

final report

July 8, 2020
Revised February 16, 2021

Traffic Impact Study

Apartments
8000 Cedar Creek Road
Louisville, KY

Prepared for

Louisville Metro Planning Commission



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INTRODUCTION

The development plan for an apartment community on Cedar Creek Road in Louisville, KY shows 324 apartment units. **Figure 1** displays a map of the site. Access to the community will be from two entrances on the Cedar Creek Road and a proposed access 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 Bardstown Road with Cedar Creek Road and Southpointe Boulevard, the intersection of Cedar Creek Road at Cedar Garden Drive and the proposed entrances on Cedar Creek Road.



Figure 1. Site Map

EXISTING CONDITIONS

Cedar Creek Road, is a Metro-maintained road with an estimated 2020 ADT of 2,900 vehicles per day between the Bardstown Road and Gentry Lane, as estimated from the Kentucky Transportation 2019 count at station 316. The road has two ten-foot lanes with three-foot shoulders. The speed limit is 35 mph. There are no sidewalks. The intersection with Bardstown Road is controlled with a traffic signal. There is a dedicated left turn lane on each approach at the intersection, and northbound Bardstown Road and westbound Brentlinger Lane have dedicated right turn lanes.

Peak hour traffic counts for the intersections were obtained on Tuesday, March 3, 2020. The a.m. peak hour on Cedar Creek Road was 7:00 to 8:00 and the p.m. peak hour was 4:45 to 5:45. **Figure 2** illustrates the existing a.m. and p.m. peak hour traffic volumes. The Appendix contains the full count data for each intersection.

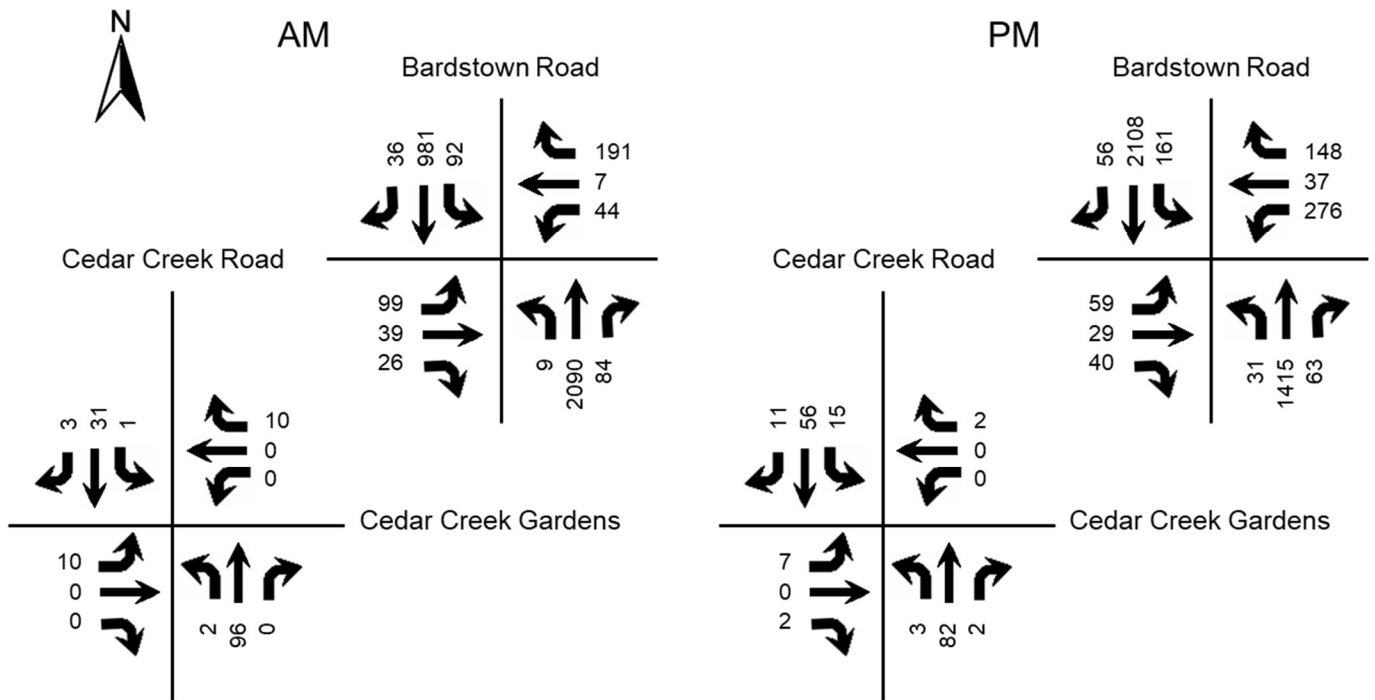


Figure 2. Existing Peak Hour Volumes

FUTURE CONDITIONS

The project completion date is 2023. An annual growth rate of 1.0 percent was applied to all 2020 volumes except Bardstow Road through traffic; 0.5 percent annual growth was used for Bardstow Road through traffic. This is determined by reviewing 2018 and 2015 counts at the intersection of Cedar Creek Road and Bardstow Road. Additionally, trip generation for 60 additional single-family homes in Cedar Creek Gardens, 88 single family homes on Heights Drive, 116 multifamily units on Brentlinger Lane, Southpointe Commons (approved development plan) and Bartley Drive Credit Union were included. **Figure 3** displays the 2023 No Build peak hour volumes.

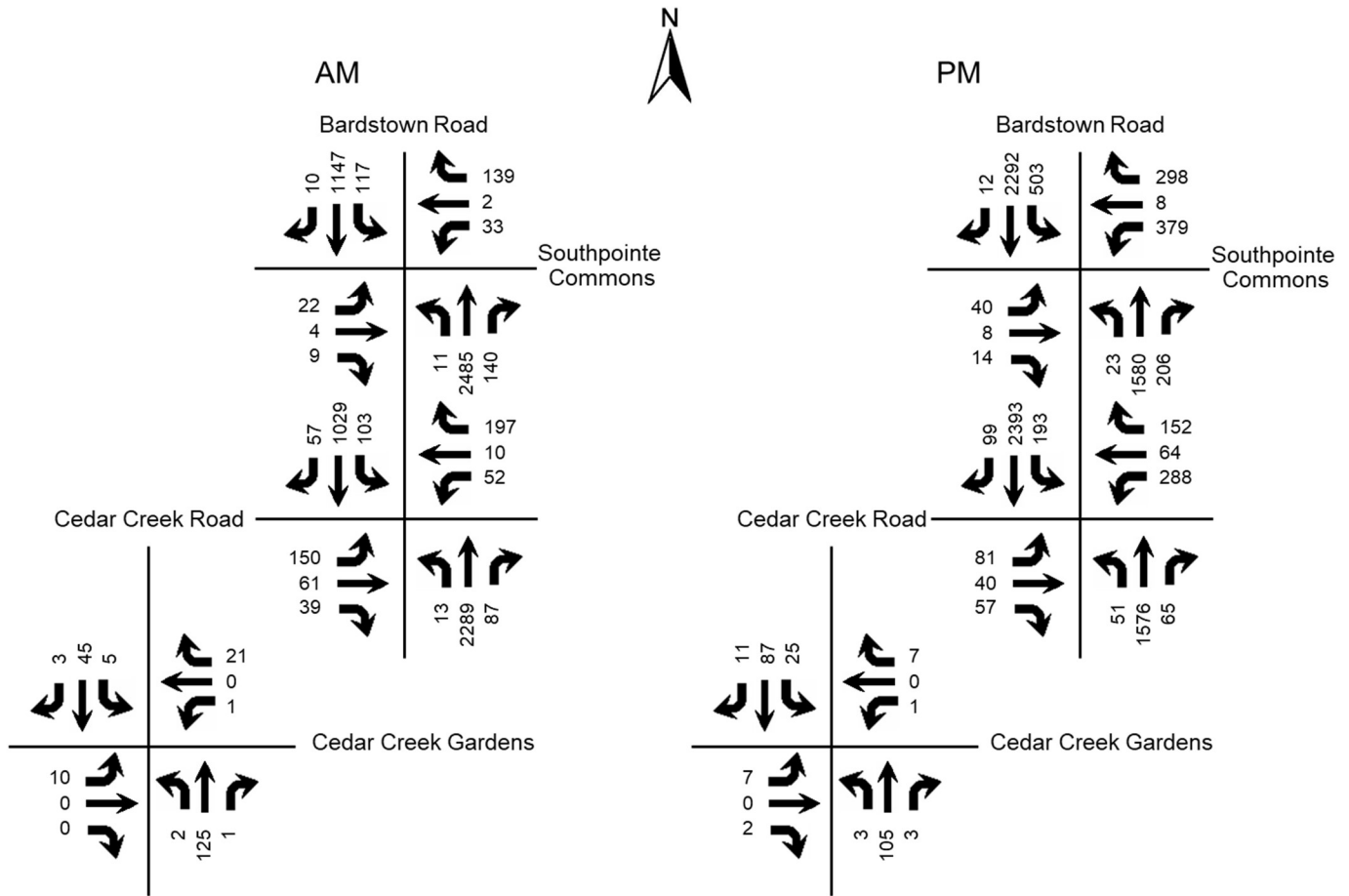


Figure 3. 2023 No Build Peak Hour Volumes

TRIP GENERATION

The Institute of Transportation Engineers Trip Generation Manual, 10th Edition contains trip generation rates for a wide range of developments. The land use of “Multifamily Housing Mid-Rise (221)” 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
Multifamily Housing Mid-Rise (324 units)	108	28	80	137	84	53

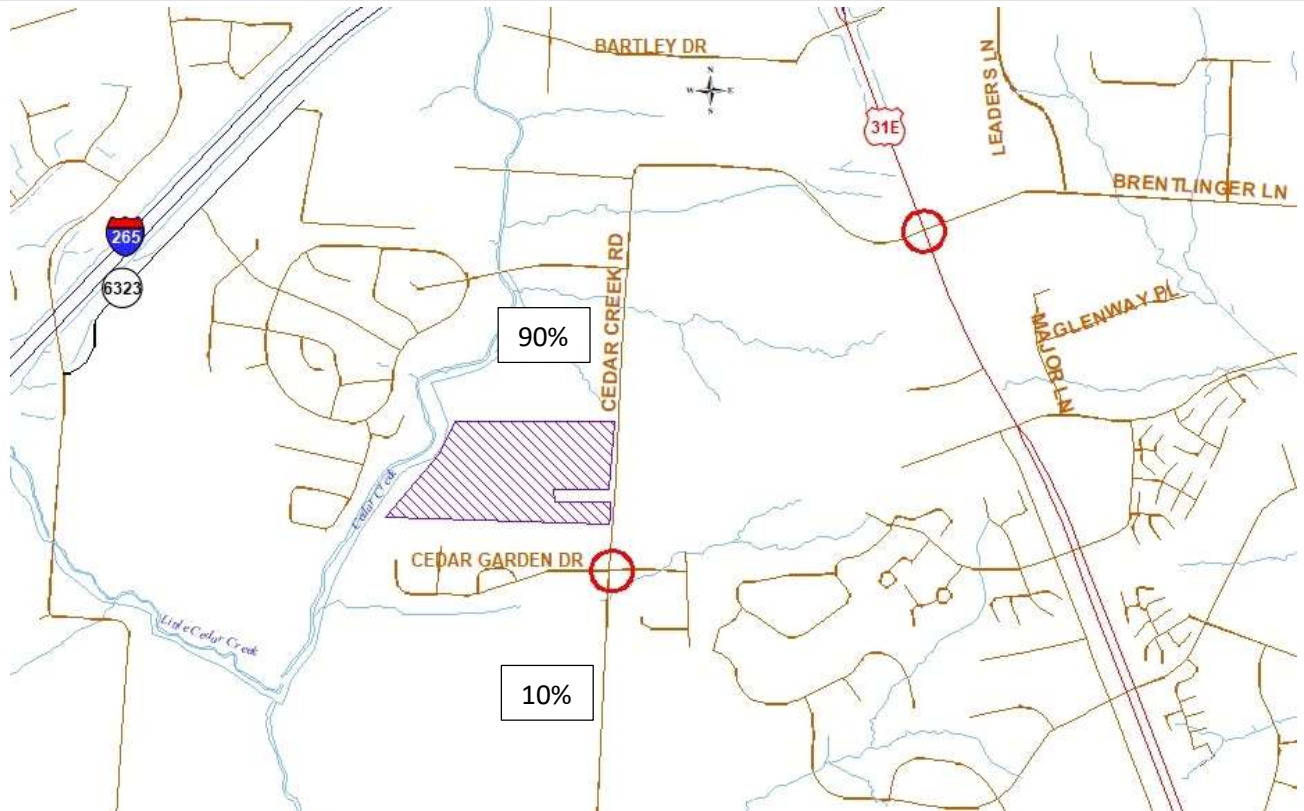


Figure 4. Trip Distribution Percentages

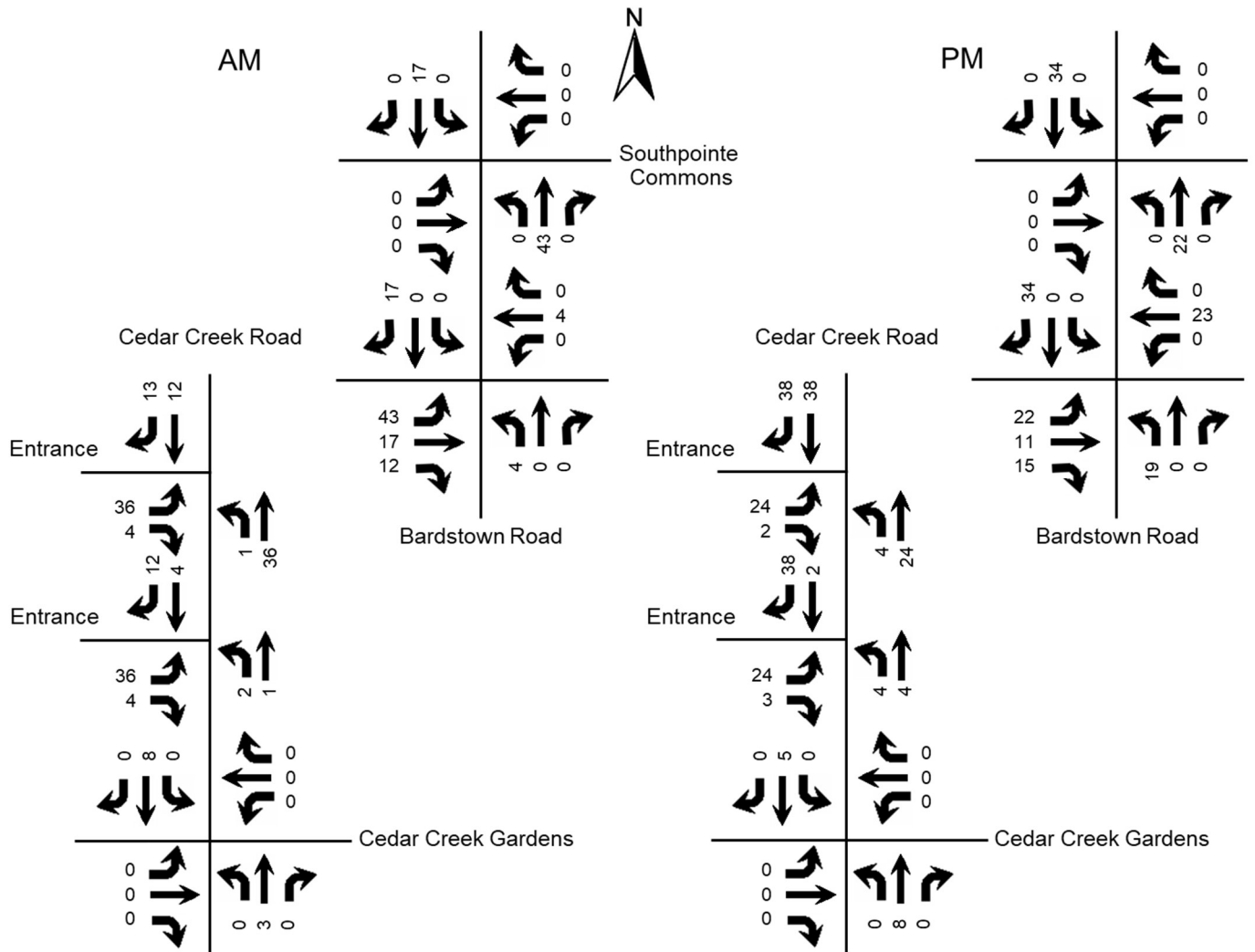


Figure 5. Peak Hour Trips Generated by Site

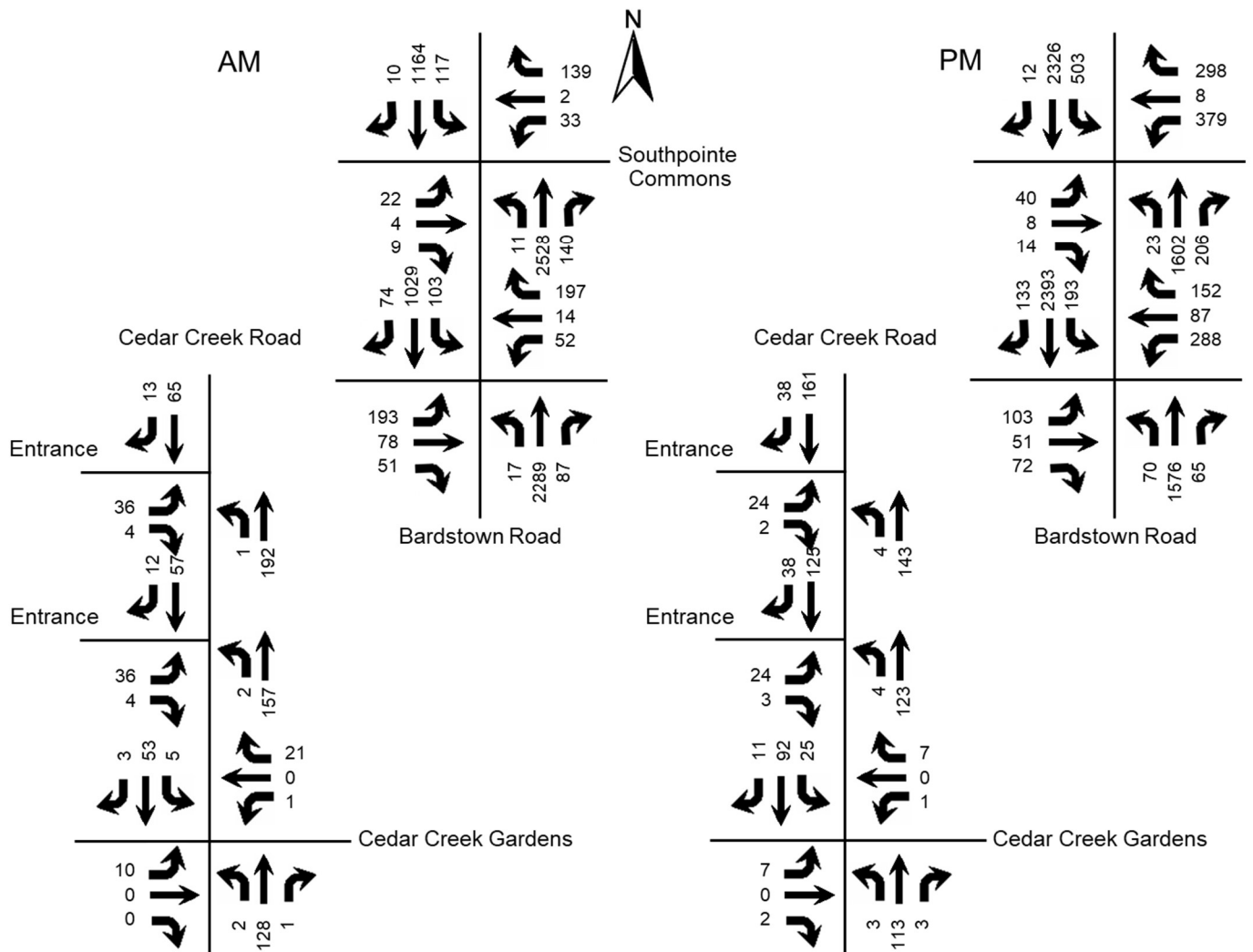


Figure 6. Build Peak Hour Volumes

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 total 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, 6th edition. Future delays and Level of Service were determined for the intersections using the HCS Streets (version 7.9) software. The delays and Level of Service are summarized in **Table 2**. The Build results include an eastbound right turn lane on Cedar Creek Road.

Table 2. Peak Hour Level of Service

Approach	A.M.			P.M.		
	2020 Existing	2023 No Build	2023 Build	2020 Existing	2023 No Build	2023 Build
Cedar Creek Road at Cedar Creek Gardens						
Cedar Creek Gardens Eastbound	A 9.5	B 10.1	B 10.2	A 9.6	B 10.2	B 10.3
Cedar Creek Gardens Westbound	A 8.8	A 9.1	A 9.1	A 8.7	A 9.1	A 9.1
Cedar Creek Road Northbound (left)	A 7.3	A 7.3	A 7.3	A 7.3	A 7.4	A 7.4
Cedar Creek Road Southbound (left)	A 7.4	A 7.5	A 7.5	A 7.4	A 7.5	A 7.5
Cedar Creek Road at South Entrance						
Entrance Eastbound			A 9.8			B 10.3
Cedar Creek Road Northbound (left)			A 7.3			A 7.6
Cedar Creek Road at North Entrance						
Entrance Eastbound			B 10.1			B 10.8
Cedar Creek Road Northbound (left)			A 7.4			A 7.6
Bardstown Road at Cedar Creek Road						
	C 22.7	C 28.3	C 31.3	D 46.8	D 35.9	C 32.9
Cedar Creek Road Eastbound	E 73.6	E 78.9	E 79.8	E 74.2	E 76.9	E 77.8
Brentlinger Lane Westbound	E 79.4	E 79.9	E 73.0	F 115.6	F 142.8	F 106.3
Bardstown Road Northbound	B 19.9	C 26.4	C 30.2	C 24.4	C 26.3	C 27.1
Bardstown Road Southbound	A 8.7	A 9.6	B 10.2	D 46.3	B 17.8	B 17.4
Bardstown Road at Bartley/Southpointe						
		B 19.3	B 17.3		D 39.1	D 42.1
Bartley Drive Eastbound		F 87.9	F 88.0		F 110.4	F 109.2
Southpointe Boulevard Westbound		E 77.5	E 79.7		F 83.7	F 87.6
Bardstown Road Northbound		B 11.9	B 11.5		B 14.7	B 16.3
Bardstown Road Southbound		C 24.9	B 18.7		D 42.2	D 46.2

Key: Level of Service, Delay in seconds per vehicle

The entrance was evaluated for turn lanes using the Kentucky Transportation Cabinet [Highway Design Guidance Manual](#) dated September, 2020. Using the volumes in Figure 6, no turn lanes are required at the entrance. See the Appendix for the chart.

CONCLUSIONS

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2023, there will be a minimal impact to the existing highway network, with the signalized intersections continuing to operate at acceptable levels of service. An eastbound right turn lane on Cedar Creek Road will be constructed.

APPENDIX

Cedar Creek Road Apartments
Traffic Impact Study

Traffic Counts

Jefferson County (Louisville), KY
Classified Turn Movement Count



Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
10 Glenlake Parkway, Suite 130, Atlanta, GA 30328
555 Fayetteville Street, Suite 201, Raleigh, NC 27601
1229 South Shelby Street, Louisville, KY 40203
6565 North MacArthur Boulevard, Suite 225, Dallas, TX 75039

Site 3 of 3
US-150 Bardstown Rd (North)
Brentlinger Ln
US-150 Bardstown Rd (South)
Cedar Creek Rd

hello@marrtraffic.com
www.marrtraffic.com

Lat/Long 38.134142°, -85.579609°
Weather Fair
55°F

Date
Tuesday, March 3, 2020

	Southbound					Westbound					Northbound					Eastbound					Int				
	US-150 Bardstown Rd (North)					Brentlinger Ln					US-150 Bardstown Rd (South)					Cedar Creek Rd									
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left		Thru	Right	Peds	App
0700 - 0715	0	25	184	7	0	216	0	4	1	60	0	65	0	1	522	14	0	537	0	45	10	3	0	58	876
0715 - 0730	0	14	222	7	0	243	0	6	1	50	0	57	0	1	556	14	0	571	0	34	10	13	0	57	928
0730 - 0745	0	18	239	13	0	270	0	13	3	46	0	62	0	1	521	22	0	544	0	25	12	4	0	41	917
0745 - 0800	0	36	266	11	0	313	0	11	1	51	0	63	0	2	503	27	1	533	0	23	11	4	0	38	947
0800 - 0815	0	24	254	5	0	283	0	14	2	44	0	60	0	5	510	21	0	536	0	17	6	5	0	28	907
0815 - 0830	0	38	216	9	0	263	0	9	4	35	0	48	0	1	482	21	0	504	0	18	13	4	0	35	850
0830 - 0845	0	29	190	9	0	228	0	13	5	70	0	88	0	4	447	22	0	473	0	26	10	7	0	43	832
0845 - 0900	0	69	187	9	0	265	0	17	10	77	0	104	0	2	376	18	0	396	0	15	12	3	0	30	795
1600 - 1615	0	50	468	17	0	535	0	55	16	69	0	140	0	3	298	7	0	308	0	12	3	6	0	21	1004
1615 - 1630	0	41	509	11	0	561	0	70	9	37	0	116	0	7	350	12	0	369	0	19	8	8	0	35	1081
1630 - 1645	0	38	523	14	0	575	0	57	16	41	0	114	0	5	353	13	0	371	0	20	7	10	0	37	1097
1645 - 1700	0	35	489	14	0	538	0	69	5	35	0	109	1	8	349	16	0	374	0	12	6	12	0	30	1051
1700 - 1715	0	34	536	14	0	584	0	66	9	39	0	114	0	9	362	13	0	384	0	17	9	9	0	35	1117
1715 - 1730	0	48	534	14	0	596	0	69	13	38	0	120	0	6	359	19	0	384	0	8	6	11	0	25	1125
1730 - 1745	0	44	549	14	0	607	0	72	10	36	0	118	0	7	345	15	0	367	0	22	8	8	0	38	1130
1745 - 1800	0	49	441	20	0	510	0	60	19	26	0	105	0	6	318	19	0	343	0	15	4	6	0	25	983
0715 - 0730	0	14	222	7	0	243	0	6	1	50	0	57	0	1	556	14	0	571	0	34	10	13	0	57	928
0730 - 0745	0	18	239	13	0	270	0	13	3	46	0	62	0	1	521	22	0	544	0	25	12	4	0	41	917
0745 - 0800	0	36	266	11	0	313	0	11	1	51	0	63	0	2	503	27	1	533	0	23	11	4	0	38	947
0800 - 0815	0	24	254	5	0	283	0	14	2	44	0	60	0	5	510	21	0	536	0	17	6	5	0	28	907
AM PEAK	0	92	981	36	0	1109	0	44	7	191	0	242	0	9	2090	84	1	2184	0	99	39	26	0	164	3699
1645 - 1700	0	35	489	14	0	538	0	69	5	35	0	109	1	8	349	16	0	374	0	12	6	12	0	30	1051
1700 - 1715	0	34	536	14	0	584	0	66	9	39	0	114	0	9	362	13	0	384	0	17	9	9	0	35	1117
1715 - 1730	0	48	534	14	0	596	0	69	13	38	0	120	0	6	359	19	0	384	0	8	6	11	0	25	1125
1730 - 1745	0	44	549	14	0	607	0	72	10	36	0	118	0	7	345	15	0	367	0	22	8	8	0	38	1130
PM PEAK	0	161	2108	56	0	2325	0	276	37	148	0	461	1	30	1415	63	0	1509	0	59	29	40	0	128	4423

Cedar Creek Road Apartments Traffic Impact Study

Jefferson County (Louisville), KY
Classified Tum Movement Count



Marr Traffic
Transportation Data Collection

41 Peabody Street, Nashville, TN 37210
10 Glenlake Parkway, Suite 130, Atlanta, GA 30328
555 Fayetteville Street, Suite 201, Raleigh, NC 27601
1229 South Shelby Street, Louisville, KY 40203
6565 North MacArthur Boulevard, Suite 225, Dallas, TX 75039

Site 2 of 3
Cedar Creek Rd (North)
Cedar Garden Dr (East)
Cedar Creek Rd (South)
Cedar garden Dr (West)

hello@marrtraffic.com
www.marrtraffic.com

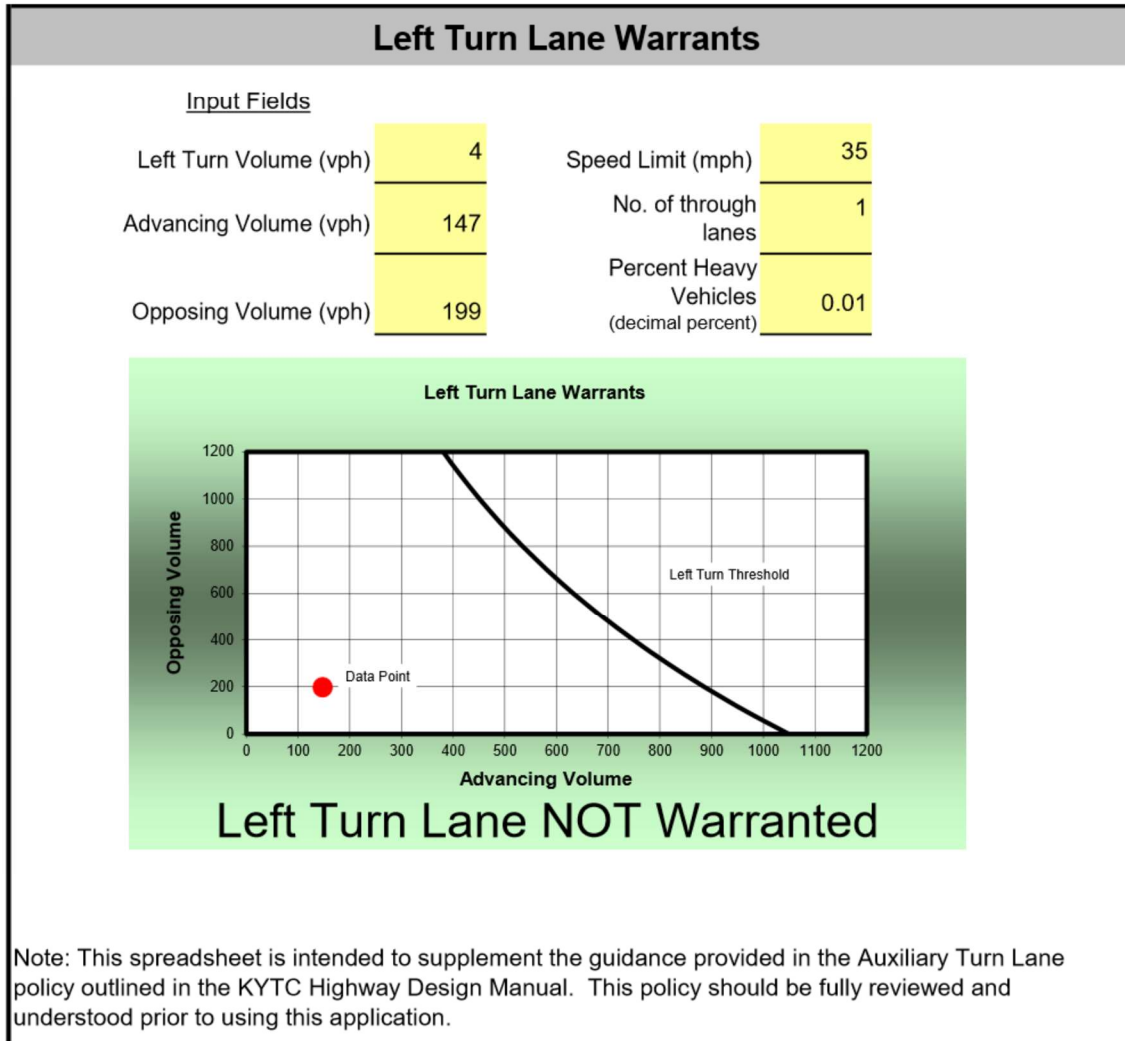
Lat/Long
38.127684°, -85.587208°

Weather
Fair
55°F

1 (800) 615-3765

Date
Tuesday, March 3, 2020

	Southbound						Westbound						Northbound						Eastbound						Int
	Cedar Creek Rd (North)						Cedar Garden Dr (East)						Cedar Creek Rd (South)						Cedar garden Dr (West)						
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	
0700 - 0715	0	0	5	0	0	5	0	0	0	4	0	4	0	0	31	0	0	31	0	3	0	0	0	3	43
0715 - 0730	1	0	4	2	0	7	0	0	0	0	0	0	0	1	30	0	0	31	0	3	0	0	0	3	41
0730 - 0745	0	0	15	0	0	15	0	0	0	4	0	4	0	0	19	0	0	19	0	2	0	0	0	2	40
0745 - 0800	0	1	7	1	0	9	0	0	0	2	0	2	0	1	16	0	0	17	0	2	0	0	0	2	30
0800 - 0815	0	2	7	0	0	9	0	0	0	0	0	0	0	0	16	0	0	16	0	1	0	2	0	3	30
0815 - 0830	0	1	8	0	0	9	0	1	0	2	0	3	0	0	15	0	0	15	0	1	0	0	0	1	28
0830 - 0845	0	1	9	1	0	11	0	0	0	1	0	1	0	0	17	1	0	18	0	3	0	1	0	4	34
0845 - 0900	0	3	10	0	0	13	0	0	0	0	0	0	0	0	18	0	0	18	0	1	0	0	0	1	32
1600 - 1615	0	1	21	2	0	24	0	0	0	1	0	1	0	1	10	0	0	11	0	2	0	0	0	2	38
1615 - 1630	0	1	17	2	1	21	0	1	0	1	0	2	0	2	20	2	0	24	0	2	0	2	0	4	51
1630 - 1645	0	0	11	5	0	16	0	0	0	1	0	1	0	2	21	0	0	23	0	0	0	0	0	0	40
1645 - 1700	0	3	19	4	0	26	0	0	0	0	0	0	0	1	19	1	0	21	0	2	0	0	0	2	49
1700 - 1715	0	1	10	1	0	12	0	0	0	2	0	2	0	1	22	0	0	23	0	2	0	0	0	2	39
1715 - 1730	0	8	12	3	0	23	0	0	0	0	0	0	0	0	16	1	0	17	0	2	0	1	0	3	43
1730 - 1745	0	3	15	3	0	21	0	0	0	0	0	0	0	1	25	0	0	26	0	1	0	1	0	2	49
1745 - 1800	0	5	20	3	0	28	0	0	0	1	0	1	0	2	14	1	0	17	0	2	0	0	0	2	48
AM PEAK	1	1	31	3	0	36	0	0	0	10	0	10	0	2	96	0	0	98	0	10	0	0	0	10	154
1645 - 1700	0	3	19	4	0	26	0	0	0	0	0	0	0	1	19	1	0	21	0	2	0	0	0	2	49
1700 - 1715	0	1	10	1	0	12	0	0	0	2	0	2	0	1	22	0	0	23	0	2	0	0	0	2	39
1715 - 1730	0	8	12	3	0	23	0	0	0	0	0	0	0	0	16	1	0	17	0	2	0	1	0	3	43
1730 - 1745	0	3	15	3	0	21	0	0	0	0	0	0	0	1	25	0	0	26	0	1	0	1	0	2	49
PM PEAK	0	15	56	11	0	82	0	0	0	2	0	2	0	3	82	2	0	87	0	7	0	2	0	9	180



HCS Reports

HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Cedar Creek Rd at CC Gard							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	7/8/2020							East/West Street	Cedar Creek Garden							
Analysis Year	2020							North/South Street	Cedar Creek Road							
Time Analyzed	AM Peak							Peak Hour Factor	0.90							
Intersection Orientation	North-South							Analysis Time Period (hrs)	0.25							
Project Description	Hagan Apartments															
Lanes																
<p style="text-align: center;">Major Street: North-South</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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	0	0		0	0	10		2	96	0		1	31	3
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type Storage	Undivided															
Critical and Follow-up Headways																
Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20		
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)			11				11			2				1		
Capacity, c (veh/h)			805				953			1586				1497		
v/c Ratio			0.01				0.01			0.00				0.00		
95% Queue Length, Q ₉₅ (veh)			0.0				0.0			0.0				0.0		
Control Delay (s/veh)			9.5				8.8			7.3				7.4		
Level of Service (LOS)			A				A			A				A		
Approach Delay (s/veh)	9.5				8.8				0.2				0.2			
Approach LOS	A				A											

HCS7 Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection	Cedar Creek Rd at CC Gard								
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	2/16/21							East/West Street	Cedar Creek Garden								
Analysis Year	2023							North/South Street	Cedar Creek Road								
Time Analyzed	AM Peak No Build							Peak Hour Factor	0.90								
Intersection Orientation	North-South							Analysis Time Period (hrs)	0.25								
Project Description	Hagan Apartments																
Lanes																	
<p>Major Street: North-South</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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		10	0	0		1	0	21		2	125	1		5	45	3	
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type Storage		Undivided															
Critical and Follow-up Headways																	
Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1			
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10			
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2			
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20			
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)			11				24			2				6			
Capacity, c (veh/h)			720				905			1565				1456			
v/c Ratio			0.02				0.03			0.00				0.00			
95% Queue Length, Q ₉₅ (veh)			0.0				0.1			0.0				0.0			
Control Delay (s/veh)			10.1				9.1			7.3				7.5			
Level of Service (LOS)			B				A			A				A			
Approach Delay (s/veh)		10.1				9.1				0.1				0.7			
Approach LOS		B				A											

HCS7 Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection	Cedar Creek Rd at CC Gard								
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	2/16/21							East/West Street	Cedar Creek Garden								
Analysis Year	2023							North/South Street	Cedar Creek Road								
Time Analyzed	AM Peak Build							Peak Hour Factor	0.90								
Intersection Orientation	North-South							Analysis Time Period (hrs)	0.25								
Project Description	Hagan Apartments																
Lanes																	
<p>Major Street: North-South</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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		10	0	0		1	0	21		2	128	1		5	53	3	
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type Storage		Undivided															
Critical and Follow-up Headways																	
Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1			
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10			
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2			
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20			
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)			11				24			2				6			
Capacity, c (veh/h)			707				901			1554				1452			
v/c Ratio			0.02				0.03			0.00				0.00			
95% Queue Length, Q ₉₅ (veh)			0.0				0.1			0.0				0.0			
Control Delay (s/veh)			10.2				9.1			7.3				7.5			
Level of Service (LOS)			B				A			A				A			
Approach Delay (s/veh)		10.2				9.1				0.1				0.6			
Approach LOS		B				A											

HCS7 Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection	Cedar Creek Rd at CC Gard								
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	7/8/2020							East/West Street	Cedar Creek Garden								
Analysis Year	2020							North/South Street	Cedar Creek Road								
Time Analyzed	PM Peak							Peak Hour Factor	0.92								
Intersection Orientation	North-South							Analysis Time Period (hrs)	0.25								
Project Description	Hagan Apartments																
Lanes																	
<p>Major Street: North-South</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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		7	0	2		0	0	2		3	82	2		15	56	11	
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type Storage		Undivided															
Critical and Follow-up Headways																	
Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1			
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10			
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2			
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20			
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)			10				2			3				16			
Capacity, c (veh/h)			800				973			1540				1516			
v/c Ratio			0.01				0.00			0.00				0.01			
95% Queue Length, Q ₉₅ (veh)			0.0				0.0			0.0				0.0			
Control Delay (s/veh)			9.6				8.7			7.3				7.4			
Level of Service (LOS)			A				A			A				A			
Approach Delay (s/veh)		9.6				8.7				0.3				1.4			
Approach LOS		A				A											

HCS7 Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection	Cedar Creek Rd at CC Gard								
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	2/16/21							East/West Street	Cedar Creek Garden								
Analysis Year	2023							North/South Street	Cedar Creek Road								
Time Analyzed	PM Peak No Build							Peak Hour Factor	0.92								
Intersection Orientation	North-South							Analysis Time Period (hrs)	0.25								
Project Description	Hagan Apartments																
Lanes																	
<p>Major Street: North-South</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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		7	0	2		1	0	7		3	105	3		25	87	11	
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type Storage		Undivided															
Critical and Follow-up Headways																	
Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1			
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10			
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2			
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20			
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)			10				9			3				27			
Capacity, c (veh/h)			708				895			1497				1484			
v/c Ratio			0.01				0.01			0.00				0.02			
95% Queue Length, Q ₉₅ (veh)			0.0				0.0			0.0				0.1			
Control Delay (s/veh)			10.2				9.1			7.4				7.5			
Level of Service (LOS)			B				A			A				A			
Approach Delay (s/veh)		10.2				9.1				0.2				1.6			
Approach LOS		B				A											

HCS7 Two-Way Stop-Control Report																	
General Information								Site Information									
Analyst	DBZ							Intersection	Cedar Creek Rd at CC Gard								
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction									
Date Performed	2/16/20							East/West Street	Cedar Creek Garden								
Analysis Year	2023							North/South Street	Cedar Creek Road								
Time Analyzed	PM Peak Build							Peak Hour Factor	0.92								
Intersection Orientation	North-South							Analysis Time Period (hrs)	0.25								
Project Description	Hagan Apartments																
Lanes																	
<p>Major Street: North-South</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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration			LTR				LTR				LTR				LTR		
Volume (veh/h)		7	0	2		1	0	7		3	113	3		25	92	11	
Percent Heavy Vehicles (%)		0	0	0		0	0	0		0				0			
Proportion Time Blocked																	
Percent Grade (%)		0				0											
Right Turn Channelized																	
Median Type Storage		Undivided															
Critical and Follow-up Headways																	
Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1			
Critical Headway (sec)		7.10	6.50	6.20		7.10	6.50	6.20		4.10				4.10			
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2			
Follow-Up Headway (sec)		3.50	4.00	3.30		3.50	4.00	3.30		2.20				2.20			
Delay, Queue Length, and Level of Service																	
Flow Rate, v (veh/h)			10				9			3				27			
Capacity, c (veh/h)			695				884			1490				1473			
v/c Ratio			0.01				0.01			0.00				0.02			
95% Queue Length, Q ₉₅ (veh)			0.0				0.0			0.0				0.1			
Control Delay (s/veh)			10.3				9.1			7.4				7.5			
Level of Service (LOS)			B				A			A				A			
Approach Delay (s/veh)		10.3				9.1				0.2				1.6			
Approach LOS		B				A											

HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Cedar Creek at Entrance							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	2/16/21							East/West Street	Entrance							
Analysis Year	2023							North/South Street	Cedar Creek Road							
Time Analyzed	AM Peak							Peak Hour Factor	0.90							
Intersection Orientation	North-South							Analysis Time Period (hrs)	0.25							
Project Description	Hagan Apt															
Lanes																
<p style="text-align: center;">Major Street: North-South</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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		36		4						2	157				12	57
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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)			44							2						
Capacity, c (veh/h)			788							1535						
v/c Ratio			0.06							0.00						
95% Queue Length, Q ₉₅ (veh)			0.2							0.0						
Control Delay (s/veh)			9.8							7.3						
Level of Service (LOS)			A							A						
Approach Delay (s/veh)		9.8								0.1						
Approach LOS		A														

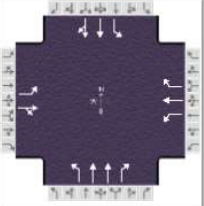
HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Cedar Creek at Entrance							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	2/16/21							East/West Street	Entrance							
Analysis Year	2023							North/South Street	Cedar Creek Road							
Time Analyzed	PM Peak							Peak Hour Factor	0.92							
Intersection Orientation	North-South							Analysis Time Period (hrs)	0.25							
Project Description	Hagan Apt															
Lanes																
<p style="text-align: center;">Major Street: North-South</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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		24		3						4	123				125	38
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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)			29							4						
Capacity, c (veh/h)			712							1411						
v/c Ratio			0.04							0.00						
95% Queue Length, Q ₉₅ (veh)			0.1							0.0						
Control Delay (s/veh)			10.3							7.6						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.3								0.3						
Approach LOS		B								A						

HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Cedar Creek at Entrance N							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	2/16/21							East/West Street	Entrance							
Analysis Year	2023							North/South Street	Cedar Creek Road							
Time Analyzed	AM Peak							Peak Hour Factor	0.90							
Intersection Orientation	North-South							Analysis Time Period (hrs)	0.25							
Project Description	Hagan Apt															
Lanes																
<p>Major Street: North-South</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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		36		4						1	192				13	65
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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)			44							1						
Capacity, c (veh/h)			748							1522						
v/c Ratio			0.06							0.00						
95% Queue Length, Q ₉₅ (veh)			0.2							0.0						
Control Delay (s/veh)			10.1							7.4						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.1								0.0						
Approach LOS		B								A						

HCS7 Two-Way Stop-Control Report																
General Information								Site Information								
Analyst	DBZ							Intersection	Cedar Creek at Entrance N							
Agency/Co.	Diane B Zimmerman Traffic Engineering							Jurisdiction								
Date Performed	2/16/21							East/West Street	Entrance							
Analysis Year	2023							North/South Street	Cedar Creek Road							
Time Analyzed	PM Peak							Peak Hour Factor	0.92							
Intersection Orientation	North-South							Analysis Time Period (hrs)	0.25							
Project Description	Hagan Apt															
Lanes																
<p>Major Street: North-South</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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		24		2						4	143				161	38
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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						
Delay, Queue Length, and Level of Service																
Flow Rate, v (veh/h)			28							4						
Capacity, c (veh/h)			653							1365						
v/c Ratio			0.04							0.00						
95% Queue Length, Q ₉₅ (veh)			0.1							0.0						
Control Delay (s/veh)			10.8							7.6						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		10.8								0.2						
Approach LOS		B								A						

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	DBZ Traffic			Duration, h	0.250		
Analyst	DBZ	Analysis Date	Jul 6, 2020	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.98		
Urban Street	Bardstown Road	Analysis Year	2020	Analysis Period	1> 7:15		
Intersection	Brentlinger/Cedar Creek	File Name	Bardstown AM 20.xus				
Project Description	Cedar Creek Apt						



Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				99	39	26	44	7	191	9	2090	84	92	981	36

Signal Information				Timing (s)						Signal Phases				
Cycle, s	180.0	Reference Phase	2	Green	2.2	3.7	129.9	24.2	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.5	0.0	5.1	3.6	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	3.0	0.0	1.7	3.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results		EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase			4		8	5	2	1	6
Case Number			6.0		5.0	1.1	3.0	1.1	4.0
Phase Duration, s			30.8		30.8	8.7	136.7	12.5	140.5
Change Period, (Y+R _c), s			6.6		6.6	6.5	6.8	6.5	6.8
Max Allow Headway (MAH), s			5.2		5.2	5.0	0.0	5.0	0.0
Queue Clearance Time (g _s), s			14.9		23.2	2.3		4.5	
Green Extension Time (g _e), s			1.9		1.0	0.0	0.0	0.3	0.0
Phase Call Probability			1.00		1.00	0.37		0.99	
Max Out Probability			0.07		0.99	0.00		0.00	

Movement Group Results		EB			WB			NB			SB		
Approach Movement		L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		101	66		45	7	195	9	2133	86	96	534	527
Adjusted Saturation Flow Rate (s), veh/h/ln		1386	1717		1282	1900	1572	1344	1781	1610	1781	1841	1817
Queue Service Time (g _s), s		12.3	6.3		5.9	0.6	21.2	0.3	74.8	1.5	2.5	12.6	12.5
Cycle Queue Clearance Time (g _c), s		12.9	6.3		12.1	0.6	21.2	0.3	74.8	1.5	2.5	12.6	12.5
Green Ratio (g/C)		0.13	0.13		0.13	0.13	0.17	0.73	0.72	0.86	0.75	0.74	0.74
Capacity (c), veh/h		222	231		168	256	264	322	2570	1379	157	1367	1349
Volume-to-Capacity Ratio (X)		0.455	0.287		0.267	0.028	0.739	0.029	0.830	0.062	0.612	0.391	0.391
Back of Queue (Q), ft/ln (95 th percentile)		204.7	130.1		94.3	13	360.8	5.4	951.7	43.5	157.9	190.5	184.4
Back of Queue (Q), veh/ln (95 th percentile)		7.9	5.0		3.6	0.5	14.1	0.2	37.5	1.7	6.2	7.4	7.3
Queue Storage Ratio (RQ) (95 th percentile)		1.36	0.13		0.31	0.04	1.60	0.03	1.36	0.22	0.79	0.27	0.27
Uniform Delay (d ₁), s/veh		73.2	70.1		75.6	67.6	71.2	6.7	17.4	2.0	37.8	4.8	4.8
Incremental Delay (d ₂), s/veh		2.1	1.0		1.2	0.1	9.2	0.1	3.3	0.1	5.1	0.8	0.8
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		75.3	71.1		76.8	67.7	80.4	6.8	20.6	2.0	42.9	5.6	5.6
Level of Service (LOS)		E	E		E	E	F	A	C	A	D	A	A
Approach Delay, s/veh / LOS		73.6	E	79.4	E	19.9	B	8.7	A				
Intersection Delay, s/veh / LOS		22.7						C					

Multimodal Results		EB		WB		NB		SB	
Pedestrian LOS Score / LOS		2.48	B	2.33	B	2.07	B	1.87	B
Bicycle LOS Score / LOS		0.76	A	0.90	A	2.33	B	1.42	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information															
Agency	DBZ Traffic			Duration, h	0.250														
Analyst	DBZ			Analysis Date	Feb 17, 2021														
Jurisdiction				Time Period	AM Peak														
Urban Street	Bardstown Road			Analysis Year	2023 No Build														
Intersection	Brentlinger/Cedar Creek			File Name	Bardstown AM 23 NB.xus														
Project Description	Cedar Creek Apt																		
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				150	61	39	52	10	197	13	2289	87	103	1029	57				
Signal Information																			
Cycle, s	180.0	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	No	Simult. Gap E/W	On	Green	2.9	3.1	129.1	25.1	0.0	0.0									
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	5.1	3.6	0.0	0.0									
				Red	3.0	0.0	1.7	3.0	0.0	0.0									
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						4				8		5		2		1		6	
Case Number						6.0				5.0		1.1		3.0		1.1		4.0	
Phase Duration, s						31.7				31.7		9.4		135.9		12.5		138.9	
Change Period, (Y+R _c), s						6.6				6.6		6.5		6.8		6.5		6.8	
Max Allow Headway (MAH), s						5.2				5.2		5.0		0.0		5.0		0.0	
Queue Clearance Time (g _s), s						22.2				23.8		2.5				5.4			
Green Extension Time (g _e), s						1.5				1.2		0.0		0.0		0.3		0.0	
Phase Call Probability						1.00				1.00		0.48				0.99			
Max Out Probability						0.77				1.00		0.00				0.01			
Movement Group Results				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16				
Adjusted Flow Rate (v), veh/h				153	102		53	10	201	13	2336	89	101	537	527				
Adjusted Saturation Flow Rate (s), veh/h/ln				1382	1720		1241	1900	1572	1344	1781	1610	1781	1841	1806				
Queue Service Time (g _s), s				19.4	9.8		7.4	0.8	21.8	0.5	97.0	1.5	3.4	9.6	9.5				
Cycle Queue Clearance Time (g _c), s				20.2	9.8		17.1	0.8	21.8	0.5	97.0	1.5	3.4	9.6	9.5				
Green Ratio (g/C)				0.14	0.14		0.14	0.14	0.17	0.73	0.72	0.86	0.75	0.73	0.73				
Capacity (c), veh/h				226	239		145	264	271	329	2554	1379	126	1351	1326				
Volume-to-Capacity Ratio (X)				0.677	0.426		0.365	0.039	0.742	0.040	0.915	0.064	0.798	0.398	0.398				
Back of Queue (Q), ft/ln (95 th percentile)				302.3	202.1		115.3	18.5	370.5	7.8	1229.7	46.4	175.8	139	131.7				
Back of Queue (Q), veh/ln (95 th percentile)				11.7	7.8		4.4	0.7	14.5	0.2	48.4	1.9	6.9	5.4	5.2				
Queue Storage Ratio (RQ) (95 th percentile)				2.02	0.20		0.38	0.06	1.65	0.04	1.76	0.23	0.88	0.20	0.19				
Uniform Delay (d ₁), s/veh				75.8	70.9		78.7	67.1	70.7	6.7	20.9	2.0	52.8	3.4	3.3				
Incremental Delay (d ₂), s/veh				7.3	1.7		2.2	0.1	9.6	0.1	6.5	0.1	13.8	0.8	0.8				
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh				83.1	72.6		80.9	67.1	80.3	6.7	27.4	2.1	66.6	4.2	4.2				
Level of Service (LOS)				F	E		F	E	F	A	C	A	E	A	A				
Approach Delay, s/veh / LOS				78.9	E		79.9	E		26.4	C		9.6	A					
Intersection Delay, s/veh / LOS				28.3						C									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				2.48	B		2.33	B		2.07	B		1.87	B					
Bicycle LOS Score / LOS				0.91	A		0.92	A		2.50	B		1.49	A					

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information																							
Agency	DBZ Traffic			Duration, h	0.250																						
Analyst	DBZ			Analysis Date	Feb 16, 2021																						
Jurisdiction				Time Period	AM Peak																						
Urban Street	Bardstown Road			Analysis Year	2023 Build																						
Intersection	Brentlinger/Cedar Creek			File Name	Bardstown AM 23 B R.xus																						
Project Description	Cedar Creek Apt Right																										
Demand Information				EB			WB			NB			SB														
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R												
Demand (v), veh/h				193	78	51	52	14	197	17	2289	87	103	1029	74												
Signal Information																											
Cycle, s	180.0	Reference Phase	2																								
Offset, s	0	Reference Point	End																								
Uncoordinated	No	Simult. Gap E/W	On	Green	3.5	2.7	125.5	28.4	0.0	0.0																	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	5.1	3.6	0.0	0.0																	
				Red	3.0	0.0	1.7	3.0	0.0	0.0																	
Timer Results				EBL			EBT			WBL			WBT			NBL			NBT			SBL			SBT		
Assigned Phase							4						8			5			2			1			6		
Case Number							5.0						5.0			1.1			3.0			1.1			4.0		
Phase Duration, s							35.0						35.0			10.0			132.3			12.7			135.0		
Change Period, (Y+R _c), s							6.6						6.6			6.5			6.8			6.5			6.8		
Max Allow Headway (MAH), s							5.2						5.2			5.0			0.0			5.0			0.0		
Queue Clearance Time (g _s), s							28.5						23.3			2.7						6.0					
Green Extension Time (g _e), s							0.0						1.6			0.0			0.0			0.2			0.0		
Phase Call Probability							1.00						1.00			0.58						0.99					
Max Out Probability							1.00						1.00			0.00						0.15					
Movement Group Results				EB			WB			NB			SB														
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R												
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16												
Adjusted Flow Rate (v), veh/h				197	80	52	53	14	201	17	2336	89	100	540	527												
Adjusted Saturation Flow Rate (s), veh/h/ln				1377	1841	1610	1267	1900	1572	1344	1781	1610	1781	1841	1797												
Queue Service Time (g _s), s				25.3	6.8	5.1	6.9	1.1	21.3	0.7	101.9	1.5	4.0	9.5	9.3												
Cycle Queue Clearance Time (g _c), s				26.5	6.8	5.1	13.7	1.1	21.3	0.7	101.9	1.5	4.0	9.5	9.3												
Green Ratio (g/C)				0.16	0.16	0.16	0.16	0.16	0.19	0.72	0.70	0.86	0.73	0.71	0.71												
Capacity (c), veh/h				256	301	254	192	300	302	324	2503	1377	121	1311	1280												
Volume-to-Capacity Ratio (X)				0.769	0.265	0.205	0.276	0.048	0.665	0.053	0.933	0.064	0.822	0.412	0.412												
Back of Queue (Q), ft/ln (95 th percentile)				390.8	152.2	96	110.4	25.6	359.7	10.8	1288.9	49.5	225.4	134.5	125.8												
Back of Queue (Q), veh/ln (95 th percentile)				15.1	5.9	3.8	4.2	1.0	14.0	0.3	50.7	2.0	8.9	5.2	5.0												
Queue Storage Ratio (RQ) (95 th percentile)				2.61	0.15	0.00	0.37	0.09	1.60	0.05	1.84	0.25	1.13	0.19	0.18												
Uniform Delay (d ₁), s/veh				74.6	65.8	66.0	72.7	64.3	67.3	7.6	23.5	2.0	56.1	3.5	3.4												
Incremental Delay (d ₂), s/veh				14.0	0.7	0.6	1.1	0.1	6.1	0.1	7.9	0.1	17.1	0.9	0.9												
Initial Queue Delay (d ₃), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
Control Delay (d), s/veh				88.6	66.5	66.5	73.8	64.4	73.5	7.6	31.4	2.1	73.2	4.4	4.3												
Level of Service (LOS)				F	E	E	E	E	E	A	C	A	E	A	A												
Approach Delay, s/veh / LOS				79.8		E	73.0		E	30.2		C	10.2		B												
Intersection Delay, s/veh / LOS				31.3						C																	
Multimodal Results				EB			WB			NB			SB														
Pedestrian LOS Score / LOS				2.48	B			2.32	B			2.07	B														
Bicycle LOS Score / LOS				1.03	A			0.93	A			2.50	C														

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information																							
Agency	DBZ Traffic			Duration, h	0.250																						
Analyst	DBZ			Analysis Date	Jul 10, 2020																						
Jurisdiction				Time Period	PM Peak																						
Urban Street	Bardstown Road			Analysis Year	2020																						
Intersection	Brentlinger/Cedar Creek			File Name	Bardstown PM 20.xus																						
Project Description	Cedar Creek Apartments			Analysis Period	1> 4:45																						
Demand Information				EB			WB			NB			SB														
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R												
Demand (v), veh/h				59	29	40	276	37	148	31	1415	63	161	2108	56												
Signal Information																											
Cycle, s	225.0	Reference Phase	2																								
Offset, s	0	Reference Point	End																								
Uncoordinated	No	Simult. Gap E/W	On	Green	5.2	5.3	146.2	48.4	0.0	0.0																	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	5.1	3.6	0.0	0.0																	
				Red	3.0	0.0	1.7	3.0	0.0	0.0																	
Timer Results				EBL			EBT			WBL			WBT			NBL			NBT			SBL			SBT		
Assigned Phase							4						8			5			2			1			6		
Case Number							6.0						5.0			1.1			3.0			1.1			4.0		
Phase Duration, s							55.0						55.0			11.7			153.0			17.0			158.3		
Change Period, (Y+R _c), s							6.6						6.6			6.5			6.8			6.5			6.8		
Max Allow Headway (MAH), s							5.1						5.1			5.0			0.0			5.0			0.0		
Queue Clearance Time (g _s), s							13.9						51.4			3.3						10.0					
Green Extension Time (g _e), s							3.7						0.0			0.1			0.0			0.5			0.0		
Phase Call Probability							1.00						1.00			0.86						1.00					
Max Out Probability							0.00						1.00			0.00						0.14					
Movement Group Results				EB			WB			NB			SB														
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R												
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16												
Adjusted Flow Rate (v), veh/h				60	70		282	38	151	32	1444	64	186	1251	1251												
Adjusted Saturation Flow Rate (s), veh/h/ln				1370	1680		1351	1900	1610	1810	1781	1572	1810	1885	1868												
Queue Service Time (g _s), s				8.3	7.7		41.7	3.6	17.2	1.3	53.7	1.3	8.0	142.5	146.6												
Cycle Queue Clearance Time (g _c), s				11.9	7.7		49.4	3.6	17.2	1.3	53.7	1.3	8.0	142.5	146.6												
Green Ratio (g/C)				0.22	0.22		0.22	0.22	0.26	0.67	0.65	0.86	0.70	0.68	0.68												
Capacity (c), veh/h				305	361		282	409	421	75	2314	1360	271	1278	1266												
Volume-to-Capacity Ratio (X)				0.197	0.195		0.998	0.092	0.358	0.420	0.624	0.047	0.688	0.979	0.988												
Back of Queue (Q), ft/ln (95 th percentile)				135.5	155.7		705.3	79.6	289.4	57.7	774.2	57.8	168.3	1881.6	1937.1												
Back of Queue (Q), veh/ln (95 th percentile)				5.3	6.1		28.2	3.2	11.6	2.3	30.5	2.3	6.7	74.7	76.3												
Queue Storage Ratio (RQ) (95 th percentile)				0.90	0.16		2.35	0.27	1.29	0.29	1.11	0.29	0.84	2.35	2.40												
Uniform Delay (d ₁), s/veh				75.5	72.3		94.0	70.3	67.7	59.7	23.2	2.1	23.7	33.5	33.3												
Incremental Delay (d ₂), s/veh				0.4	0.4		52.9	0.1	0.7	5.2	1.3	0.1	2.8	13.5	15.3												
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
Control Delay (d), s/veh				75.9	72.7		146.9	70.5	68.4	64.9	24.5	2.2	26.5	47.0	48.6												
Level of Service (LOS)				E	E		F	E	E	E	C	A	C	D	D												
Approach Delay, s/veh / LOS				74.2		E	115.6		F	24.4		C	46.3		D												
Intersection Delay, s/veh / LOS				46.8						D																	
Multimodal Results				EB			WB			NB			SB														
Pedestrian LOS Score / LOS				2.48		B	2.33		B	2.09		B	1.90		B												
Bicycle LOS Score / LOS				0.70		A	1.26		A	1.76		B	2.44		B												

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information															
Agency	DBZ Traffic			Duration, h	0.250														
Analyst	DBZ			Analysis Date	Feb 17, 2021														
Jurisdiction				Time Period	PM Peak														
Urban Street	Bardstown Road			Analysis Year	2023 No Build														
Intersection	Brentlinger/Cedar Creek			File Name	Bardstown PM 23 NB.xus														
Project Description	Cedar Creek Apartments			Analysis Period	1> 4:45														
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				81	40	57	288	64	152	51	1576	65	193	2393	99				
Signal Information																			
Cycle, s	225.0	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	No	Simult. Gap E/W	On	Green	5.8	4.0	146.9	48.4	0.0	0.0									
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	5.1	3.6	0.0	0.0									
				Red	3.0	0.0	1.7	3.0	0.0	0.0									
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase				4		8		5		2		1		6					
Case Number				6.0		5.0		1.1		3.0		1.1		4.0					
Phase Duration, s				55.0		55.0		12.3		153.7		16.3		157.7					
Change Period, (Y+R _c), s				6.6		6.6		6.5		6.8		6.5		6.8					
Max Allow Headway (MAH), s				5.2		5.2		5.0		0.0		5.0		0.0					
Queue Clearance Time (g _s), s				20.3		51.4		4.1				9.2							
Green Extension Time (g _e), s				4.3		0.0		0.1		0.0		0.6		0.0					
Phase Call Probability				1.00		1.00		0.96				1.00							
Max Out Probability				0.01		1.00		0.00				0.09							
Movement Group Results				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16				
Adjusted Flow Rate (v), veh/h				83	99		294	65	155	52	1608	66	183	1178	1178				
Adjusted Saturation Flow Rate (s), veh/h/ln				1336	1678		1317	1900	1610	1810	1781	1572	1810	1885	1859				
Queue Service Time (g _s), s				12.1	11.1		38.3	6.3	17.8	2.1	64.3	1.3	7.2	100.3	106.4				
Cycle Queue Clearance Time (g _c), s				18.3	11.1		49.4	6.3	17.8	2.1	64.3	1.3	7.2	100.3	106.4				
Green Ratio (g/C)				0.22	0.22		0.22	0.22	0.26	0.68	0.65	0.87	0.70	0.68	0.68				
Capacity (c), veh/h				282	361		256	409	416	107	2326	1365	228	1273	1255				
Volume-to-Capacity Ratio (X)				0.293	0.274		1.147	0.160	0.373	0.484	0.691	0.049	0.800	0.926	0.939				
Back of Queue (Q), ft/ln (95 th percentile)				192.9	216.2		810.3	139.8	297.6	93.7	905.5	59	212.2	824.7	850.9				
Back of Queue (Q), veh/ln (95 th percentile)				7.6	8.4		32.4	5.6	11.9	3.7	35.6	2.3	8.5	32.7	33.5				
Queue Storage Ratio (RQ) (95 th percentile)				1.29	0.22		2.70	0.47	1.32	0.47	1.29	0.29	1.06	1.03	1.06				
Uniform Delay (d ₁), s/veh				79.2	73.7		95.7	71.4	68.4	48.1	24.7	2.0	35.4	13.8	13.6				
Incremental Delay (d ₂), s/veh				0.8	0.6		101.6	0.3	0.8	4.7	1.7	0.1	2.0	2.4	2.9				
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh				80.0	74.2		197.4	71.6	69.2	52.8	26.4	2.1	37.5	16.1	16.5				
Level of Service (LOS)				F	E		F	E	E	D	C	A	D	B	B				
Approach Delay, s/veh / LOS				76.9		E	142.8		F	26.3		C	17.8		B				
Intersection Delay, s/veh / LOS				35.9						D									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				2.48		B	2.33		B	2.09		B	1.90		B				
Bicycle LOS Score / LOS				0.79		A	1.34		A	1.91		B	2.75		C				

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information												
Agency	DBZ Traffic			Duration, h	0.250											
Analyst	DBZ			Analysis Date	Feb 17, 2021								Area Type	Other		
Jurisdiction				Time Period	PM Peak								PHF	0.98		
Urban Street	Bardstown Road			Analysis Year	2023 Build								Analysis Period	1> 4:45		
Intersection	Brentlinger/Cedar Creek			File Name	Bardstown PM 23 B R.xus											
Project Description	Cedar Creek Apartments															
Demand Information				EB			WB			NB			SB			
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h				103	51	72	288	87	152	70	1576	65	193	2393	133	
Signal Information																
Cycle, s	225.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	5.9	3.8	147.0	48.4	0.0	0.0										
Yellow	3.5	0.0	5.1	3.6	0.0	0.0										
Red	3.0	0.0	1.7	3.0	0.0	0.0										
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase					4		8	5	2	1	6					
Case Number					5.0		5.0	1.1	3.0	1.1	4.0					
Phase Duration, s					55.0		55.0	12.4	153.8	16.2	157.6					
Change Period, (Y+R _c), s					6.6		6.6	6.5	6.8	6.5	6.8					
Max Allow Headway (MAH), s					5.2		5.2	5.0	0.0	5.0	0.0					
Queue Clearance Time (g _s), s					26.8		51.4	5.0		9.2						
Green Extension Time (g _e), s					4.6		0.0	0.2	0.0	0.5	0.0					
Phase Call Probability					1.00		1.00	0.99		1.00						
Max Out Probability					0.06		1.00	0.00		0.09						
Movement Group Results				EB			WB			NB			SB			
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16	
Adjusted Flow Rate (v), veh/h				105	52	73	294	89	155	71	1608	66	182	1191	1191	
Adjusted Saturation Flow Rate (s), veh/h/ln				1308	1856	1610	1374	1900	1610	1810	1781	1572	1810	1885	1850	
Queue Service Time (g _s), s				16.2	5.1	8.4	44.3	8.7	17.8	3.0	64.3	1.3	7.2	104.4	113.8	
Cycle Queue Clearance Time (g _c), s				24.8	5.1	8.4	49.4	8.7	17.8	3.0	64.3	1.3	7.2	104.4	113.8	
Green Ratio (g/C)				0.22	0.22	0.22	0.22	0.22	0.26	0.68	0.65	0.87	0.70	0.67	0.67	
Capacity (c), veh/h				263	399	346	303	409	416	103	2326	1365	228	1272	1248	
Volume-to-Capacity Ratio (X)				0.400	0.130	0.212	0.971	0.217	0.373	0.694	0.691	0.049	0.798	0.936	0.954	
Back of Queue (Q), ft/ln (95 th percentile)				241.8	114.4	161	717.2	193.3	300.1	133.6	896.3	58.3	201	765.1	793.3	
Back of Queue (Q), veh/ln (95 th percentile)				9.5	4.5	6.4	28.7	7.7	12.0	5.3	35.3	2.3	8.0	30.4	31.2	
Queue Storage Ratio (RQ) (95 th percentile)				1.61	0.11	0.00	2.39	0.64	1.33	0.67	1.00	0.29	1.01	0.85	0.87	
Uniform Delay (d ₁), s/veh				82.9	71.3	72.6	92.1	72.3	68.5	54.3	24.7	2.0	35.3	13.6	13.5	
Incremental Delay (d ₂), s/veh				1.4	0.2	0.4	44.0	0.4	0.8	11.3	1.7	0.1	1.5	2.0	2.8	
Initial Queue Delay (d ₃), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh				84.3	71.5	73.0	136.1	72.7	69.3	65.6	26.4	2.1	36.8	15.6	16.3	
Level of Service (LOS)				F	E	E	F	E	E	E	C	A	D	B	B	
Approach Delay, s/veh / LOS				77.8	E	106.3	F	27.1	C	17.4	B					
Intersection Delay, s/veh / LOS				32.9						C						
Multimodal Results				EB			WB			NB			SB			
Pedestrian LOS Score / LOS				2.48	B	2.33	B	2.09	B	2.09	B					
Bicycle LOS Score / LOS				0.87	A	1.37	A	1.93	B	2.78	C					

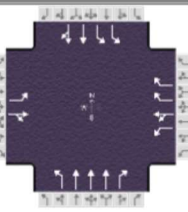
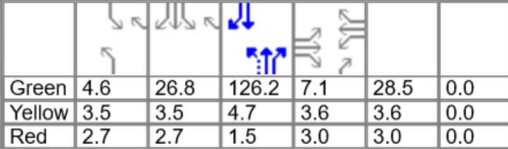

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information											
Agency	DBZ Traffic			Duration, h	0.250										
Analyst	DBZ			Analysis Date	Feb 17, 2021										
Jurisdiction				Time Period	AM Peak										
Urban Street	Bardstown Road			Analysis Year	2023 No Build										
Intersection	Bartley/Southpointe			File Name	Bardstown AM 23 NB.xus										
Project Description	Cedar Creek Apt														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				22	4	9	33	2	139	11	2485	140	117	1147	10
Signal Information															
Cycle, s	180.0	Reference Phase	2	Green	2.6	2.9	128.8	5.0	11.9	0.0					
Offset, s	0	Reference Point	End	Yellow	4.0	0.0	5.1	4.0	3.6	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Red	3.0	0.0	3.0	3.0	3.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					10.0		9.0	2.0	3.0	1.1	4.0				
Phase Duration, s					12.0		18.5	9.6	136.9	12.5	139.8				
Change Period, (Y+R _c), s					7.0		6.6	7.0	8.1	6.5	8.1				
Max Allow Headway (MAH), s					3.2		5.3	3.1	0.0	5.1	0.0				
Queue Clearance Time (g _s), s					4.3		10.9	3.1		3.6					
Green Extension Time (g _e), s					0.0		1.0	0.0	0.0	0.6	0.0				
Phase Call Probability					0.84		1.00	0.43		1.00					
Max Out Probability					0.00		0.00	0.00		0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				23	14		35	2	146	11	2536	143	114	566	565
Adjusted Saturation Flow Rate (s), veh/h/ln				1781	1663		1781	1870	1403	1781	1698	1585	1702	1870	1865
Queue Service Time (g _s), s				2.3	1.5		3.3	0.2	8.9	1.1	44.9	2.3	1.6	31.9	31.7
Cycle Queue Clearance Time (g _c), s				2.3	1.5		3.3	0.2	8.9	1.1	44.9	2.3	1.6	31.9	31.7
Green Ratio (g/C)				0.03	0.03		0.07	0.07	0.10	0.01	0.72	0.78	0.75	0.73	0.73
Capacity (c), veh/h				50	47		118	124	279	26	3647	1240	309	1369	1365
Volume-to-Capacity Ratio (X)				0.463	0.293		0.294	0.017	0.524	0.440	0.695	0.115	0.370	0.414	0.414
Back of Queue (Q), ft/ln (95 th percentile)				50.4	29.5		73.5	4.3	151.7	24.6	482.7	30.3	45.8	544.7	539.6
Back of Queue (Q), veh/ln (95 th percentile)				2.0	1.2		2.9	0.2	6.0	1.0	19.0	1.2	1.8	21.4	21.2
Queue Storage Ratio (RQ) (95 th percentile)				0.17	0.10		0.49	0.02	0.38	0.16	0.44	0.15	0.11	0.61	0.60
Uniform Delay (d ₁), s/veh				86.1	85.7		80.0	78.5	77.0	88.9	11.2	2.6	15.6	18.2	17.9
Incremental Delay (d ₂), s/veh				2.5	1.3		1.9	0.1	2.2	1.5	0.4	0.1	1.0	0.9	0.9
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh				88.6	87.0		82.0	78.6	79.1	90.4	11.6	2.7	16.6	19.0	18.8
Level of Service (LOS)				F	F		F	E	E	F	B	A	B	B	B
Approach Delay, s/veh / LOS				88.0		F	79.7		E	11.5		B	18.7		B
Intersection Delay, s/veh / LOS				17.3						B					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				2.63		C	2.63		C	2.39		B	1.87		B
Bicycle LOS Score / LOS				0.55		A	0.79		A	2.01		B	1.59		B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information						Diagram																	
Agency	DBZ Traffic			Duration, h	0.250																						
Analyst	DBZ			Analysis Date	Feb 16, 2021							Area Type	Other														
Jurisdiction				Time Period	AM Peak							PHF	0.95														
Urban Street	Bardstown Road			Analysis Year	2023 Build							Analysis Period	1> 7:15														
Intersection	Bartley/Southpointe			File Name	Bardstown AM 23 B R.xus																						
Project Description	Cedar Creek Apt Right																										
Demand Information				EB			WB			NB			SB														
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R												
Demand (v), veh/h				22	4	9	33	2	139	11	2528	140	117	1164	10												
Signal Information																											
Cycle, s	180.0	Reference Phase	2	Green	2.6	1.8	126.6	5.0	11.8	0.0																	
Offset, s	0	Reference Point	End	Yellow	4.0	3.5	5.1	4.0	3.6	0.0																	
Uncoordinated	No	Simult. Gap E/W	Off	Red	0.0	3.0	3.0	3.0	3.0	0.0																	
Force Mode	Fixed	Simult. Gap N/S	On																								
Timer Results				EBL			EBT			WBL			WBT			NBL			NBT			SBL			SBT		
Assigned Phase							4						8			5			2			1			6		
Case Number							10.0						9.0			1.1			3.0			2.0			4.0		
Phase Duration, s							12.0						18.4			6.6			134.7			14.9			143.0		
Change Period, (Y+R c), s							7.0						6.6			4.0			8.1			6.5			8.1		
Max Allow Headway (MAH), s							3.2						5.3			3.0			0.0			5.0			0.0		
Queue Clearance Time (g s), s							4.3						10.8			2.3						7.9					
Green Extension Time (g e), s							0.0						1.0			0.0			0.0			0.6			0.0		
Phase Call Probability							0.84						1.00			0.43						1.00					
Max Out Probability							0.00						0.00			0.00						0.00					
Movement Group Results				EB			WB			NB			SB														
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R												
Assigned Movement				7	4	14	3	8	18	5	2	12	1	6	16												
Adjusted Flow Rate (v), veh/h				23	14		35	2	146	11	2580	143	113	567	565												
Adjusted Saturation Flow Rate (s), veh/h/ln				1810	1689		1781	1900	1403	1781	1698	1585	1702	1870	1865												
Queue Service Time (g s), s				2.3	1.4		3.3	0.2	8.8	0.3	47.9	2.2	5.9	31.9	31.7												
Cycle Queue Clearance Time (g c), s				2.3	1.4		3.3	0.2	8.8	0.3	47.9	2.2	5.9	31.9	31.7												
Green Ratio (g/C)				0.03	0.03		0.07	0.07	0.11	0.72	0.70	0.77	0.72	0.75	0.75												
Capacity (c), veh/h				51	47		117	125	315	344	3582	1218	159	1401	1397												
Volume-to-Capacity Ratio (X)				0.456	0.289		0.297	0.017	0.465	0.033	0.720	0.117	0.712	0.405	0.405												
Back of Queue (Q), ft/ln (95 th percentile)				49.5	29		73.6	4.3	148.6	5.4	467.7	27	124.5	536	530.2												
Back of Queue (Q), veh/ln (95 th percentile)				2.0	1.2		2.9	0.2	5.9	0.2	18.4	1.1	4.8	21.1	20.9												
Queue Storage Ratio (RQ) (95 th percentile)				0.17	0.10		0.49	0.02	0.37	0.04	0.43	0.13	0.31	0.60	0.59												
Uniform Delay (d 1), s/veh				86.1	85.7		80.1	78.7	74.8	9.2	12.0	2.6	83.0	17.6	17.4												
Incremental Delay (d 2), s/veh				2.4	1.2		2.0	0.1	1.5	0.0	0.4	0.1	7.7	0.8	0.8												
Initial Queue Delay (d 3), s/veh				0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
Control Delay (d), s/veh				88.5	86.9		82.1	78.7	76.4	9.2	12.4	2.7	90.7	18.4	18.2												
Level of Service (LOS)				F	F		F	E	E	A	B	A	F	B	B												
Approach Delay, s/veh / LOS				87.9 / F			77.5 / E			11.9 / B			24.9 / C														
Intersection Delay, s/veh / LOS				19.3						B																	
Multimodal Results				EB			WB			NB			SB														
Pedestrian LOS Score / LOS				2.63 / C			2.63 / C			2.39 / B			1.87 / B														
Bicycle LOS Score / LOS				0.55 / A			0.79 / A			2.04 / B			1.61 / B														

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information											
Agency	DBZ Traffic			Duration, h	0.250										
Analyst	DBZ	Analysis Date	Feb 17, 2021	Area Type	Other										
Jurisdiction		Time Period	PM Peak	PHF	0.96										
Urban Street	Bardstown Road		Analysis Year	2023 No Build	Analysis Period	1> 4:45									
Intersection	Bartley/Wingfield		File Name	Bardstown PM 23 NB.xus											
Project Description	Cedar Creek Apartments														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	40	8	14	379	8	298	23	1550	211	521	2223	0			
Signal Information															
Cycle, s	225.0	Reference Phase	2	Green	4.6	26.8	126.2	7.1	28.5	0.0					
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	4.7	3.6	3.6	0.0					
Uncoordinated	No	Simult. Gap E/W	Off	Red	2.7	2.7	1.5	3.0	3.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					10.0		9.0	1.1	3.0	2.0	4.0				
Phase Duration, s					13.7		35.1	10.8	132.4	43.8	165.4				
Change Period, (Y+R _c), s					6.6		6.6	6.2	6.2	6.2	6.2				
Max Allow Headway (MAH), s					3.2		3.2	3.1	0.0	3.1	0.0				
Queue Clearance Time (g _s), s					7.2		26.9	3.3		36.4					
Green Extension Time (g _e), s					0.0		1.6	0.0	0.0	1.3	0.0				
Phase Call Probability					0.98		1.00	0.77		1.00					
Max Out Probability					0.01		0.00	0.00		0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16			
Adjusted Flow Rate (v), veh/h	42	23		201	202	310	24	1604	218	537	2291	0			
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1678		1781	1785	1403	1781	1698	1585	1730	1885	0			
Queue Service Time (g _s), s	5.2	3.0		24.9	24.9	19.8	1.3	29.5	4.1	34.4	106.3	0.0			
Cycle Queue Clearance Time (g _c), s	5.2	3.0		24.9	24.9	19.8	1.3	29.5	4.1	34.4	106.3	0.0			
Green Ratio (g/C)	0.03	0.03		0.13	0.13	0.30	0.58	0.56	0.69	0.92	0.71				
Capacity (c), veh/h	64	53		234	234	825	105	2857	1090	594	2684				
Volume-to-Capacity Ratio (X)	0.650	0.433		0.862	0.862	0.376	0.226	0.561	0.200	0.904	0.854	0.000			
Back of Queue (Q), ft/ln (95 th percentile)	114.8	62.4		444.9	445.9	293.6	26.3	368.2	59.2	457.5	1314.1	0			
Back of Queue (Q), veh/ln (95 th percentile)	4.5	2.5		17.5	17.6	11.6	1.0	14.5	2.3	18.0	52.1	0.0			
Queue Storage Ratio (RQ) (95 th percentile)	0.38	0.21		1.48	1.49	0.73	0.18	0.41	0.30	1.14	1.10	0.00			
Uniform Delay (d ₁), s/veh	107.0	107.0		95.8	95.8	63.1	35.5	15.3	3.9	94.4	29.2				
Incremental Delay (d ₂), s/veh	4.1	2.1		3.8	3.8	0.1	0.3	0.6	0.3	1.0	0.5	0.0			
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay (d), s/veh	111.1	109.0		99.5	99.5	63.2	35.8	15.8	4.2	95.4	29.7				
Level of Service (LOS)	F	F		F	F	E	D	B	A	F	C				
Approach Delay, s/veh / LOS	110.4		F	83.7		F	14.7		B	42.2		D			
Intersection Delay, s/veh / LOS	39.1						D								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.63		C	2.64		C	2.43		B	1.89		B			
Bicycle LOS Score / LOS	0.59		A	1.66		B	1.51		B	2.85		C			

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information											
Agency	DBZ Traffic			Duration, h	0.250										
Analyst	DBZ	Analysis Date	Feb 17, 2021	Area Type	Other										
Jurisdiction		Time Period	PM Peak	PHF	0.96										
Urban Street	Bardstown Road			Analysis Year	2023 Build										
Intersection	Bartley/Wingfield			File Name	Bardstown PM 23 B R.xus										
Project Description	Cedar Creek Apartments														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	40	8	14	379	8	298	23	1602	206	503	2326	12			
Signal Information															
Cycle, s	225.0	Reference Phase	2	Green	4.6	24.3	126.6	9.4	28.2	0.0					
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	4.7	3.6	3.6	0.0					
Uncoordinated	No	Simult. Gap E/W	Off	Red	2.7	2.7	1.5	3.0	3.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					10.0		9.0	1.1	3.0	2.0	4.0				
Phase Duration, s					16.0		34.8	10.8	132.8	41.3	163.3				
Change Period, (Y+R c), s					6.6		6.6	6.2	6.2	6.2	6.2				
Max Allow Headway (MAH), s					3.2		3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g s), s					11.4		26.7	3.3		34.1					
Green Extension Time (g e), s					0.0		1.5	0.0	0.0	1.0	0.0				
Phase Call Probability					0.98		1.00	0.77		1.00					
Max Out Probability					1.00		0.00	0.00		0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16			
Adjusted Flow Rate (v), veh/h	42	23		201	202	310	23	1635	210	501	1164	1164			
Adjusted Saturation Flow Rate (s), veh/h/ln	1795	1691		1795	1799	1414	1781	1698	1585	1730	1885	1882			
Queue Service Time (g s), s	5.1	3.0		24.7	24.7	19.9	1.3	32.2	4.3	32.1	115.3	115.6			
Cycle Queue Clearance Time (g c), s	5.1	3.0		24.7	24.7	19.9	1.3	32.2	4.3	32.1	115.3	115.6			
Green Ratio (g/C)	0.04	0.04		0.13	0.13	0.29	0.58	0.56	0.69	0.91	0.70	0.70			
Capacity (c), veh/h	75	71		233	234	796	96	2868	1091	555	1325	1323			
Volume-to-Capacity Ratio (X)	0.555	0.324		0.863	0.863	0.390	0.245	0.570	0.193	0.902	0.878	0.880			
Back of Queue (Q), ft/ln (95 th percentile)	114.9	60.7		451.6	452.4	295.5	26.8	385.2	60.1	427.2	1413.8	1424.3			
Back of Queue (Q), veh/ln (95 th percentile)	4.6	2.4		17.9	18.0	11.7	1.1	15.2	2.4	16.8	56.1	56.1			
Queue Storage Ratio (RQ) (95 th percentile)	0.38	0.20		1.51	1.51	0.74	0.18	0.48	0.30	1.07	1.18	1.18			
Uniform Delay (d 1), s/veh	105.8	104.7		95.9	95.9	65.2	40.5	16.8	4.3	96.4	34.3	33.8			
Incremental Delay (d 2), s/veh	5.3	1.0		8.7	8.7	0.1	0.3	0.6	0.3	1.2	1.1	1.1			
Initial Queue Delay (d 3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay (d), s/veh	111.1	105.7		104.7	104.7	65.3	40.8	17.4	4.6	97.6	35.4	35.0			
Level of Service (LOS)	F	F		F	F	E	D	B	A	F	D	C			
Approach Delay, s/veh / LOS	109.2	F		87.6	F		16.3	B		46.2	D				
Intersection Delay, s/veh / LOS	42.1						D								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.63	C		2.64	C		2.43	B		1.89	B				
Bicycle LOS Score / LOS	0.59	A		1.66	B		1.54	B		2.93	C				