

final report

December 2, 2024
Revised April 10, 2025

Traffic Impact Study

The Reserves at Parklands Phase 2
8000 Broad Run Road
Louisville, KY

Prepared for

Louisville Metro Planning Commission

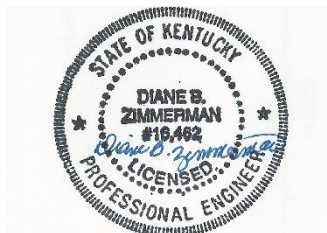


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INTRODUCTION

The development plan for the Reserves at Parklands Phase 2 on Broad Run Road in Louisville, KY shows 370 single family lots. **Figure 1** displays a map of the site. Access to the subdivision will be from two entrances on Broad Run Road. The purpose of this study is to examine the traffic impacts of the development upon the adjacent highway system. For this study, the impact area was defined to be the intersections of Broad Road with Seatonville Road, Seatonville Road with Brentlinger Lane and Billtown Road, and the proposed entrances.

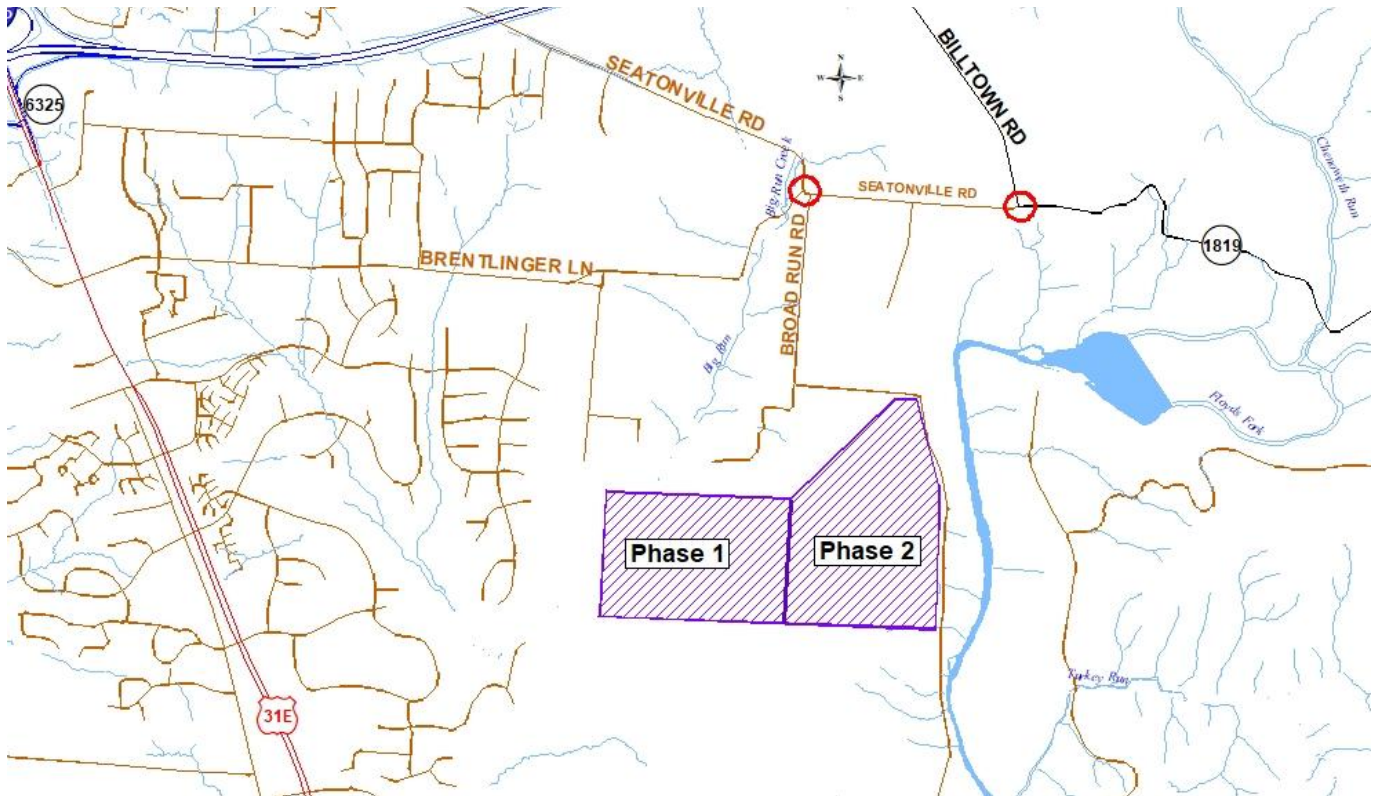


Figure 1. Site Map

EXISTING CONDITIONS

Broad Run Road is a Metro Louisville maintained road with an estimated 2024 ADT volume of 1,500 vehicles per day south of Seatonville Road, as estimated from the turning movement count and using the K factor of 14.2 from station 389. The road is two lanes with nine-foot lanes and a one-foot shoulder. The speed limit is 35 mph. There are no sidewalks. The intersection with Seatonville Road is controlled with a stop sign on Broad Run Road.

The intersection of Seatonville Road at Brentlinger Lane is controlled with a stop sign on Brentlinger Lane. The intersection of Billtown Road with Seatonville Road is controlled with a stop sign on Billtown Road.

Peak hour traffic counts for the intersections were obtained on Tuesday, April 16, 2024. The a.m. peak hour occurred between 8:00 and 9:00 and the p.m. peak hour occurred between 4:45 and 5:45. **Figure 2** illustrates the existing a.m. and p.m. peak hour traffic volumes. The figure is illustrative and is not reflective of traffic control.

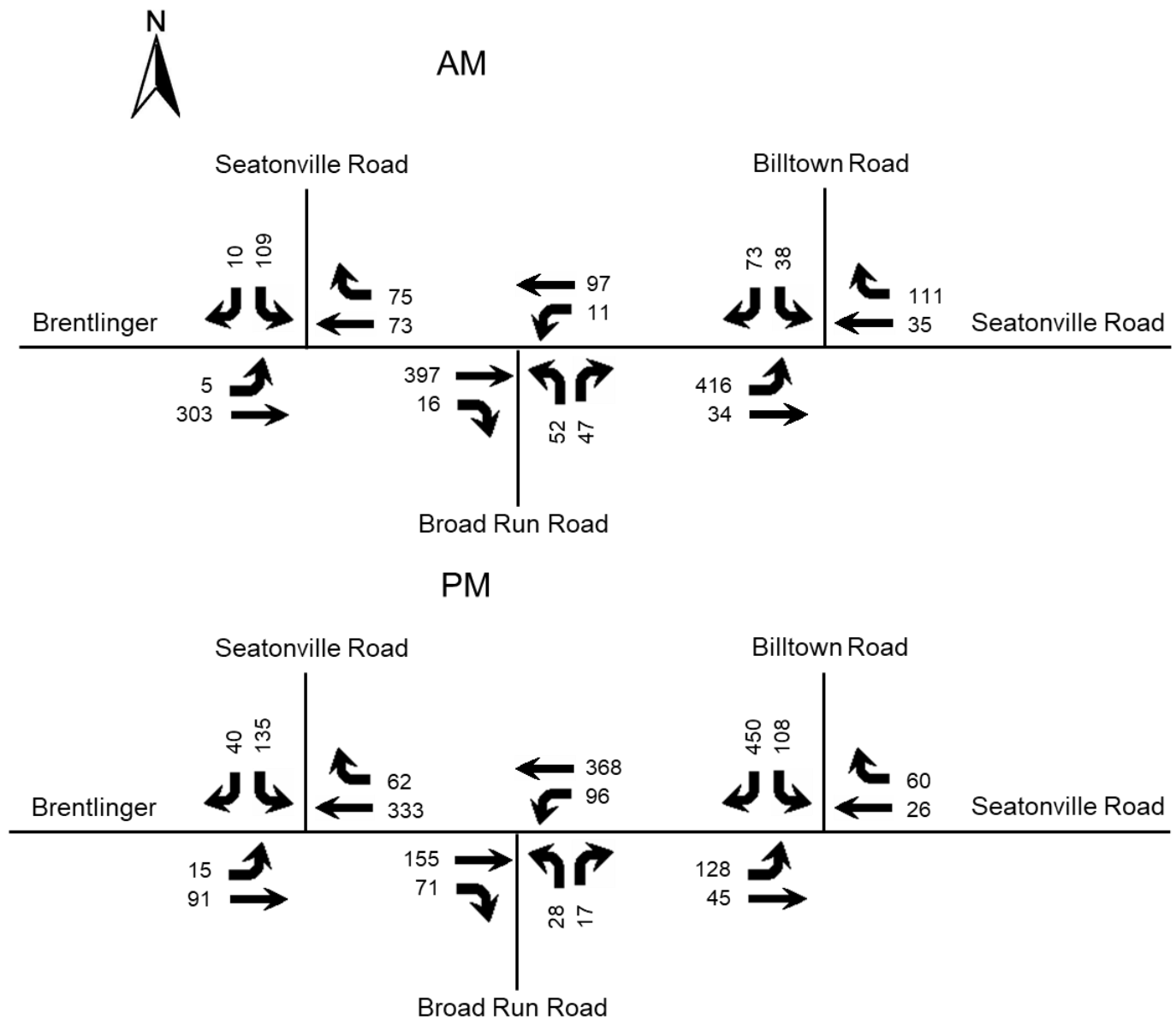


Figure 2. Existing Peak Hour Volumes

FUTURE CONDITIONS

The project completion date is 2032. An annual growth rate of 1.0 percent was applied to all volumes and the trip generation from Phase 1 was included. Phase 1 was approved with 243 single family lots and 190 townhouse units. Phase 1 will be constructing a westbound left turn lane on Seatonville Road at Broad Run Road and Brentlinger Road. **Figure 3** displays the 2032 No Build peak hour volumes.

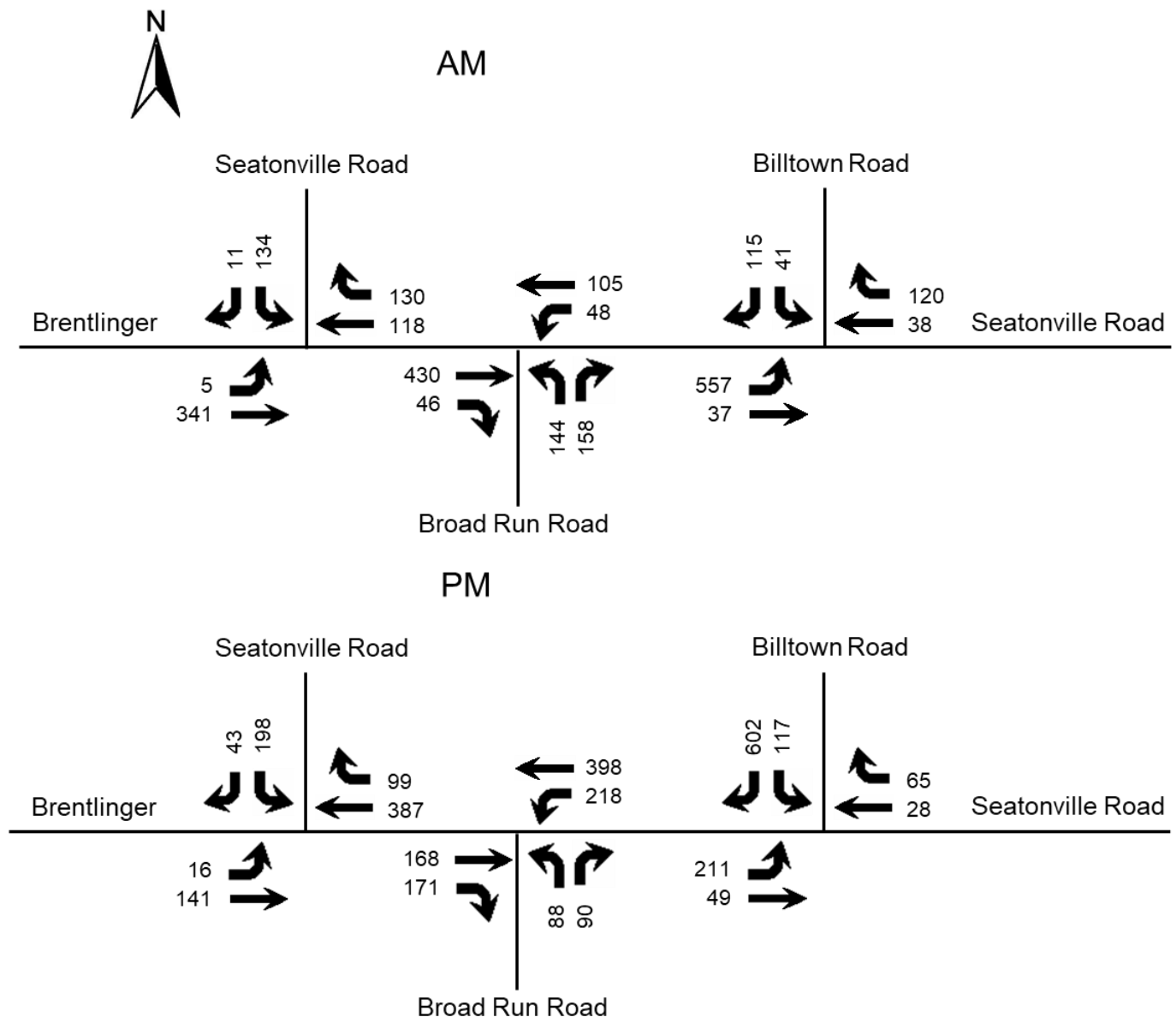


Figure 3. No Build Peak Hour Volumes

TRIP GENERATION

The Institute of Transportation Engineers Trip Generation Manual, 11th Edition contains trip generation rates for a wide range of developments. The land uses of “Single Family Detached (210)” was reviewed and determined to be the best match. The trip generation results are listed in **Table 1**. The trips were assigned to the highway network with the percentages shown in **Figure 4**. **Figure 5** shows the trips generated by this development and distributed throughout the road network during the peak hours. **Figure 6** displays the individual turning movements for the peak hours when the development is completed.

Table 1. Peak Hour Trips Generated by Site

Land Use	A.M. Peak Hour			P.M. Peak Hour		
	Trips	In	Out	Trips	In	Out
Single Family Detached (370 lots)	245	61	184	340	214	126

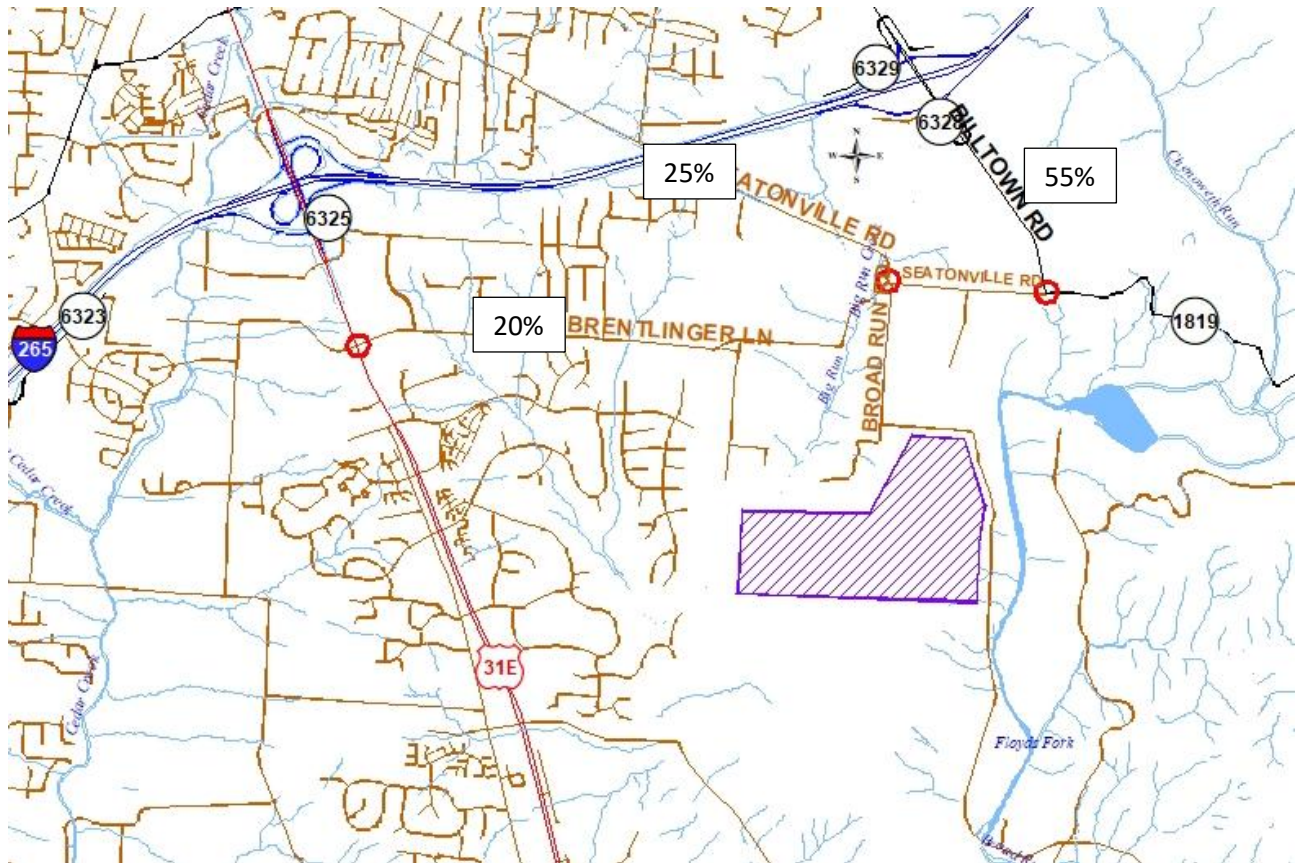


Figure 4. Trip Distribution Percentages

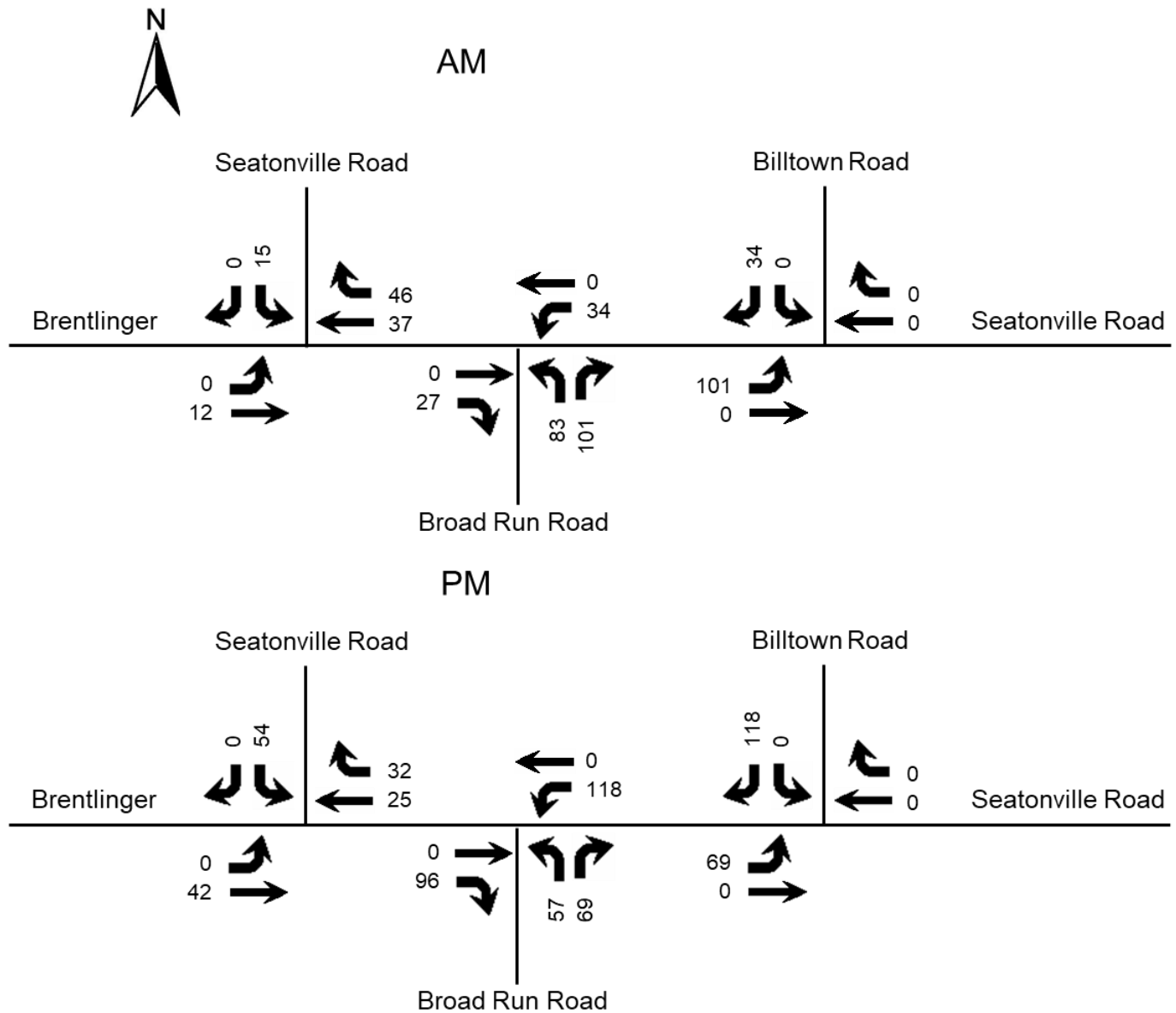


Figure 5. Peak Hour Trips Generated by Site

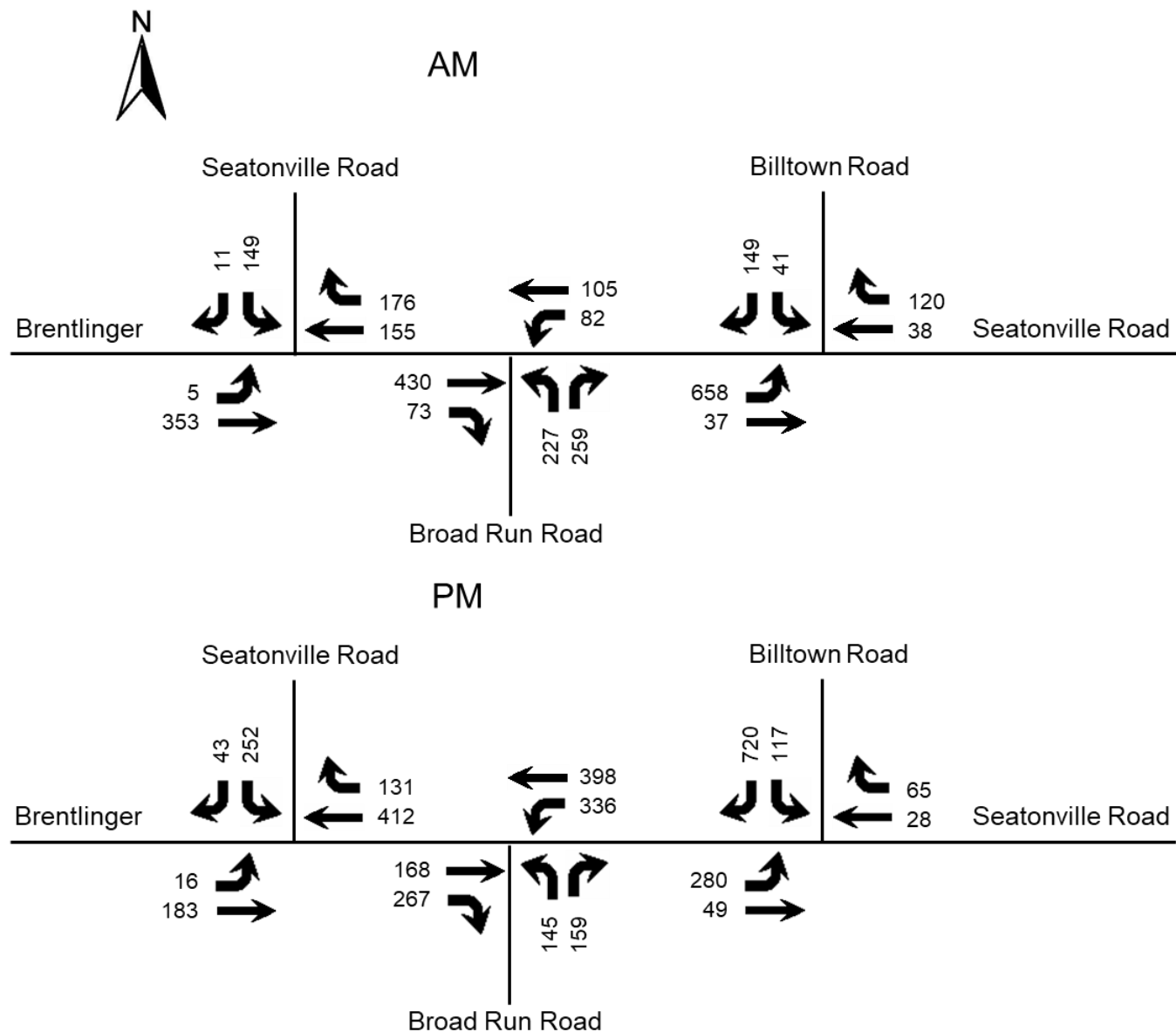


Figure 6. Build Peak Hour Volumes

ANALYSIS

The qualitative measure of operation for a roadway facility or intersection is evaluated by assigning a “Level of Service”. Level of Service is a ranking scale from A through F, “A” is the best operating condition and “F” is the worst. Level of Service results depend upon the facility that is analyzed. In this case, the Level of Service is based upon the average delay experienced at an intersection.

To evaluate the impact of the proposed development, the vehicle delays at the intersections were determined using procedures detailed in the Highway Capacity Manual, 7th edition. Future delays and Level of Service were determined for the intersections using the HCS Streets (version 2024) software. The delays and Level of Service are summarized in **Table 2**.

Table 2. Peak Hour Level of Service

Approach	A.M.			P.M.		
	2024 Existing	2032 No Build	2032 Build	2024 Existing	2032 No Build	2032 Build
Billtown Road at Seatonville Road						
Seatonville Road Eastbound	A 8.9	A 9.7	B 10.6	A 7.6	A 7.8	A 8.0
Billtown Road Southbound	C 21.2	F 50.3	F 61.2	C 16.6	E 36.1	C 18.9
Seatonville Road at Broad Run Road						
Seatonville Road Westbound (left)	A 8.6	A 9.0	A 9.2	A 7.9	A 8.6	A 9.6
Broad Run Road Northbound	B 14.8	C 21.9	F 124.5	B 14.3	C 23.9	F 250.2
Seatonville Road at Brentlinger Lane						
Seatonville Road Westbound (left)	A 7.7	A 7.9	A 8.1	A 8.4	A 8.9	A 9.3
Brentlinger Lane Eastbound	B 12.0	B 13.5	B 14.8	B 11.9	B 13.8	C 16.0

Key: Level of Service, Delay in seconds per vehicle

The results for the intersection of Billtown Road at Seatonville Road include a southbound right turn lane on Billtown Road. The 95th percentile queue analysis in the appendix, shows the left turn lane needs 100 feet of storage. Therefore, the right turn lane should be 100 feet of full width with a 100-foot bay taper.

The entrances were evaluated for turn lanes using the Kentucky Transportation Cabinet [Highway Design Guidance Manual](#) dated July, 2020. Using the volumes in Figure 6, the volume warrant for a right turn lane is satisfied.

The delays projected on Broad Run Road can be reduced by reconfiguring the Broad Run Road/Seatonville Road/Brentlinger Lane intersections into a single intersection. The current design to add turn lanes will only be able to accommodate traffic from 149 number of households from Phase 2. **Figure 7** illustrates the volumes for this single intersection. **Table 3** summarizes the Level of Service results for a single lane intersection with the traffic control either being a roundabout or an all-way stop. For the all-way stop a westbound left turn lane and a northbound right turn lane were included. Metro Public Works through the design process will determine the exact dimensions of the intersection and the traffic control.

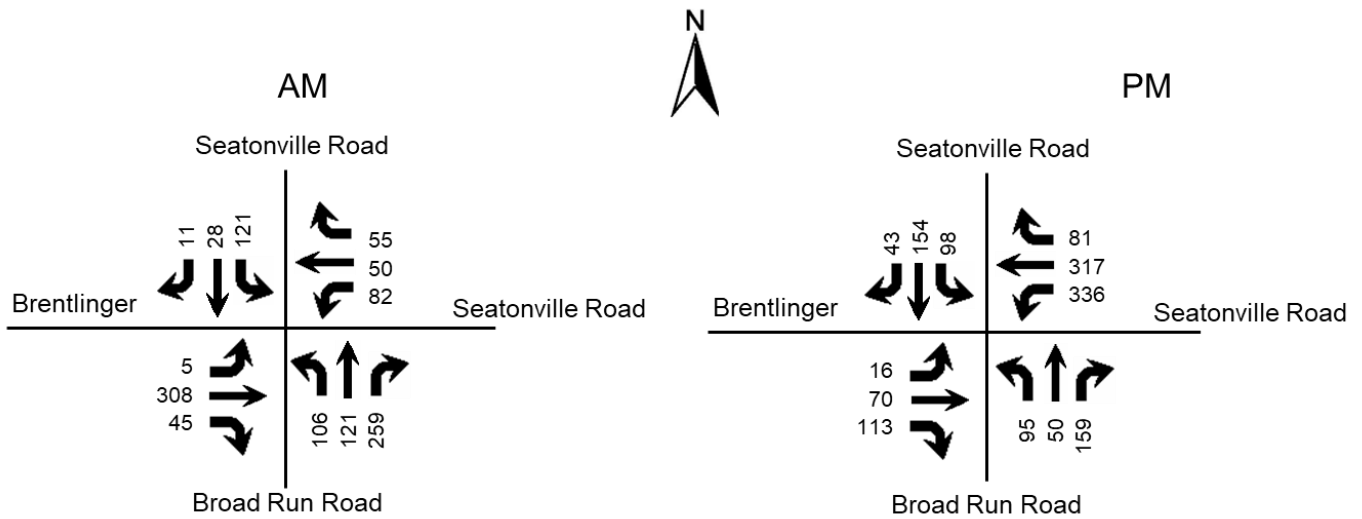


Figure 7. 2032 Build Peak Hour Volumes Single intersection

Table 3. Peak Hour Level of Service Single Intersection

Approach	A.M.		P.M.	
	2032 Roundabout	2032 All-Way	2032 Roundabout	2032 All-Way
Seatonville Road /Broad Run Road/Brentlinger Lane	B 13.3	D 27.2	B 10.5	D 25.3
Brentlinger Lane Eastbound	A 8.8	E 47.2	A 8.1	C 17.0
Seatonville Road Westbound	A 5.7	B 13.8	B 11.9	D 32.1
Broad Run Road Northbound	C 22.1	C 20.4	A 5.7	B 14.7
Seatonville Road Southbound	A 5.4	C 18.3	B 13.5	C 24.9

Key: Level of Service, Delay in seconds per vehicle

CONCLUSIONS

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2032, there will be a manageable impact to the existing highway network, with Levels of Service remaining within acceptable limits. The northern entrance on Broad Run Road meets the volume warrant to install a right turn lane. Due to the delays and short distance between Brentlinger Lane and Broad Run Road on Seatonville Road, the intersections need to be reconfigured into a single intersection to improve safety and provide adequate capacity for all vehicles. The current design of adding turn lanes on Seatonville Road will only be able to accommodate traffic from 149 number of households in Phase 2.

APPENDIX



Reserves at Parklands Phase 2 Traffic Impact Study

Traffic Counts

Classified Turn Movement Count || All vehicles

Louisville, KY (Seatonville Road)



www.marrtraffic.com

Site 3



Billtown Rd
Seatonville Rd
KY-1819 Seatonville Rd

Date

Tuesday, April 16, 2024

Lat/Long

38.136636°, -85.538352°

[Click here for Map](#)

Weather

Cloudy

76°F

[Click here for Detailed Weather](#)



0700 - 0900 (Weekday 2h Session) (04-16-2024)

All vehicles

TIME
0700 - 0715
0715 - 0730
0730 - 0745
0745 - 0800
Hourly Total
0800 - 0815
0815 - 0830
0830 - 0845
0845 - 0900
Hourly Total
Grand Total
Approach %
Intersection %
Heavy Vehicle %
PHF

Southbound				Eastbound				Westbound			
Billtown Rd				Seatonville Rd				KY-1819 Seatonville Rd			
Left	Right	U-Turn	App	Left	Thru	U-Turn	App	Thru	Right	U-Turn	App
3.1	3.2	3.3	Total	3.4	3.5	3.6	Total	3.7	3.8	3.9	Total
12	0	0	12	61	1	0	62	1	32	0	33
9	6	0	15	97	1	0	98	6	40	0	46
11	11	0	22	100	3	0	103	9	52	0	61
10	13	0	23	78	7	0	85	10	39	0	49
42	30	0	72	336	12	0	348	26	163	0	189
10	10	0	20	81	6	0	87	11	39	0	50
8	25	0	33	91	8	0	99	6	27	0	33
8	18	0	26	132	8	0	140	7	29	0	36
12	20	0	32	112	12	0	124	11	16	0	27
38	73	0	111	416	34	0	450	35	111	0	146
80	103	0	183	752	46	0	798	61	274	0	335
43.72	56.28	0.00	-	94.24	5.76	0.00	-	18.21	81.79	0.00	-
6.08	7.83	0.00	13.91	57.14	3.50	0.00	60.64	4.64	20.82	0.00	25.46
6	6	-	6	2	9	-	2	2	2	-	2
0.79	0.73	0.00	0.84	0.79	0.71	0.00	0.80	0.80	0.71	0.00	0.73
											0.88

1600 - 1800 (Weekday 2h Session) (04-16-2024)

All vehicles

TIME
1600 - 1615
1615 - 1630
1630 - 1645
1645 - 1700
Hourly Total
1700 - 1715
1715 - 1730
1730 - 1745
1745 - 1800
Hourly Total
Grand Total
Approach %
Intersection %
Heavy Vehicle %
PHF

Southbound				Eastbound				Westbound			
Billtown Rd				Seatonville Rd				KY-1819 Seatonville Rd			
Left	Right	U-Turn	App	Left	Thru	U-Turn	App	Thru	Right	U-Turn	App
3.1	3.2	3.3	Total	3.4	3.5	3.6	Total	3.7	3.8	3.9	Total
28	81	0	109	29	10	0	39	18	16	0	34
22	89	0	111	26	9	0	35	6	13	0	19
24	106	0	130	25	10	0	35	2	17	0	19
35	108	0	143	38	11	0	49	5	10	0	15
109	384	0	493	118	40	0	158	31	56	0	87
23	124	0	147	22	12	0	34	9	18	0	27
26	112	0	138	42	14	0	56	6	10	0	16
24	106	0	130	26	8	0	34	6	22	0	28
19	100	0	119	21	10	0	31	18	16	0	34
92	442	0	534	111	44	0	155	39	66	0	105
201	826	0	1027	229	84	0	313	70	122	0	192
19.57	80.43	0.00	-	73.16	26.84	0.00	-	36.46	63.54	0.00	-
13.12	53.92	0.00	67.04	14.95	5.48	0.00	20.43	4.57	7.96	0.00	12.53
1	1	-	1	1	4	-	2	1	6	-	4
0.77	0.91	0.00	0.95	0.76	0.80	0.00	0.77	0.72	0.68	0.00	0.77
											0.97

Reserves at Parklands Phase 2 Traffic Impact Study

Classified Turn Movement Count || All vehicles

Louisville, KY (Seatonville Road)



Site 2

Broad Run Rd



Date

Tuesday, April 16, 2024

Weather

Cloudy

76°F

[Click here for Detailed Weather](#)

Lat/Long

38.137069°, -85.547566°

[Click here for Map](#)

0700 - 0900 (Weekday 2h Session) (04-16-2024)

All vehicles

Northbound				
Broad Run Rd				
TIME	Left 2.1	Right 2.2	U-Turn 2.3	App Total
0700 - 0715	8	14	0	22
0715 - 0730	18	32	0	50
0730 - 0745	19	36	0	55
0745 - 0800	10	24	0	34
Hourly Total	55	106	0	161
0800 - 0815	16	16	0	32
0815 - 0830	14	7	0	21
0830 - 0845	11	12	0	23
0845 - 0900	11	12	0	23
Hourly Total	52	47	0	99
Grand Total	107	153	0	260
Approach %	41.15	58.85	0.00	-
Intersection %	9.75	13.95	0.00	23.70
Heavy Vehicle %	3	1	-	2
PHF	0.81	0.73	0.00	0.77

Eastbound					Westbound					
Seatonville Rd (West)					Seatonville Rd (East)					
Thru 2.4	Right 2.5		U-Turn 2.6	App Total	Left 2.7	Thru 2.8		U-Turn 2.9	App Total	Int Total
47	0		0	47	2	4		0	6	75
61	5		0	66	2	13		0	15	131
73	2		0	75	2	23		0	25	155
58	3		0	61	3	18		0	21	116
239	10		0	249	9	58		0	67	477
70	4		0	74	1	20		0	21	127
88	2		0	90	5	26		0	31	142
135	4		0	139	2	25		0	27	189
104	6		0	110	3	26		0	29	162
397	16		0	413	11	97		0	108	620
636	26		0	662	20	155		0	175	1097
96.07	3.93		0.00	-	11.43	88.57		0.00	-	
57.98	2.37		0.00	60.35	1.82	14.13		0.00	15.95	
2	15		-	3	10	3		-	4	3
0.74	0.67		0.00	0.74	0.55	0.93		0.00	0.87	0.82

1600 - 1800 (Weekday 2h Session) (04-16-2024)

All vehicles

Northbound				
Broad Run Rd				
TIME	Left 2.1	Right 2.2	U-Turn 2.3	App Total
1600 - 1615	4	6	0	10
1615 - 1630	6	5	0	11
1630 - 1645	5	3	0	8
1645 - 1700	5	5	0	10
Hourly Total	20	19	0	39
1700 - 1715	6	4	0	10
1715 - 1730	5	7	0	12
1730 - 1745	12	1	0	13
1745 - 1800	10	6	0	16
Hourly Total	33	18	0	51
Grand Total	53	37	0	90
Approach %	58.89	41.11	0.00	-
Intersection %	3.85	2.69	0.00	6.53
Heavy Vehicle %	4	0	-	2
PHF	0.58	0.61	0.00	0.87

Eastbound					Westbound					
Seatonville Rd (West)					Seatonville Rd (East)					
Thru	Right		U-Turn	App	Left	Thru		U-Turn	App	Int
2.4	2.5		2.6	Total	2.7	2.8		2.9	Total	Total
33	14		0	47	24	63		0	87	144
35	22		0	57	24	78		0	102	170
30	15		0	45	29	73		0	102	155
48	19		0	67	28	82		0	110	187
146	70		0	216	105	296		0	401	656
31	17		0	48	26	92		0	118	176
44	16		0	60	24	92		0	116	188
32	19		0	51	18	102		0	120	184
28	15		0	43	16	99		0	115	174
135	67		0	202	84	385		0	469	722
281	137		0	418	189	681		0	870	1378
67.22	32.78		0.00	-	21.72	78.28		0.00	-	
20.39	9.94		0.00	30.33	13.72	49.42		0.00	63.13	
2	0		-	1	2	1		-	1	1
0.81	0.93		0.00	0.84	0.86	0.90		0.00	0.97	0.98

Reserves at Parklands Phase 2

Traffic Impact Study

Classified Turn Movement Count || All vehicles

Louisville, KY (Seatonville Road)



Site 1

Seatonville Rd (South)
Seatonville Rd (North)
Brentlinger Ln



Date

Tuesday, April 16, 2024

Lat/Long

38.137182°, -85.547877°

[Click here for Map](#)

Weather

Cloudy

76°F

[Click here for Detailed Weather](#)



0700 - 0900 (Weekday 2h Session) (04-16-2024)

All vehicles

TIME	Northbound				Southbound				Eastbound				Int Total
	Seatonville Rd (South)				Seatonville Rd (North)				Brentlinger Ln				
	Left 1.1	Thru 1.2	U-Turn 1.3	App Total	Thru 1.4	Right 1.5	U-Turn 1.6	App Total	Left 1.7	Right 1.8	U-Turn 1.9	App Total	
0700 - 0715	10	0	0	10	0	39	0	39	4	8	0	12	61
0715 - 0730	21	1	0	22	1	45	0	46	9	22	0	31	99
0730 - 0745	14	0	0	14	0	60	0	60	12	29	0	41	115
0745 - 0800	12	4	0	16	4	49	0	53	8	20	0	28	97
Hourly Total	57	5	0	62	5	193	0	198	33	79	0	112	372
0800 - 0815	16	1	0	17	0	58	0	58	12	24	0	36	111
0815 - 0830	24	1	0	25	2	65	0	67	23	17	0	40	132
0830 - 0845	36	4	0	40	3	104	0	107	18	17	0	35	182
0845 - 0900	33	4	0	37	0	76	0	76	20	17	0	37	150
Hourly Total	109	10	0	119	5	303	0	308	73	75	0	148	575
Grand Total	166	15	0	181	10	496	0	506	106	154	0	260	947
Approach %	91.71	8.29	0.00	-	1.98	98.02	0.00	-	40.77	59.23	0.00	-	
Intersection %	17.53	1.58	0.00	19.11	1.06	52.38	0.00	53.43	11.19	16.26	0.00	27.46	
Heavy Vehicle %	1	7	-	2	10	3	-	4	6	1	-	3	3
PHF	0.76	0.63	0.00	0.74	0.42	0.73	0.00	0.72	0.79	0.78	0.00	0.93	0.79

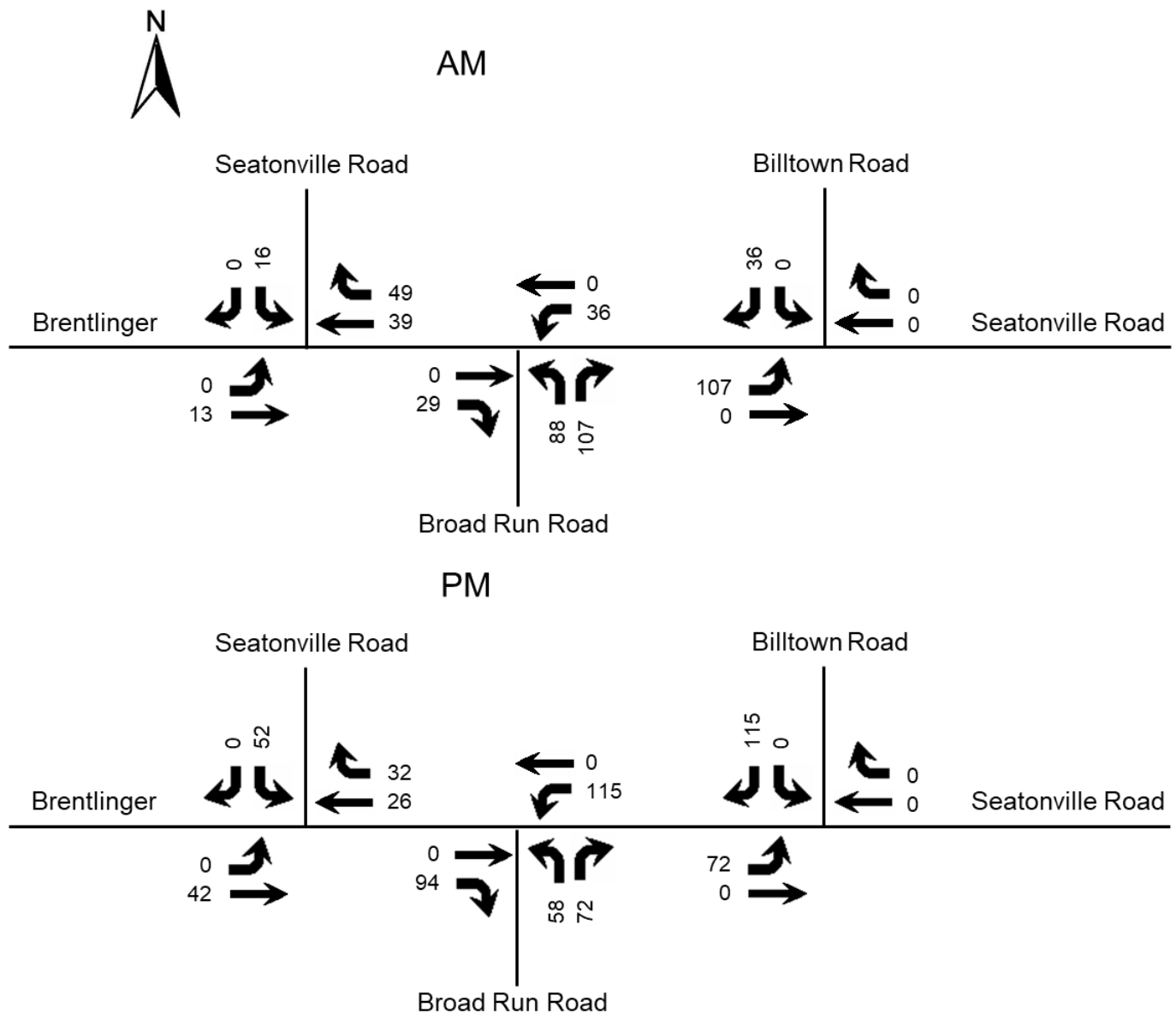
1600 - 1800 (Weekday 2h Session) (04-16-2024)

All vehicles

TIME	Northbound				Southbound				Eastbound				Int Total
	Seatonville Rd (South)				Seatonville Rd (North)				Brentlinger Ln				
	Left 1.1	Thru 1.2	U-Turn 1.3	App Total	Thru 1.4	Right 1.5	U-Turn 1.6	App Total	Left 1.7	Right 1.8	U-Turn 1.9	App Total	
1600 - 1615	23	6	0	29	1	23	0	24	50	17	0	67	120
1615 - 1630	40	9	0	49	0	17	0	17	63	20	0	83	149
1630 - 1645	29	11	0	40	0	16	0	16	69	10	0	79	135
1645 - 1700	36	11	0	47	2	31	0	33	73	14	0	87	167
Hourly Total	128	37	0	165	3	87	0	90	255	61	0	316	571
1700 - 1715	28	11	0	39	4	20	0	24	82	16	0	98	161
1715 - 1730	41	12	0	53	4	19	0	23	86	11	0	97	173
1730 - 1745	30	6	0	36	5	21	0	26	92	21	0	113	175
1745 - 1800	21	4	0	25	2	23	0	25	86	23	0	109	159
Hourly Total	120	33	0	153	15	83	0	98	346	71	0	417	668
Grand Total	248	70	0	318	18	170	0	188	601	132	0	733	1239
Approach %	77.99	22.01	0.00	-	9.57	90.43	0.00	-	81.99	18.01	0.00	-	
Intersection %	20.02	5.65	0.00	25.67	1.45	13.72	0.00	15.17	48.51	10.65	0.00	59.16	
Heavy Vehicle %	1	0	-	1	0	2	-	2	1	1	-	1	1
PHF	0.82	0.83	0.00	0.83	0.75	0.73	0.00	0.80	0.90	0.74	0.00	0.87	0.97

Table 1. Peak Hour Trips Generated by Phase 1

Land Use	A.M. Peak Hour			P.M. Peak Hour		
	Trips	In	Out	Trips	In	Out
Single Family Detached (243 lots)	167	42	125	229	144	85
Single Family Attached (190 units)	93	23	70	110	65	45
TOTAL	260	65	195	339	209	130



HCS Reports

HCS Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection	Seatonville at Billtown								
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	12/2/24							East/West Street	Seatonville Road								
Analysis Year	2024							North/South Street	Billtown Road								
Time Analyzed	AM Peak							Peak Hour Factor	0.88								
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25								
Project Description	Broad Run																
Lanes																	
<p>Major Street: East-West</p>																	
Vehicle Volumes and Adjustments																	
Approach	Eastbound				Westbound				Northbound				Southbound				
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority	1U	1	2	3	4U	4	5	6			7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0			0	0	0		0	1	0
Configuration		LT						TR								LR	
Volume (veh/h)		416	34				35	111							38		73
Percent Heavy Vehicles (%)		3													3		4
Proportion Time Blocked																	
Percent Grade (%)															0		
Right Turn Channelized																	
Median Type Storage					Undivided												
Critical and Follow-up Headways																	
Base Critical Headway (sec)		4.1													7.1		6.2
Critical Headway (sec)		4.13													6.43		6.24
Base Follow-Up Headway (sec)		2.2													3.5		3.3
Follow-Up Headway (sec)		2.23													3.53		3.34
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)		473														126	
Capacity, c (veh/h)		1406														347	
v/c Ratio		0.34														0.36	
95% Queue Length, Q ₉₅ (veh)		1.5														1.6	
95% Queue Length, Q ₉₅ (ft)		38.4														41.2	
Control Delay (s/veh)		8.9	3.0													21.2	
Level of Service (LOS)		A	A													C	
Approach Delay (s/veh)		8.4												21.2			
Approach LOS		A												C			

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HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Seatonville at Billtown							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street	Seatonville Road							
Analysis Year	2032							North/South Street	Billtown Road							
Time Analyzed	AM Peak No Build							Peak Hour Factor	0.88							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Broad Run															
Lanes																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		557	37				38	120						41		115
Percent Heavy Vehicles (%)		3												3		4
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.13												6.43		6.24
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.23												3.53		3.34
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)		633													177	
Capacity, c (veh/h)		1390													245	
v/c Ratio		0.46													0.72	
95% Queue Length, Q ₉₅ (veh)		2.4													4.9	
95% Queue Length, Q ₉₅ (ft)		61.4													126.2	
Control Delay (s/veh)		9.7	4.5												50.3	
Level of Service (LOS)		A	A												F	
Approach Delay (s/veh)	9.4												50.3			
Approach LOS	A												F			

HCS Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection	Seatonville at Billtown								
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	12/2/24							East/West Street	Seatonville Road								
Analysis Year	2032							North/South Street	Billtown Road								
Time Analyzed	AM Peak Build Right							Peak Hour Factor	0.88								
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25								
Project Description	Broad Run																
Lanes																	
<p>Major Street: East-West</p>																	
Vehicle Volumes and Adjustments																	
Approach	Eastbound				Westbound				Northbound				Southbound				
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		1	0	1	
Configuration		LT						TR						L		R	
Volume (veh/h)		658	37				38	120						41		149	
Percent Heavy Vehicles (%)		3												3		4	
Proportion Time Blocked																	
Percent Grade (%)														0			
Right Turn Channelized														No			
Median Type Storage	Undivided																
Critical and Follow-up Headways																	
Base Critical Headway (sec)		4.1												7.1		6.2	
Critical Headway (sec)		4.13												6.43		6.24	
Base Follow-Up Headway (sec)		2.2												3.5		3.3	
Follow-Up Headway (sec)		2.23												3.53		3.34	
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)		748												47		169	
Capacity, c (veh/h)		1390												49		936	
v/c Ratio		0.54												0.96		0.18	
95% Queue Length, Q ₉₅ (veh)		3.4												4.1		0.7	
95% Queue Length, Q ₉₅ (ft)		87.0												105.0		18.1	
Control Delay (s/veh)		10.6	5.8											248.5		9.7	
Level of Service (LOS)		B	A											F		A	
Approach Delay (s/veh)		10.3												61.2			
Approach LOS		B												F			

HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection				Seatonville at Billtown				
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street				Seatonville Road				
Analysis Year	2024							North/South Street				Billtown Road				
Time Analyzed	PM Peak							Peak Hour Factor				0.97				
Intersection Orientation	East-West							Analysis Time Period (hrs)				0.25				
Project Description	Broad Run															
Lanes																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume (veh/h)		128	45				26	60						108		450
Percent Heavy Vehicles (%)		2												3		4
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.43		6.24
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.53		3.34
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)		132													575	
Capacity, c (veh/h)		1507													876	
v/c Ratio		0.09													0.66	
95% Queue Length, Q ₉₅ (veh)		0.3													5.1	
95% Queue Length, Q ₉₅ (ft)		7.6													131.4	
Control Delay (s/veh)		7.6	0.7												16.6	
Level of Service (LOS)		A	A												C	
Approach Delay (s/veh)	5.8												16.6			
Approach LOS	A												C			

HCS Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection				Seatonville at Billtown					
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	12/2/24							East/West Street				Seatonville Road					
Analysis Year	2032							North/South Street				Billtown Road					
Time Analyzed	PM Peak No Build							Peak Hour Factor				0.97					
Intersection Orientation	East-West							Analysis Time Period (hrs)				0.25					
Project Description	Broad Run																
Lanes																	
<p>Major Street: East-West</p>																	
Vehicle Volumes and Adjustments																	
Approach	Eastbound				Westbound				Northbound				Southbound				
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0	
Configuration		LT						TR							LR		
Volume (veh/h)		211	49				28	65						117		602	
Percent Heavy Vehicles (%)		2												3		4	
Proportion Time Blocked																	
Percent Grade (%)														0			
Right Turn Channelized																	
Median Type Storage	Undivided																
Critical and Follow-up Headways																	
Base Critical Headway (sec)		4.1												7.1		6.2	
Critical Headway (sec)		4.12												6.43		6.24	
Base Follow-Up Headway (sec)		2.2												3.5		3.3	
Follow-Up Headway (sec)		2.22												3.53		3.34	
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)		218													741		
Capacity, c (veh/h)		1498													816		
v/c Ratio		0.15													0.91		
95% Queue Length, Q ₉₅ (veh)		0.5													12.7		
95% Queue Length, Q ₉₅ (ft)		12.7													327.2		
Control Delay (s/veh)		7.8	1.2												36.1		
Level of Service (LOS)		A	A												E		
Approach Delay (s/veh)		6.6												36.1			
Approach LOS		A												E			

HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection				Seatonville at Billtown				
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street				Seatonville Road				
Analysis Year	2032							North/South Street				Billtown Road				
Time Analyzed	PM Peak Build right							Peak Hour Factor				0.97				
Intersection Orientation	East-West							Analysis Time Period (hrs)				0.25				
Project Description	Broad Run															
Lanes																
<p>Major Street: East-West</p>																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		LT						TR						L		R
Volume (veh/h)		280	49				28	65						117		720
Percent Heavy Vehicles (%)		2												3		4
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized													No			
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)		4.1												7.1		6.2
Critical Headway (sec)		4.12												6.43		6.24
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.22												3.53		3.34
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)		289												121		742
Capacity, c (veh/h)		1498												328		997
v/c Ratio		0.19												0.37		0.74
95% Queue Length, Q ₉₅ (veh)		0.7												1.6		7.1
95% Queue Length, Q ₉₅ (ft)		17.8												41.0		183.2
Control Delay (s/veh)		8.0	1.6											22.2		18.3
Level of Service (LOS)		A	A											C		C
Approach Delay (s/veh)	7.0												18.9			
Approach LOS	A												C			

HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Seatonville at Broad Run							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street	Seatonville Road							
Analysis Year	2024							North/South Street	Broad Run							
Time Analyzed	AM Peak							Peak Hour Factor	0.82							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Broad Run															
Lanes																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			397	16		11	97			52		47				
Percent Heavy Vehicles (%)						9				4		4				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.19				6.44		6.24				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.28				3.54		3.34				
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)						13					121					
Capacity, c (veh/h)						1026					488					
v/c Ratio						0.01					0.25					
95% Queue Length, Q ₉₅ (veh)						0.0					1.0					
95% Queue Length, Q ₉₅ (ft)						0.0					25.8					
Control Delay (s/veh)						8.6	0.1				14.8					
Level of Service (LOS)						A	A				B					
Approach Delay (s/veh)					1.0				14.8							
Approach LOS					A				B							

HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Seatonville at Broad Run							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street	Seatonville Road							
Analysis Year	2032							North/South Street	Broad Run							
Time Analyzed	AM Peak No Build							Peak Hour Factor	0.82							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Broad Run															
Lanes																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			430	46		48	105			144		158				
Percent Heavy Vehicles (%)						9				4		4				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.19				6.44		6.24				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.28				3.54		3.34				
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)						59					368					
Capacity, c (veh/h)						960					572					
v/c Ratio						0.06					0.64					
95% Queue Length, Q ₉₅ (veh)						0.2					4.6					
95% Queue Length, Q ₉₅ (ft)						5.4					118.7					
Control Delay (s/veh)						9.0					21.9					
Level of Service (LOS)						A					C					
Approach Delay (s/veh)					2.8				21.9							
Approach LOS					A				C							

HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Seatonville at Broad Run							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street	Seatonville Road							
Analysis Year	2032							North/South Street	Broad Run							
Time Analyzed	AM Peak Build							Peak Hour Factor	0.82							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Broad Run															
Lanes																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			430	73		82	105			227		259				
Percent Heavy Vehicles (%)						4				4		4				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.14				6.44		6.24				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.24				3.54		3.34				
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)						100					593					
Capacity, c (veh/h)						956					504					
v/c Ratio						0.10					1.17					
95% Queue Length, Q ₉₅ (veh)						0.3					21.4					
95% Queue Length, Q ₉₅ (ft)						7.7					552.1					
Control Delay (s/veh)						9.2					124.5					
Level of Service (LOS)						A					F					
Approach Delay (s/veh)					4.0				124.5							
Approach LOS					A				F							

HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Seatonville at Broad Run							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street	Seatonville Road							
Analysis Year	2024							North/South Street	Broad Run							
Time Analyzed	PM Peak							Peak Hour Factor	0.98							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Broad Run															
Lanes																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR			LT					LR				
Volume (veh/h)			155	71			96	368			28		17			
Percent Heavy Vehicles (%)							1				4		0			
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)							4.1				7.1		6.2			
Critical Headway (sec)							4.11				6.44		6.20			
Base Follow-Up Headway (sec)							2.2				3.5		3.3			
Follow-Up Headway (sec)							2.21				3.54		3.30			
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)							98					46				
Capacity, c (veh/h)							1343					434				
v/c Ratio							0.07					0.11				
95% Queue Length, Q ₉₅ (veh)							0.2					0.4				
95% Queue Length, Q ₉₅ (ft)							5.0					10.2				
Control Delay (s/veh)							7.9	0.7				14.3				
Level of Service (LOS)							A	A				B				
Approach Delay (s/veh)					2.2				14.3							
Approach LOS					A				B							

HCS Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection				Seatonville at Broad Run					
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	12/2/24							East/West Street				Seatonville Road					
Analysis Year	2032							North/South Street				Broad Run					
Time Analyzed	PM Peak No Build							Peak Hour Factor				0.98					
Intersection Orientation	East-West							Analysis Time Period (hrs)				0.25					
Project Description	Broad Run																
Lanes																	
<p>Major Street: East-West</p>																	
Vehicle Volumes and Adjustments																	
Approach	Eastbound				Westbound				Northbound				Southbound				
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority	1U	1	2	3	4U	4	5	6			7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0			0	1	0		0	0	0
Configuration				TR		L	T					LR					
Volume (veh/h)			168	171		218	398				88		90				
Percent Heavy Vehicles (%)						1					4		0				
Proportion Time Blocked																	
Percent Grade (%)									0								
Right Turn Channelized																	
Median Type Storage	Undivided																
Critical and Follow-up Headways																	
Base Critical Headway (sec)						4.1					7.1		6.2				
Critical Headway (sec)						4.11					6.44		6.20				
Base Follow-Up Headway (sec)						2.2					3.5		3.3				
Follow-Up Headway (sec)						2.21					3.54		3.30				
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)						222					182						
Capacity, c (veh/h)						1219					369						
v/c Ratio						0.18					0.49						
95% Queue Length, Q ₉₅ (veh)						0.7					2.6						
95% Queue Length, Q ₉₅ (ft)						17.6					66.0						
Control Delay (s/veh)						8.6					23.9						
Level of Service (LOS)						A					C						
Approach Delay (s/veh)					3.0				23.9								
Approach LOS					A				C								

HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Seatonville at Broad Run							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street	Seatonville Road							
Analysis Year	2032							North/South Street	Broad Run							
Time Analyzed	PM Peak Build							Peak Hour Factor	0.98							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Broad Run															
Lanes																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	1	1	0		0	1	0		0	0	0
Configuration				TR		L	T				LR					
Volume (veh/h)			168	267		336	398			145		159				
Percent Heavy Vehicles (%)						1				4		0				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.11				6.44		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.21				3.54		3.30				
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)						343					310					
Capacity, c (veh/h)						1122					220					
v/c Ratio						0.31					1.41					
95% Queue Length, Q ₉₅ (veh)						1.3					17.8					
95% Queue Length, Q ₉₅ (ft)						32.8					451.8					
Control Delay (s/veh)						9.6					250.2					
Level of Service (LOS)						A					F					
Approach Delay (s/veh)					4.4				250.2							
Approach LOS					A				F							

HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection				Seatonville at Brentlinge				
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street				Seatonville Road				
Analysis Year	2024							North/South Street				Brentlinger				
Time Analyzed	AM Peak							Peak Hour Factor				0.79				
Intersection Orientation	East-West							Analysis Time Period (hrs)				0.25				
Project Description	Broad Run															
Lanes																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			109	10		73	76			5		303				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)						92					390					
Capacity, c (veh/h)						1443					899					
v/c Ratio						0.06					0.43					
95% Queue Length, Q ₉₅ (veh)						0.2					2.2					
95% Queue Length, Q ₉₅ (ft)						5.0					55.0					
Control Delay (s/veh)						7.7	0.5				12.0					
Level of Service (LOS)						A	A				B					
Approach Delay (s/veh)					4.0				12.0							
Approach LOS					A				B							


HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection				Seatonville at Brentlinge				
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street				Seatonville Road				
Analysis Year	2032							North/South Street				Brentlinger				
Time Analyzed	AM Peak No Build							Peak Hour Factor				0.79				
Intersection Orientation	East-West							Analysis Time Period (hrs)				0.25				
Project Description	Broad Run															
Lanes																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			134	11		118	130			5		341				
Percent Heavy Vehicles (%)						0				0		0				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.40		6.20				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.50		3.30				
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)						149					438					
Capacity, c (veh/h)						1404					857					
v/c Ratio						0.11					0.51					
95% Queue Length, Q ₉₅ (veh)						0.4					3.0					
95% Queue Length, Q ₉₅ (ft)						10.0					75.0					
Control Delay (s/veh)						7.9	0.9				13.5					
Level of Service (LOS)						A	A				B					
Approach Delay (s/veh)					4.2				13.5							
Approach LOS					A				B							

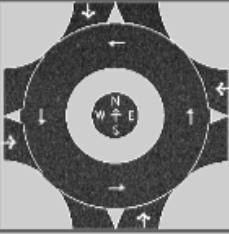
HCS Two-Way Stop-Control Report																	
General Information									Site Information								
Analyst	DBZ								Intersection	Seatonville at Brentlinge							
Agency/Co.	Diane B Zimmerman Traffic Engineering								Jurisdiction								
Date Performed	12/2/24								East/West Street	Seatonville Road							
Analysis Year	2032								North/South Street	Brentlinger							
Time Analyzed	AM Peak Build								Peak Hour Factor	0.79							
Intersection Orientation	East-West								Analysis Time Period (hrs)	0.25							
Project Description	Broad Run																
Lanes																	
Vehicle Volumes and Adjustments																	
Approach	Eastbound				Westbound				Northbound				Southbound				
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12	
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0	
Configuration				TR			LT					LR					
Volume (veh/h)			149	11			155	176			5		353				
Percent Heavy Vehicles (%)							3				0		5				
Proportion Time Blocked																	
Percent Grade (%)									0								
Right Turn Channelized																	
Median Type Storage	Undivided																
Critical and Follow-up Headways																	
Base Critical Headway (sec)						4.1				7.1		6.2					
Critical Headway (sec)						4.13				6.40		6.25					
Base Follow-Up Headway (sec)						2.2				3.5		3.3					
Follow-Up Headway (sec)						2.23				3.50		3.35					
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)						196					453						
Capacity, c (veh/h)						1363					817						
v/c Ratio						0.14					0.55						
95% Queue Length, Q ₉₅ (veh)						0.5					3.5						
95% Queue Length, Q ₉₅ (ft)						12.8					91.0						
Control Delay (s/veh)						8.1	1.3				14.8						
Level of Service (LOS)						A	A				B						
Approach Delay (s/veh)					4.5				14.8								
Approach LOS					A				B								

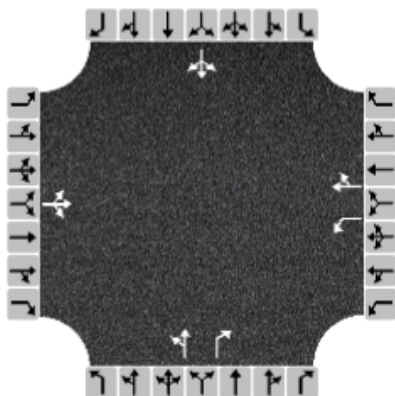
HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Seatonville at Brentlinger							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street	Seatonville Road							
Analysis Year	2024							North/South Street	Brentlinger							
Time Analyzed	PM Peak							Peak Hour Factor	0.97							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Broad Run															
Lanes																
<p>Major Street: East-West</p>																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			135	40		333	62			15		91				
Percent Heavy Vehicles (%)						1				0		1				
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.11				6.40		6.21				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.21				3.50		3.31				
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)						343					109					
Capacity, c (veh/h)						1401					631					
v/c Ratio						0.25					0.17					
95% Queue Length, Q ₉₅ (veh)						1.0					0.6					
95% Queue Length, Q ₉₅ (ft)						25.2					15.1					
Control Delay (s/veh)						8.4	2.1				11.9					
Level of Service (LOS)						A	A				B					
Approach Delay (s/veh)					7.4				11.9							
Approach LOS					A				B							

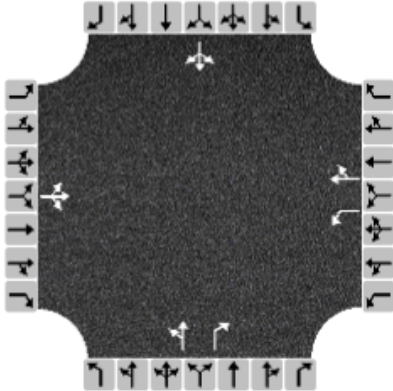
HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection				Seatonville at Brentlinge				
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street				Seatonville Road				
Analysis Year	2032							North/South Street				Brentlinger				
Time Analyzed	PM Peak No Build							Peak Hour Factor				0.97				
Intersection Orientation	East-West							Analysis Time Period (hrs)				0.25				
Project Description	Broad Run															
Lanes																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR			LT					LR				
Volume (veh/h)			198	43			387	99			16		141			
Percent Heavy Vehicles (%)							1				0		1			
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)							4.1					7.1			6.2	
Critical Headway (sec)							4.11					6.40			6.21	
Base Follow-Up Headway (sec)							2.2					3.5			3.3	
Follow-Up Headway (sec)							2.21					3.50			3.31	
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)							399					162				
Capacity, c (veh/h)							1323					569				
v/c Ratio							0.30					0.28				
95% Queue Length, Q ₉₅ (veh)							1.3					1.2				
95% Queue Length, Q ₉₅ (ft)							32.8					30.2				
Control Delay (s/veh)							8.9	2.8				13.8				
Level of Service (LOS)							A	A				B				
Approach Delay (s/veh)					7.7				13.8							
Approach LOS					A				B							

HCS Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Seatonville at Brentlinger							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	12/2/24							East/West Street	Seatonville Road							
Analysis Year	2032							North/South Street	Brentlinger							
Time Analyzed	PM Peak Build							Peak Hour Factor	0.97							
Intersection Orientation	East-West							Analysis Time Period (hrs)	0.25							
Project Description	Broad Run															
Lanes																
<p>Major Street: East-West</p>																
Vehicle Volumes and Adjustments																
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	0	0
Configuration				TR			LT					LR				
Volume (veh/h)			252	43			412	131			16		183			
Percent Heavy Vehicles (%)							1				0		1			
Proportion Time Blocked																
Percent Grade (%)									0							
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)							4.1					7.1		6.2		
Critical Headway (sec)							4.11					6.40		6.21		
Base Follow-Up Headway (sec)							2.2					3.5		3.3		
Follow-Up Headway (sec)							2.21					3.50		3.31		
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)							425					205				
Capacity, c (veh/h)							1262					531				
v/c Ratio							0.34					0.39				
95% Queue Length, Q ₉₅ (veh)							1.5					1.8				
95% Queue Length, Q ₉₅ (ft)							37.8					45.3				
Control Delay (s/veh)							9.3	3.4				16.0				
Level of Service (LOS)							A	A				C				
Approach Delay (s/veh)					7.9				16.0							
Approach LOS					A				C							

HCS Roundabouts Report																
General Information									Site Information							
Analyst	DBZ								Intersection							
Agency or Co.	Diane B. Zimmerman Traffic...								E/W Street Name				Brentlinger			
Date Performed	4/9/2025								N/S Street Name				Broad Run			
Analysis Year	2032								Analysis Time Period, hrs				0.25			
Time Analyzed	AM Peak								Peak Hour Factor				0.82			
Project Description	Broad Run								Jurisdiction							
Volume Adjustments and Site Characteristics																
Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment	LTR				LTR				LTR				LTR			
Volume (V), veh/h	0	5	308	45	0	82	50	55	0	106	121	259	0	121	28	11
Percent Heavy Vehicles, %	3	0	5	5	3	1	3	1	3	2	2	2	3	1	1	10
Flow Rate (v _{adj}), pc/h	0	6	394	58	0	101	63	68	0	132	151	322	0	149	34	15
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs, %	0															
Critical and Follow-Up Headway Adjustment																
Approach	EB				WB				NB				SB			
Lane	Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass	
Critical Headway, s		4.9763				4.9763				4.9763				4.9763		
Follow-Up Headway, s		2.6087				2.6087				2.6087				2.6087		
Flow Computations, Capacity and v/c Ratios																
Approach	EB				WB				NB				SB			
Lane	Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass	
Entry Flow (v _i), pc/h		458				232				605				198		
Entry Volume, veh/h		436				228				593				195		
Circulating Flow (v _c), pc/h	284				289				549				296			
Exiting Flow (v _o), pc/h	865				210				225				193			
Capacity (c _{adj}), pc/h		1033				1028				788				1020		
Capacity (c), veh/h		984				1012				773				1004		
v/c Ratio (x)		0.44				0.23				0.77				0.19		
Delay and Level of Service																
Approach	EB				WB				NB				SB			
Lane	Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass	
Lane Control Delay (d), s/veh		8.8				5.7				22.1				5.4		
Lane LOS		A				A				C				A		
95% Queue Length, Q ₉₅ (veh)		2.3				0.9				7.4				0.7		
95% Queue Length, Q ₉₅ (ft)		59.8				22.8				188.0				17.7		
Approach Delay, s/veh LOS	8.8		A		5.7		A		22.1		C		5.4		A	
Intersection Delay, s/veh LOS	13.3 B															

HCS Roundabouts Report																
General Information									Site Information							
Analyst	DBZ								Intersection							
Agency or Co.	Diane B. Zimmerman Traffic...								E/W Street Name				Brentlinger			
Date Performed	4/9/2025								N/S Street Name				Broad Run			
Analysis Year	2032								Analysis Time Period, hrs				0.25			
Time Analyzed	PM Peak								Peak Hour Factor				0.98			
Project Description	Broad Run								Jurisdiction							
Volume Adjustments and Site Characteristics																
Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment	LTR				LTR				LTR				LTR			
Volume (V), veh/h	0	16	70	113	0	336	317	81	0	95	50	159	0	98	154	43
Percent Heavy Vehicles, %	3	0	1	1	3	1	1	0	3	1	1	0	3	1	1	0
Flow Rate (v _{wt}), pc/h	0	16	72	116	0	346	327	83	0	98	52	162	0	101	159	44
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs, %	0															
Critical and Follow-Up Headway Adjustment																
Approach	EB				WB				NB				SB			
Lane	Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass	
Critical Headway, s		4.9763				4.9763				4.9763				4.9763		
Follow-Up Headway, s		2.6087				2.6087				2.6087				2.6087		
Flow Computations, Capacity and v/c Ratios																
Approach	EB				WB				NB				SB			
Lane	Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass	
Entry Flow (v _e), pc/h		204				756				312				304		
Entry Volume, veh/h		202				749				311				301		
Circulating Flow (v _c), pc/h		606				166				189				771		
Exiting Flow (v _e), pc/h		335				469				151				621		
Capacity (c _{pc}), pc/h		744				1165				1138				629		
Capacity (c), veh/h		737				1155				1133				623		
v/c Ratio (x)		0.27				0.65				0.27				0.48		
Delay and Level of Service																
Approach	EB				WB				NB				SB			
Lane	Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass		Left	Right	Bypass	
Lane Control Delay (d), s/veh		8.1				11.9				5.7				13.5		
Lane LOS		A				B				A				B		
95% Queue Length, Q ₉₅ (veh)		1.1				5.0				1.1				2.6		
95% Queue Length, Q ₉₅ (ft)		27.7				125.9				27.6				65.4		
Approach Delay, s/veh LOS	8.1	A			11.9	B			5.7	A			13.5	B		
Intersection Delay, s/veh LOS	10.5								B							

HCS All-Way Stop Control Report												
General and Site Information						Lanes						
Analyst	DBZ											
Agency/Co.	Diane B. Zimmerman Traffic Engineeri...											
Date Performed	4/9/2025											
Analysis Year	2032											
Analysis Time Period (hrs)	0.25											
Time Analyzed	AM Peak											
Project Description	Broad Run											
Intersection	Brentlinger/Broad Run/Seatonville											
Jurisdiction												
East/West Street	Brentlinger/Seatonville											
North/South Street	Broad Run/Seatonville											
Peak Hour Factor	0.82											
Turning Movement Demand Volumes												
Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)	5	308	45	82	50	55	106	121	259	121	28	11
% Thrus in Shared Lane												
Lane Flow Rate and Adjustments												
Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			L	TR		LT	R		LTR		
Flow Rate, v (veh/h)	437			100	128		277	316		195		
Percent Heavy Vehicles	1			2	2		2	2		1		
Initial Departure Headway, h _d (s)	3.20			3.20	3.20		3.20	3.20		3.20		
Initial Degree of Utilization, x	0.388			0.089	0.114		0.246	0.281		0.173		
Final Departure Headway, h _f (s)	7.42			8.73	7.83		7.81	6.86		8.41		
Final Degree of Utilization, x	0.900			0.243	0.279		0.601	0.602		0.456		
Move-Up Time, m (s)	2.0			2.3	2.3		2.3	2.3		2.0		
Service Time, t _s (s)	5.42			6.43	5.53		5.51	4.56		6.41		
Capacity, Delay and Level of Service												
Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			L	TR		LT	R		LTR		
Flow Rate, v (veh/h)	437			100	128		277	316		195		
Capacity (veh/h)	485			412	459		461	525		428		
95% Queue Length, Q ₉₅ (veh)	10.1			0.9	1.1		3.9	3.9		2.3		
95% Queue Length, Q ₉₅ (ft)	254.5			22.9	27.9		99.1	99.1		58.0		
Control Delay (s/veh)	47.2			14.2	13.5		21.6	19.4		18.3		
Level of Service, LOS	E			B	B		C	C		C		
Approach Delay (s/veh) LOS	47.2		E	13.8		B	20.4		C	18.3		C
Intersection Delay (s/veh) LOS	27.2						D					

HCS All-Way Stop Control Report												
General and Site Information					Lanes							
Analyst	DBZ											
Agency/Co.	Diane B. Zimmerman Traffic Engineeri...											
Date Performed	4/9/2025											
Analysis Year	2032											
Analysis Time Period (hrs)	0.25											
Time Analyzed	PM Peak											
Project Description	Broad Run											
Intersection	Brentlinger/Broad Run/Seatonville											
Jurisdiction												
East/West Street	Brentlinger/Seatonville											
North/South Street	Broad Run/Seatonville											
Peak Hour Factor	0.98											
Turning Movement Demand Volumes												
Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)	16	70	113	336	317	81	95	50	159	98	154	43
% Thrus in Shared Lane												
Lane Flow Rate and Adjustments												
Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			L	TR		LT	R		LTR		
Flow Rate, v (veh/h)	203			343	406		148	162		301		
Percent Heavy Vehicles	1			2	2		2	2		1		
Initial Departure Headway, h_d (s)	3.20			3.20	3.20		3.20	3.20		3.20		
Initial Degree of Utilization, x	0.180			0.305	0.361		0.132	0.144		0.268		
Final Departure Headway, h_f (s)	7.87			7.83	7.18		8.50	7.44		7.89		
Final Degree of Utilization, x	0.444			0.746	0.809		0.349	0.335		0.660		
Move-Up Time, m (s)	2.0			2.3	2.3		2.3	2.3		2.0		
Service Time, t_s (s)	5.87			5.53	4.88		6.20	5.14		5.89		
Capacity, Delay and Level of Service												
Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			L	TR		LT	R		LTR		
Flow Rate, v (veh/h)	203			343	406		148	162		301		
Capacity (veh/h)	457			460	502		424	484		456		
95% Queue Length, Q_{95} (veh)	2.2			6.2	7.7		1.5	1.5		4.7		
95% Queue Length, Q_{95} (ft)	55.4			157.5	195.6		38.1	38.1		118.4		
Control Delay (s/veh)	17.0			30.2	33.7		15.7	13.8		24.9		
Level of Service, LOS	C			D	D		C	B		C		
Approach Delay (s/veh) LOS	17.0	C		32.1	D		14.7	B		24.9	C	
Intersection Delay (s/veh) LOS	25.3						D					

Right Turn Warrant at Entrance on Broad Run Road

