



BA Group

2150 LAKE SHORE BOULEVARD WEST PROPOSED MIXED-USE DEVELOPMENT TORONTO, ONTARIO

Urban Transportation Considerations
Official Plan Amendment, Zoning By-law Amendment, and Draft Plan
of Subdivision Application Resubmission
Appendix F to Appendix H

Prepared For: FCR (Park Lawn) Corporation
2253213 Ontario Limited

February 2021



**APPENDIX F:
Multi-Resolution Modelling Outputs and Analysis Results**



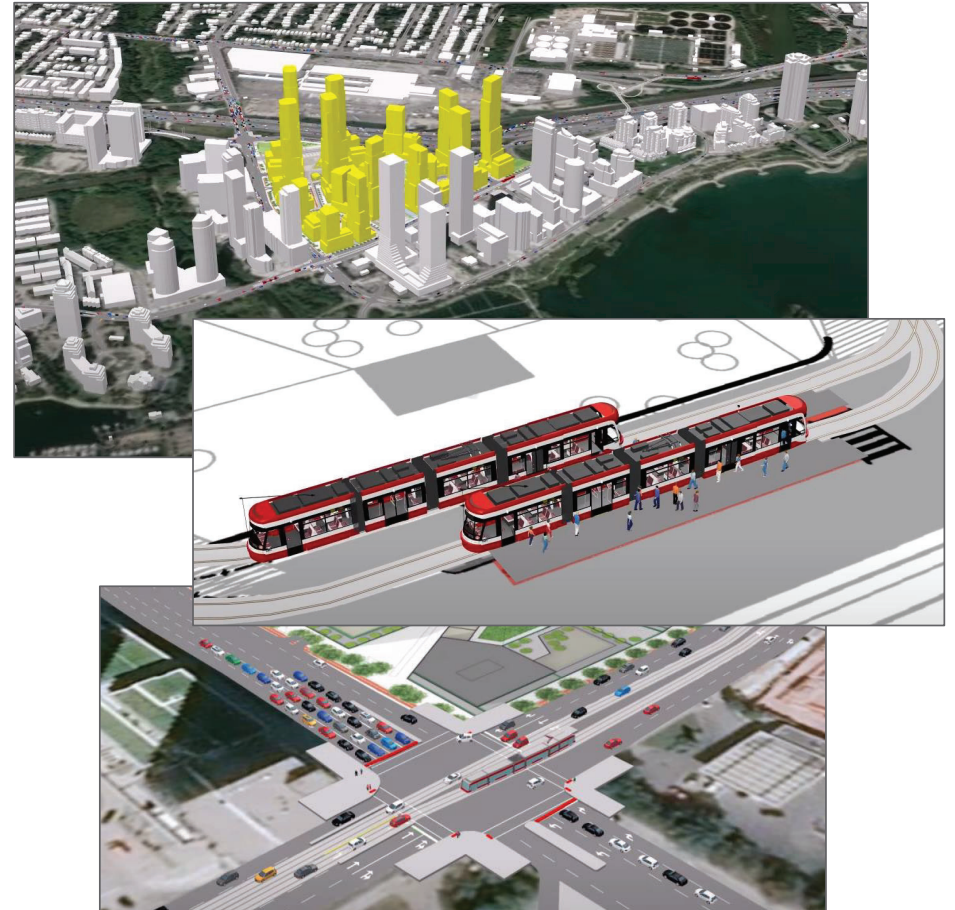
2150 LAKESHORE

**Multi-Resolution (Macro/Meso/Micro)
Transportation Modelling Exercise**

Analysis Results

January 18th, 2021

- 1) **Modelling Context & Background Information**
- 2) **Key Takeaways & Conclusions**
- 3) **Scenario 3 (Original Ramp Configuration)**
- 4) **Detailed Model Results (Scenario 2 vs Scenario 4)**
 - Background Traffic – West-to-East Network Capacity
 - Network Speed Plots
 - Volumes & Delays at Intersections
 - Private Vehicle Travel Times
 - Public Transit Travel Times
 - Highway Mainline & Ramp Volumes

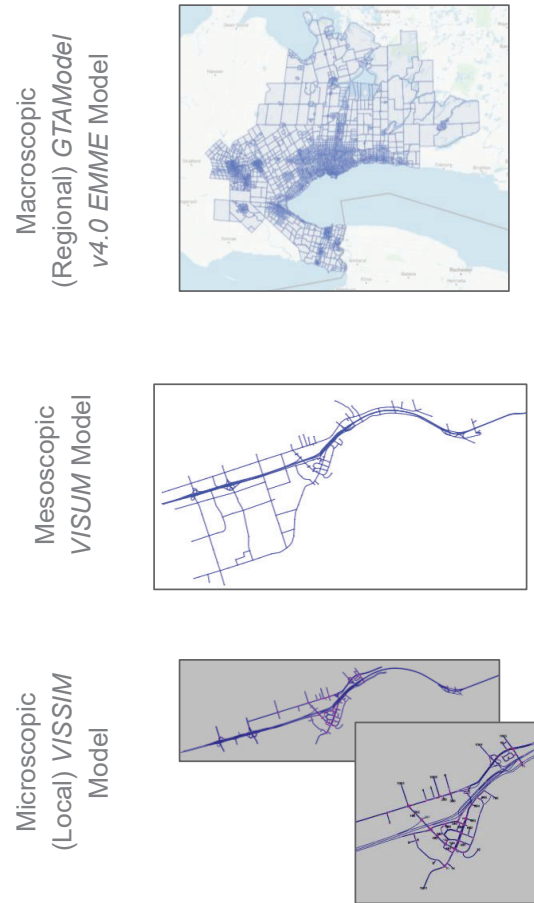
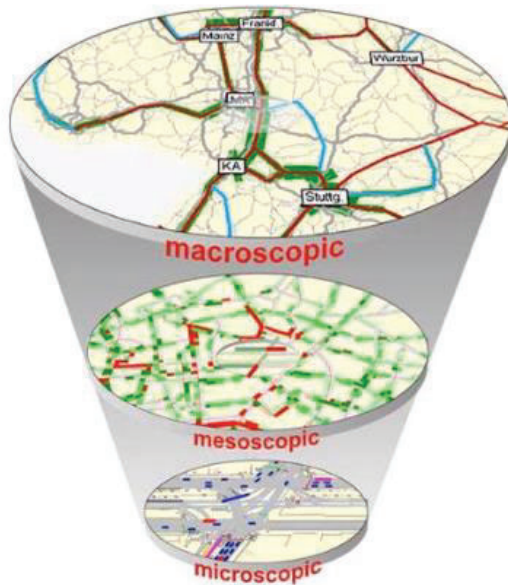


1) Modelling Context & Background Information

- Multi-Resolution (Macro/Meso/Micro) Modelling Process
- Model Scenarios
- Future (2041) Conditions Models

Modelling Process

- Multi-resolution (macro/meso/micro) modelling process conducted in conjunction with the City of Toronto, AECOM and BA Group
- Takes into account population/employment growth and planned infrastructure improvements (e.g. new GO train station) at both the regional and local levels



5 model scenarios

as defined by the
City of Toronto

Scenario 1 (AECOM) – Existing Conditions

Scenario 2 (AECOM) – Future (2041) Do-Nothing

Scenario 3 (BA Group) – Future (2041) Do-Something w/ original ramps

Scenario 4 (BA Group) – Future (2041) Do-Something w/ reconfigured ramps

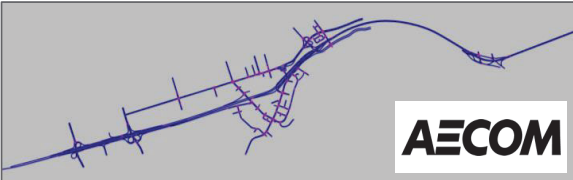
Scenario 5 (AECOM) – Future (2041) Do-Something w/ additional TMP improvements

	Scenario 2 (AECOM)	Scenario 3 (BA)	Scenario 4 (BA)
Horizon Year	2041	2041	2041
Development	No Christie's	Full Christie's	Full Christie's
Parklawn GO Station	No	Yes	Yes
Legion Rd Extension	Yes	Yes	Yes
Loop Rd & Relief Rd	No	Yes	Yes
Gardiner/Brookers Ramps	Original Config	Original Config	Reconfigured
Parklawn Rd	Original Config	As per master plan	As per master plan
Lakeshore Blvd	Original Config	As per master plan	As per master plan

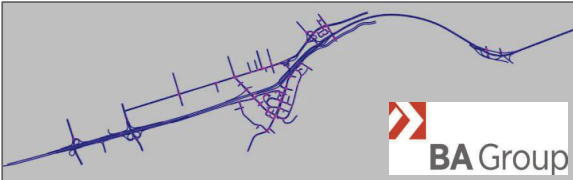
- This analysis focuses on Scenario 3 and Scenario 4, and especially on comparing the results of Scenario 4 to those of the previously modelled Scenario 2

Future Conditions (2041) Models

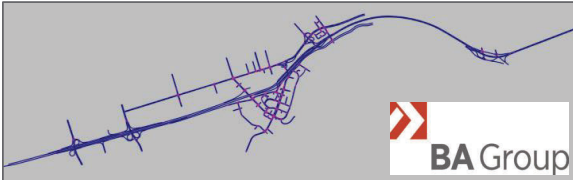
Scenario 2
Future 2041 Do-Nothing Model



Scenario 3
Future 2041 Do-Something Model
(w/ original Gardiner ramps)



Scenario 4
Future 2041 Do-Something Model
(w/ reconfigured Gardiner ramps)



2) Key Takeaways & Conclusions

- Gardiner / Brookers Ln Ramps
- Relief Road
- Overall West-to-East Network Capacity
- Local Road Network
- General Conclusions

Gardiner / Brookers Ln Ramps

- The analysis of Scenario 3 illustrates how failing to reconfigure the Gardiner ramps at Brookers Ln is projected to lead to a condition where very significant congestion occurs, primarily along the westbound Gardiner off-ramp during the weekday afternoon (PM) peak hour. This forecasted gridlock results in significantly more latent demand from the east on Lake Shore Blvd, indicating that Scenario 3 is not an optimal alternative.

Relief Road

- The Relief Road will be very well utilized and provide a significant travel time benefit to a large number of motorists, as evidenced by the dynamic traffic assignment model assigning over 950 vehicles to said Relief Road in the eastbound direction during the morning peak hour, as well as over 1,000 corresponding vehicles in the westbound direction during the afternoon peak hour.
- By providing a faster alternate route for a high number of private vehicles, the Relief Road will indeed “relieve” the Gardiner Expressway and increase the overall capacity of the network to process west-to-east (i.e. Downtown-bound) background traffic, as well as improve operations on local arterial corridors (e.g. Parklawn Rd) and intersections (e.g. Parklawn Rd & Lakeshore Blvd), as discussed in greater detail below.

Overall West-to-East Network Capacity

- The overall capacity of the network to process vehicles travelling through the study area from the west to the east (i.e. heading Downtown) during the heavily congested weekday morning (AM) peak hour will increase as a result of the proposed infrastructure improvements. In fact, the number of vehicles processed from the west end of the Gardiner Expressway (west of Kipling Ave) to the east end of the Gardiner Expressway (east of Jameson Ave) is projected to increase by nearly 100 vehicles during the weekday morning (AM) peak hour alone, and by over 250 vehicles during the three hours of simulation considered, as a result of the alternate routes provided by the Relief Road.

Local Area Road Network

- The local area road network will benefit significantly from the proposed transportation infrastructure improvements, as traffic gets rerouted to the Relief Road and operations therefore improve along currently busy arterial corridors and intersections.
- For example, traffic operations are projected to improve significantly along the Parklawn Rd corridor in the northbound direction during the weekday afternoon (PM) peak, with a decrease in travel times of over 7 minutes, as well as at the intersection of Parklawn Rd and Lakeshore Blvd, with a projected decrease of approximately 400 vehicles to the heavily congested southbound left turning movement during the weekday morning (AM) peak hour.

* * * * *

General Conclusions

- The proposed transportation improvements will result in an improved area road network that can appropriately mitigate the impacts of the future traffic to be generated by the Christie's/2150 Lakeshore development.
- Furthermore, the proposed transportation improvements will also benefit the area road network by facilitating travel not directly associated with the site (i.e. background traffic). Specifically, the capacity of the network to process vehicles travelling eastbound throughout the study area during the weekday morning (AM) peak hour will increase as a result of the addition of the Relief Road, while traffic conditions along multiple arterial corridors as well as at several intersections will also improve.

3) Future (2041) Do-Something Sc. 3 (Original Ramp Config.)

- Local Area Speed Plots
- Latent Demand Comparison

Future (2041) AM



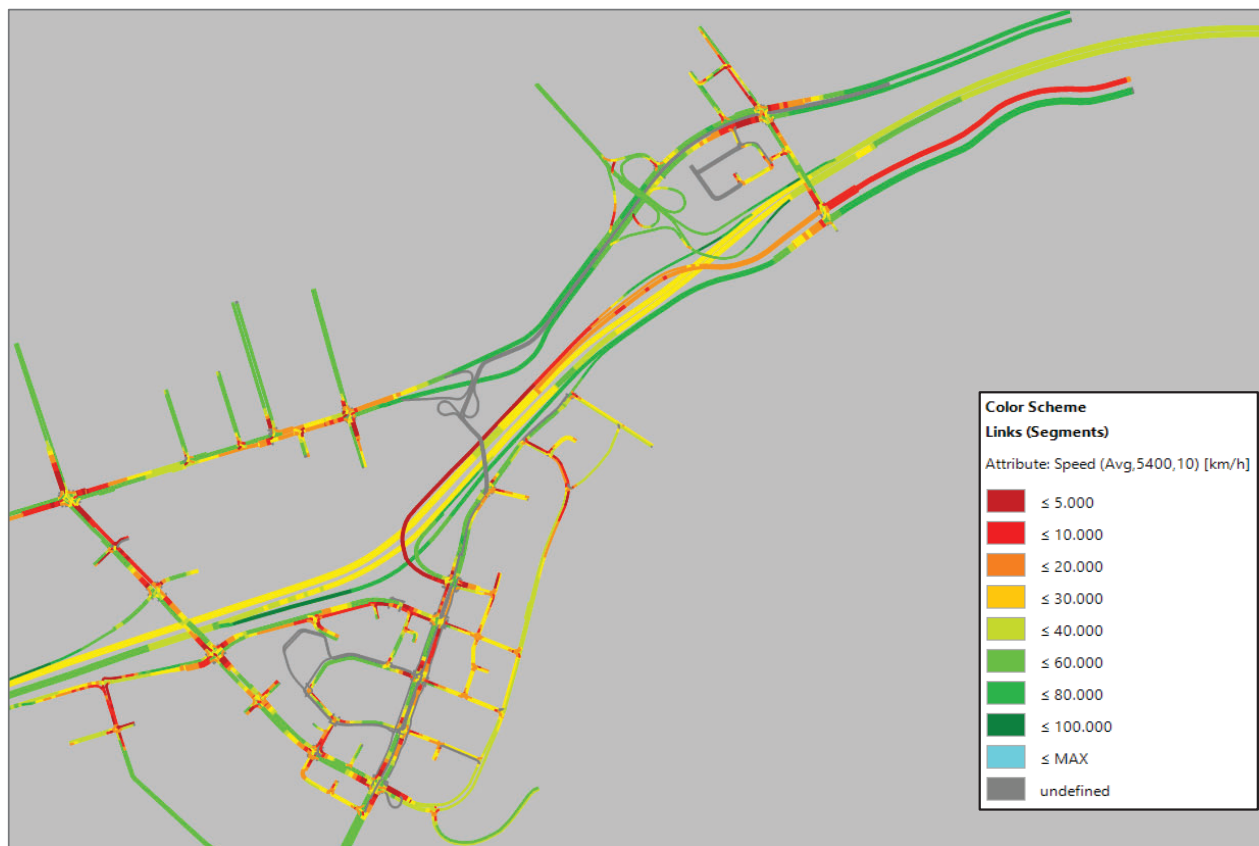
Future (2041) PM



Color Scheme
Links (Segments)
Attribute: Speed (Avg,5400,10) [km/h]

Dark Red	≤ 5.000
Red	≤ 10.000
Orange	≤ 20.000
Yellow	≤ 30.000
Light Green	≤ 40.000
Green	≤ 60.000
Dark Green	≤ 80.000
Very Dark Green	≤ 100.000
Light Blue	≤ MAX
Grey	undefined

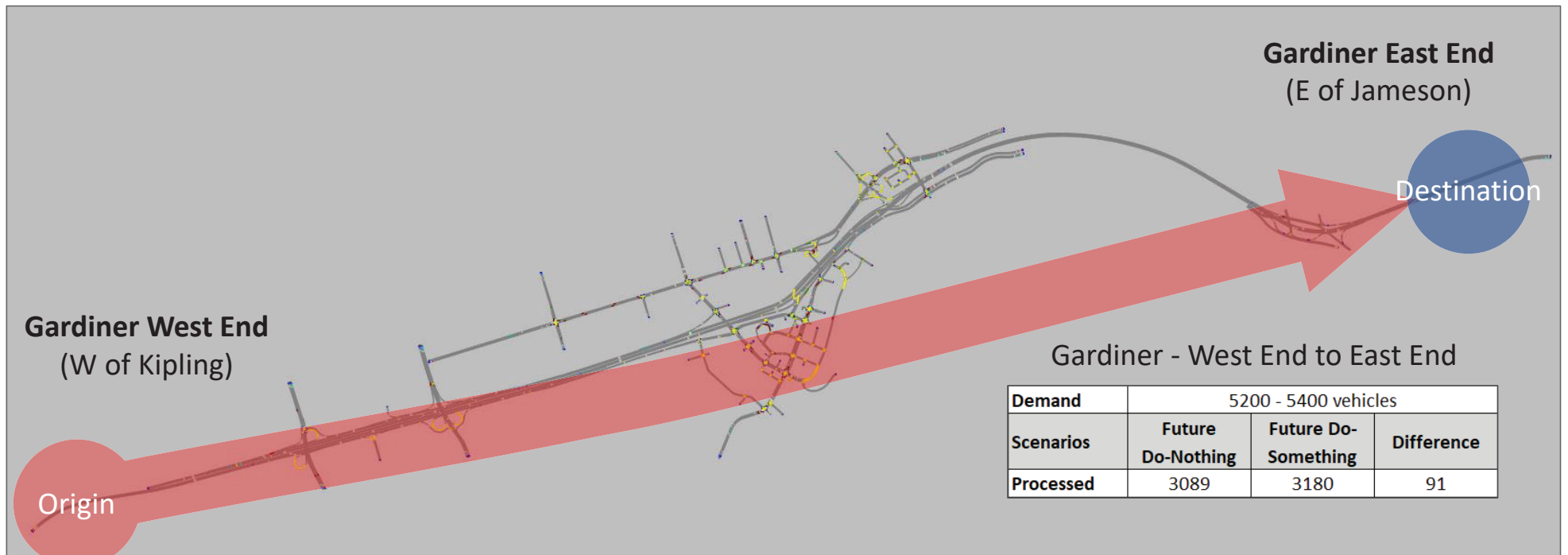
Scenario 3 PM



- Failing to reconfigure the Gardiner / Brookers Ln ramps is projected to result in significant congestion, primarily along the westbound Gardiner off-ramp during the weekday afternoon (PM) peak hour.
- This forecasted gridlock results in significantly more latent demand from the east on Lake Shore Blvd, indicating that Scenario 3 is not an optimal alternative.

4) Detailed Model Results (Scenario 2 vs Scenario 4)

- Background Traffic – West-to-East Network Capacity
- Network Speed Plots
- Volumes & Delays at Intersections
- Private Vehicle Travel Times
- Public Transit Travel Times
- Highway Mainline & Ramp Volumes



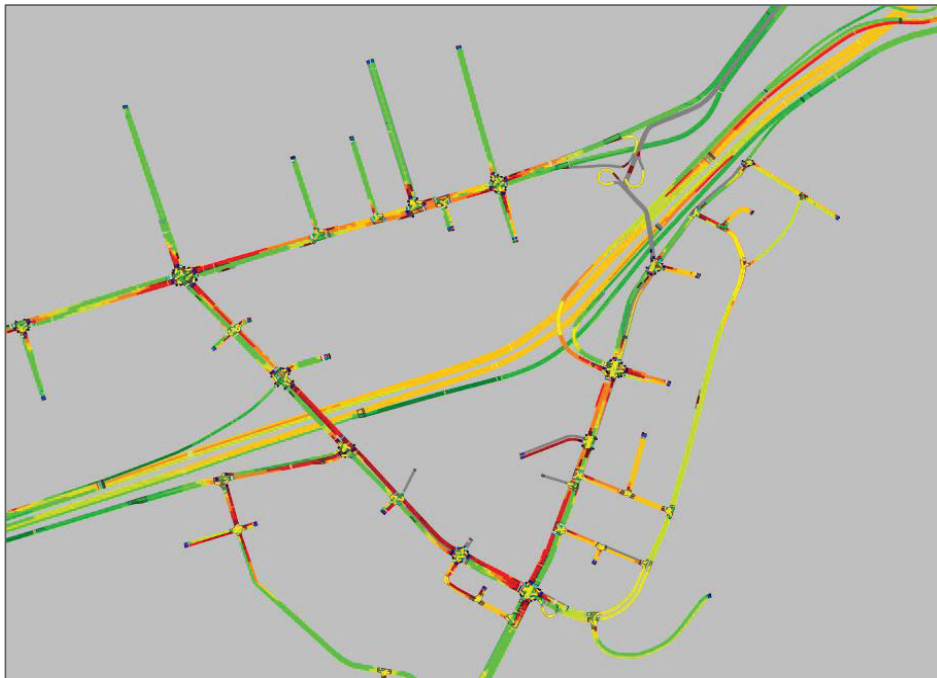
Future (2041) Do-Nothing



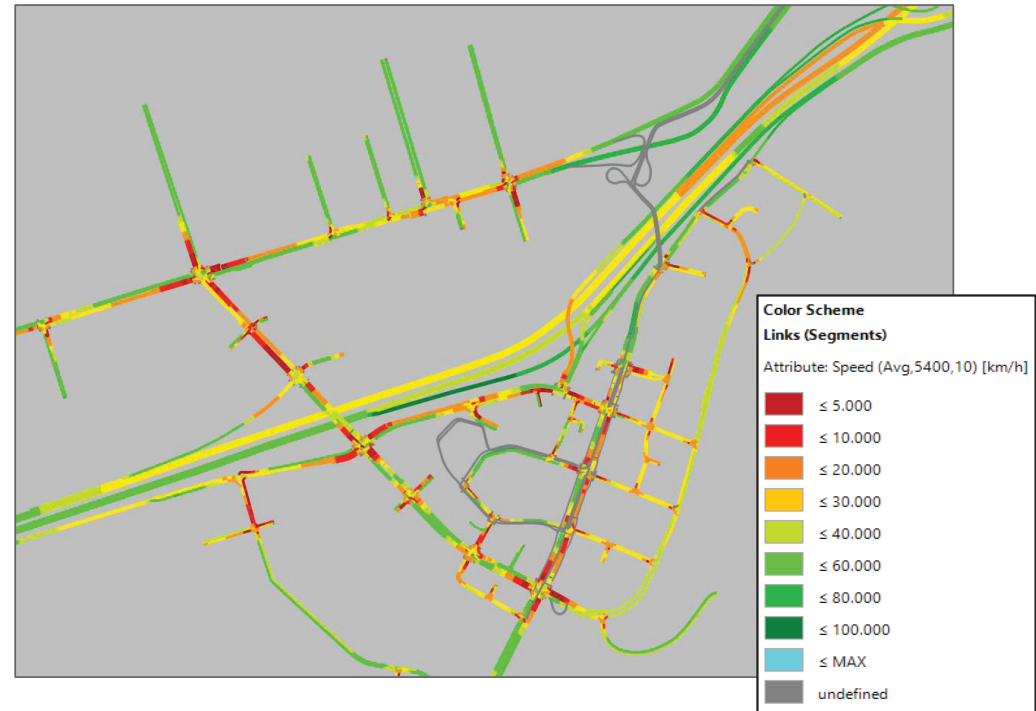
Future (2041) Do-Something



Future (2041) Do-Nothing

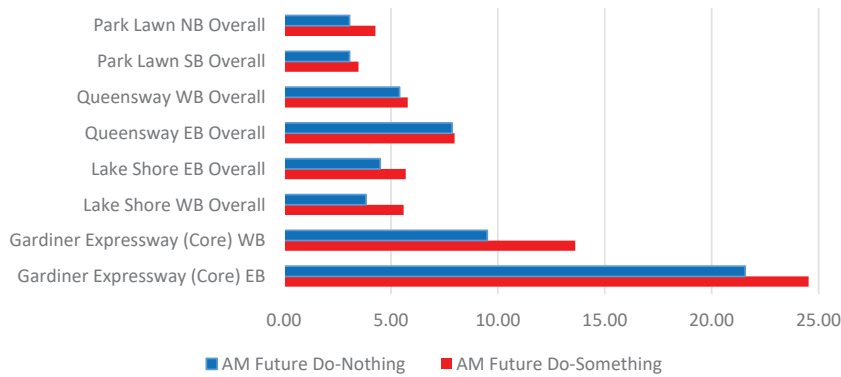


Future (2041) Do-Something

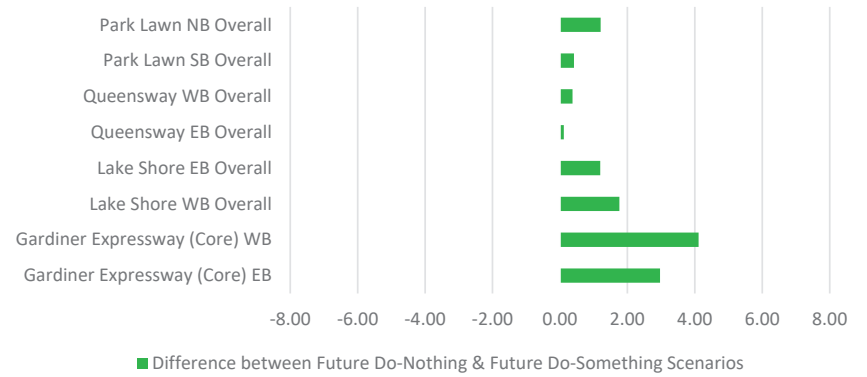


Private Vehicle Travel Times (AM & PM)

Average Travel Times (min)



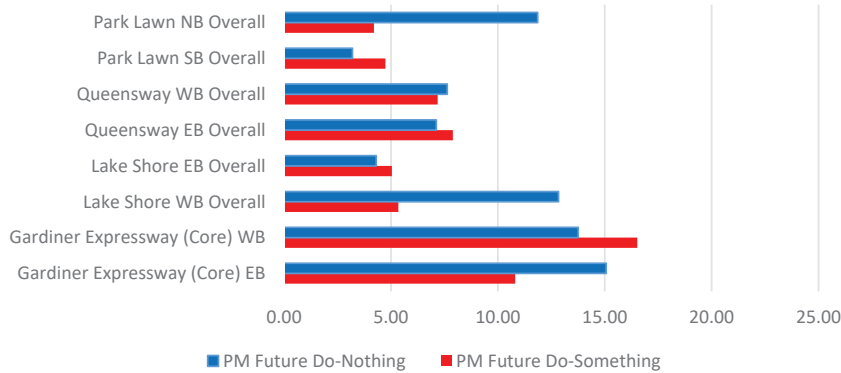
Travel Time Difference (min)



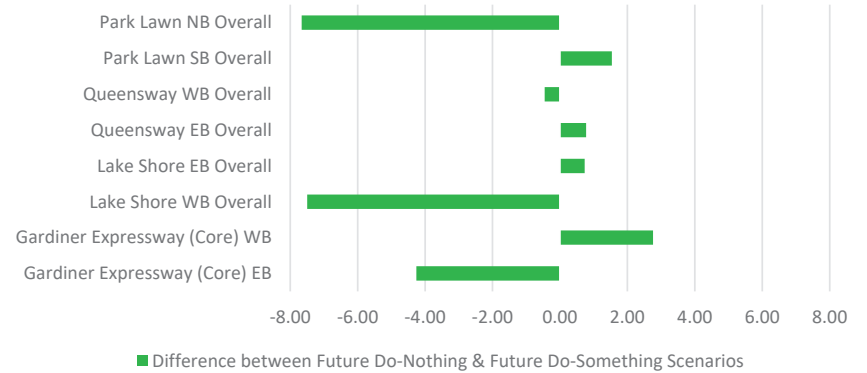
AM

PM

Average Travel Times (min)

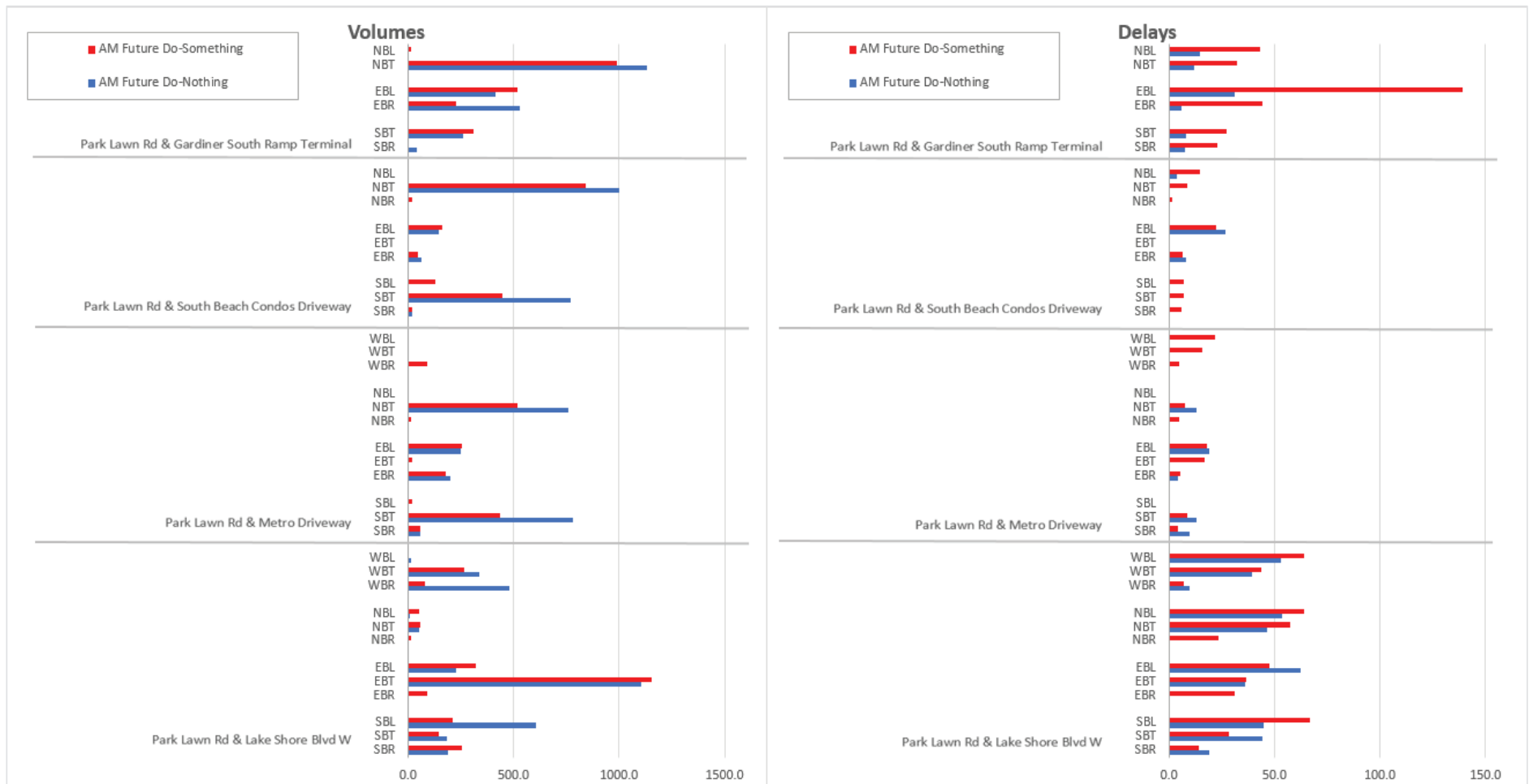


Travel Time Difference (min)

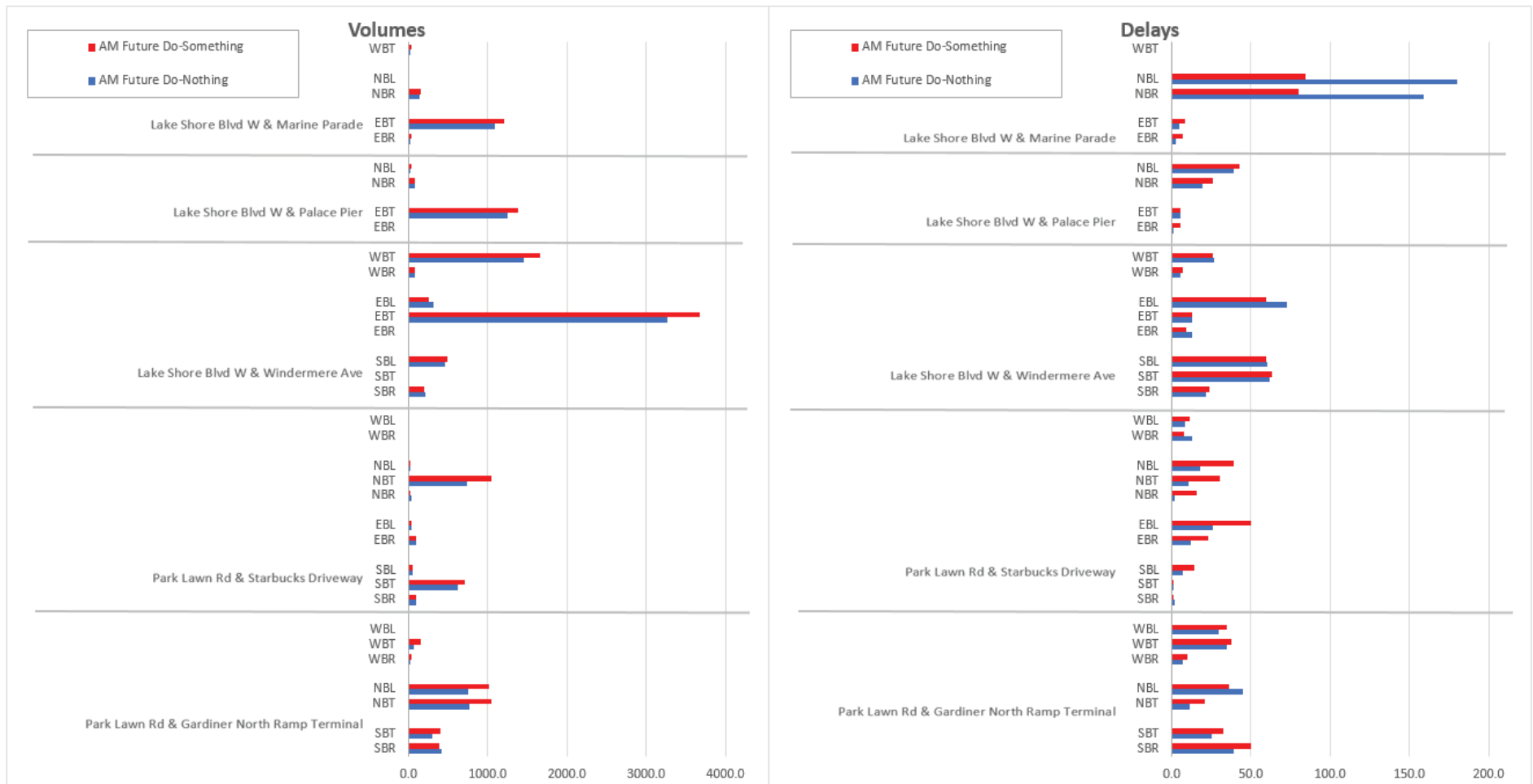


■ Difference between Future Do-Nothing & Future Do-Something Scenarios

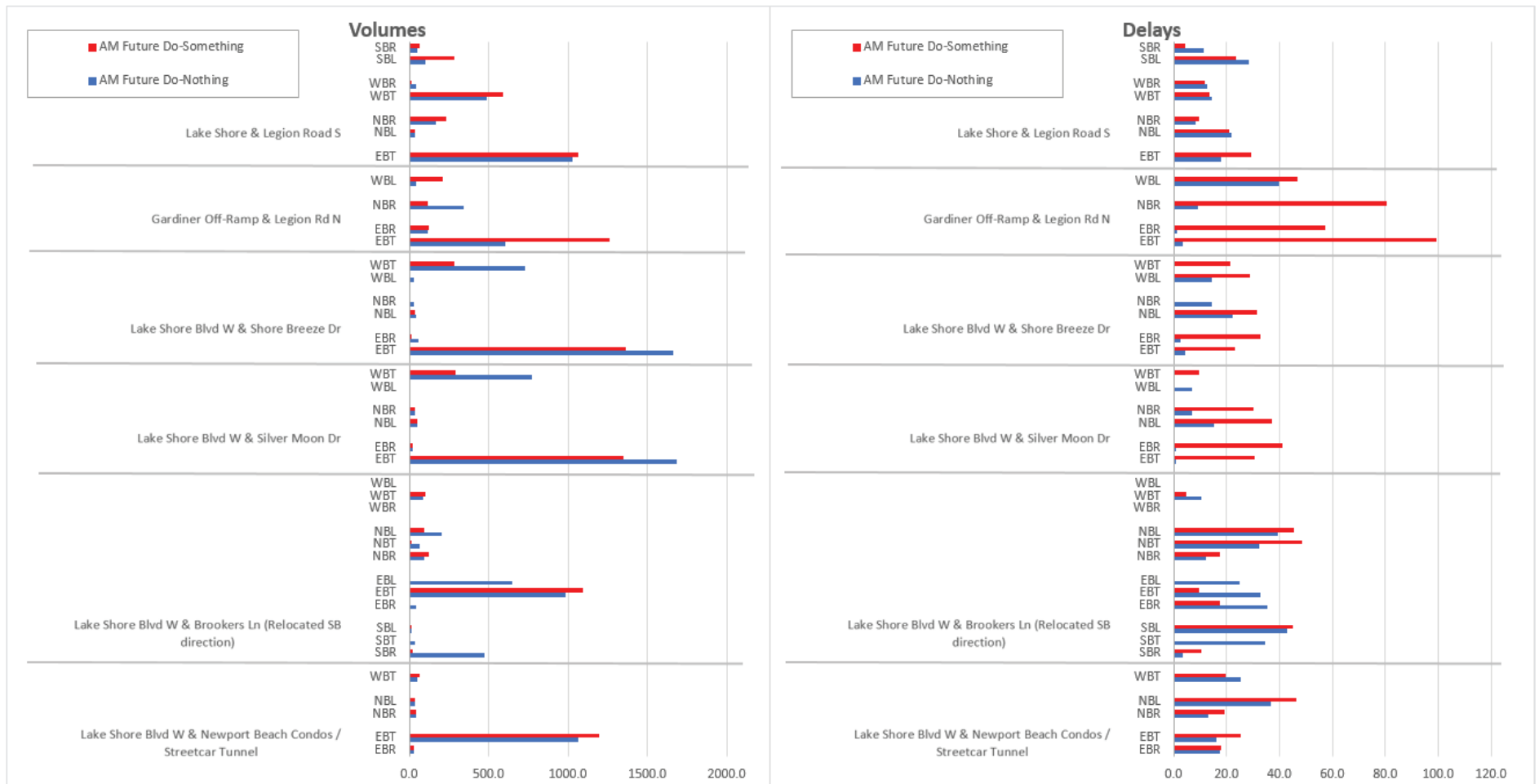
Volumes and Delays at Intersections (AM)



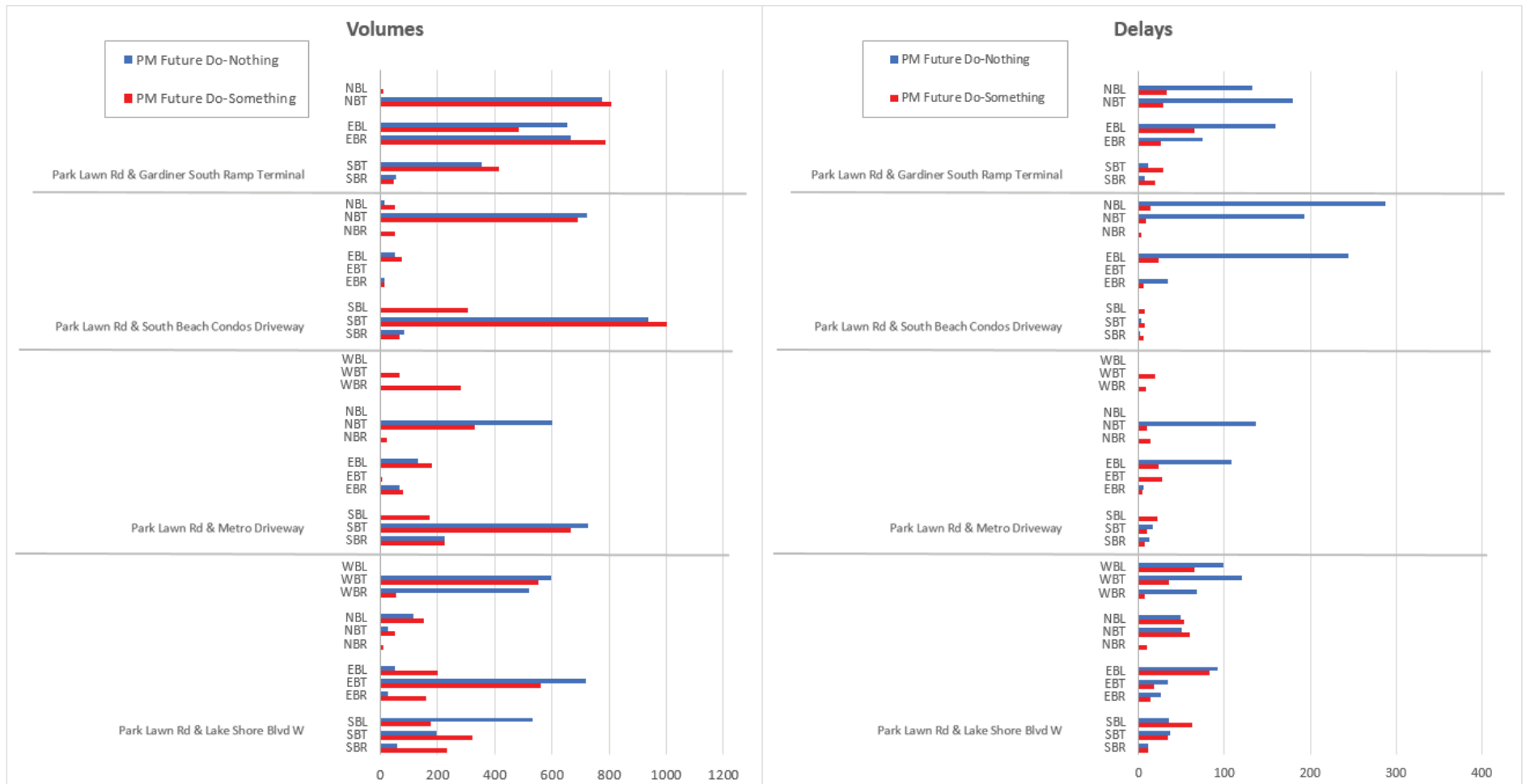
Volumes and Delays at Intersections (AM)



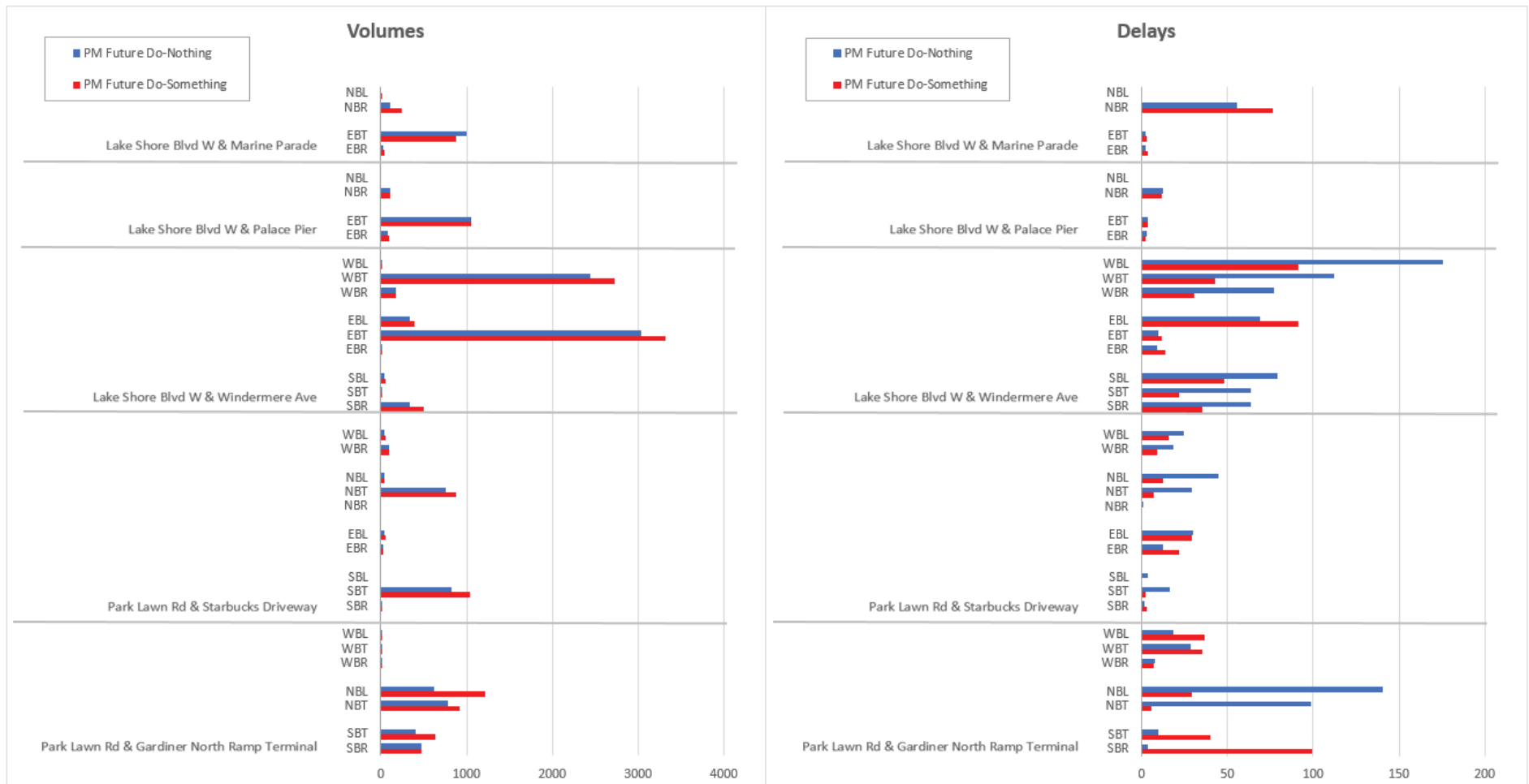
Volumes and Delays at Intersections (AM)



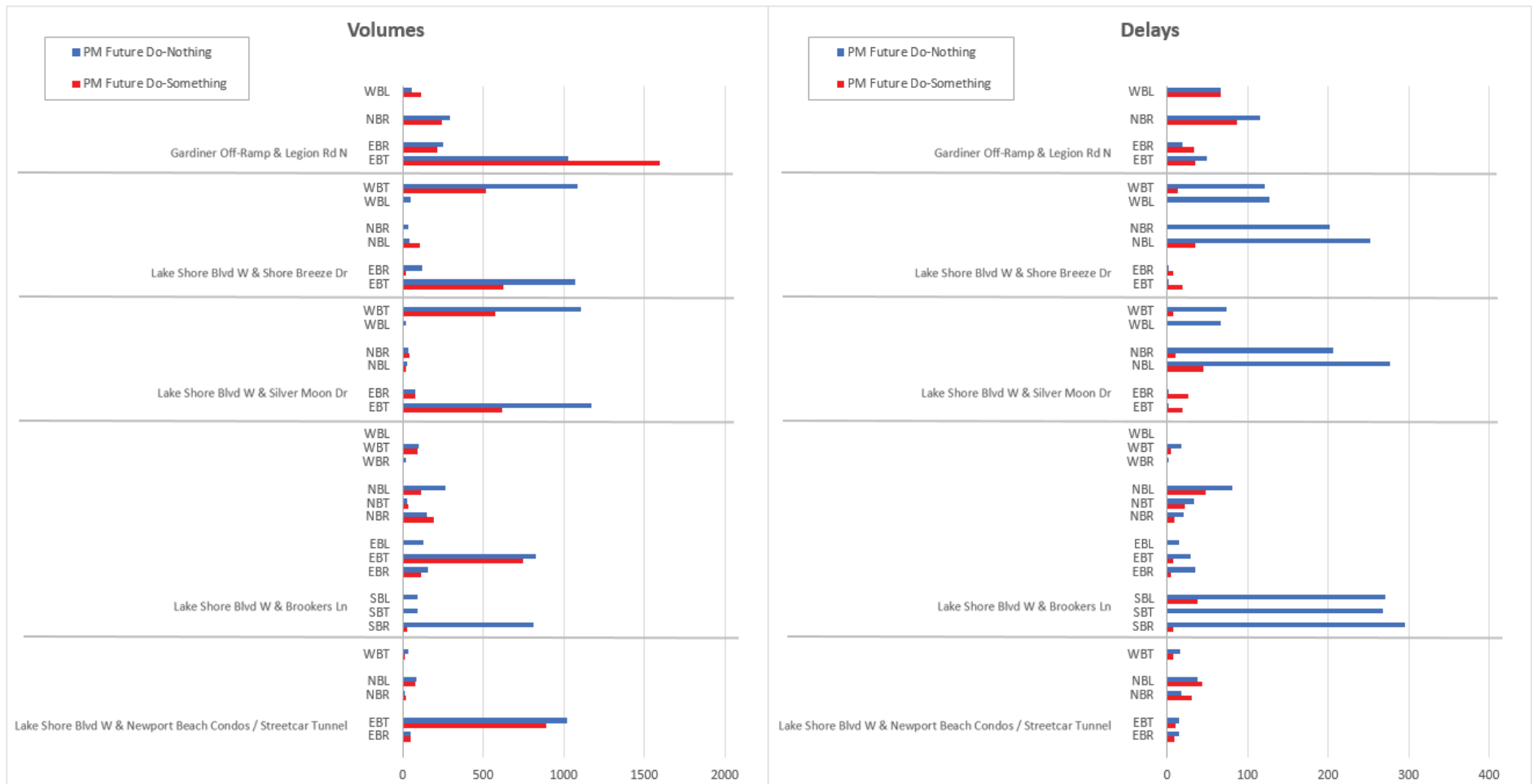
Volumes and Delays at Intersections (PM)



Volumes and Delays at Intersections (PM)

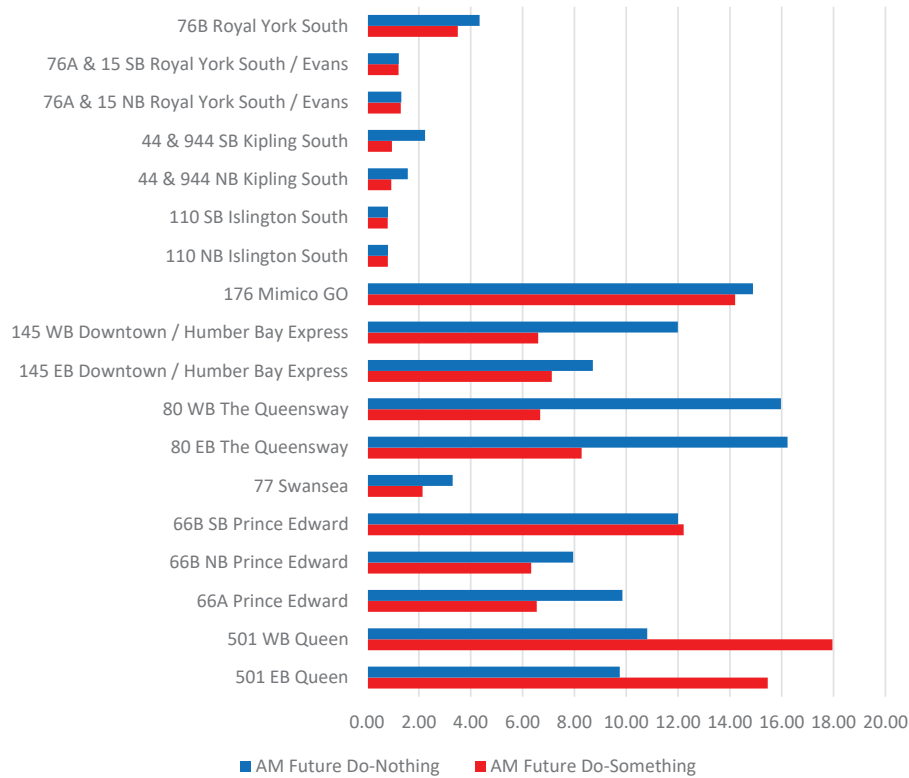


Volumes and Delays at Intersections (PM)

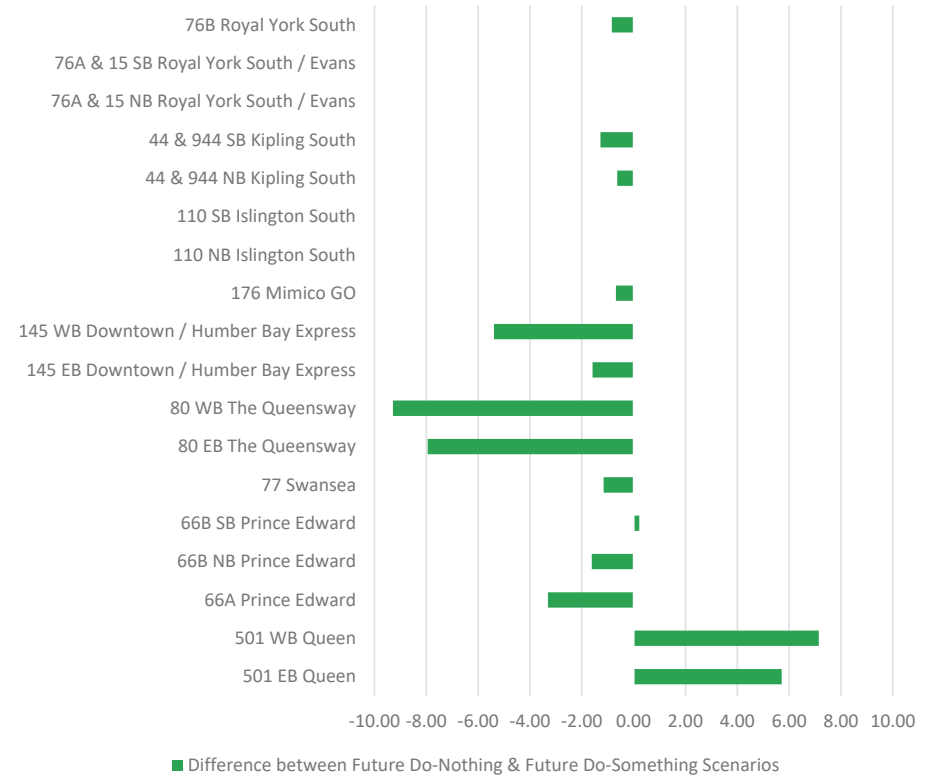


Transit Travel Times (AM)

Average Travel Times (min)

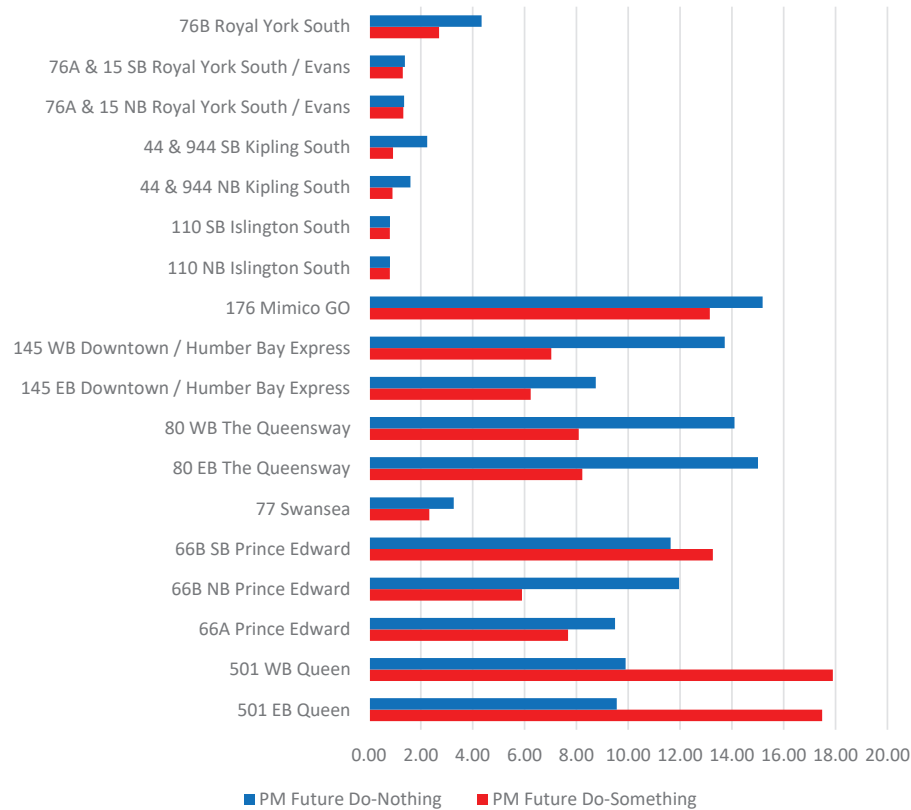


Travel Time Difference (min)

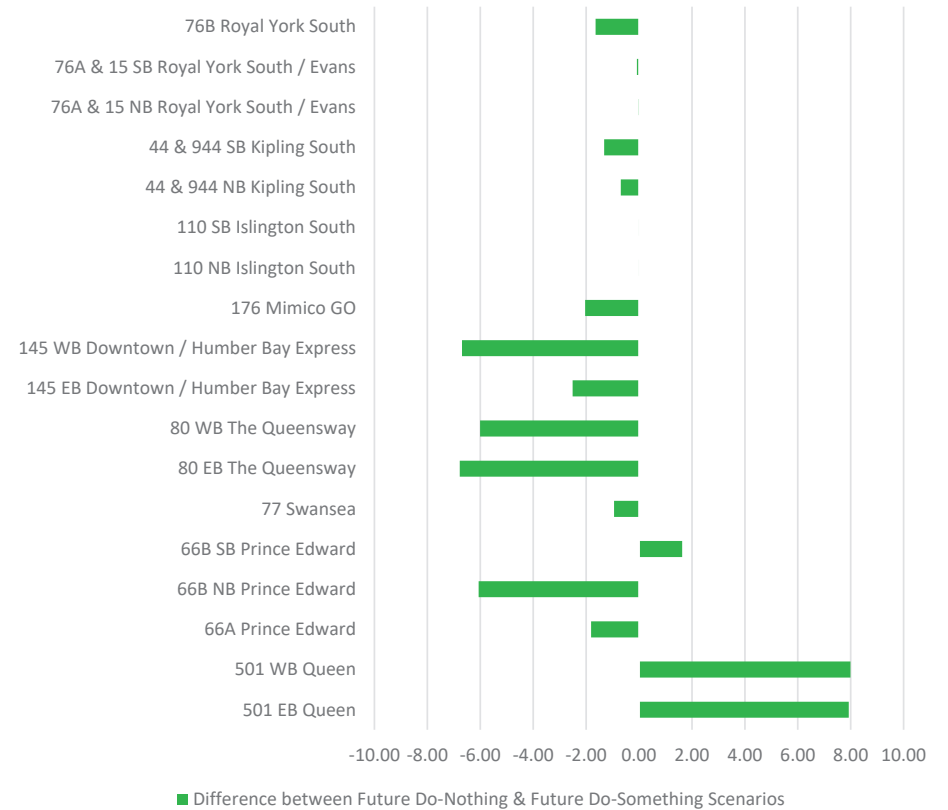


Transit Travel Times (PM)

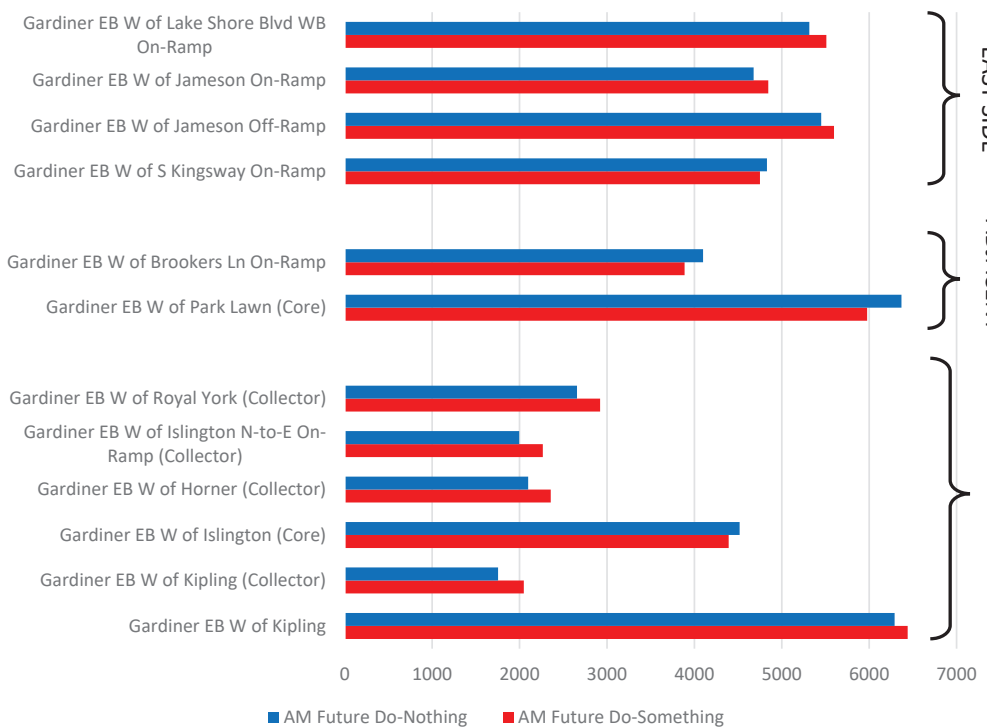
Average Travel Times (min)



Travel Time Difference (min)



Mainline Section Volumes Eastbound

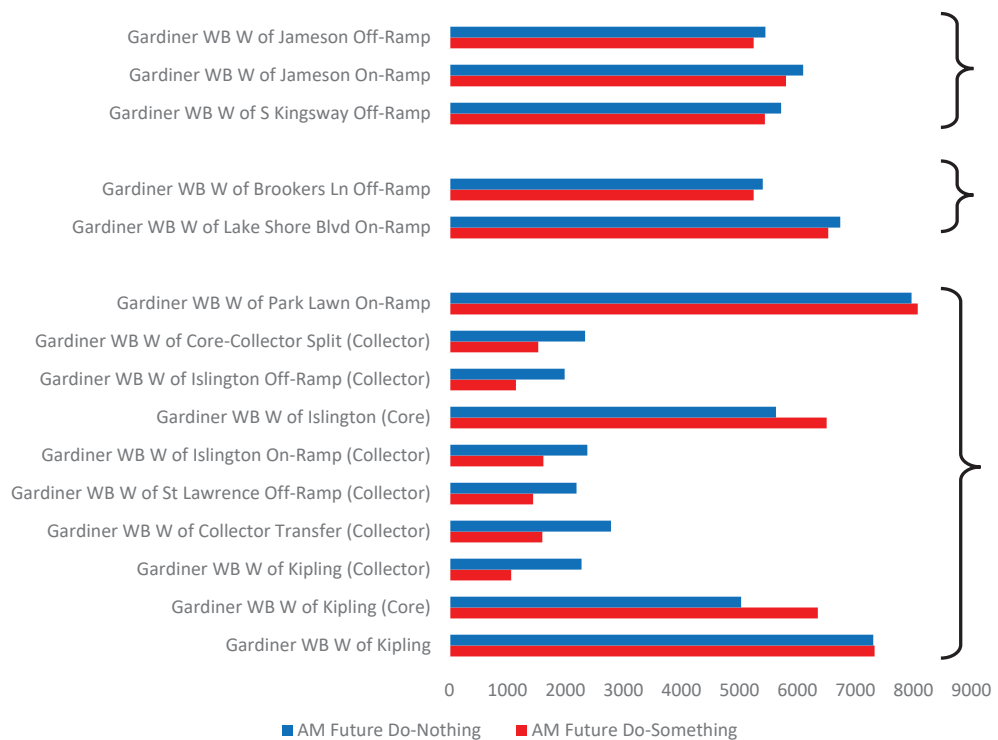


Mainline Section Volume Increase Eastbound



Mainline Volumes - Westbound (AM)

Mainline Section Volumes Westbound

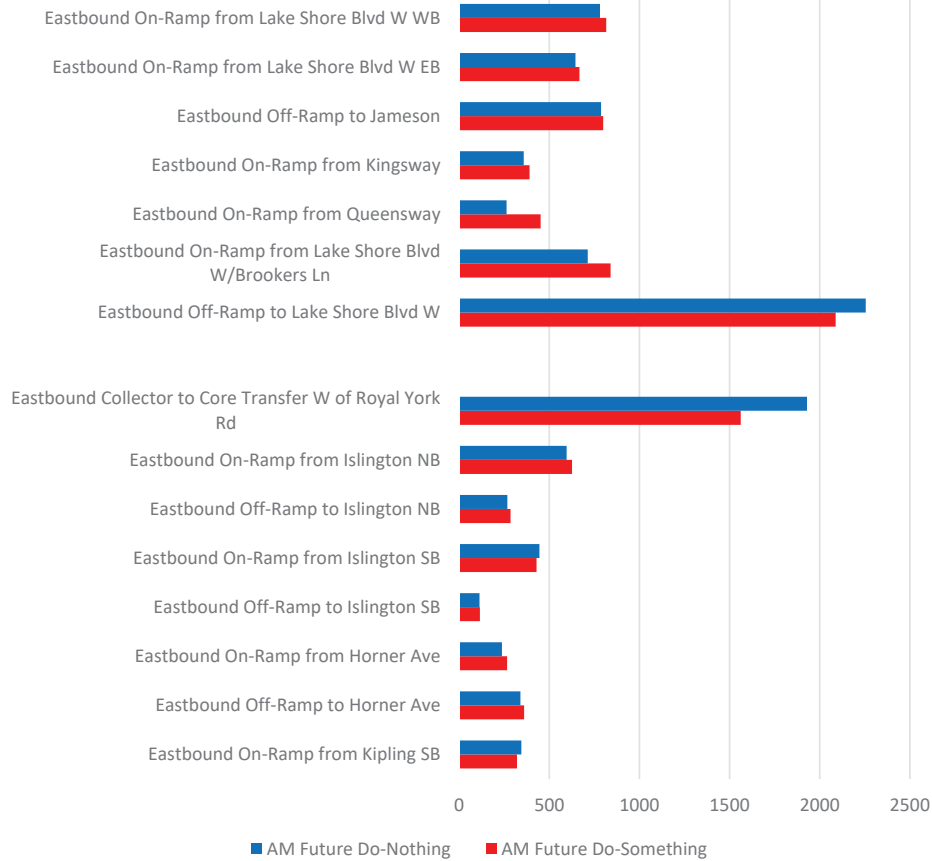


Mainline Section Volume Increase Westbound

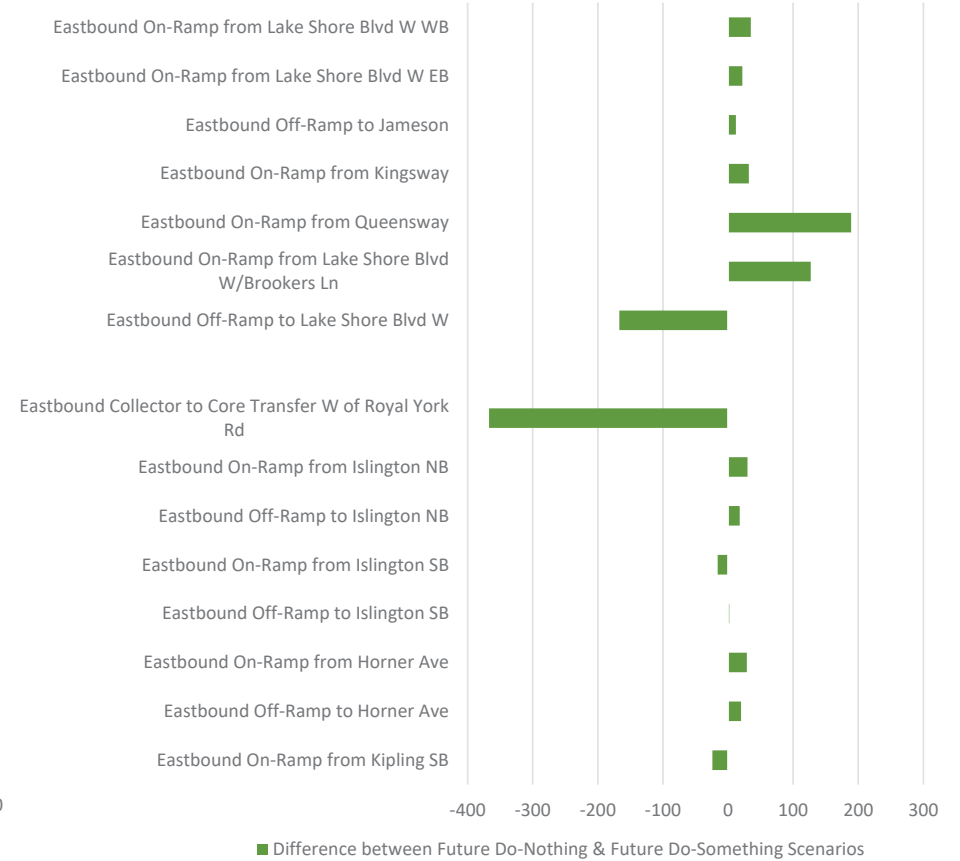


Ramp Volumes - Eastbound (AM)

Ramp Volumes Eastbound

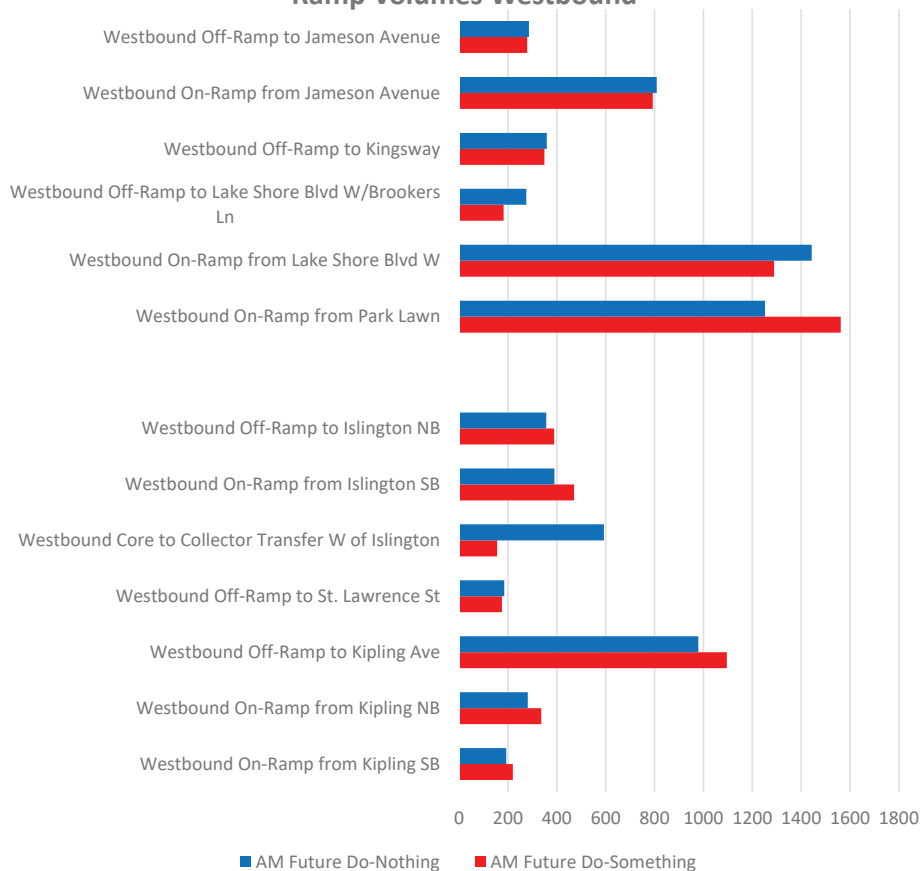


Ramp Volume Increase Eastbound



Ramp Volumes - Westbound (AM)

Ramp Volumes Westbound

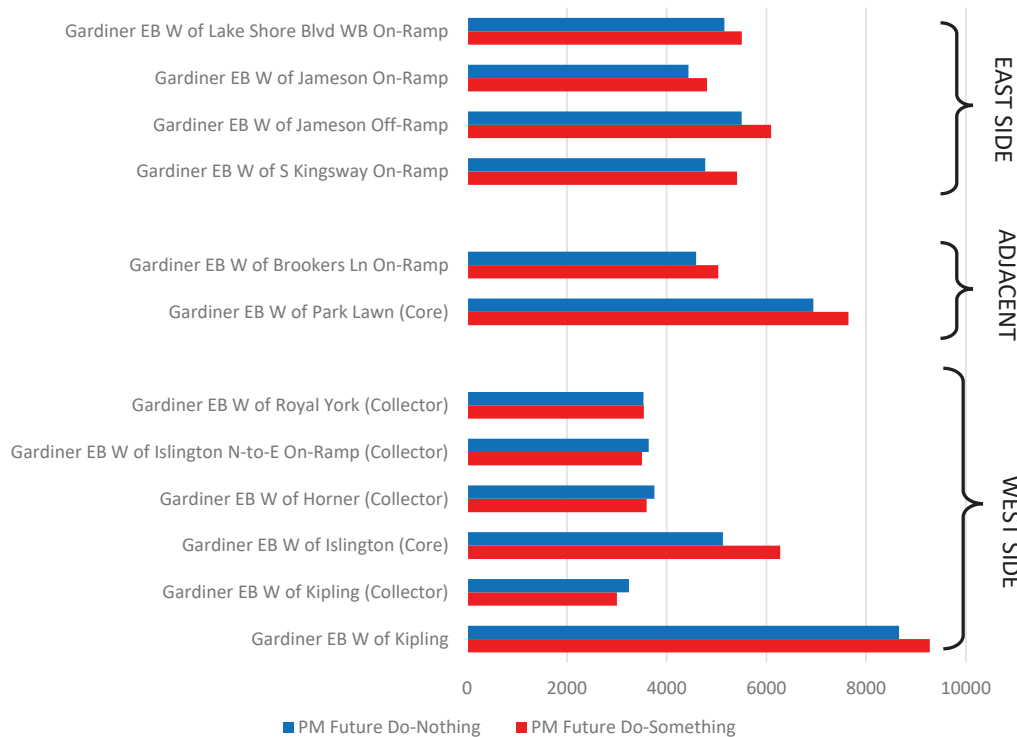


Ramp Volume Increase Westbound



Mainline Volumes - Eastbound (PM)

Mainline Section Volumes Eastbound

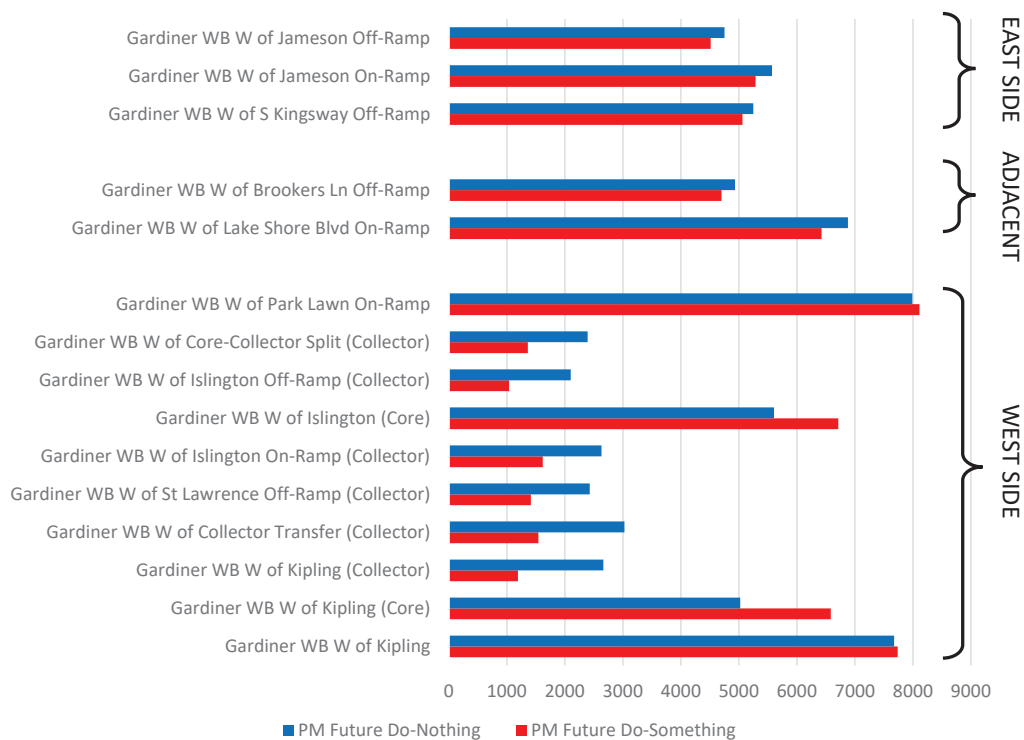


Mainline Section Volume Increase Eastbound

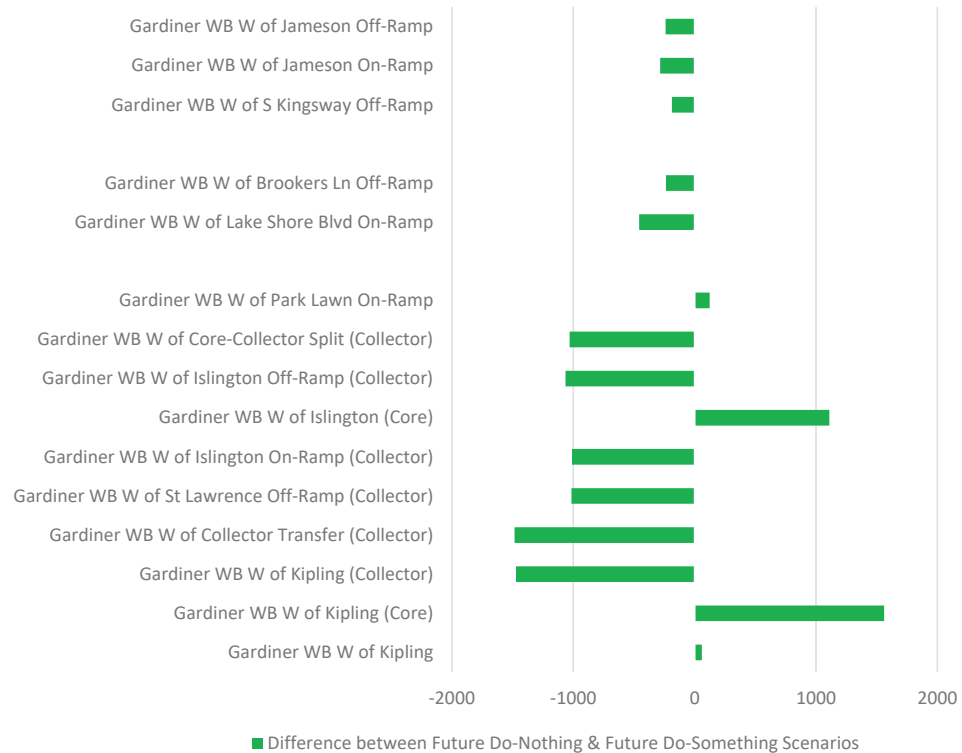


Mainline Volumes - Westbound (PM)

Mainline Section Volumes Westbound

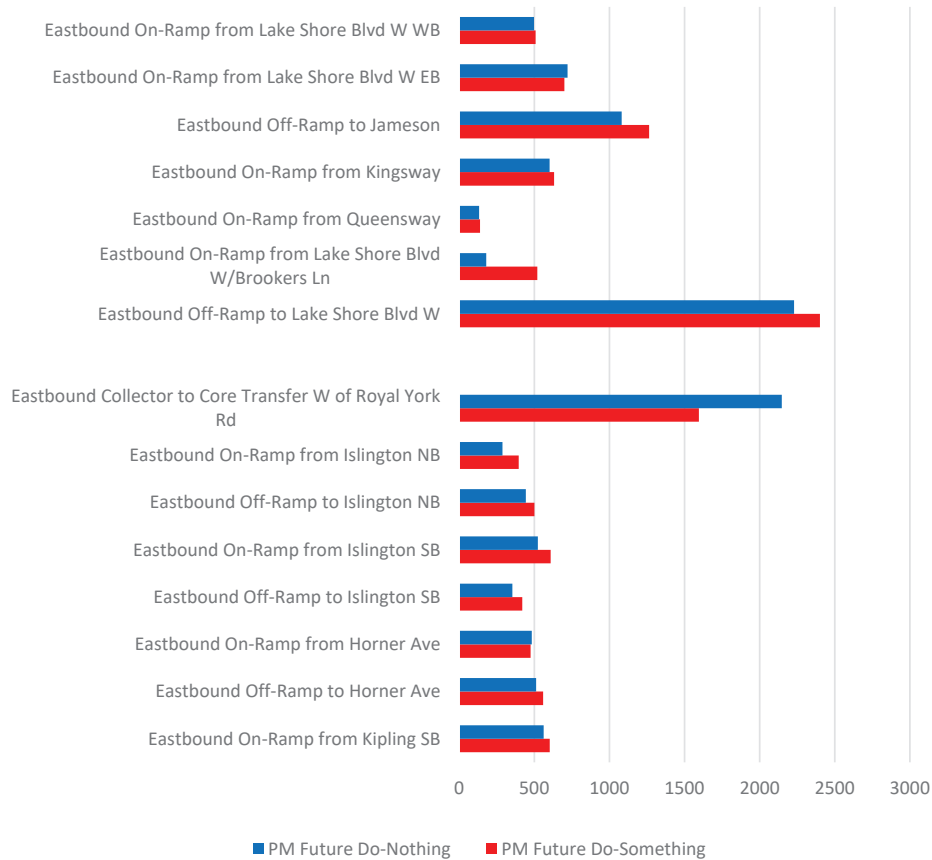


Mainline Section Volume Increase Westbound

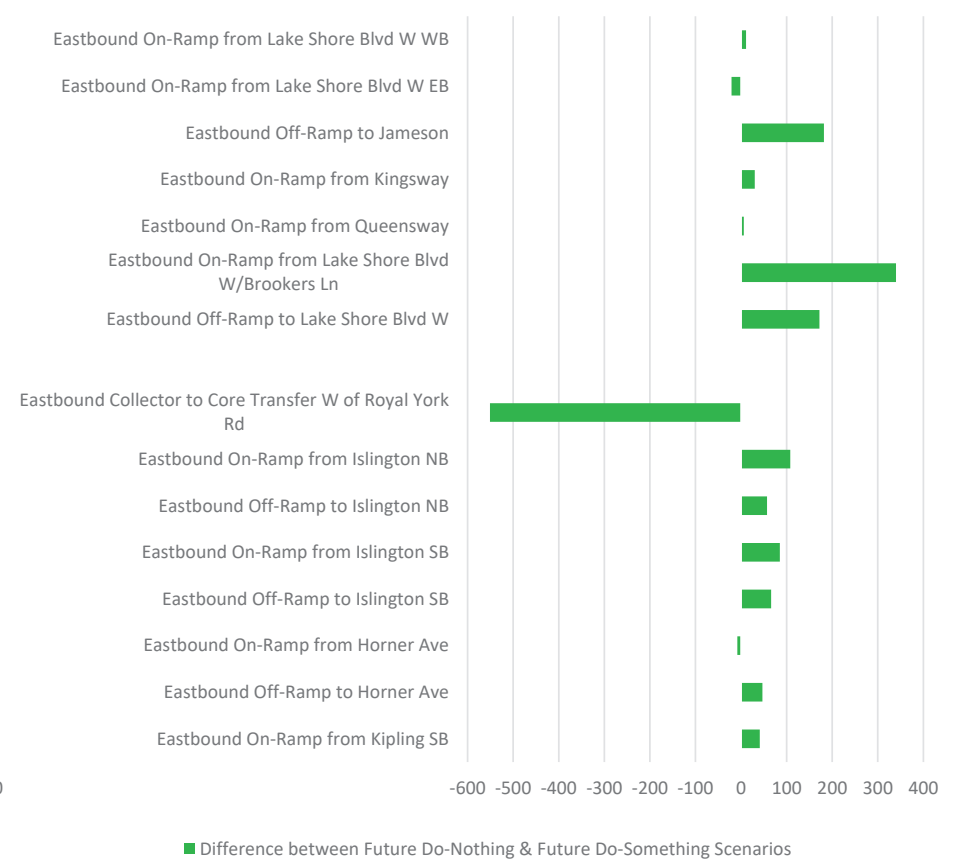


Ramp Volumes - Eastbound (PM)

Ramp Volumes Eastbound



Ramp Volume Increase Eastbound



Ramp Volumes - Westbound (PM)

Ramp Volumes Westbound



Ramp Volume Increase Westbound



APPENDIX G: Synchro Analysis Results



TRAFFIC OPERATIONS RESULTS – SIGNALIZED INTERSECTIONS

Intersection	Movement	Future Do Nothing			Future Do Something		
		V/C	LOS	Delay	V/C	LOS	Delay
Park Lawn Rd / The Queensway ²	Overall	1.07 (0.99)	E (E)	73.5 (56.8)	1.08 (0.97)	E (E)	75.2 (57.9)
	EBL	0.50 (0.84)	C (D)	25.9 (46.3)	0.44 (0.90)	C (E)	25.6 (71.2)
	EBTR	1.12 (1.01)	F (E)	106.1 (71.3)	-		
	EBT ³	-			1.12 (0.96)	F (E)	110.0 (62.3)
	EBR	-			0.07 (0.20)	C (C)	28.4 (33.3)
	WBL ^{4,5}	1.10 (0.99)	F (F)	134.5 (89.2)	1.06 (0.95)	F (E)	121.1 (79.8)
	WBT	0.66 (0.75)	C (C)	33.7 (34.6)	0.56 (0.88)	C (D)	30.6 (48.7)
	WBR	0.00 (0.01)	C (C)	23.3 (21.8)	0.00 (0.01)	C (C)	22.7 (27.9)
	NBL	0.35 (0.82)	C (E)	32.4 (67.3)	0.43 (0.93)	D (F)	38.4 (91.3)
	NBT	1.03 (0.82)	F (E)	95.1 (57.9)	1.09 (0.77)	F (E)	123.4 (59.6)
	NBR	0.36 (0.48)	C (C)	28.6 (23.0)	0.66 (0.42)	C (B)	21.2 (14.1)
	SBL ⁶	0.80 (0.98)	E (F)	64.7 (140.2)	0.72 (0.78)	D (F)	53.6 (86.6)
	SBTR	0.62 (0.72)	D (E)	45.1 (56.5)	0.71 (0.88)	D (E)	49.0 (64.2)
Park Lawn Rd / Gardiner WB On Ramp / Ontario Food Terminal Dwy ⁷	Overall	0.76 (0.76)	C (B)	24.8 (11.2)	0.88 (0.75)	D (D)	38.6 (38.7)
	WBLTR	0.78 (0.22)	D (D)	52.1 (40.0)	0.93 (0.14)	F (D)	100.2 (53.3)
	NBL ^{8,9}	0.96 (0.77)	D (B)	36.2 (11.5)	0.88 (0.97)	E (E)	55.5 (60.5)
	NBT	0.40 (0.33)	A (A)	6.1 (1.2)	0.45 (0.36)	A (A)	6.0 (4.8)
	SBT	0.26 (0.32)	C (B)	22.9 (17.9)	0.36 (0.55)	D (D)	35.4 (39.1)
	SBR	0.55 (0.40)	C (C)	30.0 (20.2)	0.89 (0.76)	D (D)	54.9 (46.9)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. Lane configurations change between analysis scenarios
3. Lane utilization factor adjusted to 1 to account for increased congestion (AM peak)
4. Lost time adjustment calibrated to -2 seconds (all analysis periods), based on existing intergreen study discussed in the October 2019 OPA submission transportation report
5. Protected turn factor adjust to 1 to account for increased congestion (AM peak)
6. Protected left turn phase introduced (AM peak)
7. Cycle length increased to 144 seconds (AM and PM peak) under future do something, consistent with adopted future do something cycle length for the Park Lawn Rd / Gardiner EB Off Ramp / Legion Rd / Relief Rd intersection, discussed below
8. Lost time adjustment calibrated to -4 seconds (AM peak), based on existing intergreen study discussed in the October 2019 OPA submission transportation report
9. Protected left turn phase introduced under future do something with introduction of dual left turn lanes (all analysis periods)

TRAFFIC OPERATIONS RESULTS – SIGNALIZED INTERSECTIONS (CONT'D)

Intersection	Movement	Future Do Nothing			Future Do Something		
		V/C	LOS	Delay	V/C	LOS	Delay
Park Lawn Rd / Gardiner EB Off Ramp / Legion Rd <i>(Future Do Nothing)</i> Park Lawn Rd / Gardiner EB Off Ramp / Legion Rd / Relief Rd <i>(Future Do Something)^{2,3,4}</i>	Overall	0.65 (0.64)	C (B)	20.8 (19.9)	0.87 (0.98)	D (E)	50.3 (63.0)
	EBL ⁵		-		0.80 (0.95)	E (F)	59.1 (86.5)
	EBLR	0.78 (0.81)	D (C)	37.7 (27.8)	-		
	EBT		-		0.79 (0.64)	D (C)	38.4 (30.2)
	EBR	0.28 (0.61)	C (C)	28.1 (23.4)	0.36 (0.97)	C (D)	26.2 (43.4)
	WBL		-		0.31 (0.97)	D (F)	35.1 (109.6)
	WBT		-		0.40 (0.14)	D (D)	42.3 (38.2)
	WBR ⁶		-		0.97 (0.98)	E (E)	71.9 (58.3)
	NBL	0.01 (0.01)	A (B)	8.3 (11.3)	0.07 (0.02)	D (C)	40.1 (25.4)
	NBT	0.59 (0.51)	B (B)	14.0 (16.1)	0.79 (0.95)	D (E)	53.7 (78.4)
	NBR		-		0.33 (0.26)	D (D)	45.2 (53.9)
	SBL		-		0.42 (0.38)	F (E)	81.0 (71.6)
	SBTR	0.16 (0.27)	A (A)	0.4 (6.1)	0.25 (0.74)	C (E)	29.7 (79.5)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. Lane configurations change between analysis scenarios
3. Cycle length increased to 144 seconds (AM and PM peak) under future do something to allow the additional time required to accommodate the addition of the Relief Rd (and consistent with the Park Lawn Rd / The Queensway intersection)
4. Minimum walk time reduced to 7 seconds under future do something to allow additional time to be allocated to the east-west movements (all analysis periods). Flash don't walk time maintained to ensure sufficient crossing time for pedestrians.
5. Protected left turn phase introduced under future do something (PM peak)
6. Right turn factor adjusted to 0.95 to account for increased congestion (PM peak future do something)

TRAFFIC OPERATIONS RESULTS – SIGNALIZED INTERSECTIONS (CONT'D)

Intersection	Movement	Future Do Nothing			Future Do Something		
		V/C	LOS	Delay	V/C	LOS	Delay
Park Lawn Rd / South Beach Condos Dwy / Existing Site Dwy North <i>(Future Do Nothing)</i> Park Lawn Rd / South Beach Condos Dwy / Dwy 2 <i>(Future Do Something)</i>	Overall				0.63 (0.82)	B (B)	20.0 (16.0)
	EBL				0.74 (0.73)	D (E)	54.1 (76.8)
	EBTR				0.05 (0.02)	C (D)	32.9 (48.4)
	WBL				0.08 (0.37)	C (D)	33.2 (52.9)
	WBTR				0.50 (0.34)	D (D)	39.6 (52.3)
	NBL				0.02 (0.20)	A (A)	6.8 (4.9)
	NBTR				0.45 (0.31)	B (A)	10.2 (4.4)
	SBL				0.57 (0.84)	C (C)	26.7 (31.7)
	SBTR				0.25 (0.44)	B (A)	13.9 (7.4)
Park Lawn Rd / Metro Grocery Dwy / Existing Site Dwy South <i>(Future Do Nothing)</i> Park Lawn Rd / Metro Grocery Dwy / Street C <i>(Future Do Something)³</i>	Overall	0.58 (0.51)	B (A)	13.7 (9.0)	0.50 (0.68)	B (B)	15.4 (18.7)
	EBL	0.71 (0.59)	C (C)	29.1 (29.0)	0.75 (0.84)	C (D)	28.2 (43.9)
	EBTR		-		0.29 (0.12)	B (B)	16.8 (16.0)
	EBR	0.38 (0.05)	C (C)	20.8 (23.0)		-	
	WBL		-		0.01 (-)	B (-)	19.8 (-)
	WBTR		-		0.10 (0.56)	D (C)	37.6 (31.3)
	NBL	- (0.00)	- (A)	- (4.8)		-	
	NBTR	0.43 (0.30)	B (A)	11.0 (6.0)	0.33 (0.21)	A (A)	8.5 (9.5)
	SBL	0.01 (0.00)	A (A)	6.9 (4.4)	0.07 (0.49)	A (B)	8.4 (15.0)
	SBTR	0.49 (0.48)	B (A)	10.3 (7.1)	0.32 (0.58)	B (B)	11.7 (13.3)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. Intersection is unsignalized under future do nothing
3. Lane configurations change between analysis scenarios

TRAFFIC OPERATIONS RESULTS – SIGNALIZED INTERSECTIONS (CONT'D)

Intersection	Movement	Future Do Nothing			Future Do Something		
		V/C	LOS	Delay	V/C	LOS	Delay
Lake Shore Blvd W / Legion Rd / Marina Del Rey Condos Dwy	Overall	0.61 (0.39)	B (B)	13.1 (10.2)	0.78 (0.45)	C (B)	21.0 (14.4)
	EBLTR	0.61 (0.41)	B (A)	10.6 (8.3)	0.70 (0.45)	C (B)	20.7 (13.2)
	WBLTR	0.29 (0.35)	A (A)	7.3 (7.7)	0.42 (0.53)	B (B)	16.0 (14.3)
	NBLTR	0.47 (0.02)	C (C)	27.7 (24.8)	0.46 (0.03)	B (B)	18.1 (18.2)
	SBL	0.60 (0.32)	C (C)	32.1 (27.2)	0.84 (0.32)	D (C)	37.2 (20.7)
	SBR	0.06 (0.07)	C (C)	24.2 (25.1)	0.06 (0.03)	B (B)	14.6 (18.3)
Lake Shore Blvd W / Park Lawn Rd / Marine Parade Dr ^{2,3}	Overall	0.70 (0.55)	D (D)	40.9 (41.0)	0.67 (0.68)	D (D)	42.5 (37.8)
	EBL	0.60 (0.24)	C (C)	27.6 (26.5)	0.89 (0.77)	E (E)	72.8 (68.2)
	EBTR	0.76 (0.55)	D (C)	35.2 (32.0)	0.73 (0.47)	C (C)	27.3 (23.0)
	WBL	0.29 (0.03)	D (C)	49.6 (32.0)	-		
	WBLT	-			0.33 (0.54)	C (C)	30.7 (21.1)
	WBT	0.39 (0.58)	D (D)	40.1 (40.9)	-		
	WBR	0.46 (0.48)	B (B)	19.6 (16.9)	0.09 (0.06)	C (D)	24.0 (54.1)
	NBL	-			0.32 (0.82)	D (E)	43.9 (69.4)
	NBLT	0.19 (0.28)	D (D)	50.5 (48.4)	-		
	NBT	-			0.14 (0.10)	D (D)	40.9 (37.5)
	NBR	0.01 (0.01)	D (D)	48.8 (45.7)	0.02 (0.02)	D (D)	39.6 (36.5)
	SBL	0.86 (0.72)	E (D)	57.3 (51.3)	0.68 (0.56)	E (E)	65.0 (59.1)
	SBT	0.50 (0.48)	D (D)	44.0 (45.0)	0.25 (0.47)	C (C)	28.1 (25.5)
	SBR	0.19 (0.07)	E (F)	78.7 (232.9)	0.31 (0.27)	F (E)	86.4 (72.6)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. Lane configurations change between analysis scenarios
3. Split phasing removed under future do something (all analysis periods)

TRAFFIC OPERATIONS RESULTS – SIGNALIZED INTERSECTIONS (CONT'D)

Intersection	Movement	Future Do Nothing			Future Do Something		
		V/C	LOS	Delay	V/C	LOS	Delay
Lake Shore Blvd W / Shore Breeze Dr (Future Do Nothing) Lake Shore Blvd W / Shore	Overall				0.60 (0.41)	B (B)	15.4 (19.8)
	EBL				0.28 (0.41)	F (F)	92.5 (88.4)
	EBTR	N/A ²			0.70 (0.37)	B (B)	13.3 (12.4)
	WBTR				0.20 (0.47)	B (B)	10.8 (19.8)
	NBLTR				0.31 (0.23)	D (D)	46.9 (45.8)
Lake Shore Blvd W / Silver Moon Dr (Future Do Nothing) Lake Shore Blvd W / Silver Moon Dr / Street B (Loop Rd) (Future Do Something) ³	Overall	0.67 (0.47)	A (A)	6.1 (4.7)	0.61 (0.42)	B (B)	12.2 (14.8)
	EBTR	0.69 (0.48)	A (A)	5.7 (3.6)	0.76 (0.33)	A (A)	8.0 (5.4)
	WBL	0.30 (0.18)	A (A)	9.4 (3.5)	0.04 (-)	E (-)	76.2 (-)
	WBT	0.30 (0.42)	A (A)	2.8 (3.2)	0.15 (0.25)	B (A)	14.8 (7.4)
	NBL	0.39 (0.33)	D (D)	44.9 (44.8)	-		
	NBLTR	-			0.20 (0.61)	D (D)	45.6 (55.0)
	NBR	0.15 (0.03)	D (D)	42.8 (42.4)	-		
	SBL	-			0.31 (0.36)	D (D)	49.0 (38.6)
	SBTR	-			0.02 (0.30)	D (C)	48.4 (32.7)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. Intersection is unsignalized under future do nothing
3. Lane configurations change between analysis scenarios

TRAFFIC OPERATIONS RESULTS – SIGNALIZED INTERSECTIONS (CONT'D)

Intersection	Movement	Future Do Nothing			Future Do Something		
		V/C	LOS	Delay	V/C	LOS	Delay
Lake Shore Blvd W / The Marginal Blvd <i>(Future Do Nothing)</i> Lake Shore Blvd W / The Marginal Blvd / Street A (Relief Rd) <i>(Future Do Something)</i>	Overall				0.86 (0.93)	F (D)	81.5 (39.6)
	EBL				0.82 (0.67)	E (E)	74.8 (75.8)
	EBTR				0.88 (0.80)	C (C)	20.7 (26.5)
	WBTR				0.30 (0.26)	D (F)	48.7 (110.1)
	NBLTR				0.48 (0.25)	D (B)	48.2 (18.2)
	SBLT				0.63 (0.96)	F (D)	88.1 (46.1)
	SBR				0.28 (0.61)	F (A)	375.5 (7.0)
Lake Shore Blvd W / Brookers Ln / Gardiner EB On Ramp / Gardiner WB Off Ramp <i>(Future Do Nothing)</i> Lake Shore Blvd W / Brookers Ln / Dwy 3 <i>(Future Do Something)^{3,4}</i>	Overall	0.99 (0.78)	D (C)	42.3 (28.2)	0.82 (0.70)	C (C)	20.9 (20.9)
	EBLTR ⁵	1.03 (0.76)	D (C)	48.0 (21.9)	-		
	EBTR		-		0.87 (0.71)	B (A)	15.6 (9.1)
	WBLTR	0.05 (0.07)	A (B)	4.3 (12.9)	-		
	WBT		-		0.09 (0.08)	A (A)	3.2 (6.4)
	NBL	0.75 (0.79)	D (D)	45.9 (40.6)	0.49 (0.58)	D (E)	52.9 (55.7)
	NBTR	0.30 (0.32)	C (C)	32.4 (24.3)	0.15 (0.35)	D (D)	47.9 (49.9)
	SBLT	0.15 (0.42)	C (C)	31.0 (25.6)	-		
	SBLTR		-		0.03 (0.03)	D (D)	46.6 (46.2)
	SBR	0.36 (0.78)	C (D)	33.1 (36.5)	-		

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. Intersection is unsignalized under future do nothing
3. Lane configurations change between analysis scenarios
4. Cycle length adjusted to 140 seconds, consistent with Lake Shore Blvd W corridor (future do something)
5. Protected left turn phase removed for this movement under future do something with the relocation of the Gardiner ramps (AM peak)

TRAFFIC OPERATIONS RESULTS – SIGNALIZED INTERSECTIONS (CONT'D)

Intersection	Movement	Future Do Nothing			Future Do Something		
		V/C	LOS	Delay	V/C	LOS	Delay
Lake Shore Blvd W / Newport Beach Condos Dwy / TTC Humber Loop ²	Overall	0.81 (0.77)	B (B)	14.3 (20.0)	0.83 (0.65)	C (B)	20.3 (15.3)
	EBT	0.90 (0.87)	B (B)	12.9 (18.7)	0.93 (0.71)	B (B)	18.7 (10.8)
	WBT	0.05 (0.03)	A (A)	5.7 (8.1)	0.06 (0.01)	A (A)	4.6 (7.3)
	NBLTR	0.05 (0.06)	C (D)	35.0 (35.1)	0.06 (0.11)	D (D)	50.7 (51.2)
Lake Shore Blvd W / Palace Pier Ct ²	Overall	0.87 (0.74)	B (B)	13.9 (10.1)	0.89 (0.68)	B (B)	16.1 (11.4)
	EBT	0.92 (0.81)	B (A)	11.6 (7.7)	0.93 (0.73)	B (A)	12.2 (7.1)
	EBR	0.00 (0.09)	A (A)	0.2 (0.5)	0.00 (0.10)	A (A)	0.3 (1.6)
	NBLR	0.33 (0.23)	D (D)	44.4 (40.6)	0.46 (0.10)	E (E)	63.2 (59.8)
Street A (Relief Rd) / Dwy 1	Overall	N/A ³			0.52 (0.56)	B (B)	16.2 (17.0)
	EBTR				0.45 (0.45)	A (B)	9.4 (11.3)
	WBL				0.17 (0.47)	A (B)	8.2 (12.0)
	WBT				0.30 (0.40)	A (A)	9.1 (9.5)
	NBL				0.74 (0.80)	E (E)	62.6 (64.7)
	NBR				0.50 (0.14)	D (D)	50.2 (41.7)
Street B (Loop Rd) / Street C	Overall	N/A ³			0.19 (0.65)	B (C)	15.3 (23.2)
	EBL				0.27 (0.76)	C (C)	23.7 (34.1)
	NBL				0.13 (0.55)	A (B)	6.5 (19.4)
	NBT				0.01 (0.01)	A (A)	4.8 (8.9)
	SBR				0.07 (0.22)	B (B)	10.4 (14.7)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. Cycle length adjusted to 140 seconds, consistent with Lake Shore Blvd W corridor (future do something)
3. New intersection under future do something

TRAFFIC OPERATIONS RESULTS – SIGNALIZED INTERSECTIONS (CONT'D)

Intersection	Movement	Future Do Nothing			Future Do Something		
		V/C	LOS	Delay	V/C	LOS	Delay
Relief Rd / Gardiner EB On Ramp / Gardiner WB Off Ramp	Overall				0.75 (0.92)	D (D)	52.9 (48.4)
	WBL				0.78 (0.95)	E (E)	63.5 (59.2)
	WBR				0.61 (0.97)	C (D)	27.2 (42.5)
	NBT		N/A ²		0.50 (0.76)	D (E)	45.3 (62.2)
	NBR				0.63 (0.19)	F (F)	94.4 (85.0)
	SBL				0.88 (0.53)	D (C)	48.8 (33.7)
	SBT				0.10 (0.25)	A (B)	9.4 (13.7)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. New intersection under future do something

TRAFFIC OPERATIONS RESULTS – UNSIGNALIZED INTERSECTIONS

Movement	Future Do Nothing		Future Do Something	
	LOS	Delay	LOS	Delay
Park Lawn Rd / South Beach Condos Dwy / Existing Site Dwy North (Future Do Nothing) Park Lawn Rd / South Beach Condos Dwy / Dwy 2 (Future Do Something)				
EBL	F (F)	218.7 (60.8)	N/A ²	
EBR	B (B)	12.1 (12.4)		
WBLTR	A (A)	0.0 (0.0)		
NBL	B (B)	10.2 (11.2)		
Lake Shore Blvd W / Humber Bay Park Rd W				
WBLT	A (A)	1.7 (1.9)	A (A)	2.3 (2.6)
NBL	C (B)	17.9 (11.9)	E (C)	45.4 (17.4)
Lake Shore Blvd W / Shore Breeze Dr (Future Do Nothing) Lake Shore Blvd W / Shore Breeze Dr / Street B (Loop Rd) (Future Do Something)				
NBR	F (D)	54.4 (26.4)	N/A ²	
Lake Shore Blvd W / Marine Parade Dr				
NBLR ³	D (E)	27.7 (50.0)	E (F)	48.9 (53.1)
Marine Parade Dr / Humber Bay Park Rd E				
EBLR	B (C)	11.8 (15.5)	C (D)	22.8 (32.3)
NBLT	-		A (A)	0.8 (0.3)
Street A (Relief Rd) / Dwy 5				
NBR	N/A ⁴		B (B)	13.7 (12.5)
Street B (Loop Rd) / Private Street D				
WBLR	N/A ⁴		B (C)	11.4 (19.4)
SBLT			A (A)	2.8 (3.9)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. Intersection is signalized under future do something
3. Movement calibrated (all analysis periods), based on existing delay study discussed in the October 2019 OPA submission transportation report
4. New intersection under future do something

TRAFFIC OPERATIONS RESULTS – UNSIGNALIZED INTERSECTIONS (CONT'D)

Movement	Future Do Nothing		Future Do Something	
	LOS	Delay	LOS	Delay
Private Street D / Dwy 6				
WBLT	N/A ²		A (A)	1.3 (1.4)
NBLR			B (C)	11.3 (15.4)
Street A (Relief Rd) / Private Street D				
EBR	N/A ²		B (C)	13.2 (21.9)
Park Lawn Road / Dwy 4				
WBR	N/A ²		B (B)	14.6 (13.0)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. New intersection under future do something

**APPENDIX H:
Synchro Output Sheets**



Timings

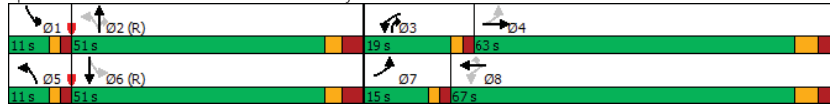
1: Park Lawn Rd & The Queensway

02-08-2021

Table with 11 columns (Lane Groups: EBL, EBT, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT) and 34 rows (Metrics: Lane Configurations, Traffic Volume, Future Volume, Turn Type, Protected Phases, Permitted Phases, Detector Phase, Switch Phase, Minimum Initial, Minimum Split, Total Split, etc.)

Intersection Summary
Cycle Length: 144
Actuated Cycle Length: 144
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SRTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.12
Intersection Signal Delay: 70.9
Intersection Capacity Utilization 109.1%
ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 1: Park Lawn Rd & The Queensway



HCM Signalized Intersection Capacity Analysis

1: Park Lawn Rd & The Queensway

02-08-2021

Table with 13 columns (Movements: EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR) and 34 rows (Metrics: Lane Configurations, Traffic Volume, Future Volume, Ideal Flow, Lane Width, Total Lost Time, Lane Util. Factor, Frpb, Ped/bikes, Flt, Satd. Flow, Peak-hour factor, Adj. Flow, RTOR Reduction, Lane Group Flow, Confl. Peds./Bikes, Heavy Vehicles, Bus Typeages, Turn Type, Protected/Permitted Phases, Actuated Green, Effective Green, Actuated g/C Ratio, Clearance Time, Vehicle Extension, Lane Grp Cap, v/s Ratio, w/c Ratio, Uniform Delay, Progression Factor, Incremental Delay, Delay, Level of Service, Approach Delay, Approach LOS)

Intersection Summary
HCM 2000 Control Delay 73.5
HCM 2000 Level of Service E
HCM 2000 Volume to Capacity ratio 1.07
Actuated Cycle Length (s) 144.0
Sum of lost time (s) 18.0
Intersection Capacity Utilization 109.1%
ICU Level of Service H
Analysis Period (min) 15
c Critical Lane Group

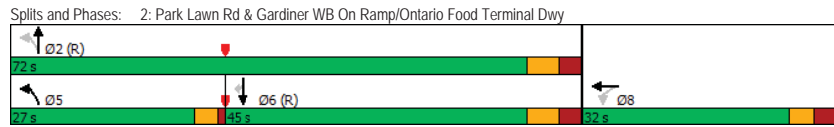
Timings

2: Park Lawn Rd & Gardiner WB On Ramp/Ontario Food Terminal Dwy

02-08-2021

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↗	↗	↗	↗
Traffic Volume (vph)	153	775	845	309	436
Future Volume (vph)	153	775	845	309	436
Turn Type	NA	pm+pt	NA	NA	Perm
Protected Phases	8	5	2	6	
Permitted Phases		2		6	
Detector Phase	8	5	2	6	6
Switch Phase					
Minimum Initial (s)	7.0	7.0	38.0	38.0	38.0
Minimum Split (s)	32.0	11.0	45.0	45.0	45.0
Total Split (s)	32.0	27.0	72.0	45.0	45.0
Total Split (%)	30.8%	26.0%	69.2%	43.3%	43.3%
Yellow Time (s)	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	1.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-4.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	0.0	6.0	6.0	6.0
Lead/Lag		Lead		Lag	Lag
Lead-Lag Optimize?		Yes		Yes	Yes
Recall Mode	None	None	C-Min	C-Min	C-Min
Act Effct Green (s)	22.1	76.9	70.9	39.0	39.0
Actuated g/C Ratio	0.21	0.74	0.68	0.38	0.38
v/c Ratio	0.78	0.93	0.40	0.26	0.68
Control Delay	56.0	33.6	6.7	23.1	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	33.6	6.7	23.1	14.6
LOS	E	C	A	C	B
Approach Delay	56.0		19.6	18.2	
Approach LOS	E		B	B	

Intersection Summary	
Cycle Length:	104
Actuated Cycle Length:	104
Offset:	0 (0%), Referenced to phase 2:NBL and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	21.9
Intersection Capacity Utilization:	101.6%
ICU Level of Service:	G
Analysis Period (min):	15



HCM Signalized Intersection Capacity Analysis

2: Park Lawn Rd & Gardiner WB On Ramp/Ontario Food Terminal Dwy

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕		↗	↗			↗	↗
Traffic Volume (vph)	0	0	0	4	153	39	775	845	0	0	309	436
Future Volume (vph)	0	0	0	4	153	39	775	845	0	0	309	436
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)					5.0		0.0	6.0			6.0	6.0
Lane Util. Factor					1.00		1.00	0.95			0.95	1.00
Frbp, ped/bikes					1.00		1.00	1.00			1.00	0.95
Flpb, ped/bikes					1.00		0.99	1.00			1.00	1.00
Frt					0.97		1.00	1.00			1.00	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					1226		1622	3368			3466	1342
Flt Permitted					1.00		0.54	1.00			1.00	1.00
Satd. Flow (perm)					1226		919	3368			3466	1342
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	4	165	42	833	909	0	0	332	469
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	190
Lane Group Flow (vph)	0	0	0	0	202	0	833	909	0	0	332	279
Confl. Peds. (#/hr)	3		2	2		3	15		6	6		15
Confl. Bikes (#/hr)												5
Heavy Vehicles (%)	0%	0%	0%	3%	51%	43%	3%	6%	0%	0%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	6
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases					8		2				6	
Actuated Green, G (s)					21.1		69.9	69.9			38.0	38.0
Effective Green, g (s)					22.1		73.9	70.9			39.0	39.0
Actuated g/C Ratio					0.21		0.71	0.68			0.38	0.38
Clearance Time (s)					6.0		4.0	7.0			7.0	7.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					260		868	2296			1299	503
v/s Ratio Prot							c0.29	0.27			0.10	
v/s Ratio Perm					0.16		0.39					0.21
v/c Ratio					0.78		0.96	0.40			0.26	0.55
Uniform Delay, d1					38.6		9.0	7.2			22.5	25.6
Progression Factor					1.00		2.01	0.79			1.00	1.00
Incremental Delay, d2					13.4		18.1	0.4			0.5	4.4
Delay (s)					52.1		36.2	6.1			22.9	30.0
Level of Service					D		D	A			C	C
Approach Delay (s)		0.0			52.1		20.5				27.1	
Approach LOS		A			D		C				C	

Intersection Summary	
HCM 2000 Control Delay	24.8
HCM 2000 Volume to Capacity ratio	0.76
Actuated Cycle Length (s)	104.0
Sum of lost time (s)	11.0
Intersection Capacity Utilization	101.6%
ICU Level of Service	G
Analysis Period (min)	15
c	Critical Lane Group

Timings

3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd

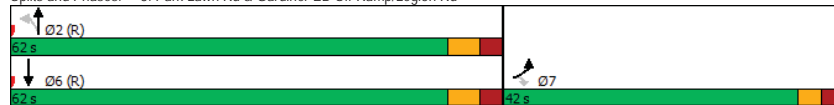
02-08-2021

	↖	↗	↙	↘	↑	↓
Lane Group	EBL	EBR	NBL	NBT	SBT	
Lane Configurations	↖↗	↖	↗	↖↗	↖↗	
Traffic Volume (vph)	468	573	4	1164	269	
Future Volume (vph)	468	573	4	1164	269	
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	7			2	6	
Permitted Phases		7	2			
Detector Phase	7	7	2	2	6	
Switch Phase						
Minimum Initial (s)	7.0	7.0	51.0	51.0	51.0	
Minimum Split (s)	30.0	30.0	58.0	58.0	58.0	
Total Split (s)	42.0	42.0	62.0	62.0	62.0	
Total Split (%)	40.4%	40.4%	59.6%	59.6%	59.6%	
Yellow Time (s)	3.0	3.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	3.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0	4.0	6.0	6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Min	C-Min	C-Min	
Act Effct Green (s)	31.4	31.4	62.6	62.6	62.6	
Actuated g/C Ratio	0.30	0.30	0.60	0.60	0.60	
v/c Ratio	0.80	0.57	0.01	0.59	0.17	
Control Delay	34.8	6.4	10.8	15.2	0.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	34.8	6.4	10.8	15.2	0.4	
LOS	C	A	B	B	A	
Approach Delay	25.8			15.2	0.4	
Approach LOS	C			B	A	

Intersection Summary

Cycle Length: 104
 Actuated Cycle Length: 104
 Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 17.7 Intersection LOS: B
 Intersection Capacity Utilization 77.5% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd



HCM Signalized Intersection Capacity Analysis

3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd

02-08-2021

	↖	↗	↙	↘	↑	↓	↖
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	↖↗	↖	↗	↖↗	↖↗		
Traffic Volume (vph)	468	573	4	1164	269	43	
Future Volume (vph)	468	573	4	1164	269	43	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	3.0	3.0	3.0	3.5	3.5	3.0	
Total Lost time (s)	4.0	4.0	6.0	6.0	6.0		
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95		
Frpb, ped/bikes	0.97	0.95	1.00	1.00	0.99		
Flpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		
Frft	0.95	0.85	1.00	1.00	0.98		
Flt Protected	0.97	1.00	0.95	1.00	1.00		
Satd. Flow (prot)	2890	1247	1618	3500	3315		
Flt Permitted	0.97	1.00	0.55	1.00	1.00		
Satd. Flow (perm)	2890	1247	939	3500	3315		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	
Adj. Flow (vph)	498	610	4	1238	286	46	
RTOR Reduction (vph)	73	247	0	0	11	0	
Lane Group Flow (vph)	681	107	4	1238	321	0	
Confl. Peds. (#/hr)		35	17			17	
Confl. Bikes (#/hr)						4	
Heavy Vehicles (%)	7%	4%	3%	2%	5%	4%	
Bus Blockages (#/hr)	0	0	0	0	0	6	
Turn Type	Prot	Perm	Perm	NA	NA		
Protected Phases	7			2	6		
Permitted Phases		7	2				
Actuated Green, G (s)	30.4	30.4	61.6	61.6	61.6		
Effective Green, g (s)	31.4	31.4	62.6	62.6	62.6		
Actuated g/C Ratio	0.30	0.30	0.60	0.60	0.60		
Clearance Time (s)	5.0	5.0	7.0	7.0	7.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	872	376	565	2106	1995		
v/s Ratio Prot	c0.24			c0.35	0.10		
v/s Ratio Perm		0.09	0.00				
v/c Ratio	0.78	0.28	0.01	0.59	0.16		
Uniform Delay, d1	33.2	27.7	8.3	12.8	9.1		
Progression Factor	1.00	1.00	1.00	1.00	0.03		
Incremental Delay, d2	4.6	0.4	0.0	1.2	0.2		
Delay (s)	37.7	28.1	8.3	14.0	0.4		
Level of Service	D	C	A	B	A		
Approach Delay (s)	34.7			13.9	0.4		
Approach LOS	C			B	A		

Intersection Summary

HCM 2000 Control Delay 20.8 HCM 2000 Level of Service C
 HCM 2000 Volume to Capacity ratio 0.65
 Actuated Cycle Length (s) 104.0 Sum of lost time (s) 10.0
 Intersection Capacity Utilization 77.5% ICU Level of Service D
 Analysis Period (min) 15
 c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 4: Park Lawn Rd & South Beach Condos Dwy/Site Dwy North

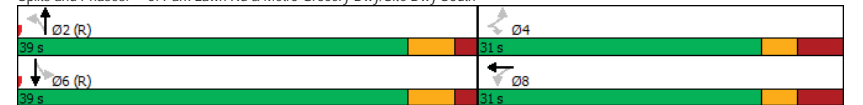
02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	→	↗	↖	↔	↗	↖	↗	↖	↔	↗	↖
Traffic Volume (veh/h)	146	0	64	0	0	0	6	1030	0	0	824	18
Future Volume (Veh/h)	146	0	64	0	0	0	6	1030	0	0	824	18
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	155	0	68	0	0	0	6	1096	0	0	877	19
Pedestrians	1			1								
Lane Width (m)	3.0			3.5								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	0			0								
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)							181			147		
pX, platoon unblocked	0.88	0.88	0.99	0.88	0.88	0.87	0.99				0.87	
vC, conflicting volume	1448	1996	449	1616	2006	549	897				1097	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1180	1806	423	1372	1817	192	876				820	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.3				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3				2.2	
p0 queue free %	0	100	88	100	100	100	99				100	
cM capacity (veh/h)	127	70	573	82	68	718	705				713	
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2				
Volume Total	155	68	0	6	731	365	438	458				
Volume Left	155	0	0	6	0	0	0	0				
Volume Right	0	68	0	0	0	0	0	19				
cSH	127	573	1700	705	1700	1700	713	1700				
Volume to Capacity	1.22	0.12	0.00	0.01	0.43	0.21	0.00	0.27				
Queue Length 95th (m)	76.8	3.2	0.0	0.2	0.0	0.0	0.0	0.0				
Control Delay (s)	218.7	12.1	0.0	10.2	0.0	0.0	0.0	0.0				
Lane LOS	F	B	A	B								
Approach Delay (s)	155.7	0.0		0.1								
Approach LOS	F	A										
Intersection Summary												
Average Delay	15.7											
Intersection Capacity Utilization	43.2%			ICU Level of Service			A					
Analysis Period (min)	15											

Timings
 5: Park Lawn Rd & Metro Grocery Dwy/Site Dwy South

02-08-2021

Lane Group	EBL	EBR	NBT	SBL	SBT	Ø8
Lane Configurations	↖	↗	↕	↖	↗	
Traffic Volume (vph)	250	202	790	3	838	
Future Volume (vph)	250	202	790	3	838	
Turn Type	Perm	Perm	NA	Perm	NA	
Protected Phases			2	6		8
Permitted Phases	4	4	6			
Detector Phase	4	4	2	6	6	
Switch Phase						
Minimum Initial (s)	7.0	7.0	18.0	18.0	18.0	7.0
Minimum Split (s)	30.0	30.0	24.0	24.0	24.0	30.0
Total Split (s)	31.0	31.0	39.0	39.0	39.0	31.0
Total Split (%)	44.3%	44.3%	55.7%	55.7%	55.7%	44%
Yellow Time (s)	3.0	3.0	4.0	4.0	4.0	3.0
All-Red Time (s)	4.0	4.0	2.0	2.0	2.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	5.0	5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Min	C-Min	C-Min	None
Act Effct Green (s)	19.8	19.8	39.2	39.2	39.2	
Actuated g/C Ratio	0.28	0.28	0.56	0.56	0.56	
v/c Ratio	0.71	0.46	0.43	0.01	0.50	
Control Delay	33.0	14.7	12.0	9.3	11.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.0	14.7	12.0	9.3	11.4	
LOS	C	B	B	A	B	
Approach Delay			12.0			11.4
Approach LOS			B			B
Intersection Summary						
Cycle Length: 70						
Actuated Cycle Length: 70						
Offset: 31 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green						
Natural Cycle: 55						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.71						
Intersection Signal Delay: 14.5				Intersection LOS: B		
Intersection Capacity Utilization 53.4%				ICU Level of Service A		
Analysis Period (min) 15						
Split and Phases: 5: Park Lawn Rd & Metro Grocery Dwy/Site Dwy South						



HCM Signalized Intersection Capacity Analysis
5: Park Lawn Rd & Metro Grocery Dwy/Site Dwy South

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	[Diagrammatic Lane Configurations]											
Traffic Volume (vph)	250	0	202	0	0	0	0	790	3	3	838	63
Future Volume (vph)	250	0	202	0	0	0	0	790	3	3	838	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0			6.0			5.0			5.0		
Lane Util. Factor	1.00			1.00			0.95			0.95		
Frbp, ped/bikes	1.00			0.97			1.00			0.99		
Flpb, ped/bikes	0.97			1.00			1.00			0.99		
Frt	1.00			0.85			1.00			0.99		
Flt Protected	0.95			1.00			1.00			0.95		
Satd. Flow (prot)	1618			1427			3464			1675		
Flt Permitted	0.76			1.00			1.00			0.30		
Satd. Flow (perm)	1289			1427			3464			527		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	260	0	210	0	0	0	0	823	3	3	873	66
RTOR Reduction (vph)	0	0	57	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	260			153			0			932		
Confl. Peds. (#/hr)	33			25			33			42		
Confl. Bikes (#/hr)							3			11		
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	0%	3%	0%	0%	4%	4%
Turn Type	Perm			Perm			Perm			NA		
Protected Phases				8			2			6		
Permitted Phases	4			4			8			2		
Actuated Green, G (s)	18.8			18.8			38.2			38.2		
Effective Green, g (s)	19.8			19.8			39.2			39.2		
Actuated g/C Ratio	0.28			0.28			0.56			0.56		
Clearance Time (s)	7.0			7.0			6.0			6.0		
Vehicle Extension (s)	3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)	364			403			1939			295		
v/s Ratio Prot							0.24			c0.28		
v/s Ratio Perm	c0.20			0.11						0.01		
v/c Ratio	0.71			0.38			0.43			0.01		
Uniform Delay, d1	22.6			20.2			8.9			6.8		
Progression Factor	1.00			1.00			1.17			1.00		
Incremental Delay, d2	6.5			0.6			0.6			0.1		
Delay (s)	29.1			20.8			11.0			6.9		
Level of Service	C			C			B			A		
Approach Delay (s)	25.4			0.0			11.0			10.3		
Approach LOS	C			A			B			B		

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

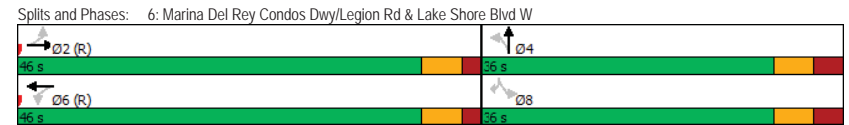
c Critical Lane Group

Timings
6: Marina Del Rey Condos Dwy/Legion Rd & Lake Shore Blvd W

02-08-2021

Lane Group	EBL	EBT	WBT	NBT	SBL	SBR
Lane Configurations	[Diagrammatic Lane Configurations]					
Traffic Volume (vph)	56	1059	539	0	126	77
Future Volume (vph)	56	1059	539	0	126	77
Turn Type	Perm	NA	NA	NA	Perm	Perm
Protected Phases	2		6		4	
Permitted Phases	2				8	
Detector Phase	2		6		8	
Switch Phase						
Minimum Initial (s)	19.0	19.0	19.0	7.0	7.0	7.0
Minimum Split (s)	25.0	25.0	25.0	35.0	35.0	35.0
Total Split (s)	46.0	46.0	46.0	36.0	36.0	36.0
Total Split (%)	56.1%	56.1%	56.1%	43.9%	43.9%	43.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0		5.0		6.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	51.5	51.5	19.5	19.5	19.5	19.5
Actuated g/C Ratio	0.63	0.63	0.24	0.24	0.24	0.24
v/c Ratio	0.61	0.29	0.52	0.60	0.20	0.20
Control Delay	12.8	8.7	23.2	37.1	5.9	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	8.7	23.2	37.1	5.9	5.9
LOS	B	A	C	D	A	A
Approach Delay	12.8	8.7	23.2			
Approach LOS	B	A	C			

Intersection Summary	
Cycle Length:	82
Actuated Cycle Length:	82
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	13.9
Intersection Capacity Utilization:	88.4%
ICU Level of Service:	E
Intersection LOS:	B
Analysis Period (min):	15



HCM Signalized Intersection Capacity Analysis

6: Marina Del Rey Condos Dwy/Legion Rd & Lake Shore Blvd W

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔				↔
Traffic Volume (vph)	56	1059	0	0	539	41	35	0	170	126	0	77
Future Volume (vph)	56	1059	0	0	539	41	35	0	170	126	0	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		5.0			5.0			6.0		6.0		6.0
Lane Util. Factor		0.95			0.95			1.00		1.00		1.00
Frbp, ped/bikes		1.00			0.99			0.96		1.00		0.95
Flpb, ped/bikes		1.00			1.00			0.99		0.98		1.00
Frt		1.00			0.99			0.89		1.00		0.85
Flt Protected		1.00			1.00			0.99		0.95		1.00
Satd. Flow (prot)		3429			3324			1575		1611		1432
Flt Permitted		0.89			1.00			0.99		0.55		1.00
Satd. Flow (perm)		3051			3324			1575		925		1432
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	58	1103	0	0	561	43	36	0	177	131	0	80
RTOR Reduction (vph)	0	0	0	0	5	0	0	38	0	0	0	61
Lane Group Flow (vph)	0	1161	0	0	599	0	0	175	0	131	0	19
Confl. Peds. (#/hr)	31		21	21		31	44		42	42		44
Confl. Bikes (#/hr)		19				5			2			
Heavy Vehicles (%)	17%	3%	0%	0%	6%	0%	0%	0%	0%	2%	0%	0%
Bus Blockages (#/hr)	12	0	2	12	0	2	0	0	0	0	0	0
Turn Type	Perm	NA			NA	Perm	NA	Perm	NA	Perm		Perm
Protected Phases		2			6			4		8		
Permitted Phases	2			6			4			8		
Actuated Green, G (s)		50.5			50.5			18.5		18.5		18.5
Effective Green, g (s)		51.5			51.5			19.5		19.5		19.5
Actuated g/C Ratio		0.63			0.63			0.24		0.24		0.24
Clearance Time (s)		6.0			6.0			7.0		7.0		7.0
Vehicle Extension (s)		3.0			3.0			3.0		3.0		3.0
Lane Grp Cap (vph)		1916			2087			374		219		340
v/s Ratio Prot					0.18							
v/s Ratio Perm		c0.38						0.11		c0.14		0.01
v/c Ratio		0.61			0.29			0.47		0.60		0.06
Uniform Delay, d1		9.2			6.9			26.8		27.8		24.1
Progression Factor		1.00			1.00			1.00		1.00		1.00
Incremental Delay, d2		1.4			0.3			0.9		4.3		0.1
Delay (s)		10.6			7.3			27.7		32.1		24.2
Level of Service		B			A			C		C		C
Approach Delay (s)		10.6			7.3			27.7		29.1		
Approach LOS		B			A			C		C		
Intersection Summary												
HCM 2000 Control Delay		13.1										B
HCM 2000 Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		82.0						Sum of lost time (s)		12.0		
Intersection Capacity Utilization		88.4%										E
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

7: Humber Bay Park Rd W & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔		↔
Traffic Volume (veh/h)	1337	20	21	578	16	30
Future Volume (Veh/h)	1337	20	21	578	16	30
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1422	21	22	615	17	32
Pedestrians					9	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						4
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	64			256		
pX, platoon unblocked			0.81		0.85	0.81
vC, conflicting volume			1452		1793	730
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1093		1168	204
IC, single (s)			4.1		6.8	6.9
IC, 2 stage (s)						
IF (s)			2.2		3.5	3.3
p0 queue free %			96		89	95
cM capacity (veh/h)			521		153	653
Direction, Lane #						
Volume Total	948	495	227	410	49	
Volume Left	0	0	22	0	17	
Volume Right	0	21	0	0	32	
cSH	1700	1700	521	1700	442	
Volume to Capacity	0.56	0.29	0.04	0.24	0.11	
Queue Length 95th (m)	0.0	0.0	1.1	0.0	3.0	
Control Delay (s)	0.0	0.0	1.7	0.0	17.9	
Lane LOS			A		C	
Approach Delay (s)	0.0		0.6		17.9	
Approach LOS					C	
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			47.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
9: Shore Breeze Dr & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑		↑
Traffic Volume (veh/h)	1741	28	3	814	54	37
Future Volume (Veh/h)	1741	28	3	814	54	37
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1833	29	3	857	57	39
Pedestrians					46	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	146			130		
pX, platoon unblocked			0.76		0.78	0.76
vC, conflicting volume			1908		2328	672
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1074		1368	0
IC, single (s)			4.1		6.8	6.9
IC, 2 stage (s)						
IF (s)			2.2		3.5	3.3
p0 queue free %			99		46	95
cM capacity (veh/h)			481		106	799
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	733	733	396	289	571	96
Volume Left	0	0	0	3	0	57
Volume Right	0	0	29	0	0	39
cSH	1700	1700	1700	481	1700	163
Volume to Capacity	0.43	0.43	0.23	0.01	0.34	0.59
Queue Length 95th (m)	0.0	0.0	0.0	0.2	0.0	24.9
Control Delay (s)	0.0	0.0	0.0	0.2	0.0	54.4
Lane LOS				A		F
Approach Delay (s)	0.0			0.1		54.4
Approach LOS						F
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			Err%	ICU Level of Service		H
Analysis Period (min)			15			

Timings
10: Silver Moon Dr & Lake Shore Blvd W

02-08-2021

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑	↑
Traffic Volume (vph)	1706	31	768	48	30
Future Volume (vph)	1706	31	768	48	30
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	4		8		
Permitted Phases		8		2	2
Detector Phase	4	8	8	2	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	25.0	35.0	35.0
Total Split (s)	65.0	65.0	65.0	35.0	35.0
Total Split (%)	65.0%	65.0%	65.0%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	82.7	82.7	82.7	9.8	9.8
Actuated g/C Ratio	0.83	0.83	0.83	0.10	0.10
v/c Ratio	0.67	0.29	0.29	0.34	0.20
Control Delay	6.2	11.1	3.1	47.3	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	11.1	3.1	47.3	30.7
LOS	A	B	A	D	C
Approach Delay	6.2		3.4	41.0	
Approach LOS	A		A	D	
Intersection Summary					
Cycle Length: 100					
Actuated Cycle Length: 100					
Offset: 35 (35%), Referenced to phase 4:EBT and 8:WBT, Start of Green					
Natural Cycle: 90					
Control Type: Actuated-Coordinated					
Maximum v/c Ratio: 0.67					
Intersection Signal Delay: 6.3			Intersection LOS: A		
Intersection Capacity Utilization 62.7%			ICU Level of Service B		
Analysis Period (min) 15					
Splits and Phases: 10: Silver Moon Dr & Lake Shore Blvd W					

HCM Signalized Intersection Capacity Analysis
10: Silver Moon Dr & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	1706	67	31	768	48	30
Future Volume (vph)	1706	67	31	768	48	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	6.0		6.0	6.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	0.99		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3451		1491	3433	1560	1507
Flt Permitted	1.00		0.09	1.00	0.95	1.00
Satd. Flow (perm)	3451		137	3433	1560	1507
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1834	72	33	826	52	32
RTOR Reduction (vph)	1	0	0	0	0	12
Lane Group Flow (vph)	1905	0	33	826	52	20
Confl. Peds. (#/hr)		38	38			
Confl. Bikes (#/hr)		3				
Heavy Vehicles (%)	2%	12%	13%	4%	8%	0%
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	79.3		79.3	79.3	7.7	7.7
Effective Green, g (s)	80.3		80.3	80.3	8.7	8.7
Actuated g/C Ratio	0.80		0.80	0.80	0.09	0.09
Clearance Time (s)	7.0		7.0	7.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2771		110	2756	135	131
v/s Ratio Prot		c0.55		0.24		
v/s Ratio Perm			0.24		c0.03	0.01
v/c Ratio	0.69		0.30	0.30	0.39	0.15
Uniform Delay, d1	4.3		2.6	2.6	43.1	42.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4		6.9	0.3	1.8	0.5
Delay (s)	5.7		9.4	2.8	44.9	42.8
Level of Service	A		A	A	D	D
Approach Delay (s)	5.7			3.1	44.1	
Approach LOS	A			A	D	

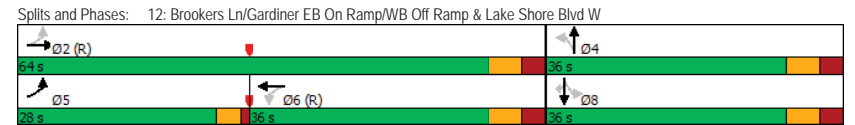
Intersection Summary			
HCM 2000 Control Delay	6.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		
c	Critical Lane Group		

Timings
12: Brookers Ln/Gardiner EB On Ramp/WB Off Ramp & Lake Shore Blvd W

02-08-2021

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔		↔	↔
Traffic Volume (vph)	660	1029	101	205	62	16	37	494
Future Volume (vph)	660	1029	101	205	62	16	37	494
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases	5	2	6		4		8	
Permitted Phases	2			4		8		8
Detector Phase	5	2	6	4	4	8	8	8
Switch Phase								
Minimum Initial (s)	6.0	29.0	29.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	10.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Total Split (%)	28.0%	64.0%	36.0%	36.0%	36.0%	36.0%	36.0%	36.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		6.0	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead			Lag				
Lead-Lag Optimize?	Yes			Yes				
Recall Mode	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)		65.1	22.9	22.9			22.9	22.9
Actuated g/C Ratio		0.65	0.65	0.23	0.23		0.23	0.23
v/c Ratio		1.03	0.05	0.75	0.39		0.15	0.71
Control Delay		50.4	5.0	51.2	20.2		29.3	8.7
Queue Delay		15.1	0.0	0.0	0.0		0.0	0.0
Total Delay		65.4	5.0	51.2	20.2		29.3	8.7
LOS		E	A	D	C		C	A
Approach Delay		65.4	5.0		37.6		10.7	
Approach LOS		E	A		D		B	


Intersection Summary	
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	7 (7%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle:	125
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.03
Intersection Signal Delay:	48.6
Intersection Capacity Utilization	81.9%
Intersection LOS:	D
ICU Level of Service	D
Analysis Period (min)	15



HCM Signalized Intersection Capacity Analysis

12: Brookers Ln/Gardiner EB On Ramp/WB Off Ramp & Lake Shore Blvd W

02-08-2021




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	↔
Traffic Volume (vph)	660	1029	47	0	101	2	205	62	100	16	37	494
Future Volume (vph)	660	1029	47	0	101	2	205	62	100	16	37	494
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0			6.0			6.0			6.0		
Lane Util. Factor	0.95			0.95			1.00			1.00		
Frbp, ped/bikes	1.00			1.00			1.00			1.00		
Flpb, ped/bikes	1.00			1.00			1.00			1.00		
Frt	1.00			1.00			1.00			0.85		
Flt Protected	0.98			1.00			0.95			1.00		
Satd. Flow (prot)	3383			3297			1668			1767		
Flt Permitted	0.79			1.00			0.72			1.00		
Satd. Flow (perm)	2713			3297			1265			1680		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	695	1083	49	0	106	2	216	65	105	17	39	520
RTOR Reduction (vph)	0	2	0	0	1	0	0	53	0	0	0	401
Lane Group Flow (vph)	0	1825	0	0	107	0	216	117	0	0	56	119
Confl. Peds. (#/hr)	2		58		58		2		2		2	
Confl. Bikes (#/hr)	3											
Heavy Vehicles (%)	1%	4%	0%	0%	8%	6%	1%	0%	1%	4%	5%	5%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	0	0	0	0	0
Turn Type	pm+pt	NA			NA	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4		8			8
Actuated Green, G (s)		64.1			64.1		21.9	21.9			21.9	21.9
Effective Green, g (s)		65.1			65.1		22.9	22.9			22.9	22.9
Actuated g/C Ratio		0.65			0.65		0.23	0.23			0.23	0.23
Clearance Time (s)		7.0			7.0		7.0	7.0			7.0	7.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1766			2146		289	384			363	328
v/s Ratio Prot					0.03			0.07				
v/s Ratio Perm		c0.67					c0.17				0.04	0.08
v/c Ratio		1.03			0.05		0.75	0.30			0.15	0.36
Uniform Delay, d1		17.5			6.3		35.9	31.9			30.8	32.4
Progression Factor		1.00			0.67		1.00	1.00			1.00	1.00
Incremental Delay, d2		30.6			0.0		10.1	0.5			0.2	0.7
Delay (s)		48.0			4.3		45.9	32.4			31.0	33.1
Level of Service		D			A		D	C			C	C
Approach Delay (s)		48.0			4.3		40.0				32.9	
Approach LOS		D			A		D				C	

Intersection Summary			
HCM 2000 Control Delay	42.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Timings

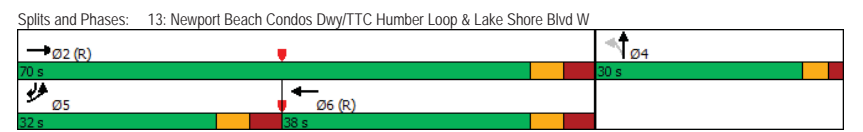
13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W

02-08-2021



Lane Group	EBL	EBT	WBT	NBT
Lane Configurations	↔	↔	↔	↔
Traffic Volume (vph)	10	1108	58	0
Future Volume (vph)	10	1108	58	0
Turn Type	Prot	NA	NA	NA
Protected Phases	5	2	6	4
Permitted Phases				
Detector Phase	5	2	6	4
Switch Phase				
Minimum Initial (s)	7.0	16.0	16.0	7.0
Minimum Split (s)	15.0	24.0	24.0	29.0
Total Split (s)	32.0	70.0	38.0	30.0
Total Split (%)	32.0%	70.0%	38.0%	30.0%
Yellow Time (s)	4.0	4.0	4.0	3.0
All-Red Time (s)	4.0	4.0	4.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0	7.0	7.0	4.0
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Min	C-Min	None
Act Effct Green (s)	8.6	74.6	71.1	18.2
Actuated g/C Ratio	0.09	0.75	0.71	0.18
v/c Ratio	0.14	0.87	0.05	0.20
Control Delay	44.3	16.7	7.4	1.8
Queue Delay	0.0	2.9	0.0	0.0
Total Delay	44.3	19.6	7.4	1.8
LOS	D	B	A	A
Approach Delay		19.8	7.4	1.8
Approach LOS		B	A	A

Intersection Summary	
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.87
Intersection Signal Delay:	18.1
Intersection Capacity Utilization	82.4%
ICU Level of Service	E
Intersection LOS:	B
Analysis Period (min)	15



HCM Signalized Intersection Capacity Analysis

13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕			↕			↕				↕
Traffic Volume (vph)	10	1108	30	0	58	0	36	0	42	0	0	0
Future Volume (vph)	10	1108	30	0	58	0	36	0	42	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0			7.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			1.00				
Frbp, ped/bikes	1.00	1.00			1.00			1.00				
Flpb, ped/bikes	1.00	1.00			1.00			0.94				
Frt	1.00	1.00			1.00			0.93				
Flt Protected	0.95	1.00			1.00			0.98				
Satd. Flow (prot)	842	1817			1789			1594				
Flt Permitted	0.95	1.00			1.00			0.98				
Satd. Flow (perm)	842	1817			1789			1594				
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	1154	31	0	60	0	38	0	44	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	68	0	0	0	0
Lane Group Flow (vph)	10	1184	0	0	60	0	0	14	0	0	0	0
Confl. Peds. (#/hr)							111					111
Confl. Bikes (#/hr)			5									1
Heavy Vehicles (%)	100%	3%	0%	0%	5%	0%	0%	0%	0%	0%	0%	100%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	Prot	NA			NA		Perm	NA				Over
Protected Phases	5	2			6			4				5
Permitted Phases							4					
Actuated Green, G (s)	1.9	71.2			61.3			15.8				
Effective Green, g (s)	2.9	72.2			62.3			16.8				
Actuated g/C Ratio	0.03	0.72			0.62			0.17				
Clearance Time (s)	8.0	8.0			8.0			5.0				
Vehicle Extension (s)	3.0	3.0			3.0			3.0				
Lane Grp Cap (vph)	24	1311			1114			267				
v/s Ratio Prot	0.01	c0.65			0.03							
v/s Ratio Perm								0.01				
v/c Ratio	0.42	0.90			0.05			0.05				
Uniform Delay, d1	47.7	11.1			7.4			34.9				
Progression Factor	1.02	0.84			0.77			1.00				
Incremental Delay, d2	3.6	3.7			0.1			0.1				
Delay (s)	52.3	12.9			5.7			35.0				
Level of Service	D	B			A			C				
Approach Delay (s)		13.3			5.7			35.0			0.0	
Approach LOS		B			A			C			A	
Intersection Summary												
HCM 2000 Control Delay		14.3			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.81										
Actuated Cycle Length (s)		100.0			Sum of lost time (s)			18.0				
Intersection Capacity Utilization		82.4%			ICU Level of Service			E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

14: Marine Parade Dr & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↕	↕	
Traffic Volume (veh/h)	1115	31	0	23	7	169
Future Volume (Veh/h)	1115	31	0	23	7	169
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1149	32	0	24	7	174
Pedestrians					38	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	133			168		
pX, platoon unblocked			0.30		0.30	0.30
vC, conflicting volume			1219		1227	1203
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			567		594	514
IC, single (s)			4.1		*3.5	*3.3
IC, 2 stage (s)						
IF (s)			2.2		*2.3	*2.3
p0 queue free %			100		98	48
cM capacity (veh/h)			298		310	336
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	1181	24	181			
Volume Left	0	0	7			
Volume Right	32	0	174			
cSH	1700	298	335			
Volume to Capacity	0.69	0.00	0.54			
Queue Length 95th (m)	0.0	0.0	24.3			
Control Delay (s)	0.0	0.0	27.7			
Lane LOS			D			
Approach Delay (s)	0.0	0.0	27.7			
Approach LOS			D			
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			78.2%		ICU Level of Service	D
Analysis Period (min)			15			
* User Entered Value						

Timings

15: Palace Pier Ct & Lake Shore Blvd W

02-08-2021

	→	↘	↙
Lane Group	EBT	EBR	NBL
Lane Configurations	↑	↑	↑
Traffic Volume (vph)	1307	3	23
Future Volume (vph)	1307	3	23
Turn Type	NA	Perm	Perm
Protected Phases	2		
Permitted Phases		2	4
Detector Phase	2	2	4
Switch Phase			
Minimum Initial (s)	19.0	19.0	7.0
Minimum Split (s)	25.0	25.0	28.0
Total Split (s)	71.0	71.0	29.0
Total Split (%)	71.0%	71.0%	29.0%
Yellow Time (s)	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	4.0
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Min	C-Min	None
Act Effct Green (s)	84.3	84.3	10.1
Actuated g/C Ratio	0.84	0.84	0.10
v/c Ratio	0.89	0.00	0.49
Control Delay	12.9	0.3	26.1
Queue Delay	12.2	0.0	0.0
Total Delay	25.1	0.3	26.1
LOS	C	A	C
Approach Delay	25.1		26.1
Approach LOS	C		C

Intersection Summary			
Cycle Length:	100		
Actuated Cycle Length:	100		
Offset:	0 (0%), Referenced to phase 2:EBT, Start of Green		
Natural Cycle:	130		
Control Type:	Actuated-Coordinated		
Maximum v/c Ratio:	0.89		
Intersection Signal Delay:	25.1	Intersection LOS: C	
Intersection Capacity Utilization:	82.3%	ICU Level of Service E	
Analysis Period (min):	15		



HCM Signalized Intersection Capacity Analysis

15: Palace Pier Ct & Lake Shore Blvd W

02-08-2021

	→	↘	↙	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑			↑	↑
Traffic Volume (vph)	1307	3	0	0	23	77
Future Volume (vph)	1307	3	0	0	23	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	5.0	5.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	
Frbp, ped/bikes	1.00	0.94			1.00	
Flpb, ped/bikes	1.00	1.00			1.00	
Frt	1.00	0.85			0.90	
Flt Protected	1.00	1.00			0.99	
Satd. Flow (prot)	1807	1265			1548	
Flt Permitted	1.00	1.00			0.99	
Satd. Flow (perm)	1807	1265			1548	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1361	3	0	0	24	80
RTOR Reduction (vph)	0	0	0	0	59	0
Lane Group Flow (vph)	1361	3	0	0	45	0
Confl. Peds. (#/hr)		16	16		1	
Heavy Vehicles (%)	4%	11%	0%	0%	3%	1%
Bus Blockages (#/hr)	0	2	0	0	0	0
Turn Type	NA	Perm			Perm	
Protected Phases	2					
Permitted Phases		2			4	
Actuated Green, G (s)	81.3	81.3			7.7	
Effective Green, g (s)	82.3	82.3			8.7	
Actuated g/C Ratio	0.82	0.82			0.09	
Clearance Time (s)	6.0	6.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0	
Lane Grp Cap (vph)	1487	1041			134	
v/s Ratio Prot		c0.75				
v/s Ratio Perm		0.00			c0.03	
v/c Ratio	0.92	0.00			0.33	
Uniform Delay, d1	6.3	1.6			42.9	
Progression Factor	0.65	0.10			1.00	
Incremental Delay, d2	7.5	0.0			1.5	
Delay (s)	11.6	0.2			44.4	
Level of Service	B	A			D	
Approach Delay (s)	11.6			0.0	44.4	
Approach LOS	B			A	D	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service B	
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
17: Marine Parade Dr & Humber Bay Park Rd E

02-08-2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔		↑	↑	↔
Traffic Volume (veh/h)	15	15	0	77	166	48
Future Volume (Veh/h)	15	15	0	77	166	48
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	15	15	0	79	171	49
Pedestrians	162					
Lane Width (m)	3.0					
Walking Speed (m/s)	1.2					
Percent Blockage	11					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					142	
pX, platoon unblocked						
vC, conflicting volume	436	272	382			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436	272	382			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	98	100			
cM capacity (veh/h)	491	649	1054			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	30	79	114	106		
Volume Left	15	0	0	0		
Volume Right	15	0	0	49		
cSH	559	1054	1700	1700		
Volume to Capacity	0.05	0.00	0.07	0.06		
Queue Length 95th (m)	1.4	0.0	0.0	0.0		
Control Delay (s)	11.8	0.0	0.0	0.0		
Lane LOS	B					
Approach Delay (s)	11.8	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization		23.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Timings
1: Park Lawn Rd & The Queensway

02-08-2021

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	252	1116	375	1135	18	138	451	354	93	371
Future Volume (vph)	252	1116	375	1135	18	138	451	354	93	371
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+ov	Perm	NA
Protected Phases	7	4	3	8		5	2	3		6
Permitted Phases	4		8		8	2		2	6	
Detector Phase	7	4	3	8	8	5	2	3	6	6
Switch Phase										
Minimum Initial (s)	7.0	24.0	7.0	24.0	24.0	7.0	29.0	7.0	29.0	29.0
Minimum Split (s)	11.0	31.0	11.0	31.0	31.0	11.0	36.0	11.0	36.0	36.0
Total Split (s)	24.0	61.0	32.0	69.0	69.0	11.0	51.0	32.0	40.0	40.0
Total Split (%)	16.7%	42.4%	22.2%	47.9%	47.9%	7.6%	35.4%	22.2%	27.8%	27.8%
Yellow Time (s)	2.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0
All-Red Time (s)	2.0	3.0	2.0	3.0	3.0	2.0	4.0	2.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	2.0	6.0	6.0	3.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	Min	None	Min	Min	None	C-Min	None	C-Min	C-Min
Act Effct Green (s)	76.9	55.0	91.0	65.1	65.1	48.0	45.0	77.0	34.0	34.0
Actuated g/C Ratio	0.53	0.38	0.63	0.45	0.45	0.33	0.31	0.53	0.24	0.24
v/c Ratio	0.83	1.01	0.98	0.75	0.03	0.79	0.82	0.47	0.98	0.74
Control Delay	49.4	70.4	83.8	36.8	0.1	67.5	58.5	19.8	139.9	50.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	70.4	83.8	36.8	0.1	67.5	58.5	19.8	139.9	50.3
LOS	D	E	F	D	A	E	E	B	F	D
Approach Delay	66.9		47.9			45.3			62.4	
Approach LOS	E		D			D			E	
Intersection Summary										
Cycle Length: 144										
Actuated Cycle Length: 144										
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green										
Natural Cycle: 120										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 1.01										
Intersection Signal Delay: 55.7										
Intersection Capacity Utilization 124.2%										
ICU Level of Service H										
Analysis Period (min) 15										
Splits and Phases: 1: Park Lawn Rd & The Queensway										

HCM Signalized Intersection Capacity Analysis
1: Park Lawn Rd & The Queensway

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↕	↔	↕	↕
Traffic Volume (vph)	252	1116	170	375	1135	18	138	451	354	93	371	224
Future Volume (vph)	252	1116	170	375	1135	18	138	451	354	93	371	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.0	2.0	6.0	6.0	3.0	6.0	3.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frbp, ped/bikes	1.00	0.99	1.00	1.00	0.94	1.00	1.00	0.97	1.00	0.97	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00
Frt	1.00	0.98	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	1.00	0.94
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1685	3422	1652	3466	1403	1663	1824	1432	1644	3228	3228	3228
Flt Permitted	0.13	1.00	0.07	1.00	1.00	0.18	1.00	1.00	0.24	1.00	1.00	1.00
Satd. Flow (perm)	235	3422	120	3466	1403	317	1824	1432	417	3228	3228	3228
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	260	1151	175	387	1170	19	142	465	365	96	382	231
RTOR Reduction (vph)	0	9	0	0	0	10	0	0	15	0	63	0
Lane Group Flow (vph)	260	1317	0	387	1170	9	142	465	350	96	550	0
Confl. Peds. (#/hr)	12	49	49	12	49	12	49	26	26	49	49	49
Confl. Bikes (#/hr)		11		8		8		3		2		2
Heavy Vehicles (%)	0%	1%	0%	2%	3%	0%	1%	3%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+ov	Perm	NA	NA	NA
Protected Phases	7	4	3	8	8	5	2	3	6	6	6	6
Permitted Phases	4		8	8	2	2	6	6	6	6	6	6
Actuated Green, G (s)	71.9	54.0	86.0	64.1	64.1	44.0	44.0	72.0	33.0	33.0	33.0	33.0
Effective Green, g (s)	73.9	55.0	88.0	65.1	65.1	45.0	45.0	74.0	34.0	34.0	34.0	34.0
Actuated g/C Ratio	0.51	0.38	0.61	0.45	0.45	0.31	0.31	0.51	0.24	0.24	0.24	0.24
Clearance Time (s)	4.0	7.0	4.0	7.0	7.0	4.0	7.0	4.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	310	1307	392	1566	634	173	570	735	98	762	762	762
v/s Ratio Prot	0.11	c0.39	c0.21	0.34		0.05	c0.25	0.10		0.17		
v/s Ratio Perm	0.32		0.40		0.01	0.21		0.15	c0.23			
v/c Ratio	0.84	1.01	0.99	0.75	0.01	0.82	0.82	0.48	0.98	0.72		
Uniform Delay, d1	28.6	44.5	47.6	32.6	21.7	41.6	45.7	22.5	54.7	50.7		
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	17.7	26.8	41.7	2.0	0.0	25.7	12.2	0.5	85.5	5.9		
Delay (s)	46.3	71.3	89.2	34.6	21.8	67.3	57.9	23.0	140.2	56.5		
Level of Service	D	E	F	C	C	E	E	C	F	E		
Approach Delay (s)	67.2		47.9		46.2		67.8					
Approach LOS	E		D		D		E					

Intersection Summary			
HCM 2000 Control Delay	56.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	124.2%	ICU Level of Service	H
Analysis Period (min)	15		
c	Critical Lane Group		

Future Do Nothing 5:00 pm 07-11-2019 PM Peak
LJR

Synchro 11 Report
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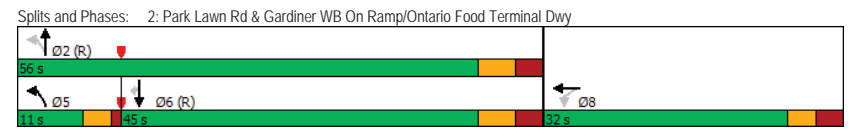
Timings

2: Park Lawn Rd & Gardiner WB On Ramp/Ontario Food Terminal Dwy

02-08-2021

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↕	↕	↕	↕
Traffic Volume (vph)	17	676	878	445	523
Future Volume (vph)	17	676	878	445	523
Turn Type	NA	pm+pt	NA	NA	Perm
Protected Phases	8	5	2	6	
Permitted Phases		2			6
Detector Phase	8	5	2	6	6
Switch Phase					
Minimum Initial (s)	7.0	7.0	38.0	38.0	38.0
Minimum Split (s)	32.0	11.0	45.0	45.0	45.0
Total Split (s)	32.0	11.0	56.0	45.0	45.0
Total Split (%)	36.4%	12.5%	63.6%	51.1%	51.1%
Yellow Time (s)	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	1.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	3.0	6.0	6.0	6.0
Lead/Lag		Lead		Lag	Lag
Lead-Lag Optimize?		Yes		Yes	Yes
Recall Mode	None	None	C-Min	C-Min	C-Min
Act Effct Green (s)	8.8	76.4	75.8	39.0	39.0
Actuated g/C Ratio	0.10	0.87	0.86	0.44	0.44
v/c Ratio	0.25	0.74	0.31	0.30	0.60
Control Delay	27.0	13.6	1.2	16.4	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	13.6	1.2	16.4	4.7
LOS	C	B	A	B	A
Approach Delay	27.0		6.6	10.1	
Approach LOS	C		A	B	

Intersection Summary	
Cycle Length:	88
Actuated Cycle Length:	88
Offset:	0 (0%), Referenced to phase 2:NBL and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.74
Intersection Signal Delay:	8.2
Intersection Capacity Utilization:	91.9%
ICU Level of Service:	F
Intersection LOS:	A
Analysis Period (min):	15



Future Do Nothing 5:00 pm 07-11-2019 PM Peak
LJR

Synchro 11 Report
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HCM Signalized Intersection Capacity Analysis

2: Park Lawn Rd & Gardiner WB On Ramp/Ontario Food Terminal Dwy

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				1	↕	17	↕	↕			↕	↕
Traffic Volume (vph)	0	0	0	1	17	17	676	878	0	0	445	523
Future Volume (vph)	0	0	0	1	17	17	676	878	0	0	445	523
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)					5.0		3.0	6.0			6.0	6.0
Lane Util. Factor					1.00		1.00	0.95			0.95	1.00
Frbp, ped/bikes					1.00		1.00	1.00			1.00	0.96
Flpb, ped/bikes					1.00		0.99	1.00			1.00	1.00
Frt					0.93		1.00	1.00			1.00	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					1342		1658	3500			3500	1365
Flt Permitted					1.00		0.42	1.00			1.00	1.00
Satd. Flow (perm)					1342		734	3500			3500	1365
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	1	18	18	712	924	0	0	468	551
RTOR Reduction (vph)	0	0	0	0	17	0	0	0	0	0	0	322
Lane Group Flow (vph)	0	0	0	0	20	0	712	924	0	0	468	229
Confl. Peds. (#/hr)				1	1		45		3	3		45
Confl. Bikes (#/hr)								10				4
Heavy Vehicles (%)	0%	0%	0%	0%	63%	0%	1%	2%	0%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	6
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases					8		2				6	
Actuated Green, G (s)					5.0		70.0	70.0			35.6	35.6
Effective Green, g (s)					6.0		71.0	71.0			36.6	36.6
Actuated g/C Ratio					0.07		0.81	0.81			0.42	0.42
Clearance Time (s)					6.0		4.0	7.0			7.0	7.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					91		921	2823			1455	567
v/s Ratio Prot							c0.28	0.26			0.13	
v/s Ratio Perm					0.02		c0.35					0.17
v/c Ratio					0.22		0.77	0.33			0.32	0.40
Uniform Delay, d1					38.8		3.8	2.2			17.3	18.0
Progression Factor					1.00		2.14	0.43			1.00	1.00
Incremental Delay, d2					1.2		3.2	0.2			0.6	2.1
Delay (s)					40.0		11.5	1.2			17.9	20.2
Level of Service					D		B	A			B	C
Approach Delay (s)		0.0			40.0		5.7				19.1	
Approach LOS		A			D		A				B	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	88.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Future Do Nothing 5:00 pm 07-11-2019 PM Peak
LJR

Synchro 11 Report
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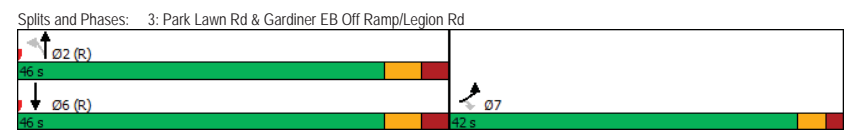
Timings

3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd

02-08-2021

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations	↕	↕	↕	↕	↕
Traffic Volume (vph)	722	701	4	839	390
Future Volume (vph)	722	701	4	839	390
Turn Type	Prot	Perm	Perm	NA	NA
Protected Phases	7			2	6
Permitted Phases		7	2		
Detector Phase	7	7	2	2	6
Switch Phase					
Minimum Initial (s)	7.0	7.0	39.0	39.0	39.0
Minimum Split (s)	30.0	30.0	46.0	46.0	46.0
Total Split (s)	42.0	42.0	46.0	46.0	46.0
Total Split (%)	47.7%	47.7%	52.3%	52.3%	52.3%
Yellow Time (s)	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	4.0	4.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	None	None	C-Min	C-Min	C-Min
Act Effct Green (s)	34.4	34.4	43.6	43.6	43.6
Actuated g/C Ratio	0.39	0.39	0.50	0.50	0.50
v/c Ratio	0.81	0.70	0.01	0.51	0.27
Control Delay	27.8	15.6	13.2	17.0	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	15.6	13.2	17.0	6.2
LOS	C	B	B	B	A
Approach Delay	23.9			17.0	6.2
Approach LOS	C			B	A

Intersection Summary	
Cycle Length: 88	
Actuated Cycle Length: 88	
Offset: 0 (0%), Referenced to phase 2:NBL and 6:SBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 70.6%	ICU Level of Service C
Analysis Period (min) 15	



Future Do Nothing 5:00 pm 07-11-2019 PM Peak
LJR

Synchro 11 Report
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HCM Signalized Intersection Capacity Analysis
 3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd

02-08-2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	722	701	4	839	390	56
Future Volume (vph)	722	701	4	839	390	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.0	3.5	3.5	3.0
Total Lost time (s)	4.0	4.0	6.0	6.0	6.0	
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	
Frbp, ped/bikes	0.99	0.98	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	
Frt	0.96	0.85	1.00	1.00	0.98	
Flt Protected	0.96	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	3114	1344	1636	3500	3438	
Flt Permitted	0.96	1.00	0.47	1.00	1.00	
Satd. Flow (perm)	3114	1344	810	3500	3438	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	760	738	4	883	411	59
RTOR Reduction (vph)	44	152	0	0	12	0
Lane Group Flow (vph)	982	320	4	883	458	0
Confl. Peds. (#/hr)		8	50			50
Confl. Bikes (#/hr)						4
Heavy Vehicles (%)	2%	0%	0%	2%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	6
Turn Type	Prot	Perm	Perm	NA	NA	
Protected Phases	7			2	6	
Permitted Phases		7	2			
Actuated Green, G (s)	33.4	33.4	42.6	42.6	42.6	
Effective Green, g (s)	34.4	34.4	43.6	43.6	43.6	
Actuated g/C Ratio	0.39	0.39	0.50	0.50	0.50	
Clearance Time (s)	5.0	5.0	7.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1217	525	401	1734	1703	
v/s Ratio Prot	c0.32			c0.25	0.13	
v/s Ratio Perm		0.24	0.00			
v/c Ratio	0.81	0.61	0.01	0.51	0.27	
Uniform Delay, d1	23.8	21.4	11.3	15.0	12.9	
Progression Factor	1.00	1.00	1.00	1.00	0.45	
Incremental Delay, d2	4.0	2.0	0.0	1.1	0.4	
Delay (s)	27.8	23.4	11.3	16.1	6.1	
Level of Service	C	C	B	B	A	
Approach Delay (s)	26.5			16.0	6.1	
Approach LOS	C			B	A	
Intersection Summary						
HCM 2000 Control Delay		19.9		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.64				
Actuated Cycle Length (s)		88.0		Sum of lost time (s)		10.0
Intersection Capacity Utilization		70.6%		ICU Level of Service		C
Analysis Period (min)		15				
c Critical Lane Group						

Future Do Nothing 5:00 pm 07-11-2019 PM Peak
 LJR

Synchro 11 Report
 Page 6

HCM Unsignalized Intersection Capacity Analysis
 4: Park Lawn Rd & South Beach Condos Dwy/Site Dwy North

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	0	16	0	0	0	19	782	0	0	1000	91
Future Volume (Veh/h)	50	0	16	0	0	0	19	782	0	0	1000	91
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	52	0	17	0	0	0	20	815	0	0	1042	95
Pedestrians			30				1					
Lane Width (m)			3.0				3.5					
Walking Speed (m/s)			1.2				1.2					
Percent Blockage			2				0					
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)							181			147		
pX, platoon unblocked	0.97	0.97	0.95	0.97	0.97	0.94	0.95			0.94		
vC, conflicting volume	1567	1976	598	1394	2023	408	1167			816		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1277	1700	468	1098	1749	243	1068			677		
IC, single (s)	7.5	6.5	7.0	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)												
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	54	100	97	100	100	100	97			100		
cM capacity (veh/h)	114	85	500	152	79	717	602			868		
Direction, Lane #												
	EB 1	EB 2	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2				
Volume Total	52	17	0	20	543	272	521	616				
Volume Left	52	0	0	20	0	0	0	0				
Volume Right	0	17	0	0	0	0	0	95				
cSH	114	500	1700	602	1700	1700	868	1700				
Volume to Capacity	0.46	0.03	0.00	0.03	0.32	0.16	0.00	0.36				
Queue Length 95th (m)	16.0	0.8	0.0	0.8	0.0	0.0	0.0	0.0				
Control Delay (s)	60.8	12.4	0.0	11.2	0.0	0.0	0.0	0.0				
Lane LOS	F	B	A	B								
Approach Delay (s)	48.9		0.0	0.3			0.0					
Approach LOS	E		A									
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization			40.8%		ICU Level of Service			A				
Analysis Period (min)			15									

Future Do Nothing 5:00 pm 07-11-2019 PM Peak
 LJR

Synchro 11 Report
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Timings

5: Park Lawn Rd & Metro Grocery Dwy/Site Dwy South

02-08-2021

	↖	↗	↙	↘	↕	↔	∅8
Lane Group	EBL	EBR	NBL	NBT	SBL	SBT	∅8
Lane Configurations	↖	↗	↙	↘	↖	↗	↕
Traffic Volume (vph)	144	75	1	657	2	779	
Future Volume (vph)	144	75	1	657	2	779	
Turn Type	Perm	Perm	Perm	NA	Perm	NA	
Protected Phases				2		6	8
Permitted Phases	4	4	2		6		
Detector Phase	4	4	2	2	6	6	
Switch Phase							
Minimum Initial (s)	7.0	7.0	18.0	18.0	18.0	18.0	7.0
Minimum Split (s)	30.0	30.0	24.0	24.0	24.0	24.0	30.0
Total Split (s)	31.0	31.0	39.0	39.0	39.0	39.0	31.0
Total Split (%)	44.3%	44.3%	55.7%	55.7%	55.7%	55.7%	44%
Yellow Time (s)	3.0	3.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	4.0	4.0	2.0	2.0	2.0	2.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	5.0	5.0	5.0	5.0	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	C-Min	C-Min	C-Min	C-Min	None
Act Effct Green (s)	15.0	15.0	47.8	47.8	47.8	47.8	
Actuated g/C Ratio	0.21	0.21	0.68	0.68	0.68	0.68	
v/c Ratio	0.53	0.21	0.00	0.29	0.00	0.46	
Control Delay	29.8	6.3	8.0	7.0	7.5	7.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	29.8	6.3	8.0	7.0	7.5	7.9	
LOS	C	A	A	A	A	A	
Approach Delay				7.0		7.9	
Approach LOS				A		A	

Intersection Summary

Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 31 (44%), Referenced to phase 2:NBT and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 9.2	Intersection LOS: A
Intersection Capacity Utilization 51.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Park Lawn Rd & Metro Grocery Dwy/Site Dwy South



HCM Signalized Intersection Capacity Analysis

5: Park Lawn Rd & Metro Grocery Dwy/Site Dwy South

02-08-2021

	↖	→	↗	↙	↘	↕	↔	↖	↗	↙	↘	↕	↔
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖		↗		↘		↖	↗		↙	↘	↕	
Traffic Volume (vph)	144	0	75	0	0	0	1	657	2	2	779	239	
Future Volume (vph)	144	0	75	0	0	0	1	657	2	2	779	239	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	
Total Lost time (s)	6.0		6.0				5.0	5.0		5.0	5.0		
Lane Util. Factor	1.00		1.00				1.00	0.95		1.00	0.95		
Frbp, ped/bikes	1.00		0.98				1.00	1.00		1.00	0.97		
Ftbp, ped/bikes	0.99		1.00				0.98	1.00		0.99	1.00		
Frt	1.00		0.85				1.00	1.00		1.00	0.96		
Flt Protected	0.95		1.00				0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1654		1481				1647	3498		1671	3306		
Flt Permitted	0.76		1.00				0.23	1.00		0.38	1.00		
Satd. Flow (perm)	1319		1481				406	3498		670	3306		
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Adj. Flow (vph)	150	0	78	0	0	0	1	684	2	2	811	249	
RTOR Reduction (vph)	0	0	63	0	0	0	0	0	0	0	28	0	
Lane Group Flow (vph)	150	0	15	0	0	0	1	686	0	2	1032	0	
Conf. Peds. (#/hr)	9		5	5			9	61		11	11	61	
Conf. Bikes (#/hr)			1							13		6	
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	1%	0%	
Turn Type	Perm		Perm				Perm	NA		Perm	NA		
Protected Phases					8			2			6		
Permitted Phases	4		4		8		2			6			
Actuated Green, G (s)	12.6		12.6				44.4	44.4		44.4	44.4		
Effective Green, g (s)	13.6		13.6				45.4	45.4		45.4	45.4		
Actuated g/C Ratio	0.19		0.19				0.65	0.65		0.65	0.65		
Clearance Time (s)	7.0		7.0				6.0	6.0		6.0	6.0		
Vehicle Extension (s)	3.0		3.0				3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	256		287				263	2268		434	2144		
v/s Ratio Prot								0.20			c0.31		
v/s Ratio Perm	c0.11		0.01				0.00			0.00			
v/c Ratio	0.59		0.05				0.00	0.30		0.00	0.48		
Uniform Delay, d1	25.6		23.0				4.3	5.4		4.3	6.3		
Progression Factor	1.00		1.00				1.09	1.07		1.00	1.00		
Incremental Delay, d2	3.4		0.1				0.0	0.3		0.0	0.8		
Delay (s)	29.0		23.0				4.8	6.0		4.4	7.1		
Level of Service	C		C				A	A		A	A		
Approach Delay (s)		27.0			0.0			6.0			7.1		
Approach LOS		C			A			A			A		

Intersection Summary

HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

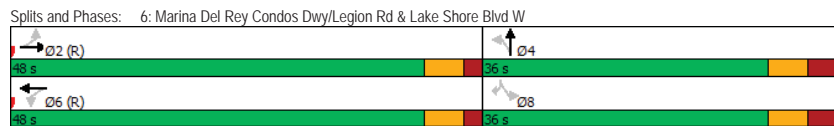
Timings

6: Marina Del Rey Condos Dwy/Legion Rd & Lake Shore Blvd W

02-08-2021

	↖	→	←	↑	↘	↙
Lane Group	EBL	EBT	WBT	NBT	SBL	SBR
Lane Configurations		↔	↔	↔	↔	↔
Traffic Volume (vph)	46	715	699	0	86	86
Future Volume (vph)	46	715	699	0	86	86
Turn Type	Perm	NA	NA	NA	Perm	Perm
Protected Phases		2	6	4		
Permitted Phases	2				8	8
Detector Phase	2	2	6	4	8	8
Switch Phase						
Minimum Initial (s)	19.0	19.0	19.0	7.0	7.0	7.0
Minimum Split (s)	25.0	25.0	25.0	35.0	35.0	35.0
Total Split (s)	48.0	48.0	48.0	36.0	36.0	36.0
Total Split (%)	57.1%	57.1%	57.1%	42.9%	42.9%	42.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		5.0	5.0	6.0	6.0	6.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	55.7	55.7	21.1	21.1	21.1	21.1
Actuated g/C Ratio	0.66	0.66	0.25	0.25	0.25	0.25
v/c Ratio	0.40	0.34	0.09	0.30	0.22	0.22
Control Delay	10.6	9.6	6.8	24.8	6.0	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.6	9.6	6.8	24.8	6.0	6.0
LOS	B	A	A	C	A	A
Approach Delay		10.6	9.6	6.8		
Approach LOS		B	A	A		

Intersection Summary						
Cycle Length:	84					
Actuated Cycle Length:	84					
Offset:	0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green					
Natural Cycle:	60					
Control Type:	Actuated-Coordinated					
Maximum v/c Ratio:	0.40					
Intersection Signal Delay:	10.6			Intersection LOS: B		
Intersection Capacity Utilization:	77.5%			ICU Level of Service D		
Analysis Period (min):	15					



HCM Signalized Intersection Capacity Analysis

6: Marina Del Rey Condos Dwy/Legion Rd & Lake Shore Blvd W

02-08-2021

	↖	→	↘	↙	←	↖	↗	↑	↘	↙	↓	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔		↔		↔
Traffic Volume (vph)	46	715	0	0	699	38	13	0	23	86	0	86
Future Volume (vph)	46	715	0	0	699	38	13	0	23	86	0	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		5.0			5.0			6.0		6.0		6.0
Lane Util. Factor		0.95			0.95			1.00		1.00		1.00
Frbp, ped/bikes		1.00			0.99			0.95		1.00		0.96
Flpb, ped/bikes		1.00			1.00			0.99		0.94		1.00
Frt		1.00			0.99			0.91		1.00		0.85
Flt Protected		1.00			1.00			0.98		0.95		1.00
Satd. Flow (prot)		3484			3446			1590		1580		1370
Flt Permitted		0.86			1.00			0.98		0.73		1.00
Satd. Flow (perm)		3018			3446			1590		1218		1370
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	48	745	0	0	728	40	14	0	24	90	0	90
RTOR Reduction (vph)	0	0	0	0	4	0	0	29	0	0	0	69
Lane Group Flow (vph)	0	793	0	0	764	0	0	9	0	90	0	21
Confl. Peds. (#/hr)	64		42	42		64	28		73	73		28
Confl. Bikes (#/hr)			12			15			1			
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	6%
Bus Blockages (#/hr)	11	0	2	11	0	2	0	0	0	0	0	0
Turn Type	Perm	NA			NA		Perm	NA		Perm		Perm
Protected Phases		2			6			4				8
Permitted Phases	2				6			4				8
Actuated Green, G (s)		52.3			52.3			18.7		18.7		18.7
Effective Green, g (s)		53.3			53.3			19.7		19.7		19.7
Actuated g/C Ratio		0.63			0.63			0.23		0.23		0.23
Clearance Time (s)		6.0			6.0			7.0		7.0		7.0
Vehicle Extension (s)		3.0			3.0			3.0		3.0		3.0
Lane Grp Cap (vph)		1914			2186			372		285		321
v/s Ratio Prot					0.22							
v/s Ratio Perm		c0.26						0.01		c0.07		0.02
v/c Ratio		0.41			0.35			0.02		0.32		0.07
Uniform Delay, d1		7.6			7.2			24.7		26.6		25.0
Progression Factor		1.00			1.00			1.00		1.00		1.00
Incremental Delay, d2		0.7			0.4			0.0		0.6		0.1
Delay (s)		8.3			7.7			24.8		27.2		25.1
Level of Service		A			A			C		C		C
Approach Delay (s)		8.3			7.7			24.8		26.2		26.2
Approach LOS		A			A			C		C		C

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	84.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c	Critical Lane Group		

HCM Unsignalized Intersection Capacity Analysis
7: Humber Bay Park Rd W & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	810	14	43	739	11	20
Future Volume (Veh/h)	810	14	43	739	11	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	835	14	44	762	11	21
Pedestrians					22	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					2	
Right turn flare (veh)						4
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	64			256		
pX, platoon unblocked			0.90		0.90	0.90
vC, conflicting volume			871		1333	446
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			630		650	157
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		97	97
cM capacity (veh/h)			851		343	767
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	557	292	298	508	32	
Volume Left	0	0	44	0	11	
Volume Right	0	14	0	0	21	
cSH	1700	1700	851	1700	999	
Volume to Capacity	0.33	0.17	0.05	0.30	0.03	
Queue Length 95th (m)	0.0	0.0	1.3	0.0	0.8	
Control Delay (s)	0.0	0.0	1.9	0.0	11.9	
Lane LOS			A		B	
Approach Delay (s)	0.0		0.7		11.9	
Approach LOS					B	
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			57.9%		ICU Level of Service	B
Analysis Period (min)			15			

Timings
8: Marine Parade Dr/Park Lawn Rd & Lake Shore Blvd W

02-08-2021

Lane Group	EBL	EBT	WBL	WBT	WBR	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	57	732	5	643	560	44	11	578	208	68
Future Volume (vph)	57	732	5	643	560	44	11	578	208	68
Turn Type	pm+pt	NA	Perm	NA	pm+ov	NA	Perm	Split	NA	Perm
Protected Phases	5	2		6	3	4		3	3	
Permitted Phases	2		6		6		4			3
Detector Phase	5	2	6	6	3	4	4	3	3	3
Switch Phase										
Minimum Initial (s)	6.0	34.0	34.0	34.0	34.0	7.0	7.0	34.0	34.0	34.0
Minimum Split (s)	10.0	41.0	41.0	41.0	41.0	33.0	33.0	41.0	41.0	41.0
Total Split (s)	20.0	65.0	45.0	45.0	42.0	33.0	33.0	42.0	42.0	42.0
Total Split (%)	14.3%	46.4%	32.1%	32.1%	30.0%	23.6%	23.6%	30.0%	30.0%	30.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag	Lead	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Min	C-Min	C-Min	Min	None	None	Min	Min	Min
Act Effct Green (s)	61.8	58.8	46.3	46.3	82.5	27.0	27.0	36.2	36.2	36.2
Actuated g/C Ratio	0.44	0.42	0.33	0.33	0.59	0.19	0.19	0.26	0.26	0.26
v/c Ratio	0.24	0.55	0.03	0.58	0.60	0.28	0.04	0.72	0.48	0.21
Control Delay	25.5	32.3	34.6	41.7	7.0	49.6	0.3	53.7	48.0	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	32.3	34.6	41.7	7.0	49.6	0.3	53.7	48.0	7.1
LOS	C	C	C	D	A	D	A	D	D	A
Approach Delay		31.8		25.6		46.6				48.6
Approach LOS		C		C		D				D
Intersection Summary										
Cycle Length: 140										
Actuated Cycle Length: 140										
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green										
Natural Cycle: 125										
Control Type: Actuated-Coordinated										
Maximum v/c Ratio: 0.72										
Intersection Signal Delay: 34.9										
Intersection Capacity Utilization 111.8%										
ICU Level of Service H										
Analysis Period (min) 15										
Splits and Phases: 8: Marine Parade Dr/Park Lawn Rd & Lake Shore Blvd W										

HCM Signalized Intersection Capacity Analysis

8: Marine Parade Dr/Park Lawn Rd & Lake Shore Blvd W

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↕	↔	↕	↕
Traffic Volume (vph)	57	732	25	5	643	560	119	44	11	578	208	68
Future Volume (vph)	57	732	25	5	643	560	119	44	11	578	208	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	0.95	1.00	0.97	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.91	1.00	0.83	1.00	1.00	1.00	0.67
Flpb, ped/bikes	0.99	1.00		0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.96	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1581	3440		1567	3500	1373	3176	992	3236	1756	979	979
Flt Permitted	0.24	1.00		0.31	1.00	1.00	0.96	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	395	3440		509	3500	1373	3176	992	3236	1756	979	979
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	59	762	26	5	670	583	124	46	11	602	217	71
RTOR Reduction (vph)	0	2	0	0	0	167	0	0	9	0	0	53
Lane Group Flow (vph)	59	787	0	5	670	416	0	170	2	602	217	18
Confl. Peds. (#/hr)	121		71	71		121	306		99	99		306
Confl. Bikes (#/hr)			11						2			16
Heavy Vehicles (%)	1%	3%	0%	0%	2%	0%	9%	7%	23%	1%	7%	1%
Bus Blockages (#/hr)	11	0	2	11	0	0	0	0	6	0	0	6
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2			6	3	4	4		3	3	
Permitted Phases	2			6		6			4			3
Actuated Green, G (s)	57.8	57.8		45.3	45.3	80.5	26.0	26.0	35.2	35.2	35.2	35.2
Effective Green, g (s)	58.8	58.8		46.3	46.3	82.5	27.0	27.0	36.2	36.2	36.2	36.2
Actuated g/C Ratio	0.42	0.42		0.33	0.33	0.59	0.19	0.19	0.26	0.26	0.26	0.26
Clearance Time (s)	4.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	246	1444		168	1157	867	612	191	836	454	253	253
v/s Ratio Prot	0.02	c0.23			c0.19	0.12		c0.05		c0.19	0.12	
v/s Ratio Perm	0.08			0.01		0.18			0.00			0.02
v/c Ratio	0.24	0.55		0.03	0.58	0.48	0.28	0.01	0.72	0.48	0.07	0.07
Uniform Delay, d1	26.0	30.5		31.7	38.8	16.5	48.2	45.7	47.3	43.9	39.2	39.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.03	1.01	5.94	5.94
Incremental Delay, d2	0.5	1.5		0.3	2.1	0.4	0.2	0.0	2.8	0.7	0.1	0.1
Delay (s)	26.5	32.0		32.0	40.9	16.9	48.4	45.7	51.3	45.0	232.9	232.9
Level of Service	C	C		C	D	B	D	D	D	D	D	F
Approach Delay (s)		31.6			29.7		48.3			64.2		
Approach LOS		C			C		D			E		
Intersection Summary												
HCM 2000 Control Delay		41.0										D
HCM 2000 Volume to Capacity ratio		0.55										
Actuated Cycle Length (s)		140.0						21.0				
Intersection Capacity Utilization		111.8%										H
Analysis Period (min)		15										
c Critical Lane Group												

Future Do Nothing 5:00 pm 07-11-2019 PM Peak
LR

Synchro 11 Report
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HCM Unsignalized Intersection Capacity Analysis

9: Shore Breeze Dr & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕	↕	↕	↕	↕	↕
Traffic Volume (veh/h)	1227	82	21	1178	29	36
Future Volume (Veh/h)	1227	82	21	1178	29	36
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1265	85	22	1214	30	37
Pedestrians					104	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					7	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	158			117		
pX, platoon unblocked			0.89		0.94	0.89
vC, conflicting volume			1454		2062	568
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1063		1328	63
IC, single (s)			4.1		6.8	6.9
IC, 2 stage (s)						
IF (s)			2.2		3.5	3.3
p0 queue free %			96		76	95
cM capacity (veh/h)			545		124	818
Direction, Lane #						
	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	506	506	338	427	809	67
Volume Left	0	0	0	22	0	30
Volume Right	0	0	85	0	0	37
cSH	1700	1700	1700	545	1700	234
Volume to Capacity	0.30	0.30	0.20	0.04	0.48	0.29
Queue Length 95th (m)	0.0	0.0	0.0	1.0	0.0	9.1
Control Delay (s)	0.0	0.0	0.0	1.2	0.0	26.4
Lane LOS				A		D
Approach Delay (s)	0.0			0.4		26.4
Approach LOS						D
Intersection Summary						
Average Delay				0.9		
Intersection Capacity Utilization			Err%		ICU Level of Service	H
Analysis Period (min)			15			

Future Do Nothing 5:00 pm 07-11-2019 PM Peak
LR

Synchro 11 Report
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Timings

10: Silver Moon Dr & Lake Shore Blvd W

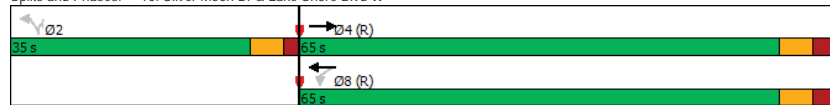
02-08-2021

	→	↖	←	↙	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑	↑
Traffic Volume (vph)	1123	48	1154	44	41
Future Volume (vph)	1123	48	1154	44	41
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	4		8		
Permitted Phases		8		2	2
Detector Phase	4	8	8	2	2
Switch Phase					
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	25.0	35.0	35.0
Total Split (s)	65.0	65.0	65.0	35.0	35.0
Total Split (%)	65.0%	65.0%	65.0%	35.0%	35.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	83.3	83.3	83.3	9.2	9.2
Actuated g/C Ratio	0.83	0.83	0.83	0.09	0.09
v/c Ratio	0.46	0.17	0.40	0.29	0.24
Control Delay	3.7	4.3	3.4	46.5	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	4.3	3.4	46.5	16.2
LOS	A	A	A	D	B
Approach Delay	3.7		3.4	31.9	
Approach LOS	A		A	C	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 35 (35%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.46
 Intersection Signal Delay: 4.5 Intersection LOS: A
 Intersection Capacity Utilization 53.2% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 10: Silver Moon Dr & Lake Shore Blvd W



HCM Signalized Intersection Capacity Analysis

10: Silver Moon Dr & Lake Shore Blvd W

02-08-2021

	→	↖	←	↙	↗	
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Volume (vph)	1123	133	48	1154	44	41
Future Volume (vph)	1123	133	48	1154	44	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	6.0		6.0	6.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frbp, ped/bikes	0.97		1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00		0.97	1.00	1.00	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Fl Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3358		1628	3535	1685	1485
Fl Permitted	1.00		0.20	1.00	0.95	1.00
Satd. Flow (perm)	3358		340	3535	1685	1485
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	1158	137	49	1190	45	42
RTOR Reduction (vph)	4	0	0	0	0	39
Lane Group Flow (vph)	1291	0	49	1190	45	3
Confl. Peds. (#/hr)		86	86			
Confl. Bikes (#/hr)		3				1
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	79.9		79.9	79.9	7.1	7.1
Effective Green, g (s)	80.9		80.9	80.9	8.1	8.1
Actuated g/C Ratio	0.81		0.81	0.81	0.08	0.08
Clearance Time (s)	7.0		7.0	7.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2716		275	2859	136	120
v/s Ratio Prot	c0.38			0.34		
v/s Ratio Perm			0.14		c0.03	0.00
v/c Ratio	0.48		0.18	0.42	0.33	0.03
Uniform Delay, d1	3.0		2.1	2.8	43.4	42.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6		1.4	0.4	1.4	0.1
Delay (s)	3.6		3.5	3.2	44.8	42.4
Level of Service	A		A	A	D	D
Approach Delay (s)	3.6			3.2	43.7	
Approach LOS	A			A	D	

Intersection Summary

HCM 2000 Control Delay 4.7 HCM 2000 Level of Service A
 HCM 2000 Volume to Capacity ratio 0.47
 Actuated Cycle Length (s) 100.0 Sum of lost time (s) 12.0
 Intersection Capacity Utilization 53.2% ICU Level of Service A
 Analysis Period (min) 15

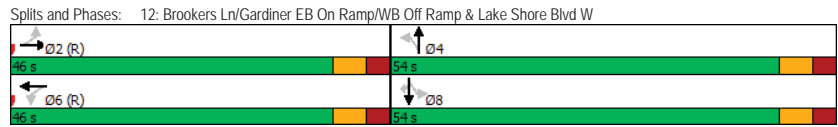
c Critical Lane Group

Timings

12: Brookers Ln/Gardiner EB On Ramp/WB Off Ramp & Lake Shore Blvd W 02-08-2021

	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔		↔	↔
Traffic Volume (vph)	130	865	111	277	32	90	96	842
Future Volume (vph)	130	865	111	277	32	90	96	842
Turn Type	Perm	NA	NA	Perm	NA	Perm	NA	Perm
Protected Phases		2	6		4		8	
Permitted Phases	2			4		8		8
Detector Phase	2	2	6	4	4	8	8	8
Switch Phase								
Minimum Initial (s)	29.0	29.0	29.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Total Split (s)	46.0	46.0	46.0	54.0	54.0	54.0	54.0	54.0
Total Split (%)	46.0%	46.0%	46.0%	54.0%	54.0%	54.0%	54.0%	54.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	None	None	Min	Min	Min
Act Effct Green (s)	53.3	53.3	34.7	34.7		34.7	34.7	
Actuated g/C Ratio	0.53	0.53	0.35	0.35		0.35	0.35	
v/c Ratio	0.77	0.08	0.80	0.34		0.42	0.89	
Control Delay	24.7	13.9	44.2	20.0		25.8	16.2	
Queue Delay	0.2	0.0	0.0	0.1		0.2	0.0	
Total Delay	24.9	13.9	44.2	20.1		26.0	16.2	
LOS	C	B	D	C		C	B	
Approach Delay	24.9	13.9		34.4		18.0		
Approach LOS	C	B		C		B		

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 40 (40%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 23.4	Intersection LOS: C
Intersection Capacity Utilization 106.6%	ICU Level of Service G
Analysis Period (min) 15	



HCM Signalized Intersection Capacity Analysis

12: Brookers Ln/Gardiner EB On Ramp/WB Off Ramp & Lake Shore Blvd W 02-08-2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	↔
Traffic Volume (vph)	130	865	167	0	111	19	277	32	158	90	96	842
Future Volume (vph)	130	865	167	0	111	19	277	32	158	90	96	842
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		6.0			6.0		6.0	6.0			6.0	6.0
Lane Util. Factor		0.95			0.95		1.00	1.00			1.00	1.00
Frbp, ped/bikes		0.98			1.00		1.00	0.99			1.00	1.00
Flpb, ped/bikes		1.00			1.00		1.00	1.00			1.00	1.00
Frt		0.98			0.98		1.00	0.88			1.00	0.85
Flt Protected		0.99			1.00		0.95	1.00			0.98	1.00
Satd. Flow (prot)		3352			3287		1685	1628			1808	1492
Flt Permitted		0.88			1.00		0.60	1.00			0.73	1.00
Satd. Flow (perm)		2982			3287		1061	1628			1346	1492
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	137	911	176	0	117	20	292	34	166	95	101	886
RTOR Reduction (vph)	0	11	0	0	9	0	0	20	0	0	0	484
Lane Group Flow (vph)	0	1213	0	0	128	0	292	180	0	0	196	402
Confl. Peds. (#/hr)	2		72	72								
Confl. Bikes (#/hr)			2				5			1		
Heavy Vehicles (%)	0%	2%	0%	0%	7%	0%	0%	0%	0%	3%	0%	1%
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	Perm
Protected Phases		2			6		4			8		8
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)		52.3			52.3		33.7	33.7			33.7	33.7
Effective Green, g (s)		53.3			53.3		34.7	34.7			34.7	34.7
Actuated g/C Ratio		0.53			0.53		0.35	0.35			0.35	0.35
Clearance Time (s)		7.0			7.0		7.0	7.0			7.0	7.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		1589			1751		368	564			467	517
v/s Ratio Prot					0.04			0.11				
v/s Ratio Perm		c0.41					c0.28			0.15	0.27	
v/c Ratio		0.76			0.07		0.79	0.32		0.42	0.78	
Uniform Delay, d1		18.4			11.3		29.4	24.0		25.0	29.2	
Progression Factor		1.00			1.13		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.5			0.1		11.2	0.3		0.6	7.3	
Delay (s)		21.9			12.9		40.6	24.3		25.6	36.5	
Level of Service		C			B		D	C		C	D	
Approach Delay (s)		21.9			12.9		34.0			34.5		
Approach LOS		C			B		C			C		

Intersection Summary	
HCM 2000 Control Delay	28.2 HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.78
Actuated Cycle Length (s)	100.0 Sum of lost time (s) 12.0
Intersection Capacity Utilization	106.6% ICU Level of Service G
Analysis Period (min)	15
c Critical Lane Group	

Timings

13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W

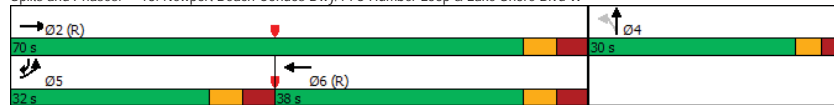
02-08-2021

Lane Group	EBL	EBT	WBT	NBT
Lane Configurations	↔	↕	↕	↕
Traffic Volume (vph)	15	1062	38	0
Future Volume (vph)	15	1062	38	0
Turn Type	Prot	NA	NA	NA
Protected Phases	5	2	6	4
Permitted Phases				
Detector Phase	5	2	6	4
Switch Phase				
Minimum Initial (s)	7.0	16.0	16.0	7.0
Minimum Split (s)	15.0	24.0	24.0	29.0
Total Split (s)	32.0	70.0	38.0	30.0
Total Split (%)	32.0%	70.0%	38.0%	30.0%
Yellow Time (s)	4.0	4.0	4.0	3.0
All-Red Time (s)	4.0	4.0	4.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0	7.0	7.0	4.0
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Min	C-Min	None
Act Effct Green (s)	9.1	74.6	67.5	18.2
Actuated g/C Ratio	0.09	0.75	0.68	0.18
v/c Ratio	0.20	0.84	0.03	0.25
Control Delay	45.1	22.2	12.3	3.7
Queue Delay	0.0	1.0	0.0	0.0
Total Delay	45.1	23.2	12.3	3.7
LOS	D	C	B	A
Approach Delay		23.5	12.3	3.7
Approach LOS		C	B	A

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 21.6
 Intersection Capacity Utilization 80.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W



HCM Signalized Intersection Capacity Analysis

13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕			↕			↕				↕
Traffic Volume (vph)	15	1062	48	0	38	0	84	0	16	0	0	0
Future Volume (vph)	15	1062	48	0	38	0	84	0	16	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0			7.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			1.00				
Frbp, ped/bikes	1.00	1.00			1.00			1.00				
Flpb, ped/bikes	1.00	1.00			1.00			0.91				
Frt	1.00	0.99			1.00			0.98				
Flt Protected	0.95	1.00			1.00			0.96				
Satd. Flow (prot)	842	1830			1860			1605				
Flt Permitted	0.95	1.00			1.00			0.96				
Satd. Flow (perm)	842	1830			1860			1605				
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	15	1095	49	0	39	0	87	0	16	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	86	0	0	0	0
Lane Group Flow (vph)	15	1143	0	0	39	0	0	17	0	0	0	0
Confl. Peds. (#/hr)							86					86
Confl. Bikes (#/hr)			6			5						
Heavy Vehicles (%)	100%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	100%
Turn Type	Prot	NA			NA		Perm	NA				Over
Protected Phases	5	2			6			4				5
Permitted Phases							4					
Actuated Green, G (s)	3.9	71.2			59.3			15.8				
Effective Green, g (s)	4.9	72.2			60.3			16.8				
Actuated g/C Ratio	0.05	0.72			0.60			0.17				
Clearance Time (s)	8.0	8.0			8.0			5.0				
Vehicle Extension (s)	3.0	3.0			3.0			3.0				
Lane Grp Cap (vph)	41	1321			1121			269				
v/s Ratio Prot	0.02	c0.62			0.02							
v/s Ratio Perm								0.01				
v/c Ratio	0.37	0.87			0.03			0.06				
Uniform Delay, d1	46.0	10.3			8.0			35.0				
Progression Factor	0.98	1.23			1.00			1.00				
Incremental Delay, d2	4.1	6.0			0.1			0.1				
Delay (s)	49.1	18.7			8.1			35.1				
Level of Service	D	B			A			D				
Approach Delay (s)		19.0			8.1			35.1			0.0	
Approach LOS		B			A			D			A	

Intersection Summary

HCM 2000 Control Delay 20.0 HCM 2000 Level of Service B
 HCM 2000 Volume to Capacity ratio 0.77
 Actuated Cycle Length (s) 100.0 Sum of lost time (s) 18.0
 Intersection Capacity Utilization 80.7% ICU Level of Service D
 Analysis Period (min) 15

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 14: Marine Parade Dr & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (veh/h)	1030	46	0	0	2	118
Future Volume (Veh/h)	1030	46	0	0	2	118
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	1132	51	0	0	2	130
Pedestrians						39
Lane Width (m)						3.0
Walking Speed (m/s)						1.2
Percent Blockage						3
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	132		168			
pX, platoon unblocked			0.30	0.30	0.30	
vC, conflicting volume			1222	1196	1196	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			580	495	495	
tC, single (s)			4.1	*6.0	*5.4	
tC, 2 stage (s)						
tF (s)			2.2	*3.0	*3.0	
p0 queue free. %			100	99	37	
cM capacity (veh/h)			295	189	205	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	1183	0	132			
Volume Left	0	0	2			
Volume Right	51	0	130			
cSH	1700	1700	205			
Volume to Capacity	0.70	0.00	0.65			
Queue Length 95th (m)	0.0	0.0	30.7			
Control Delay (s)	0.0	0.0	50.0			
Lane LOS			E			
Approach Delay (s)	0.0	0.0	50.0			
Approach LOS			E			
Intersection Summary						
Average Delay			5.0			
Intersection Capacity Utilization			71.2%	ICU Level of Service	C	
Analysis Period (min)			15			
* User Entered Value						

Timings
 15: Palace Pier Ct & Lake Shore Blvd W

02-08-2021

Lane Group	EBT	EBR	NBL
Lane Configurations	↔		↔
Traffic Volume (vph)	1075	92	0
Future Volume (vph)	1075	92	0
Turn Type	NA	Perm	Perm
Protected Phases	2		
Permitted Phases	2		4
Detector Phase	2	2	4
Switch Phase			
Minimum Initial (s)	19.0	19.0	7.0
Minimum Split (s)	25.0	25.0	28.0
Total Split (s)	71.0	71.0	29.0
Total Split (%)	71.0%	71.0%	29.0%
Yellow Time (s)	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	4.0
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Min	C-Min	None
Act Effct Green (s)	79.1	79.1	11.9
Actuated g/C Ratio	0.79	0.79	0.12
v/c Ratio	0.81	0.09	0.47
Control Delay	10.4	0.6	18.5
Queue Delay	1.2	0.0	0.0
Total Delay	11.5	0.6	18.5
LOS	B	A	B
Approach Delay	10.7	18.5	
Approach LOS	B	B	
Intersection Summary			
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			
Splits and Phases: 15: Palace Pier Ct & Lake Shore Blvd W			
↔ Ø2 (R)		↔ Ø4	
71 s		29 s	

HCM Signalized Intersection Capacity Analysis
15: Palace Pier Ct & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑			↑	↑
Traffic Volume (vph)	1075	92	0	0	0	112
Future Volume (vph)	1075	92	0	0	0	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	5.0	5.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	
Frbp, ped/bikes	1.00	0.94			1.00	
Flpb, ped/bikes	1.00	1.00			1.00	
Frt	1.00	0.85			0.86	
Flt Protected	1.00	1.00			1.00	
Satd. Flow (prot)	1860	1395			1519	
Flt Permitted	1.00	1.00			1.00	
Satd. Flow (perm)	1860	1395			1519	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1194	102	0	0	0	124
RTOR Reduction (vph)	0	5	0	0	82	0
Lane Group Flow (vph)	1194	97	0	0	42	0
Confl. Peds. (#/hr)		14	14		3	
Heavy Vehicles (%)	1%	2%	0%	0%	0%	1%
Turn Type	NA	Perm			Perm	
Protected Phases	2					
Permitted Phases		2			4	
Actuated Green, G (s)	78.1	78.1			10.9	
Effective Green, g (s)	79.1	79.1			11.9	
Actuated g/C Ratio	0.79	0.79			0.12	
Clearance Time (s)	6.0	6.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0	
Lane Grp Cap (vph)	1471	1103			180	
v/s Ratio Prot	c0.64					
v/s Ratio Perm		0.07			c0.03	
v/c Ratio	0.81	0.09			0.23	
Uniform Delay, d1	6.1	2.3			39.9	
Progression Factor	0.66	0.16			1.00	
Incremental Delay, d2	3.7	0.1			0.7	
Delay (s)	7.7	0.5			40.6	
Level of Service	A	A			D	
Approach Delay (s)	7.1			0.0	40.6	
Approach LOS	A			A	D	
Intersection Summary						
HCM 2000 Control Delay		10.1			HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.74				
Actuated Cycle Length (s)		100.0			Sum of lost time (s)	10.0
Intersection Capacity Utilization		71.0%			ICU Level of Service	C
Analysis Period (min)		15				
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis
17: Marine Parade Dr & Humber Bay Park Rd E

02-08-2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑		↑	↑	↑
Traffic Volume (veh/h)	11	10	0	153	150	85
Future Volume (Veh/h)	11	10	0	153	150	85
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	11	0	166	163	92
Pedestrians	302					
Lane Width (m)	3.0					
Walking Speed (m/s)	1.2					
Percent Blockage	21					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					142	
pX, platoon unblocked						
vC, conflicting volume	677	430	557			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	677	430	557			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	96	98	100			
cM capacity (veh/h)	309	458	809			
Direction, Lane #						
Volume Total	23	166	109	146		
Volume Left	12	0	0	0		
Volume Right	11	0	0	92		
cSH	366	809	1700	1700		
Volume to Capacity	0.06	0.00	0.06	0.09		
Queue Length 95th (m)	1.6	0.0	0.0	0.0		
Control Delay (s)	15.5	0.0	0.0	0.0		
Lane LOS	C					
Approach Delay (s)	15.5	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			23.3%		ICU Level of Service	A
Analysis Period (min)			15			

Timings

1: Park Lawn Rd & The Queensway

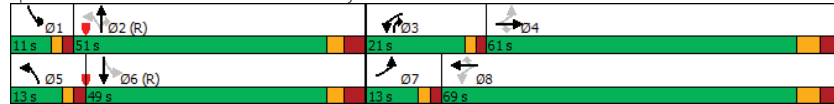
02-08-2021

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖	↖	↖	↖↖
Traffic Volume (vph)	114	1503	97	272	851	5	86	593	400	95	484
Future Volume (vph)	114	1503	97	272	851	5	86	593	400	95	484
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA
Protected Phases	7	4		3	8		5	2	3	1	6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	8	5	2	3	1	6
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	24.0	7.0	29.0	7.0	7.0	29.0
Minimum Split (s)	11.0	31.0	31.0	11.0	31.0	31.0	11.0	36.0	11.0	11.0	36.0
Total Split (s)	13.0	61.0	61.0	21.0	69.0	69.0	13.0	51.0	21.0	11.0	49.0
Total Split (%)	9.0%	42.4%	42.4%	14.6%	47.9%	47.9%	9.0%	35.4%	14.6%	7.6%	34.0%
Yellow Time (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	2.0	3.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	4.0	2.0	2.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	2.0	6.0	6.0	3.0	6.0	3.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	None	None	C-Min
Act Effct Green (s)	67.7	55.0	55.0	80.0	63.3	63.3	57.6	45.0	66.0	54.4	43.4
Actuated g/C Ratio	0.47	0.38	0.38	0.56	0.44	0.44	0.40	0.31	0.46	0.38	0.30
v/c Ratio	0.44	1.12	0.17	1.05	0.56	0.01	0.42	1.09	0.65	0.70	0.72
Control Delay	21.8	106.6	3.4	111.2	31.9	0.0	37.1	117.7	18.8	53.8	46.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.8	106.6	3.4	111.2	31.9	0.0	37.1	117.7	18.8	53.8	46.5
LOS	C	F	A	F	C	A	D	F	B	D	D
Approach Delay		95.1			50.9			74.6			47.4
Approach LOS		F			D			E			D

Intersection Summary

Cycle Length: 144
 Actuated Cycle Length: 144
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.12
 Intersection Signal Delay: 71.8
 Intersection Capacity Utilization 110.3%
 Analysis Period (min) 15
 Intersection LOS: E
 ICU Level of Service H

Splits and Phases: 1: Park Lawn Rd & The Queensway



HCM Signalized Intersection Capacity Analysis

1: Park Lawn Rd & The Queensway

02-08-2021

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓	↖
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖	↖	↖	↖↖	↖
Traffic Volume (vph)	114	1503	97	272	851	5	86	593	400	95	484	209
Future Volume (vph)	114	1503	97	272	851	5	86	593	400	95	484	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.0	6.0	2.0	6.0	6.0	3.0	6.0	3.0	3.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	0.90	1.00	1.00	0.83	1.00	1.00	0.94	1.00	0.97	1.00
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85	1.00
Flt Protected	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1609	3613	1342	1657	3535	1177	1600	1789	1309	1620	3192	1600
Flt Permitted	0.24	1.00	1.00	0.07	1.00	1.00	0.19	1.00	1.00	0.09	1.00	1.00
Satd. Flow (perm)	414	3613	1342	114	3535	1177	325	1789	1309	157	3192	1600
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	118	1549	100	280	877	5	89	611	412	98	499	215
RTOR Reduction (vph)	0	0	62	0	0	3	0	0	34	0	34	0
Lane Group Flow (vph)	118	1549	38	280	877	2	89	611	378	98	680	0
Confl. Peds. (#/hr)	50		50	50		50	50		50	50		50
Confl. Bikes (#/hr)			4			9			4			2
Heavy Vehicles (%)	4%	4%	0%	7%	1%	5%	5%	5%	8%	4%	4%	4%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	NA
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	62.7	54.0	54.0	75.0	62.3	62.3	52.6	44.0	61.0	49.4	42.4	
Effective Green, g (s)	64.7	55.0	55.0	77.0	63.3	63.3	54.6	45.0	63.0	51.4	43.4	
Actuated g/C Ratio	0.45	0.38	0.38	0.53	0.44	0.44	0.38	0.31	0.44	0.36	0.30	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	266	1379	512	264	1553	517	208	559	572	137	962	
v/s Ratio Prot	0.03	c0.43		c0.14	0.25		c0.03	c0.34	0.08	c0.04	0.21	
v/s Ratio Perm	0.17		0.03	0.43		0.00	0.13		0.21		0.21	
v/c Ratio	0.44	1.12	0.07	1.06	0.56	0.00	0.43	1.09	0.66	0.72	0.71	
Uniform Delay, d1	24.4	44.5	28.3	48.8	30.1	22.7	31.4	49.5	32.0	37.4	44.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.18	1.20	0.58	1.00	1.00	
Incremental Delay, d2	1.2	65.5	0.1	72.3	0.5	0.0	1.3	64.1	2.6	16.2	4.4	
Delay (s)	25.6	110.0	28.4	121.1	30.6	22.7	38.4	123.4	21.2	53.6	49.0	
Level of Service	C	F	C	F	C	C	D	F	C	D	D	
Approach Delay (s)		99.8			52.3		78.7				49.6	
Approach LOS		F			D		E				D	

Intersection Summary

HCM 2000 Control Delay 75.2
 HCM 2000 Level of Service E
 HCM 2000 Volume to Capacity ratio 1.08
 Actuated Cycle Length (s) 144.0
 Sum of lost time (s) 18.0
 Intersection Capacity Utilization 110.3%
 ICU Level of Service H
 Analysis Period (min) 15
 Critical Lane Group

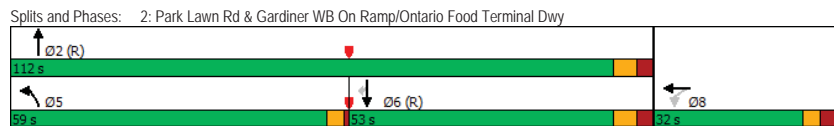
Timings

2: Park Lawn Rd & Gardiner WB On Ramp/Ontario Food Terminal Dwy

02-08-2021

	←	↖	↑	↓	↘
Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↕	↗	↗	↗	↗
Traffic Volume (vph)	154	1023	1053	402	389
Future Volume (vph)	154	1023	1053	402	389
Turn Type	NA	Prot	NA	NA	Perm
Protected Phases	8	5	2	6	
Permitted Phases					6
Detector Phase	8	5	2	6	6
Switch Phase					
Minimum Initial (s)	7.0	7.0	38.0	38.0	38.0
Minimum Split (s)	32.0	11.0	45.0	45.0	45.0
Total Split (s)	32.0	59.0	112.0	53.0	53.0
Total Split (%)	22.2%	41.0%	77.8%	36.8%	36.8%
Yellow Time (s)	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	1.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-4.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	0.0	6.0	6.0	6.0
Lead/Lag		Lead		Lag	Lag
Lead-Lag Optimize?		Yes		Yes	Yes
Recall Mode	None	None	C-Min	C-Min	C-Min
Act Effct Green (s)	26.3	56.8	106.7	49.8	49.8
Actuated g/C Ratio	0.18	0.39	0.74	0.35	0.35
v/c Ratio	0.93	0.88	0.45	0.36	0.90
Control Delay	100.2	56.8	6.1	36.3	49.7
Queue Delay	0.0	2.9	0.3	0.0	0.0
Total Delay	100.2	59.6	6.4	36.3	49.7
LOS	F	E	A	D	D
Approach Delay	100.2		32.6	42.9	
Approach LOS	F		C	D	

Intersection Summary	
Cycle Length: 144	
Actuated Cycle Length: 144	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 39.6	Intersection LOS: D
Intersection Capacity Utilization 93.8%	ICU Level of Service F
Analysis Period (min) 15	



HCM Signalized Intersection Capacity Analysis

2: Park Lawn Rd & Gardiner WB On Ramp/Ontario Food Terminal Dwy

02-08-2021

	↖	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				5	↕	37	↗	↗			↗	↗
Traffic Volume (vph)	0	0	0	5	154	37	1023	1053	0	0	402	389
Future Volume (vph)	0	0	0	5	154	37	1023	1053	0	0	402	389
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)					5.0		0.0	6.0			6.0	6.0
Lane Util. Factor					1.00		0.97	0.95			0.95	1.00
Frbp, ped/bikes					0.98		1.00	1.00			1.00	0.85
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.97		1.00	1.00			1.00	0.85
Flt Protected					1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)					1208		3173	3368			3466	1208
Flt Permitted					1.00		0.95	1.00			1.00	1.00
Satd. Flow (perm)					1208		3173	3368			3466	1208
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	5	166	40	1100	1132	0	0	432	418
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	0	0	0	205	0	1100	1132	0	0	432	371
Confl. Peds. (#/hr)	50		50	50		50	50		50	50		50
Confl. Bikes (#/hr)												5
Heavy Vehicles (%)	0%	0%	0%	3%	51%	43%	3%	6%	0%	0%	3%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	6
Turn Type				Perm	NA		Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases												6
Actuated Green, G (s)					25.3		52.8	105.7			48.9	48.9
Effective Green, g (s)					26.3		56.8	106.7			49.9	49.9
Actuated g/C Ratio					0.18		0.39	0.74			0.35	0.35
Clearance Time (s)					6.0		4.0	7.0			7.0	7.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					220		1251	2495			1201	418
v/s Ratio Prot							c0.35	0.34			0.12	
v/s Ratio Perm					0.17							c0.31
v/c Ratio					0.93		0.88	0.45			0.36	0.89
Uniform Delay, d1					58.0		40.4	7.3			35.1	44.4
Progression Factor					1.00		1.24	0.77			0.99	0.87
Incremental Delay, d2					42.2		5.4	0.4			0.5	16.1
Delay (s)					100.2		55.5	6.0			35.4	54.9
Level of Service					F		E	A			D	D
Approach Delay (s)	0.0				100.2		30.4				45.0	
Approach LOS	A				F		C				D	

Intersection Summary			
HCM 2000 Control Delay	38.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	93.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Timings

3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd/Street A (Relief Rd)

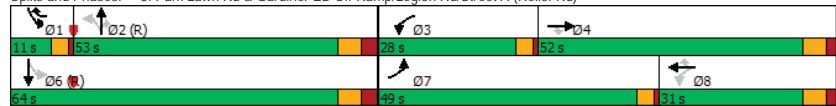
02-08-2021

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↗	↖↗	↖	↗	↖↗	↖↗	↖↗	↖↗	↖↗
Traffic Volume (vph)	517	633	229	59	195	574	13	992	202	90	308
Future Volume (vph)	517	633	229	59	195	574	13	992	202	90	308
Turn Type	Prot	NA	Perm	pm+pt	NA	pm+ov	Perm	NA	Perm	pm+pt	NA
Protected Phases	7	4		3	8	1		2		1	6
Permitted Phases			4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	1	2	2	2	1	6
Switch Phase											
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	31.0	31.0	11.0	31.0	11.0	29.0	29.0	29.0	11.0	29.0
Total Split (s)	49.0	52.0	52.0	28.0	31.0	11.0	53.0	53.0	53.0	11.0	64.0
Total Split (%)	34.0%	36.1%	36.1%	19.4%	21.5%	7.6%	36.8%	36.8%	36.8%	7.6%	44.4%
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	1.0	3.0	3.0	3.0	1.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0	3.0	6.0	6.0	6.0	3.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	C-Min	C-Min	C-Min	Max	C-Min
Act Effct Green (s)	32.5	65.3	65.3	51.0	39.8	60.3	39.2	39.2	39.2	60.7	57.7
Actuated g/C Ratio	0.23	0.45	0.45	0.35	0.28	0.42	0.27	0.27	0.27	0.42	0.40
v/c Ratio	0.80	0.79	0.46	0.28	0.41	0.91	0.07	0.77	0.49	0.41	0.24
Control Delay	61.7	42.2	13.7	22.5	46.3	53.1	37.4	52.2	17.1	70.4	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.6	0.0	0.0	0.0
Total Delay	61.7	42.2	13.7	22.5	46.3	59.1	37.4	52.7	17.1	70.4	29.6
LOS	E	D	B	C	D	E	D	D	B	E	C
Approach Delay		44.8			53.4			46.6			38.7
Approach LOS		D			D			D			D

Intersection Summary

Cycle Length: 144
 Actuated Cycle Length: 144
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 46.6 Intersection LOS: D
 Intersection Capacity Utilization 81.1% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd/Street A (Relief Rd)



HCM Signalized Intersection Capacity Analysis

3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd/Street A (Relief Rd)

02-08-2021

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓	↖
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↖	↗	↖↗	↖	↗	↖↗	↖↗	↖↗	↖↗	↖↗	↖↗
Traffic Volume (vph)	517	633	229	59	195	574	13	992	202	90	308	3
Future Volume (vph)	517	633	229	59	195	574	13	992	202	90	308	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0	3.0	6.0	6.0	6.0	3.0	6.0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.69	1.00	1.00	1.00	1.00	1.00	0.80	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00	0.79	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3054	1879	993	1626	1842	1478	1298	5029	1198	1685	3385	
Flt Permitted	0.95	1.00	1.00	0.23	1.00	1.00	0.55	1.00	1.00	0.10	1.00	
Satd. Flow (perm)	3054	1879	993	402	1842	1478	754	5029	1198	172	3385	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	550	673	244	63	207	611	14	1055	215	96	328	3
RTOR Reduction (vph)	0	0	81	0	0	56	0	110	0	1	0	0
Lane Group Flow (vph)	550	673	163	63	207	555	14	1055	105	96	330	0
Confl. Peds. (#/hr)			200	200			100		100	100		100
Confl. Bikes (#/hr)							1					4
Heavy Vehicles (%)	7%	0%	4%	2%	2%	2%	3%	2%	0%	0%	5%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	6
Turn Type	Prot	NA	Perm	pm+pt	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8	1		2		1	6	
Permitted Phases			4	8		8	2		2	6		
Actuated Green, G (s)	31.5	64.3	64.3	46.4	39.6	54.1	37.4	37.4	37.4	55.9	55.9	
Effective Green, g (s)	32.5	65.3	65.3	48.4	40.6	56.1	38.4	38.4	38.4	56.9	56.9	
Actuated g/C Ratio	0.23	0.45	0.45	0.34	0.28	0.39	0.27	0.27	0.27	0.40	0.40	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0	4.0	7.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	689	852	450	201	519	575	201	1341	319	230	1337	
v/s Ratio Prot	c0.18	0.36		0.02	0.11	c0.10		c0.21		0.04	0.10	
v/s Ratio Perm			0.16	0.09		0.27	0.02		0.09		0.12	
v/c Ratio	0.80	0.79	0.36	0.31	0.40	0.97	0.07	0.79	0.33	0.42	0.25	
Uniform Delay, d1	52.7	33.5	25.7	34.2	41.8	43.0	39.5	49.0	42.4	30.9	29.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.45	1.00	
Incremental Delay, d2	6.4	4.9	0.5	0.9	0.5	28.9	0.7	4.7	2.7	5.2	0.4	
Delay (s)	59.1	38.4	26.2	35.1	42.3	71.9	40.1	53.7	45.2	81.0	29.7	
Level of Service	E	D	C	D	D	E	D	D	D	F	C	
Approach Delay (s)		44.1			62.3			52.1			41.2	
Approach LOS		D			E			D			D	

Intersection Summary

HCM 2000 Control Delay 50.3 HCM 2000 Level of Service D
 HCM 2000 Volume to Capacity ratio 0.87
 Actuated Cycle Length (s) 144.0 Sum of lost time (s) 17.0
 Intersection Capacity Utilization 81.1% ICU Level of Service D
 Analysis Period (min) 15
 c Critical Lane Group

Timings

4: Park Lawn Rd & South Beach Condos Dwy/Dwy 2

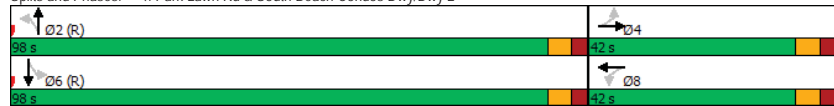
02-08-2021

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	160	0	21	0	5	841	130	449
Future Volume (vph)	160	0	21	0	5	841	130	449
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	29.0	29.0	29.0	29.0	25.0	25.0	25.0	25.0
Total Split (s)	42.0	42.0	42.0	42.0	98.0	98.0	98.0	98.0
Total Split (%)	30.0%	30.0%	30.0%	30.0%	70.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	44.9	44.9	44.9	44.9	83.1	83.1	83.1	83.1
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.59	0.59	0.59	0.59
v/c Ratio	0.73	0.11	0.08	0.56	0.02	0.45	0.57	0.25
Control Delay	61.9	0.5	35.5	32.2	6.4	10.2	28.6	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	61.9	0.5	35.5	32.2	6.4	10.4	28.6	13.8
LOS	E	A	D	C	A	B	C	B
Approach Delay		47.7		32.5		10.4		17.0
Approach LOS		D		C		B		B

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:NBL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 19.2 Intersection LOS: B
 Intersection Capacity Utilization 81.1% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 4: Park Lawn Rd & South Beach Condos Dwy/Dwy 2



HCM Signalized Intersection Capacity Analysis

4: Park Lawn Rd & South Beach Condos Dwy/Dwy 2

02-08-2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	
Traffic Volume (vph)	160	0	48	21	0	212	5	841	22	130	449	20
Future Volume (vph)	160	0	48	21	0	212	5	841	22	130	449	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	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		1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.68		1.00	0.68		1.00	0.99		1.00	0.98	
Flpb, ped/bikes	0.81	1.00		0.71	1.00		0.75	1.00		0.91	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	1.00		1.00	0.99	
Fl Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1336	1062		1188	1083		1140	3439		1531	3301	
Fl Permitted	0.51	1.00		0.72	1.00		0.45	1.00		0.26	1.00	
Satd. Flow (perm)	720	1062		905	1083		538	3439		411	3301	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	170	0	51	22	0	226	5	895	23	138	478	21
RTOR Reduction (vph)	0	35	0	0	53	0	0	2	0	0	3	0
Lane Group Flow (vph)	170	16	0	22	173	0	5	916	0	138	496	0
Confl. Peds. (#/hr)	200		200	200		200	200		200	200		200
Confl. Bikes (#/hr)									3			4
Heavy Vehicles (%)	2%	0%	2%	0%	0%	0%	11%	2%	0%	0%	5%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	43.9	43.9		43.9	43.9		82.1	82.1		82.1	82.1	
Effective Green, g (s)	44.9	44.9		44.9	44.9		83.1	83.1		83.1	83.1	
Actuated g/C Ratio	0.32	0.32		0.32	0.32		0.59	0.59		0.59	0.59	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	230	340		290	347		319	2041		243	1959	
v/s Ratio Prot		0.02			0.16			0.27			0.15	
v/s Ratio Perm	c0.24			0.02			0.01			c0.34		
v/c Ratio	0.74	0.05		0.08	0.50		0.02	0.45		0.57	0.25	
Uniform Delay, d1	42.3	32.8		33.1	38.4		11.7	15.8		17.4	13.6	
Progression Factor	1.00	1.00		1.00	1.00		0.58	0.60		1.00	1.00	
Incremental Delay, d2	11.7	0.1		0.1	1.1		0.1	0.7		9.3	0.3	
Delay (s)	54.1	32.9		33.2	39.6		6.8	10.2		26.7	13.9	
Level of Service	D	C		C	D		A	B		C	B	
Approach Delay (s)		49.2			39.0			10.2			16.7	
Approach LOS		D			D			B			B	

Intersection Summary

HCM 2000 Control Delay 20.0 HCM 2000 Level of Service B
 HCM 2000 Volume to Capacity ratio 0.63
 Actuated Cycle Length (s) 140.0 Sum of lost time (s) 12.0
 Intersection Capacity Utilization 81.1% ICU Level of Service D
 Analysis Period (min) 15

c Critical Lane Group

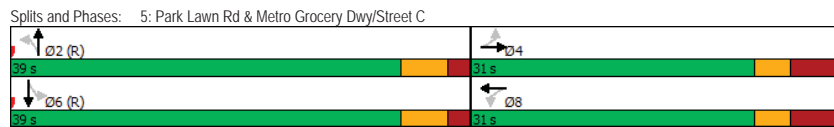
Timings

5: Park Lawn Rd & Metro Grocery Dwy/Street C

02-08-2021

	↖	→	↘	←	↑	↙	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Configurations	↖	↘	↖	↘	↖	↘	↖
Traffic Volume (vph)	257	18	2	4	517	21	438
Future Volume (vph)	257	18	2	4	517	21	438
Turn Type	Perm	NA	Perm	NA	Perm	NA	NA
Protected Phases		4		8		2	6
Permitted Phases	4		8			6	
Detector Phase	4	4	8	8	2	6	6
Switch Phase							
Minimum Initial (s)	7.0	7.0	7.0	7.0	18.0	18.0	18.0
Minimum Split (s)	30.0	30.0	30.0	30.0	24.0	24.0	24.0
Total Split (s)	31.0	31.0	31.0	31.0	39.0	39.0	39.0
Total Split (%)	44.3%	44.3%	44.3%	44.3%	55.7%	55.7%	55.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	4.0	4.0	4.0	4.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	5.0	5.0	5.0
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min
Act Effct Green (s)	24.6	24.6	24.6	24.6	34.4	34.4	34.4
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.49	0.49	0.49
v/c Ratio	0.75	0.38	0.01	0.19	0.33	0.07	0.33
Control Delay	32.5	9.7	16.0	9.5	9.1	10.4	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.5	9.7	16.0	9.5	9.1	10.4	12.0
LOS	C	A	B	A	A	B	B
Approach Delay		22.7		9.7	9.1		11.9
Approach LOS		C		A	A		B

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 47.5%	ICU Level of Service A
Analysis Period (min) 15	



HCM Signalized Intersection Capacity Analysis

5: Park Lawn Rd & Metro Grocery Dwy/Street C

02-08-2021

	↖	→	↘	↙	←	↖	↘	↑	↙	↘	↓	↖
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↘		↖	↘		↖	↘		↖	↘	↖
Traffic Volume (vph)	257	18	176	2	4	89	0	517	15	21	438	60
Future Volume (vph)	257	18	176	2	4	89	0	517	15	21	438	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0		6.0	6.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.83		1.00	0.82			0.99		1.00	0.95	
Flpb, ped/bikes	0.84	1.00		0.86	1.00			1.00		0.83	1.00	
Frt	1.00	0.86		1.00	0.86			1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1402	1319		1452	1314			3414		1398	3204	
Flt Permitted	0.69	1.00		0.63	1.00			1.00		0.42	1.00	
Satd. Flow (perm)	1024	1319		965	1314			3414		617	3204	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	268	19	183	2	4	93	0	539	16	22	456	62
RTOR Reduction (vph)	0	66	0	0	53	0	0	3	0	0	15	0
Lane Group Flow (vph)	268	136	0	2	44	0	0	552	0	22	504	0
Confl. Peds. (#/hr)	200		200	200		200	200		200	200		200
Confl. Bikes (#/hr)									3			11
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	0%	3%	0%	0%	4%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.6	23.6		23.6	23.6			33.4		33.4	33.4	
Effective Green, g (s)	24.6	24.6		24.6	24.6			34.4		34.4	34.4	
Actuated g/C Ratio	0.35	0.35		0.35	0.35			0.49		0.49	0.49	
Clearance Time (s)	7.0	7.0		7.0	7.0			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)	359	463		339	461			1677		303	1574	
v/s Ratio Prot		0.10			0.03			c0.16			0.16	
v/s Ratio Perm	c0.26			0.00						0.04		
v/c Ratio	0.75	0.29		0.01	0.10			0.33		0.07	0.32	
Uniform Delay, d1	20.0	16.4		14.8	15.2			10.8		9.4	10.7	
Progression Factor	1.00	1.00		1.34	2.46			0.74		0.84	1.04	
Incremental Delay, d2	8.2	0.4		0.0	0.1			0.5		0.5	0.5	
Delay (s)	28.2	16.8		19.8	37.6			8.5		8.4	11.7	
Level of Service	C	B		B	D			A		A	B	
Approach Delay (s)		23.3			37.2			8.5			11.6	
Approach LOS		C			D			A			B	

Intersection Summary	
HCM 2000 Control Delay	15.4 HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio	0.50
Actuated Cycle Length (s)	70.0 Sum of lost time (s) 11.0
Intersection Capacity Utilization	47.5% ICU Level of Service A
Analysis Period (min)	15
c Critical Lane Group	

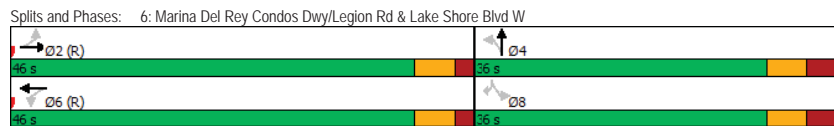
Timings

6: Marina Del Rey Condos Dwy/Legion Rd & Lake Shore Blvd W

02-08-2021

Lane Group	EBT	WBT	NBT	SBL	SBR
Lane Configurations	↔↔	↔↔	↕	↔	↔
Traffic Volume (vph)	1064	587	0	286	68
Future Volume (vph)	1064	587	0	286	68
Turn Type	NA	NA	NA	Perm	Perm
Protected Phases	2	6	4		
Permitted Phases				8	8
Detector Phase	2	6	4	8	8
Switch Phase					
Minimum Initial (s)	19.0	19.0	7.0	7.0	7.0
Minimum Split (s)	25.0	25.0	35.0	35.0	35.0
Total Split (s)	46.0	46.0	36.0	36.0	36.0
Total Split (%)	56.1%	56.1%	43.9%	43.9%	43.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min	None	None	None
Act Effct Green (s)	37.2	37.2	33.8	33.8	33.8
Actuated g/C Ratio	0.45	0.45	0.41	0.41	0.41
v/c Ratio	0.70	0.42	0.49	0.83	0.13
Control Delay	20.8	15.9	18.9	45.2	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	15.9	18.9	45.2	5.2
LOS	C	B	B	D	A
Approach Delay	20.8	15.9	18.9		
Approach LOS	C	B	B		

Intersection Summary
 Cycle Length: 82
 Actuated Cycle Length: 82
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 21.9
 Intersection Capacity Utilization 81.1%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service D



HCM Signalized Intersection Capacity Analysis

6: Marina Del Rey Condos Dwy/Legion Rd & Lake Shore Blvd W

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↕		↔		↔
Traffic Volume (vph)	0	1064	0	0	587	18	35	0	235	286	0	68
Future Volume (vph)	0	1064	0	0	587	18	35	0	235	286	0	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.5	3.0
Total Lost time (s)		5.0			5.0			6.0		6.0		6.0
Lane Util. Factor		0.95			0.95			1.00		1.00		1.00
Frbp, ped/bikes		1.00			0.99			0.84		1.00		0.82
Flpb, ped/bikes		1.00			1.00			0.98		0.89		1.00
Frt		1.00			1.00			0.88		1.00		0.85
Flt Protected		1.00			1.00			0.99		0.95		1.00
Satd. Flow (prot)		3466			3313			1350		1475		1230
Flt Permitted		1.00			1.00			0.99		0.56		1.00
Satd. Flow (perm)		3466			3313			1350		864		1230
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1108	0	0	611	19	36	0	245	298	0	71
RTOR Reduction (vph)	0	0	0	0	3	0	0	24	0	0	0	42
Lane Group Flow (vph)	0	1108	0	0	627	0	0	257	0	298	0	29
Confl. Peds. (#/hr)	200		200	200		200	200		200	200		200
Confl. Bikes (#/hr)			19			5			2			
Heavy Vehicles (%)	17%	3%	0%	0%	6%	0%	0%	0%	0%	2%	0%	0%
Bus Blockages (#/hr)	12	0	2	12	0	2	0	0	0	0	0	0
Turn Type	NA				NA		Perm	NA		Perm		Perm
Protected Phases		2			6			4				8
Permitted Phases		2			6			4				8
Actuated Green, G (s)		36.2			36.2			32.8		32.8		32.8
Effective Green, g (s)		37.2			37.2			33.8		33.8		33.8
Actuated g/C Ratio		0.45			0.45			0.41		0.41		0.41
Clearance Time (s)		6.0			6.0			7.0		7.0		7.0
Vehicle Extension (s)		3.0			3.0			3.0		3.0		3.0
Lane Grp Cap (vph)		1572			1502			556		356		507
v/s Ratio Prot		c0.32			0.19							
v/s Ratio Perm								0.19		c0.34		0.02
v/c Ratio		0.70			0.42			0.46		0.84		0.06
Uniform Delay, d1		18.0			15.1			17.5		21.6		14.5
Progression Factor		1.00			1.00			1.00		1.00		1.00
Incremental Delay, d2		2.7			0.9			0.6		15.6		0.0
Delay (s)		20.7			16.0			18.1		37.2		14.6
Level of Service		C			B			B		D		B
Approach Delay (s)		20.7			16.0			18.1		32.9		
Approach LOS		C			B			B		C		

Intersection Summary
 HCM 2000 Control Delay 21.0
 HCM 2000 Volume to Capacity ratio 0.78
 Actuated Cycle Length (s) 82.0
 Intersection Capacity Utilization 81.1%
 Analysis Period (min) 15
 HCM 2000 Level of Service C
 Sum of lost time (s) 12.0
 ICU Level of Service D
 Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
7: Humber Bay Park Rd W & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔↔			↔↔	↔	↔
Traffic Volume (veh/h)	1561	25	15	603	16	31
Future Volume (Veh/h)	1561	25	15	603	16	31
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	1661	27	16	641	17	33
Pedestrians					200	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					14	
Right turn flare (veh)						4
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	64			256		
pX, platoon unblocked			0.74		0.76	0.74
vC, conflicting volume			1888		2227	1044
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1499		1712	360
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		67	92
cM capacity (veh/h)			289		52	410
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	1107	581	230	427	50	
Volume Left	0	0	16	0	17	
Volume Right	0	27	0	0	33	
cSH	1700	1700	289	1700	152	
Volume to Capacity	0.65	0.34	0.06	0.25	0.33	
Queue Length 95th (m)	0.0	0.0	1.4	0.0	10.6	
Control Delay (s)	0.0	0.0	2.3	0.0	45.4	
Lane LOS			A		E	
Approach Delay (s)	0.0		0.8		45.4	
Approach LOS					E	
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			54.1%		ICU Level of Service	A
Analysis Period (min)			15			

Timings
8: Marine Parade Dr/Park Lawn Rd & Lake Shore Blvd W

02-08-2021

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔		↔↔	↔	↔	↔	↔	↔↔	↔	↔
Traffic Volume (vph)	323	1155	2	266	80	51	56	13	212	148	257
Future Volume (vph)	323	1155	2	266	80	51	56	13	212	148	257
Turn Type	Prot	NA	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		6		6	4		4	3	8
Permitted Phases			6		6	4		4			8
Detector Phase	5	2	6	6	6	4	4	4	3	8	8
Switch Phase											
Minimum Initial (s)	6.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	6.0	34.0	34.0
Minimum Split (s)	10.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	10.0	41.0	41.0
Total Split (s)	40.0	84.0	44.0	44.0	44.0	41.0	41.0	41.0	15.0	56.0	56.0
Total Split (%)	28.6%	60.0%	31.4%	31.4%	31.4%	29.3%	29.3%	29.3%	10.7%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0		6.0	6.0	6.0	6.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lag	Lag	Lead		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	Min	Min	Min	None	Min	Min
Act Effct Green (s)	34.4	75.5		38.1	38.1	35.0	35.0	35.0	14.5	52.5	52.5
Actuated g/C Ratio	0.25	0.54		0.27	0.27	0.25	0.25	0.25	0.10	0.38	0.38
v/c Ratio	0.89	0.73		0.33	0.26	0.32	0.14	0.05	0.68	0.25	0.54
Control Delay	76.2	27.6		31.6	6.0	49.1	41.9	0.4	70.2	29.0	13.8
Queue Delay	0.0	0.2		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.2	27.8		31.6	6.0	49.1	41.9	0.4	70.2	29.0	13.8
LOS	E	C		C	A	D	D	A	E	C	B
Approach Delay		37.8		25.7			40.4			36.8	
Approach LOS		D		C			D			D	
Intersection Summary											
Cycle Length: 140											
Actuated Cycle Length: 140											
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green											
Natural Cycle: 115											
Control Type: Actuated-Coordinated											
Maximum v/c Ratio: 0.89											
Intersection Signal Delay: 36.1						Intersection LOS: D					
Intersection Capacity Utilization 121.3%						ICU Level of Service H					
Analysis Period (min) 15											
Splits and Phases: 8: Marine Parade Dr/Park Lawn Rd & Lake Shore Blvd W											

HCM Signalized Intersection Capacity Analysis

8: Marine Parade Dr/Park Lawn Rd & Lake Shore Blvd W

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↕	↕	↔
Traffic Volume (vph)	323	1155	91	2	266	80	51	56	13	212	148	257
Future Volume (vph)	323	1155	91	2	266	80	51	56	13	212	148	257
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.0			6.0	6.0	6.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frbp, ped/bikes	1.00	0.97			1.00	0.63	1.00	1.00	0.63	1.00	1.00	0.63
Flpb, ped/bikes	1.00	1.00			1.00	1.00	0.71	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1572	3342			3359	934	985	1756	754	3204	1708	889
Flt Permitted	0.95	1.00			0.95	1.00	0.66	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1572	3342			3176	934	682	1756	754	3204	1708	889
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	344	1229	97	2	283	85	54	60	14	226	157	273
RTOR Reduction (vph)	0	4	0	0	0	62	0	0	11	0	0	171
Lane Group Flow (vph)	344	1322	0	0	285	23	54	60	4	226	157	102
Confl. Peds. (#/hr)	500		500	500		500	500		500	500		500
Confl. Bikes (#/hr)			21						3			15
Heavy Vehicles (%)	2%	3%	0%	35%	6%	2%	21%	7%	23%	2%	10%	4%
Bus Blockages (#/hr)	12	0	2	12	0	0	0	0	6	0	0	6
Turn Type	Prot	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	5	2			6			4		3		8
Permitted Phases				6		6	4		4			8
Actuated Green, G (s)	33.4	74.5			37.1	37.1	34.0	34.0	34.0	13.5	51.5	51.5
Effective Green, g (s)	34.4	75.5			38.1	38.1	35.0	35.0	35.0	14.5	52.5	52.5
Actuated g/C Ratio	0.25	0.54			0.27	0.27	0.25	0.25	0.25	0.10	0.38	0.38
Clearance Time (s)	4.0	7.0			7.0	7.0	7.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	386	1802			864	254	170	439	188	331	640	333
v/s Ratio Prot	c0.22	c0.40						0.03		c0.07		0.09
v/s Ratio Perm					0.09	0.02	0.08		0.00			c0.12
v/c Ratio	0.89	0.73			0.33	0.09	0.32	0.14	0.02	0.68	0.25	0.31
Uniform Delay, d1	51.0	24.6			40.7	38.0	42.8	40.8	39.6	60.5	30.1	30.9
Progression Factor	1.00	1.00			0.73	0.61	1.00	1.00	1.00	0.98	0.93	2.78
Incremental Delay, d2	21.8	2.7			1.0	0.7	1.1	0.1	0.0	5.5	0.2	0.5
Delay (s)	72.8	27.3			30.7	24.0	43.9	40.9	39.6	65.0	28.1	86.4
Level of Service	E	C			C	C	D	D	D	E	C	F
Approach Delay (s)		36.6				29.1			42.0			65.1
Approach LOS		D				C			D			E

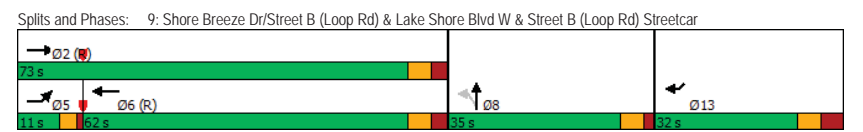
Intersection Summary			
HCM 2000 Control Delay	42.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	121.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Timings

9: Shore Breeze Dr/Street B (Loop Rd) & Lake Shore Blvd W & Street B (Loop Rd) Streetcar

Lane Group	EBL	EBT	WBT	NBT	SWR
Lane Configurations	↔	↕	↕	↕	↕
Traffic Volume (vph)	8	1347	294	8	18
Future Volume (vph)	8	1347	294	8	18
Turn Type	Prot	NA	NA	NA	Prot
Protected Phases	5	2	6	8	13
Permitted Phases					
Detector Phase	5	2	6	8	13
Switch Phase					
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	31.0	31.0	35.0	15.0
Total Split (s)	11.0	73.0	62.0	35.0	32.0
Total Split (%)	7.9%	52.1%	44.3%	25.0%	22.9%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	2.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	7.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	None	None
Act Effct Green (s)	8.1	87.4	85.1	30.0	10.6
Actuated g/C Ratio	0.06	0.62	0.61	0.21	0.08
v/c Ratio	0.08	0.68	0.19	0.31	0.33
Control Delay	83.4	13.0	10.2	49.6	75.5
Queue Delay	0.0	0.2	0.0	0.0	0.0
Total Delay	83.4	13.2	10.2	49.6	75.5
LOS	F	B	B	D	E
Approach Delay		13.6	10.2	49.6	
Approach LOS		B	B	D	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 15.4	Intersection LOS: B
Intersection Capacity Utilization 71.5%	ICU Level of Service C
Analysis Period (min) 15	



HCM Signalized Intersection Capacity Analysis

9: Shore Breeze Dr/Street B (Loop Rd) & Lake Shore Blvd W & Street B (Loop Rd) Streets

Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SWR
Lane Configurations	↔	↕	↔	↕	↔	↔	↕	↔	↕
Traffic Volume (vph)	8	1347	25	294	46	48	8	37	18
Future Volume (vph)	8	1347	25	294	46	48	8	37	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	3.0	6.0		6.0			5.0		7.0
Lane Util. Factor	1.00	0.95		0.95			1.00		1.00
Frpb, ped/bikes	1.00	0.99		0.92			1.00		1.00
Flpb, ped/bikes	1.00	1.00		1.00			0.85		1.00
Frt	1.00	1.00		0.98			0.95		0.86
Flt Protected	0.95	1.00		1.00			0.97		1.00
Satd. Flow (prot)	1652	3421		3124			1460		767
Flt Permitted	0.95	1.00		1.00			0.97		1.00
Satd. Flow (perm)	1652	3421		3124			1460		767
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	8	1418	26	309	48	51	8	39	19
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	8	1443	0	357	0	0	98	0	19
Confl. Peds. (#/hr)			200		200	200			
Confl. Bikes (#/hr)			5						
Heavy Vehicles (%)	2%	3%	4%	4%	0%	0%	0%	2%	100%
Turn Type	Prot	NA		NA		Perm	NA		Prot
Protected Phases	5	2		6			8		13
Permitted Phases						8			
Actuated Green, G (s)	1.5	83.2		77.7			29.0		6.8
Effective Green, g (s)	2.5	84.2		78.7			30.0		7.8
Actuated g/C Ratio	0.02	0.60		0.56			0.21		0.06
Clearance Time (s)	4.0	7.0		7.0			6.0		8.0
Vehicle Extension (s)	3.0	3.0		3.0			3.0		3.0
Lane Grp Cap (vph)	29	2057		1756			312		42
v/s Ratio Prot	0.00	c0.42		0.11					c0.02
v/s Ratio Perm							0.07		
v/c Ratio	0.28	0.70		0.20			0.31		0.45
Uniform Delay, d1	67.9	19.2		15.2			46.3		64.0
Progression Factor	1.31	0.62		0.70			1.00		1.00
Incremental Delay, d2	3.6	1.4		0.3			0.6		7.6
Delay (s)	92.5	13.3		10.8			46.9		71.6
Level of Service	F	B		B			D		E
Approach Delay (s)		13.7		10.8			46.9		
Approach LOS		B		B			D		

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

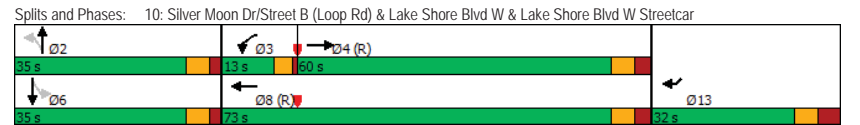
c Critical Lane Group

Timings

10: Silver Moon Dr/Street B (Loop Rd) & Lake Shore Blvd W & Lake Shore Blvd W Streets

Lane Group	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SWR
Lane Configurations	↕	↕	↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	1366	1	287	36	0	57	1	18
Future Volume (vph)	1366	1	287	36	0	57	1	18
Turn Type	NA	Prot	NA	Perm	NA	Perm	NA	Prot
Protected Phases	4	3	8		2		6	13
Permitted Phases				2		6		
Detector Phase	4	3	8	2	2	6	6	13
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	25.0	13.0	25.0	35.0	35.0	35.0	35.0	15.0
Total Split (s)	60.0	13.0	73.0	35.0	35.0	35.0	35.0	32.0
Total Split (%)	42.9%	9.3%	52.1%	25.0%	25.0%	25.0%	25.0%	22.9%
Yellow Time (s)	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	1.0	3.0	2.0	2.0	2.0	2.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	3.0	6.0	5.0	5.0	5.0	5.0	7.0
Lead/Lag	Lag	Lead						
Lead-Lag Optimize?	Yes	Yes						
Recall Mode	C-Min	None	C-Min	None	None	None	None	None
Act Effct Green (s)	85.2	8.0	87.4	30.0	30.0	30.0	30.0	10.6
Actuated g/C Ratio	0.61	0.06	0.62	0.21	0.21	0.21	0.21	0.08
v/c Ratio	0.70	0.01	0.14	0.20	0.31	0.07	0.33	
Control Delay	7.5	70.0	14.8	48.3	53.3	20.9	75.5	
Queue Delay	0.4	0.0	0.0	0.0	0.7	0.0	0.0	
Total Delay	7.9	70.0	14.8	48.3	54.0	20.9	75.5	
LOS	A	E	B	D	D	C	E	
Approach Delay	7.9		15.0		48.3		46.1	
Approach LOS	A		B		D		D	

Intersection Summary	
Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 12.1	Intersection LOS: B
Intersection Capacity Utilization 71.7%	ICU Level of Service C
Analysis Period (min) 15	



HCM Signalized Intersection Capacity Analysis

10: Silver Moon Dr/Street B (Loop Rd) & Lake Shore Blvd W & Lake Shore Blvd W Streets

Movement	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	SWR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	1366	17	1	287	36	0	57	1	17	18
Future Volume (vph)	1366	17	1	287	36	0	57	1	17	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.5	3.0	3.5	3.0	3.0
Total Lost time (s)	6.0	3.0	6.0	5.0	5.0	5.0	7.0			
Lane Util. Factor	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.72	1.00		
Flpb, ped/bikes	1.00	1.00	1.00	1.00	0.72	0.73	1.00	1.00		
Frt	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.86		
Flt Protected	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00		
Satd. Flow (prot)	3466	1491	3433	1186	1200	1137	767			
Flt Permitted	1.00	0.95	1.00	0.75	0.73	1.00	1.00	1.00		
Satd. Flow (perm)	3466	1491	3433	930	927	1137	767			
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	1469	18	1	309	39	0	61	1	18	19
RTOR Reduction (vph)	0	0	0	0	0	0	14	0	0	0
Lane Group Flow (vph)	1487	0	1	309	0	39	61	5	0	19
Confl. Peds. (#/hr)	200	200		200		200		200		
Confl. Bikes (#/hr)	3									
Heavy Vehicles (%)	2%	12%	13%	4%	8%	0%	2%	2%	2%	100%
Turn Type	NA	Prot	NA	Perm	NA	Perm	NA	Prot		
Protected Phases	4	3	8		2		6	13		
Permitted Phases				2		6				
Actuated Green, G (s)	77.8	1.4	83.2		29.0	29.0	29.0	6.8		
Effective Green, g (s)	78.8	2.4	84.2		30.0	30.0	30.0	7.8		
Actuated g/C Ratio	0.56	0.02	0.60		0.21	0.21	0.21	0.06		
Clearance Time (s)	7.0	4.0	7.0		6.0	6.0	6.0	8.0		
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	1950	25	2064		199	198	243	42		
v/s Ratio Prot	c0.43	0.00	c0.09				0.00	c0.02		
v/s Ratio Perm					0.04	c0.07				
v/c Ratio	0.76	0.04	0.15		0.20	0.31	0.02	0.45		
Uniform Delay, d1	23.4	67.7	12.2		45.1	46.3	43.4	64.0		
Progression Factor	0.25	1.12	1.20		1.00	1.04	1.11	1.00		
Incremental Delay, d2	2.2	0.6	0.1		0.5	0.9	0.0	7.6		
Delay (s)	8.0	76.2	14.8		45.6	49.0	48.4	71.6		
Level of Service	A	E	B		D	D	D	E		
Approach Delay (s)	8.0		15.0		45.6		48.9			
Approach LOS	A		B		D		D			

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c	Critical Lane Group		

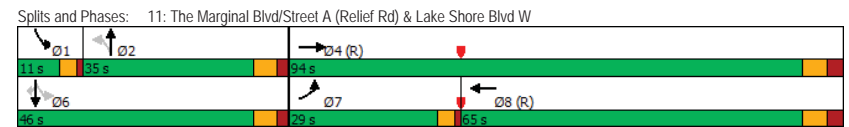
Timings

11: The Marginal Blvd/Street A (Relief Rd) & Lake Shore Blvd W

02-08-2021

Lane Group	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	367	1052	17	4	167	41	141	266
Future Volume (vph)	367	1052	17	4	167	41	141	266
Turn Type	Prot	NA	NA	Perm	NA	pm+pt	NA	Perm
Protected Phases	7	4	8		2	1	6	
Permitted Phases				2		6		6
Detector Phase	7	4	8	2	2	1	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	29.0	29.0	35.0	35.0	11.0	35.0	35.0
Total Split (s)	29.0	94.0	65.0	35.0	35.0	11.0	46.0	46.0
Total Split (%)	20.7%	67.1%	46.4%	25.0%	25.0%	7.9%	32.9%	32.9%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0		5.0		5.0	5.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	39.9	97.9	55.0		31.1		31.1	31.1
Actuated g/C Ratio	0.28	0.70	0.39		0.22		0.22	0.22
v/c Ratio	0.82	0.88	0.42		0.48		0.63	0.63
Control Delay	78.3	22.0	16.4		51.3		93.2	46.8
Queue Delay	0.0	11.1	2.0		0.0		0.1	0.8
Total Delay	78.3	33.2	18.4		51.3		93.3	47.6
LOS	E	C	B		D		F	D
Approach Delay		44.8	18.4		51.3		66.2	
Approach LOS		D	B		D		E	

Intersection Summary	
Cycle Length: 140	Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 47.1	Intersection LOS: D
Intersection Capacity Utilization 95.0%	ICU Level of Service F
Analysis Period (min) 15	



HCM Signalized Intersection Capacity Analysis

11: The Marginal Blvd/Street A (Relief Rd) & Lake Shore Blvd W

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	367	1052	1	0	17	200	4	167	7	41	141	266
Future Volume (vph)	367	1052	1	0	17	200	4	167	7	41	141	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.0			6.0			5.0			5.0	5.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frbp, ped/bikes	1.00	1.00			0.70			0.98			1.00	0.70
Flpb, ped/bikes	1.00	1.00			1.00			1.00			0.93	1.00
Frt	1.00	1.00			0.88			0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.99	1.00
Satd. Flow (prot)	1685	1841			1152			1821			1703	1041
Flt Permitted	0.95	1.00			1.00			0.99			0.81	1.00
Satd. Flow (perm)	1685	1841			1152			1812			1391	1041
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	395	1131	1	0	18	215	4	180	8	44	152	286
RTOR Reduction (vph)	0	0	0	0	99	0	0	1	0	0	0	222
Lane Group Flow (vph)	395	1132	0	0	134	0	0	191	0	0	196	64
Confl. Peds. (#/hr)	200		200	200		200	200		200	200		200
Confl. Bikes (#/hr)			4									
Heavy Vehicles (%)	0%	2%	0%	0%	4%	0%	0%	0%	0%	2%	2%	2%
Turn Type	Prot	NA			NA			NA	pm+pt	NA	NA	Perm
Protected Phases	7	4			8			2		1	6	
Permitted Phases							2			6		6
Actuated Green, G (s)	38.9	96.9			54.0			30.1			30.1	30.1
Effective Green, g (s)	39.9	97.9			55.0			31.1			31.1	31.1
Actuated g/C Ratio	0.28	0.70			0.39			0.22			0.22	0.22
Clearance Time (s)	4.0	7.0			7.0			6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	480	1287			452			402			309	231
v/s Ratio Prot	0.23	c0.61			0.12						c0.14	0.06
v/s Ratio Perm								0.11				0.06
v/c Ratio	0.82	0.88			0.30			0.48			0.63	0.28
Uniform Delay, d1	46.8	16.4			29.2			47.4			49.3	45.1
Progression Factor	1.43	0.86			1.61			1.00			1.72	8.31
Incremental Delay, d2	8.0	6.5			1.6			0.9			3.5	0.5
Delay (s)	74.8	20.7			48.7			48.2			88.1	375.5
Level of Service	E	C			D			D			F	F
Approach Delay (s)		34.7			48.7			48.2			258.6	
Approach LOS		C			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	81.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c	Critical Lane Group		

Timings

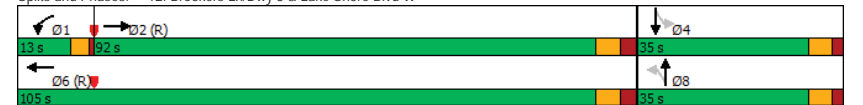
12: Brookers Ln/Dwy 3 & Lake Shore Blvd W

02-08-2021

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT	Ø1
Lane Configurations	↔	↔	↔	↔	↔	↔	
Traffic Volume (vph)	1095	104	92	15	17	0	
Future Volume (vph)	1095	104	92	15	17	0	
Turn Type	NA	NA	Perm	NA	Perm	NA	
Protected Phases	2	6	8	8	4	4	1
Permitted Phases			8		4		
Detector Phase	2	6	8	8	4	4	
Switch Phase							
Minimum Initial (s)	29.0	29.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.0	36.0	35.0	35.0	35.0	35.0	13.0
Total Split (s)	92.0	105.0	35.0	35.0	35.0	35.0	13.0
Total Split (%)	65.7%	75.0%	25.0%	25.0%	25.0%	25.0%	9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	3.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lag						Lead
Lead-Lag Optimize?	Yes						Yes
Recall Mode	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	102.8	102.8	26.2	26.2	25.6	25.6	
Actuated g/C Ratio	0.73	0.73	0.19	0.19	0.18	0.18	
v/c Ratio	0.87	0.09	0.49	0.40	0.15	0.15	
Control Delay	18.0	3.7	58.3	13.3	5.3	5.3	
Queue Delay	29.9	0.0	0.0	0.0	0.0	0.0	
Total Delay	47.9	3.7	58.3	13.3	5.3	5.3	
LOS	D	A	E	B	A	A	
Approach Delay	47.9	3.7		31.5	5.3		
Approach LOS	D	A		C	A		

Intersection Summary	
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	145
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.87
Intersection Signal Delay:	41.2
Intersection Capacity Utilization	91.2%
ICU Level of Service	F
Intersection LOS:	D
Analysis Period (min)	15

Splits and Phases: 12: Brookers Ln/Dwy 3 & Lake Shore Blvd W



HCM Signalized Intersection Capacity Analysis
12: Brookers Ln/Dwy 3 & Lake Shore Blvd W

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	1095	5	0	104	0	92	15	121	17	0	21
Future Volume (vph)	0	1095	5	0	104	0	92	15	121	17	0	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		6.0			6.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frbp, ped/bikes		1.00			1.00		1.00	0.86			0.86	
Flpb, ped/bikes		1.00			1.00		0.77	1.00			0.95	
Frt		1.00			1.00		1.00	0.87			0.93	
Flt Protected		1.00			1.00		0.95	1.00			0.98	
Satd. Flow (prot)		1804			1740		1291	1390			1362	
Flt Permitted		1.00			1.00		0.78	1.00			0.85	
Satd. Flow (perm)		1804			1740		1057	1390			1183	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1153	5	0	109	0	97	16	127	18	0	22
RTOR Reduction (vph)	0	0	0	0	0	0	0	103	0	0	33	0
Lane Group Flow (vph)	0	1158	0	0	109	0	97	40	0	0	7	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			3									
Heavy Vehicles (%)	2%	4%	0%	0%	8%	2%	1%	2%	1%	2%	2%	2%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	0	0	0	0	0
Turn Type	NA	NA	Prot	NA	NA	Perm	NA	NA	Perm	NA	NA	NA
Protected Phases		2		1	6			8		4		4
Permitted Phases							8					
Actuated Green, G (s)		101.8			101.8		25.2	25.2				25.2
Effective Green, g (s)		102.8			102.8		26.2	26.2				26.2
Actuated g/C Ratio		0.73			0.73		0.19	0.19				0.19
Clearance Time (s)		7.0			7.0		6.0	6.0				6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0				3.0
Lane Grp Cap (vph)		1324			1277		197	260				221
v/s Ratio Prot		c0.64			0.06			0.03				
v/s Ratio Perm							c0.09					0.01
v/c Ratio		0.87			0.09		0.49	0.15				0.03
Uniform Delay, d1		13.8			5.3		50.9	47.6				46.5
Progression Factor		0.82			0.58		1.00	1.00				1.00
Incremental Delay, d2		4.3			0.1		1.9	0.3				0.1
Delay (s)		15.6			3.2		52.9	47.9				46.6
Level of Service		B			A		D	D				D
Approach Delay (s)		15.6			3.2		49.9					46.6
Approach LOS		B			A		D					D
Intersection Summary												
HCM 2000 Control Delay	20.9		HCM 2000 Level of Service		C							
HCM 2000 Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	140.0		Sum of lost time (s)		14.0							
Intersection Capacity Utilization	91.2%		ICU Level of Service		F							
Analysis Period (min)	15											
c Critical Lane Group												

Timings
13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W

02-08-2021

Lane Group	EBL	EBT	WBT	NBT
Lane Configurations	↔	↔	↔	↔
Traffic Volume (vph)	10	1197	68	0
Future Volume (vph)	10	1197	68	0
Turn Type	Prot	NA	NA	NA
Protected Phases	5	2	6	4
Permitted Phases				
Detector Phase	5	2	6	4
Switch Phase				
Minimum Initial (s)	7.0	16.0	16.0	7.0
Minimum Split (s)	15.0	24.0	24.0	29.0
Total Split (s)	32.0	111.0	79.0	29.0
Total Split (%)	22.9%	79.3%	56.4%	20.7%
Yellow Time (s)	4.0	4.0	4.0	3.0
All-Red Time (s)	4.0	4.0	4.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0	7.0	7.0	4.0
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Min	C-Min	None
Act Effct Green (s)	9.0	107.4	103.7	21.6
Actuated g/C Ratio	0.06	0.77	0.74	0.15
v/c Ratio	0.19	0.93	0.05	0.29
Control Delay	63.2	21.2	4.7	8.1
Queue Delay	0.0	6.0	0.0	0.0
Total Delay	63.2	27.2	4.7	8.1
LOS	E	C	A	A
Approach Delay		27.5	4.7	8.1
Approach LOS		C	A	A
Intersection Summary				
Cycle Length: 140				
Actuated Cycle Length: 140				
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green				
Natural Cycle: 120				
Control Type: Actuated-Coordinated				
Maximum v/c Ratio: 0.93				
Intersection Signal Delay: 25.3	Intersection LOS: C			
Intersection Capacity Utilization 87.5%	ICU Level of Service E			
Analysis Period (min) 15				
Splits and Phases: 13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W				
→ Ø2 (R)	111 s			↑ Ø4
↔ Ø5	32 s			← Ø5 (R)
	79 s			

HCM Signalized Intersection Capacity Analysis

13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↑			↔				
Traffic Volume (vph)	10	1197	30	0	68	0	36	0	43	0	0	0
Future Volume (vph)	10	1197	30	0	68	0	36	0	43	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0			7.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			1.00				
Frbp, ped/bikes	1.00	0.99			1.00			1.00				
Flpb, ped/bikes	1.00	1.00			1.00			0.76				
Frt	1.00	1.00			1.00			0.93				
Flt Protected	0.95	1.00			1.00			0.98				
Satd. Flow (prot)	842	1793			1789			1300				
Flt Permitted	0.95	1.00			1.00			0.98				
Satd. Flow (perm)	842	1793			1789			1300				
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	10	1247	31	0	71	0	38	0	45	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	70	0	0	0	0
Lane Group Flow (vph)	10	1278	0	0	71	0	0	13	0	0	0	0
Confl. Peds. (#/hr)			200	200			200					200
Confl. Bikes (#/hr)			5									1
Heavy Vehicles (%)	100%	3%	0%	0%	5%	0%	0%	0%	0%	0%	0%	100%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	Prot	NA			NA		Perm	NA				
Protected Phases	5	2			6			4				
Permitted Phases							4					
Actuated Green, G (s)	2.1	106.4			96.3			20.6				
Effective Green, g (s)	3.1	107.4			97.3			21.6				
Actuated g/C Ratio	0.02	0.77			0.69			0.15				
Clearance Time (s)	8.0	8.0			8.0			5.0				
Vehicle Extension (s)	3.0	3.0			3.0			3.0				
Lane Grp Cap (vph)	18	1375			1243			200				
v/s Ratio Prot	0.01	c0.71			0.04							
v/s Ratio Perm								0.01				
v/c Ratio	0.56	0.93			0.06			0.06				
Uniform Delay, d1	67.8	13.2			6.8			50.6				
Progression Factor	0.95	0.84			0.66			1.00				
Incremental Delay, d2	18.9	7.6			0.1			0.1				
Delay (s)	83.6	18.7			4.6			50.7				
Level of Service	F	B			A			D				
Approach Delay (s)		19.2			4.6			50.7			0.0	
Approach LOS		B			A			D			A	
Intersection Summary												
HCM 2000 Control Delay		20.3										C
HCM 2000 Volume to Capacity ratio		0.83										
Actuated Cycle Length (s)		140.0			Sum of lost time (s)			18.0				
Intersection Capacity Utilization		87.5%										E
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

14: Marine Parade Dr & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	1200	42	0	38	10	151
Future Volume (Veh/h)	1200	42	0	38	10	151
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1237	43	0	39	10	156
Pedestrians					50	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					3	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	133			168		
pX, platoon unblocked			0.25		0.25	0.25
vC, conflicting volume			1330		1348	1308
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			814		885	727
IC, single (s)			4.1		*3.5	*3.3
IC, 2 stage (s)						
IF (s)			2.2		*2.3	*2.3
p0 queue free %			100		95	35
cM capacity (veh/h)			197		207	240
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	1280	39	166			
Volume Left	0	0	10			
Volume Right	43	0	156			
cSH	1700	197	238			
Volume to Capacity	0.75	0.00	0.70			
Queue Length 95th (m)	0.0	0.0	36.7			
Control Delay (s)	0.0	0.0	48.9			
Lane LOS			E			
Approach Delay (s)	0.0	0.0	48.9			
Approach LOS			E			
Intersection Summary						
Average Delay			5.5			
Intersection Capacity Utilization			82.4%		ICU Level of Service	E
Analysis Period (min)			15			
* User Entered Value						

Timings

15: Palace Pier Ct & Lake Shore Blvd W

02-08-2021

	→	↘	↙
Lane Group	EBT	EBR	NBL
Lane Configurations	↑	↑	↑
Traffic Volume (vph)	1376	2	38
Future Volume (vph)	1376	2	38
Turn Type	NA	Perm	Prot
Protected Phases	2		4
Permitted Phases		2	
Detector Phase	2	2	4
Switch Phase			
Minimum Initial (s)	19.0	19.0	7.0
Minimum Split (s)	25.0	25.0	28.0
Total Split (s)	112.0	112.0	28.0
Total Split (%)	80.0%	80.0%	20.0%
Yellow Time (s)	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	4.0
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Min	C-Min	None
Act Effct Green (s)	118.8	118.8	12.2
Actuated g/C Ratio	0.85	0.85	0.09
v/c Ratio	0.94	0.00	0.61
Control Delay	14.5	0.5	44.0
Queue Delay	16.2	0.0	0.0
Total Delay	30.7	0.5	44.0
LOS	C	A	D
Approach Delay	30.7		44.0
Approach LOS	C		D

Intersection Summary			
Cycle Length:	140		
Actuated Cycle Length:	140		
Offset:	0 (0%), Referenced to phase 2:EBT, Start of Green		
Natural Cycle:	150		
Control Type:	Actuated-Coordinated		
Maximum v/c Ratio:	0.94		
Intersection Signal Delay:	31.7	Intersection LOS: C	
Intersection Capacity Utilization	86.6%	ICU Level of Service E	
Analysis Period (min)	15		

Splits and Phases: 15: Palace Pier Ct & Lake Shore Blvd W



HCM Signalized Intersection Capacity Analysis

15: Palace Pier Ct & Lake Shore Blvd W

02-08-2021

	→	↘	↙	←	↘	↙
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑			↑	↑
Traffic Volume (vph)	1376	2	0	0	38	75
Future Volume (vph)	1376	2	0	0	38	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	5.0	5.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	
Frbp, ped/bikes	1.00	0.80			1.00	
Flpb, ped/bikes	1.00	1.00			1.00	
Frt	1.00	0.85			0.91	
Flt Protected	1.00	1.00			0.98	
Satd. Flow (prot)	1807	1077			1562	
Flt Permitted	1.00	1.00			0.98	
Satd. Flow (perm)	1807	1077			1562	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1433	2	0	0	40	78
RTOR Reduction (vph)	0	0	0	0	56	0
Lane Group Flow (vph)	1433	2	0	0	62	0
Confl. Peds. (#/hr)		50	50		1	
Heavy Vehicles (%)	4%	11%	0%	0%	3%	1%
Bus Blockages (#/hr)	0	2	0	0	0	0
Turn Type	NA	Perm			Prot	
Protected Phases	2				4	
Permitted Phases		2				
Actuated Green, G (s)	117.8	117.8			11.2	
Effective Green, g (s)	118.8	118.8			12.2	
Actuated g/C Ratio	0.85	0.85			0.09	
Clearance Time (s)	6.0	6.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0	
Lane Grp Cap (vph)	1533	913			136	
v/s Ratio Prot	c0.79				c0.04	
v/s Ratio Perm		0.00				
v/c Ratio	0.93	0.00			0.46	
Uniform Delay, d1	7.8	1.6			60.8	
Progression Factor	0.55	0.19			1.00	
Incremental Delay, d2	7.9	0.0			2.4	
Delay (s)	12.2	0.3			63.2	
Level of Service	B	A			E	
Approach Delay (s)	12.2			0.0	63.2	
Approach LOS	B			A	E	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
17: Marine Parade Dr & Humber Bay Park Rd E

02-08-2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↕	↕	↔
Traffic Volume (veh/h)	16	13	6	89	203	37
Future Volume (Veh/h)	16	13	6	89	203	37
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	16	13	6	92	209	38
Pedestrians	500					
Lane Width (m)	3.0					
Walking Speed (m/s)	1.2					
Percent Blockage	35					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					142	
pX, platoon unblocked						
vC, conflicting volume	832	624	747			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	832	624	747			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free. %	92	95	99			
cM capacity (veh/h)	201	283	568			
Direction, Lane #	EB 1	NB 1	SB 1	SB 2		
Volume Total	29	98	139	108		
Volume Left	16	6	0	0		
Volume Right	13	0	0	38		
cSH	231	568	1700	1700		
Volume to Capacity	0.13	0.01	0.08	0.06		
Queue Length 95th (m)	3.4	0.3	0.0	0.0		
Control Delay (s)	22.8	0.8	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	22.8	0.8	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay		2.0				
Intersection Capacity Utilization		23.3%		ICU Level of Service	A	
Analysis Period (min)		15				

Timings
19: Dwy 1 & Street A (Relief Rd)

02-08-2021

Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↕	↕	↕	↕	↕
Traffic Volume (vph)	821	43	669	160	118
Future Volume (vph)	821	43	669	160	118
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	4		8		
Permitted Phases		8		2	2
Detector Phase	4	8	8	2	2
Switch Phase					
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	26.0	26.0	26.0	28.0	28.0
Total Split (s)	76.0	76.0	76.0	64.0	64.0
Total Split (%)	54.3%	54.3%	54.3%	45.7%	45.7%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	99.0	99.0	99.0	30.0	30.0
Actuated g/C Ratio	0.71	0.71	0.71	0.21	0.21
v/c Ratio	0.45	0.16	0.30	0.74	0.55
Control Delay	10.2	10.1	10.0	68.5	44.4
Queue Delay	0.2	0.0	0.4	0.0	0.0
Total Delay	10.4	10.1	10.4	68.5	44.5
LOS	B	B	B	E	D
Approach Delay	10.4		10.4	58.3	
Approach LOS	B		B	E	
Intersection Summary					
Cycle Length: 140					
Actuated Cycle Length: 140					
Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green					
Natural Cycle: 60					
Control Type: Actuated-Coordinated					
Maximum v/c Ratio: 0.74					
Intersection Signal Delay: 17.4				Intersection LOS: B	
Intersection Capacity Utilization 63.2%				ICU Level of Service B	
Analysis Period (min) 15					
Splits and Phases: 19: Dwy 1 & Street A (Relief Rd)					

HCM Signalized Intersection Capacity Analysis
19: Dwy 1 & Street A (Relief Rd)

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	821	103	43	669	160	118
Future Volume (vph)	821	103	43	669	160	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	6.0		6.0	6.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frbp, ped/bikes	0.94		1.00	1.00	1.00	0.68
Flpb, ped/bikes	1.00		0.91	1.00	0.68	1.00
Frt	0.98		1.00	1.00	1.00	0.85
Flt Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	3226		1502	3500	1129	1002
Flt Permitted	1.00		0.25	1.00	0.95	1.00
Satd. Flow (perm)	3226		390	3500	1129	1002
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	912	114	48	743	178	131
RTOR Reduction (vph)	4	0	0	0	0	24
Lane Group Flow (vph)	1022	0	48	743	178	107
Confl. Peds. (#/hr)		200	200		200	200
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	98.0		98.0	98.0	29.0	29.0
Effective Green, g (s)	99.0		99.0	99.0	30.0	30.0
Actuated g/C Ratio	0.71		0.71	0.71	0.21	0.21
Clearance Time (s)	7.0		7.0	7.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	2281		275	2475	241	214
v/s Ratio Prot	c0.32			0.21		
v/s Ratio Perm			0.12		c0.16	0.11
v/c Ratio	0.45		0.17	0.30	0.74	0.50
Uniform Delay, d1	8.8		6.8	7.6	51.3	48.4
Progression Factor	1.00		1.02	1.16	1.00	1.00
Incremental Delay, d2	0.6		1.2	0.3	11.2	1.8
Delay (s)	9.4		8.2	9.1	62.6	50.2
Level of Service	A		A	A	E	D
Approach Delay (s)	9.4			9.0	57.3	
Approach LOS	A			A	E	
Intersection Summary						
HCM 2000 Control Delay		16.2		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.52				
Actuated Cycle Length (s)		140.0		Sum of lost time (s)		12.0
Intersection Capacity Utilization		63.2%		ICU Level of Service		B
Analysis Period (min)		15				

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
22: Dwy 5 & Street A (Relief Rd)

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	929	6	0	711	0	42
Future Volume (Veh/h)	929	6	0	711	0	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1032	7	0	790	0	47
Pedestrians					200	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					14	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	68			83		
pX, platoon unblocked			0.87		0.87	0.87
vC, conflicting volume			1239		1630	720
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			978		1428	382
IC, single (s)			4.1		6.8	6.9
IC, 2 stage (s)						
IF (s)			2.2		3.5	3.3
p0 queue free %			100		100	90
cM capacity (veh/h)			526		94	462
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	688	351	395	395	47	
Volume Left	0	0	0	0	0	
Volume Right	0	7	0	0	47	
cSH	1700	1700	1700	1700	462	
Volume to Capacity	0.40	0.21	0.23	0.23	0.10	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	2.7	
Control Delay (s)	0.0	0.0	0.0	0.0	13.7	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		13.7	
Approach LOS					B	
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			35.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
23: Street C & Dwy 7

02-08-2021

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕			
Traffic Volume (veh/h)	0	54	94	18	0	0
Future Volume (Veh/h)	0	54	94	18	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	60	104	20	0	0
Pedestrians					200	
Lane Width (m)					0.0	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		83	61			
pX, platoon unblocked						
vC, conflicting volume	324				374	314
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	324				374	314
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1236				627	726
Direction, Lane #	EB 1	WB 1				
Volume Total	60	124				
Volume Left	0	0				
Volume Right	0	20				
cSH	1236	1700				
Volume to Capacity	0.00	0.07				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		16.7%		ICU Level of Service		A
Analysis Period (min)		15				

Timings
24: Street B (Loop Rd) & Street C/Street B (Loop Rd) Streetcar

02-08-2021

Lane Group	EBL	WBL	NBL	NBT	SBR
Lane Configurations	↕	↕	↕	↕	↕
Traffic Volume (vph)	54	18	57	5	55
Future Volume (vph)	54	18	57	5	55
Turn Type	Perm	Prot	Perm	NA	Perm
Protected Phases		3		2	
Permitted Phases	4		2		6
Detector Phase	4	3	2	2	6
Switch Phase					
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	25.0	15.0	25.0	25.0	25.0
Total Split (s)	25.0	15.0	30.0	30.0	30.0
Total Split (%)	35.7%	21.4%	42.9%	42.9%	42.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	4.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	7.0	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	None	None	C-Min	C-Min	C-Min
Act Effct Green (s)	16.8	8.2	42.0	42.0	0.0
Actuated g/C Ratio	0.24	0.12	0.60	0.60	0.00
v/c Ratio	0.25	0.10	0.10	0.01	0.06
Control Delay	23.2	28.9	6.5	5.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	28.9	6.5	5.8	0.1
LOS	C	C	A	A	A
Approach Delay				6.5	
Approach LOS				A	
Intersection Summary					
Cycle Length: 70					
Actuated Cycle Length: 70					
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBR, Start of Green					
Natural Cycle: 65					
Control Type: Actuated-Coordinated					
Maximum v/c Ratio: 0.25					
Intersection Signal Delay: 11.5			Intersection LOS: B		
Intersection Capacity Utilization 30.8%			ICU Level of Service A		
Analysis Period (min) 15					
Splits and Phases: 24: Street B (Loop Rd) & Street C/Street B (Loop Rd) Streetcar					
↕ Ø2 (R)	↕ Ø3	↕ Ø4			
30 s	15 s	25 s			
↕ Ø5 (R)					
30 s					

HCM Signalized Intersection Capacity Analysis

24: Street B (Loop Rd) & Street C/Street B (Loop Rd) Streetcar

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	5	0	0	18	0	0	57	5	0	0	0	55	
Traffic Volume (vph)	54	0	0	18	0	0	57	5	0	0	0	55	
Future Volume (vph)	54	0	0	18	0	0	57	5	0	0	0	55	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	
Total Lost time (s)	6.0			7.0			6.0	6.0				6.0	
Lane Util. Factor	1.00			1.00			1.00	1.00				1.00	
Frbp, ped/bikes	1.00			1.00			1.00	1.00				0.60	
Flpb, ped/bikes	0.61			1.00			0.61	1.00				1.00	
Frt	1.00			1.00			1.00	1.00				0.86	
Flt Protected	0.95			0.95			0.95	1.00				1.00	
Satd. Flow (prot)	1009			1652			1009	1842				901	
Flt Permitted	0.95			0.95			0.95	1.00				1.00	
Satd. Flow (perm)	1009			1652			1009	1842				901	
Peak-hour factor, PHF	0.90	0.92	0.90	0.92	0.92	0.92	0.90	0.90	0.92	0.92	0.90	0.90	
Adj. Flow (vph)	60	0	0	20	0	0	63	6	0	0	0	61	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	32	
Lane Group Flow (vph)	60	0	0	20	0	0	63	6	0	0	0	29	
Confl. Peds. (#/hr)	200		200				200					200	
Turn Type	Perm			Prot			Perm	NA				Perm	
Protected Phases				3				2					
Permitted Phases	4						2					6	
Actuated Green, G (s)	14.4			1.6			32.0	32.0				32.0	
Effective Green, g (s)	15.4			2.6			33.0	33.0				33.0	
Actuated g/C Ratio	0.22			0.04			0.47	0.47				0.47	
Clearance Time (s)	7.0			8.0			7.0	7.0				7.0	
Vehicle Extension (s)	3.0			3.0			3.0	3.0				3.0	
Lane Grp Cap (vph)	221			61			475	868				424	
v/s Ratio Prot				c0.01				0.00					
v/s Ratio Perm	c0.06						c0.06					0.03	
v/c Ratio	0.27			0.33			0.13	0.01				0.07	
Uniform Delay, d1	22.6			32.8			10.4	9.8				10.1	
Progression Factor	1.02			1.00			0.57	0.49				1.00	
Incremental Delay, d2	0.7			3.1			0.6	0.0				0.3	
Delay (s)	23.7			36.0			6.5	4.8				10.4	
Level of Service	C			D			A	A				B	
Approach Delay (s)		23.7			36.0			6.4			10.4		
Approach LOS		C			D			A			B		
Intersection Summary													
HCM 2000 Control Delay			15.3		HCM 2000 Level of Service							B	
HCM 2000 Volume to Capacity ratio			0.19										
Actuated Cycle Length (s)			70.0		Sum of lost time (s)						21.0		
Intersection Capacity Utilization			30.8%		ICU Level of Service						A		
Analysis Period (min)			15										

HCM Unsignalized Intersection Capacity Analysis

25: Street B (Loop Rd) & Private Street D

02-08-2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W				W
Traffic Volume (veh/h)	37	55	0	0	19	38
Future Volume (Veh/h)	37	55	0	0	19	38
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	41	61	0	0	21	42
Pedestrians	200					
Lane Width (m)	3.0					
Walking Speed (m/s)	1.2					
Percent Blockage	14					
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			119			294
pX, platoon unblocked						
vC, conflicting volume	284	200			200	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	284	200			200	
IC, single (s)	6.4	6.2			4.1	
IC, 2 stage (s)						
IF (s)	3.5	3.3			2.2	
p0 queue free %	93	92			98	
cM capacity (veh/h)	597	724			1182	
Direction, Lane #						
Volume Total	102	63				
Volume Left	41	21				
Volume Right	61	0				
cSH	667	1182				
Volume to Capacity	0.15	0.02				
Queue Length 95th (m)	4.3	0.4				
Control Delay (s)	11.4	2.8				
Lane LOS	B	A				
Approach Delay (s)	11.4	2.8				
Approach LOS	B					
Intersection Summary						
Average Delay			8.1			
Intersection Capacity Utilization			25.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
26: Dwy 6 & Private Street D

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (veh/h)	0	19	10	54	38	21
Future Volume (Veh/h)	0	19	10	54	38	21
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	21	11	60	42	23
Pedestrians						200
Lane Width (m)						3.0
Walking Speed (m/s)						1.2
Percent Blockage						14
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			221		292	210
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			221		292	210
IC, single (s)			4.1		6.4	6.2
IC, 2 stage (s)						
IF (s)			2.2		3.5	3.3
p0 queue free %			99		93	97
cM capacity (veh/h)			1161		596	714
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	21	71	65			
Volume Left	0	11	42			
Volume Right	21	0	23			
eSH	1700	1161	633			
Volume to Capacity	0.01	0.01	0.10			
Queue Length 95th (m)	0.0	0.2	2.7			
Control Delay (s)	0.0	1.3	11.3			
Lane LOS	A		B			
Approach Delay (s)	0.0	1.3	11.3			
Approach LOS	B		B			
Intersection Summary						
Average Delay			5.3			
Intersection Capacity Utilization			23.4%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
27: Street A (Relief Rd) & Private Street D

02-08-2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔		↔	
Traffic Volume (veh/h)	0	21	0	734	430	64
Future Volume (Veh/h)	0	21	0	734	430	64
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	23	0	816	478	71
Pedestrians						200
Lane Width (m)						3.0
Walking Speed (m/s)						1.2
Percent Blockage						14
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				91	30	
pX, platoon unblocked						
vC, conflicting volume	1122	474	749			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1122	474	749			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	100			
cM capacity (veh/h)	172	462	737			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	23	408	408	319	230	
Volume Left	0	0	0	0	0	
Volume Right	23	0	0	0	71	
eSH	462	1700	1700	1700	1700	
Volume to Capacity	0.05	0.24	0.24	0.19	0.14	
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	
Control Delay (s)	13.2	0.0	0.0	0.0	0.0	
Lane LOS	B		B			
Approach Delay (s)	13.2	0.0	0.0			
Approach LOS	B		B			
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			24.9%	ICU Level of Service		A
Analysis Period (min)			15			

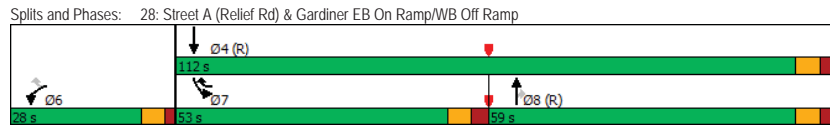
Timings

28: Street A (Relief Rd) & Gardiner EB On Ramp/WB Off Ramp

02-08-2021

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↑	↗	↖↗	↑
Traffic Volume (vph)	370	397	313	422	846	124
Future Volume (vph)	370	397	313	422	846	124
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	6	7	8		7	4
Permitted Phases		6		8		
Detector Phase	6	7	8	8	7	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	14.0	29.0	29.0	14.0	29.0
Total Split (s)	28.0	53.0	59.0	59.0	53.0	112.0
Total Split (%)	20.0%	37.9%	42.1%	42.1%	37.9%	80.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag		Lead	Lag	Lag	Lead	
Lead-Lag Optimize?		Yes	Yes	Yes	Yes	
Recall Mode	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)	23.0	68.6	53.4	53.4	46.6	106.0
Actuated g/C Ratio	0.16	0.49	0.38	0.38	0.33	0.76
v/c Ratio	0.78	0.64	0.50	0.77	0.88	0.10
Control Delay	66.9	26.3	47.4	30.6	50.5	9.9
Queue Delay	0.0	0.0	2.8	0.5	2.9	0.0
Total Delay	66.9	26.3	50.1	31.1	53.4	9.9
LOS	E	C	D	C	D	A
Approach Delay	45.9		39.2			47.8
Approach LOS	D		D			D

Intersection Summary
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 52 (37%), Referenced to phase 4:SBT and 8:NBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 44.7
 Intersection Capacity Utilization 75.0%
 Intersection LOS: D
 ICU Level of Service D
 Analysis Period (min) 15



HCM Signalized Intersection Capacity Analysis

28: Street A (Relief Rd) & Gardiner EB On Ramp/WB Off Ramp

02-08-2021

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗	↖	↑	↗	↖↗	↑
Traffic Volume (vph)	370	397	313	422	846	124
Future Volume (vph)	370	397	313	422	846	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.97	1.00
Frbp, ped/bikes	1.00	0.89	1.00	0.68	1.00	1.00
Ftpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3204	1321	1842	1002	3204	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3204	1321	1842	1002	3204	1842
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	411	441	348	469	940	138
RTOR Reduction (vph)	0	38	0	228	0	0
Lane Group Flow (vph)	411	403	348	241	940	138
Confl. Peds. (#/hr)	200	200		200	200	
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	6	7	8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	22.0	67.6	52.4	52.4	45.6	105.0
Effective Green, g (s)	23.0	69.6	53.4	53.4	46.6	106.0
Actuated g/C Ratio	0.16	0.50	0.38	0.38	0.33	0.76
Clearance Time (s)	6.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	526	656	702	382	1066	1394
v/s Ratio Prot	c0.13	0.20	0.19		c0.29	0.07
v/s Ratio Perm		0.10		c0.24		
v/c Ratio	0.78	0.61	0.50	0.63	0.88	0.10
Uniform Delay, d1	56.1	25.5	33.0	35.3	44.1	4.5
Progression Factor	1.00	1.00	1.31	2.50	0.92	2.07
Incremental Delay, d2	7.4	1.7	2.0	6.2	8.2	0.1
Delay (s)	63.5	27.2	45.3	94.4	48.8	9.4
Level of Service	E	C	D	F	D	A
Approach Delay (s)	44.7		73.5			43.8
Approach LOS	D		E			D

Intersection Summary
 HCM 2000 Control Delay 52.9
 HCM 2000 Volume to Capacity ratio 0.75
 Actuated Cycle Length (s) 140.0
 Intersection Capacity Utilization 75.0%
 Analysis Period (min) 15
 HCM 2000 Level of Service D
 Sum of lost time (s) 17.0
 ICU Level of Service D

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
29: Park Lawn Rd & Dwy 4

02-08-2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↖			↕
Traffic Volume (veh/h)	0	90	438	22	0	613
Future Volume (Veh/h)	0	90	438	22	0	613
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	100	487	24	0	681
Pedestrians	200					
Lane Width (m)	3.0					
Walking Speed (m/s)	1.2					
Percent Blockage	14					
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			84			79
pX, platoon unblocked	0.93					
vC, conflicting volume	1040	456			711	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	881	456			711	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	79			100	
cM capacity (veh/h)	228	475			761	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	100	325	186	340	340	
Volume Left	0	0	0	0	0	
Volume Right	100	0	24	0	0	
cSH	475	1700	1700	1700	1700	
Volume to Capacity	0.21	0.19	0.11	0.20	0.20	
Queue Length 95th (m)	6.3	0.0	0.0	0.0	0.0	
Control Delay (s)	14.6	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	14.6	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			25.6%		ICU Level of Service	A
Analysis Period (min)			15			

Timings
1: Park Lawn Rd & The Queensway

02-08-2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗
Traffic Volume (vph)	260	1134	198	330	1121	17	190	501	328	95	548
Future Volume (vph)	260	1134	198	330	1121	17	190	501	328	95	548
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	Perm	NA
Protected Phases	7	4		3	8		5	2	3		6
Permitted Phases	4		4	8		8	2		2	6	
Detector Phase	7	4	4	3	8	8	5	2	3	6	6
Switch Phase											
Minimum Initial (s)	7.0	24.0	24.0	7.0	24.0	24.0	7.0	29.0	7.0	29.0	29.0
Minimum Split (s)	11.0	31.0	31.0	11.0	31.0	31.0	11.0	36.0	11.0	36.0	36.0
Total Split (s)	25.0	56.0	56.0	29.0	60.0	60.0	16.0	59.0	29.0	43.0	43.0
Total Split (%)	17.4%	38.9%	38.9%	20.1%	41.7%	41.7%	11.1%	41.0%	20.1%	29.9%	29.9%
Yellow Time (s)	2.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	3.0
All-Red Time (s)	2.0	3.0	3.0	2.0	3.0	3.0	2.0	4.0	2.0	4.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-2.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	2.0	6.0	6.0	3.0	6.0	3.0	6.0	6.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	C-Min	None	C-Min	C-Min
Act Effct Green (s)	74.0	49.8	49.8	82.8	54.5	54.5	56.2	53.2	82.2	36.5	36.5
Actuated g/C Ratio	0.51	0.35	0.35	0.58	0.38	0.38	0.39	0.37	0.57	0.25	0.25
v/c Ratio	0.89	0.96	0.36	0.94	0.88	0.03	0.92	0.77	0.42	0.78	0.88
Control Delay	71.3	63.4	9.2	76.5	50.9	0.1	86.5	60.6	12.2	87.7	61.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.3	63.4	9.2	76.5	50.9	0.1	86.5	60.6	12.2	87.7	61.7
LOS	E	E	A	E	D	A	F	E	B	F	E
Approach Delay		57.9			56.0			49.9			64.6
Approach LOS		E			E			D			E
Intersection Summary											
Cycle Length: 144											
Actuated Cycle Length: 144											
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green											
Natural Cycle: 100											
Control Type: Actuated-Coordinated											
Maximum v/c Ratio: 0.96											
Intersection Signal Delay: 56.8	Intersection LOS: E										
Intersection Capacity Utilization 118.5%	ICU Level of Service H										
Analysis Period (min) 15											
Spplits and Phases: 1: Park Lawn Rd & The Queensway											

HCM Signalized Intersection Capacity Analysis
1: Park Lawn Rd & The Queensway

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	260	1134	198	330	1121	17	190	501	328	95	548	189
Future Volume (vph)	260	1134	198	330	1121	17	190	501	328	95	548	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.0	6.0	2.0	6.0	6.0	3.0	6.0	3.0	6.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.89	1.00	1.00	0.83	1.00	1.00	0.94	1.00	0.98	
Frlb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1685	3535	1336	1652	3466	1236	1667	1824	1393	1622	3323	
Flt Permitted	0.08	1.00	1.00	0.08	1.00	1.00	0.11	1.00	1.00	0.29	1.00	
Satd. Flow (perm)	142	3535	1336	132	3466	1236	189	1824	1393	501	3323	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	268	1169	204	340	1156	18	196	516	338	98	565	195
RTOR Reduction (vph)	0	0	112	0	0	11	0	0	14	0	24	0
Lane Group Flow (vph)	268	1169	92	340	1156	7	196	516	325	98	736	0
Confl. Peds. (#/hr)	50		50	50	50	50	50	50	50	50	50	50
Confl. Bikes (#/hr)		11				8			3			2
Heavy Vehicles (%)	0%	1%	0%	2%	3%	0%	1%	3%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	0	2	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	Perm	NA	NA
Protected Phases	7	4		3	8		5	2	3		6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	69.1	48.8	48.8	77.9	53.6	53.6	52.1	52.1	77.2	35.4	35.4	
Effective Green, g (s)	71.1	49.8	49.8	79.9	54.6	54.6	53.1	53.1	79.2	36.4	36.4	
Actuated g/C Ratio	0.49	0.35	0.35	0.55	0.38	0.38	0.37	0.37	0.55	0.25	0.25	
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	7.0	4.0	7.0	4.0	7.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	298	1222	462	359	1314	468	210	672	766	126	839	
v/s Ratio Prot	0.13	c0.33		c0.18	0.33		c0.09	0.28	0.08		0.22	
v/s Ratio Perm	0.31		0.07	0.35		0.01	c0.26		0.16	0.20		
v/c Ratio	0.90	0.96	0.20	0.95	0.88	0.01	0.93	0.77	0.42	0.78	0.88	
Uniform Delay, d1	43.6	46.0	33.1	46.2	41.6	27.9	37.4	40.0	19.0	50.0	51.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.30	1.29	0.72	1.00	1.00	
Incremental Delay, d2	27.6	16.3	0.2	33.6	7.0	0.0	42.5	7.9	0.4	36.6	12.5	
Delay (s)	71.2	62.3	33.3	79.8	48.7	27.9	91.3	59.6	14.1	86.6	64.2	
Level of Service	E	E	C	E	D	C	F	E	B	F	E	
Approach Delay (s)		60.2			55.4			50.9			66.7	
Approach LOS		E			E			D			E	

Intersection Summary			
HCM 2000 Control Delay	57.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	118.5%	ICU Level of Service	H
Analysis Period (min)	15		
c	Critical Lane Group		

Future Do Something 5:00 pm 03-05-2019 PM Peak
L/R

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Timings

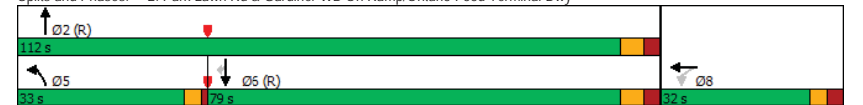
2: Park Lawn Rd & Gardiner WB On Ramp/Ontario Food Terminal Dwy

02-08-2021

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔
Traffic Volume (vph)	18	1214	914	629	467
Future Volume (vph)	18	1214	914	629	467
Turn Type	NA	Prot	NA	NA	Perm
Protected Phases	8	5	2	6	
Permitted Phases					6
Detector Phase	8	5	2	6	6
Switch Phase					
Minimum Initial (s)	7.0	7.0	38.0	38.0	38.0
Minimum Split (s)	32.0	11.0	45.0	45.0	45.0
Total Split (s)	32.0	33.0	112.0	79.0	79.0
Total Split (%)	22.2%	22.9%	77.8%	54.9%	54.9%
Yellow Time (s)	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	3.0	1.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	3.0	6.0	6.0	6.0
Lead/Lag		Lead		Lag	Lag
Lead-Lag Optimize?		Yes		Yes	Yes
Recall Mode	None	None	C-Min	C-Min	C-Min
Act Effct Green (s)	23.2	58.7	113.6	50.7	50.7
Actuated g/C Ratio	0.16	0.41	0.79	0.35	0.35
v/c Ratio	0.19	0.97	0.35	0.54	0.81
Control Delay	36.2	58.8	5.5	37.6	27.7
Queue Delay	0.0	0.0	0.2	0.0	0.0
Total Delay	36.2	58.8	5.7	37.6	27.7
LOS	D	E	A	D	C
Approach Delay	36.2		36.0	33.4	
Approach LOS	D		D	C	

Intersection Summary	
Cycle Length: 144	
Actuated Cycle Length: 144	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 35.1	Intersection LOS: D
Intersection Capacity Utilization 98.7%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 2: Park Lawn Rd & Gardiner WB On Ramp/Ontario Food Terminal Dwy



Future Do Something 5:00 pm 03-05-2019 PM Peak
L/R

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HCM Signalized Intersection Capacity Analysis

2: Park Lawn Rd & Gardiner WB On Ramp/Ontario Food Terminal Dwy

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↔	↔	↔	↔	↔			↔	↔
Traffic Volume (vph)	0	0	0	7	18	15	1214	914	0	0	629	467
Future Volume (vph)	0	0	0	7	18	15	1214	914	0	0	629	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)					5.0		3.0	6.0			6.0	6.0
Lane Util. Factor					1.00		0.97	0.95			0.95	1.00
Frpb, ped/bikes					0.96		1.00	1.00			1.00	0.93
Flpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Frt					0.95		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					1308		3236	3500			3500	1328
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					1308		3236	3500			3500	1328
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	7	19	16	1278	962	0	0	662	492
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	0	146
Lane Group Flow (vph)	0	0	0	0	28	0	1278	962	0	0	662	346
Confl. Peds. (#/hr)	50		50	50		50	50		50	50		50
Confl. Bikes (#/hr)							10					4
Heavy Vehicles (%)	0%	0%	0%	0%	63%	0%	1%	2%	0%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	6
Turn Type				Perm	NA		Prot	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8								6
Actuated Green, G (s)					20.8		57.7	110.2			48.5	48.5
Effective Green, g (s)					21.8		58.7	111.2			49.5	49.5
Actuated g/C Ratio					0.15		0.41	0.77			0.34	0.34
Clearance Time (s)					6.0		4.0	7.0			7.0	7.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					198		1319	2702			1203	456
v/s Ratio Prot							c0.39	0.27			0.19	
v/s Ratio Perm												c0.26
v/c Ratio					0.14		0.97	0.36			0.55	0.76
Uniform Delay, d1					53.0		41.8	5.2			38.2	42.0
Progression Factor					1.00		1.25	0.91			0.99	0.94
Incremental Delay, d2					0.3		8.5	0.1			1.1	7.3
Delay (s)					53.3		60.5	4.8			39.1	46.9
Level of Service					D		E	A			D	D
Approach Delay (s)		0.0			53.3		36.6				42.4	
Approach LOS		A			D		D				D	
Intersection Summary												
HCM 2000 Control Delay	38.7			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.75											
Actuated Cycle Length (s)	144.0			Sum of lost time (s)			14.0					
Intersection Capacity Utilization	98.7%			ICU Level of Service			F					
Analysis Period (min)	15											
c Critical Lane Group												

Future Do Something 5:00 pm 03-05-2019 PM Peak
L/R

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Timings

3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd/Street A (Relief Rd)

02-08-2021

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Traffic Volume (vph)	483	546	787	164	68	853	10	808	121	170	417	
Future Volume (vph)	483	546	787	164	68	853	10	808	121	170	417	
Turn Type	Prot	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4	5		8	1	5	2		1	6	
Permitted Phases			4	8		8	2		2	6		
Detector Phase	7	4	5	8	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	11.0	31.0	11.0	31.0	31.0	11.0	11.0	29.0	29.0	11.0	29.0	
Total Split (s)	27.0	76.0	37.0	49.0	49.0	39.0	37.0	29.0	29.0	39.0	31.0	
Total Split (%)	18.8%	52.8%	25.7%	34.0%	34.0%	27.1%	25.7%	20.1%	20.1%	27.1%	21.5%	
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	2.0	1.0	2.0	2.0	1.0	1.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	3.0	5.0	3.0	5.0	5.0	3.0	3.0	6.0	6.0	3.0	6.0	
Lead/Lag	Lead		Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min	C-Min	None	C-Min	
Act Effct Green (s)	24.0	68.4	104.2	41.4	41.4	82.3	62.4	25.7	25.7	66.7	27.8	
Actuated g/C Ratio	0.17	0.48	0.72	0.29	0.29	0.57	0.43	0.18	0.18	0.46	0.19	
v/c Ratio	0.95	0.64	0.96	0.98	0.14	0.92	0.02	0.95	0.45	0.38	0.74	
Control Delay	87.6	32.1	41.5	111.7	37.6	41.9	22.1	78.3	24.8	67.0	79.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	
Total Delay	87.6	32.1	41.5	111.7	37.6	49.5	22.1	78.3	24.8	67.0	79.7	
LOS	F	C	D	F	D	D	C	E	C	E	E	
Approach Delay	50.9			58.2			70.8			76.3		
Approach LOS	D			E			E			E		
Intersection Summary												
Cycle Length: 144												
Actuated Cycle Length: 144												
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 95												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.98												
Intersection Signal Delay: 60.5	Intersection LOS: E											
Intersection Capacity Utilization 96.6%	ICU Level of Service F											
Analysis Period (min) 15												
Splits and Phases: 3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd/Street A (Relief Rd)												
Ø1	Ø2 (R)	Ø4	Ø5	Ø6 (R)	Ø7	Ø8						
39 s	29 s	76 s	37 s	31 s	27 s	49 s						

Future Do Something 5:00 pm 03-05-2019 PM Peak
L/R

Synchro 11 Report
Page 5

HCM Signalized Intersection Capacity Analysis

3: Park Lawn Rd & Gardiner EB Off Ramp/Legion Rd/Street A (Relief Rd)

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑	↘	↔	↑	↘	↔	↑	↘	↔	↑	↘
Traffic Volume (vph)	483	546	787	164	68	853	10	808	121	170	417	45
Future Volume (vph)	483	546	787	164	68	853	10	808	121	170	417	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	5.0	3.0	5.0	5.0	3.0	3.0	6.0	6.0	3.0	6.0	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.79	1.00	1.00	1.00	1.00	1.00	0.79	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	0.87	1.00	1.00	0.97	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.95	1.00	1.00	0.85	1.00	0.99	
Fl Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3204	1879	1190	1438	1842	1652	1636	5029	1190	1679	3370	
Fl Permitted	0.95	1.00	1.00	0.41	1.00	1.00	0.27	1.00	1.00	0.14	1.00	
Satd. Flow (perm)	3204	1879	1190	621	1842	1652	463	5029	1190	254	3370	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	508	575	828	173	72	898	11	851	127	179	439	47
RTOR Reduction (vph)	0	0	9	0	0	28	0	0	72	0	6	0
Lane Group Flow (vph)	508	575	819	173	72	870	11	851	55	179	480	0
Confl. Peds. (#/hr)			200	200			100		100	100		100
Confl. Bikes (#/hr)								7				4
Heavy Vehicles (%)	2%	0%	0%	2%	2%	2%	0%	2%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	6
Turn Type	Prot	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4	5	8	1	5	2		1	6		
Permitted Phases			4	8		8	2		2	6		
Actuated Green, G (s)	23.0	67.4	100.2	40.4	40.4	75.3	57.5	24.7	24.7	61.7	26.8	
Effective Green, g (s)	24.0	68.4	102.2	41.4	41.4	77.3	59.5	25.7	25.7	63.7	27.8	
Actuated g/C Ratio	0.17	0.48	0.71	0.29	0.29	0.54	0.41	0.18	0.18	0.44	0.19	
Clearance Time (s)	4.0	6.0	4.0	6.0	6.0	4.0	4.0	7.0	7.0	4.0	7.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	534	892	844	178	529	886	466	897	212	467	650	
v/s Ratio Prot	0.16	0.31	c0.23		0.04	c0.24	0.01	c0.17		c0.10	0.14	
v/s Ratio Perm			0.46	0.28		0.28	0.00		0.05	0.07		
v/c Ratio	0.95	0.64	0.97	0.97	0.14	0.98	0.02	0.95	0.26	0.38	0.74	
Uniform Delay, d1	59.4	28.6	19.5	50.7	38.0	32.7	25.4	58.5	50.9	26.9	54.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.64	1.33	
Incremental Delay, d2	27.1	1.6	23.9	58.9	0.1	25.6	0.0	19.9	2.9	0.5	7.0	
Delay (s)	86.5	30.2	43.4	109.6	38.2	58.3	25.4	78.4	53.9	71.6	79.5	
Level of Service	F	C	D	F	D	E	C	E	D	E	E	
Approach Delay (s)		50.9			64.8			74.7			77.4	
Approach LOS		D			E			E			E	

Intersection Summary			
HCM 2000 Control Delay	63.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	144.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

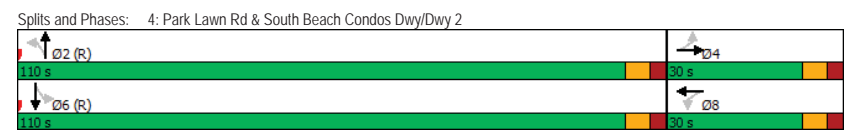
Timings

4: Park Lawn Rd & South Beach Condos Dwy/Dwy 2

02-08-2021

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↔	↑	↘	↘	↘	↘	↘	↘
Traffic Volume (vph)	74	0	55	0	52	691	304	1001
Future Volume (vph)	74	0	55	0	52	691	304	1001
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	29.0	29.0	29.0	29.0	25.0	25.0	25.0	25.0
Total Split (s)	30.0	30.0	30.0	30.0	110.0	110.0	110.0	110.0
Total Split (%)	21.4%	21.4%	21.4%	21.4%	78.6%	78.6%	78.6%	78.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Min	C-Min	C-Min	C-Min
Act Effct Green (s)	23.8	23.8	23.8	23.8	104.2	104.2	104.2	104.2
Actuated g/C Ratio	0.17	0.17	0.17	0.17	0.74	0.74	0.74	0.74
v/c Ratio	0.73	0.07	0.37	0.61	0.20	0.31	0.84	0.44
Control Delay	92.1	0.6	59.1	22.2	5.2	4.4	34.7	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.3
Total Delay	92.1	0.6	59.1	22.2	5.2	4.6	34.7	8.7
LOS	F	A	E	C	A	A	C	A
Approach Delay		75.5		30.9		4.6		14.4
Approach LOS		E		C		A		B

Intersection Summary			
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 120 (86%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 15.1		Intersection LOS: B	
Intersection Capacity Utilization 82.7%		ICU Level of Service E	
Analysis Period (min) 15			



HCM Signalized Intersection Capacity Analysis
 4: Park Lawn Rd & South Beach Condos Dwy/Dwy 2

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	74	0	16	55	0	179	52	691	49	304	1001	67
Future Volume (vph)	74	0	16	55	0	179	52	691	49	304	1001	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	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		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.68		1.00	0.68		1.00	0.96		1.00	0.96	
Flpb, ped/bikes	0.80	1.00		0.69	1.00		0.92	1.00		0.83	1.00	
Frt	1.00	0.85		1.00	0.85		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1342	1051		1164	1083		1517	3339		1403	3379	
Flt Permitted	0.44	1.00		0.75	1.00		0.23	1.00		0.34	1.00	
Satd. Flow (perm)	624	1051		915	1083		365	3339		508	3379	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	77	0	17	57	0	186	54	720	51	317	1043	70
RTOR Reduction (vph)	0	14	0	0	124	0	0	4	0	0	4	0
Lane Group Flow (vph)	77	3	0	57	62	0	54	767	0	317	1109	0
Confl. Peds. (#/hr)	200		200	200		200	200		200	200		200
Confl. Bikes (#/hr)									16			6
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	2%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.8	22.8		22.8	22.8		103.2	103.2		103.2	103.2	
Effective Green, g (s)	23.8	23.8		23.8	23.8		104.2	104.2		104.2	104.2	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.74	0.74		0.74	0.74	
Clearance Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	106	178		155	184		271	2485		378	2514	
v/s Ratio Prot		0.00			0.06			0.23			0.33	
v/s Ratio Perm	c0.12			0.06			0.15			c0.62		
v/c Ratio	0.73	0.02		0.37	0.34		0.20	0.31		0.84	0.44	
Uniform Delay, d1	55.0	48.4		51.4	51.2		5.4	5.9		12.2	6.8	
Progression Factor	1.00	1.00		1.00	1.00		0.63	0.70		1.00	1.00	
Incremental Delay, d2	21.8	0.0		1.5	1.1		1.5	0.3		19.5	0.6	
Delay (s)	76.8	48.4		52.9	52.3		4.9	4.4		31.7	7.4	
Level of Service	E	D		D	D		A	A		C	A	
Approach Delay (s)		71.6			52.4			4.5			12.8	
Approach LOS		E			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		
c	Critical Lane Group		

Timings
 5: Park Lawn Rd & Metro Grocery Dwy/Street C

02-08-2021

Lane Group	EBL	EBT	WBT	NBT	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	181	5	66	330	171	667
Future Volume (vph)	181	5	66	330	171	667
Turn Type	Perm	NA	NA	NA	Perm	NA
Protected Phases		4	8	2		6
Permitted Phases	4				6	
Detector Phase	4	4	8	2	6	6
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	18.0	18.0	18.0
Minimum Split (s)	30.0	30.0	30.0	24.0	24.0	24.0
Total Split (s)	31.0	31.0	31.0	39.0	39.0	39.0
Total Split (%)	44.3%	44.3%	44.3%	55.7%	55.7%	55.7%
Yellow Time (s)	3.0	3.0	3.0	4.0	4.0	4.0
All-Red Time (s)	4.0	4.0	4.0	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	C-Min	C-Min	C-Min
Act Effct Green (s)	23.9	23.9	23.9	35.1	35.1	35.1
Actuated g/C Ratio	0.34	0.34	0.34	0.50	0.50	0.50
v/c Ratio	0.84	0.18	0.64	0.22	0.49	0.59
Control Delay	52.6	8.8	22.7	9.7	16.5	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	8.8	22.7	9.7	16.5	12.8
LOS	D	A	C	A	B	B
Approach Delay		38.6	22.7	9.7		13.4
Approach LOS		D	C	A		B

Intersection Summary	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 17.6	Intersection LOS: B
Intersection Capacity Utilization 98.0%	ICU Level of Service F
Analysis Period (min) 15	



HCM Signalized Intersection Capacity Analysis
5: Park Lawn Rd & Metro Grocery Dwy/Street C

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	[Diagrammatic Lane Configurations]											
Traffic Volume (vph)	181	5	81	0	66	280	0	330	24	171	667	226
Future Volume (vph)	181	5	81	0	66	280	0	330	24	171	667	226
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	6.0	6.0			6.0			5.0		5.0	5.0	
Lane Util. Factor	1.00	1.00			1.00			0.95		1.00	0.95	
Frbp, ped/bikes	1.00	0.82			0.85			0.97		1.00	0.90	
Flpb, ped/bikes	0.90	1.00			1.00			1.00		0.77	1.00	
Frt	1.00	0.86			0.88			0.99		1.00	0.96	
Flt Protected	0.95	1.00			1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1506	1322			1396			3373		1292	3061	
Flt Permitted	0.42	1.00			1.00			1.00		0.53	1.00	
Satd. Flow (perm)	664	1322			1396			3373		724	3061	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	189	5	84	0	69	292	0	344	25	178	695	235
RTOR Reduction (vph)	0	34	0	0	92	0	0	7	0	0	46	0
Lane Group Flow (vph)	189	55	0	0	269	0	0	362	0	178	884	0
Confl. Peds. (#/hr)	200		200	200		200	200		200	200		200
Confl. Bikes (#/hr)			1						13			6
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.9	22.9			22.9			34.1		34.1	34.1	
Effective Green, g (s)	23.9	23.9			23.9			35.1		35.1	35.1	
Actuated g/C Ratio	0.34	0.34			0.34			0.50		0.50	0.50	
Clearance Time (s)	7.0	7.0			7.0			6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	226	451			476			1691		363	1534	
v/s Ratio Prot		0.04			0.19			0.11			0.29	
v/s Ratio Perm	c0.28									0.25		
v/c Ratio	0.84	0.12			0.56			0.21		0.49	0.58	
Uniform Delay, d1	21.2	15.8			18.8			9.7		11.5	12.2	
Progression Factor	1.00	1.00			1.58			0.95		0.93	0.97	
Incremental Delay, d2	22.7	0.1			1.5			0.3		4.3	1.5	
Delay (s)	43.9	16.0			31.3			9.5		15.0	13.3	
Level of Service	D	B			C			A		B	B	
Approach Delay (s)		35.0			31.3			9.5			13.6	
Approach LOS		C			C			A			B	

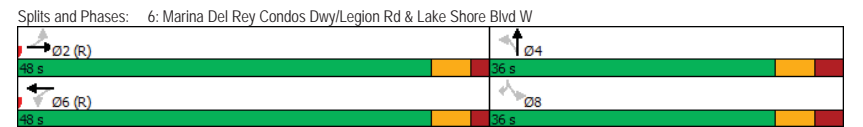
Intersection Summary		
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio	0.68	
Actuated Cycle Length (s)	70.0	Sum of lost time (s) 11.0
Intersection Capacity Utilization	98.0%	ICU Level of Service F
Analysis Period (min)	15	
c	Critical Lane Group	

Timings
6: Marina Del Rey Condos Dwy/Legion Rd & Lake Shore Blvd W

02-08-2021

Lane Group	EBT	WBT	NBT	SBL	SBR
Lane Configurations	[Diagrammatic Lane Configurations]				
Traffic Volume (vph)	785	903	0	112	37
Future Volume (vph)	785	903	0	112	37
Turn Type	NA	NA	NA	Perm	Perm
Protected Phases	2	6	4		
Permitted Phases				8	8
Detector Phase	2	6	4	8	8
Switch Phase					
Minimum Initial (s)	19.0	19.0	7.0	7.0	7.0
Minimum Split (s)	25.0	25.0	35.0	35.0	35.0
Total Split (s)	48.0	48.0	36.0	36.0	36.0
Total Split (%)	57.1%	57.1%	42.9%	42.9%	42.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	6.0	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min	None	None	None
Act Effct Green (s)	44.0	44.0	29.0	29.0	29.0
Actuated g/C Ratio	0.52	0.52	0.35	0.35	0.35
v/c Ratio	0.45	0.53	0.08	0.32	0.09
Control Delay	13.4	14.5	6.8	23.2	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	14.5	6.8	23.2	7.0
LOS	B	B	A	C	A
Approach Delay	13.4	14.5	6.8		
Approach LOS	B	B	A		

Intersection Summary
 Cycle Length: 84
 Actuated Cycle Length: 84
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.53
 Intersection Signal Delay: 14.3
 Intersection Capacity Utilization 86.7%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service E



HCM Signalized Intersection Capacity Analysis

6: Marina Del Rey Condos Dwy/Legion Rd & Lake Shore Blvd W

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔				↔
Traffic Volume (vph)	0	785	0	0	903	23	13	0	23	112	0	37
Future Volume (vph)	0	785	0	0	903	23	13	0	23	112	0	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		5.0			5.0			6.0		6.0		6.0
Lane Util. Factor		0.95			0.95			1.00		1.00		1.00
Frbp, ped/bikes		1.00			0.99			0.88		1.00		0.81
Flpb, ped/bikes		1.00			1.00			0.93		0.83		1.00
Frt		1.00			1.00			0.91		1.00		0.85
Flt Protected		1.00			1.00			0.98		0.95		1.00
Satd. Flow (prot)		3500			3449			1388		1397		1154
Flt Permitted		1.00			1.00			0.98		0.73		1.00
Satd. Flow (perm)		3500			3449			1388		1077		1154
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	818	0	0	941	24	14	0	24	117	0	39
RTOR Reduction (vph)	0	0	0	0	2	0	0	25	0	0	0	26
Lane Group Flow (vph)	0	818	0	0	963	0	0	13	0	117	0	13
Confl. Peds. (#/hr)	200		200	200		200	200		200	200		200
Confl. Bikes (#/hr)		12			15			1				
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	6%
Bus Blockages (#/hr)	11	0	2	11	0	2	0	0	0	0	0	0
Turn Type	NA	NA	NA	NA	NA	Perm	NA	NA	Perm	NA	Perm	Perm
Protected Phases	2			6			4			8		8
Permitted Phases	2			6			4			8		8
Actuated Green, G (s)		43.0			43.0			28.0		28.0		28.0
Effective Green, g (s)		44.0			44.0			29.0		29.0		29.0
Actuated g/C Ratio		0.52			0.52			0.35		0.35		0.35
Clearance Time (s)		6.0			6.0			7.0		7.0		7.0
Vehicle Extension (s)		3.0			3.0			3.0		3.0		3.0
Lane Grp Cap (vph)		1833			1806			479		371		398
v/s Ratio Prot		0.23			c0.28							
v/s Ratio Perm								0.01		c0.11		0.01
v/c Ratio		0.45			0.53			0.03		0.32		0.03
Uniform Delay, d1		12.4			13.2			18.2		20.2		18.2
Progression Factor		1.00			1.00			1.00		1.00		1.00
Incremental Delay, d2		0.8			1.1			0.0		0.5		0.0
Delay (s)		13.2			14.3			18.2		20.7		18.3
Level of Service		B			B			B		C		B
Approach Delay (s)		13.2			14.3			18.2		20.1		
Approach LOS		B			B			B		C		
Intersection Summary												
HCM 2000 Control Delay		14.4			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.45										
Actuated Cycle Length (s)		84.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		86.7%			ICU Level of Service			E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

7: Humber Bay Park Rd W & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (veh/h)	949	16	47	927	10	19
Future Volume (Veh/h)	949	16	47	927	10	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	978	16	48	956	10	20
Pedestrians					200	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					14	
Right turn flare (veh)						4
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	64			256		
pX, platoon unblocked			0.86		0.92	0.86
vC, conflicting volume			1194		1760	697
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			889		1025	307
IC, single (s)			4.1		6.8	6.9
IC, 2 stage (s)						
IF (s)			2.2		3.5	3.3
p0 queue free %			92		94	96
cM capacity (veh/h)			568		170	511
Direction, Lane #						
Volume Total	652	342	367	637	30	
Volume Left	0	0	48	0	10	
Volume Right	0	16	0	0	20	
cSH	1700	1700	568	1700	510	
Volume to Capacity	0.38	0.20	0.08	0.37	0.06	
Queue Length 95th (m)	0.0	0.0	2.2	0.0	1.5	
Control Delay (s)	0.0	0.0	2.6	0.0	17.4	
Lane LOS			A		C	
Approach Delay (s)	0.0		1.0		17.4	
Approach LOS					C	
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			67.2%		ICU Level of Service	C
Analysis Period (min)			15			

Timings

8: Marine Parade Dr/Park Lawn Rd & Lake Shore Blvd W

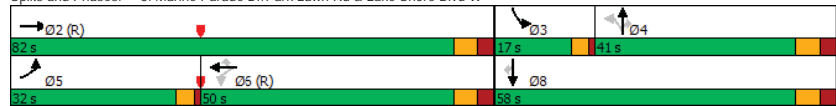
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	↖	→	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗		↖↗	↖	↖	↖	↖	↖↗	↖	↖	↖
Traffic Volume (vph)	202	559	2	552	54	154	49	12	176	322	235	
Future Volume (vph)	202	559	2	552	54	154	49	12	176	322	235	
Turn Type	Prot	NA	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm	
Protected Phases	5	2		6		6	4		4		8	
Permitted Phases			6		6	4		4				8
Detector Phase	5	2	6	6	6	4	4	4	3	8	8	
Switch Phase												
Minimum Initial (s)	6.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	6.0	34.0	34.0	
Minimum Split (s)	10.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	10.0	42.0	42.0	
Total Split (s)	32.0	82.0	50.0	50.0	50.0	41.0	41.0	41.0	17.0	58.0	58.0	
Total Split (%)	22.9%	58.6%	35.7%	35.7%	35.7%	29.3%	29.3%	29.3%	12.1%	41.4%	41.4%	
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	3.0	6.0		6.0	6.0	6.0	6.0	6.0	3.0	6.0	6.0	
Lead/Lag	Lead		Lag	Lag	Lag	Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	C-Min	Min	Min	Min	None	Min	Min	
Act Effct Green (s)	23.9	71.6		44.8	44.8	39.2	39.2	39.2	14.2	56.4	56.4	
Actuated g/C Ratio	0.17	0.51		0.32	0.32	0.28	0.28	0.28	0.10	0.40	0.40	
v/c Ratio	0.77	0.47		0.54	0.15	0.82	0.10	0.05	0.56	0.47	0.48	
Control Delay	74.1	23.6		22.1	3.2	77.6	37.8	0.3	62.8	26.9	10.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	
Total Delay	74.1	23.6		22.1	3.2	77.6	37.8	0.3	62.8	27.5	10.9	
LOS	E	C		C	A	E	D	A	E	C	B	
Approach Delay		34.7		20.4			64.1			30.6		
Approach LOS		C		C			E			C		

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 32.5
 Intersection Capacity Utilization 133.3%
 Intersection LOS: C
 ICU Level of Service H
 Analysis Period (min) 15

Splits and Phases: 8: Marine Parade Dr/Park Lawn Rd & Lake Shore Blvd W



HCM Signalized Intersection Capacity Analysis

8: Marine Parade Dr/Park Lawn Rd & Lake Shore Blvd W

02-08-2021

	↖	→	↗	←	↖	↗	↖	↗	↖	↗	↖	↗
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖↗	↖	↖	↖	↖	↖	↖↗	↖	↖
Traffic Volume (vph)	202	559	161	2	552	54	154	49	12	176	322	235
Future Volume (vph)	202	559	161	2	552	54	154	49	12	176	322	235
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	3.0	6.0			6.0	6.0	6.0	6.0	6.0	3.0	6.0	6.0
Lane Util. Factor	1.00	0.95			0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frbp, ped/bikes	1.00	0.92			1.00	0.63	1.00	1.00	0.63	1.00	1.00	0.63
Ftpb, ped/bikes	1.00	1.00			1.00	1.00	0.77	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97			1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1595	3092			3498	952	1193	1756	755	3236	1756	915
Flt Permitted	0.95	1.00			0.95	1.00	0.56	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1595	3092			3334	952	702	1756	755	3236	1756	915
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	210	582	168	2	575	56	160	51	12	183	335	245
RTOR Reduction (vph)	0	3	0	0	0	38	0	0	9	0	0	146
Lane Group Flow (vph)	210	747	0	0	577	18	160	51	4	183	335	99
Confl. Peds. (#/hr)	500		500	500		500	500		500	500		500
Confl. Bikes (#/hr)			11						2			16
Heavy Vehicles (%)	1%	3%	0%	0%	2%	0%	9%	7%	23%	1%	7%	1%
Bus Blockages (#/hr)	11	0	2	11	0	0	0	0	6	0	0	6
Turn Type	Prot	NA		Perm	NA	Perm	Perm	NA	Perm	Prot	NA	Perm
Protected Phases	5	2			6		4		4	3	8	
Permitted Phases					6		4		4			8
Actuated Green, G (s)	22.9	70.6			43.7	43.7	38.2	38.2	38.2	13.2	55.4	55.4
Effective Green, g (s)	23.9	71.6			44.7	44.7	39.2	39.2	39.2	14.2	56.4	56.4
Actuated g/C Ratio	0.17	0.51			0.32	0.32	0.28	0.28	0.28	0.10	0.40	0.40
Clearance Time (s)	4.0	7.0			7.0	7.0	7.0	7.0	7.0	4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	272	1581			1064	303	196	491	211	328	707	368
v/s Ratio Prot	c0.13	0.24							0.03	c0.06	0.19	
v/s Ratio Perm					c0.17	0.02	c0.23		0.00			0.11
v/c Ratio	0.77	0.47			0.54	0.06	0.82	0.10	0.02	0.56	0.47	0.27
Uniform Delay, d1	55.4	22.0			39.2	33.1	47.0	37.4	36.5	59.9	30.8	28.0
Progression Factor	1.00	1.00			0.49	1.63	1.00	1.00	1.00	0.96	0.81	2.58
Incremental Delay, d2	12.7	1.0			1.8	0.3	22.4	0.1	0.0	1.8	0.4	0.3
Delay (s)	68.2	23.0			21.1	54.1	69.4	37.5	36.5	59.1	25.5	72.6
Level of Service	E	C			C	D	E	D	D	E	C	E
Approach Delay (s)		32.9			24.0		60.2			48.7		
Approach LOS		C			C		E			D		

Intersection Summary

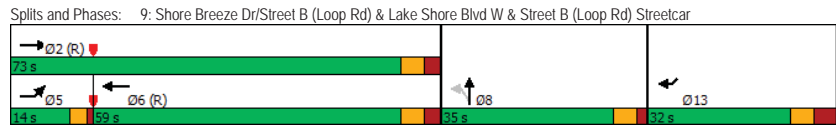
HCM 2000 Control Delay 37.8
 HCM 2000 Volume to Capacity ratio 0.68
 Actuated Cycle Length (s) 140.0
 Intersection Capacity Utilization 133.3%
 Analysis Period (min) 15
 ICU Level of Service H
 HCM 2000 Level of Service D
 Sum of lost time (s) 18.0
 Critical Lane Group

Timings

9: Shore Breeze Dr/Street B (Loop Rd) & Lake Shore Blvd W & Street B (Loop Rd) Streetcar

	←	→	←	↑	↙
Lane Group	EBL	EBT	WBT	NBT	SWR
Lane Configurations	↔	↕	↕	↕	↕
Traffic Volume (vph)	32	620	573	20	18
Future Volume (vph)	32	620	573	20	18
Turn Type	Prot	NA	NA	NA	Prot
Protected Phases	5	2	6	8	13
Permitted Phases					
Detector Phase	5	2	6	8	13
Switch Phase					
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	25.0	25.0	35.0	15.0
Total Split (s)	14.0	73.0	59.0	35.0	32.0
Total Split (%)	10.0%	52.1%	42.1%	25.0%	22.9%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	2.0	4.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0	5.0	7.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	None	None
Act Effct Green (s)	9.6	87.4	79.3	30.0	10.6
Actuated g/C Ratio	0.07	0.62	0.57	0.21	0.08
v/c Ratio	0.29	0.35	0.44	0.23	0.33
Control Delay	87.2	12.0	19.9	47.7	75.5
Queue Delay	0.0	0.1	0.3	0.0	0.0
Total Delay	87.2	12.0	20.2	47.7	75.5
LOS	F	B	C	D	E
Approach Delay		15.4	20.2	47.7	
Approach LOS		B	C	D	

Intersection Summary	
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.44
Intersection Signal Delay:	19.9
Intersection Capacity Utilization:	67.6%
Intersection LOS:	B
ICU Level of Service:	C
Analysis Period (min):	15



HCM Signalized Intersection Capacity Analysis

9: Shore Breeze Dr/Street B (Loop Rd) & Lake Shore Blvd W & Street B (Loop Rd) Streetcar

	←	→	↙	←	↖	↗	↑	↘	↙
Movement	EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SWR
Lane Configurations	↔	↕		↕			↕	↕	↕
Traffic Volume (vph)	32	620	76	573	160	18	20	39	18
Future Volume (vph)	32	620	76	573	160	18	20	39	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	3.0	6.0		6.0			5.0		7.0
Lane Util. Factor	1.00	0.95		0.95			1.00		1.00
Frbp, ped/bikes	1.00	0.94		0.88			1.00		1.00
Flpb, ped/bikes	1.00	1.00		1.00			0.93		1.00
Frt	1.00	0.98		0.97			0.93		0.86
Fl Protected	0.95	1.00		1.00			0.99		1.00
Satd. Flow (prot)	1652	3238		3004			1596		767
Fl Permitted	0.95	1.00		1.00			0.99		1.00
Satd. Flow (perm)	1652	3238		3004			1596		767
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	33	639	78	591	165	19	21	40	19
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0
Lane Group Flow (vph)	33	712	0	756	0	0	80	0	19
Confl. Peds. (#/hr)			200		200	200			
Confl. Bikes (#/hr)			4						
Heavy Vehicles (%)	2%	2%	0%	1%	0%	0%	0%	2%	100%
Turn Type	Prot	NA		NA		Perm	NA		Prot
Protected Phases	5	2		6			8		13
Permitted Phases							8		
Actuated Green, G (s)	5.8	83.2		73.4			29.0		6.8
Effective Green, g (s)	6.8	84.2		74.4			30.0		7.8
Actuated g/C Ratio	0.05	0.60		0.53			0.21		0.06
Clearance Time (s)	4.0	7.0		7.0			6.0		8.0
Vehicle Extension (s)	3.0	3.0		3.0			3.0		3.0
Lane Grp Cap (vph)	80	1947		1596			342		42
v/s Ratio Prot	c0.02	0.22		c0.25					c0.02
v/s Ratio Perm							0.05		
v/c Ratio	0.41	0.37		0.47			0.23		0.45
Uniform Delay, d1	64.7	14.3		20.5			45.5		64.0
Progression Factor	1.32	0.84		0.91			1.00		1.00
Incremental Delay, d2	3.1	0.5		1.0			0.4		7.6
Delay (s)	88.4	12.4		19.8			45.8		71.6
Level of Service	F	B		B			D		E
Approach Delay (s)		15.7		19.8			45.8		
Approach LOS		B		B			D		

Intersection Summary	
HCM 2000 Control Delay	19.8
HCM 2000 Volume to Capacity ratio	0.41
Actuated Cycle Length (s)	140.0
Intersection Capacity Utilization	67.6%
Analysis Period (min)	15
Sum of lost time (s)	21.0
ICU Level of Service	C

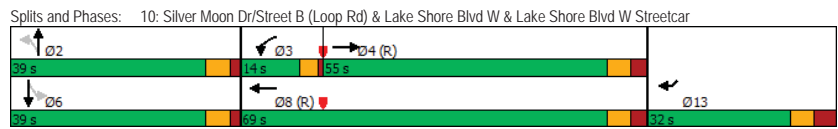
c Critical Lane Group

Timings

10: Silver Moon Dr/Street B (Loop Rd) & Lake Shore Blvd W & Lake Shore Blvd W Streetcar

Lane Group	EBT	WBT	NBL	NBT	SBL	SBT	SWR	Ø3
Lane Configurations	↕↕	↕↕		↕↕	↕↕	↕↕	↕↕	
Traffic Volume (vph)	623	517	107	0	79	42	18	
Future Volume (vph)	623	517	107	0	79	42	18	
Turn Type	NA	NA	Perm	NA	Perm	NA	Prot	
Protected Phases	4	8		2		6	13	3
Permitted Phases			2		6			
Detector Phase	4	8	2	2	6	6	13	
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	25.0	25.0	35.0	35.0	35.0	15.0	13.0	
Total Split (s)	55.0	69.0	39.0	39.0	39.0	32.0	14.0	
Total Split (%)	39.3%	49.3%	27.9%	27.9%	27.9%	22.9%	10%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	
All-Red Time (s)	3.0	3.0	2.0	2.0	2.0	2.0	4.0	1.0
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	6.0	6.0		5.0	5.0	5.0	7.0	
Lead/Lag	Lag							Lead
Lead-Lag Optimize?	Yes							Yes
Recall Mode	C-Min	C-Min	None	None	None	None	None	None
Act Effct Green (s)	86.3	86.3		31.2	31.2	31.2	10.6	
Actuated g/C Ratio	0.62	0.62		0.22	0.22	0.22	0.08	
v/c Ratio	0.32	0.24		0.61	0.36	0.44	0.33	
Control Delay	5.4	7.5		64.6	42.1	18.1	75.5	
Queue Delay	0.1	0.3		0.0	0.0	0.0	0.0	
Total Delay	5.5	7.8		64.6	42.1	18.1	75.5	
LOS	A	A		E	D	B	E	
Approach Delay	5.5	7.8		64.6		26.3		
Approach LOS	A	A		E		C		

Intersection Summary	
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.61
Intersection Signal Delay:	14.4
Intersection Capacity Utilization:	87.6%
Intersection LOS:	B
ICU Level of Service:	E
Analysis Period (min):	15



HCM Signalized Intersection Capacity Analysis

10: Silver Moon Dr/Street B (Loop Rd) & Lake Shore Blvd W & Lake Shore Blvd W Streetcar

Movement	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	SWR
Lane Configurations	↕↕		↕↕	↕↕		↕↕	↕↕	↕↕		↕↕
Traffic Volume (vph)	623	23	0	517	107	0	79	42	110	18
Future Volume (vph)	623	23	0	517	107	0	79	42	110	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.5	3.0	3.5	3.0	3.0
Total Lost time (s)	6.0			6.0		5.0	5.0	5.0		7.0
Lane Util. Factor	0.95			0.95		1.00	1.00	1.00		1.00
Frbp, ped/bikes	0.98			1.00		1.00	1.00	0.79		1.00
Flpb, ped/bikes	1.00			1.00		0.79	0.78	1.00		1.00
Frt	0.99			1.00		1.00	1.00	0.89		0.86
Flt Protected	1.00			1.00		0.95	0.95	1.00		1.00
Satd. Flow (prot)	3412			3535		1407	1287	1290		767
Flt Permitted	1.00			1.00		0.55	0.75	1.00		1.00
Satd. Flow (perm)	3412			3535		808	1017	1290		767
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	642	24	0	533	110	0	81	43	113	19
RTOR Reduction (vph)	1	0	0	0	0	0	0	69	0	0
Lane Group Flow (vph)	665	0	0	533	0	110	81	87	0	19
Confl. Peds. (#/hr)		200	200		200		200		200	
Confl. Bikes (#/hr)		3								
Heavy Vehicles (%)	2%	0%	0%	1%	0%	0%	2%	2%	2%	100%
Turn Type	NA		Prot	NA	Perm	NA	Perm	NA		Prot
Protected Phases	4		3	8		2		6		13
Permitted Phases					2		6			
Actuated Green, G (s)	82.0			82.0		30.2	30.2	30.2		6.8
Effective Green, g (s)	83.0			83.0		31.2	31.2	31.2		7.8
Actuated g/C Ratio	0.59			0.59		0.22	0.22	0.22		0.06
Clearance Time (s)	7.0			7.0		6.0	6.0	6.0		8.0
Vehicle Extension (s)	3.0			3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	2022			2095		180	226	287		42
v/s Ratio Prot	c0.19			0.15				0.07		c0.02
v/s Ratio Perm						c0.14	0.08			
v/c Ratio	0.33			0.25		0.61	0.36	0.30		0.45
Uniform Delay, d1	14.4			13.7		48.9	45.9	45.3		64.0
Progression Factor	0.35			0.53		1.00	0.82	0.71		1.00
Incremental Delay, d2	0.4			0.2		6.0	0.9	0.6		7.6
Delay (s)	5.4			7.4		55.0	38.6	32.7		71.6
Level of Service	A			A		D	D	C		E
Approach Delay (s)	5.4			7.4		55.0		34.7		
Approach LOS	A			A		D		C		

Intersection Summary			
HCM 2000 Control Delay	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Timings

11: The Marginal Blvd/Street A (Relief Rd) & Lake Shore Blvd W

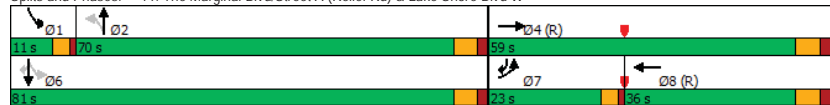
02-08-2021

	EBL	EBT	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	132	544	20	53	69	298	242	452
Future Volume (vph)	132	544	20	53	69	298	242	452
Turn Type	Prot	NA	NA	Perm	NA	pm+pt	NA	pm+ov
Protected Phases	7	4	8		2	1	6	7
Permitted Phases				2		6		6
Detector Phase	7	4	8	2	2	1	6	7
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.0	29.0	29.0	35.0	35.0	11.0	35.0	11.0
Total Split (s)	23.0	59.0	36.0	70.0	70.0	11.0	81.0	23.0
Total Split (%)	16.4%	42.1%	25.7%	50.0%	50.0%	7.9%	57.9%	16.4%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	3.0
All-Red Time (s)	1.0	3.0	3.0	2.0	2.0	1.0	2.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0		-1.0		-1.0	-1.0
Total Lost Time (s)	3.0	6.0	6.0		5.0		5.0	3.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead		Lead
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	16.8	55.0	35.3		74.0		74.0	92.7
Actuated g/C Ratio	0.12	0.39	0.25		0.53		0.53	0.66
v/c Ratio	0.68	0.79	0.53		0.26		0.94	0.61
Control Delay	83.3	27.6	25.2		18.2		44.3	6.4
Queue Delay	0.0	2.5	0.6		0.0		3.9	0.0
Total Delay	83.3	30.1	25.8		18.2		48.2	6.4
LOS	F	C	C		B		D	A
Approach Delay		40.4	25.8		18.2		29.2	
Approach LOS		D	C		B		C	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 31.8
 Intersection Capacity Utilization 94.7%
 Intersection LOS: C
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 11: The Marginal Blvd/Street A (Relief Rd) & Lake Shore Blvd W



HCM Signalized Intersection Capacity Analysis

11: The Marginal Blvd/Street A (Relief Rd) & Lake Shore Blvd W

02-08-2021

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔			↔		↔	↔		↔	↔	↔
Traffic Volume (vph)	132	544	9	0	20	215	53	69	16	298	242	452
Future Volume (vph)	132	544	9	0	20	215	53	69	16	298	242	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Lost time (s)	3.0	6.0			6.0			5.0			5.0	3.0
Lane Util. Factor	1.00	1.00			1.00			1.00			1.00	1.00
Frbp, ped/bikes	1.00	0.99			0.70			0.94			1.00	0.76
Flpb, ped/bikes	1.00	1.00			1.00			0.97			0.79	1.00
Frt	1.00	1.00			0.88			0.98			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.98			0.97	1.00
Satd. Flow (prot)	1685	1823			1158			1663			1422	1121
Flt Permitted	0.95	1.00			1.00			0.61			0.75	1.00
Satd. Flow (perm)	1685	1823			1158			1033			1102	1121
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	136	561	9	0	21	222	55	71	16	307	249	466
RTOR Reduction (vph)	0	1	0	0	166	0	0	3	0	0	0	26
Lane Group Flow (vph)	136	569	0	0	77	0	0	139	0	0	556	440
Confl. Peds. (#/hr)	200		200	200		200	200		200	200		200
Confl. Bikes (#/hr)			3			6						
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	2%	2%	2%
Turn Type	Prot	NA			NA		Perm	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8			2		1	6	7
Permitted Phases							2			6		6
Actuated Green, G (s)	15.8	54.0			34.2			73.0			73.0	88.8
Effective Green, g (s)	16.8	55.0			35.2			74.0			74.0	90.8
Actuated g/C Ratio	0.12	0.39			0.25			0.53			0.53	0.65
Clearance Time (s)	4.0	7.0			7.0			6.0			6.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	202	716			291			546			582	727
v/s Ratio Prot	0.08	c0.31			0.07							0.07
v/s Ratio Perm							0.13				c0.50	0.32
v/c Ratio	0.67	0.80			0.26			0.25			0.96	0.61
Uniform Delay, d1	59.0	37.5			42.0			18.0			31.4	14.2
Progression Factor	1.15	0.48			2.57			1.00			0.86	0.43
Incremental Delay, d2	8.2	8.6			2.1			0.2			19.1	0.9
Delay (s)	75.8	26.5			110.1			18.2			46.1	7.0
Level of Service	E	C			F			B			D	A
Approach Delay (s)		36.0			110.1			18.2			28.3	
Approach LOS		D			F			B			C	

Intersection Summary

HCM 2000 Control Delay 39.6
 HCM 2000 Volume to Capacity ratio 0.93
 Actuated Cycle Length (s) 140.0
 Intersection Capacity Utilization 94.7%
 Analysis Period (min) 15

c Critical Lane Group

Timings

12: Brookers Ln/Dwy 3 & Lake Shore Blvd W

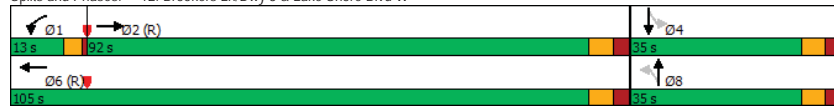
02-08-2021

	→	←	↖	↑	↘	↓	
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT	Ø1
Lane Configurations	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	744	92	114	35	8	0	
Future Volume (vph)	744	92	114	35	8	0	
Turn Type	NA	NA	Perm	NA	Perm	NA	
Protected Phases	2	6		8		4	1
Permitted Phases			8		4		
Detector Phase	2	6	8	8	4	4	
Switch Phase							
Minimum Initial (s)	29.0	29.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	36.0	36.0	35.0	35.0	35.0	35.0	13.0
Total Split (s)	92.0	105.0	35.0	35.0	35.0	35.0	13.0
Total Split (%)	65.7%	75.0%	25.0%	25.0%	25.0%	25.0%	9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0
All-Red Time (s)	3.0	3.0	2.0	2.0	2.0	2.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	6.0	6.0	5.0	5.0		5.0	
Lead/Lag	Lag						Lead
Lead-Lag Optimize?	Yes						Yes
Recall Mode	C-Min	C-Min	None	None	None	None	None
Act Effct Green (s)	102.3	102.3	26.7	26.7			25.8
Actuated g/C Ratio	0.73	0.73	0.19	0.19			0.18
v/c Ratio	0.71	0.08	0.58	0.58			0.15
Control Delay	10.2	7.4	62.2	19.2			5.1
Queue Delay	6.4	0.0	0.0	0.0			0.0
Total Delay	16.6	7.4	62.2	19.2			5.1
LOS	B	A	E	B			A
Approach Delay	16.6	7.4		33.5			5.1
Approach LOS	B	A		C			A

Intersection Summary

Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 105	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 20.0	Intersection LOS: B
Intersection Capacity Utilization 80.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 12: Brookers Ln/Dwy 3 & Lake Shore Blvd W



HCM Signalized Intersection Capacity Analysis

12: Brookers Ln/Dwy 3 & Lake Shore Blvd W

02-08-2021

	↖	→	↘	↖	←	↖	↑	↘	↘	↓	↖	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
Traffic Volume (vph)	0	744	117	0	92	0	114	35	193	8	0	29
Future Volume (vph)	0	744	117	0	92	0	114	35	193	8	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)		6.0			6.0		5.0	5.0			5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frbp, ped/bikes		0.97			1.00		1.00	0.87			0.80	
Flpb, ped/bikes		1.00			1.00		0.77	1.00			0.98	
Frt		0.98			1.00		1.00	0.87			0.89	
Flt Protected		1.00			1.00		0.95	1.00			0.99	
Satd. Flow (prot)		1750			1756		1302	1421			1274	
Flt Permitted		1.00			1.00		0.79	1.00			0.91	
Satd. Flow (perm)		1750			1756		1081	1421			1173	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	783	123	0	97	0	120	37	203	8	0	31
RTOR Reduction (vph)	0	3	0	0	0	0	0	146	0	0	32	0
Lane Group Flow (vph)	0	903	0	0	97	0	120	94	0	0	7	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			2						1			
Heavy Vehicles (%)	2%	2%	0%	0%	7%	2%	0%	2%	0%	2%	2%	2%
Turn Type		NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	
Permitted Phases							8			4		
Actuated Green, G (s)		101.3			101.3		25.7	25.7			25.7	
Effective Green, g (s)		102.3			102.3		26.7	26.7			26.7	
Actuated g/C Ratio		0.73			0.73		0.19	0.19			0.19	
Clearance Time (s)		7.0			7.0		6.0	6.0			6.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)		1278			1283		206	271			223	
v/s Ratio Prot		c0.52			0.06			0.07				
v/s Ratio Perm							c0.11				0.01	
v/c Ratio		0.71			0.08		0.58	0.35			0.03	
Uniform Delay, d1		10.5			5.4		51.6	49.1			46.1	
Progression Factor		0.69			1.17		1.00	1.00			1.00	
Incremental Delay, d2		1.9			0.1		4.2	0.8			0.1	
Delay (s)		9.1			6.4		55.7	49.9			46.2	
Level of Service		A			A		E	D			D	
Approach Delay (s)		9.1			6.4		51.8				46.2	
Approach LOS		A			A		D				D	

Intersection Summary

HCM 2000 Control Delay	20.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c	Critical Lane Group		

Timings

13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W

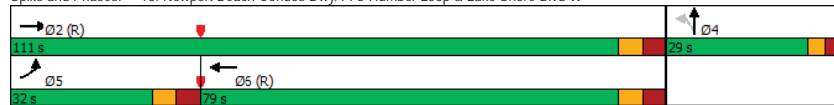
02-08-2021

	↖	→	←	↑
Lane Group	EBL	EBT	WBT	NBT
Lane Configurations	↖	↑	↑	↖
Traffic Volume (vph)	15	892	11	0
Future Volume (vph)	15	892	11	0
Turn Type	Prot	NA	NA	NA
Protected Phases	5	2	6	4
Permitted Phases				
Detector Phase	5	2	6	4
Switch Phase				
Minimum Initial (s)	7.0	16.0	16.0	7.0
Minimum Split (s)	15.0	24.0	24.0	29.0
Total Split (s)	32.0	111.0	79.0	29.0
Total Split (%)	22.9%	79.3%	56.4%	20.7%
Yellow Time (s)	4.0	4.0	4.0	3.0
All-Red Time (s)	4.0	4.0	4.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	7.0	7.0	7.0	4.0
Lead/Lag	Lead		Lag	
Lead-Lag Optimize?	Yes		Yes	
Recall Mode	None	C-Min	C-Min	None
Act Effct Green (s)	9.7	107.4	99.9	21.6
Actuated g/C Ratio	0.07	0.77	0.71	0.15
v/c Ratio	0.26	0.71	0.01	0.42
Control Delay	64.8	12.2	9.7	14.9
Queue Delay	0.0	0.4	0.0	0.1
Total Delay	64.8	12.6	9.7	15.0
LOS	E	B	A	B
Approach Delay		13.4	9.7	15.0
Approach LOS		B	A	B

Intersection Summary

Cycle Length: 140	
Actuated Cycle Length: 140	
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 72.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W



HCM Signalized Intersection Capacity Analysis

13: Newport Beach Condos Dwy/TTC Humber Loop & Lake Shore Blvd W

02-08-2021

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑			↑			↖				
Traffic Volume (vph)	15	892	50	0	11	0	80	0	20	0	0	0
Future Volume (vph)	15	892	50	0	11	0	80	0	20	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0
Total Lost time (s)	7.0	7.0			7.0			4.0				
Lane Util. Factor	1.00	1.00			1.00			1.00				
Frbp, ped/bikes	1.00	0.97			1.00			1.00				
Flpb, ped/bikes	1.00	1.00			1.00			0.59				
Frt	1.00	0.99			1.00			0.97				
Flt Protected	0.95	1.00			1.00			0.96				
Satd. Flow (prot)	842	1772			1860			1034				
Flt Permitted	0.95	1.00			1.00			0.96				
Satd. Flow (perm)	842	1772			1860			1034				
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	15	920	52	0	11	0	82	0	21	0	0	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	85	0	0	0	0
Lane Group Flow (vph)	15	971	0	0	11	0	0	18	0	0	0	0
Confl. Peds. (#/hr)			200	200			200					200
Confl. Bikes (#/hr)			6				5					
Heavy Vehicles (%)	100%	2%	0%	0%	1%	0%	0%	0%	0%	0%	0%	100%
Turn Type	Prot	NA			NA		Perm	NA				
Protected Phases	5	2			6			4				
Permitted Phases							4					
Actuated Green, G (s)	4.3	106.4			94.1			20.6				
Effective Green, g (s)	5.3	107.4			95.1			21.6				
Actuated g/C Ratio	0.04	0.77			0.68			0.15				
Clearance Time (s)	8.0	8.0			8.0			5.0				
Vehicle Extension (s)	3.0	3.0			3.0			3.0				
Lane Grp Cap (vph)	31	1359			1263			159				
v/s Ratio Prot	0.02	c0.55			0.01							
v/s Ratio Perm								0.02				
v/c Ratio	0.48	0.71			0.01			0.11				
Uniform Delay, d1	66.0	8.4			7.2			50.9				
Progression Factor	0.93	1.00			1.00			1.00				
Incremental Delay, d2	8.5	2.4			0.0			0.3				
Delay (s)	69.9	10.8			7.3			51.2				
Level of Service	E	B			A			D				
Approach Delay (s)		11.7			7.3			51.2			0.0	
Approach LOS		B			A			D			A	

Intersection Summary

HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
 14: Marine Parade Dr & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔		↔	
Traffic Volume (veh/h)	873	37	0	0	1	243
Future Volume (Veh/h)	873	37	0	0	1	243
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	959	41	0	0	1	267
Pedestrians						50
Lane Width (m)						3.0
Walking Speed (m/s)						1.2
Percent Blockage						3
Right turn flare (veh)						
Median type	None		None			
Median storage (veh)						
Upstream signal (m)	132		168			
pX, platoon unblocked			0.69		0.69 0.69	
vC, conflicting volume			1050		1030 1030	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			845		815 815	
tC, single (s)			4.1		*6.0 *5.4	
tC, 2 stage (s)						
tF (s)			2.2		*3.0 *3.0	
p0 queue free. %			100		100 17	
cM capacity (veh/h)			531		282 323	
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	1000	0	268			
Volume Left	0	0	1			
Volume Right	41	0	267			
cSH	1700	1700	323			
Volume to Capacity	0.59	0.00	0.83			
Queue Length 95th (m)	0.0	0.0	57.4			
Control Delay (s)	0.0	0.0	53.1			
Lane LOS			F			
Approach Delay (s)	0.0	0.0	53.1			
Approach LOS			F			
Intersection Summary						
Average Delay			11.2			
Intersection Capacity Utilization			70.1%		ICU Level of Service C	
Analysis Period (min)	15					
* User Entered Value						

Timings
 15: Palace Pier Ct & Lake Shore Blvd W

02-08-2021

Lane Group	EBT	EBR	NBL
Lane Configurations	↔		
Traffic Volume (vph)	1049	96	0
Future Volume (vph)	1049	96	0
Turn Type	NA	Perm	Prot
Protected Phases	2 4		
Permitted Phases	2		
Detector Phase	2	2	4
Switch Phase			
Minimum Initial (s)	19.0	19.0	7.0
Minimum Split (s)	25.0	25.0	28.0
Total Split (s)	112.0	112.0	28.0
Total Split (%)	80.0%	80.0%	20.0%
Yellow Time (s)	4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	5.0	4.0
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Min	C-Min	None
Act Effct Green (s)	119.5	119.5	11.5
Actuated g/C Ratio	0.85	0.85	0.08
v/c Ratio	0.73	0.11	0.53
Control Delay	9.1	1.7	17.6
Queue Delay	0.4	0.0	0.0
Total Delay	9.5	1.7	17.6
LOS	A	A	B
Approach Delay	8.8	17.6	
Approach LOS	A	B	
Intersection Summary			
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			
Splits and Phases: 15: Palace Pier Ct & Lake Shore Blvd W			
↔ Ø2 (R) 112 s		↔ Ø4 28 s	

HCM Signalized Intersection Capacity Analysis
15: Palace Pier Ct & Lake Shore Blvd W

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑			↑	↑
Traffic Volume (vph)	1049	96	0	0	0	112
Future Volume (vph)	1049	96	0	0	0	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	5.0	5.0			4.0	
Lane Util. Factor	1.00	1.00			1.00	
Frbp, ped/bikes	1.00	0.80			1.00	
Flpb, ped/bikes	1.00	1.00			1.00	
Frt	1.00	0.85			0.86	
Flt Protected	1.00	1.00			1.00	
Satd. Flow (prot)	1860	1181			1519	
Flt Permitted	1.00	1.00			1.00	
Satd. Flow (perm)	1860	1181			1519	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1166	107	0	0	0	124
RTOR Reduction (vph)	0	4	0	0	112	0
Lane Group Flow (vph)	1166	103	0	0	12	0
Confl. Peds. (#/hr)		50	50		3	
Heavy Vehicles (%)	1%	2%	0%	0%	0%	1%
Turn Type	NA	Perm			Prot	
Protected Phases	2				4	
Permitted Phases		2				
Actuated Green, G (s)	118.5	118.5			10.5	
Effective Green, g (s)	119.5	119.5			11.5	
Actuated g/C Ratio	0.85	0.85			0.08	
Clearance Time (s)	6.0	6.0			5.0	
Vehicle Extension (s)	3.0	3.0			3.0	
Lane Grp Cap (vph)	1587	1008			124	
v/s Ratio Prot	c0.63				c0.01	
v/s Ratio Perm		0.09				
v/c Ratio	0.73	0.10			0.10	
Uniform Delay, d1	4.0	1.6			59.4	
Progression Factor	1.10	0.84			1.00	
Incremental Delay, d2	2.7	0.2			0.3	
Delay (s)	7.1	1.6			59.8	
Level of Service	A	A			E	
Approach Delay (s)	6.7			0.0	59.8	
Approach LOS	A			A	E	
Intersection Summary						
HCM 2000 Control Delay		11.4			HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.68				
Actuated Cycle Length (s)		140.0			Sum of lost time (s)	9.0
Intersection Capacity Utilization		69.6%			ICU Level of Service	C
Analysis Period (min)		15				
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis
17: Marine Parade Dr & Humber Bay Park Rd E

02-08-2021

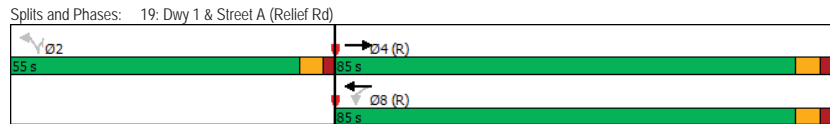
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (veh/h)	10	9	3	193	405	80
Future Volume (Veh/h)	10	9	3	193	405	80
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	10	3	210	440	87
Pedestrians	500					
Lane Width (m)	3.0					
Walking Speed (m/s)	1.2					
Percent Blockage	35					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					142	
pX, platoon unblocked						
vC, conflicting volume	1200	764	1027			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1200	764	1027			
IC, single (s)	6.8	6.9	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	91	96	99			
cM capacity (veh/h)	117	229	447			
Direction, Lane #						
Volume Total	21	213	293	234		
Volume Left	11	3	0	0		
Volume Right	10	0	0	87		
cSH	153	447	1700	1700		
Volume to Capacity	0.14	0.01	0.17	0.14		
Queue Length 95th (m)	3.7	0.2	0.0	0.0		
Control Delay (s)	32.3	0.3	0.0	0.0		
Lane LOS	D	A				
Approach Delay (s)	32.3	0.3	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay				1.0		
Intersection Capacity Utilization			25.4%		ICU Level of Service	A
Analysis Period (min)			15			

Timings
19: Dwy 1 & Street A (Relief Rd)

02-08-2021

	→	↖	←	↙	↗
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↑↑	↑	↑
Traffic Volume (vph)	615	124	903	197	99
Future Volume (vph)	615	124	903	197	99
Turn Type	NA	Perm	NA	Perm	Perm
Protected Phases	4		8		
Permitted Phases		8		2	2
Detector Phase	4	8	8	2	2
Switch Phase					
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	26.0	26.0	26.0	28.0	28.0
Total Split (s)	85.0	85.0	85.0	55.0	55.0
Total Split (%)	60.7%	60.7%	60.7%	39.3%	39.3%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	2.0	2.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	6.0	6.0	5.0	5.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	94.9	94.9	94.9	34.1	34.1
Actuated g/C Ratio	0.68	0.68	0.68	0.24	0.24
v/c Ratio	0.46	0.45	0.40	0.80	0.33
Control Delay	11.6	14.9	10.5	69.6	11.9
Queue Delay	0.0	0.0	1.0	0.0	0.0
Total Delay	11.6	14.9	11.5	69.6	11.9
LOS	B	B	B	E	B
Approach Delay	11.6		12.0	51.0	
Approach LOS	B		B	D	

Intersection Summary
 Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 17.3
 Intersection Capacity Utilization 66.0%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service C



HCM Signalized Intersection Capacity Analysis
19: Dwy 1 & Street A (Relief Rd)

02-08-2021

	→	↖	←	↙	↗	
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑	↑
Traffic Volume (vph)	615	234	124	903	197	99
Future Volume (vph)	615	234	124	903	197	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.0	3.0	3.5	3.0	3.0
Total Lost time (s)	6.0		6.0	6.0	5.0	5.0
Lane Util. Factor	0.95		1.00	0.95	1.00	1.00
Frbp, ped/bikes	0.84		1.00	1.00	1.00	0.68
Flpb, ped/bikes	1.00		0.88	1.00	0.68	1.00
Frt	0.96		1.00	1.00	1.00	0.85
Fl Protected	1.00		0.95	1.00	0.95	1.00
Satd. Flow (prot)	2834		1459	3500	1129	1002
Fl Permitted	1.00		0.29	1.00	0.95	1.00
Satd. Flow (perm)	2834		438	3500	1129	1002
Peak-hour factor, PHF	0.95	0.95	0.90	0.95	0.90	0.95
Adj. Flow (vph)	647	246	138	951	219	104
RTOR Reduction (vph)	21	0	0	0	0	70
Lane Group Flow (vph)	872	0	138	951	219	34
Confl. Peds. (#/hr)		200	200		200	200
Turn Type	NA		Perm	NA	Perm	Perm
Protected Phases	4			8		
Permitted Phases			8		2	2
Actuated Green, G (s)	93.9		93.9	93.9	33.1	33.1
Effective Green, g (s)	94.9		94.9	94.9	34.1	34.1
Actuated g/C Ratio	0.68		0.68	0.68	0.24	0.24
Clearance Time (s)	7.0		7.0	7.0	6.0	6.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1921		296	2372	274	244
v/s Ratio Prot	0.31			0.27		
v/s Ratio Perm			c0.31		c0.19	0.03
v/c Ratio	0.45		0.47	0.40	0.80	0.14
Uniform Delay, d1	10.5		10.6	10.0	49.7	41.5
Progression Factor	1.00		0.94	0.93	1.00	1.00
Incremental Delay, d2	0.8		2.1	0.2	14.9	0.3
Delay (s)	11.3		12.0	9.5	64.7	41.7
Level of Service	B		B	A	E	D
Approach Delay (s)	11.3			9.8	57.3	
Approach LOS	B			A	E	

Intersection Summary
 HCM 2000 Control Delay 17.0
 HCM 2000 Volume to Capacity ratio 0.56
 Actuated Cycle Length (s) 140.0
 Intersection Capacity Utilization 66.0%
 Analysis Period (min) 15
 HCM 2000 Level of Service B
 Sum of lost time (s) 12.0
 ICU Level of Service C

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
22: Dwy 5 & Street A (Relief Rd)

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔		↔		↔
Traffic Volume (veh/h)	702	18	0	1031	0	60
Future Volume (Veh/h)	702	18	0	1031	0	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Hourly flow rate (vph)	739	19	0	1085	0	63
Pedestrians					200	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					14	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	60			81		
pX, platoon unblocked			0.89		0.89	0.89
vC, conflicting volume			958		1491	579
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			711		1308	286
IC, single (s)			4.1		6.8	6.9
IC, 2 stage (s)						
IF (s)			2.2		3.5	3.3
p0 queue free %			100		100	88
cM capacity (veh/h)			679		116	546
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	493	265	542	542	63	
Volume Left	0	0	0	0	0	
Volume Right	0	19	0	0	63	
cSH	1700	1700	1700	1700	546	
Volume to Capacity	0.29	0.16	0.32	0.32	0.12	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	3.1	
Control Delay (s)	0.0	0.0	0.0	0.0	12.5	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		12.5	
Approach LOS					B	
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			31.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
23: Street C & Dwy 7

02-08-2021

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔			
Traffic Volume (veh/h)	0	198	348	48	0	0
Future Volume (Veh/h)	0	198	348	48	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.95	0.95	0.95	0.90	0.95
Hourly flow rate (vph)	0	208	366	51	0	0
Pedestrians					200	
Lane Width (m)					0.0	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)		79	68			
pX, platoon unblocked	0.92				0.94	0.92
vC, conflicting volume	617				800	592
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	537				646	509
IC, single (s)	4.1				6.4	6.2
IC, 2 stage (s)						
IF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	945				409	517
Direction, Lane #	EB 1	WB 1				
Volume Total	208	417				
Volume Left	0	0				
Volume Right	0	51				
cSH	945	1700				
Volume to Capacity	0.00	0.25				
Queue Length 95th (m)	0.0	0.0				
Control Delay (s)	0.0	0.0				
Lane LOS						
Approach Delay (s)	0.0	0.0				
Approach LOS						
Intersection Summary						
Average Delay		0.0				
Intersection Capacity Utilization		25.5%		ICU Level of Service	A	
Analysis Period (min)		15				

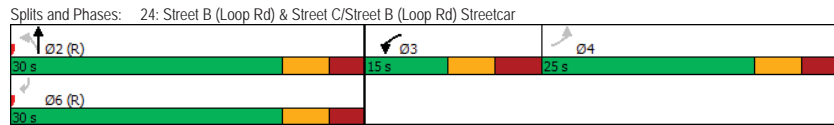
Timings

24: Street B (Loop Rd) & Street C/Street B (Loop Rd) Streetcar

02-08-2021

Lane Group	EBL	WBL	NBL	NBT	SBR
Lane Configurations	↖ ↗	↖ ↗	↖ ↗	↖ ↗	↖ ↗
Traffic Volume (vph)	195	18	206	7	191
Future Volume (vph)	195	18	206	7	191
Turn Type	Perm	Prot	Perm	NA	Perm
Protected Phases		3		2	
Permitted Phases	4		2		6
Detector Phase	4	3	2	2	6
Switch Phase					
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	25.0	15.0	25.0	25.0	25.0
Total Split (s)	25.0	15.0	30.0	30.0	30.0
Total Split (%)	35.7%	21.4%	42.9%	42.9%	42.9%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	4.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	6.0	7.0	6.0	6.0	6.0
Lead/Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes			
Recall Mode	None	None	C-Min	C-Min	C-Min
Act Effct Green (s)	19.8	8.0	35.2	35.2	0.0
Actuated g/C Ratio	0.28	0.11	0.50	0.50	0.00
v/c Ratio	0.76	0.11	0.45	0.01	0.18
Control Delay	40.6	29.3	15.3	9.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	29.3	15.3	9.1	0.4
LOS	D	C	B	A	A
Approach Delay				15.1	
Approach LOS				B	

Intersection Summary				
Cycle Length:	70			
Actuated Cycle Length:	70			
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBR, Start of Green			
Natural Cycle:	65			
Control Type:	Actuated-Coordinated			
Maximum v/c Ratio:	0.76			
Intersection Signal Delay:	19.4	Intersection LOS:		B
Intersection Capacity Utilization:	41.0%	ICU Level of Service:		A
Analysis Period (min):	15			



HCM Signalized Intersection Capacity Analysis

24: Street B (Loop Rd) & Street C/Street B (Loop Rd) Streetcar

02-08-2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖ ↗			↖ ↗			↖ ↗	↖ ↗				↖ ↗
Traffic Volume (vph)	195	0	0	18	0	0	206	7	0	0	0	191
Future Volume (vph)	195	0	0	18	0	0	206	7	0	0	0	191
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.5	3.0	3.0	3.0	3.5
Total Lost time (s)	6.0			7.0			6.0	6.0				6.0
Lane Util. Factor	1.00			1.00			1.00	1.00				1.00
Frbp, ped/bikes	1.00			1.00			1.00	1.00				0.60
Flpb, ped/bikes	0.61			1.00			0.61	1.00				1.00
Frt	1.00			1.00			1.00	1.00				0.86
Fl Protected	0.95			0.95			0.95	1.00				1.00
Satd. Flow (prot)	1009			1652			1009	1842				901
Fl Permitted	0.95			0.95			0.95	1.00				1.00
Satd. Flow (perm)	1009			1652			1009	1842				901
Peak-hour factor, PHF	0.90	0.92	0.95	0.92	0.92	0.92	0.90	0.95	0.92	0.92	0.95	0.95
Adj. Flow (vph)	217	0	0	20	0	0	229	7	0	0	0	201
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	118
Lane Group Flow (vph)	217	0	0	20	0	0	229	7	0	0	0	83
Confl. Peds. (#/hr)	200		200				200					200
Turn Type	Perm			Prot			Perm	NA				Perm
Protected Phases				3				2				
Permitted Phases	4						2					6
Actuated Green, G (s)	18.8			1.4			27.8	27.8				27.8
Effective Green, g (s)	19.8			2.4			28.8	28.8				28.8
Actuated g/C Ratio	0.28			0.03			0.41	0.41				0.41
Clearance Time (s)	7.0			8.0			7.0	7.0				7.0
Vehicle Extension (s)	3.0			3.0			3.0	3.0				3.0
Lane Grp Cap (vph)	285			56			415	757				370
v/s Ratio Prot				c0.01				0.00				
v/s Ratio Perm	c0.21						c0.23					0.09
v/c Ratio	0.76			0.36			0.55	0.01				0.22
Uniform Delay, d1	22.9			33.0			15.7	12.2				13.4
Progression Factor	1.03			1.00			0.92	0.73				1.00
Incremental Delay, d2	10.6			3.9			5.0	0.0				1.4
Delay (s)	34.1			36.9			19.4	8.9				14.7
Level of Service	C			D			B	A				B
Approach Delay (s)		34.1			36.9			19.0				14.7
Approach LOS		C			D			B				B

Intersection Summary			
HCM 2000 Control Delay	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
25: Street B (Loop Rd) & Private Street D

02-08-2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔					↔
Traffic Volume (veh/h)	113	190	0	0	80	117
Future Volume (Veh/h)	113	190	0	0	80	117
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.95	0.95	0.95	0.90	0.95
Hourly flow rate (vph)	126	200	0	0	89	123
Pedestrians	200					
Lane Width (m)	3.0					
Walking Speed (m/s)	1.2					
Percent Blockage	14					
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)			113		275	
pX, platoon unblocked	0.97					
vC, conflicting volume	501	200			200	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	469	200			200	
IC, single (s)	6.4	6.2			4.1	
IC, 2 stage (s)						
IF (s)	3.5	3.3			2.2	
p0 queue free %	70	72			92	
cM capacity (veh/h)	426	724			1182	
Direction, Lane #	WB 1	SB 1				
Volume Total	326	212				
Volume Left	126	89				
Volume Right	200	0				
eSH	570	1182				
Volume to Capacity	0.57	0.08				
Queue Length 95th (m)	28.7	2.0				
Control Delay (s)	19.4	3.9				
Lane LOS	C	A				
Approach Delay (s)	19.4	3.9				
Approach LOS	C					
Intersection Summary						
Average Delay		13.3				
Intersection Capacity Utilization		41.9%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
26: Dwy 6 & Private Street D

02-08-2021

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Volume (veh/h)	40	39	35	250	50	10
Future Volume (Veh/h)	40	39	35	250	50	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.90	0.95	0.90	0.95
Hourly flow rate (vph)	42	41	39	263	56	11
Pedestrians					200	
Lane Width (m)					3.0	
Walking Speed (m/s)					1.2	
Percent Blockage					14	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			283		604	262
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			283		604	262
IC, single (s)			4.1		6.4	6.2
IC, 2 stage (s)						
IF (s)			2.2		3.5	3.3
p0 queue free %			96		85	98
cM capacity (veh/h)			1102		384	668
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	83	302	67			
Volume Left	0	39	56			
Volume Right	41	0	11			
eSH	1700	1102	412			
Volume to Capacity	0.05	0.04	0.16			
Queue Length 95th (m)	0.0	0.9	4.6			
Control Delay (s)	0.0	1.4	15.4			
Lane LOS		A	C			
Approach Delay (s)	0.0	1.4	15.4			
Approach LOS			C			
Intersection Summary						
Average Delay			3.2			
Intersection Capacity Utilization		31.8%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
 27: Street A (Relief Rd) & Private Street D

02-08-2021

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖	↗	↖
Traffic Volume (veh/h)	0	47	0	419	947	285
Future Volume (Veh/h)	0	47	0	419	947	285
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.95	0.90	0.95	0.95	0.95
Hourly flow rate (vph)	0	49	0	441	997	300
Pedestrians	200					
Lane Width (m)	3.0					
Walking Speed (m/s)	1.2					
Percent Blockage	14					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)				105	31	
pX, platoon unblocked						
vC, conflicting volume	1568	848	1497			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1568	848	1497			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	81	100			
cM capacity (veh/h)	88	262	382			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	49	220	220	665	632	
Volume Left	0	0	0	0	0	
Volume Right	49	0	0	0	300	
cSH	262	1700	1700	1700	1700	
Volume to Capacity	0.19	0.13	0.13	0.39	0.37	
Queue Length 95th (m)	5.4	0.0	0.0	0.0	0.0	
Control Delay (s)	21.9	0.0	0.0	0.0	0.0	
Lane LOS	C					
Approach Delay (s)	21.9	0.0		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			47.1%		ICU Level of Service	A
Analysis Period (min)			15			

Timings
 28: Street A (Relief Rd) & Gardiner EB On Ramp/WB Off Ramp

02-08-2021

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↖	↗	↖	↗
Traffic Volume (vph)	990	792	239	180	514	243
Future Volume (vph)	990	792	239	180	514	243
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	6	7	8		7	4
Permitted Phases		6		8		
Detector Phase	6	7	8	8	7	4
Switch Phase						
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	28.0	29.0	29.0	29.0	29.0	29.0
Total Split (s)	56.0	54.0	30.0	30.0	54.0	84.0
Total Split (%)	40.0%	38.6%	21.4%	21.4%	38.6%	60.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Total Lost Time (s)	5.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag		Lead	Lag	Lag	Lead	Lead
Lead-Lag Optimize?		Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)	50.6	96.8	25.2	25.2	47.2	78.4
Actuated g/C Ratio	0.36	0.69	0.18	0.18	0.34	0.56
v/c Ratio	0.95	0.98	0.76	0.56	0.53	0.25
Control Delay	60.4	48.3	63.3	18.0	35.1	14.0
Queue Delay	0.5	0.0	0.0	0.0	0.5	0.6
Total Delay	60.8	48.3	63.3	18.0	35.6	14.5
LOS	E	D	E	B	D	B
Approach Delay	55.4		43.9			29.1
Approach LOS	E		D			C
Intersection Summary						
Cycle Length: 140						
Actuated Cycle Length: 140						
Offset: 30 (21%), Referenced to phase 4:SBT and 8:NBT, Start of Green						
Natural Cycle: 110						
Control Type: Actuated-Coordinated						
Maximum v/c Ratio: 0.98						
Intersection Signal Delay: 47.0	Intersection LOS: D					
Intersection Capacity Utilization 85.1%	ICU Level of Service E					
Analysis Period (min) 15						
Splits and Phases: 28: Street A (Relief Rd) & Gardiner EB On Ramp/WB Off Ramp						

HCM Signalized Intersection Capacity Analysis
 28: Street A (Relief Rd) & Gardiner EB On Ramp/WB Off Ramp

02-08-2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔↔	↔	↑	↔	↔↔	↑
Traffic Volume (vph)	990	792	239	180	514	243
Future Volume (vph)	990	792	239	180	514	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.0	3.0	3.5	3.0	3.0	3.5
Total Lost time (s)	5.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	0.97	1.00	1.00	1.00	0.97	1.00
Frbp, ped/bikes	1.00	0.83	1.00	0.68	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3204	1232	1842	1002	3204	1842
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3204	1232	1842	1002	3204	1842
Peak-hour factor, PHF	0.90	0.95	0.95	0.95	0.90	0.95
Adj. Flow (vph)	1100	834	252	189	571	256
RTOR Reduction (vph)	0	2	0	155	0	0
Lane Group Flow (vph)	1100	832	252	34	571	256
Confl. Peds. (#/hr)	200	200		200	200	
Turn Type	Prot	pm+ov	NA	Perm	Prot	NA
Protected Phases	6	7	8		7	4
Permitted Phases		6		8		
Actuated Green, G (s)	49.6	95.8	24.2	24.2	46.2	77.4
Effective Green, g (s)	50.6	97.8	25.2	25.2	47.2	78.4
Actuated g/C Ratio	0.36	0.70	0.18	0.18	0.34	0.56
Clearance Time (s)	6.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1158	860	331	180	1080	1031
v/s Ratio Prot	0.34	c0.33	c0.14		0.18	0.14
v/s Ratio Perm		0.35		0.03		
v/c Ratio	0.95	0.97	0.76	0.19	0.53	0.25
Uniform Delay, d1	43.5	19.6	54.5	48.7	37.4	15.7
Progression Factor	1.00	1.00	0.89	1.70	0.89	0.84
Incremental Delay, d2	15.7	22.9	13.7	2.1	0.4	0.5
Delay (s)	59.2	42.5	62.2	85.0	33.7	13.7
Level of Service	E	D	E	F	C	B
Approach Delay (s)	52.0		71.9			27.5
Approach LOS	D		E			C
Intersection Summary						
HCM 2000 Control Delay			48.4		HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.92			
Actuated Cycle Length (s)			140.0		Sum of lost time (s)	17.0
Intersection Capacity Utilization			85.1%		ICU Level of Service	E
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 29: Park Lawn Rd & Dwy 4

02-08-2021

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↔	↔↔			↔↔
Traffic Volume (veh/h)	0	90	260	47	0	741
Future Volume (Veh/h)	0	90	260	47	0	741
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.95	0.95	0.95	0.90	0.95
Hourly flow rate (vph)	0	95	274	49	0	780
Pedestrians	200					
Lane Width (m)	3.0					
Walking Speed (m/s)	1.2					
Percent Blockage	14					
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			81			81
pX, platoon unblocked	0.83					
vC, conflicting volume	888	362			523	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	471	362			523	
IC, single (s)	6.8	6.9			4.1	
IC, 2 stage (s)						
IF (s)	3.5	3.3			2.2	
p0 queue free %	100	83			100	
cM capacity (veh/h)	375	547			895	
Direction, Lane #						
	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	95	183	140	390	390	
Volume Left	0	0	0	0	0	
Volume Right	95	0	49	0	0	
cSH	547	1700	1700	1700	1700	
Volume to Capacity	0.17	0.11	0.08	0.23	0.23	
Queue Length 95th (m)	5.0	0.0	0.0	0.0	0.0	
Control Delay (s)	13.0	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	13.0	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			25.6%		ICU Level of Service	A
Analysis Period (min)			15			