

APPENDIX G – TOTAL FUTURE TRAFFIC (QUAKER AND FIRST ROUNDBOUT)

LANE SUMMARY

 Site: 102 [2033 AM (Site Folder: First Avenue & Quaker Road - Imp)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

First Avenue & Quaker Road
Site Category: Proposed Design 1
Roundabout

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h	HV %	[Total veh/h	HV %	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
South: First Avenue															
Lane 1 ^d	282	0.0	282	0.0	799	0.353	100	9.3	LOS A	2.8	19.3	Full	500	0.0	0.0
Lane 2	163	0.0	163	0.0	622	0.262	100	10.7	LOS B	1.8	12.4	Short	60	0.0	NA
Approach	445	0.0	445	0.0		0.353		9.8	LOS A	2.8	19.3				
East: Quaker Road															
Lane 1 ^d	489	2.0	489	2.0	1140	0.429	100	8.0	LOS A	3.3	23.3	Full	500	0.0	0.0
Lane 2	62	0.0	62	0.0	715	0.087	100	7.1	LOS A	0.5	3.2	Short	60	0.0	NA
Approach	552	1.8	552	1.8		0.429		7.9	LOS A	3.3	23.3				
North: First Avenue															
Lane 1 ^d	515	0.0	515	0.0	966	0.533	100	9.7	LOS A	4.8	33.4	Full	500	0.0	0.0
Lane 2	76	0.0	76	0.0	592	0.128	100	9.3	LOS A	0.7	4.9	Short	60	0.0	NA
Approach	591	0.0	591	0.0		0.533		9.7	LOS A	4.8	33.4				
West: Quaker Road															
Lane 1 ^d	559	1.8	559	1.8	813	0.687	100	14.6	LOS B	8.5	60.4	Full	500	0.0	0.0
Lane 2	54	0.0	54	0.0	507	0.106	100	11.3	LOS B	0.6	4.2	Short	60	0.0	NA
Approach	613	1.6	613	1.6		0.687		14.3	LOS B	8.5	60.4				
All Vehicles	2200	0.9	2200	0.9		0.687		10.5	LOS B	8.5	60.4				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)											
South: First Avenue											
Mov.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL	Ov.	Ov. Lane No.
From S To Exit:	W	N	E			Cap. veh/h	v/c	%	%		
Lane 1	71	212	-	282	0.0	799	0.353	100	NA	NA	
Lane 2	-	-	163	163	0.0	622	0.262	100	0.0	1	

Approach	71	212	163	445	0.0		0.353				
East: Quaker Road											
Mov.	L2	T1	R2	Total	%HV						
From E						Cap.	Deg.	Lane	Prob.	Ov.	
To Exit:	S	W	N			veh/h	Satn	Util.	SL	Lane	
							v/c	%	%	No.	
Lane 1	208	281	-	489	2.0	1140	0.429	100	NA	NA	
Lane 2	-	-	62	62	0.0	715	0.087	100	0.0	1	
Approach	208	281	62	552	1.8		0.429				
North: First Avenue											
Mov.	L2	T1	R2	Total	%HV						
From N						Cap.	Deg.	Lane	Prob.	Ov.	
To Exit:	E	S	W			veh/h	Satn	Util.	SL	Lane	
							v/c	%	%	No.	
Lane 1	143	372	-	515	0.0	966	0.533	100	NA	NA	
Lane 2	-	-	76	76	0.0	592	0.128	100	0.0	1	
Approach	143	372	76	591	0.0		0.533				
West: Quaker Road											
Mov.	L2	T1	R2	Total	%HV						
From W						Cap.	Deg.	Lane	Prob.	Ov.	
To Exit:	N	E	S			veh/h	Satn	Util.	SL	Lane	
							v/c	%	%	No.	
Lane 1	54	505	-	559	1.8	813	0.687	100	NA	NA	
Lane 2	-	-	54	54	0.0	507	0.106	100	0.0	1	
Approach	54	505	54	613	1.6		0.687				
Total %HV Deg.Satn (v/c)											
All Vehicles	2200	0.9		0.687							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis												
	Exit Lane Number	Short Lane Length m	Percent Oppng in Lane %	Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Capacity Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
South Exit: First Avenue												
Merge Type: Priority												
Exit Short Lane	2	60	0.0	580	582	3.00	2.00	54	1200	0.045	1.0	1.2
Merge Lane	1	-	100.0	Merge Lane is not Opposed				580	1800	0.322	0.0	0.0
East Exit: Quaker Road												
Merge Type: Priority												
Exit Short Lane	2	60	0.0	648	653	3.00	2.00	163	1124	0.145	1.2	1.6
Merge Lane	1	-	100.0	Merge Lane is not Opposed				648	1800	0.360	0.0	0.0
North Exit: First Avenue												
Merge Type: Priority												
Exit Short Lane	2	60	0.0	265	265	3.00	2.00	62	1531	0.041	0.4	0.5
Merge Lane	1	-	100.0	Merge Lane is not Opposed				265	1800	0.147	0.0	0.0
West Exit: Quaker Road												
Merge Type: Priority												
Exit Short Lane	2	60	0.0	352	354	3.00	2.00	76	1439	0.053	0.5	0.6
Merge Lane	1	-	100.0	Merge Lane is not Opposed				352	1800	0.195	0.0	0.0

Variable Demand Analysis				
	Initial Queued Demand	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
	veh	veh	sec	sec
South: First Avenue				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Quaker Road				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: First Avenue				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Quaker Road				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 102 [2033 PM (Site Folder: First Avenue & Quaker Road - Imp)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

First Avenue & Quaker Road
Site Category: Proposed Design 1
Roundabout

Lane Use and Performance															
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h	HV %	[Total veh/h	HV %	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
South: First Avenue															
Lane 1 ^d	417	0.0	417	0.0	834	0.500	100	9.7	LOS A	4.5	31.4	Full	500	0.0	0.0
Lane 2	238	2.0	238	2.0	639	0.372	74 ⁵	10.6	LOS B	2.6	18.3	Short	60	0.0	NA
Approach	655	0.7	655	0.7		0.500		10.0	LOS B	4.5	31.4				
East: Quaker Road															
Lane 1 ^d	705	2.0	705	2.0	973	0.724	100	12.8	LOS B	9.5	67.9	Full	500	0.0	0.0
Lane 2	205	0.6	205	0.6	644	0.318	44 ⁶	9.5	LOS A	2.0	13.9	Short	60	0.0	NA
Approach	909	1.7	909	1.7		0.724		12.1	LOS B	9.5	67.9				
North: First Avenue															
Lane 1	111	0.0	111	0.0	477	0.232	44 ⁶	15.7	LOS B	1.4	10.0	Full	500	0.0	0.0
Lane 2 ^d	388	0.0	388	0.0	735	0.529	100	12.0	LOS B	5.1	35.5	Short	60	0.0	NA
Approach	499	0.0	499	0.0		0.529		12.8	LOS B	5.1	35.5				
West: Quaker Road															
Lane 1 ^d	560	1.7	560	1.7	902	0.621	100	11.6	LOS B	6.6	46.9	Full	500	0.0	0.0
Lane 2	53	0.0	53	0.0	560	0.094	100	9.1	LOS A	0.5	3.5	Short	60	0.0	NA
Approach	613	1.5	613	1.5		0.621		11.4	LOS B	6.6	46.9				
All Vehicles	2676	1.1	2676	1.1		0.724		11.6	LOS B	9.5	67.9				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

⁵ Lane under-utilisation found by the program

⁶ Lane under-utilisation due to downstream effects

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)															
South: First Avenue															
Mov.	L2	T1	R2	Total	%HV										
From S						Cap.	Deg.	Lane	Prob.	Ov.					
To Exit:	W	N	E			veh/h	v/c	Util.	SL	Ov.	Lane				
								%	%	No.					

Lane 1	48	368	-	417	0.0	834	0.500	100	NA	NA
Lane 2	-	-	238	238	2.0	639	0.372	74 ⁵	0.0	1
Approach	48	368	238	655	0.7	0.500				
East: Quaker Road										
Mov.	L2	T1	R2	Total	%HV					
From E						Cap.	Deg.	Lane	Prob.	Ov.
To Exit:	S	W	N			veh/h	Satn	Util.	SL	Lane
							v/c	%	%	No.
Lane 1	195	510	-	705	2.0	973	0.724	100	NA	NA
Lane 2	-	58	146	205	0.6	644	0.318	44 ⁶	0.0	1
Approach	195	568	146	909	1.7	0.724				
North: First Avenue										
Mov.	L2	T1	R2	Total	%HV					
From N						Cap.	Deg.	Lane	Prob.	Ov.
To Exit:	E	S	W			veh/h	Satn	Util.	SL	Lane
							v/c	%	%	No.
Lane 1	106	4	-	111	0.0	477	0.232	44 ⁶	NA	NA
Lane 2	-	325	63	388	0.0	735	0.529	100	0.0	1
Approach	106	329	63	499	0.0	0.529				
West: Quaker Road										
Mov.	L2	T1	R2	Total	%HV					
From W						Cap.	Deg.	Lane	Prob.	Ov.
To Exit:	N	E	S			veh/h	Satn	Util.	SL	Lane
							v/c	%	%	No.
Lane 1	95	465	-	560	1.7	902	0.621	100	NA	NA
Lane 2	-	-	53	53	0.0	560	0.094	100	0.0	1
Approach	95	465	53	613	1.5	0.621				
Total %HV Deg.Satn (v/c)										
All Vehicles	2676	1.1		0.724						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

6 Lane under-utilisation due to downstream effects

Merge Analysis												
	Exit Lane Number	Short Lane Length m	Percent Oppng in Lane %	Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min Delay sec	Merge Delay sec
South Exit: First Avenue												
Merge Type: Priority												
Exit Short Lane	1	60	0.0	378	378	3.03	2.02	199	1397	0.142	0.6	0.8
Merge Lane	2	-	100.0	Merge Lane is not Opposed				378	1800	0.210	0.0	0.0
East Exit: Quaker Road												
Merge Type: Priority												
Exit Short Lane	2	60	0.0	572	576	3.03	2.02	238	1189	0.200	1.0	1.4
Merge Lane	1	-	100.0	Merge Lane is not Opposed				572	1800	0.318	0.0	0.0
North Exit: First Avenue												
Merge Type: Priority												
Exit Short Lane	2	60	0.0	463	463	3.00	2.00	146	1325	0.110	0.8	1.0
Merge Lane	1	-	100.0	Merge Lane is not Opposed				463	1800	0.257	0.0	0.0
West Exit: Quaker Road												
Merge Type: Priority												
Exit Short Lane	2	60	0.0	558	564	3.01	2.01	122	1211	0.100	1.0	1.3

Merge Lane	1	-	100.0	Merge Lane is not Opposed	558	1800	0.310	0.0	0.0
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Variable Demand Analysis				
	Initial Queued Demand	Residual Queued Demand	Time for Residual Demand to Clear	Duration of Oversatn
	veh	veh	sec	sec
South: First Avenue				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Quaker Road				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: First Avenue				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Quaker Road				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [2033 AM - Improved (Site Folder: Rice Road & Quaker Road - Imp)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Rice Road & Quaker Road
Site Category: Proposed Design 1
Roundabout

Lane Use and Performance														
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.
	[Total veh/h	HV %	[Total veh/h	HV %	veh/h	v/c	%	sec		[Veh	Dist] m		m	% %
South: Rice Road														
Lane 1 ^d	536	0.0	536	0.0	992	0.540	100	8.0	LOS A	4.9	34.0	Full	500	0.0 0.0
Approach	536	0.0	536	0.0		0.540		8.0	LOS A	4.9	34.0			
East: Quaker Road														
Lane 1 ^d	356	0.9	356	0.9	964	0.369	100	8.6	LOS A	2.7	18.8	Full	500	0.0 0.0
Approach	356	0.9	356	0.9		0.369		8.6	LOS A	2.7	18.8			
North: Rice Road														
Lane 1 ^d	573	0.0	573	0.0	1120	0.511	100	6.7	LOS A	4.1	28.6	Full	500	0.0 0.0
Approach	573	0.0	573	0.0		0.511		6.7	LOS A	4.1	28.6			
West: Quaker Road														
Lane 1 ^d	546	1.0	546	1.0	876	0.624	100	11.7	LOS B	6.7	47.2	Full	500	0.0 0.0
Approach	546	1.0	546	1.0		0.624		11.7	LOS B	6.7	47.2			
All Vehicles	2011	0.4	2011	0.4		0.624		8.8	LOS A	6.7	47.2			

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)											
South: Rice Road											
Mov.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From S To Exit:	W	N	E			Cap. veh/h	v/c	%	%		
Lane 1	73	338	125	536	0.0	992	0.540	100	NA	NA	
Approach	73	338	125	536	0.0		0.540				
East: Quaker Road											
Mov.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From E						Cap. veh/h	v/c	%	%		

To Exit:	S	W	N							
Lane 1	136	155	65	356	0.9	964	0.369	100	NA	NA
Approach	136	155	65	356	0.9	0.369				
North: Rice Road										
Mov.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.
From N To Exit:	E	S	W			Cap. veh/h	v/c	%	%	
Lane 1	91	412	71	573	0.0	1120	0.511	100	NA	NA
Approach	91	412	71	573	0.0	0.511				
West: Quaker Road										
Mov.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.
From W To Exit:	N	E	S			Cap. veh/h	v/c	%	%	
Lane 1	107	278	161	546	1.0	876	0.624	100	NA	NA
Approach	107	278	161	546	1.0	0.624				
Total %HV Deg.Satn (v/c)										
All Vehicles	2011	0.4	0.624							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis												
	Exit Lane Number	Short Lane Length m	Percent Oppng in Lane %	Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Rice Road				
Lane 1	0.0	0.0	0.0	0.0
East: Quaker Road				
Lane 1	0.0	0.0	0.0	0.0
North: Rice Road				
Lane 1	0.0	0.0	0.0	0.0
West: Quaker Road				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

 Site: 101 [2033 PM - Improved (Site Folder: Rice Road & Quaker Road - Imp)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Rice Road & Quaker Road

Site Category: Proposed Design 1

Roundabout

Lane Use and Performance														
	Demand Flows		Arrival Flows		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% Back Of Queue		Lane Config	Lane Length	Cap. Prob. Adj. Block.
	[Total veh/h	HV %	[Total veh/h	HV %	veh/h	v/c	%	sec		[Veh	Dist] m		m	% %
South: Rice Road														
Lane 1 ^d	725	0.0	725	0.0	916	0.792	100	15.1	LOS B	12.4	86.5	Full	500	0.0 0.0
Approach	725	0.0	725	0.0		0.792		15.1	LOS B	12.4	86.5			
East: Quaker Road														
Lane 1 ^d	608	1.2	608	1.2	763	0.797	100	19.5	LOS B	12.4	87.7	Full	500	0.0 0.0
Approach	608	1.2	608	1.2		0.797		19.5	LOS B	12.4	87.7			
North: Rice Road														
Lane 1 ^d	601	0.0	601	0.0	788	0.763	100	16.8	LOS B	11.0	76.8	Full	500	0.0 0.0
Approach	601	0.0	601	0.0		0.763		16.8	LOS B	11.0	76.8			
West: Quaker Road														
Lane 1 ^d	578	1.1	578	1.1	804	0.718	100	14.9	LOS B	9.3	65.9	Full	500	0.0 0.0
Approach	578	1.1	578	1.1		0.718		14.9	LOS B	9.3	65.9			
All Vehicles	2513	0.5	2513	0.5		0.797		16.5	LOS B	12.4	87.7			

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

Lane LOS values are based on average delay per lane.

Intersection and Approach LOS values are based on average delay for all lanes.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

^d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)											
South: Rice Road											
Mov.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From S To Exit:	W	N	E			Cap. veh/h	v/c	%	%		
Lane 1	179	397	149	725	0.0	916	0.792	100	NA	NA	
Approach	179	397	149	725	0.0		0.792				
East: Quaker Road											
Mov.	L2	T1	R2	Total	%HV		Deg. Satn	Lane Util.	Prob. SL Ov.	Ov. Lane No.	
From E						Cap. veh/h	v/c	%	%		

To Exit:	S	W	N							
Lane 1	157	360	92	608	1.2	763	0.797	100	NA	NA
Approach	157	360	92	608	1.2	0.797				
North: Rice Road										
Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From N						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	E	S	W			veh/h	v/c	%	%	No.
Lane 1	85	426	89	601	0.0	788	0.763	100	NA	NA
Approach	85	426	89	601	0.0	0.763				
West: Quaker Road										
Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.
From W						Cap.	Satn	Util.	SL Ov.	Lane
To Exit:	N	E	S			veh/h	v/c	%	%	No.
Lane 1	126	328	123	578	1.1	804	0.718	100	NA	NA
Approach	126	328	123	578	1.1	0.718				
Total %HV Deg.Satn (v/c)										
All Vehicles	2513	0.5	0.797							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis												
	Exit Lane Number	Short Lane Length m	Percent Opng in Lane % veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec	
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Rice Road				
Lane 1	0.0	0.0	0.0	0.0
East: Quaker Road				
Lane 1	0.0	0.0	0.0	0.0
North: Rice Road				
Lane 1	0.0	0.0	0.0	0.0
West: Quaker Road				
Lane 1	0.0	0.0	0.0	0.0

APPENDIX H – TOTAL FUTURE TRAFFIC (IMPROVEMENTS)

Lanes, Volumes, Timings

1: Clare Avenue

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	47	38	164	15	13	120
Future Volume (vph)	47	38	164	15	13	120
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	0	0		0	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1583	0	1712	0	0	1722
Flt Permitted	0.973					0.995
Satd. Flow (perm)	1583	0	1712	0	0	1722
Link Speed (k/h)	50		48			48
Link Distance (m)	139.9		634.5			378.6
Travel Time (s)	10.1		47.6			28.4
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	51	41	178	16	14	130
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	194	0	0	144
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	30.6%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	47	38	164	15	13	120
Future Vol, veh/h	47	38	164	15	13	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	51	41	178	16	14	130

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	345	186	0
Stage 1	186	-	-
Stage 2	159	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	656	861	-
Stage 1	850	-	-
Stage 2	875	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	648	861	-
Mov Cap-2 Maneuver	648	-	-
Stage 1	850	-	-
Stage 2	865	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v10.66		0	0.74
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	729	176
HCM Lane V/C Ratio	-	-	0.127	0.01
HCM Control Delay (s/veh)	-	-	10.7	7.6
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0

Lanes, Volumes, Timings

2: Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	342	27	26	187	33	10	0	81	44	0	11
Future Volume (vph)	22	342	27	26	187	33	10	0	81	44	0	11
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1680	0	1644	1663	0	0	1514	0	0	1620	0
Flt Permitted	0.950			0.950				0.994			0.962	
Satd. Flow (perm)	1644	1680	0	1644	1663	0	0	1514	0	0	1620	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		351.0			190.3			36.8			63.5	
Travel Time (s)		25.3			13.7			2.6			4.6	
Confl. Peds. (#/hr)	20		20									
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	24	372	29	28	203	36	11	0	88	48	0	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	401	0	28	239	0	0	99	0	0	60	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	40.2%						ICU Level of Service A					
Analysis Period (min)	15											

HCM 7th TWSC
2: Quaker Road

12-17-2024

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	342	27	26	187	33	10	0	81	44	0	11
Future Vol, veh/h	22	342	27	26	187	33	10	0	81	44	0	11
Conflicting Peds, #/hr	20	0	20	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	24	372	29	28	203	36	11	0	88	48	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	259	0	0	421	0	0	714	770	406	717	767	241
Stage 1	-	-	-	-	-	-	454	454	-	298	298	-
Stage 2	-	-	-	-	-	-	260	316	-	420	469	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1317	-	-	1149	-	-	349	334	649	347	335	803
Stage 1	-	-	-	-	-	-	589	573	-	715	671	-
Stage 2	-	-	-	-	-	-	749	659	-	615	564	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1295	-	-	1129	-	-	323	308	638	282	310	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	323	308	-	282	310	-
Stage 1	-	-	-	-	-	-	569	553	-	686	643	-
Stage 2	-	-	-	-	-	-	720	631	-	521	544	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.44	0.87	12.54	18.66
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	576	1295	-	-	1129	-	-	323
HCM Lane V/C Ratio	0.172	0.018	-	-	0.025	-	-	0.185
HCM Control Delay (s/veh)	12.5	7.8	-	-	8.3	-	-	18.7
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0.1	-	-	0.7

Lanes, Volumes, Timings

3: Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	462	3	20	242	22	8	0	59	1	0	1
Future Volume (vph)	1	462	3	20	242	22	8	0	59	1	0	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1695	0	1644	1677	0	0	1517	0	0	1574	0
Flt Permitted	0.950			0.950				0.994			0.976	
Satd. Flow (perm)	1644	1695	0	1644	1677	0	0	1517	0	0	1574	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		190.3			295.7			54.2			58.9	
Travel Time (s)		13.7			21.3			3.9			0.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	1	502	3	22	263	24	9	0	64	1	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	505	0	22	287	0	0	73	0	0	2	0
Sign Control	Free				Free				Stop		Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	37.8%					ICU Level of Service A						
Analysis Period (min)	15											

HCM 7th TWSC

3: Quaker Road

12-17-2024

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	462	3	20	242	22	8	0	59	1	0	1
Future Vol, veh/h	1	462	3	20	242	22	8	0	59	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	30	-	-	30	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	1	502	3	22	263	24	9	0	64	1	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	287	0	0	505	0	0	813	836	504	823	826	275
Stage 1	-	-	-	-	-	-	506	506	-	318	318	-
Stage 2	-	-	-	-	-	-	307	330	-	504	508	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1287	-	-	1070	-	-	300	305	572	295	309	769
Stage 1	-	-	-	-	-	-	553	543	-	697	657	-
Stage 2	-	-	-	-	-	-	708	649	-	554	542	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1287	-	-	1070	-	-	293	299	572	256	303	769
Mov Cap-2 Maneuver	-	-	-	-	-	-	293	299	-	256	303	-
Stage 1	-	-	-	-	-	-	552	543	-	683	644	-
Stage 2	-	-	-	-	-	-	692	636	-	491	542	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v 0.02		0.59	13.16	14.42
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	514	1287	-	-	1070	-	-	384
HCM Lane V/C Ratio	0.142	0.001	-	-	0.02	-	-	0.006
HCM Control Delay (s/veh)	13.2	7.8	-	-	8.4	-	-	14.4
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0.1	-	-	0

Lanes, Volumes, Timings

4: Rice Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	0	22	10	0	12	0	475	6	7	645	22
Future Volume (vph)	22	0	22	10	0	12	0	475	6	7	645	22
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	10.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1543	0	0	1569	0	1697	1688	0	1607	1682	0
Flt Permitted		0.976			0.978					0.950		
Satd. Flow (perm)	0	1543	0	0	1569	0	1697	1688	0	1607	1682	0
Link Speed (k/h)		50			50			40			50	
Link Distance (m)		36.3			61.8			46.9			105.7	
Travel Time (s)		0.0			4.4			4.2			7.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	24	0	24	11	0	13	0	516	7	8	701	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	24	0	0	523	0	8	725	0
Sign Control	Stop			Stop			Free			Free		
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	48.6%				ICU Level of Service A							
Analysis Period (min)	15											

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	22	0	22	10	0	12	0	475	6	7	645	22
Future Vol, veh/h	22	0	22	10	0	12	0	475	6	7	645	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	10	-	-	15	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	0	2	0	0	0	0	2
Mvmt Flow	24	0	24	11	0	13	0	516	7	8	701	24

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1245	1251	713	1236	1260	520	725	0	0	523	0	0
Stage 1	728	728	-	520	520	-	-	-	-	-	-	-
Stage 2	516	523	-	716	740	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	151	172	432	154	170	560	878	-	-	1054	-	-
Stage 1	415	428	-	543	532	-	-	-	-	-	-	-
Stage 2	542	531	-	424	423	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	146	171	432	145	169	560	878	-	-	1054	-	-
Mov Cap-2 Maneuver	146	171	-	145	169	-	-	-	-	-	-	-
Stage 1	412	425	-	543	532	-	-	-	-	-	-	-
Stage 2	529	531	-	398	420	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v26.03		21.41	0	0.09
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	878	-	-	219 243	1054	-	-
HCM Lane V/C Ratio	-	-	-	0.219 0.098	0.007	-	-
HCM Control Delay (s/veh)	0	-	-	26 21.4	8.4	-	-
HCM Lane LOS	A	-	-	D C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.8 0.3	0	-	-

Lanes, Volumes, Timings

5: Rice Road

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	481	0	0	677
Future Volume (vph)	0	0	481	0	0	677
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.3	3.3	3.3	3.3
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1731	0	1692	0	1692	1692
Fit Permitted						
Satd. Flow (perm)	1731	0	1692	0	1692	1692
Link Speed (k/h)	50		40			50
Link Distance (m)	47.0		212.0			46.9
Travel Time (s)	3.4		19.1			3.4
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	0	523	0	0	736
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	523	0	0	736
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	42.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	481	0	0	677
Future Vol, veh/h	0	0	481	0	0	677
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	15	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	523	0	0	736
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1259	523	0	0	523	0
Stage 1	523	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	190	558	-	-	1054	-
Stage 1	599	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	190	558	-	-	1054	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	599	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s/v	0	0	0			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1054	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s/veh)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Lanes, Volumes, Timings

6: Rice Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	1	22	20	2	25	0	421	19	14	596	67
Future Volume (vph)	36	1	22	20	2	25	0	421	19	14	596	67
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1562	0	0	1573	0	1697	1680	0	1607	1663	0
Flt Permitted		0.970			0.979					0.950		
Satd. Flow (perm)	0	1562	0	0	1573	0	1697	1680	0	1607	1663	0
Link Speed (k/h)		50			50			40			50	
Link Distance (m)		32.8			98.9			148.6			212.0	
Travel Time (s)		0.0			7.1			13.4			15.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	39	1	24	22	2	27	0	458	21	15	648	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	0	51	0	0	479	0	15	721	0
Sign Control	Stop				Stop		Free				Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	50.7%					ICU Level of Service A						
Analysis Period (min)	15											

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	36	1	22	20	2	25	0	421	19	14	596	67
Future Vol, veh/h	36	1	22	20	2	25	0	421	19	14	596	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	0	2	0	0	0	0	2
Mvmt Flow	39	1	24	22	2	27	0	458	21	15	648	73

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1173	1193	684	1147	1219	468	721	0	0	478	0	0
Stage 1	715	715	-	468	468	-	-	-	-	-	-	-
Stage 2	459	478	-	679	751	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	169	187	449	178	180	599	881	-	-	1095	-	-
Stage 1	422	435	-	579	561	-	-	-	-	-	-	-
Stage 2	582	555	-	445	418	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	157	184	449	165	178	599	881	-	-	1095	-	-
Mov Cap-2 Maneuver	157	184	-	165	178	-	-	-	-	-	-	-
Stage 1	416	429	-	579	561	-	-	-	-	-	-	-
Stage 2	554	555	-	414	413	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v29.84		21.43	0	0.17
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	881	-	-	208 270	1095	-	-
HCM Lane V/C Ratio	-	-	-	0.308 0.189	0.014	-	-
HCM Control Delay (s/veh)	0	-	-	29.8 21.4	8.3	-	-
HCM Lane LOS	A	-	-	D C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.3 0.7	0	-	-

Lanes, Volumes, Timings

7: Rice Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	67	22	0	4	22	457	6	2	456	5
Future Volume (vph)	10	0	67	22	0	4	22	457	6	2	456	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.5	3.5	3.3	3.3
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1488	0	0	1596	0	1576	1655	0	1612	1657	0
Flt Permitted		0.993			0.959		0.950			0.950		
Satd. Flow (perm)	0	1488	0	0	1596	0	1576	1655	0	1612	1657	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		64.6			81.2			232.4			190.6	
Travel Time (s)		4.7			0.0			16.7			13.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	11	0	73	24	0	4	24	497	7	2	496	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	84	0	0	28	0	24	504	0	2	501	0
Sign Control	Stop				Stop		Free				Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	40.2%				ICU Level of Service A							
Analysis Period (min)	15											

HCM 7th TWSC
7: Rice Road

12-17-2024

Intersection

Int Delay, s/veh 1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↖	↗		↖	↗	
Traffic Vol, veh/h	10	0	67	22	0	4	22	457	6	2	456	5
Future Vol, veh/h	10	0	67	22	0	4	22	457	6	2	456	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	73	24	0	4	24	497	7	2	496	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1047	1054	498	1048	1053	500	501	0	0	503	0	0
Stage 1	503	503	-	548	548	-	-	-	-	-	-	-
Stage 2	545	551	-	500	505	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	206	226	572	206	226	571	1063	-	-	1061	-	-
Stage 1	551	542	-	521	517	-	-	-	-	-	-	-
Stage 2	523	515	-	553	540	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	199	220	572	175	221	571	1063	-	-	1061	-	-
Mov Cap-2 Maneuver	199	220	-	175	221	-	-	-	-	-	-	-
Stage 1	550	540	-	509	505	-	-	-	-	-	-	-
Stage 2	507	504	-	482	539	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v14.55		26.42	0.38	0.04
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1063	-	-	460 196	1061	-	-
HCM Lane V/C Ratio	0.022	-	-	0.182 0.144	0.002	-	-
HCM Control Delay (s/veh)	8.5	-	-	14.6 26.4	8.4	-	-
HCM Lane LOS	A	-	-	B D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7 0.5	0	-	-

Lanes, Volumes, Timings

8: Rice Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	67	0	0	0	22	449	0	0	395	5
Future Volume (vph)	10	0	67	0	0	0	22	449	0	0	395	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.5	3.5	3.3	3.3
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1488	0	0	1697	0	1576	1658	0	1697	1655	0
Flt Permitted		0.993					0.950					
Satd. Flow (perm)	0	1488	0	0	1697	0	1576	1658	0	1697	1655	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		58.4			61.8			190.6			68.0	
Travel Time (s)		4.2			0.0			13.7			4.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	11	0	73	0	0	0	24	488	0	0	429	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	84	0	0	0	0	24	488	0	0	434	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	37.4%						ICU Level of Service A					
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↗		↗	↗	
Traffic Vol, veh/h	10	0	67	0	0	0	22	449	0	0	395	5
Future Vol, veh/h	10	0	67	0	0	0	22	449	0	0	395	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	73	0	0	0	24	488	0	0	429	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	968	968	432	965	971	488	435	0	0	488	0	0
Stage 1	432	432	-	536	536	-	-	-	-	-	-	-
Stage 2	536	536	-	429	435	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	233	254	623	234	253	580	1125	-	-	1075	-	-
Stage 1	602	582	-	529	523	-	-	-	-	-	-	-
Stage 2	529	523	-	604	581	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	228	248	623	203	248	580	1125	-	-	1075	-	-
Mov Cap-2 Maneuver	228	248	-	203	248	-	-	-	-	-	-	-
Stage 1	602	582	-	517	512	-	-	-	-	-	-	-
Stage 2	517	512	-	533	581	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v13.46			0		0.39		0					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1125	-	-	509	-	1075	-	-				
HCM Lane V/C Ratio	0.021	-	-	0.164	-	-	-	-				
HCM Control Delay (s/veh)	8.3	-	-	13.5	0	0	-	-				
HCM Lane LOS	A	-	-	B	A	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.6	-	0	-	-				

Lanes, Volumes, Timings

9: Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	448	16	26	272	3	54	0	81	12	0	13
Future Volume (vph)	5	448	16	26	272	3	54	0	81	12	0	13
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		45.7	45.7		45.7	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1689	0	1562	1611	0	0	1559	0	0	1571	0
Flt Permitted	0.950			0.950				0.980			0.976	
Satd. Flow (perm)	1644	1689	0	1562	1611	0	0	1559	0	0	1571	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		326.4			220.0			48.8			221.2	
Travel Time (s)		23.5			35.5			0.0			0.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	5	487	17	28	296	3	59	0	88	13	0	14
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	5	504	0	25	302	0	0	147	0	0	27	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	43.6%					ICU Level of Service A						
Analysis Period (min)	15											

HCM 7th TWSC
9: Quaker Road

12-17-2024

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	448	16	26	272	3	54	0	81	12	0	13
Future Vol, veh/h	5	448	16	26	272	3	54	0	81	12	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	30	-	-	45.7	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	5	487	17	28	296	3	59	0	88	13	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	299	0	0	504	0	0	859	862	496	852	869	297
Stage 1	-	-	-	-	-	-	507	507	-	354	354	-
Stage 2	-	-	-	-	-	-	352	355	-	498	515	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1274	-	-	1071	-	-	279	295	578	282	292	747
Stage 1	-	-	-	-	-	-	552	543	-	667	634	-
Stage 2	-	-	-	-	-	-	669	633	-	558	538	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1274	-	-	1071	-	-	265	286	578	232	283	747
Mov Cap-2 Maneuver	-	-	-	-	-	-	265	286	-	232	283	-
Stage 1	-	-	-	-	-	-	550	541	-	650	617	-
Stage 2	-	-	-	-	-	-	639	616	-	471	536	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.08			0.73			19.53			15.77		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	393	1274	-	-	1071	-	-	361
HCM Lane V/C Ratio	0.374	0.004	-	-	0.026	-	-	0.075
HCM Control Delay (s/veh)	19.5	7.8	-	-	8.5	0	-	15.8
HCM Lane LOS	C	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	1.7	0	-	-	0.1	-	-	0.2

Lanes, Volumes, Timings

10: Quaker Road

12-17-2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖	↗	↖	
Traffic Volume (vph)	538	3	14	342	7	46
Future Volume (vph)	538	3	14	342	7	46
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	30.0		0.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			7.5		7.5	
Satd. Flow (prot)	1695	0	1612	1697	1489	0
Flt Permitted			0.950		0.993	
Satd. Flow (perm)	1695	0	1612	1697	1489	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	220.0			273.2	102.8	
Travel Time (s)	15.8			0.0	7.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	585	3	15	372	8	50
Shared Lane Traffic (%)						
Lane Group Flow (vph)	588	0	15	372	58	0
Sign Control	Free			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	41.1%			ICU Level of Service A		
Analysis Period (min)	15					

Lanes, Volumes, Timings

11: First Avenue

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	0	84	22	0	22	19	338	0	22	550	33
Future Volume (vph)	59	0	84	22	0	22	19	338	0	22	550	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1544	0	0	1574	0	0	1725	0	0	1715	0
Flt Permitted		0.980			0.976			0.997			0.998	
Satd. Flow (perm)	0	1544	0	0	1574	0	0	1725	0	0	1715	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		91.1			108.9			108.6			221.2	
Travel Time (s)		6.6			7.8			7.8			15.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	64	0	91	24	0	24	21	367	0	24	598	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	155	0	0	48	0	0	388	0	0	658	0
Sign Control	Stop				Stop		Free				Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	58.7%				ICU Level of Service B							
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	59	0	84	22	0	22	19	338	0	22	550	33
Future Vol, veh/h	59	0	84	22	0	22	19	338	0	22	550	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	0	0	0	0	0	0	0
Mvmt Flow	64	0	91	24	0	24	21	367	0	24	598	36

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1072	1072	616	1054	1090	367	634	0	0	367	0	0
Stage 1	664	664	-	409	409	-	-	-	-	-	-	-
Stage 2	409	409	-	646	682	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.22	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	200	222	491	206	217	682	959	-	-	1202	-	-
Stage 1	453	462	-	624	600	-	-	-	-	-	-	-
Stage 2	624	600	-	464	453	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	182	210	491	158	204	682	959	-	-	1202	-	-
Mov Cap-2 Maneuver	182	210	-	158	204	-	-	-	-	-	-	-
Stage 1	439	447	-	607	583	-	-	-	-	-	-	-
Stage 2	585	583	-	366	439	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v31.15		22.24	0.47	0.29
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	96	-	-	288	256	65	-
HCM Lane V/C Ratio	0.022	-	-	0.539	0.187	0.02	-
HCM Control Delay (s/veh)	8.8	0	-	31.2	22.2	8.1	0
HCM Lane LOS	A	A	-	D	C	A	A
HCM 95th %tile Q(veh)	0.1	-	-	3	0.7	0.1	-

Lanes, Volumes, Timings

12: Cataract Road

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	40	15	299	13	5	522
Future Volume (vph)	40	15	299	13	5	522
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	0	0		0	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1608	0	1720	0	0	1730
Flt Permitted	0.965					
Satd. Flow (perm)	1608	0	1720	0	0	1730
Link Speed (k/h)	50		50			50
Link Distance (m)	65.2		119.8			70.9
Travel Time (s)	4.7		8.6			5.1
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	43	16	325	14	5	567
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	339	0	0	572
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	44.2%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	15	299	13	5	522
Future Vol, veh/h	40	15	299	13	5	522
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	43	16	325	14	5	567

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	910	332	0
Stage 1	332	-	-
Stage 2	578	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	307	714	-
Stage 1	731	-	-
Stage 2	565	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	305	714	-
Mov Cap-2 Maneuver	305	-	-
Stage 1	731	-	-
Stage 2	561	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v16.91		0	0.08
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	362	17
HCM Lane V/C Ratio	-	-	0.165	0.004
HCM Control Delay (s/veh)	-	-	16.9	8
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.6	0

Lanes, Volumes, Timings

13: Cataract Road

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	40	15	301	13	5	487
Future Volume (vph)	40	15	301	13	5	487
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	0	0		0	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1608	0	1720	0	0	1731
Flt Permitted	0.965					
Satd. Flow (perm)	1608	0	1720	0	0	1731
Link Speed (k/h)	50		50			50
Link Distance (m)	51.9		70.9			111.7
Travel Time (s)	3.7		5.1			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	43	16	327	14	5	529
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	341	0	0	534
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	42.2%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	40	15	301	13	5	487
Future Vol, veh/h	40	15	301	13	5	487
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	43	16	327	14	5	529

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	874	334	0
Stage 1	334	-	-
Stage 2	540	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	323	712	-
Stage 1	730	-	-
Stage 2	588	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	321	712	-
Mov Cap-2 Maneuver	321	-	-
Stage 1	730	-	-
Stage 2	584	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v16.33		0	0.08
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	377	18
HCM Lane V/C Ratio	-	-	0.159	0.004
HCM Control Delay (s/veh)	-	-	16.3	7.9
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.6	0

Lanes, Volumes, Timings
14: Cataract Road & Street 'D'

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	27	295	21	9	427
Future Volume (vph)	65	27	295	21	9	427
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	45.7	45.7		45.7	45.7	
Storage Lanes	0	0		0	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1607	0	1715	0	0	1729
Flt Permitted	0.966					0.999
Satd. Flow (perm)	1607	0	1715	0	0	1729
Link Speed (k/h)	48		50			50
Link Distance (m)	162.3		111.7			177.0
Travel Time (s)	41.4		26.6			10.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	71	29	321	23	10	464
Shared Lane Traffic (%)						
Lane Group Flow (vph)	100	0	344	0	0	474
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	44.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 7th TWSC
14: Cataract Road & Street 'D'

12-17-2024

Intersection

Int Delay, s/veh 1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	27	295	21	9	427
Future Vol, veh/h	65	27	295	21	9	427
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	71	29	321	23	10	464

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	816	332	0
Stage 1	332	-	-
Stage 2	484	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	349	714	-
Stage 1	731	-	-
Stage 2	624	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	346	714	-
Mov Cap-2 Maneuver	346	-	-
Stage 1	731	-	-
Stage 2	617	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v16.69		0	0.16
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	407	37
HCM Lane V/C Ratio	-	-	0.246	0.008
HCM Control Delay (s/veh)	-	-	16.7	8
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1	0

Lanes, Volumes, Timings

15: First Avenue

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	0	196	37	0	14	68	242	12	4	202	28
Future Volume (vph)	89	0	196	37	0	14	68	242	12	4	202	28
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1546	0	0	1608	0	0	1705	0	0	1701	0
Flt Permitted		0.985			0.965			0.990			0.999	
Satd. Flow (perm)	0	1546	0	0	1608	0	0	1705	0	0	1701	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		135.4			80.3			177.0			566.2	
Travel Time (s)		9.7			0.0			12.7			39.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	97	0	213	40	0	15	74	263	13	4	220	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	310	0	0	55	0	0	350	0	0	254	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	60.4%						ICU Level of Service B					
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	89	0	196	37	0	14	68	242	12	4	202	28
Future Vol, veh/h	89	0	196	37	0	14	68	242	12	4	202	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	97	0	213	40	0	15	74	263	13	4	220	30

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	654	667	235	646	676	270	250	0	0	276	0	0
Stage 1	243	243	-	417	417	-	-	-	-	-	-	-
Stage 2	411	424	-	228	259	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	382	382	809	388	378	774	1327	-	-	1299	-	-
Stage 1	765	708	-	617	594	-	-	-	-	-	-	-
Stage 2	622	591	-	779	697	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	349	355	809	266	351	774	1327	-	-	1299	-	-
Mov Cap-2 Maneuver	349	355	-	266	351	-	-	-	-	-	-	-
Stage 1	762	705	-	576	555	-	-	-	-	-	-	-
Stage 2	570	552	-	572	695	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	18.42	18.38	1.66	0.13
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	377	-	-	573	324	30	-
HCM Lane V/C Ratio	0.056	-	-	0.541	0.171	0.003	-
HCM Control Delay (s/veh)	7.9	0	-	18.4	18.4	7.8	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0.2	-	-	3.2	0.6	0	-

Lanes, Volumes, Timings

16: Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	718	44	22	470	6	22	0	22	16	0	31
Future Volume (vph)	10	718	44	22	470	6	22	0	22	16	0	31
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1681	0	1612	1694	0	0	1543	0	0	1550	0
Flt Permitted	0.950			0.950				0.976			0.984	
Satd. Flow (perm)	1644	1681	0	1612	1694	0	0	1543	0	0	1550	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.7			188.6			68.3			81.3	
Travel Time (s)		18.9			13.6			0.0			5.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	2%	2%	0%	2%	2%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	11	780	48	24	511	7	24	0	24	17	0	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	828	0	24	518	0	0	48	0	0	51	0
Sign Control	Free				Free				Stop		Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	54.9%					ICU Level of Service A						
Analysis Period (min)	15											

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	718	44	22	470	6	22	0	22	16	0	31
Future Vol, veh/h	10	718	44	22	470	6	22	0	22	16	0	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	30	-	-	30	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	2	2	0	2	2	2	0	2	0
Mvmt Flow	11	780	48	24	511	7	24	0	24	17	0	34

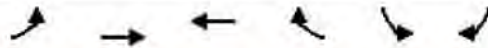
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	517	0	0	828	0	0	1385	1391	804	1364	1412	514
Stage 1	-	-	-	-	-	-	826	826	-	562	562	-
Stage 2	-	-	-	-	-	-	559	565	-	802	850	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4.018	3.3
Pot Cap-1 Maneuver	1059	-	-	803	-	-	121	142	383	126	138	564
Stage 1	-	-	-	-	-	-	366	386	-	515	510	-
Stage 2	-	-	-	-	-	-	514	508	-	380	377	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1059	-	-	803	-	-	109	136	383	113	133	564
Mov Cap-2 Maneuver	-	-	-	-	-	-	109	136	-	113	133	-
Stage 1	-	-	-	-	-	-	362	383	-	500	494	-
Stage 2	-	-	-	-	-	-	469	493	-	353	373	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.11	0.42	34.34	24.03
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	170	1059	-	-	803	-	-	240
HCM Lane V/C Ratio	0.282	0.01	-	-	0.03	-	-	0.213
HCM Control Delay (s/veh)	34.3	8.4	-	-	9.6	-	-	24
HCM Lane LOS	D	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.1	0	-	-	0.1	-	-	0.8

Lanes, Volumes, Timings
17: Quaker Road

12-17-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	5	761	450	8	25	15
Future Volume (vph)	5	761	450	8	25	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	20.0			0.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1644	1697	1694	0	1575	0
Flt Permitted	0.950				0.970	
Satd. Flow (perm)	1644	1697	1694	0	1575	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		76.8	297.6		65.7	
Travel Time (s)		5.5	21.4		4.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	5	827	489	9	27	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	827	498	0	43	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type: Other						
Control Type: Unsignalized						
Intersection Capacity Utilization 53.5% ICU Level of Service A						
Analysis Period (min) 15						

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	761	450	8	25	15
Future Vol, veh/h	5	761	450	8	25	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	20	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	2	0
Mvmt Flow	5	827	489	9	27	16

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	498	0	0 1332 493
Stage 1	-	-	- 493 -
Stage 2	-	-	- 838 -
Critical Hdwy	4.1	-	- 6.42 6.2
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.2	-	- 3.518 3.3
Pot Cap-1 Maneuver	1077	-	- 170 580
Stage 1	-	-	- 614 -
Stage 2	-	-	- 424 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1077	-	- 169 580
Mov Cap-2 Maneuver	-	-	- 302 -
Stage 1	-	-	- 610 -
Stage 2	-	-	- 424 -

Approach	EB	WB	SB
HCM Control Delay, s/v 0.05		0	16.08
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1077	-	-	-	368
HCM Lane V/C Ratio	0.005	-	-	-	0.118
HCM Control Delay (s/veh)	8.4	-	-	-	16.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Lanes, Volumes, Timings
18: Pelham St & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↘		↗	↘	
Traffic Volume (vph)	48	138	109	12	57	102	44	217	35	71	234	13
Future Volume (vph)	48	138	109	12	57	102	44	217	35	71	234	13
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		0.0	60.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1599	0	0	1531	0	1612	1656	0	1612	1683	0
Flt Permitted		0.923			0.964		0.591			0.584		
Satd. Flow (perm)	0	1487	0	0	1481	0	1003	1656	0	990	1683	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		58			111			16			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		252.0			404.5			1006.2			780.9	
Travel Time (s)		18.1			29.1			72.4			56.2	
Confl. Peds. (#/hr)	4					4			1	1		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	52	150	118	13	62	111	48	236	38	77	254	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	320	0	0	186	0	48	274	0	77	268	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
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)	8.0	8.0		8.0	8.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.3	32.3		32.3	32.3		32.3	32.3		32.3	32.3	
Total Split (s)	32.3	32.3		32.3	32.3		32.7	32.7		32.7	32.7	
Total Split (%)	49.7%	49.7%		49.7%	49.7%		50.3%	50.3%		50.3%	50.3%	
Maximum Green (s)	26.0	26.0		26.0	26.0		26.4	26.4		26.4	26.4	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-2.5			-2.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)		3.8			3.8		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5		2.5	2.5	

Lanes, Volumes, Timings
18: Pelham St & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		4	4		1	1		0	0	
Act Effct Green (s)		15.7			15.7		15.9	15.9		15.9	15.9	
Actuated g/C Ratio		0.39			0.39		0.40	0.40		0.40	0.40	
v/c Ratio		0.52			0.29		0.12	0.41		0.20	0.40	
Control Delay (s/veh)		11.4			5.6		9.9	11.2		10.7	11.5	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)		11.4			5.6		9.9	11.2		10.7	11.5	
LOS		B			A		A	B		B	B	
Approach Delay (s/veh)		11.4			5.6			11.0			11.3	
Approach LOS		B			A			B			B	
Queue Length 50th (m)		9.8			2.4		1.7	9.9		2.7	10.1	
Queue Length 95th (m)		39.3			15.3		8.7	35.4		12.9	35.6	
Internal Link Dist (m)		228.0			380.5			982.2			756.9	
Turn Bay Length (m)							60.0			60.0		
Base Capacity (vph)		1153			1161		774	1282		764	1300	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.28			0.16		0.06	0.21		0.10	0.21	

Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 40.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay (s/veh): 10.3

Intersection LOS: B

Intersection Capacity Utilization 65.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 18: Pelham St & Quaker Road



Lanes, Volumes, Timings
19: Rice Road & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	264	153	129	147	62	69	321	119	86	391	67
Future Volume (vph)	102	264	153	129	147	62	69	321	119	86	391	67
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3	3.3
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	100.0		0.0	100.0		0.0	50.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1615	0	1644	1631	0	1607	1624	0	1607	1654	0
Flt Permitted	0.617			0.395			0.312			0.336		
Satd. Flow (perm)	1068	1615	0	684	1631	0	528	1624	0	568	1654	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54			39			34			16	
Link Speed (k/h)		50			50			40			50	
Link Distance (m)		295.7			326.4			105.7			232.4	
Travel Time (s)		21.3			23.5			9.5			16.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	111	287	166	140	160	67	75	349	129	93	425	73
Shared Lane Traffic (%)												
Lane Group Flow (vph)	111	453	0	140	227	0	75	478	0	93	498	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
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)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	26.3	26.3		26.3	26.3		24.3	24.3		24.3	24.3	
Total Split (s)	33.0	33.0		33.0	33.0		32.0	32.0		32.0	32.0	
Total Split (%)	50.8%	50.8%		50.8%	50.8%		49.2%	49.2%		49.2%	49.2%	
Maximum Green (s)	26.7	26.7		26.7	26.7		25.7	25.7		25.7	25.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings
19: Rice Road & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	22.6	22.6		22.6	22.6		20.4	20.4		20.4	20.4	
Actuated g/C Ratio	0.41	0.41		0.41	0.41		0.37	0.37		0.37	0.37	
v/c Ratio	0.26	0.66		0.51	0.33		0.39	0.78		0.45	0.81	
Control Delay (s/veh)	14.4	18.3		21.9	11.9		20.4	24.9		21.8	27.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	14.4	18.3		21.9	11.9		20.4	24.9		21.8	27.8	
LOS	B	B		C	B		C	C		C	C	
Approach Delay (s/veh)		17.5			15.7			24.3			26.9	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	7.5	32.6		10.7	12.9		4.9	34.9		6.3	38.6	
Queue Length 95th (m)	18.5	65.8		28.1	28.6		16.6	#77.6		20.1	#92.3	
Internal Link Dist (m)		271.7			302.4			81.7			208.4	
Turn Bay Length (m)	100.0			100.0			50.0			50.0		
Base Capacity (vph)	520	815		333	815		248	780		266	785	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.21	0.56		0.42	0.28		0.30	0.61		0.35	0.63	

Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 55.8

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.81

Intersection Signal Delay (s/veh): 21.7

Intersection LOS: C

Intersection Capacity Utilization 98.0%

ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 19: Rice Road & Quaker Road



Lanes, Volumes, Timings

20: First Avenue/Cataract Road & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	480	51	198	267	59	67	201	155	136	355	72
Future Volume (vph)	51	480	51	198	267	59	67	201	155	136	355	72
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	150.0		0.0	30.0		30.0	40.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1612	1673	0	1644	1657	0	1612	1731	1471	1644	1682	0
Flt Permitted	0.510			0.297			0.432			0.438		
Satd. Flow (perm)	865	1673	0	514	1657	0	733	1731	1471	758	1682	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			19				168			14
Link Speed (k/h)		50			50			50				50
Link Distance (m)		273.2			262.7			221.2			119.8	
Travel Time (s)		19.7			18.9			15.9			8.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	55	522	55	215	290	64	73	218	168	148	386	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	577	0	215	354	0	73	218	168	148	464	0
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		20.0	20.0		10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	18.0	18.0		26.3	26.3		26.1	26.1	26.1	9.0	24.3	
Total Split (s)	18.0	18.0		44.0	44.0		27.0	27.0	27.0	9.0	36.0	
Total Split (%)	22.5%	22.5%		55.0%	55.0%		33.8%	33.8%	33.8%	11.3%	45.0%	
Maximum Green (s)	14.0	14.0		37.7	37.7		20.7	20.7	20.7	5.0	29.7	
Yellow Time (s)	3.0	3.0		3.3	3.3		3.3	3.3	3.3	3.0	3.3	
All-Red Time (s)	1.0	1.0		3.0	3.0		3.0	3.0	3.0	1.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0		6.3	6.3		6.3	6.3	6.3	4.0	6.3	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lanes, Volumes, Timings

20: First Avenue/Cataract Road & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0	7.0		7.0	
Flash Dont Walk (s)	7.0	7.0		11.0	11.0		11.0	11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0		0	
Act Effect Green (s)	39.6	39.6		37.3	37.3		15.7	15.7	15.7	27.1	24.7	
Actuated g/C Ratio	0.53	0.53		0.50	0.50		0.21	0.21	0.21	0.36	0.33	
v/c Ratio	0.12	0.65		0.84	0.42		0.47	0.60	0.38	0.44	0.82	
Control Delay (s/veh)	11.0	17.5		49.2	14.0		36.6	33.9	7.0	21.3	35.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	11.0	17.5		49.2	14.0		36.6	33.9	7.0	21.3	35.3	
LOS	B	B		D	B		D	C	A	C	D	
Approach Delay (s/veh)		17.0			27.3			24.5			31.9	
Approach LOS		B			C			C			C	
Queue Length 50th (m)	3.7	53.8		24.8	28.3		9.1	28.1	0.0	14.4	57.8	
Queue Length 95th (m)	10.3	98.2		#70.0	53.4		21.2	48.1	13.6	26.6	92.4	
Internal Link Dist (m)		249.2			238.7			197.2			95.8	
Turn Bay Length (m)	30.0			150.0			30.0		30.0	40.0		
Base Capacity (vph)	465	905		260	850		204	482	531	334	680	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.12	0.64		0.83	0.42		0.36	0.45	0.32	0.44	0.68	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 74.7

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay (s/veh): 25.1

Intersection LOS: C

Intersection Capacity Utilization 99.9%

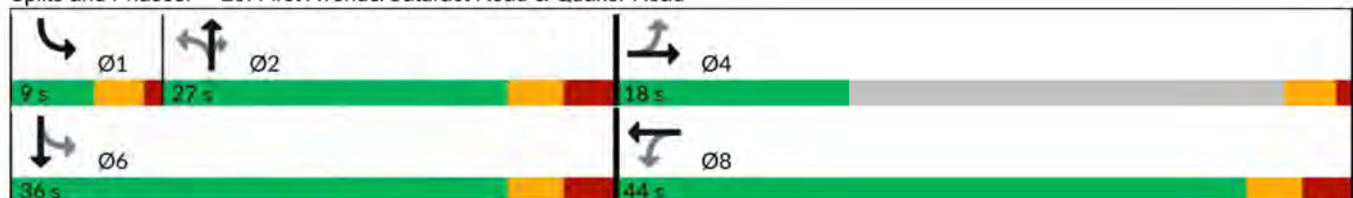
ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 20: First Avenue/Cataract Road & Quaker Road



Lanes, Volumes, Timings
21: Niagara St & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	24	318	32	26	27	126	390	26	15	290	198
Future Volume (vph)	442	24	318	32	26	27	126	390	26	15	290	198
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	100.0		65.0	0.0		22.5	75.0		0.0	22.5		150.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1612	1440	0	1612	1555	0	1612	3195	0	1612	3224	1442
Flt Permitted	0.654			0.532			0.432			0.500		
Satd. Flow (perm)	1108	1440	0	902	1555	0	731	3195	0	848	3224	1407
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		361			39			9				215
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		297.6			214.3			467.2			109.3	
Travel Time (s)		21.4			15.4			33.6			6.6	
Confl. Peds. (#/hr)	1		2	2		1	2					2
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.70	0.70	0.70	0.96	0.96	0.96	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	502	27	361	46	37	39	131	406	27	16	315	215
Shared Lane Traffic (%)												
Lane Group Flow (vph)	502	388	0	46	76	0	131	433	0	16	315	215
Number of Detectors	1	1		1	1		1	1		1	1	0
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8		5	2			6	7
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		6	6	6 7
Switch Phase												
Minimum Initial (s)	7.0	10.0		5.0	10.0		5.0	20.0		20.0	20.0	7.0
Minimum Split (s)	11.1	37.7		9.0	37.7		9.0	31.7		31.7	31.7	11.1
Total Split (s)	16.0	40.7		9.0	33.7		39.0	70.3		31.3	31.3	16.0
Total Split (%)	13.3%	33.9%		7.5%	28.1%		32.5%	58.6%		26.1%	26.1%	13.3%
Maximum Green (s)	12.0	34.0		5.0	27.0		35.0	63.6		24.6	24.6	12.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.7	3.7	3.0
All-Red Time (s)	1.0	3.0		1.0	3.0		1.0	3.0		3.0	3.0	1.0
Lost Time Adjust (s)	-2.9	-2.9		-2.9	-2.9		1.0	-2.6		1.0	-2.6	0.0
Total Lost Time (s)	1.1	3.8		1.1	3.8		5.0	4.1		7.7	4.1	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	2.5		3.0	2.5		3.0	2.5		2.5	2.5	3.0

Lanes, Volumes, Timings

21: Niagara St & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		24.0			24.0			18.0		18.0	18.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effect Green (s)	31.7	24.0		23.1	16.9		35.6	36.6		21.3	25.2	38.6
Actuated g/C Ratio	0.43	0.32		0.31	0.23		0.48	0.49		0.29	0.34	0.52
v/c Ratio	0.86	0.55		0.13	0.20		0.28	0.27		0.07	0.29	0.26
Control Delay (s/veh)	34.9	6.7		14.5	16.4		14.9	12.7		27.9	23.5	3.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	34.9	6.7		14.5	16.4		14.9	12.7		27.9	23.5	3.4
LOS	C	A		B	B		B	B		C	C	A
Approach Delay (s/veh)		22.7			15.7			13.3			15.7	
Approach LOS		C			B			B			B	
Queue Length 50th (m)	55.2	2.8		3.6	4.4		9.6	16.7		1.7	17.4	0.0
Queue Length 95th (m)	#108.1	21.3		8.3	10.6		27.9	39.1		8.4	40.8	13.6
Internal Link Dist (m)		273.6			190.3			443.2			85.3	
Turn Bay Length (m)	100.0						75.0			22.5		150.0
Base Capacity (vph)	586	952		363	714		832	2765		294	1287	903
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.86	0.41		0.13	0.11		0.16	0.16		0.05	0.24	0.24

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 74

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.86

Intersection Signal Delay (s/veh): 18.0

Intersection LOS: B

Intersection Capacity Utilization 77.0%

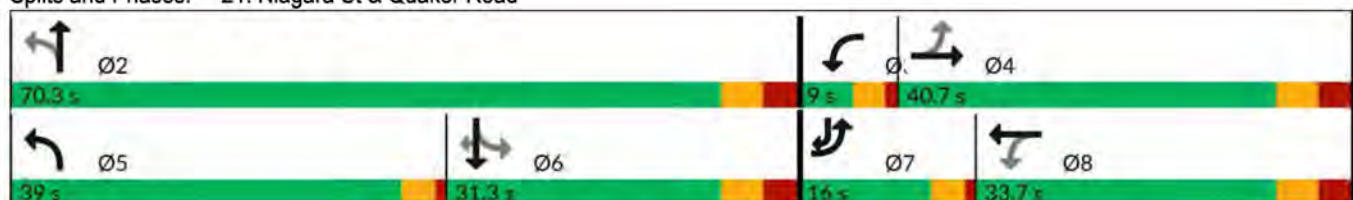
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 21: Niagara St & Quaker Road



Lanes, Volumes, Timings
22: Niagara St & Merritt Rd

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	156	3	358	73	57	4	346	599	29	203	3
Future Volume (vph)	10	156	3	358	73	57	4	346	599	29	203	3
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		185.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1640	0	1566	1539	0	0	1647	1401	0	3106	0
Flt Permitted		0.976		0.277				0.997			0.878	
Satd. Flow (perm)	0	1605	0	457	1539	0	0	1643	1401	0	2744	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			61				658		1	
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		832.7			584.5			911.9			164.9	
Travel Time (s)		60.0			35.1			54.7			9.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.68	0.68	0.68	0.94	0.94	0.94	0.91	0.91	0.91	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	15	229	4	381	78	61	4	380	658	33	233	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	248	0	381	139	0	0	384	658	0	269	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		12.0	12.0	6.1	12.0	12.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		20.0	20.0	20.0	20.0	20.0	
Minimum Split (s)	16.7	16.7		16.7	16.7		26.7	26.7	26.7	26.7	26.7	
Total Split (s)	23.0	23.0		27.2	50.2		39.8	39.8	39.8	39.8	39.8	
Total Split (%)	25.6%	25.6%		30.2%	55.8%		44.2%	44.2%	44.2%	44.2%	44.2%	
Maximum Green (s)	16.3	16.3		23.2	43.5		33.1	33.1	33.1	33.1	33.1	
Yellow Time (s)	3.7	3.7		3.0	3.7		3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	3.0	3.0		1.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)		-2.1		1.0	-2.1			-2.4	-2.4		-2.4	
Total Lost Time (s)		4.6		5.0	4.6			4.3	4.3		4.3	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	

Lanes, Volumes, Timings
22: Niagara St & Merritt Rd

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		16.9		39.0	39.4			30.5	30.5		30.5	
Actuated g/C Ratio		0.21		0.49	0.50			0.39	0.39		0.39	
v/c Ratio		0.72		0.81	0.17			0.61	0.70		0.25	
Control Delay (s/veh)		44.5		29.8	7.5			25.2	6.2		18.0	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay (s/veh)		44.5		29.8	7.5			25.2	6.2		18.0	
LOS		D		C	A			C	A		B	
Approach Delay (s/veh)		44.5			23.9			13.2			18.0	
Approach LOS		D			C			B			B	
Queue Length 50th (m)		37.0		38.7	6.3			48.0	0.0		14.9	
Queue Length 95th (m)		46.8		#77.7	16.0			79.9	23.7		23.9	
Internal Link Dist (m)		808.7			560.5			887.9			140.9	
Turn Bay Length (m)												
Base Capacity (vph)		384		545	936			758	1000		1265	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	
Reduced v/c Ratio		0.65		0.70	0.15			0.51	0.66		0.21	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 79

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay (s/veh): 20.2

Intersection LOS: C

Intersection Capacity Utilization 77.6%

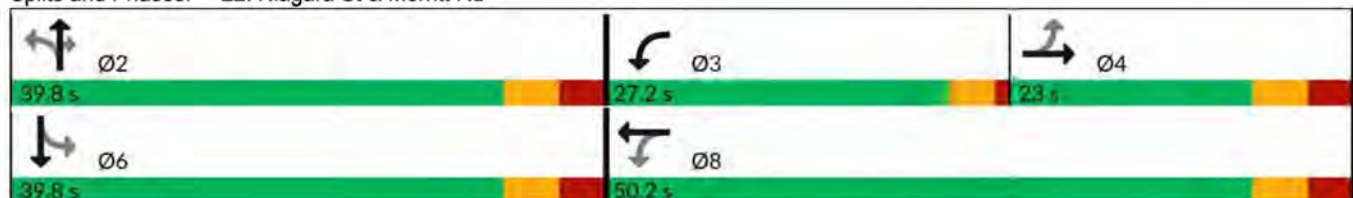
ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 22: Niagara St & Merritt Rd



Lanes, Volumes, Timings

23: Clare Avenue/Line Avenue & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	198	26	54	144	11	20	44	138	55	55	11
Future Volume (vph)	22	198	26	54	144	11	20	44	138	55	55	11
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1666	0	1531	1592	0	0	1563	0	0	1672	0
Flt Permitted		0.958		0.581	0.984			0.973			0.831	
Satd. Flow (perm)	0	1603	0	936	1570	0	0	1529	0	0	1421	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			11			150			12	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		404.5			351.0			378.6			1022.4	
Travel Time (s)		29.1			25.3			27.3			73.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	24	215	28	59	157	12	22	48	150	60	60	12
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	267	0	53	175	0	0	220	0	0	132	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
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)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings

23: Clare Avenue/Line Avenue & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		10.6		10.4	10.4			19.9			19.9	
Actuated g/C Ratio		0.30		0.29	0.29			0.56			0.56	
v/c Ratio		0.55		0.19	0.38			0.24			0.16	
Control Delay (s/veh)		13.8		10.3	11.0			3.7			6.9	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)		13.8		10.3	11.0			3.7			6.9	
LOS		B		B	B			A			A	
Approach Delay (s/veh)		13.8			10.9			3.7			6.9	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		11.2		2.2	7.3			1.9			3.4	
Queue Length 95th (m)		23.9		7.1	16.8			11.5			12.4	
Internal Link Dist (m)		380.5			327.0			354.6			998.4	
Turn Bay Length (m)				30.0								
Base Capacity (vph)		733		422	715			922			801	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.36		0.13	0.24			0.24			0.16	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 35.6

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.55

Intersection Signal Delay (s/veh): 9.3

Intersection LOS: A

Intersection Capacity Utilization 54.3%

ICU Level of Service A

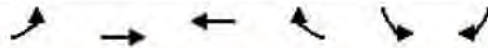
Analysis Period (min) 15

Splits and Phases: 23: Clare Avenue/Line Avenue & Quaker Road



Lanes, Volumes, Timings
25: Quaker Road

12-17-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	722	454	6	18	16
Future Volume (vph)	6	722	454	6	18	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	20.0			0.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1644	1697	1694	0	1581	0
Flt Permitted	0.950				0.974	
Satd. Flow (perm)	1644	1697	1694	0	1581	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.6	76.8		55.5	
Travel Time (s)		13.6	5.5		4.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	7	785	493	7	20	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	7	785	500	0	37	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	51.3%
Analysis Period (min)	15
	ICU Level of Service A

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	722	454	6	18	16
Future Vol, veh/h	6	722	454	6	18	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	20	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	7	785	493	7	20	17
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	500	0	-	0	1295	497
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	798	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1075	-	-	-	181	577
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	447	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1075	-	-	-	180	577
Mov Cap-2 Maneuver	-	-	-	-	315	-
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	447	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.07	0		14.9		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1075	-	-	-	400	
HCM Lane V/C Ratio	0.006	-	-	-	0.092	
HCM Control Delay (s/veh)	8.4	-	-	-	14.9	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.3	

Lanes, Volumes, Timings
102: First Avenue & Merritt Rd

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	77	0	84	248	0	143
Future Volume (vph)	77	0	84	248	0	143
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	0	0		0	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1612	0	1525	0	0	1697
Flt Permitted	0.950					
Satd. Flow (perm)	1612	0	1525	0	0	1697
Link Speed (k/h)	50		50			50
Link Distance (m)	832.7		566.2			139.5
Travel Time (s)	60.0		40.8			10.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	84	0	91	270	0	155
Shared Lane Traffic (%)						
Lane Group Flow (vph)	84	0	361	0	0	155
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.7%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	77	0	84	248	0	143
Future Vol, veh/h	77	0	84	248	0	143
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	84	0	91	270	0	155

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	382	226	0
Stage 1	226	-	-
Stage 2	155	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	621	813	-
Stage 1	811	-	-
Stage 2	873	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	621	813	-
Mov Cap-2 Maneuver	621	-	-
Stage 1	811	-	-
Stage 2	873	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	621	1198
HCM Lane V/C Ratio	-	-	0.135	-
HCM Control Delay (s/veh)	-	-	11.7	0
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.5	0

Lanes, Volumes, Timings

1: Clare Avenue

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	31	23	164	43	35	158
Future Volume (vph)	31	23	164	43	35	158
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	0	0		0	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1586	0	1682	0	0	1715
Flt Permitted	0.972					0.991
Satd. Flow (perm)	1586	0	1682	0	0	1715
Link Speed (k/h)	50		48			48
Link Distance (m)	139.9		634.5			378.6
Travel Time (s)	10.1		47.6			28.4
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	34	25	178	47	38	172
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	225	0	0	210
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	36.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM 7th TWSC
1: Clare Avenue

12-17-2024

Intersection

Int Delay, s/veh 1.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	23	164	43	35	158
Future Vol, veh/h	31	23	164	43	35	158
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	34	25	178	47	38	172

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	449	202	0
Stage 1	202	-	-
Stage 2	248	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	571	844	-
Stage 1	837	-	-
Stage 2	798	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	553	844	-
Mov Cap-2 Maneuver	553	-	-
Stage 1	837	-	-
Stage 2	773	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	11.1	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	649	326
HCM Lane V/C Ratio	-	-	0.091	0.028
HCM Control Delay (s/veh)	-	-	11.1	7.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1

Lanes, Volumes, Timings

2: Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	424	11	79	427	22	7	0	52	44	0	11
Future Volume (vph)	22	424	11	79	427	22	7	0	52	44	0	11
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	50.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1691	0	1644	1686	0	0	1517	0	0	1620	0
Flt Permitted	0.950			0.950				0.994			0.962	
Satd. Flow (perm)	1644	1691	0	1644	1686	0	0	1517	0	0	1620	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		351.0			190.3			36.8			63.5	
Travel Time (s)		25.3			13.7			2.6			4.6	
Confl. Peds. (#/hr)	20		20									
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	24	461	12	86	464	24	8	0	57	48	0	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	473	0	86	488	0	0	65	0	0	60	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	49.8%						ICU Level of Service A					
Analysis Period (min)	15											

HCM 7th TWSC
2: Quaker Road

12-17-2024

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	424	11	79	427	22	7	0	52	44	0	11
Future Vol, veh/h	22	424	11	79	427	22	7	0	52	44	0	11
Conflicting Peds, #/hr	20	0	20	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	50	-	-	50	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	24	461	12	86	464	24	8	0	57	48	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	508	0	0	493	0	0	1171	1214	487	1177	1208	496
Stage 1	-	-	-	-	-	-	535	535	-	668	668	-
Stage 2	-	-	-	-	-	-	636	680	-	509	541	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1067	-	-	1081	-	-	171	183	585	170	185	578
Stage 1	-	-	-	-	-	-	533	527	-	451	460	-
Stage 2	-	-	-	-	-	-	470	454	-	551	524	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1049	-	-	1063	-	-	148	159	575	135	160	568
Mov Cap-2 Maneuver	-	-	-	-	-	-	148	159	-	135	160	-
Stage 1	-	-	-	-	-	-	512	507	-	408	415	-
Stage 2	-	-	-	-	-	-	423	410	-	485	504	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.41	1.3	14.88	40.56
HCM LOS			B	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	428	1049	-	-	1063	-	-	159
HCM Lane V/C Ratio	0.15	0.023	-	-	0.081	-	-	0.375
HCM Control Delay (s/veh)	14.9	8.5	-	-	8.7	-	-	40.6
HCM Lane LOS	B	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0.3	-	-	1.6

Lanes, Volumes, Timings

3: Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	506	8	53	523	22	5	0	38	1	0	1
Future Volume (vph)	5	506	8	53	523	22	5	0	38	1	0	1
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1694	0	1644	1688	0	0	1515	0	0	1574	0
Flt Permitted	0.950			0.950				0.995			0.976	
Satd. Flow (perm)	1644	1694	0	1644	1688	0	0	1515	0	0	1574	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		190.3			295.7			54.2			58.9	
Travel Time (s)		13.7			21.3			3.9			0.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	5	550	9	58	568	24	5	0	41	1	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	559	0	58	592	0	0	46	0	0	2	0
Sign Control	Free				Free		Stop				Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	48.0%					ICU Level of Service A						
Analysis Period (min)	15											

HCM 7th TWSC
3: Quaker Road

12-17-2024

Intersection

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	506	8	53	523	22	5	0	38	1	0	1
Future Vol, veh/h	5	506	8	53	523	22	5	0	38	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	30	-	-	30	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	5	550	9	58	568	24	5	0	41	1	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	592	0	0	559	0	0	1249	1273	554	1257	1265	580
Stage 1	-	-	-	-	-	-	565	565	-	696	696	-
Stage 2	-	-	-	-	-	-	684	708	-	561	570	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	993	-	-	1022	-	-	151	169	536	149	171	518
Stage 1	-	-	-	-	-	-	513	511	-	435	446	-
Stage 2	-	-	-	-	-	-	442	441	-	516	509	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	993	-	-	1022	-	-	142	159	536	129	160	518
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	159	-	129	160	-
Stage 1	-	-	-	-	-	-	510	508	-	411	421	-
Stage 2	-	-	-	-	-	-	416	416	-	473	506	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v 0.08		0.77	15.05	22.56
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	405	993	-	-	1022	-	-	207
HCM Lane V/C Ratio	0.115	0.005	-	-	0.056	-	-	0.01
HCM Control Delay (s/veh)	15.1	8.6	-	-	8.7	-	-	22.6
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.4	0	-	-	0.2	-	-	0

Lanes, Volumes, Timings

4: Rice Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	0	22	18	0	18	0	649	17	22	627	22
Future Volume (vph)	22	0	22	18	0	18	0	649	17	22	627	22
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	10.0		0.0	15.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1543	0	0	1574	0	1697	1685	0	1607	1682	0
Flt Permitted		0.976			0.976					0.950		
Satd. Flow (perm)	0	1543	0	0	1574	0	1697	1685	0	1607	1682	0
Link Speed (k/h)		50			50			40			50	
Link Distance (m)		36.3			61.8			46.9			105.7	
Travel Time (s)		0.0			4.4			4.2			7.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	24	0	24	20	0	20	0	705	18	24	682	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	40	0	0	723	0	24	706	0
Sign Control	Stop			Stop			Free			Free		
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	48.4%				ICU Level of Service A							
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Vol, veh/h	22	0	22	18	0	18	0	649	17	22	627	22
Future Vol, veh/h	22	0	22	18	0	18	0	649	17	22	627	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	10	-	-	15	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	0	2	0	0	0	0	2
Mvmt Flow	24	0	24	20	0	20	0	705	18	24	682	24

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1447	1465	693	1444	1468	715	705	0	0	724	0	0
Stage 1	741	741	-	715	715	-	-	-	-	-	-	-
Stage 2	705	724	-	729	753	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	109	128	443	111	128	434	893	-	-	888	-	-
Stage 1	408	423	-	425	435	-	-	-	-	-	-	-
Stage 2	427	430	-	417	417	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	102	125	443	102	124	434	893	-	-	888	-	-
Mov Cap-2 Maneuver	102	125	-	102	124	-	-	-	-	-	-	-
Stage 1	397	411	-	425	435	-	-	-	-	-	-	-
Stage 2	408	430	-	384	406	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v35.41		33.39	0	0.3
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	893	-	-	165	165	888	-
HCM Lane V/C Ratio	-	-	-	0.289	0.237	0.027	-
HCM Control Delay (s/veh)	0	-	-	35.4	33.4	9.2	-
HCM Lane LOS	A	-	-	E	D	A	-
HCM 95th %tile Q(veh)	0	-	-	1.1	0.9	0.1	-

Lanes, Volumes, Timings

5: Rice Road

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	666	0	0	668
Future Volume (vph)	0	0	666	0	0	668
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.3	3.3	3.3	3.3
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	15.0	
Storage Lanes	1	0		0	1	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1731	0	1692	0	1692	1692
Fit Permitted						
Satd. Flow (perm)	1731	0	1692	0	1692	1692
Link Speed (k/h)	50		40			50
Link Distance (m)	47.0		212.0			46.9
Travel Time (s)	3.4		19.1			3.4
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	0	0	724	0	0	726
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	724	0	0	726
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	41.5%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	666	0	0	668
Future Vol, veh/h	0	0	666	0	0	668
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	15	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	0	724	0	0	726
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1450	724	0	0	724	0
Stage 1	724	-	-	-	-	-
Stage 2	726	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	146	429	-	-	888	-
Stage 1	484	-	-	-	-	-
Stage 2	483	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	146	429	-	-	888	-
Mov Cap-2 Maneuver	287	-	-	-	-	-
Stage 1	484	-	-	-	-	-
Stage 2	483	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s/v	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	888	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s/veh)	-	-	0	0	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Lanes, Volumes, Timings

6: Rice Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	3	22	41	3	39	0	563	54	41	577	50
Future Volume (vph)	64	3	22	41	3	39	0	563	54	41	577	50
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1583	0	0	1582	0	1697	1670	0	1607	1669	0
Flt Permitted		0.965			0.976					0.950		
Satd. Flow (perm)	0	1583	0	0	1582	0	1697	1670	0	1607	1669	0
Link Speed (k/h)		50			50			40			50	
Link Distance (m)		32.8			98.9			148.6			212.0	
Travel Time (s)		0.0			7.1			13.4			15.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	0%	0%	0%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	70	3	24	45	3	42	0	612	59	45	627	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	97	0	0	90	0	0	671	0	45	681	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	51.8%						ICU Level of Service A					
Analysis Period (min)	15											

Intersection

Int Delay, s/veh 7.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↘		↗	↘	
Traffic Vol, veh/h	64	3	22	41	3	39	0	563	54	41	577	50
Future Vol, veh/h	64	3	22	41	3	39	0	563	54	41	577	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	0	2	0	2	0	0	0	0	2
Mvmt Flow	70	3	24	45	3	42	0	612	59	45	627	54

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1357	1414	654	1359	1412	641	682	0	0	671	0	0
Stage 1	743	743	-	641	641	-	-	-	-	-	-	-
Stage 2	614	671	-	718	771	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.52	6.2	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4.018	3.3	2.218	-	-	2.2	-	-
Pot Cap-1 Maneuver	126	138	466	127	138	478	911	-	-	929	-	-
Stage 1	407	422	-	466	469	-	-	-	-	-	-	-
Stage 2	479	455	-	423	410	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	107	131	466	112	131	478	911	-	-	929	-	-
Mov Cap-2 Maneuver	107	131	-	112	131	-	-	-	-	-	-	-
Stage 1	387	401	-	466	469	-	-	-	-	-	-	-
Stage 2	434	455	-	379	390	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v82.99		45.02	0	0.56
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	911	-	-	133 176	929	-	-
HCM Lane V/C Ratio	-	-	-	0.727 0.511	0.048	-	-
HCM Control Delay (s/veh)	0	-	-	83 45	9.1	-	-
HCM Lane LOS	A	-	-	F E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	4.2 2.5	0.2	-	-

Lanes, Volumes, Timings

7: Rice Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	43	13	0	2	58	505	22	5	512	12
Future Volume (vph)	7	0	43	13	0	2	58	505	22	5	512	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.5	3.5	3.3	3.3
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1491	0	0	1598	0	1576	1649	0	1612	1654	0
Flt Permitted		0.993			0.958		0.950			0.950		
Satd. Flow (perm)	0	1491	0	0	1598	0	1576	1649	0	1612	1654	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		64.6			81.2			232.4			190.6	
Travel Time (s)		4.7			0.0			16.7			13.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	0	47	14	0	2	63	549	24	5	557	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	0	0	16	0	63	573	0	5	570	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	47.6%						ICU Level of Service A					
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	7	0	43	13	0	2	58	505	22	5	512	12
Future Vol, veh/h	7	0	43	13	0	2	58	505	22	5	512	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	47	14	0	2	63	549	24	5	557	13

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1249	1273	563	1254	1267	561	570	0	0	573	0	0
Stage 1	574	574	-	687	687	-	-	-	-	-	-	-
Stage 2	675	699	-	567	580	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	150	167	526	149	169	527	1003	-	-	1000	-	-
Stage 1	504	503	-	437	447	-	-	-	-	-	-	-
Stage 2	444	442	-	508	500	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	139	156	526	126	157	527	1003	-	-	1000	-	-
Mov Cap-2 Maneuver	139	156	-	126	157	-	-	-	-	-	-	-
Stage 1	501	501	-	410	419	-	-	-	-	-	-	-
Stage 2	414	414	-	460	497	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	16.1	33.98	0.88	0.08
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1003	-	-	378 140	1000	-	-
HCM Lane V/C Ratio	0.063	-	-	0.144 0.116	0.005	-	-
HCM Control Delay (s/veh)	8.8	-	-	16.1 34	8.6	-	-
HCM Lane LOS	A	-	-	C D	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5 0.4	0	-	-

Lanes, Volumes, Timings

8: Rice Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	43	0	0	0	58	455	0	0	486	12
Future Volume (vph)	7	0	43	0	0	0	58	455	0	0	486	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.5	3.5	3.3	3.3
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	30.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1491	0	0	1697	0	1576	1658	0	1697	1652	0
Flt Permitted		0.993					0.950					
Satd. Flow (perm)	0	1491	0	0	1697	0	1576	1658	0	1697	1652	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		58.4			61.8			190.6			68.0	
Travel Time (s)		4.2			0.0			13.7			4.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	8	0	47	0	0	0	63	495	0	0	528	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	0	0	0	0	63	495	0	0	541	0
Sign Control	Stop				Stop		Free				Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	45.4%				ICU Level of Service A							
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	0	43	0	0	0	58	455	0	0	486	12
Future Vol, veh/h	7	0	43	0	0	0	58	455	0	0	486	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	47	0	0	0	63	495	0	0	528	13
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1155	1155	535	1149	1162	495	541	0	0	495	0	0
Stage 1	535	535	-	621	621	-	-	-	-	-	-	-
Stage 2	621	621	-	528	541	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	174	197	545	176	195	575	1027	-	-	1069	-	-
Stage 1	529	524	-	475	479	-	-	-	-	-	-	-
Stage 2	475	479	-	534	521	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	163	185	545	151	183	575	1027	-	-	1069	-	-
Mov Cap-2 Maneuver	163	185	-	151	183	-	-	-	-	-	-	-
Stage 1	529	524	-	446	450	-	-	-	-	-	-	-
Stage 2	446	450	-	488	521	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s/v	15.1		0		0.99		0					
HCM LOS	C		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1027	-	-	411	-	1069	-	-				
HCM Lane V/C Ratio	0.061	-	-	0.132	-	-	-	-				
HCM Control Delay (s/veh)	8.7	-	-	15.1	0	0	-	-				
HCM Lane LOS	A	-	-	C	A	A	-	-				
HCM 95th %tile Q(veh)	0.2	-	-	0.5	-	0	-	-				

Lanes, Volumes, Timings

9: Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	476	44	70	526	11	38	0	51	7	0	9
Future Volume (vph)	15	476	44	70	526	11	38	0	51	7	0	9
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		45.7	45.7		45.7	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1677	0	1562	1606	0	0	1564	0	0	1566	0
Flt Permitted	0.950			0.950	0.999			0.979			0.978	
Satd. Flow (perm)	1644	1677	0	1562	1606	0	0	1564	0	0	1566	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		326.4			220.0			48.8			221.2	
Travel Time (s)		23.5			35.5			0.0			0.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	16	517	48	76	572	12	41	0	55	8	0	10
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	16	565	0	68	592	0	0	96	0	0	18	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	61.3%					ICU Level of Service B						
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	476	44	70	526	11	38	0	51	7	0	9
Future Vol, veh/h	15	476	44	70	526	11	38	0	51	7	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	30	-	-	45.7	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	16	517	48	76	572	12	41	0	55	8	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	584	0	0	565	0	0	1298	1310	541	1280	1328	578
Stage 1	-	-	-	-	-	-	574	574	-	730	730	-
Stage 2	-	-	-	-	-	-	724	736	-	550	598	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1001	-	-	1017	-	-	140	161	545	144	157	520
Stage 1	-	-	-	-	-	-	508	507	-	417	431	-
Stage 2	-	-	-	-	-	-	420	428	-	523	494	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1001	-	-	1017	-	-	125	146	545	118	143	520
Mov Cap-2 Maneuver	-	-	-	-	-	-	125	146	-	118	143	-
Stage 1	-	-	-	-	-	-	499	498	-	386	399	-
Stage 2	-	-	-	-	-	-	381	396	-	462	486	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.24	1.02	32.78	23.84
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	224	1001	-	-	1017	-	-	208
HCM Lane V/C Ratio	0.432	0.016	-	-	0.075	-	-	0.083
HCM Control Delay (s/veh)	32.8	8.7	-	-	8.8	0	-	23.8
HCM Lane LOS	D	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	2	0	-	-	0.2	-	-	0.3

Lanes, Volumes, Timings

10: Quaker Road

12-17-2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↘	↖	↗	
Traffic Volume (vph)	525	8	50	602	5	30
Future Volume (vph)	525	8	50	602	5	30
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	10.0		0.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			7.5		7.5	
Satd. Flow (prot)	1694	0	1612	1731	1513	0
Flt Permitted			0.950		0.993	
Satd. Flow (perm)	1694	0	1612	1731	1513	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	220.0			127.5	102.8	
Travel Time (s)	15.8			19.7	7.4	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	571	9	54	654	5	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	580	0	54	654	38	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	47.2%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	525	8	50	602	5	30
Future Vol, veh/h	525	8	50	602	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	10	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	2	0	2	0
Mvmt Flow	571	9	54	654	5	33

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	579
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	994
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	994
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.68	13.34
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	470	-	-	994	-
HCM Lane V/C Ratio	0.081	-	-	0.055	-
HCM Control Delay (s/veh)	13.3	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Lanes, Volumes, Timings

11: First Avenue

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	0	60	22	0	22	57	557	0	22	469	56
Future Volume (vph)	42	0	60	22	0	22	57	557	0	22	469	56
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1544	0	0	1574	0	0	1722	0	0	1703	0
Flt Permitted		0.980			0.976			0.995			0.998	
Satd. Flow (perm)	0	1544	0	0	1574	0	0	1722	0	0	1703	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		91.1			108.9			108.6			221.2	
Travel Time (s)		6.6			7.8			7.8			15.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	46	0	65	24	0	24	62	605	0	24	510	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	111	0	0	48	0	0	667	0	0	595	0
Sign Control	Stop				Stop		Free				Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	70.7%											
Analysis Period (min)	15											
	ICU Level of Service C											

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	42	0	60	22	0	22	57	557	0	22	469	56
Future Vol, veh/h	42	0	60	22	0	22	57	557	0	22	469	56
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	2	0	0	0	0	0	0	0	0	0
Mvmt Flow	46	0	65	24	0	24	62	605	0	24	510	61

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1317	1317	540	1287	1348	605	571	0	0	605	0	0
Stage 1	588	588	-	729	729	-	-	-	-	-	-	-
Stage 2	729	729	-	558	618	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.22	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	136	159	542	142	152	501	1012	-	-	982	-	-
Stage 1	499	499	-	417	431	-	-	-	-	-	-	-
Stage 2	417	431	-	518	484	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	113	139	542	110	133	501	1012	-	-	982	-	-
Mov Cap-2 Maneuver	113	139	-	110	133	-	-	-	-	-	-	-
Stage 1	481	481	-	379	391	-	-	-	-	-	-	-
Stage 2	361	391	-	439	466	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v39.35		32.1	0.82	0.35
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	167	-	-	212	180	71	-
HCM Lane V/C Ratio	0.061	-	-	0.524	0.266	0.024	-
HCM Control Delay (s/veh)	8.8	0	-	39.3	32.1	8.8	0
HCM Lane LOS	A	A	-	E	D	A	A
HCM 95th %tile Q(veh)	0.2	-	-	2.7	1	0.1	-

Lanes, Volumes, Timings

12: Cataract Road

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	27	8	535	44	16	447
Future Volume (vph)	27	8	535	44	16	447
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	0	0		0	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1613	0	1713	0	0	1726
Flt Permitted	0.963					0.998
Satd. Flow (perm)	1613	0	1713	0	0	1726
Link Speed (k/h)	50		50			50
Link Distance (m)	65.2		119.8			70.9
Travel Time (s)	4.7		8.6			5.1
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	29	9	582	48	17	486
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	0	630	0	0	503
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.6%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 0.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	8	535	44	16	447
Future Vol, veh/h	27	8	535	44	16	447
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	2	0
Mvmt Flow	29	9	582	48	17	486

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1126	605	0
Stage 1	605	-	-
Stage 2	521	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	229	501	-
Stage 1	549	-	-
Stage 2	600	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	223	501	-
Mov Cap-2 Maneuver	223	-	-
Stage 1	549	-	-
Stage 2	585	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v21.56		0	0.31
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	255	62
HCM Lane V/C Ratio	-	-	0.149	0.018
HCM Control Delay (s/veh)	-	-	21.6	8.8
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1

Lanes, Volumes, Timings

13: Cataract Road

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	52	8	499	44	16	436
Future Volume (vph)	52	8	499	44	16	436
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	0	0		0	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1630	0	1712	0	0	1727
Flt Permitted	0.959					0.998
Satd. Flow (perm)	1630	0	1712	0	0	1727
Link Speed (k/h)	50		50			50
Link Distance (m)	51.9		70.9			111.7
Travel Time (s)	3.7		5.1			8.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	57	9	542	48	17	474
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	0	590	0	0	491
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.3%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection

Int Delay, s/veh 1.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	52	8	499	44	16	436
Future Vol, veh/h	52	8	499	44	16	436
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	57	9	542	48	17	474

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1075	566	0
Stage 1	566	-	-
Stage 2	509	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	245	527	-
Stage 1	572	-	-
Stage 2	608	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	239	527	-
Mov Cap-2 Maneuver	239	-	-
Stage 1	572	-	-
Stage 2	593	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v23.59		0	0.31
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	258	64
HCM Lane V/C Ratio	-	-	0.253	0.017
HCM Control Delay (s/veh)	-	-	23.6	8.7
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1	0.1

Lanes, Volumes, Timings
14: Cataract Road & Street 'D'

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	15	442	65	27	409
Future Volume (vph)	43	15	442	65	27	409
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	45.7	45.7		45.7	45.7	
Storage Lanes	0	0		0	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1612	0	1701	0	0	1725
Flt Permitted	0.964					0.997
Satd. Flow (perm)	1612	0	1701	0	0	1725
Link Speed (k/h)	48		50			50
Link Distance (m)	162.3		111.7			177.0
Travel Time (s)	41.4		26.6			10.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	47	16	480	71	29	445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	551	0	0	474
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	57.7%			ICU Level of Service B		
Analysis Period (min)	15					

HCM 7th TWSC
14: Cataract Road & Street 'D'

12-17-2024

Intersection

Int Delay, s/veh 1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	43	15	442	65	27	409
Future Vol, veh/h	43	15	442	65	27	409
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	16	480	71	29	445

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1019	516	0
Stage 1	516	-	-
Stage 2	503	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	265	563	-
Stage 1	603	-	-
Stage 2	611	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	255	563	-
Mov Cap-2 Maneuver	255	-	-
Stage 1	603	-	-
Stage 2	588	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v20.37		0	0.53
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	297	111
HCM Lane V/C Ratio	-	-	0.212	0.029
HCM Control Delay (s/veh)	-	-	20.4	8.6
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1

Lanes, Volumes, Timings

15: First Avenue

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	0	131	25	0	8	183	234	40	15	280	77
Future Volume (vph)	49	0	131	25	0	8	183	234	40	15	280	77
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1541	0	0	1612	0	0	1676	0	0	1679	0
Flt Permitted		0.987			0.964			0.980			0.998	
Satd. Flow (perm)	0	1541	0	0	1612	0	0	1676	0	0	1679	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		135.4			80.3			177.0			566.2	
Travel Time (s)		9.7			0.0			12.7			39.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	53	0	142	27	0	9	199	254	43	16	304	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	195	0	0	36	0	0	496	0	0	404	0
Sign Control	Stop				Stop		Free				Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	70.3%				ICU Level of Service C							
Analysis Period (min)	15											

Intersection												
Int Delay, s/veh	6.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	49	0	131	25	0	8	183	234	40	15	280	77
Future Vol, veh/h	49	0	131	25	0	8	183	234	40	15	280	77
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	53	0	142	27	0	9	199	254	43	16	304	84

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1031	1074	346	1011	1095	276	388	0	0	298	0	0
Stage 1	379	379	-	674	674	-	-	-	-	-	-	-
Stage 2	652	696	-	337	421	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	213	222	701	220	216	768	1181	-	-	1275	-	-
Stage 1	647	618	-	448	457	-	-	-	-	-	-	-
Stage 2	460	446	-	682	592	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	165	174	701	137	169	768	1181	-	-	1275	-	-
Mov Cap-2 Maneuver	165	174	-	137	169	-	-	-	-	-	-	-
Stage 1	636	608	-	357	364	-	-	-	-	-	-	-
Stage 2	362	356	-	534	583	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v24.88		31.44	3.47	0.32
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	700	-	-	372 172	70	-	-
HCM Lane V/C Ratio	0.168	-	-	0.525 0.209	0.013	-	-
HCM Control Delay (s/veh)	8.7	0	-	24.9 31.4	7.9	0	-
HCM Lane LOS	A	A	-	C D	A	A	-
HCM 95th %tile Q(veh)	0.6	-	-	2.9 0.8	0	-	-

Lanes, Volumes, Timings

16: Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	719	22	22	822	16	22	0	22	10	0	20
Future Volume (vph)	28	719	22	22	822	16	22	0	22	10	0	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1690	0	1612	1692	0	0	1543	0	0	1550	0
Flt Permitted	0.950			0.950				0.976			0.984	
Satd. Flow (perm)	1644	1690	0	1612	1692	0	0	1543	0	0	1550	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		262.7			188.6			68.3			81.3	
Travel Time (s)		18.9			13.6			0.0			5.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	2%	2%	0%	2%	2%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	30	782	24	24	893	17	24	0	24	11	0	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	806	0	24	910	0	0	48	0	0	33	0
Sign Control	Free				Free				Stop		Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	59.1%					ICU Level of Service B						
Analysis Period (min)	15											

Intersection

Int Delay, s/veh 3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	719	22	22	822	16	22	0	22	10	0	20
Future Vol, veh/h	28	719	22	22	822	16	22	0	22	10	0	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	30	-	-	30	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	2	2	0	2	2	2	0	2	0
Mvmt Flow	30	782	24	24	893	17	24	0	24	11	0	22

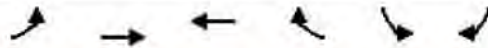
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	911	0	0	805	0	0	1796	1813	793	1792	1816	902
Stage 1	-	-	-	-	-	-	854	854	-	950	950	-
Stage 2	-	-	-	-	-	-	941	959	-	842	866	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4.018	3.3
Pot Cap-1 Maneuver	756	-	-	819	-	-	62	78	388	63	78	339
Stage 1	-	-	-	-	-	-	353	375	-	315	339	-
Stage 2	-	-	-	-	-	-	316	336	-	361	370	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	756	-	-	819	-	-	54	73	388	55	73	339
Mov Cap-2 Maneuver	-	-	-	-	-	-	54	73	-	55	73	-
Stage 1	-	-	-	-	-	-	339	360	-	306	329	-
Stage 2	-	-	-	-	-	-	287	326	-	326	355	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v 0.36		0.24	75.94	43.57
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	95	756	-	-	819	-	-	125
HCM Lane V/C Ratio	0.502	0.04	-	-	0.029	-	-	0.26
HCM Control Delay (s/veh)	75.9	10	-	-	9.5	-	-	43.6
HCM Lane LOS	F	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	2.2	0.1	-	-	0.1	-	-	1

Lanes, Volumes, Timings
17: Quaker Road

12-17-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	726	853	22	15	12
Future Volume (vph)	16	726	853	22	15	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	20.0			0.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1644	1697	1692	0	1564	0
Flt Permitted	0.950				0.973	
Satd. Flow (perm)	1644	1697	1692	0	1564	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		76.8	297.6		65.7	
Travel Time (s)		5.5	21.4		4.7	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	17	789	927	24	16	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	789	951	0	29	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 60.2%

ICU Level of Service B

Analysis Period (min) 15

Intersection

Int Delay, s/veh 0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	726	853	22	15	12
Future Vol, veh/h	16	726	853	22	15	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	20	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	2	0
Mvmt Flow	17	789	927	24	16	13

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	951	0	0 1763 939
Stage 1	-	-	- 939 -
Stage 2	-	-	- 824 -
Critical Hdwy	4.1	-	- 6.42 6.2
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.2	-	- 3.518 3.3
Pot Cap-1 Maneuver	730	-	- 93 323
Stage 1	-	-	- 380 -
Stage 2	-	-	- 431 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	730	-	- 90 323
Mov Cap-2 Maneuver	-	-	- 223 -
Stage 1	-	-	- 371 -
Stage 2	-	-	- 431 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.22	0	20.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	730	-	-	-	259
HCM Lane V/C Ratio	0.024	-	-	-	0.114
HCM Control Delay (s/veh)	10	-	-	-	20.7
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Lanes, Volumes, Timings
18: Pelham St & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↘		↗	↘	
Traffic Volume (vph)	23	141	118	45	164	136	117	295	40	159	353	68
Future Volume (vph)	23	141	118	45	164	136	117	295	40	159	353	68
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		0.0	60.0		0.0	60.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1595	0	0	1581	0	1612	1662	0	1612	1656	0
Flt Permitted		0.950			0.921		0.377			0.474		
Satd. Flow (perm)	0	1521	0	0	1465	0	640	1662	0	804	1656	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		71			64			13			19	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		252.0			404.5			1006.2			780.9	
Travel Time (s)		18.1			29.1			72.4			56.2	
Confl. Peds. (#/hr)	4					4			1	1		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	25	153	128	49	178	148	127	321	43	173	384	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	306	0	0	375	0	127	364	0	173	458	0
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
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)	8.0	8.0		8.0	8.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.3	32.3		32.3	32.3		32.3	32.3		32.3	32.3	
Total Split (s)	32.3	32.3		32.3	32.3		32.7	32.7		32.7	32.7	
Total Split (%)	49.7%	49.7%		49.7%	49.7%		50.3%	50.3%		50.3%	50.3%	
Maximum Green (s)	26.0	26.0		26.0	26.0		26.4	26.4		26.4	26.4	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)		-2.5			-2.5		-2.3	-2.3		-2.3	-2.3	
Total Lost Time (s)		3.8			3.8		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.5	2.5		2.5	2.5		2.5	2.5		2.5	2.5	

Lanes, Volumes, Timings
18: Pelham St & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0		19.0	19.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)	0	0		4	4		1	1		0	0	
Act Effct Green (s)		18.2			18.2		19.8	19.8		19.8	19.8	
Actuated g/C Ratio		0.39			0.39		0.43	0.43		0.43	0.43	
v/c Ratio		0.48			0.61		0.47	0.51		0.50	0.64	
Control Delay (s/veh)		11.5			14.9		17.8	13.2		17.3	15.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)		11.5			14.9		17.8	13.2		17.3	15.7	
LOS		B			B		B	B		B	B	
Approach Delay (s/veh)		11.5			14.9			14.4			16.1	
Approach LOS		B			B			B			B	
Queue Length 50th (m)		12.2			17.3		6.4	18.0		9.0	24.3	
Queue Length 95th (m)		35.7			49.0		24.5	49.4		30.9	65.8	
Internal Link Dist (m)		228.0			380.5			982.2			756.9	
Turn Bay Length (m)							60.0			60.0		
Base Capacity (vph)		1030			990		426	1111		535	1109	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.30			0.38		0.30	0.33		0.32	0.41	

Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 46.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay (s/veh): 14.6

Intersection LOS: B

Intersection Capacity Utilization 75.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 18: Pelham St & Quaker Road



Lanes, Volumes, Timings
19: Rice Road & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	312	117	149	342	87	170	377	142	81	405	85
Future Volume (vph)	120	312	117	149	342	87	170	377	142	81	405	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3	3.3
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	100.0		0.0	100.0		0.0	50.0		0.0	50.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1636	0	1644	1651	0	1607	1622	0	1607	1648	0
Flt Permitted	0.339			0.340			0.317			0.284		
Satd. Flow (perm)	587	1636	0	588	1651	0	536	1622	0	480	1648	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		30			21			41			23	
Link Speed (k/h)		50			50			40			50	
Link Distance (m)		295.7			326.4			105.7			232.4	
Travel Time (s)		21.3			23.5			9.5			16.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	130	339	127	162	372	95	185	410	154	88	440	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	466	0	162	467	0	185	564	0	88	532	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
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)	20.0	20.0		20.0	20.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	26.3	26.3		26.3	26.3		24.3	24.3		24.3	24.3	
Total Split (s)	27.0	27.0		27.0	27.0		38.0	38.0		38.0	38.0	
Total Split (%)	41.5%	41.5%		41.5%	41.5%		58.5%	58.5%		58.5%	58.5%	
Maximum Green (s)	20.7	20.7		20.7	20.7		31.7	31.7		31.7	31.7	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.3	6.3		6.3	6.3		6.3	6.3		6.3	6.3	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings
19: Rice Road & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	21.0	21.0		21.0	21.0		24.3	24.3		24.3	24.3	
Actuated g/C Ratio	0.36	0.36		0.36	0.36		0.42	0.42		0.42	0.42	
v/c Ratio	0.61	0.76		0.76	0.77		0.83	0.80		0.44	0.76	
Control Delay (s/veh)	35.2	28.3		48.0	28.8		46.0	23.0		19.2	21.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	35.2	28.3		48.0	28.8		46.0	23.0		19.2	21.0	
LOS	D	C		D	C		D	C		B	C	
Approach Delay (s/veh)		29.8			33.8			28.7			20.8	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	11.5	41.6		15.5	42.6		16.3	45.4		6.2	42.9	
Queue Length 95th (m)	#38.5	#97.7		#49.6	#99.3		#48.0	79.0		17.1	73.2	
Internal Link Dist (m)		271.7			302.4			81.7			208.4	
Turn Bay Length (m)	100.0			100.0			50.0			50.0		
Base Capacity (vph)	212	610		212	610		297	916		266	923	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.61	0.76		0.76	0.77		0.62	0.62		0.33	0.58	

Intersection Summary

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 58.1

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay (s/veh): 28.3

Intersection LOS: C

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 19: Rice Road & Quaker Road



Lanes, Volumes, Timings

20: First Avenue/Cataract Road & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	442	50	185	540	139	46	350	226	101	313	60
Future Volume (vph)	90	442	50	185	540	139	46	350	226	101	313	60
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	105.0		0.0	150.0		0.0	30.0		30.0	40.0		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1644	1674	0	1644	1651	0	1644	1731	1471	1644	1689	0
Flt Permitted	0.313			0.215			0.302			0.339		
Satd. Flow (perm)	542	1674	0	372	1651	0	523	1731	1471	587	1689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			22				189		11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.7			262.7			221.2			119.8	
Travel Time (s)		10.5			18.9			15.9			8.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	98	480	54	201	587	151	50	380	246	110	340	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	534	0	201	738	0	50	380	246	110	405	0
Number of Detectors	1	2		1	2		1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	20.0	20.0		7.0	20.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	26.3	26.3		11.1	26.3		26.1	26.1	26.1	24.3	24.3	
Total Split (s)	41.0	41.0		13.6	54.6		35.4	35.4	35.4	35.4	35.4	
Total Split (%)	45.6%	45.6%		15.1%	60.7%		39.3%	39.3%	39.3%	39.3%	39.3%	
Maximum Green (s)	34.7	34.7		9.6	48.3		29.1	29.1	29.1	29.1	29.1	
Yellow Time (s)	3.3	3.3		3.0	3.3		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	3.0	3.0		1.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.3	6.3		4.0	6.3		6.3	6.3	6.3	6.3	6.3	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	

Lanes, Volumes, Timings

20: First Avenue/Cataract Road & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0			11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0	0	0	0	
Act Effect Green (s)	29.5	29.5		45.0	42.6		23.0	23.0	23.0	23.0	23.0	
Actuated g/C Ratio	0.38	0.38		0.57	0.54		0.29	0.29	0.29	0.29	0.29	
v/c Ratio	0.48	0.84		0.56	0.82		0.33	0.75	0.44	0.64	0.81	
Control Delay (s/veh)	30.1	37.2		15.5	24.4		29.7	36.2	9.3	44.6	39.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	30.1	37.2		15.5	24.4		29.7	36.2	9.3	44.6	39.4	
LOS	C	D		B	C		C	D	A	D	D	
Approach Delay (s/veh)		36.1			22.5			25.9			40.5	
Approach LOS		D			C			C			D	
Queue Length 50th (m)	11.7	75.5		14.7	89.0		6.3	55.0	6.7	15.3	58.4	
Queue Length 95th (m)	28.3	#134.8		27.4	#169.4		16.5	87.4	24.5	#37.1	93.2	
Internal Link Dist (m)		121.7			238.7			197.2			95.8	
Turn Bay Length (m)	105.0			150.0			30.0		30.0	40.0		
Base Capacity (vph)	246	766		373	1055		200	661	678	224	652	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	
Reduced v/c Ratio	0.40	0.70		0.54	0.70		0.25	0.57	0.36	0.49	0.62	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 78.6

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay (s/veh): 29.8

Intersection LOS: C

Intersection Capacity Utilization 107.9%

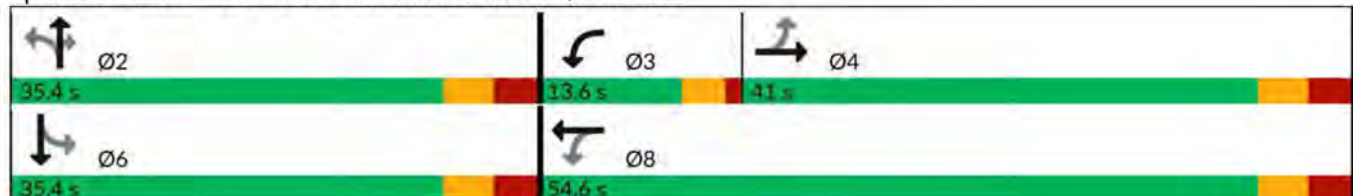
ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 20: First Avenue/Cataract Road & Quaker Road



Lanes, Volumes, Timings
21: Niagara St & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	326	49	282	45	31	20	381	510	62	39	717	405
Future Volume (vph)	326	49	282	45	31	20	381	510	62	39	717	405
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	100.0		65.0	0.0		22.5	75.0		0.0	22.5		150.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1612	1461	0	1612	1587	0	1612	3172	0	1612	3224	1442
Flt Permitted	0.659			0.280			0.134			0.427		
Satd. Flow (perm)	1117	1461	0	475	1587	0	227	3172	0	724	3224	1407
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		248			26			17				440
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		297.6			214.3			467.2			109.3	
Travel Time (s)		21.4			15.4			33.6			6.6	
Confl. Peds. (#/hr)	1		2	2		1	2					2
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.70	0.70	0.70	0.96	0.96	0.96	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	370	56	320	64	44	29	397	531	65	42	779	440
Shared Lane Traffic (%)												
Lane Group Flow (vph)	370	376	0	64	73	0	397	596	0	42	779	440
Number of Detectors	1	1		1	1		1	1		1	1	0
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov
Protected Phases	7	4		3	8		5	2			6	7
Permitted Phases	4			8			2			6		6
Detector Phase	7	4		3	8		5	2		6	6	6 7
Switch Phase												
Minimum Initial (s)	7.0	10.0		5.0	10.0		5.0	20.0		20.0	20.0	7.0
Minimum Split (s)	11.1	37.7		9.0	37.7		9.0	31.7		31.7	31.7	11.1
Total Split (s)	16.0	40.7		9.0	33.7		39.0	70.3		31.3	31.3	16.0
Total Split (%)	13.3%	33.9%		7.5%	28.1%		32.5%	58.6%		26.1%	26.1%	13.3%
Maximum Green (s)	12.0	34.0		5.0	27.0		35.0	63.6		24.6	24.6	12.0
Yellow Time (s)	3.0	3.7		3.0	3.7		3.0	3.7		3.7	3.7	3.0
All-Red Time (s)	1.0	3.0		1.0	3.0		1.0	3.0		3.0	3.0	1.0
Lost Time Adjust (s)	-2.9	-2.9		-2.9	-2.9		1.0	-2.6		1.0	-2.6	0.0
Total Lost Time (s)	1.1	3.8		1.1	3.8		5.0	4.1		7.7	4.1	4.0
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	2.5		3.0	2.5		3.0	2.5		2.5	2.5	3.0

Lanes, Volumes, Timings
21: Niagara St & Quaker Road

12-17-2024

	↖	→	↗	↖	←	↖	↖	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None		None	None		None	None		None	None	None
Walk Time (s)		7.0			7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		24.0			24.0			18.0		18.0	18.0	
Pedestrian Calls (#/hr)		5			5			5		5	5	
Act Effect Green (s)	32.2	22.7		23.9	17.4		58.9	59.8		24.7	28.4	41.3
Actuated g/C Ratio	0.33	0.23		0.25	0.18		0.60	0.61		0.25	0.29	0.42
v/c Ratio	0.82	0.71		0.30	0.24		0.78	0.31		0.23	0.83	0.52
Control Delay (s/veh)	45.3	20.4		27.1	27.9		33.8	10.7		40.6	44.5	4.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	45.3	20.4		27.1	27.9		33.8	10.7		40.6	44.5	4.9
LOS	D	C		C	C		C	B		D	D	A
Approach Delay (s/veh)		32.8			27.5			19.9			30.6	
Approach LOS		C			C			B			C	
Queue Length 50th (m)	60.3	21.7		8.4	8.0		50.2	24.2		6.4	72.8	0.0
Queue Length 95th (m)	93.5	52.5		14.0	14.6		#120.6	53.3		20.2	#151.3	22.7
Internal Link Dist (m)		273.6			190.3			443.2			85.3	
Turn Bay Length (m)	100.0						75.0			22.5		150.0
Base Capacity (vph)	449	734		212	535		641	2253		183	940	853
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	0.82	0.51		0.30	0.14		0.62	0.26		0.23	0.83	0.52

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 97.5

Natural Cycle: 100

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.83

Intersection Signal Delay (s/veh): 27.6

Intersection LOS: C

Intersection Capacity Utilization 86.5%

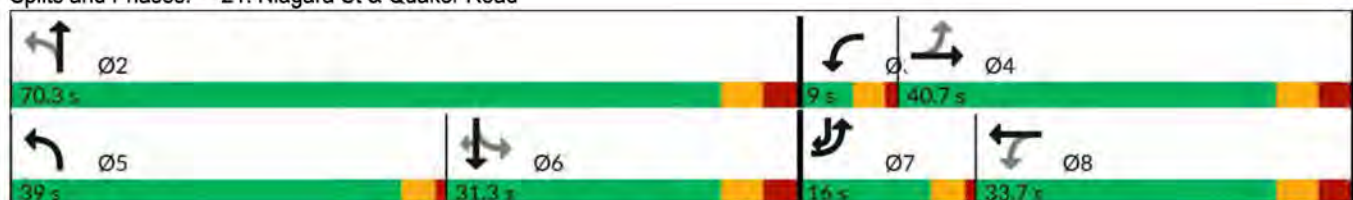
ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 21: Niagara St & Quaker Road



Lanes, Volumes, Timings
22: Niagara St & Merritt Rd

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	90	3	683	165	35	2	312	542	48	491	21
Future Volume (vph)	2	90	3	683	165	35	2	312	542	48	491	21
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	0.0		185.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	0		1	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1640	0	1566	1605	0	0	1648	1401	0	3100	0
Flt Permitted		0.990		0.286				0.996			0.763	
Satd. Flow (perm)	0	1625	0	471	1605	0	0	1642	1401	0	2375	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			22				596			4
Link Speed (k/h)		50			60			60			60	
Link Distance (m)		832.7			584.5			911.9			164.9	
Travel Time (s)		60.0			35.1			54.7			9.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.68	0.68	0.68	0.94	0.94	0.94	0.91	0.91	0.91	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	3	132	4	727	176	37	2	343	596	55	564	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	139	0	727	213	0	0	345	596	0	643	0
Number of Detectors	1	1		1	1		1	1	1	1	1	
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	
Leading Detector (m)	12.0	12.0		12.0	12.0		12.0	12.0	6.1	12.0	12.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		3	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		20.0	20.0	20.0	20.0	20.0	
Minimum Split (s)	16.7	16.7		16.7	16.7		26.7	26.7	26.7	26.7	26.7	
Total Split (s)	16.7	16.7		43.3	60.0		30.0	30.0	30.0	30.0	30.0	
Total Split (%)	18.6%	18.6%		48.1%	66.7%		33.3%	33.3%	33.3%	33.3%	33.3%	
Maximum Green (s)	10.0	10.0		39.3	53.3		23.3	23.3	23.3	23.3	23.3	
Yellow Time (s)	3.7	3.7		3.0	3.7		3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	3.0	3.0		1.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lost Time Adjust (s)		-2.1		1.0	-2.1			-2.4	-2.4		-2.4	
Total Lost Time (s)		4.6		5.0	4.6			4.3	4.3		4.3	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		5.0	5.0	5.0	5.0	5.0	

Lanes, Volumes, Timings
22: Niagara St & Merritt Rd

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None		None	None		Min	Min	Min	Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		12.1		53.7	54.1			25.7	25.7		25.7	
Actuated g/C Ratio		0.14		0.61	0.61			0.29	0.29		0.29	
v/c Ratio		0.63		0.98	0.22			0.73	0.72		0.93	
Control Delay (s/veh)		50.1		48.7	7.5			39.1	8.1		53.0	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay (s/veh)		50.1		48.7	7.5			39.1	8.1		53.0	
LOS		D		D	A			D	A		D	
Approach Delay (s/veh)		50.1			39.4			19.4			53.0	
Approach LOS		D			D			B			D	
Queue Length 50th (m)		22.9		100.1	13.1			53.8	0.0		56.7	
Queue Length 95th (m)		30.2		#177.3	23.0			#90.7	29.3		#85.9	
Internal Link Dist (m)		808.7			560.5			887.9			140.9	
Turn Bay Length (m)												
Base Capacity (vph)		222		758	1011			475	829		692	
Starvation Cap Reductn		0		0	0			0	0		0	
Spillback Cap Reductn		0		0	0			0	0		0	
Storage Cap Reductn		0		0	0			0	0		0	
Reduced v/c Ratio		0.63		0.96	0.21			0.73	0.72		0.93	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 88.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay (s/veh): 36.2

Intersection LOS: D

Intersection Capacity Utilization 93.7%

ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 22: Niagara St & Merritt Rd



Lanes, Volumes, Timings

23: Clare Avenue/Line Avenue & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Traffic Volume (vph)	22	276	33	106	286	55	18	44	126	55	55	11
Future Volume (vph)	22	276	33	106	286	55	18	44	126	55	55	11
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	0.0		0.0	30.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	0	1668	0	1612	1656	0	0	1567	0	0	1672	0
Flt Permitted		0.961		0.515				0.972			0.826	
Satd. Flow (perm)	0	1608	0	874	1656	0	0	1531	0	0	1412	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17			29			137			12	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		404.5			351.0			378.6			1022.4	
Travel Time (s)		29.1			25.3			27.3			73.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	24	300	36	115	311	60	20	48	137	60	60	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	360	0	115	371	0	0	205	0	0	132	0
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
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)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.0		4.0	4.0			4.0			4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	

Lanes, Volumes, Timings

23: Clare Avenue/Line Avenue & Quaker Road

12-17-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)		12.5		12.5	12.5			16.2			16.2	
Actuated g/C Ratio		0.34		0.34	0.34			0.44			0.44	
v/c Ratio		0.65		0.39	0.64			0.27			0.21	
Control Delay (s/veh)		15.5		13.2	14.7			4.5			8.1	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)		15.5		13.2	14.7			4.5			8.1	
LOS		B		B	B			A			A	
Approach Delay (s/veh)		15.5			14.4			4.5			8.1	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		16.6		5.1	16.4			2.3			4.3	
Queue Length 95th (m)		34.1		13.6	34.0			11.2			12.6	
Internal Link Dist (m)		380.5			327.0			354.6			998.4	
Turn Bay Length (m)				30.0								
Base Capacity (vph)		717		384	745			750			628	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.50		0.30	0.50			0.27			0.21	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 36.7

Natural Cycle: 40

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.65

Intersection Signal Delay (s/veh): 12.3

Intersection LOS: B

Intersection Capacity Utilization 71.3%

ICU Level of Service C

Analysis Period (min) 15

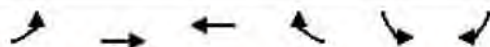
Splits and Phases: 23: Clare Avenue/Line Avenue & Quaker Road



Lanes, Volumes, Timings

25: Quaker Road

12-17-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	696	811	16	9	11
Future Volume (vph)	17	696	811	16	9	11
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%	0%		0%	
Storage Length (m)	20.0			0.0	0.0	0.0
Storage Lanes	1			0	0	0
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1644	1697	1692	0	1567	0
Flt Permitted	0.950				0.978	
Satd. Flow (perm)	1644	1697	1692	0	1567	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		188.6	76.8		55.5	
Travel Time (s)		13.6	5.5		4.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	2%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	18	757	882	17	10	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	757	899	0	22	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 57.4%

ICU Level of Service B

Analysis Period (min) 15

HCM 7th TWSC
25: Quaker Road

12-17-2024

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	696	811	16	9	11
Future Vol, veh/h	17	696	811	16	9	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	20	-	-	-	-	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	18	757	882	17	10	12
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	899	0	-	0	1684	890
Stage 1	-	-	-	-	890	-
Stage 2	-	-	-	-	793	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	764	-	-	-	105	344
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	449	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	764	-	-	-	102	344
Mov Cap-2 Maneuver	-	-	-	-	238	-
Stage 1	-	-	-	-	395	-
Stage 2	-	-	-	-	449	-
Approach	EB	WB		SB		
HCM Control Delay, s/v	0.23	0		18.58		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	764	-	-	-	287	
HCM Lane V/C Ratio	0.024	-	-	-	0.076	
HCM Control Delay (s/veh)	9.8	-	-	-	18.6	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	

Lanes, Volumes, Timings

29: Quaker Road

12-17-2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖	↗	↖	
Traffic Volume (vph)	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%			0%	0%	
Storage Length (m)		0.0	30.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Satd. Flow (prot)	1697	0	1697	1697	1697	0
Flt Permitted						
Satd. Flow (perm)	1697	0	1697	1697	1697	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	127.5			145.7	63.5	
Travel Time (s)	10.3			9.4	4.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	0.0%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	0					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	30	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	1	0	2	1
Stage 1	-	-	-	-	1	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1622	-	1020	1083
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1622	-	1020	1083
Mov Cap-2 Maneuver	-	-	-	-	932	-
Stage 1	-	-	-	-	1022	-
Stage 2	-	-	-	-	1022	-
Approach	EB	WB		NB		
HCM Control Delay, s/v	0	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	-	-	-	1622	-	
HCM Lane V/C Ratio	-	-	-	-	-	
HCM Control Delay (s/veh)	0	-	-	0	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Lanes, Volumes, Timings
102: First Avenue & Merritt Rd

12-17-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	95	0	41	63	0	85
Future Volume (vph)	95	0	41	63	0	85
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)	0%		0%			0%
Storage Length (m)	0.0	0.0		0.0	0.0	
Storage Lanes	0	0		0	0	
Taper Length (m)	7.5				7.5	
Satd. Flow (prot)	1612	0	1559	0	0	1697
Flt Permitted	0.950					
Satd. Flow (perm)	1612	0	1559	0	0	1697
Link Speed (k/h)	50		50			50
Link Distance (m)	832.7		566.2			139.5
Travel Time (s)	60.0		40.8			10.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	103	0	45	68	0	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	103	0	113	0	0	92
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	18.9%			ICU Level of Service A		
Analysis Period (min)	15					

Intersection						
Int Delay, s/veh	3.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	95	0	41	63	0	85
Future Vol, veh/h	95	0	41	63	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	0	45	68	0	92
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	171	79	0	0	113	0
Stage 1	79	-	-	-	-	-
Stage 2	92	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	819	982	-	-	1476	-
Stage 1	944	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	819	982	-	-	1476	-
Mov Cap-2 Maneuver	819	-	-	-	-	-
Stage 1	944	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s/v10.03		0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	819	1476	-	
HCM Lane V/C Ratio	-	-	0.126	-	-	
HCM Control Delay (s/veh)	-	-	10	0	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.4	0	-	