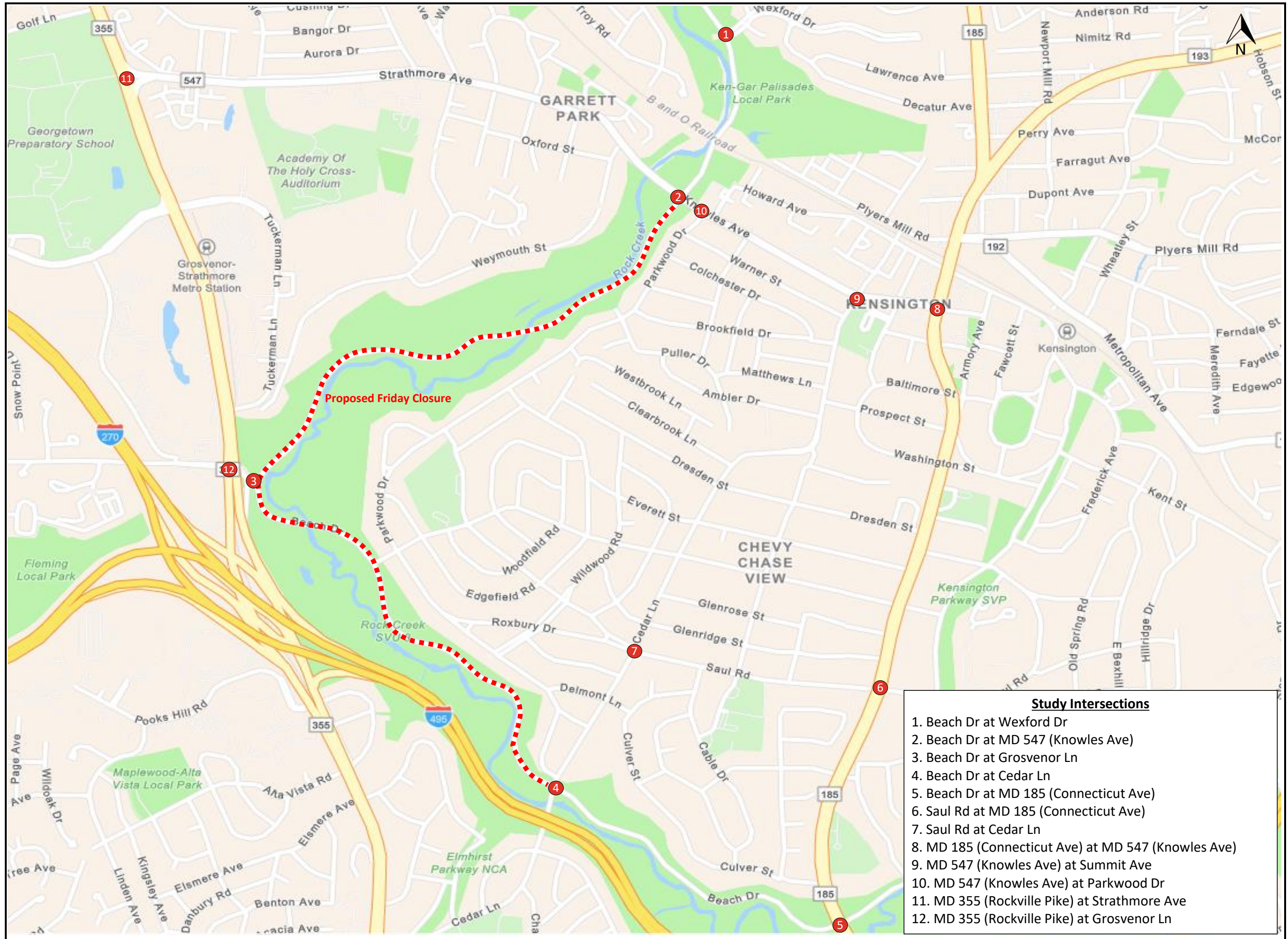
Notes

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

APPENDIX

D

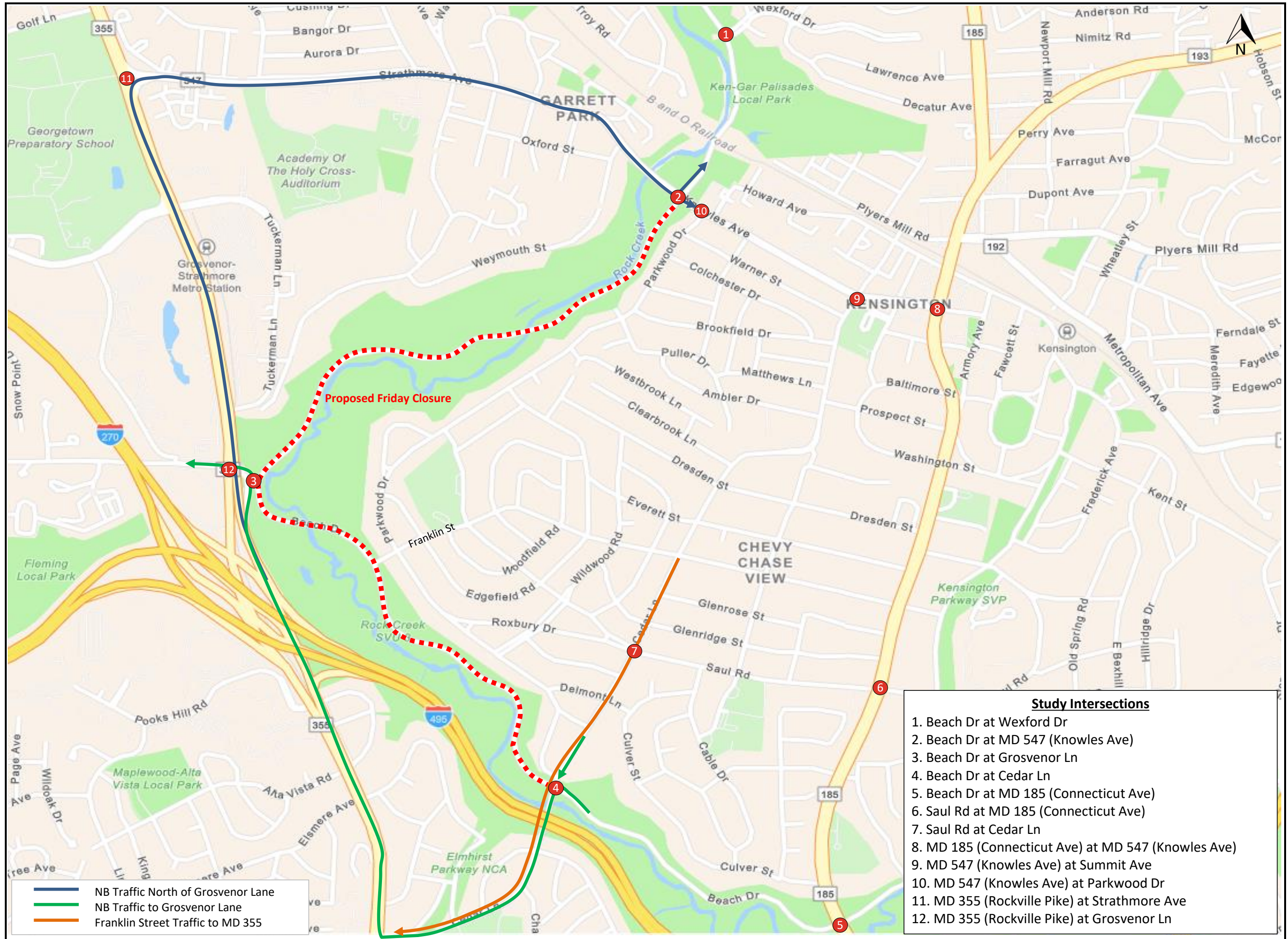
Friday Closure Peak Hour Volumes



Proposed Friday Closure

Study Intersections

1. Beach Dr at Wexford Dr
2. Beach Dr at MD 547 (Knowles Ave)
3. Beach Dr at Grosvenor Ln
4. Beach Dr at Cedar Ln
5. Beach Dr at MD 185 (Connecticut Ave)
6. Saul Rd at MD 185 (Connecticut Ave)
7. Saul Rd at Cedar Ln
8. MD 185 (Connecticut Ave) at MD 547 (Knowles Ave)
9. MD 547 (Knowles Ave) at Summit Ave
10. MD 547 (Knowles Ave) at Parkwood Dr
11. MD 355 (Rockville Pike) at Strathmore Ave
12. MD 355 (Rockville Pike) at Grosvenor Ln

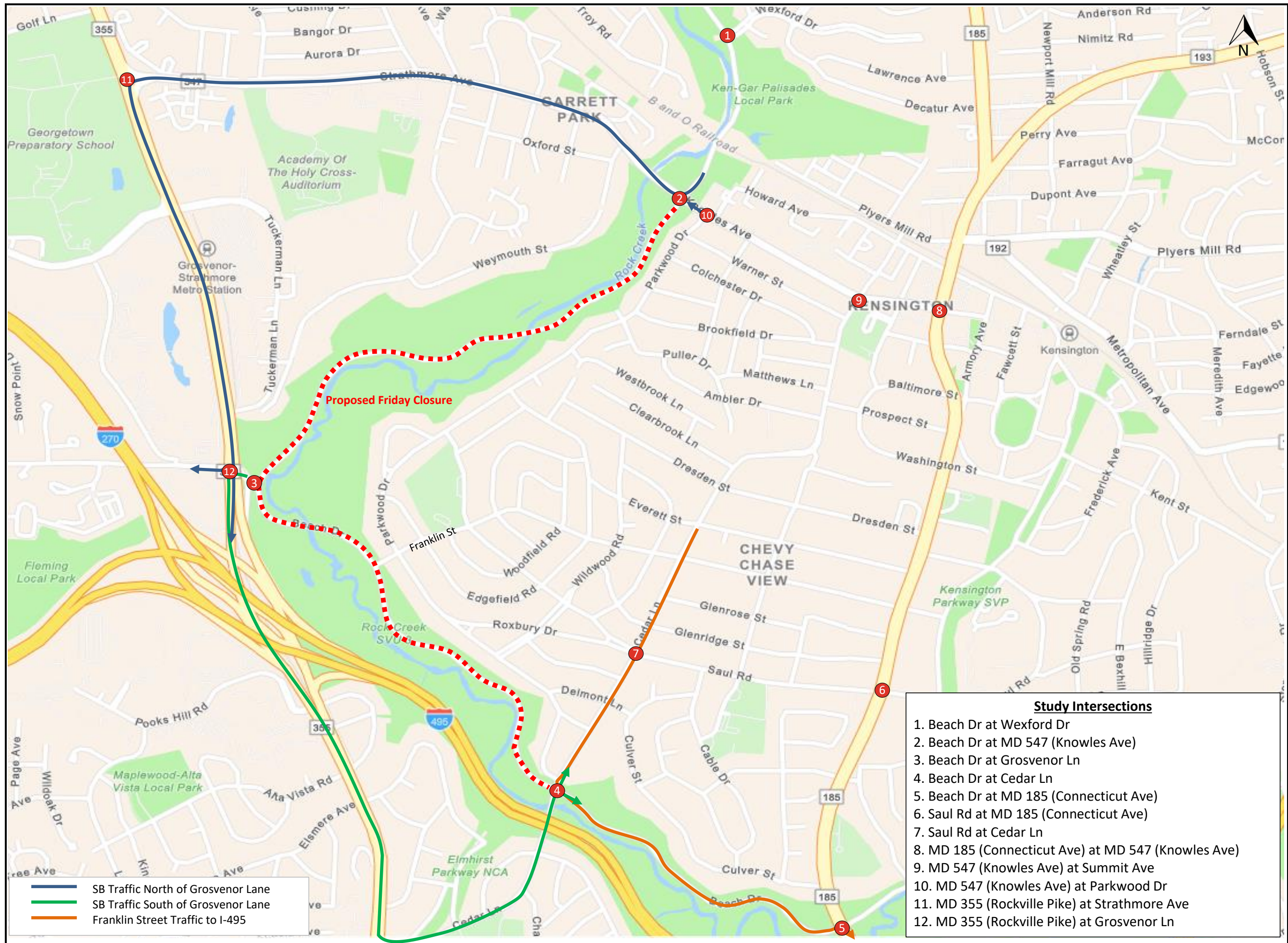


Proposed Friday Closure

Study Intersections

1. Beach Dr at Wexford Dr
2. Beach Dr at MD 547 (Knowles Ave)
3. Beach Dr at Grosvenor Ln
4. Beach Dr at Cedar Ln
5. Beach Dr at MD 185 (Connecticut Ave)
6. Saul Rd at MD 185 (Connecticut Ave)
7. Saul Rd at Cedar Ln
8. MD 185 (Connecticut Ave) at MD 547 (Knowles Ave)
9. MD 547 (Knowles Ave) at Summit Ave
10. MD 547 (Knowles Ave) at Parkwood Dr
11. MD 355 (Rockville Pike) at Strathmore Ave
12. MD 355 (Rockville Pike) at Grosvenor Ln

- NB Traffic North of Grosvenor Lane
- NB Traffic to Grosvenor Lane
- Franklin Street Traffic to MD 355



Proposed Friday Closure

- SB Traffic North of Grosvenor Lane
- SB Traffic South of Grosvenor Lane
- Franklin Street Traffic to I-495

- Study Intersections**
1. Beach Dr at Wexford Dr
 2. Beach Dr at MD 547 (Knowles Ave)
 3. Beach Dr at Grosvenor Ln
 4. Beach Dr at Cedar Ln
 5. Beach Dr at MD 185 (Connecticut Ave)
 6. Saul Rd at MD 185 (Connecticut Ave)
 7. Saul Rd at Cedar Ln
 8. MD 185 (Connecticut Ave) at MD 547 (Knowles Ave)
 9. MD 547 (Knowles Ave) at Summit Ave
 10. MD 547 (Knowles Ave) at Parkwood Dr
 11. MD 355 (Rockville Pike) at Strathmore Ave
 12. MD 355 (Rockville Pike) at Grosvenor Ln

LEGEND

← AM (PM) Peak Hour Vehicular Volume

No Rerouted Traffic at these Intersections

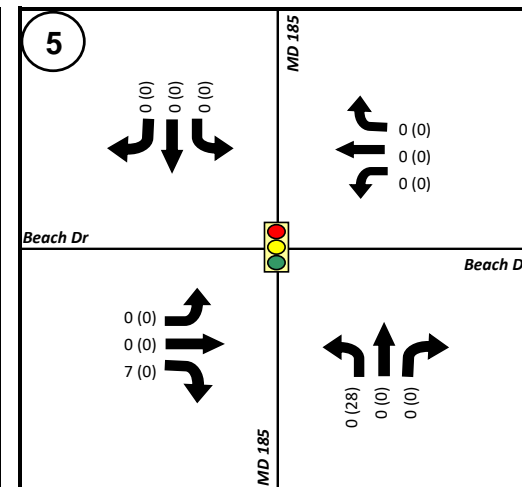
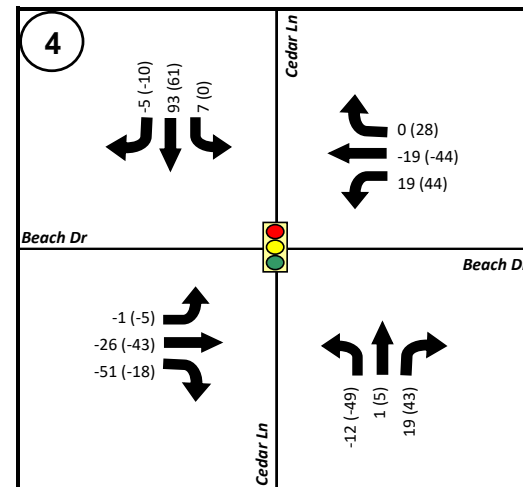
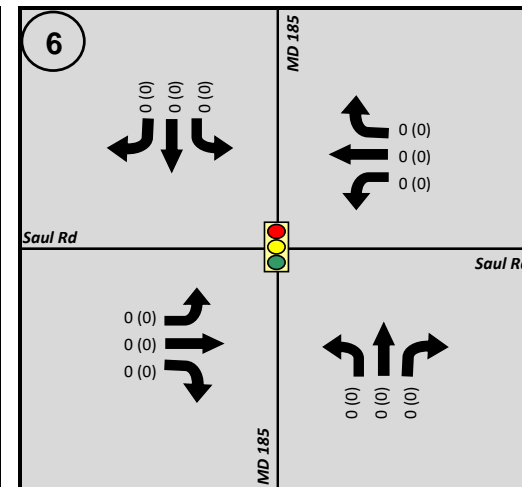
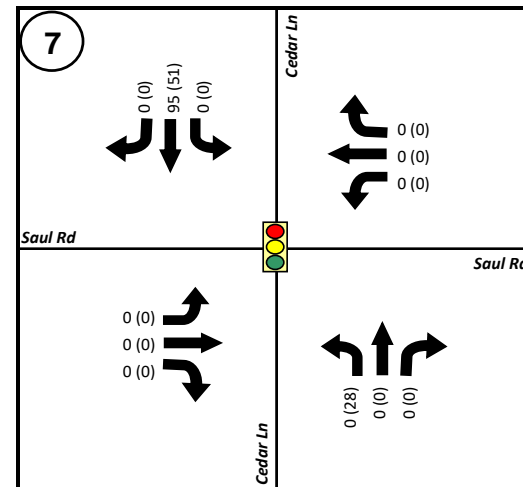
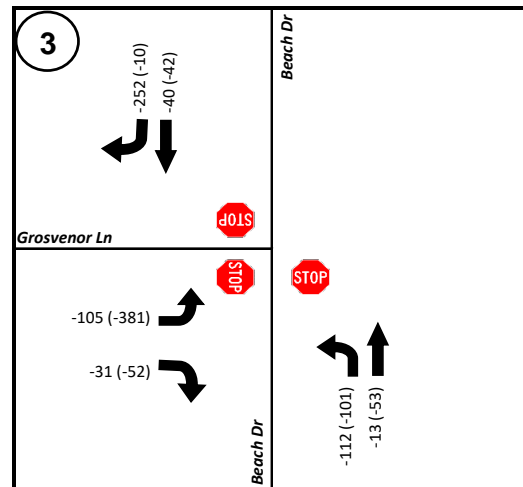
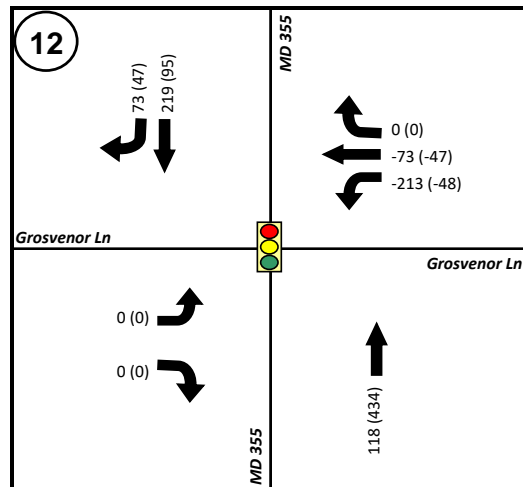
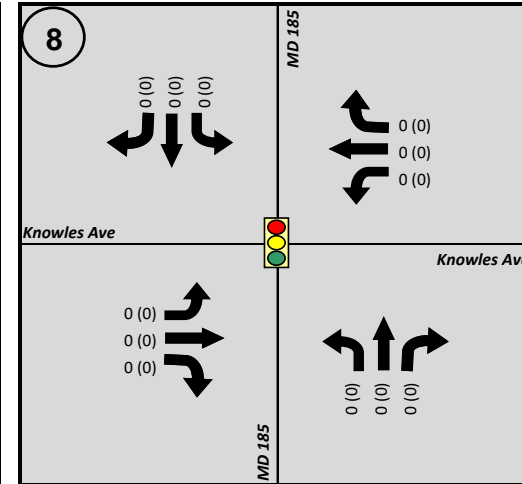
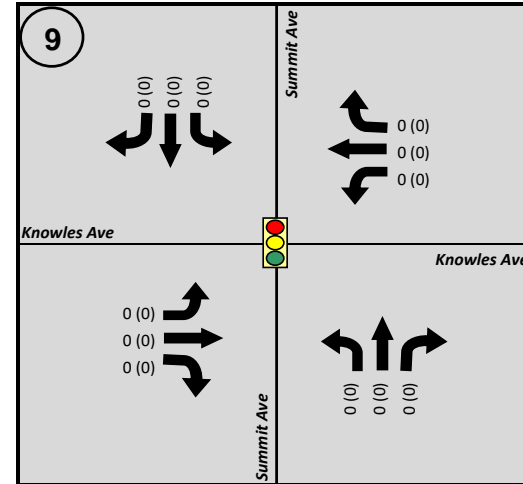
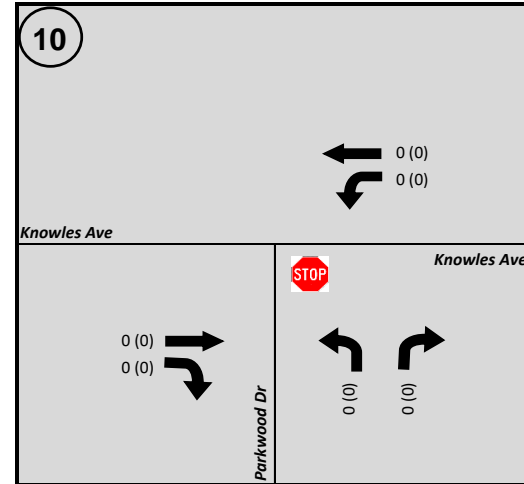
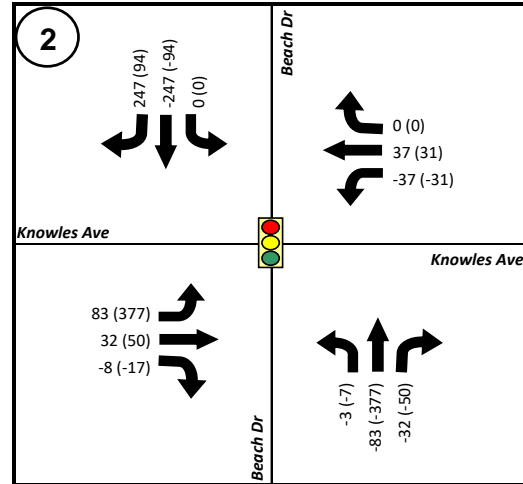
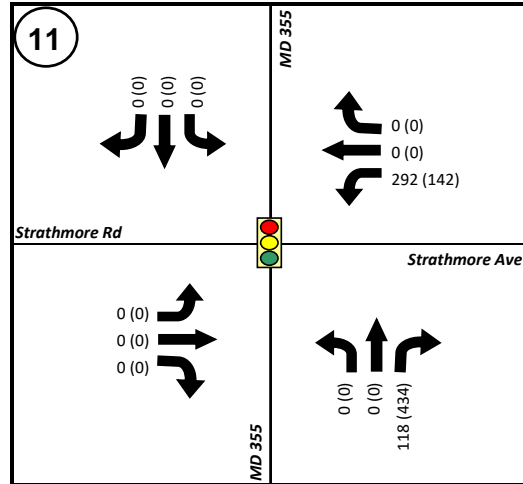
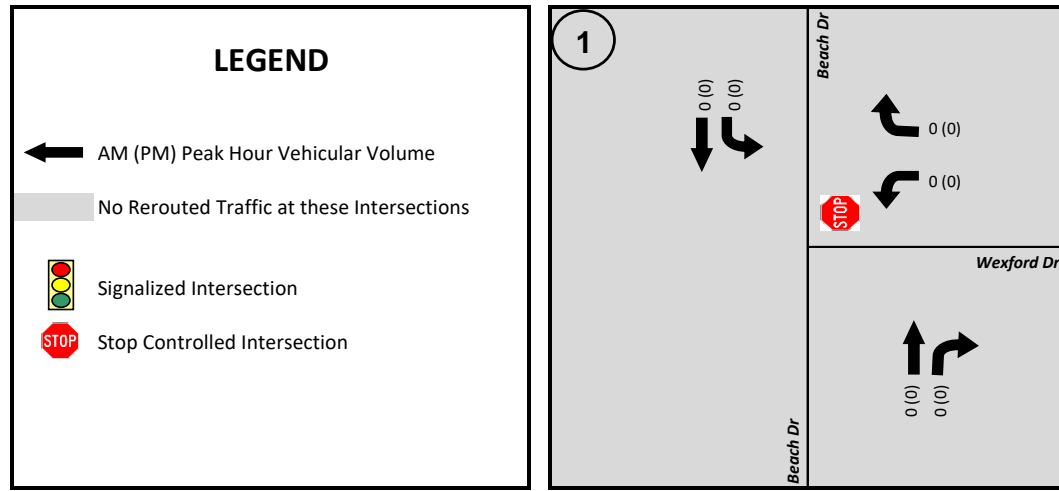


Signalized Intersection



Stop Controlled Intersection


Rerouted Traffic




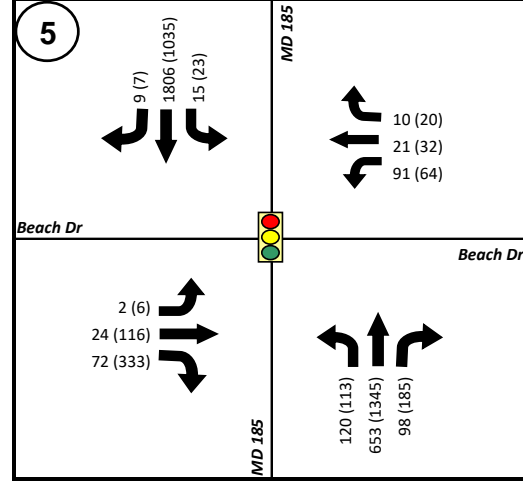
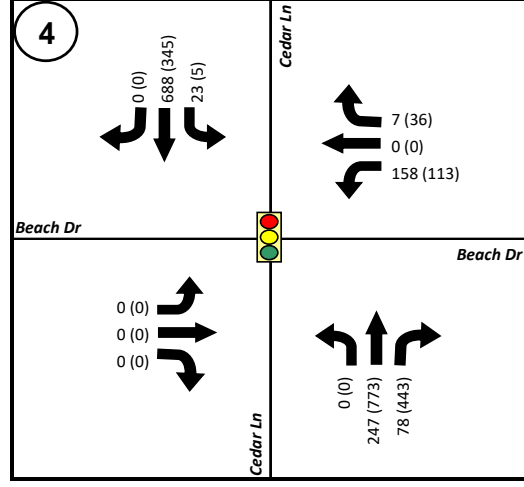
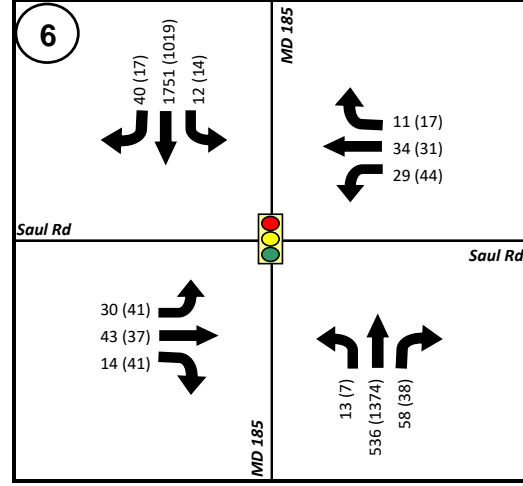
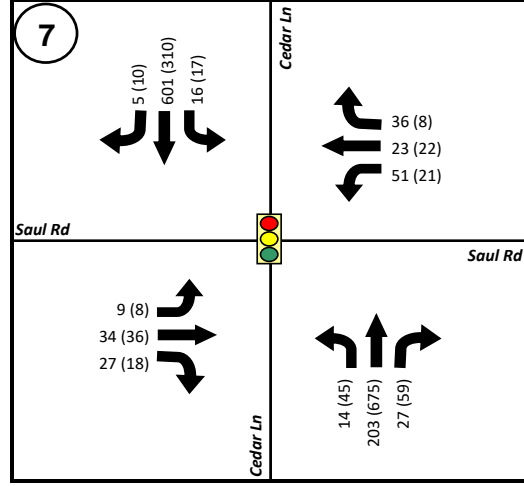
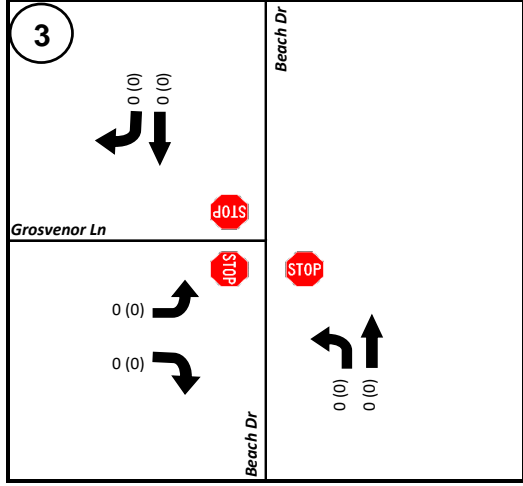
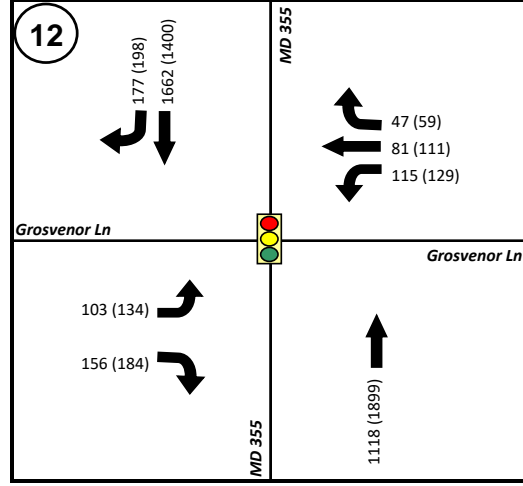
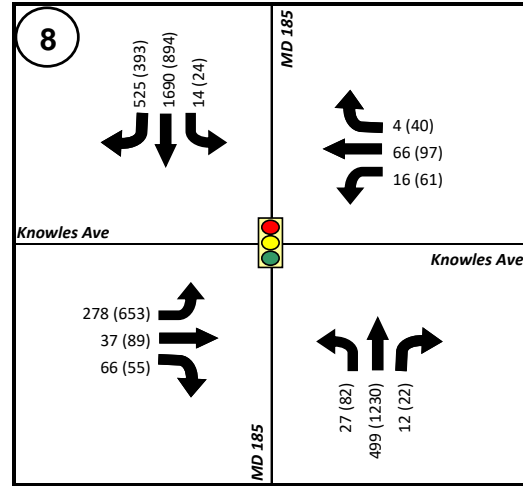
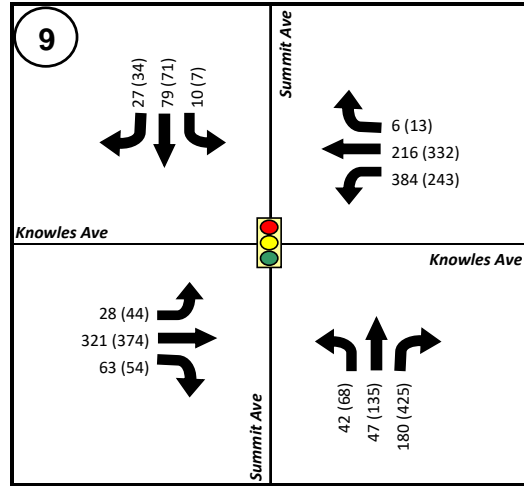
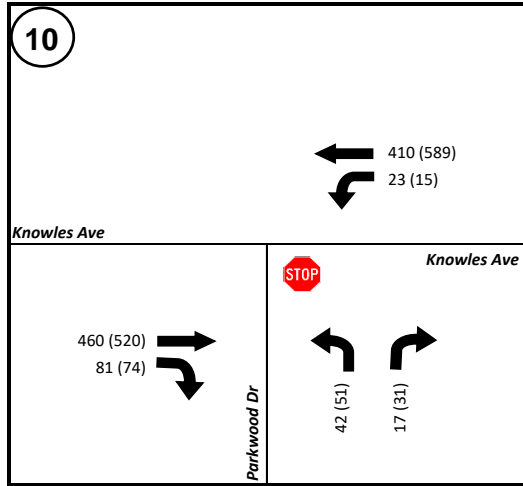
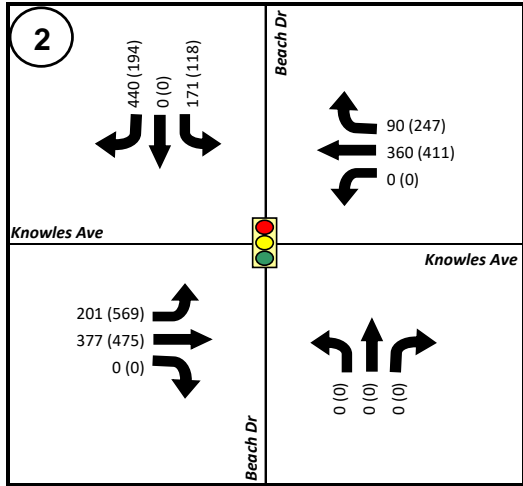
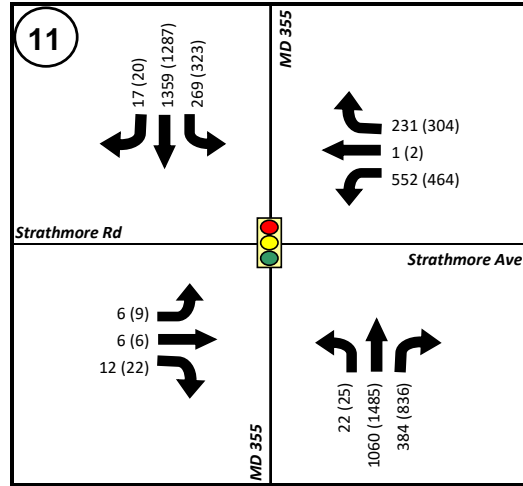
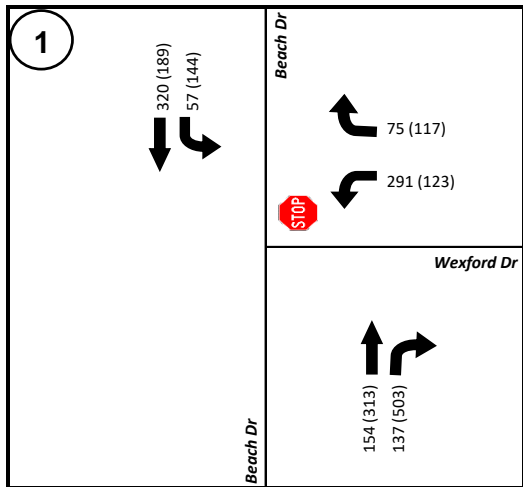
Friday Closure Peak Hour Volumes

LEGEND

← AM (PM) Peak Hour Vehicular Volume

 Signalized Intersection

 Stop Controlled Intersection



APPENDIX

E

Friday Closure Synchro Outputs

HCM 7th Signalized Intersection Summary

2: Beach Dr & Knowles Ave

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	377	0	0	360	90	0	0	0	171	0	440
Future Volume (veh/h)	201	377	0	0	360	90	0	0	0	171	0	440
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	218	410	0	0	391	98	0	0	0	186	0	478
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	498	1088	0	499	838	889	0	323	274	505	0	525
Arrive On Green	0.09	0.58	0.00	0.00	0.45	0.45	0.00	0.00	0.00	0.11	0.00	0.33
Sat Flow, veh/h	1781	1870	0	1781	1870	1585	0	1870	1585	1781	0	1585
Grp Volume(v), veh/h	218	410	0	0	391	98	0	0	0	186	0	478
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	1585	0	1870	1585	1781	0	1585
Q Serve(g_s), s	7.4	14.1	0.0	0.0	17.5	3.5	0.0	0.0	0.0	9.8	0.0	34.7
Cycle Q Clear(g_c), s	7.4	14.1	0.0	0.0	17.5	3.5	0.0	0.0	0.0	9.8	0.0	34.7
Prop In Lane	1.00		0.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	498	1088	0	499	838	889	0	323	274	505	0	525
V/C Ratio(X)	0.44	0.38	0.00	0.00	0.47	0.11	0.00	0.00	0.00	0.37	0.00	0.91
Avail Cap(c_a), veh/h	498	1088	0	661	838	889	0	499	423	505	0	674
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.5	13.5	0.0	0.0	23.1	12.3	0.0	0.0	0.0	32.7	0.0	38.4
Incr Delay (d2), s/veh	2.8	1.0	0.0	0.0	1.9	0.3	0.0	0.0	0.0	2.1	0.0	14.1
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	3.3	6.1	0.0	0.0	8.1	1.3	0.0	0.0	0.0	4.6	0.0	15.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.3	14.5	0.0	0.0	25.0	12.6	0.0	0.0	0.0	34.7	0.0	52.6
LnGrp LOS	B	B			C	B				C		D
Approach Vol, veh/h		628			489			0				664
Approach Delay, s/veh		15.8			22.5			0.0				47.6
Approach LOS		B			C							D
Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	59.3	19.0	25.7	0.0	75.3		44.7				
Change Period (Y+Rc), s	5.0	5.5	5.5	5.0	5.0	5.5		5.0				
Max Green Setting (Gmax), s	11.0	42.5	13.5	32.0	11.0	42.5		51.0				
Max Q Clear Time (g_c+I1), s	9.4	19.5	11.8	0.0	0.0	16.1		36.7				
Green Ext Time (p_c), s	0.1	2.8	0.1	0.0	0.0	2.7		3.1				
Intersection Summary												
HCM 7th Control Delay, s/veh												29.5
HCM 7th LOS												C

HCM 7th Signalized Intersection Summary

4: Cedar Ln & Beach Dr

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕↔			↕	↗
Traffic Volume (veh/h)	0	0	0	158	0	7	0	247	78	23	688	0
Future Volume (veh/h)	0	0	0	158	0	7	0	247	78	23	688	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	0	0	0	172	0	8	0	268	85	25	748	0
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	287	0	303	0	10	0	1833	569	68	1250	1088
Arrive On Green	0.00	0.00	0.00	0.15	0.00	0.15	0.00	0.69	0.69	0.69	0.69	0.00
Sat Flow, veh/h	0	1870	0	1361	0	63	0	2763	828	27	1821	1585
Grp Volume(v), veh/h	0	0	0	180	0	0	0	176	177	773	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1424	0	0	0	1777	1721	1848	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	9.2	0.0	0.0	0.0	2.6	2.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	9.2	0.0	0.0	0.0	2.6	2.7	16.6	0.0	0.0
Prop In Lane	0.00		0.00	0.96		0.04	0.00		0.48	0.03		1.00
Lane Grp Cap(c), veh/h	0	287	0	312	0	0	0	1220	1182	1318	0	1088
V/C Ratio(X)	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.14	0.15	0.59	0.00	0.00
Avail Cap(c_a), veh/h	0	499	0	474	0	0	0	1220	1182	1318	0	1088
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)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	30.8	0.0	0.0	0.0	4.1	4.1	6.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.2	0.3	1.9	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	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.8	0.8	5.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	32.4	0.0	0.0	0.0	4.3	4.4	8.2	0.0	0.0
LnGrp LOS				C				A	A	A		
Approach Vol, veh/h		0			180			353			773	
Approach Delay, s/veh		0.0			32.4			4.4			8.2	
Approach LOS					C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		57.5		17.5		57.5		17.5				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		43.0		20.0		43.0		20.0				
Max Q Clear Time (g_c+I1), s		4.7		0.0		18.6		11.2				
Green Ext Time (p_c), s		2.3		0.0		6.2		0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh				10.5								
HCM 7th LOS				B								

HCM 7th Signalized Intersection Summary

5: MD 185 & Beach Dr

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↘		↖	↕↕↕		↖	↕↕↕	
Traffic Volume (veh/h)	2	24	72	91	21	10	120	653	98	15	1806	9
Future Volume (veh/h)	2	24	72	91	21	10	120	653	98	15	1806	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2	26	78	99	23	11	130	710	107	16	1963	10
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	25	187	163	155	123	59	260	3748	560	563	4096	21
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.03	0.84	0.84	1.00	1.00	1.00
Sat Flow, veh/h	39	1817	1585	1290	1196	572	1781	4484	669	669	5243	27
Grp Volume(v), veh/h	28	0	78	99	0	34	130	537	280	16	1274	699
Grp Sat Flow(s),veh/h/ln	1856	0	1585	1290	0	1767	1781	1702	1750	669	1702	1866
Q Serve(g_s), s	0.0	0.0	8.4	13.6	0.0	3.2	2.6	5.5	5.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	0.0	8.4	16.1	0.0	3.2	2.6	5.5	5.6	0.0	0.0	0.0
Prop In Lane	0.07		1.00	1.00		0.32	1.00		0.38	1.00		0.01
Lane Grp Cap(c), veh/h	213	0	163	155	0	182	260	2845	1463	563	2660	1458
V/C Ratio(X)	0.13	0.00	0.48	0.64	0.00	0.19	0.50	0.19	0.19	0.03	0.48	0.48
Avail Cap(c_a), veh/h	471	0	387	338	0	432	411	2845	1463	563	2660	1458
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	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.83	0.83	0.83
Uniform Delay (d), s/veh	73.5	0.0	76.2	80.8	0.0	73.8	3.2	2.9	2.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	2.2	4.3	0.0	0.5	1.5	0.1	0.3	0.1	0.5	0.9
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	1.2	0.0	3.6	4.8	0.0	1.5	0.9	1.7	1.8	0.0	0.2	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.8	0.0	78.3	85.1	0.0	74.3	4.7	3.0	3.2	0.1	0.5	0.9
LnGrp LOS	E		E	F		E	A	A	A	A	A	A
Approach Vol, veh/h		106			133			947			1989	
Approach Delay, s/veh		77.1			82.4			3.3			0.7	
Approach LOS		E			F			A			A	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		155.5		24.5	9.8	145.6		24.5				
Change Period (Y+Rc), s		5.0		6.0	5.0	5.0		6.0				
Max Green Setting (Gmax), s		125.0		44.0	20.0	100.0		44.0				
Max Q Clear Time (g_c+I1), s		7.6		10.4	4.6	2.0		18.1				
Green Ext Time (p_c), s		6.3		0.4	0.3	29.1		0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh			7.4									
HCM 7th LOS			A									

HCM 7th Signalized Intersection Summary

7: Cedar Ln & Saul Rd

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔	↔		↔	↔
Traffic Volume (veh/h)	9	34	27	51	23	36	14	203	27	16	601	5
Future Volume (veh/h)	9	34	27	51	23	36	14	203	27	16	601	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	10	37	29	55	25	39	15	221	29	17	653	5
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	84	253	174	234	111	134	83	1033	940	60	1092	940
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	110	947	652	615	418	504	54	1741	1585	18	1840	1585
Grp Volume(v), veh/h	76	0	0	119	0	0	236	0	29	670	0	5
Grp Sat Flow(s),veh/h/ln	1709	0	0	1537	0	0	1795	0	1585	1859	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.1
Cycle Q Clear(g_c), s	2.5	0.0	0.0	4.2	0.0	0.0	4.4	0.0	0.6	17.0	0.0	0.1
Prop In Lane	0.13		0.38	0.46		0.33	0.06		1.00	0.03		1.00
Lane Grp Cap(c), veh/h	510	0	0	480	0	0	1116	0	940	1152	0	940
V/C Ratio(X)	0.15	0.00	0.00	0.25	0.00	0.00	0.21	0.00	0.03	0.58	0.00	0.01
Avail Cap(c_a), veh/h	510	0	0	480	0	0	1116	0	940	1152	0	940
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.1	0.0	0.0	21.7	0.0	0.0	7.1	0.0	6.3	9.7	0.0	6.2
Incr Delay (d2), s/veh	0.6	0.0	0.0	1.2	0.0	0.0	0.4	0.0	0.1	2.1	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	1.8	0.0	0.0	1.6	0.0	0.2	6.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.7	0.0	0.0	22.9	0.0	0.0	7.5	0.0	6.4	11.8	0.0	6.2
LnGrp LOS	C			C			A		A	B		A
Approach Vol, veh/h		76			119			265				675
Approach Delay, s/veh		21.7			22.9			7.4				11.8
Approach LOS		C			C			A				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		50.0		25.0		50.0		25.0				
Change Period (Y+Rc), s		5.5		5.0		5.5		5.0				
Max Green Setting (Gmax), s		44.5		20.0		44.5		20.0				
Max Q Clear Time (g_c+I1), s		6.4		4.5		19.0		6.2				
Green Ext Time (p_c), s		1.6		0.3		5.1		0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh				12.6								
HCM 7th LOS				B								

HCM Signalized Intersection Capacity Analysis

11: MD 355 & Strathmore Ave

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↑↑↑	↗	↖	↑↑↑	↖
Traffic Volume (vph)	6	6	12	552	1	231	22	1060	384	269	1359	17
Future Volume (vph)	6	6	12	552	1	231	22	1060	384	269	1359	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.5	6.5	4.0	5.0	5.5	5.5	5.0	5.5	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1817	1583	1681	1686	1583	1770	5085	1583	1770	5076	
Flt Permitted		0.98	1.00	0.95	0.95	1.00	0.14	1.00	1.00	0.16	1.00	
Satd. Flow (perm)		1817	1583	1681	1686	1583	267	5085	1583	289	5076	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	7	13	600	1	251	24	1152	417	292	1477	18
RTOR Reduction (vph)	0	0	13	0	0	0	0	0	228	0	0	0
Lane Group Flow (vph)	0	14	0	300	301	251	24	1152	189	292	1495	0
Turn Type	Split	NA	Perm	Split	NA	Free	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			Free	6		6	2		
Actuated Green, G (s)		5.1	5.1	34.2	34.2	150.0	72.3	68.1	68.1	92.7	83.5	
Effective Green, g (s)		5.1	5.1	34.2	34.2	150.0	72.3	68.1	68.1	92.7	83.5	
Actuated g/C Ratio		0.03	0.03	0.23	0.23	1.00	0.48	0.45	0.45	0.62	0.56	
Clearance Time (s)		6.0	6.0	6.5	6.5		5.0	5.5	5.5	5.0	5.5	
Vehicle Extension (s)		4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		61	53	383	384	1583	170	2308	718	372	2825	
v/s Ratio Prot		0.01		0.18	c0.18		0.00	0.23		c0.10	0.29	
v/s Ratio Perm			0.00			c0.16	0.06		0.12	c0.38		
v/c Ratio		0.23	0.01	0.78	0.78	0.16	0.14	0.50	0.26	0.78	0.53	
Uniform Delay, d1		70.5	70.0	54.4	54.4	0.0	20.6	28.9	25.4	19.5	20.9	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		2.6	0.1	10.6	10.6	0.2	0.4	0.8	0.9	10.4	0.7	
Delay (s)		73.2	70.1	65.0	65.0	0.2	21.0	29.7	26.3	29.9	21.6	
Level of Service		E	E	E	E	A	C	C	C	C	C	
Approach Delay (s/veh)		71.7			45.9			28.7			23.0	
Approach LOS		E			D			C			C	

Intersection Summary

HCM 2000 Control Delay (s/veh)	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary

12: MD 355 & Grosvenor Ln

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔		↗	↔↔	↑	↗		↑↑↑			↑↑↑	↗
Traffic Volume (veh/h)	103	0	156	100	73	47	0	1118	0	0	1654	185
Future Volume (veh/h)	103	0	156	100	73	47	0	1118	0	0	1654	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	0	1870	1870	1870	1870	0	1870	0	0	1870	1870
Adj Flow Rate, veh/h	112	0	0	109	79	0	0	1215	0	0	1798	201
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	0	2	2	2	2	0	2	0	0	2	2
Cap, veh/h	159	0		495	107		0	3966	0	0	3966	1231
Arrive On Green	0.05	0.00	0.00	0.14	0.06	0.00	0.00	0.78	0.00	0.00	0.78	0.78
Sat Flow, veh/h	3456	112		3456	1870	1585	0	5443	0	0	5274	1585
Grp Volume(v), veh/h	112	76.1		109	79	0	0	1215	0	0	1798	201
Grp Sat Flow(s),veh/h/ln	1728	E		1728	1870	1585	0	1702	0	0	1702	1585
Q Serve(g_s), s	4.8			4.2	6.2	0.0	0.0	10.5	0.0	0.0	18.2	4.9
Cycle Q Clear(g_c), s	4.8			4.2	6.2	0.0	0.0	10.5	0.0	0.0	18.2	4.9
Prop In Lane	1.00			1.00		1.00	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	159			495	107		0	3966	0	0	3966	1231
V/C Ratio(X)	0.70			0.22	0.74		0.00	0.31	0.00	0.00	0.45	0.16
Avail Cap(c_a), veh/h	346			1267	424		0	3966	0	0	3966	1231
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	70.5			56.8	69.6	0.0	0.0	4.9	0.0	0.0	5.8	4.3
Incr Delay (d2), s/veh	5.6			0.2	9.5	0.0	0.0	0.2	0.0	0.0	0.4	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
%ile BackOfQ(50%),veh/ln	2.3			1.9	3.3	0.0	0.0	3.2	0.0	0.0	5.6	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	76.1			57.1	79.1	0.0	0.0	5.1	0.0	0.0	6.1	4.6
LnGrp LOS	E			E	E			A			A	A
Approach Vol, veh/h					188			1215			1999	
Approach Delay, s/veh					66.3			5.1			6.0	
Approach LOS					E			A			A	
Timer - Assigned Phs		2	3	4		6	7					
Phs Duration (G+Y+Rc), s		122.5	12.9	14.6		122.5	27.5					
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0					
Max Green Setting (Gmax), s		83.0	15.0	34.0		83.0	55.0					
Max Q Clear Time (g_c+I1), s		12.5	6.8	8.2		20.2	6.2					
Green Ext Time (p_c), s		11.2	0.2	0.4		24.1	0.4					

Intersection Summary

HCM 7th Control Delay, s/veh	11.1
HCM 7th LOS	B

Notes

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

HCM 7th Signalized Intersection Summary

2: Beach Dr & Knowles Ave

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	569	475	0	0	411	247	0	0	0	118	0	194
Future Volume (veh/h)	569	475	0	0	411	247	0	0	0	118	0	194
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	618	516	0	0	447	268	0	0	0	128	0	211
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	592	1410	0	610	1160	1122	0	48	40	252	0	252
Arrive On Green	0.09	0.75	0.00	0.00	0.62	0.62	0.00	0.00	0.00	0.09	0.00	0.16
Sat Flow, veh/h	1781	1870	0	1781	1870	1585	0	1870	1585	1781	0	1585
Grp Volume(v), veh/h	618	516	0	0	447	268	0	0	0	128	0	211
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	1870	1585	0	1870	1585	1781	0	1585
Q Serve(g_s), s	11.0	11.3	0.0	0.0	14.3	7.1	0.0	0.0	0.0	8.1	0.0	15.5
Cycle Q Clear(g_c), s	11.0	11.3	0.0	0.0	14.3	7.1	0.0	0.0	0.0	8.1	0.0	15.5
Prop In Lane	1.00		0.00	1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	592	1410	0	610	1160	1122	0	48	40	252	0	252
V/C Ratio(X)	1.04	0.37	0.00	0.00	0.39	0.24	0.00	0.00	0.00	0.51	0.00	0.84
Avail Cap(c_a), veh/h	592	1410	0	772	1160	1122	0	592	502	252	0	713
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	18.7	5.0	0.0	0.0	11.4	6.2	0.0	0.0	0.0	49.0	0.0	49.0
Incr Delay (d2), s/veh	48.9	0.7	0.0	0.0	1.0	0.5	0.0	0.0	0.0	7.1	0.0	7.3
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	20.6	4.1	0.0	0.0	6.0	2.4	0.0	0.0	0.0	4.1	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	67.6	5.8	0.0	0.0	12.3	6.7	0.0	0.0	0.0	56.1	0.0	56.3
LnGrp LOS	F	A			B	A				E		E
Approach Vol, veh/h	1134				715		0				339	
Approach Delay, s/veh	39.5				10.2		0.0				56.2	
Approach LOS	D				B						E	
Timer - Assigned Phs	1	2	3	4	5	6	8					
Phs Duration (G+Y+Rc), s	16.0	79.9	16.0	8.1	0.0	95.9	24.1					
Change Period (Y+Rc), s	5.0	5.5	5.5	5.0	5.0	5.5	5.0					
Max Green Setting (Gmax), s	11.0	39.5	10.5	38.0	11.0	39.5	54.0					
Max Q Clear Time (g_c+I1), s	13.0	16.3	10.1	0.0	0.0	13.3	17.5					
Green Ext Time (p_c), s	0.0	3.9	0.0	0.0	0.0	3.6	1.6					
Intersection Summary												
HCM 7th Control Delay, s/veh			32.5									
HCM 7th LOS			C									

HCM 7th Signalized Intersection Summary

4: Cedar Ln & Beach Dr

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕↔			↕	↗
Traffic Volume (veh/h)	0	0	0	113	0	36	0	773	443	5	345	0
Future Volume (veh/h)	0	0	0	113	0	36	0	773	443	5	345	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	0	0	0	123	0	39	0	840	482	5	375	0
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	255	0	232	3	48	0	1539	872	52	1302	1116
Arrive On Green	0.00	0.00	0.00	0.14	0.00	0.14	0.00	0.70	0.70	0.70	0.70	0.00
Sat Flow, veh/h	0	1870	0	1087	21	351	0	2279	1239	5	1849	1585
Grp Volume(v), veh/h	0	0	0	162	0	0	0	681	641	380	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1460	0	0	0	1777	1647	1854	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	7.9	0.0	0.0	0.0	13.8	14.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	8.1	0.0	0.0	0.0	13.8	14.1	5.7	0.0	0.0
Prop In Lane	0.00		0.00	0.76		0.24	0.00		0.75	0.01		1.00
Lane Grp Cap(c), veh/h	0	255	0	283	0	0	0	1251	1160	1354	0	1116
V/C Ratio(X)	0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.54	0.55	0.28	0.00	0.00
Avail Cap(c_a), veh/h	0	449	0	434	0	0	0	1251	1160	1354	0	1116
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)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	31.5	0.0	0.0	0.0	5.3	5.4	4.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.8	0.0	0.0	0.0	1.7	1.9	0.5	0.0	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.9	0.0	0.0	0.0	4.2	4.1	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	0.0	0.0	0.0	33.3	0.0	0.0	0.0	7.0	7.3	4.6	0.0	0.0
LnGrp LOS				C				A	A	A		
Approach Vol, veh/h		0			162			1322			380	
Approach Delay, s/veh		0.0			33.3			7.2			4.6	
Approach LOS					C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		58.8		16.2		58.8		16.2				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		45.0		18.0		45.0		18.0				
Max Q Clear Time (g_c+I1), s		16.1		0.0		7.7		10.1				
Green Ext Time (p_c), s		11.7		0.0		2.6		0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh				8.9								
HCM 7th LOS				A								

HCM 7th Signalized Intersection Summary

5: MD 185 & Beach Dr

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↘		↖	↑↑↑		↖	↑↑↑	
Traffic Volume (veh/h)	6	116	333	64	32	20	113	1345	185	23	1035	7
Future Volume (veh/h)	6	116	333	64	32	20	113	1345	185	23	1035	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	126	362	70	35	22	123	1462	201	25	1125	8
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	34	448	390	219	264	166	420	3089	424	206	3179	23
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.04	0.68	0.68	1.00	1.00	1.00
Sat Flow, veh/h	37	1819	1585	908	1074	675	1781	4539	623	299	5231	37
Grp Volume(v), veh/h	133	0	362	70	0	57	123	1096	567	25	732	401
Grp Sat Flow(s),veh/h/ln	1856	0	1585	908	0	1749	1781	1702	1758	299	1702	1864
Q Serve(g_s), s	0.0	0.0	33.5	10.2	0.0	3.8	3.8	22.8	22.8	1.9	0.0	0.0
Cycle Q Clear(g_c), s	8.7	0.0	33.5	18.8	0.0	3.8	3.8	22.8	22.8	13.8	0.0	0.0
Prop In Lane	0.05		1.00	1.00		0.39	1.00		0.35	1.00		0.02
Lane Grp Cap(c), veh/h	482	0	390	219	0	430	420	2317	1197	206	2069	1133
V/C Ratio(X)	0.28	0.00	0.93	0.32	0.00	0.13	0.29	0.47	0.47	0.12	0.35	0.35
Avail Cap(c_a), veh/h	569	0	465	262	0	513	528	2317	1197	206	2069	1133
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	0.96	0.96	0.96
Uniform Delay (d), s/veh	45.9	0.0	55.2	53.5	0.0	44.1	9.3	11.3	11.3	0.9	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	22.8	0.8	0.0	0.1	0.4	0.7	1.3	1.2	0.5	0.8
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	4.2	0.0	16.0	2.4	0.0	1.7	1.5	8.5	9.0	0.1	0.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.2	0.0	78.0	54.4	0.0	44.2	9.7	12.0	12.6	2.1	0.5	0.8
LnGrp LOS	D		E	D		D	A	B	B	A	A	A
Approach Vol, veh/h		495			127			1786			1158	
Approach Delay, s/veh		69.5			49.8			12.0			0.6	
Approach LOS		E			D			B			A	
Timer - Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		107.1		42.9	10.9	96.2		42.9				
Change Period (Y+Rc), s		5.0		6.0	5.0	5.0		6.0				
Max Green Setting (Gmax), s		95.0		44.0	15.0	75.0		44.0				
Max Q Clear Time (g_c+I1), s		24.8		35.5	5.8	15.8		20.8				
Green Ext Time (p_c), s		19.3		1.4	0.2	10.7		0.6				
Intersection Summary												
HCM 7th Control Delay, s/veh			17.6									
HCM 7th LOS			B									

HCM 7th Signalized Intersection Summary

7: Cedar Ln & Saul Rd

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Volume (veh/h)	8	36	18	21	22	8	45	675	59	17	310	10
Future Volume (veh/h)	8	36	18	21	22	8	45	675	59	17	310	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	9	39	20	23	24	9	49	734	64	18	337	11
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	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	297	136	215	212	69	93	1034	940	72	1050	940
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	113	1113	511	553	795	258	71	1742	1585	37	1769	1585
Grp Volume(v), veh/h	68	0	0	56	0	0	783	0	64	355	0	11
Grp Sat Flow(s),veh/h/ln	1738	0	0	1607	0	0	1813	0	1585	1806	0	1585
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	6.3	0.0	1.3	0.0	0.0	0.2
Cycle Q Clear(g_c), s	2.2	0.0	0.0	1.7	0.0	0.0	22.5	0.0	1.3	7.1	0.0	0.2
Prop In Lane	0.13		0.29	0.41		0.16	0.06		1.00	0.05		1.00
Lane Grp Cap(c), veh/h	518	0	0	496	0	0	1127	0	940	1122	0	940
V/C Ratio(X)	0.13	0.00	0.00	0.11	0.00	0.00	0.69	0.00	0.07	0.32	0.00	0.01
Avail Cap(c_a), veh/h	518	0	0	496	0	0	1127	0	940	1122	0	940
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	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	0.0	20.8	0.0	0.0	10.7	0.0	6.5	7.7	0.0	6.2
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.5	0.0	0.0	3.5	0.0	0.1	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	1.0	0.0	0.0	0.8	0.0	0.0	8.6	0.0	0.4	2.7	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	21.5	0.0	0.0	21.3	0.0	0.0	14.2	0.0	6.6	8.4	0.0	6.3
LnGrp LOS	C			C			B		A	A		A
Approach Vol, veh/h	68		56				847			366		
Approach Delay, s/veh	21.5		21.3				13.7			8.3		
Approach LOS	C		C				B			A		
Timer - Assigned Phs	2		4				6			8		
Phs Duration (G+Y+Rc), s	50.0		25.0				50.0			25.0		
Change Period (Y+Rc), s	5.5		5.0				5.5			5.0		
Max Green Setting (Gmax), s	44.5		20.0				44.5			20.0		
Max Q Clear Time (g_c+I1), s	24.5		4.2				9.1			3.7		
Green Ext Time (p_c), s	6.1		0.2				2.5			0.2		
Intersection Summary												
HCM 7th Control Delay, s/veh			12.9									
HCM 7th LOS			B									

HCM Signalized Intersection Capacity Analysis

11: MD 355 & Strathmore Ave

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖	↕	↗	↖	↕↕↕	↗	↖	↕↕↕	
Traffic Volume (vph)	9	6	22	464	2	304	25	1485	836	323	1287	20
Future Volume (vph)	9	6	22	464	2	304	25	1485	836	323	1287	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0	6.0	6.5	6.5	4.0	5.0	5.5	5.5	5.0	5.5	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97	1.00	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1810	1583	1681	1686	1583	1770	5085	1583	1770	5073	
Flt Permitted		0.97	1.00	0.95	0.95	1.00	0.18	1.00	1.00	0.06	1.00	
Satd. Flow (perm)		1810	1583	1681	1686	1583	328	5085	1583	108	5073	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	7	24	504	2	330	27	1614	909	351	1399	22
RTOR Reduction (vph)	0	0	23	0	0	0	0	0	373	0	0	0
Lane Group Flow (vph)	0	17	1	252	254	330	27	1614	536	351	1421	0
Turn Type	Split	NA	Perm	Split	NA	Free	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			Free	6		6	2		
Actuated Green, G (s)		5.3	5.3	28.4	28.4	150.0	68.4	64.3	64.3	98.3	89.2	
Effective Green, g (s)		5.3	5.3	28.4	28.4	150.0	68.4	64.3	64.3	98.3	89.2	
Actuated g/C Ratio		0.04	0.04	0.19	0.19	1.00	0.46	0.43	0.43	0.66	0.59	
Clearance Time (s)		6.0	6.0	6.5	6.5		5.0	5.5	5.5	5.0	5.5	
Vehicle Extension (s)		4.0	4.0	4.0	4.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		63	55	318	319	1583	188	2179	678	392	3016	
v/s Ratio Prot		0.01		0.15	c0.15		0.00	0.32		c0.17	0.28	
v/s Ratio Perm			0.00			c0.21	0.06		0.34	c0.42		
v/c Ratio		0.27	0.02	0.79	0.80	0.21	0.14	0.74	0.79	0.90	0.47	
Uniform Delay, d1		70.5	69.8	58.0	58.0	0.0	22.5	35.9	37.0	47.7	17.1	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2		3.1	0.2	13.4	13.6	0.3	0.4	2.3	9.1	22.1	0.5	
Delay (s)		73.6	70.0	71.3	71.6	0.3	22.9	38.2	46.2	69.8	17.6	
Level of Service		E	E	E	E	A	C	D	D	E	B	
Approach Delay (s/veh)		71.5			43.4			40.9			28.0	
Approach LOS		E			D			D			C	

Intersection Summary

HCM 2000 Control Delay (s/veh)	37.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary

12: MD 355 & Grosvenor Ln

04/25/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔		↗	↔↔	↑	↗		↑↑↑			↑↑↑	↗
Traffic Volume (veh/h)	134	0	184	129	111	59	0	1899	0	0	1400	198
Future Volume (veh/h)	134	0	184	129	111	59	0	1899	0	0	1400	198
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width 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
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	0	1870	1870	1870	1870	0	1870	0	0	1870	1870
Adj Flow Rate, veh/h	146	0	0	140	121	0	0	2064	0	0	1522	215
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	0	2	2	2	2	0	2	0	0	2	2
Cap, veh/h	198	0		613	150		0	3792	0	0	3792	1177
Arrive On Green	0.06	0.00	0.00	0.18	0.08	0.00	0.00	0.74	0.00	0.00	0.74	0.74
Sat Flow, veh/h	3456	146		3456	1870	1585	0	5443	0	0	5274	1585
Grp Volume(v), veh/h	146	74.9		140	121	0	0	2064	0	0	1522	215
Grp Sat Flow(s),veh/h/ln	1728	E		1728	1870	1585	0	1702	0	0	1702	1585
Q Serve(g_s), s	6.2			5.2	9.5	0.0	0.0	26.2	0.0	0.0	16.4	6.1
Cycle Q Clear(g_c), s	6.2			5.2	9.5	0.0	0.0	26.2	0.0	0.0	16.4	6.1
Prop In Lane	1.00			1.00		1.00	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	198			613	150		0	3792	0	0	3792	1177
V/C Ratio(X)	0.74			0.23	0.81		0.00	0.54	0.00	0.00	0.40	0.18
Avail Cap(c_a), veh/h	530			1290	337		0	3792	0	0	3792	1177
HCM Platoon Ratio	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	0.00	0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	69.6			52.9	67.9	0.0	0.0	8.3	0.0	0.0	7.1	5.7
Incr Delay (d2), s/veh	5.3			0.2	9.8	0.0	0.0	0.6	0.0	0.0	0.3	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
%ile BackOfQ(50%),veh/ln	2.9			2.3	5.0	0.0	0.0	8.8	0.0	0.0	5.5	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	74.9			53.1	77.6	0.0	0.0	8.9	0.0	0.0	7.4	6.1
LnGrp LOS	E			D	E			A			A	A
Approach Vol, veh/h					261			2064			1737	
Approach Delay, s/veh					64.5			8.9			7.2	
Approach LOS					E			A			A	
Timer - Assigned Phs		2	3	4		6	7					
Phs Duration (G+Y+Rc), s		117.4	14.6	18.0		117.4	32.6					
Change Period (Y+Rc), s		6.0	6.0	6.0		6.0	6.0					
Max Green Setting (Gmax), s		82.0	23.0	27.0		82.0	56.0					
Max Q Clear Time (g_c+I1), s		28.2	8.2	11.5		18.4	7.2					
Green Ext Time (p_c), s		26.9	0.4	0.5		18.2	0.5					
Intersection Summary												
HCM 7th Control Delay, s/veh											13.9	
HCM 7th LOS											B	
Notes												
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

APPENDIX

F

Friday Closure Synchro Outputs - Mitigated

HCM 7th Signalized Intersection Summary

2: Beach Dr & Knowles Ave

04/21/2024



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	569	475	0	0	411	247	0	0	0	118	0	194
Future Volume (veh/h)	569	475	0	0	411	247	0	0	0	118	0	194
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
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	1870	1870	1870	1870	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	618	516	0	0	447	268				128	0	211
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	667	1239	0	60	616	911				438	0	390
Arrive On Green	0.29	0.66	0.00	0.00	0.33	0.33				0.25	0.00	0.25
Sat Flow, veh/h	1781	1870	0	885	1870	1585				1781	0	1585
Grp Volume(v), veh/h	618	516	0	0	447	268				128	0	211
Grp Sat Flow(s),veh/h/ln	1781	1870	0	885	1870	1585				1781	0	1585
Q Serve(g_s), s	30.0	15.4	0.0	0.0	25.3	10.4				7.0	0.0	13.9
Cycle Q Clear(g_c), s	30.0	15.4	0.0	0.0	25.3	10.4				7.0	0.0	13.9
Prop In Lane	1.00		0.00	1.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	667	1239	0	60	616	911				438	0	390
V/C Ratio(X)	0.93	0.42	0.00	0.00	0.73	0.29				0.29	0.00	0.54
Avail Cap(c_a), veh/h	667	1239	0	60	616	911				438	0	390
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	1.00	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	25.8	9.4	0.0	0.0	35.5	13.0				36.8	0.0	39.4
Incr Delay (d2), s/veh	20.9	1.0	0.0	0.0	7.3	0.8				1.7	0.0	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
%ile BackOfQ(50%),veh/ln	12.9	6.3	0.0	0.0	12.7	3.9				3.3	0.0	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	46.7	10.5	0.0	0.0	42.8	13.9				38.5	0.0	44.7
LnGrp LOS	D	B			D	B				D		D
Approach Vol, veh/h		1134			715						339	
Approach Delay, s/veh		30.2			32.0						42.3	
Approach LOS		C			C						D	
Timer - Assigned Phs	1	2			6			8				
Phs Duration (G+Y+Rc), s	40.0	45.0			85.0			35.0				
Change Period (Y+Rc), s	5.0	5.5			5.5			5.5				
Max Green Setting (Gmax), s	35.0	39.5			79.5			29.5				
Max Q Clear Time (g_c+I1), s	32.0	27.3			17.4			15.9				
Green Ext Time (p_c), s	0.8	3.1			3.9			1.5				
Intersection Summary												
HCM 7th Control Delay, s/veh					32.7							
HCM 7th LOS					C							