

Alternative Analysis Memo

Introduction

The feasibility study is being conducted to improve the intersection of Braintree Drive and Weathersfield Way in Cook County. The intersection is currently stop-controlled on all approaches. The scope of the evaluation is to investigate the feasibility of a roundabout at this intersection.

Land use surrounding the intersection is primarily residential, with a recreational baseball field in the northeast corner of the existing intersection. There are several residential driveways on the north, south, and west approaches.

Braintree Drive is a two-lane roadway classified as a minor collector and Weathersfield Way is a two-lane roadway classified as a minor collector. The posted speed on Braintree Drive is 25 mph. Weathersfield Way has a posted speed of 25 mph.

The purpose of this brief memorandum is to present findings of the traffic analysis and intersection improvement alternative.

Crash Analysis Summary

Crash analysis for the study intersection was conducted for a 5-year period from 2016 through 2020. A total of 4 crashes occurred in the 5-year study period. The predominant crash type was angle (3 crashes, 75%), followed by rear end (1 crash, 25%). These crashes were all classified as Property Damage Only. No severe (Type A or B) and fatalities occurred in this five-year period. 25% of crashes happened in dark conditions and 50% of crashes happened in wet conditions. There were no crashes involving pedestrians or pedal cyclists.

Intersection Alternative

In order to improve intersection safety and reduce potential for future crashes, a roundabout intersection improvement alternative was evaluated:

The single-lane compact roundabout with an inscribed circle diameter of 90 feet is proposed at the existing intersection location. The roundabout consists of a 14-foot approach lane with 4' splitter island on each leg and a single 16 foot circulating lane within the roundabout. The intersection is designed to accommodate an S-BUS 40 design vehicle within paved lane widths for use of the roundabout by school buses. Larger vehicle turning movements at the roundabout are accommodated using the mountable paved central and splitter medians. A signal warrant analysis was conducted and a traffic signal is not warranted at the intersection.

Traffic Analysis Summary

Traffic counts conducted in 2023 were used for the project. Traffic projections were requested from CMAP for year 2050 and projected design hourly volumes were developed.

Traffic analysis was conducted for existing and projected traffic volumes for the evening peak period. Traffic Analysis Summary is as follows for the existing and proposed traffic control alternative:

Stop-Controlled

Stop-controlled capacity analyses were conducted using HCS 7 software. The capacity analysis results, delay and level of service, by approach are shown below:

Year 2023:

Approach	Eastbound	Westbound	Northbound	Southbound
Approach Delay	9.9	11.8	10.9	10.4
Approach LOS	A	B	B	B
Intersection LOS	B	B	B	B

Year 2050:

Approach	Eastbound	Westbound	Northbound	Southbound
Approach Delay	10.4	13.0	11.7	11.0
Approach LOS	B	B	B	B
Intersection LOS	B	B	B	B

Roundabout

Roundabout capacity analyses were conducted using SIDRA software. The capacity analysis results, delay and level of service, by approach are shown below:

Year 2023:

Approach	Eastbound	Westbound	Northbound	Southbound
Approach Delay	4.5	6.1	4.9	5.3
Approach LOS	A	A	A	A
Intersection LOS	A	A	A	A

Year 2050:

Approach	Eastbound	Westbound	Northbound	Southbound
Approach Delay	4.7	6.6	5.2	5.7
Approach LOS	A	A	A	A
Intersection LOS	A	A	A	A

Exhibits

1. Signal Warrant Analysis
2. Stop-Controlled Analysis
3. Roundabout Analysis
4. Roundabout Intersection Layout
5. AutoTurn Analysis- Roundabout Intersection

HCS7 Warrants Report

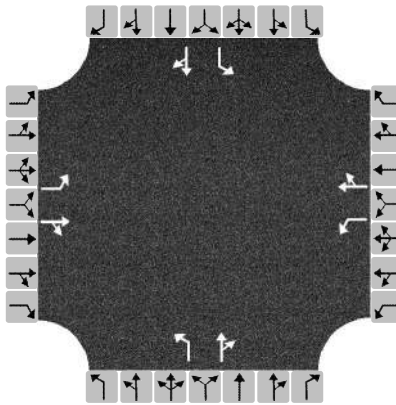
Project Information

Analyst	OJE	Date	1/26/2023
Agency	Village of Shaumburg	Analysis Year	2023
Jurisdiction	Village of Shaumburg	Time Period Analyzed	6:00AM - 6:00PM
Project Description	Braintree and Weathersfield Signal Warrants		

General

Major Street Direction	North-South	Population < 10,000	No
Starting Time Interval	6	Coordinated Signal System	No
Median Type	Undivided	Crashes (crashes/year)	0
Major Street Speed (mi/h)	25	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	5280		

Geometry and Traffic



Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Number of Lanes, N	1	1	0	1	1	0	1	1	0	1	1	0
Lane Usage	L	TR		L	TR		L	TR		L	TR	
Vehicle Volumes Averages (veh/h)	14	71	19	14	83	10	19	107	15	15	96	11
Pedestrian Averages (peds/h)	0			0			0			0		
Gap Averages (gaps/h)	0			0			0			0		
Delay (s/veh)	0.0			0.0			0.0			0.0		
Delay (veh-hrs)	0.0			0.0			0.0			0.0		

School Crossing and Roadway Network

Number of Students in Highest Hour	0	Two or More Major Routes	No
Number of Adequate Gaps in Period	0	Weekend Counts	No
Number of Minutes in Period	0	5-year Growth Factor (%)	0

Railroad Crossing

Grade Crossing Approach	None	Rail Traffic (trains/day)	0
Highest Volume Hour with Trains	Unknown	High Occupancy Buses (%)	0
Distance to Stop Line (ft)		Tractor-Trailer Trucks (%)	0

HCS7 Warrants Report

Volume Summary

Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (100%)	1A (80%)	1B (100%)	1B (80%)	2 (100%)	3A (100%)	3B (100%)	4A (100%)	4B (100%)
06 - 07	158	50	233	0	0	No	No	No	No	No	No	No	No	No
07 - 08	364	189	653	0	0	No	No	No	No	No	No	No	No	No
08 - 09	340	115	562	0	0	No	No	No	No	No	No	No	No	No
09 - 10	183	69	315	0	0	No	No	No	No	No	No	No	No	No
10 - 11	144	84	300	0	0	No	No	No	No	No	No	No	No	No
11 - 12	215	88	380	0	0	No	No	No	No	No	No	No	No	No
12 - 13	177	87	347	0	0	No	No	No	No	No	No	No	No	No
13 - 14	188	100	379	0	0	No	No	No	No	No	No	No	No	No
14 - 15	320	102	523	0	0	No	No	No	No	No	No	No	No	No
15 - 16	362	196	688	0	0	No	No	No	No	No	No	No	No	No
16 - 17	365	217	724	0	0	No	No	No	No	No	No	No	No	No
17 - 18	366	147	643	0	0	No	No	No	No	No	No	No	No	No
Total	3182	1444	5747	0	0	0	0	0	0	0	0	0	0	0

Warrants

Warrant 1: Eight-Hour Vehicular Volume

A. Minimum Vehicular Volumes (Both major approaches --and-- higher minor approach) --or--

B. Interruption of Continuous Traffic (Both major approaches --and-- higher minor approach) --or--

80% Vehicular --and-- Interruption Volumes (Both major approaches --and-- higher minor approach)

Warrant 2: Four-Hour Vehicular Volume

Four-Hour Vehicular Volume (Both major approaches --and-- higher minor approach)

Warrant 3: Peak Hour

A. Peak-Hour Conditions (Minor delay -- and-- minor volume --and-- total volume) --or--

B. Peak-Hour Vehicular Volumes (Both major approaches --and-- higher minor approach)

Warrant 4: Pedestrian Volume

A. Four Hour Volumes --or--

B. One-Hour Volumes

Warrant 5: School Crossing

Gaps Same Period --and--

Student Volumes

Nearest Traffic Control Signal (optional)



Warrant 6: Coordinated Signal System

Degree of Platooning (Predominant direction or both directions)

Warrant 7: Crash Experience

A. Adequate trials of alternatives, observance and enforcement failed --and--

B. Reported crashes susceptible to correction by signal (12-month period) --and--

C. 80% Volumes for Warrants 1A, 1B, --or-- 4 are satisfied

Warrant 8: Roadway Network

A. Weekday Volume (Peak hour total --and-- projected warrants 1, 2, or 3) --or--

B. Weekend Volume (Five hours total)

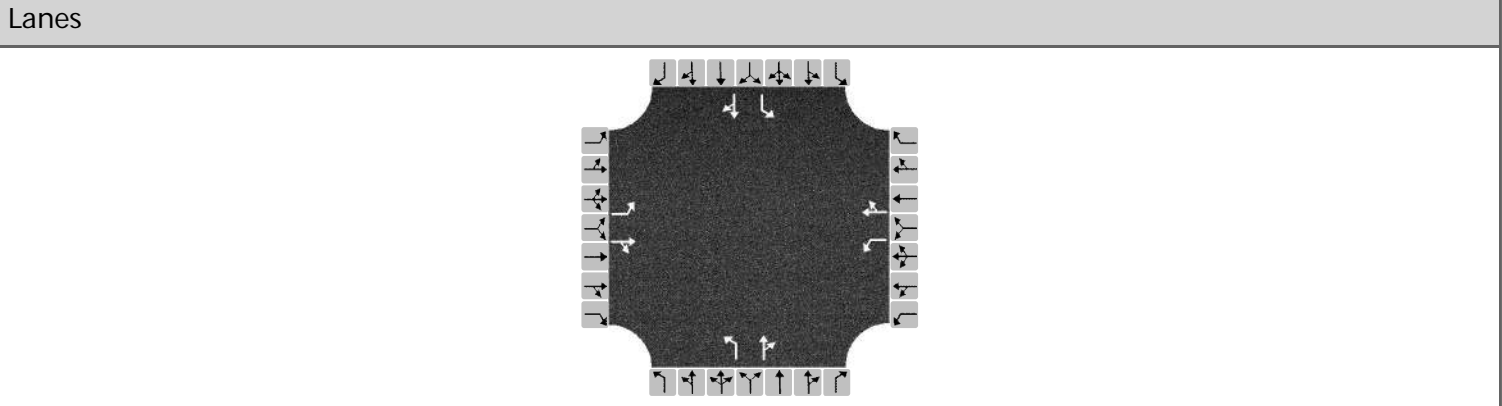
Warrant 9: Grade Crossing

A. Grade Crossing within 140 ft --and--

B. Peak-Hour Vehicular Volumes

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	MRL	Intersection	Weathersfield Way
Agency/Co.	Village of Schaumburg	Jurisdiction	Village of Schuamburg
Date Performed	2/15/2024	East/West Street	Weathersfield Way
Analysis Year	2023	North/South Street	Braintree Drive
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.89
Time Analyzed	Existing 2023 PM Peak		
Project Description	Braintree Dr & Weathersfield Way		



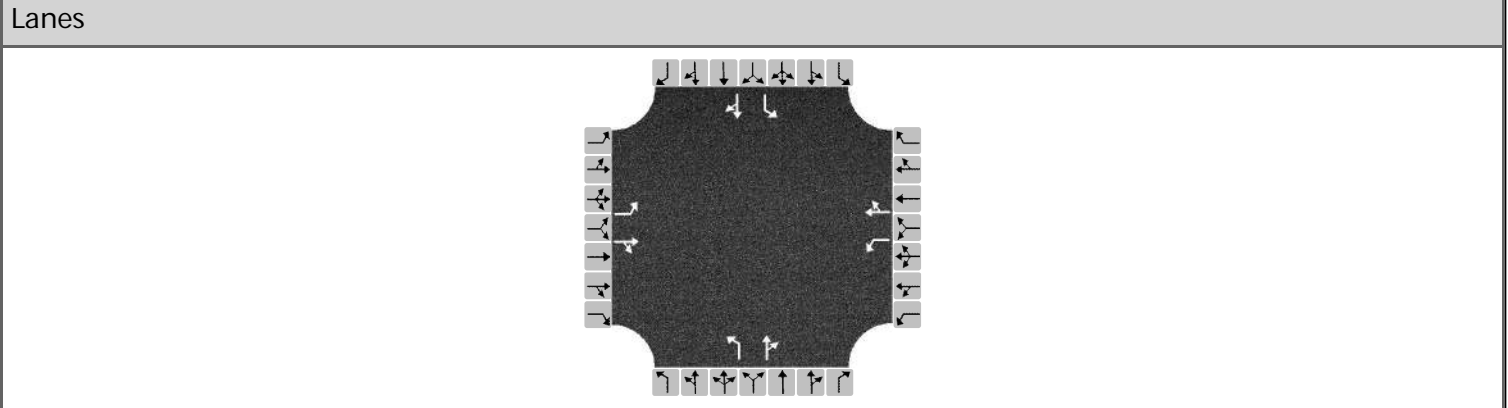
Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume	16	85	25	41	207	19	28	149	20	18	112	18
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR		L	TR		L	TR		L	TR	
Flow Rate, v (veh/h)	18	124		46	254		31	190		20	146	
Percent Heavy Vehicles	0	0		0	0		0	0		0	0	

Departure Headway and Service Time												
Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.016	0.110		0.041	0.226		0.028	0.169		0.018	0.130	
Final Departure Headway, hd (s)	6.49	5.83		6.27	5.72		6.44	5.86		6.52	5.92	
Final Degree of Utilization, x	0.032	0.200		0.080	0.403		0.056	0.309		0.037	0.240	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	4.19	3.53		3.97	3.42		4.14	3.56		4.22	3.62	

Capacity, Delay and Level of Service												
Flow Rate, v (veh/h)	18	124		46	254		31	190		20	146	
Capacity	555	618		574	630		559	615		553	608	
95% Queue Length, Q ₉₅ (veh)	0.1	0.7		0.3	1.9		0.2	1.3		0.1	0.9	
Control Delay (s/veh)	9.4	10.0		9.5	12.2		9.5	11.2		9.5	10.5	
Level of Service, LOS	A	A		A	B		A	B		A	B	
Approach Delay (s/veh)	9.9			11.8			10.9			10.4		
Approach LOS	A			B			B			B		
Intersection Delay, s/veh LOS	11.0						B					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	MRL	Intersection	Weathersfield Way
Agency/Co.	Village of Schaumburg	Jurisdiction	Village of Schuamburg
Date Performed	2/15/2024	East/West Street	Weathersfield Way
Analysis Year	2050	North/South Street	Braintree Drive
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.89
Time Analyzed	Projected 2050 PM Peak		
Project Description	Braintree Dr & Weathersfield Way		



Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume	18	94	28	45	229	21	31	165	22	20	124	20
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	L	TR		L	TR		L	TR		L	TR	
Flow Rate, v (veh/h)	20	137		51	281		35	210		22	162	
Percent Heavy Vehicles	0	0		0	0		0	0		0	0	

Departure Headway and Service Time												
Initial Departure Headway, hd (s)	3.20	3.20		3.20	3.20		3.20	3.20		3.20	3.20	
Initial Degree of Utilization, x	0.018	0.122		0.045	0.250		0.031	0.187		0.020	0.144	
Final Departure Headway, hd (s)	6.70	6.04		6.45	5.90		6.64	6.05		6.73	6.13	
Final Degree of Utilization, x	0.038	0.230		0.091	0.460		0.064	0.353		0.042	0.275	
Move-Up Time, m (s)	2.3	2.3		2.3	2.3		2.3	2.3		2.3	2.3	
Service Time, ts (s)	4.40	3.74		4.15	3.60		4.34	3.75		4.43	3.83	

Capacity, Delay and Level of Service												
Flow Rate, v (veh/h)	20	137		51	281		35	210		22	162	
Capacity	537	596		558	611		543	595		535	587	
95% Queue Length, Q ₉₅ (veh)	0.1	0.9		0.3	2.4		0.2	1.6		0.1	1.1	
Control Delay (s/veh)	9.7	10.5		9.8	13.5		9.8	12.0		9.7	11.1	
Level of Service, LOS	A	B		A	B		A	B		A	B	
Approach Delay (s/veh)	10.4			13.0			11.7			11.0		
Approach LOS	B			B			B			B		
Intersection Delay, s/veh LOS	11.8						B					

MOVEMENT SUMMARY

Site: EX [2023 PM Peak BRAINTREE-ROUNABOUT (Site Folder: General)]

Existing 2023 PM Peak

Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist ft]				
South: BRAINTREE DR														
3	L2	28	0.0	30	0.0	0.190	4.9	LOS A	1.0	25.3	0.32	0.18	0.32	23.9
8	T1	149	0.0	162	0.0	0.190	4.9	LOS A	1.0	25.3	0.32	0.18	0.32	23.7
18	R2	20	0.0	22	0.0	0.190	4.9	LOS A	1.0	25.3	0.32	0.18	0.32	23.3
Approach		197	0.0	214	0.0	0.190	4.9	LOS A	1.0	25.3	0.32	0.18	0.32	23.7
East: WEATHERSFIELD WAY														
1	L2	41	0.0	45	0.0	0.276	6.1	LOS A	1.6	39.2	0.43	0.29	0.43	33.0
6	T1	207	0.0	225	0.0	0.276	6.1	LOS A	1.6	39.2	0.43	0.29	0.43	33.2
16	R2	19	0.0	21	0.0	0.276	6.1	LOS A	1.6	39.2	0.43	0.29	0.43	32.5
Approach		267	0.0	290	0.0	0.276	6.1	LOS A	1.6	39.2	0.43	0.29	0.43	33.1
North: BRAINTREE DR														
7	L2	18	0.0	20	0.0	0.165	5.3	LOS A	0.9	21.9	0.48	0.34	0.48	33.5
4	T1	112	0.0	122	0.0	0.165	5.3	LOS A	0.9	21.9	0.48	0.34	0.48	33.6
14	R2	18	0.0	20	0.0	0.165	5.3	LOS A	0.9	21.9	0.48	0.34	0.48	32.9
Approach		148	0.0	161	0.0	0.165	5.3	LOS A	0.9	21.9	0.48	0.34	0.48	33.5
West: WEATHERSFIELD WAY														
5	L2	16	0.0	17	0.0	0.128	4.5	LOS A	0.6	16.2	0.37	0.22	0.37	33.9
2	T1	85	0.0	92	0.0	0.128	4.5	LOS A	0.6	16.2	0.37	0.22	0.37	34.0
12	R2	25	0.0	27	0.0	0.128	4.5	LOS A	0.6	16.2	0.37	0.22	0.37	33.3
Approach		126	0.0	137	0.0	0.128	4.5	LOS A	0.6	16.2	0.37	0.22	0.37	33.9
All Vehicles		738	0.0	802	0.0	0.276	5.3	LOS A	1.6	39.2	0.40	0.26	0.40	30.1

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

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

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

ROUNABOUT ANALYSIS

Site: EX [2023 PM Peak BRAINTREE-ROUNABOUT (Site Folder: General)]

Existing 2023 PM Peak

Site Category: (None)
Roundabout

Roundabout Basic Parameters												
Location	Name	Central Island Diam	Circ Width	Insc Diam	Entry Radius	Entry Angle	Circ Lanes	Entry Lanes	Av.Entry Lane Width	App. Dist	Prop Queued Upstr Signal	Extra Bunching
		ft	ft	ft	ft	°			ft	ft		%
South	BRAINTREE DR	58.00	16.00	90.0 ⁷	65.0	30.0	1	1	14.00	1600.0	NA ⁵	0.0
East	WEATHERSF IELD WAY	58.00	16.00	90.0 ⁷	65.0	30.0	1	1	14.00	1600.0	NA ⁵	0.0
North	BRAINTREE DR	58.00	16.00	90.0 ⁷	65.0	30.0	1	1	14.00	1600.0	NA ⁵	0.0
West	WEATHERSF IELD WAY	58.00	16.00	90.0 ⁷	65.0	30.0	1	1	14.00	1600.0	NA ⁵	0.0

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

- ⁵ Not Applicable (single Site analysis or unconnected Site in Network analysis).
- ⁷ Inscribed diameter value was specified by the user.

Roundabout Entry and Circulating / Exiting Stream Parameters														
To Approach	Turn	Lane No	Lane Type	Opng Flow	Opng Flow	In-Bunch Hdwy	Prop. Bunched	Cap Const	Priority Sharing	OD Factor	HVE for Entry	Critical [Hdwy	Gap Dist]	Follow-up Hdwy
				veh/h	pcu/h	sec		Effect				sec	ft	sec
South: BRAINTREE DR														
Environment Factor: 1.05														
Entry/Circ Flow Adjustment: None														
West	L2	1	Dominant	129	129	2.00	0.146	No	No	0.989	1.00	5.07	132.9	2.78
North	T1	1	Dominant	129	129	2.00	0.146	No	No	0.989	1.00	5.07	132.9	2.78
East	R2	1	Dominant	129	129	2.00	0.146	No	No	0.989	1.00	5.07	132.9	2.78
East: WEATHERSFIELD WAY														
Environment Factor: 1.05														
Entry/Circ Flow Adjustment: None														
South	L2	1	Dominant	210	210	2.00	0.225	No	No	0.984	1.00	4.94	132.4	2.75
West	T1	1	Dominant	210	210	2.00	0.225	No	No	0.984	1.00	4.94	132.4	2.75
North	R2	1	Dominant	210	210	2.00	0.225	No	No	0.984	1.00	4.94	132.4	2.75
North: BRAINTREE DR														
Environment Factor: 1.05														
Entry/Circ Flow Adjustment: None														
East	L2	1	Dominant	300	300	2.00	0.306	No	No	0.971	1.00	4.80	127.5	2.72
South	T1	1	Dominant	300	300	2.00	0.306	No	No	0.971	1.00	4.80	127.5	2.72
West	R2	1	Dominant	300	300	2.00	0.306	No	No	0.971	1.00	4.80	127.5	2.72
West: WEATHERSFIELD WAY														
Environment Factor: 1.05														
Entry/Circ Flow Adjustment: None														
North	L2	1	Dominant	186	186	2.00	0.202	No	No	0.982	1.00	4.98	127.5	2.76
East	T1	1	Dominant	186	186	2.00	0.202	No	No	0.982	1.00	4.98	127.5	2.76
South	R2	1	Dominant	186	186	2.00	0.202	No	No	0.982	1.00	4.98	127.5	2.76

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

Circulating Lane Flow Rates			
Lane No	Circulating Flow Rate		
	veh/h	pcu/h	Percent

South: BRAINTREE DR			
Lane 1	129	129	100.0
Approach	129	129	
East: WEATHERSFIELD WAY			
Lane 1	210	210	100.0
Approach	210	210	
North: BRAINTREE DR			
Lane 1	300	300	100.0
Approach	300	300	
West: WEATHERSFIELD WAY			
Lane 1	186	186	100.0
Approach	186	186	

Roundabout Capacity Model: The SIDRA Standard roundabout capacity model option is in use. This model takes into account the total circulating flow as well as the effect of flow distribution in circulating lanes on the entry capacity results.

Gap Acceptance Cycle Parameters (Lanes)					
Opposed Lane	Cycle Time sec	Blocked Time sec	Unblocked Time sec	Unblocked Time Ratio	Minimum Delay sec
South: BRAINTREE DR					
1	36.47	4.85	31.62	0.867	3.2
East: WEATHERSFIELD WAY					
1	26.15	5.21	20.94	0.801	3.4
North: BRAINTREE DR					
1	21.62	5.86	15.76	0.729	3.7
West: WEATHERSFIELD WAY					
1	28.34	5.19	23.15	0.817	3.4

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

Gap Acceptance Cycle Parameters (Movements)							
To Approach	Turn	Lane No	Cycle Time sec	Blocked Time sec	Unblocked Time sec	Unblocked Time Ratio	Minimum Delay sec
South: BRAINTREE DR							
West	L2	1	36.47	4.85	31.62	0.867	3.2
North	T1	1	36.47	4.85	31.62	0.867	3.2
East	R2	1	36.47	4.85	31.62	0.867	3.2
East: WEATHERSFIELD WAY							
South	L2	1	26.15	5.21	20.94	0.801	3.4
West	T1	1	26.15	5.21	20.94	0.801	3.4
North	R2	1	26.15	5.21	20.94	0.801	3.4
North: BRAINTREE DR							
East	L2	1	21.62	5.86	15.76	0.729	3.7
South	T1	1	21.62	5.86	15.76	0.729	3.7
West	R2	1	21.62	5.86	15.76	0.729	3.7
West: WEATHERSFIELD WAY							
North	L2	1	28.34	5.19	23.15	0.817	3.4
East	T1	1	28.34	5.19	23.15	0.817	3.4
South	R2	1	28.34	5.19	23.15	0.817	3.4

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

MOVEMENT SUMMARY

Site: PR [2050 PM Peak BRAINTREE-ROUNABOUT (Site Folder: General)]

Projected 2050 PM Peak

Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total veh/h]	[HV %]				[Veh. veh]	[Dist ft]				
South: BRAINTREE DR														
3	L2	31	0.0	34	0.0	0.213	5.2	LOS A	1.2	29.0	0.35	0.20	0.35	23.8
8	T1	165	0.0	179	0.0	0.213	5.2	LOS A	1.2	29.0	0.35	0.20	0.35	23.6
18	R2	22	0.0	24	0.0	0.213	5.2	LOS A	1.2	29.0	0.35	0.20	0.35	23.2
Approach		218	0.0	237	0.0	0.213	5.2	LOS A	1.2	29.0	0.35	0.20	0.35	23.6
East: WEATHERSFIELD WAY														
1	L2	45	0.0	49	0.0	0.311	6.6	LOS A	1.8	45.7	0.47	0.33	0.47	32.8
6	T1	229	0.0	249	0.0	0.311	6.6	LOS A	1.8	45.7	0.47	0.33	0.47	32.9
16	R2	21	0.0	23	0.0	0.311	6.6	LOS A	1.8	45.7	0.47	0.33	0.47	32.2
Approach		295	0.0	321	0.0	0.311	6.6	LOS A	1.8	45.7	0.47	0.33	0.47	32.8
North: BRAINTREE DR														
7	L2	20	0.0	22	0.0	0.188	5.7	LOS A	1.0	25.6	0.51	0.38	0.51	33.3
4	T1	124	0.0	135	0.0	0.188	5.7	LOS A	1.0	25.6	0.51	0.38	0.51	33.5
14	R2	20	0.0	22	0.0	0.188	5.7	LOS A	1.0	25.6	0.51	0.38	0.51	32.8
Approach		164	0.0	178	0.0	0.188	5.7	LOS A	1.0	25.6	0.51	0.38	0.51	33.4
West: WEATHERSFIELD WAY														
5	L2	18	0.0	20	0.0	0.145	4.7	LOS A	0.7	18.7	0.39	0.25	0.39	33.8
2	T1	94	0.0	102	0.0	0.145	4.7	LOS A	0.7	18.7	0.39	0.25	0.39	33.9
12	R2	28	0.0	30	0.0	0.145	4.7	LOS A	0.7	18.7	0.39	0.25	0.39	33.2
Approach		140	0.0	152	0.0	0.145	4.7	LOS A	0.7	18.7	0.39	0.25	0.39	33.7
All Vehicles		817	0.0	888	0.0	0.311	5.7	LOS A	1.8	45.7	0.43	0.29	0.43	30.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Signalised Intersections.

Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.

LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).

Roundabout Capacity Model: SIDRA Standard.

Delay Model: HCM Delay Formula (Geometric Delay is not included).

Queue Model: HCM Queue Formula.

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

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

ROUNABOUT ANALYSIS

Site: PR [2050 PM Peak BRAINTREE-ROUNABOUT (Site Folder: General)]

Projected 2050 PM Peak

Site Category: (None)
Roundabout

Roundabout Basic Parameters												
Location	Name	Central Island Diam	Circ Width	Insc Diam	Entry Radius	Entry Angle	Circ Lanes	Entry Lanes	Av.Entry Lane Width	App. Dist	Prop Queued Upstr Signal	Extra Bunching
		ft	ft	ft	ft	°			ft	ft		%
South	BRAINTREE DR	58.00	16.00	90.0 ⁷	65.0	30.0	1	1	14.00	1600.0	NA ⁵	0.0
East	WEATHERSF IELD WAY	58.00	16.00	90.0 ⁷	65.0	30.0	1	1	14.00	1600.0	NA ⁵	0.0
North	BRAINTREE DR	58.00	16.00	90.0 ⁷	65.0	30.0	1	1	14.00	1600.0	NA ⁵	0.0
West	WEATHERSF IELD WAY	58.00	16.00	90.0 ⁷	65.0	30.0	1	1	14.00	1600.0	NA ⁵	0.0

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

- ⁵ Not Applicable (single Site analysis or unconnected Site in Network analysis).
- ⁷ Inscribed diameter value was specified by the user.

Roundabout Entry and Circulating / Exiting Stream Parameters														
To Approach	Turn	Lane No	Lane Type	Opng Flow	Opng Flow	In-Bunch Hdwy	Prop. Bunched	Cap Const	Priority Sharing	OD Factor	HVE for Entry	Critical [Hdwy	Gap Dist]	Follow-up Hdwy
				veh/h	pcu/h	sec		Effect				sec	ft	sec
South: BRAINTREE DR														
Environment Factor: 1.05														
Entry/Circ Flow Adjustment: None														
West	L2	1	Dominant	143	143	2.00	0.160	No	No	0.987	1.00	5.05	132.2	2.78
North	T1	1	Dominant	143	143	2.00	0.160	No	No	0.987	1.00	5.05	132.2	2.78
East	R2	1	Dominant	143	143	2.00	0.160	No	No	0.987	1.00	5.05	132.2	2.78
East: WEATHERSFIELD WAY														
Environment Factor: 1.05														
Entry/Circ Flow Adjustment: None														
South	L2	1	Dominant	233	233	2.00	0.246	No	No	0.981	1.00	4.90	131.4	2.74
West	T1	1	Dominant	233	233	2.00	0.246	No	No	0.981	1.00	4.90	131.4	2.74
North	R2	1	Dominant	233	233	2.00	0.246	No	No	0.981	1.00	4.90	131.4	2.74
North: BRAINTREE DR														
Environment Factor: 1.05														
Entry/Circ Flow Adjustment: None														
East	L2	1	Dominant	332	332	2.00	0.332	No	No	0.965	1.00	4.75	126.3	2.71
South	T1	1	Dominant	332	332	2.00	0.332	No	No	0.965	1.00	4.75	126.3	2.71
West	R2	1	Dominant	332	332	2.00	0.332	No	No	0.965	1.00	4.75	126.3	2.71
West: WEATHERSFIELD WAY														
Environment Factor: 1.05														
Entry/Circ Flow Adjustment: None														
North	L2	1	Dominant	205	205	2.00	0.221	No	No	0.979	1.00	4.94	126.7	2.75
East	T1	1	Dominant	205	205	2.00	0.221	No	No	0.979	1.00	4.94	126.7	2.75
South	R2	1	Dominant	205	205	2.00	0.221	No	No	0.979	1.00	4.94	126.7	2.75

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

Circulating Lane Flow Rates			
Lane No	Circulating Flow Rate	veh/h	pcu/h
			Percent

South: BRAINTREE DR			
Lane 1	143	143	100.0
Approach	143	143	
East: WEATHERSFIELD WAY			
Lane 1	233	233	100.0
Approach	233	233	
North: BRAINTREE DR			
Lane 1	332	332	100.0
Approach	332	332	
West: WEATHERSFIELD WAY			
Lane 1	205	205	100.0
Approach	205	205	

Roundabout Capacity Model: The SIDRA Standard roundabout capacity model option is in use. This model takes into account the total circulating flow as well as the effect of flow distribution in circulating lanes on the entry capacity results.

Gap Acceptance Cycle Parameters (Lanes)					
Opposed Lane	Cycle Time sec	Blocked Time sec	Unblocked Time sec	Unblocked Time Ratio	Minimum Delay sec
South: BRAINTREE DR					
1	33.82	4.94	28.88	0.854	3.2
East: WEATHERSFIELD WAY					
1	24.61	5.36	19.25	0.782	3.5
North: BRAINTREE DR					
1	20.72	6.11	14.61	0.705	3.8
West: WEATHERSFIELD WAY					
1	26.62	5.32	21.30	0.800	3.4

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

Gap Acceptance Cycle Parameters (Movements)							
To Approach	Turn	Lane No	Cycle Time sec	Blocked Time sec	Unblocked Time sec	Unblocked Time Ratio	Minimum Delay sec
South: BRAINTREE DR							
West	L2	1	33.82	4.94	28.88	0.854	3.2
North	T1	1	33.82	4.94	28.88	0.854	3.2
East	R2	1	33.82	4.94	28.88	0.854	3.2
East: WEATHERSFIELD WAY							
South	L2	1	24.61	5.36	19.25	0.782	3.5
West	T1	1	24.61	5.36	19.25	0.782	3.5
North	R2	1	24.61	5.36	19.25	0.782	3.5
North: BRAINTREE DR							
East	L2	1	20.72	6.11	14.61	0.705	3.8
South	T1	1	20.72	6.11	14.61	0.705	3.8
West	R2	1	20.72	6.11	14.61	0.705	3.8
West: WEATHERSFIELD WAY							
North	L2	1	26.62	5.32	21.30	0.800	3.4
East	T1	1	26.62	5.32	21.30	0.800	3.4
South	R2	1	26.62	5.32	21.30	0.800	3.4

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