final report

February 25, 2021
Revised March 29, 2021

Traffic Impact Study

Cedar Creek Crossings
7714 Bardstown Road
Louisville, KY

Prepared for

Louisville Metro Planning Commission
Kentucky Transportation Cabinet

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INTRODUCTION

The development plan for 7714 Bardstown Road in Louisville, KY shows six buildings, which are proposed as general retail (28,025 square feet), a furniture store (3,015 square feet), medical office (3,500 square feet), a fast-food restaurant (4,600 square feet), a fast casual restaurant (2,330 square feet) and a coffee shop (2,320 square feet). **Figure 1** displays a map of the site. Access to the center will be from a full access driveway and a proposed right-in/right-out on Bardstown Road, and full access driveway on Cedar Creek 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 intersection of Bardstown Road with Cedar Creek Road/Brentlinger Lane, and Southpointe Boulevard/Bartley Drive, and the entrances.

Figure 1. Site Map

EXISTING CONDITIONS

Bardstown Road, US 31E, is maintained by the Kentucky Transportation Cabinet (KYTC) with an estimated 2020 ADT of 48,000 vehicles per day between I 265 and Cedar Creek Road, as estimated from the turning movement count. The road is a four-lane highway with twelve-foot lanes, a center turn lane and eight-foot paved shoulders. An additional northbound lane begins near the entrance of Cedar Creek Baptist Church. The speed limit is 50 mph. There are no sidewalks. The intersection with Cedar Creek Road /Brentlinger Lane is controlled with a traffic signal. There are left turn lanes on all approaches. The northbound and westbound approaches have right turn lanes.

Peak hour traffic counts for the intersections were obtained on March 3, 2020. The a.m. peak hour occurred between 7:15 and 8:15 a.m. The p.m. peak occurred between 4:45 and 5:45 p.m. **Figure 2** illustrates the existing a.m. and p.m. peak hour traffic volumes.

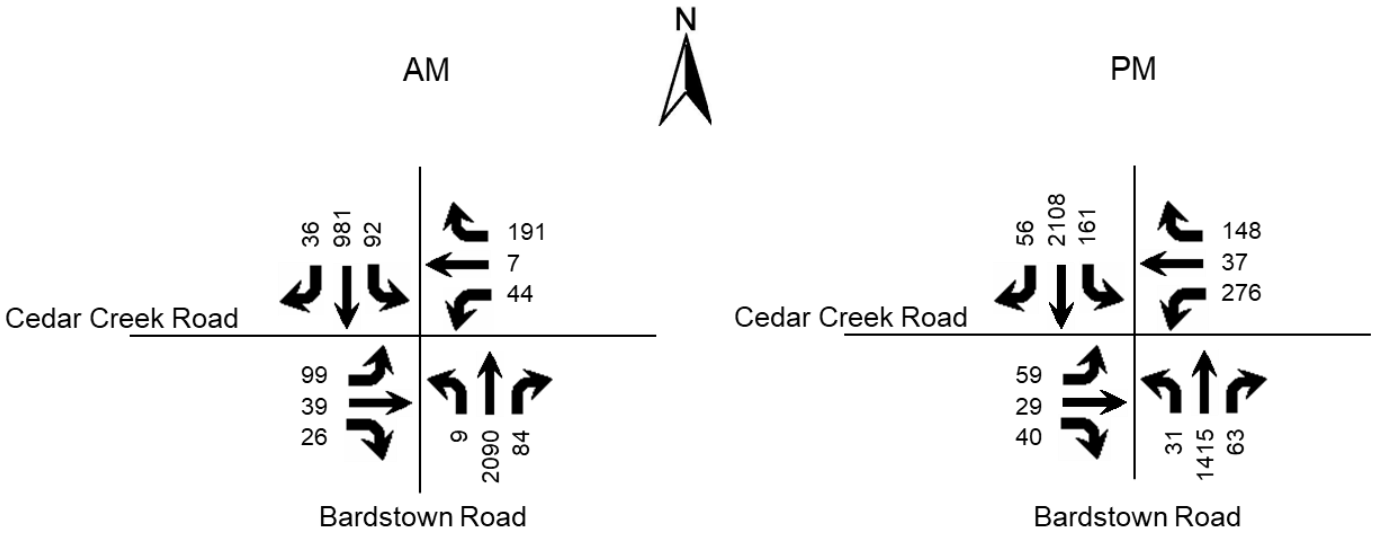


Figure 2. Existing (2020) Peak Hour Volumes

FUTURE CONDITIONS

The project completion date is 2023. An annual growth rate of 1.0 percent was applied to all 2020 volumes except Bardstown Road through traffic; 0.5 percent annual growth was used for Bardstown Road through traffic. This is determined by reviewing 2018 and 2015 counts at the intersection of Cedar Creek Road and Bardstown 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), Bartley Drive Credit Union, 168 apartments at 7703 Cedar Creek Drive, and 324 apartments at 8000 Cedar Creek Drive are included were included. **Figure 3** displays the 2023 No Build peak hour volumes.

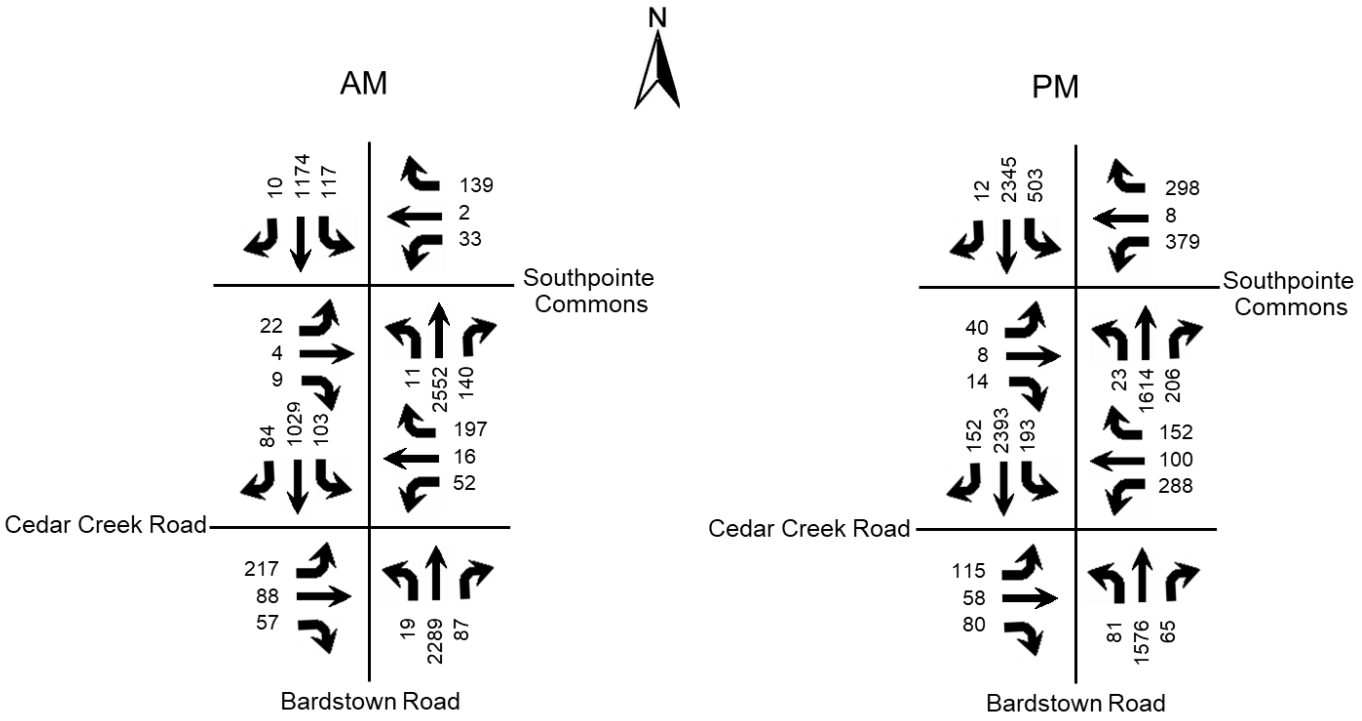


Figure 3. No Build 2023 Peak Hour Volumes

TRIP GENERATION

The Institute of Transportation Engineers Trip Generation Manual, 10th Edition contains trip generation rates for a wide range of land uses. The land uses of "Shopping Center (820)", "Medical Office (720)", "Furniture Store (890)", "Fast-Food Restaurant with drive-thru (934)", "Fast Casual (930)", and "Coffee Shop with Drive-Through Window (937)" were reviewed and determined to be the best match. The trip generation results are listed in **Table 1**. The new trips were assigned to the highway network with the percentages shown in **Figure 4**. Pass-by trips were assigned using the peak directional direction of the adjacent streets. The pass-by trips are shown in parenthesis. **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

	A.M. Peak Hour			P.M. Peak Hour		
Land Use	Trips	In	Out	Trips	In	Out
Shopping Center (28,025 sq. ft.)	26	16	10	212	102	110
Furniture Store (3,015 sq. ft.)	2	2	0	2	1	1
Medical Office (3,500 sq. ft.)	11	9	2	14	4	10
Fast-Food with drive-thru (4,600 sq. ft.)	185	94	91	150	78	72
Fast Casual (2,330 sq. ft.)	5	3	2	33	18	15
Coffee Shop w/ Drive Thru (2,320 sq. ft.)	206	105	101	101	51	50
Total	**435**	**229**	**206**	**512**	**254**	**258**
Pass-by Trips	192	98	94	212	107	105
TOTAL New Trips	**243**	**131**	**112**	**300**	**147**	**153**

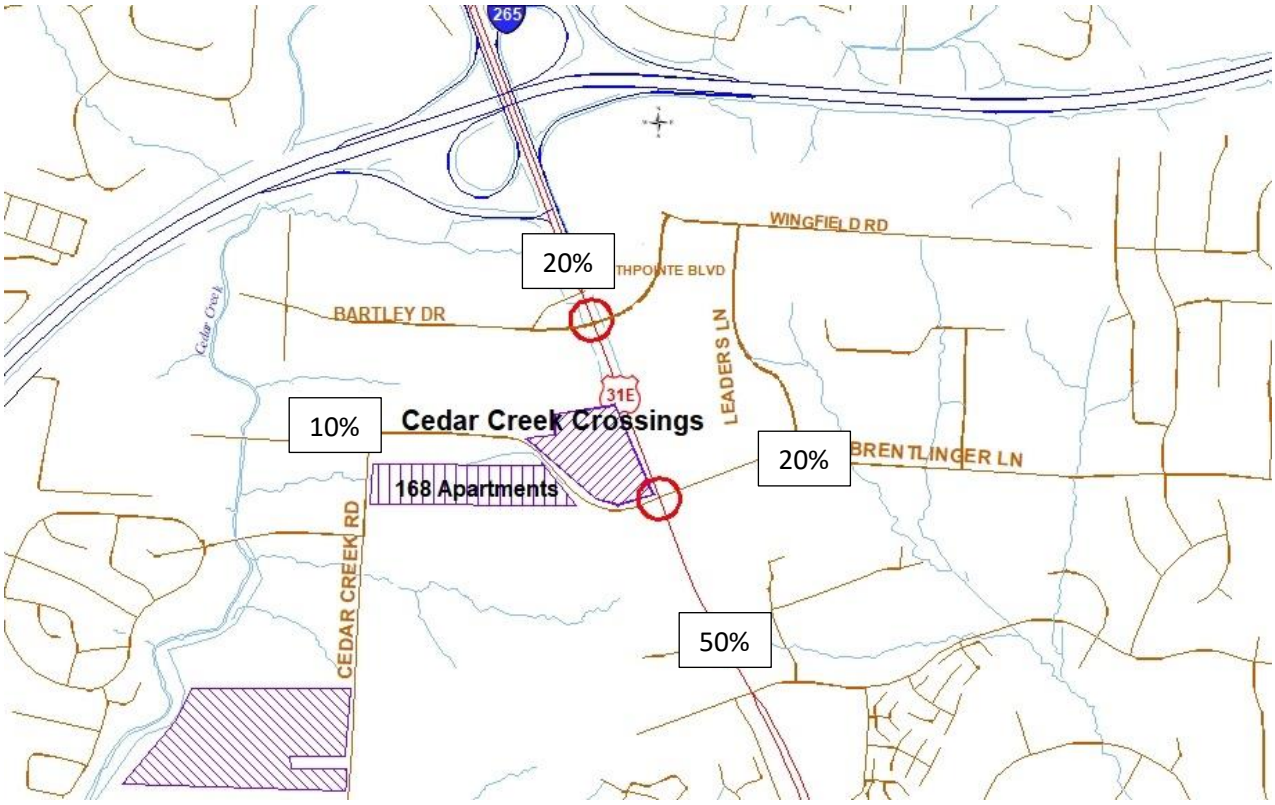


Figure 4. Trip Distribution Percentages

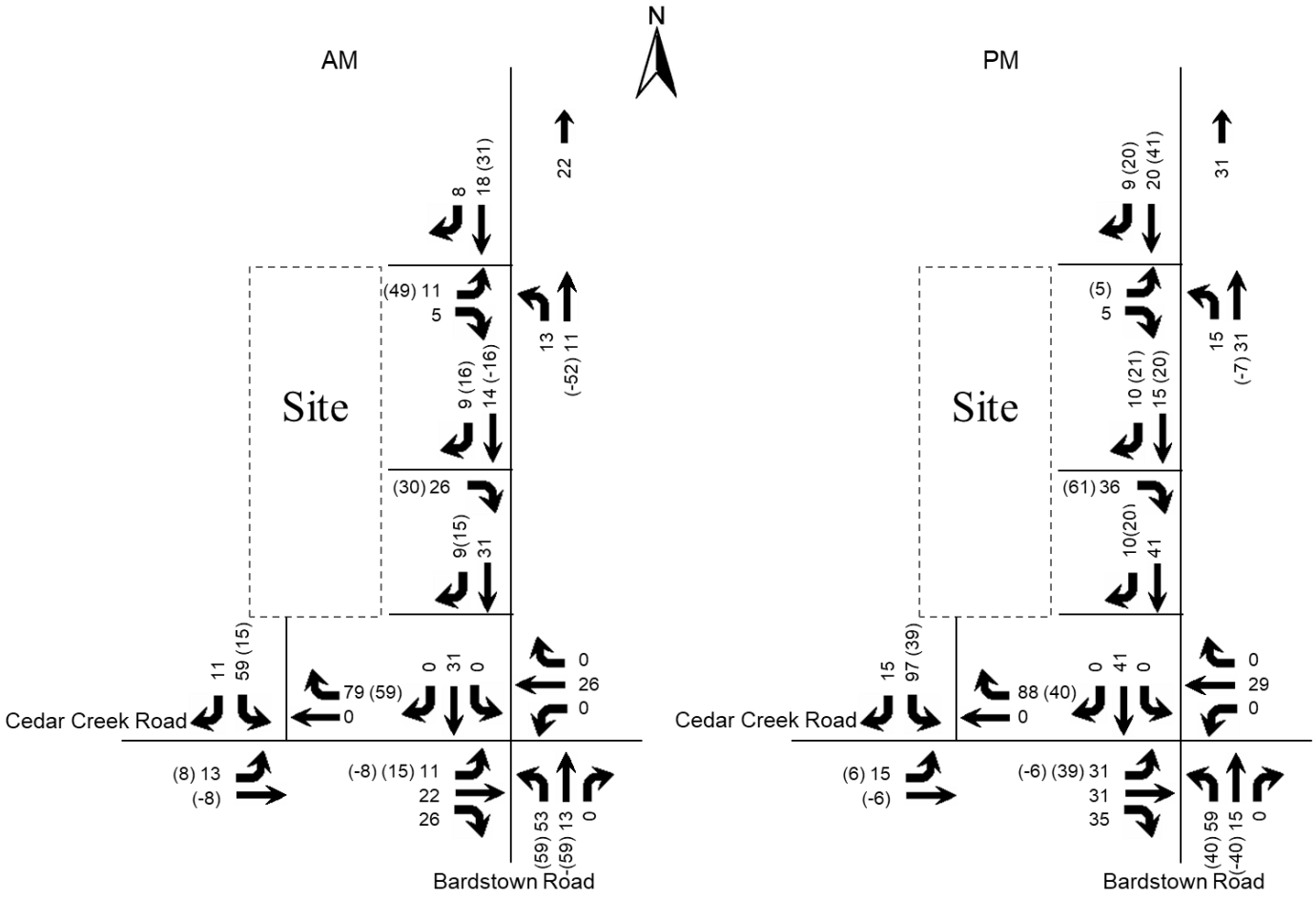


Figure 5. Peak Hour Trips Generated by Site

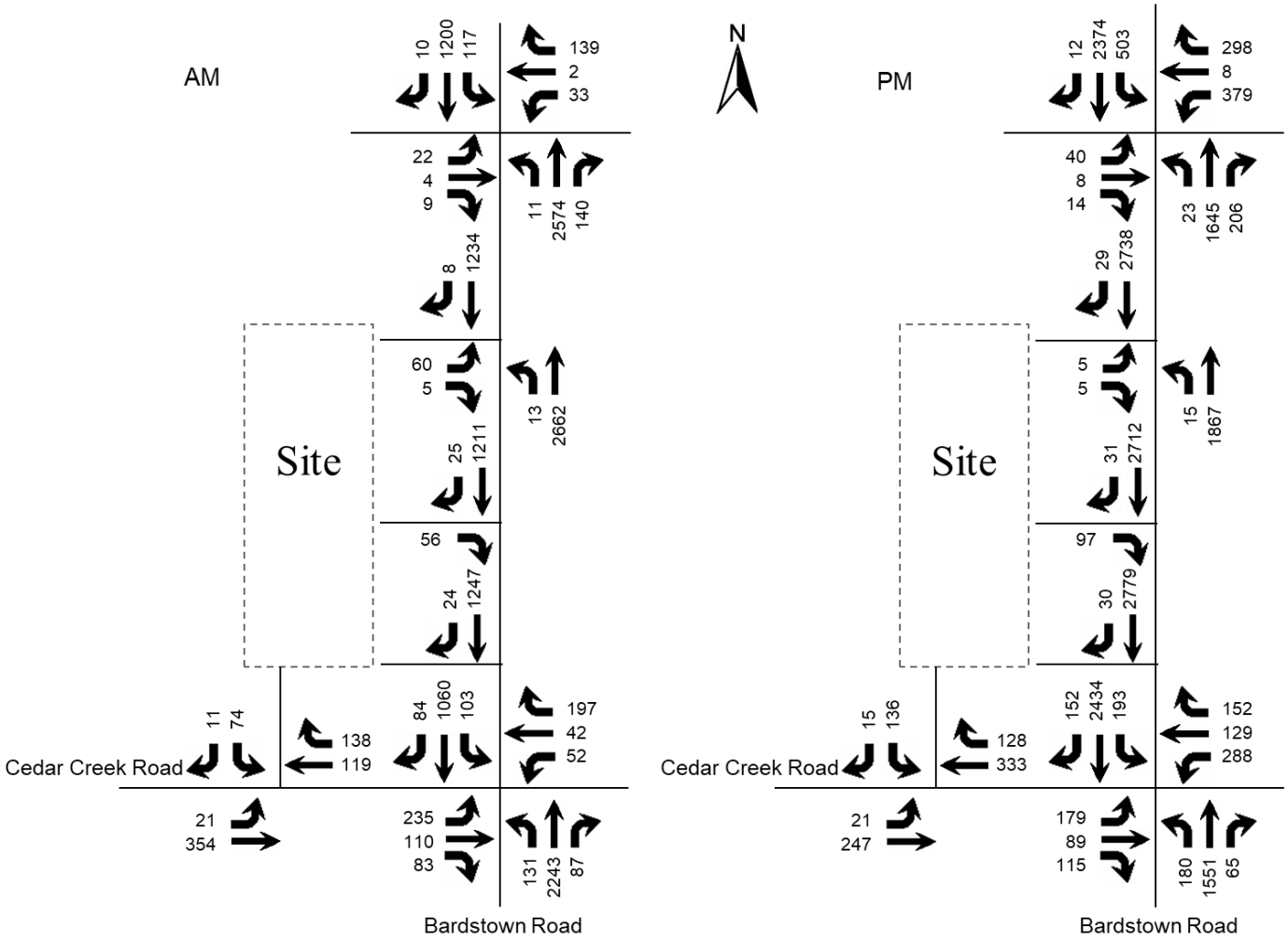


Figure 6. Build 2023 Peak Hour Volumes

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**.

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
Bardstown Road at Cedar Creek Road	**C 22.7**	**C 32.2**	**C 32.8**	**D 46.4**	**D 35.2**	**D 46.5**
Cedar Creek Road Eastbound	E 73.6	F 87.0	F 107.1	E 74.2	E 77.7	F 85.3
Brentlinger Lane Westbound	E 79.3	E 73.3	E 70.8	F 115.6	F 109.2	F 123.5
Bardstown Road Northbound	B 19.9	C 30.0	C 26.8	C 24.4	C 28.0	D 37.6
Bardstown Road Southbound	A 8.8	A 9.8	A 8.4	D 45.6	C 20.1	C 29.4
Bardstown Road at Southpointe Blvd		**C 21.1**	**B 19.5**		**D 39.1**	**D 40.1**
Bartley Drive Eastbound		F 83.3	F 88.0		F 113.4	F 113.4
Southpointe Boulevard Westbound		E 77.5	E 77.5		F 84.6	F 84.7
Bardstown Road Northbound		B 13.9	B 11.7		B 15.0	B 16.1
Bardstown Road Southbound		C 27.0	C 25.9		D 42.0	D 43.4
Bardstown Road at Entrance						
Entrance Eastbound			D 30.9			F 154.0
Bardstown Road Northbound (left)			B 10.8			F 89.7
Cedar Creek Road at Entrance						
Cedar Creek Road Eastbound (left)			A 7.8			A 8.4
Entrance Southbound			B 14.4			C 19.8

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 July, 2020. The traffic impact policy requires using volumes for ten years beyond build-out, or 2033. The 2033 volumes were determined by applying a 0.5 percent annual growth rate from 2023. **Figure 7** illustrates the 2033 No Build volumes. **Figure 8** illustrates the 2033 Build Volumes. Using the volumes in Figure 8, a right turn lane

is required at the entrance on Bardstown Road. No turn lanes are required on Cedar Creek Road at the entrance. **Table 3** summarizes the delay and Level of Service for 2033.

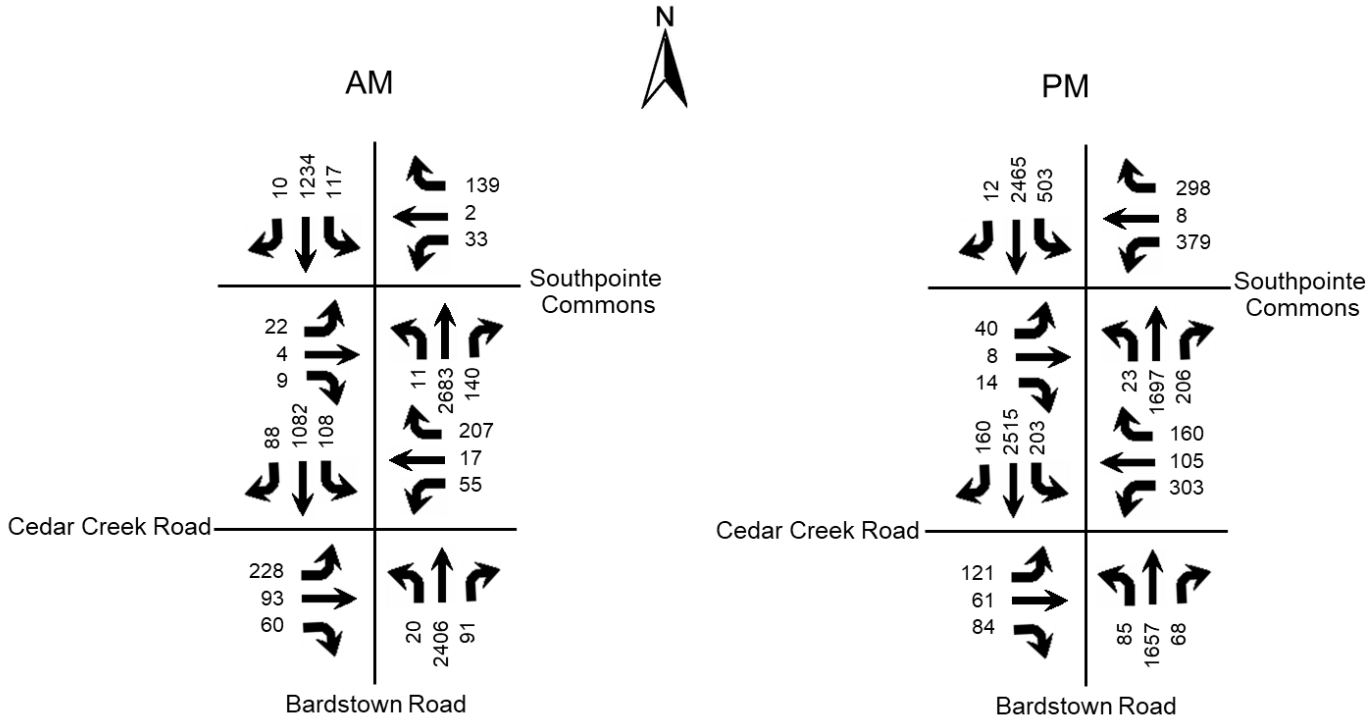


Figure 7. 2033 No Build Peak Hour Volumes

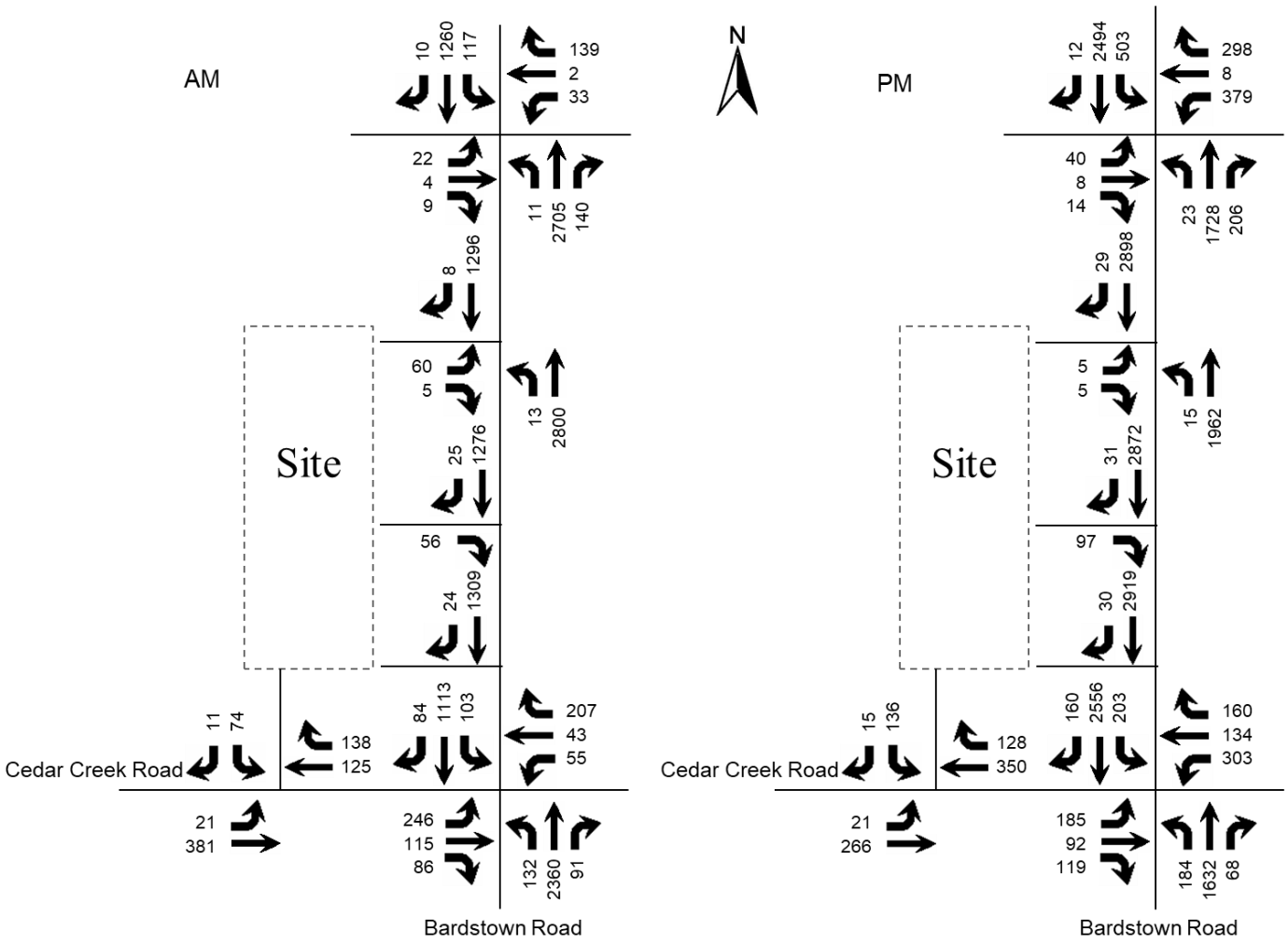


Figure 8. 2033 Build Peak Hour Volumes

Table 3. Peak Hour Level of Service

Approach	A.M.			P.M.		
	2020 Existing	2033 No Build	2033 Build	2020 Existing	2033 No Build	2033 Build
Bardstown Road at Cedar Creek Road	**C 22.7**	**D 40.4**	**D 38.3**	**D 46.4**	**D 38.2**	**D 49.8**
Cedar Creek Road Eastbound	E 73.6	F 92.4	F 115.5	E 74.2	E 78.0	F 88.2
Brentlinger Lane Westbound	E 79.3	E 72.3	E 71.5	F 115.6	F 118.7	F 135.9
Bardstown Road Northbound	B 19.9	D 42.7	C 33.9	C 24.4	C 29.8	D 39.1
Bardstown Road Southbound	A 8.8	B 10.3	A 9.3	D 45.6	C 22.1	C 31.4
Bardstown Road at Southpointe Blvd		**C 21.2**	**B 19.8**		**D 39.2**	**D 39.8**
Bartley Drive Eastbound		F 88.0	F 88.0		F 113.4	F 113.4
Southpointe Boulevard Westbound		E 77.6	E 77.7		F 85.1	F 85.2
Bardstown Road Northbound		B 14.9	B 12.7		B 14.3	B 16.2
Bardstown Road Southbound		C 25.8	C 25.7		D 43.4	D 43.4
Bardstown Road at Entrance						
Entrance Eastbound			D 34.6			F 381.6
Bardstown Road Northbound (left)			B 11.2			F 181.4
Cedar Creek Road at Entrance						
Cedar Creek Road Eastbound (left)			A 7.9			A 8.5
Entrance Southbound			B 14.9			C 21.1

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 2023 and 2033, there will be an impact to the existing highway network. The delays experienced in the area will increase. A right turn lane will be required at the entrances on Bardstown Road. Proposed mitigation for the intersection of Bardstown Road at Cedar Creek Road is the construction of a southbound right turn lane on Bardstown Road.

APPENDIX

Traffic Counts

Jefferson County (Louisville), KY
Classified Turn Movement Count

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

Lat/Long
38.134142°, -85.579609°

Weather
Fair
55° F

Date
Tuesday, March 3, 2020

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

hello@marrtraffic.com
www.marrtraffic.com

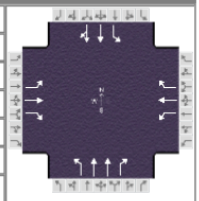
	Southbound US-150 Bardstown Rd (North)						Westbound Brentlinger Ln						Northbound US-150 Bardstown Rd (South)						Eastbound Cedar Creek Rd						
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	Int
0700 - 0715	0	25	184	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**

HCS Reports

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 22, 2021	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.98
Urban Street	Bardstown Road	Analysis Year	2023 No Build	Analysis Period	1> 7:15
Intersection	Brentlinger/Cedar Creek	File Name	Bardstown AM 23 NB.xus		
Project Description	Cedar Creek Crossings				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	217	88	57	52	16	197	19	2289	87	103	1029	84

Signal Information												
Cycle, s	180.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	3.7	2.3	125.6	28.4	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	5.1	3.6	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	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	10.2	132.4	12.6	134.8
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		31.4		23.3	2.6		5.9	
Green Extension Time (*g e*), s		0.0		1.7	0.0	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	0.62		0.99	
Max Out Probability		1.00		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	221	90	58	53	16	201	19	2336	89	99	542	527
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1375	1841	1610	1255	1900	1572	1541	1781	1610	1781	1841	1791
Queue Service Time (*g s*), s	28.1	7.7	5.6	7.0	1.3	21.3	0.6	101.8	1.5	3.9	8.9	8.6
Cycle Queue Clearance Time (*g c*), s	29.4	7.7	5.6	14.8	1.3	21.3	0.6	101.8	1.5	3.9	8.9	8.6
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	254	301	263	184	300	301	369	2505	1378	121	1309	1274
Volume-to-Capacity Ratio (*X*)	0.870	0.299	0.221	0.288	0.054	0.667	0.053	0.932	0.064	0.821	0.414	0.414
Back of Queue (*Q*), ft/ln (95 th percentile)	462.8	172.7	107	111.3	29.3	360.1	10.9	1285.5	49.4	223	124.5	116.2
Back of Queue (*Q*), veh/ln (95 th percentile)	17.9	6.7	4.3	4.2	1.2	14.1	0.4	50.6	2.0	8.8	4.8	4.6
Queue Storage Ratio (*RQ*) (95 th percentile)	3.09	0.17	0.86	0.37	0.10	1.60	0.05	1.84	0.25	1.12	0.18	0.17
Uniform Delay (*d 1*), s/veh	76.4	66.2	65.4	73.6	64.4	67.4	7.4	23.4	2.0	55.7	3.2	3.1
Incremental Delay (*d 2*), s/veh	26.7	0.8	0.6	1.2	0.1	6.2	0.1	7.9	0.1	16.7	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	103.1	67.0	66.0	74.8	64.5	73.6	7.5	31.3	2.1	72.4	4.1	4.0
Level of Service (LOS)	F	E	E	E	E	E	A	C	A	E	A	A
Approach Delay, s/veh / LOS	88.5	F		73.3	E		30.0	C		9.8	A	
Intersection Delay, s/veh / LOS	32.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.32	B	2.07	B	2.07	B
Bicycle LOS Score / LOS	1.10	A	0.93	A	2.50	C	1.51	B

 HCS™ Streets Version 7.9 Generated: 2/22/2021 12:02:29 PM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 22, 2021	Area Type	Other
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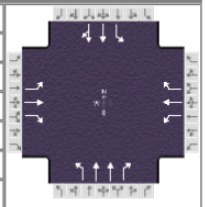


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	217	88	57	52	16	197	19	2289	87	103	1029	84

Signal Information					EB			WB			NB			SB		
Cycle, s	180.0	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	3.7	2.3		125.6	28.4	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		5.1	3.6	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	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	10.2	132.4	12.6	134.8
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		31.4		23.3	2.6		5.9	
Green Extension Time (*g e*), s		0.0		1.7	0.0	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	0.62		0.99	
Max Out Probability		1.00		1.00	0.00		0.14	

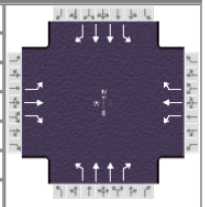
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	221	90	58	53	16	201	19	2336	89	99	542	527
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1397	1900	1585	1255	1900	1572	1541	1781	1610	1781	1841	1791
Queue Service Time (*g s*), s	28.1	7.5	5.7	7.0	1.3	21.3	0.6	101.8	1.5	3.9	8.6	8.4
Cycle Queue Clearance Time (*g c*), s	29.4	7.5	5.7	14.5	1.3	21.3	0.6	101.8	1.5	3.9	8.6	8.4
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	258	310	259	186	300	301	370	2505	1378	121	1309	1274
Volume-to-Capacity Ratio (*X*)	0.858	0.289	0.225	0.285	0.054	0.667	0.052	0.932	0.064	0.820	0.414	0.414
Back of Queue (*Q*), ft/ln (95 th percentile)	450.7	167	108.8	111.1	29.3	360	10.9	1285.5	49.4	223.6	120.5	113.3
Back of Queue (*Q*), veh/ln (95 th percentile)	17.7	6.7	4.3	4.2	1.2	14.1	0.4	50.6	2.0	8.8	4.7	4.5
Queue Storage Ratio (*RQ*) (95 th percentile)	3.00	0.17	0.87	0.37	0.10	1.60	0.05	1.84	0.25	1.12	0.17	0.16
Uniform Delay (*d 1*), s/veh	76.2	66.1	65.4	73.4	64.4	67.4	7.4	23.4	2.0	55.8	3.1	3.0
Incremental Delay (*d 2*), s/veh	24.6	0.7	0.6	1.2	0.1	6.2	0.1	7.9	0.1	16.7	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	100.7	66.9	66.0	74.6	64.5	73.6	7.5	31.3	2.1	72.5	4.0	3.9
Level of Service (LOS)	F	E	E	E	E	E	A	C	A	E	A	A
Approach Delay, s/veh / LOS	87.0	F		73.3	E		30.0	C		9.8	A	
Intersection Delay, s/veh / LOS	32.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.32	B	2.07	B	2.07	B
Bicycle LOS Score / LOS	1.10	A	0.93	A	2.50	C	1.51	B

 HCS™ Streets Version 7.9 Generated: 3/29/2021 8:36:46 PM

HCS7 Signalized Intersection Results Summary

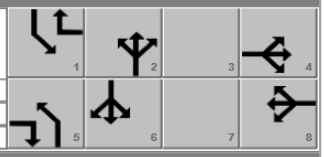
General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Mar 29, 2021	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.98
Urban Street	Bardstown Road	Analysis Year	2023 Build	Analysis Period	1> 7:15
Intersection	Brentlinger/Cedar Creek	File Name	Bardstown AM 23 B.xus		
Project Description	Cedar Creek Crossings				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	235	110	83	52	42	197	131	2243	87	103	1060	84

Signal Information			
Cycle, s	180.0	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	6.0	0.3	125.5	28.4	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	3.0
Phase Duration, s		35.0		35.0	12.7	132.5	12.5	132.3
Change Period, (*Y+R c*), s		6.6		6.6	6.5	6.8	6.5	6.8
Max Allow Headway (*MAH*), s		5.2		5.2	5.0	0.0	5.0	0.0
Queue Clearance Time (*g s*), s		31.4		23.1	6.0		5.2	
Green Extension Time (*g e*), s		0.0		2.0	0.3	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	1.00		0.99	
Max Out Probability		1.00		0.98	0.18		0.08	

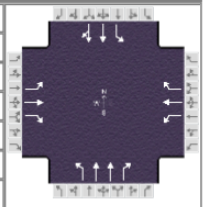
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	240	112	85	53	43	201	134	2289	89	97	994	79
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1364	1900	1598	1230	1900	1572	1767	1781	1610	1781	1752	1585
Queue Service Time (*g s*), s	25.9	9.5	8.0	7.3	3.5	21.1	4.0	95.8	1.5	3.2	7.9	0.8
Cycle Queue Clearance Time (*g c*), s	29.4	9.5	8.0	16.7	3.5	21.1	4.0	95.8	1.5	3.2	7.9	0.8
Green Ratio (*g/C*)	0.16	0.16	0.20	0.16	0.16	0.20	0.73	0.70	0.86	0.73	0.70	0.70
Capacity (*c*), veh/h	236	310	325	169	300	318	468	2508	1379	124	2443	1105
Volume-to-Capacity Ratio (*X*)	1.015	0.362	0.260	0.313	0.143	0.633	0.285	0.913	0.064	0.778	0.407	0.071
Back of Queue (*Q*), ft/ln (95 th percentile)	552	206.5	151.3	113	78.1	352.8	66.8	1209.4	49.3	161.9	100.7	12.7
Back of Queue (*Q*), veh/ln (95 th percentile)	21.7	8.3	6.0	4.3	3.1	13.8	2.6	47.6	2.0	6.4	3.9	0.5
Queue Storage Ratio (*RQ*) (95 th percentile)	3.68	0.21	1.21	0.38	0.26	1.57	0.33	1.73	0.25	0.81	0.14	0.06
Uniform Delay (*d 1*), s/veh	79.2	67.0	60.3	75.3	65.3	65.7	7.2	22.4	2.0	51.1	3.1	2.3
Incremental Delay (*d 2*), s/veh	62.5	1.0	0.6	1.5	0.3	4.7	0.5	6.4	0.1	12.8	0.5	0.1
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	0.0
Control Delay (*d*), s/veh	141.7	68.0	60.9	76.8	65.6	70.4	7.7	28.8	2.1	63.8	3.5	2.4
Level of Service (LOS)	F	E	E	E	E	E	A	C	A	E	A	A
Approach Delay, s/veh / LOS	107.1	F		70.8	E		26.8	C		8.4	A	
Intersection Delay, s/veh / LOS	32.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.48	B	2.07	B	2.07	B
Bicycle LOS Score / LOS	1.21	A	0.98	A	2.56	C	1.54	B

 HCS™ Streets Version 7.9 Generated: 3/29/2021 8:31:10 PM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 25, 2021	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.98
Urban Street	Bardstown Road	Analysis Year	2033 No Build	Analysis Period	1> 7:15
Intersection	Brentlinger/Cedar Creek	File Name	Bardstown AM 33 NB.xus		
Project Description	Cedar Creek Crossings				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	228	93	60	55	17	207	20	2406	91	108	1082	88

Signal Information					EB			WB			NB			SB		
Cycle, s	180.0	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	3.8	4.1		123.8	28.4	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		5.1	3.6	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	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	10.3	130.6	14.4	134.7
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		31.4		24.3	2.7		7.8	
Green Extension Time (g_e), s		0.0		1.5	0.0	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	0.64		0.99	
Max Out Probability		1.00		1.00	0.00		0.58	

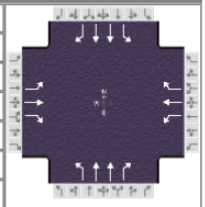
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	233	95	61	56	17	211	20	2455	93	99	544	530
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1396	1900	1585	1249	1900	1572	1541	1781	1610	1781	1841	1792
Queue Service Time (g_s), s	28.0	7.9	6.1	7.5	1.4	22.3	0.7	122.6	1.7	5.8	8.3	8.1
Cycle Queue Clearance Time (g_c), s	29.4	7.9	6.1	15.4	1.4	22.3	0.7	122.6	1.7	5.8	8.3	8.1
Green Ratio (*g/C*)	0.16	0.16	0.16	0.16	0.16	0.20	0.71	0.69	0.85	0.75	0.71	0.71
Capacity (*c*), veh/h	257	310	259	182	300	317	370	2469	1361	130	1308	1273
Volume-to-Capacity Ratio (*X*)	0.905	0.306	0.236	0.308	0.058	0.666	0.055	0.994	0.068	0.763	0.416	0.416
Back of Queue (*Q*), ft/ln (95 th percentile)	488.1	177.1	2.2	118.3	31.1	372.3	12	1608.3	54.2	222.6	115.5	108.5
Back of Queue (*Q*), veh/ln (95 th percentile)	19.2	7.1	0.1	4.5	1.2	14.5	0.4	63.3	2.2	8.8	4.5	4.3
Queue Storage Ratio (*RQ*) (95 th percentile)	3.25	0.18	0.02	0.39	0.10	1.65	0.06	2.30	0.27	1.11	0.16	0.16
Uniform Delay (d_1), s/veh	76.9	66.3	65.5	74.0	64.4	66.2	7.8	27.6	2.3	68.0	2.9	2.8
Incremental Delay (d_2), s/veh	32.8	0.8	0.7	1.3	0.1	5.8	0.1	16.9	0.1	13.0	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	0.0
Control Delay (*d*), s/veh	109.7	67.1	66.2	75.4	64.5	72.1	7.9	44.5	2.4	81.0	3.8	3.8
Level of Service (LOS)	F	E	E	E	E	E	A	D	A	F	A	A
Approach Delay, s/veh / LOS	92.4	F		72.3	E		42.7	D		10.3	B	
Intersection Delay, s/veh / LOS	40.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.32	B	2.08	B	2.07	B
Bicycle LOS Score / LOS	1.13	A	0.96	A	2.61	C	1.56	B

 HCS™ Streets Version 7.9 Generated: 3/29/2021 8:40:01 PM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Mar 29, 2021	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.98
Urban Street	Bardstown Road	Analysis Year	2033 Build	Analysis Period	1> 7:15
Intersection	Brentlinger/Cedar Creek	File Name	Bardstown AM 33 B.xus		
Project Description	Cedar Creek Crossings				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	246	115	86	55	43	207	132	2360	91	103	1113	84

Signal Information					EB			WB			NB			SB		
Cycle, s	180.0	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	6.3	0.1		125.3	28.4	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		5.1	3.6	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	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	3.0
Phase Duration, s		35.0		35.0	12.8	132.1	12.9	132.2
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		31.4		24.2	6.0		6.3	
Green Extension Time (g_e), s		0.0		1.7	0.3	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	1.00		0.99	
Max Out Probability		1.00		1.00	0.19		0.18	

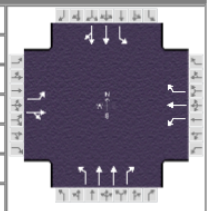
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	251	117	88	56	44	211	135	2408	93	93	1005	76
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1362	1900	1598	1224	1900	1572	1767	1781	1610	1781	1752	1585
Queue Service Time (g_s), s	25.8	9.9	8.3	7.8	3.6	22.2	4.0	112.3	1.6	4.3	8.1	0.8
Cycle Queue Clearance Time (g_c), s	29.4	9.9	8.3	17.7	3.6	22.2	4.0	112.3	1.6	4.3	8.1	0.8
Green Ratio (*g/C*)	0.16	0.16	0.20	0.16	0.16	0.20	0.73	0.70	0.86	0.73	0.70	0.70
Capacity (*c*), veh/h	235	310	326	166	300	322	458	2498	1374	114	2442	1104
Volume-to-Capacity Ratio (*X*)	1.066	0.378	0.269	0.339	0.146	0.656	0.294	0.964	0.068	0.815	0.412	0.069
Back of Queue (*Q*), ft/ln (95 th percentile)	594.7	214.4	157	120.5	80	370	67.8	1434.4	52.4	213.4	101.9	12.3
Back of Queue (*Q*), veh/ln (95 th percentile)	23.4	8.6	6.2	4.6	3.2	14.5	2.6	56.5	2.1	8.4	4.0	0.5
Queue Storage Ratio (*RQ*) (95 th percentile)	3.96	0.21	1.26	0.40	0.27	1.64	0.34	2.05	0.26	1.07	0.15	0.06
Uniform Delay (d_1), s/veh	79.3	67.1	60.4	75.9	65.3	65.7	7.4	25.2	2.0	60.9	3.1	2.3
Incremental Delay (d_2), s/veh	77.3	1.1	0.6	1.7	0.3	5.4	0.5	11.4	0.1	16.8	0.5	0.1
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	0.0
Control Delay (*d*), s/veh	156.6	68.2	61.0	77.6	65.7	71.1	7.9	36.6	2.1	77.7	3.5	2.4
Level of Service (LOS)	F	E	E	E	E	E	A	D	A	E	A	A
Approach Delay, s/veh / LOS	115.5	F		71.5	E		33.9	C		9.3	A	
Intersection Delay, s/veh / LOS	38.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.48	B	2.07	B	2.07	B
Bicycle LOS Score / LOS	1.24	A	1.00	A	2.66	C	1.58	B

 HCS™ Streets Version 7.9 Generated: 3/29/2021 3:22:36 PM

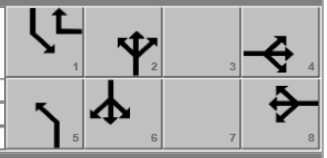
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 8, 2021	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Bardstown Road	Analysis Year	2020	Analysis Period	1> 4:45
Intersection	Brentlinger/Cedar Creek	File Name	Bardstown PM 20.xus		
Project Description	Cedar Creek Crossings				



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		5.2		5.2	5.0	0.0	5.0	0.0
Queue Clearance Time (*g s*), s		13.9		51.4	3.3		9.9	
Green Extension Time (*g e*), s		3.9		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		0.13	

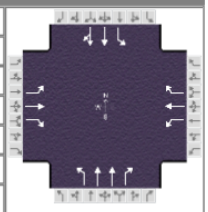
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	60	70		282	38	151	32	1444	64	186	1251	1251
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1370	1680		1351	1900	1610	1810	1781	1572	1810	1885	1868
Queue Service Time (*g s*), s	8.3	7.7		41.7	3.6	17.2	1.3	53.7	1.3	7.9	142.3	146.5
Cycle Queue Clearance Time (*g c*), s	11.9	7.7		49.4	3.6	17.2	1.3	53.7	1.3	7.9	142.3	146.5
Green Ratio (*g/C*)	0.22	0.22		0.22	0.22	0.26	0.67	0.65	0.87	0.70	0.68	0.68
Capacity (*c*), veh/h	305	361		282	409	421	75	2315	1360	270	1278	1266
Volume-to-Capacity Ratio (*X*)	0.197	0.195		0.998	0.092	0.359	0.420	0.624	0.047	0.688	0.979	0.988
Back of Queue (*Q*), ft/ln (95 th percentile)	136.8	157.3		709.2	80.3	291.9	57.3	765.8	57	166.4	1843.4	1898.7
Back of Queue (*Q*), veh/ln (95 th percentile)	5.4	6.1		28.4	3.2	11.7	2.3	30.2	2.2	6.7	73.2	74.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.91	0.16		2.36	0.27	1.30	0.29	1.09	0.29	0.83	2.30	2.35
Uniform Delay (*d 1*), s/veh	75.5	72.3		94.0	70.3	67.7	59.7	23.2	2.1	23.8	32.8	32.6
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	26.6	46.3	47.8
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		45.6	D	
Intersection Delay, s/veh / LOS	46.4						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

 HCS™ Streets Version 7.9 Generated: 3/29/2021 9:31:08 PM

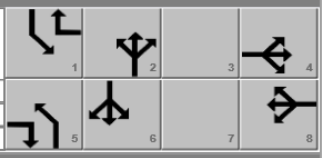
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 22, 2021	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Bardstown Road	Analysis Year	2023 No Build	Analysis Period	1> 4:45
Intersection	Brentlinger/Cedar Creek	File Name	Bardstown PM 23 NB.xus		
Project Description	Cedar Creek Crossings				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	115	58	80	288	100	152	81	1576	65	193	2393	152

Signal Information												
Cycle, s	225.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	3.6	147.0	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		5.0		5.0	1.1	3.0	1.1	4.0
Phase Duration, s		55.0		55.0	12.5	153.8	16.2	157.5
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		30.7		51.4	5.8		9.2	
Green Extension Time (g_e), s		4.5		0.0	0.2	0.0	0.5	0.0
Phase Call Probability		1.00		1.00	0.99		1.00	
Max Out Probability		0.14		1.00	0.00		0.08	

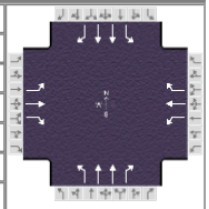
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	117	59	82	294	102	155	83	1608	66	181	1193	1193
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1293	1856	1598	1365	1900	1610	1810	1781	1572	1810	1885	1845
Queue Service Time (g_s), s	18.6	5.8	9.2	43.6	10.0	17.8	3.8	64.2	1.3	7.2	108.6	119.5
Cycle Queue Clearance Time (g_c), s	28.7	5.8	9.2	49.4	10.0	17.8	3.8	64.2	1.3	7.2	108.6	119.5
Green Ratio (*g/C*)	0.22	0.22	0.24	0.22	0.22	0.26	0.68	0.65	0.87	0.70	0.67	0.67
Capacity (*c*), veh/h	252	399	387	296	409	416	100	2327	1366	228	1270	1244
Volume-to-Capacity Ratio (*X*)	0.465	0.148	0.211	0.992	0.250	0.373	0.827	0.691	0.049	0.794	0.939	0.959
Back of Queue (*Q*), ft/ln (95 th percentile)	268.7	130.6	174.5	729.4	216.8	300.1	163.9	895	58.2	205.7	892.1	940.5
Back of Queue (*Q*), veh/ln (95 th percentile)	10.6	5.1	6.9	29.2	8.7	12.0	6.6	35.2	2.3	8.2	35.4	37.0
Queue Storage Ratio (*RQ*) (95 th percentile)	1.79	0.13	1.16	2.43	0.72	1.33	0.82	1.28	0.29	1.03	1.12	1.17
Uniform Delay (d_1), s/veh	85.1	71.6	68.1	92.9	72.8	68.5	59.5	24.6	2.0	35.1	15.2	15.2
Incremental Delay (d_2), s/veh	1.9	0.2	0.4	49.9	0.5	0.8	20.9	1.7	0.1	2.0	2.9	4.2
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	87.0	71.8	68.5	142.8	73.3	69.3	80.4	26.4	2.1	37.1	18.2	19.4
Level of Service (LOS)	F	E	E	F	E	E	F	C	A	D	B	B
Approach Delay, s/veh / LOS	77.7	E		109.2	F		28.0	C		20.1	C	
Intersection Delay, s/veh / LOS	35.2						D					

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	0.91	A	1.40	A	1.94	B	2.79	C

 HCS™ Streets Version 7.9 Generated: 2/22/2021 3:04:31 PM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 22, 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.xus		
Project Description	Cedar Creek Crossings				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	179	89	115	288	129	152	180	1551	65	193	2434	152

Signal Information													
Cycle, s	225.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	10.4	1.6	138.2	48.4	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	5.1	3.6	0.0	0.0			
				Red	3.0	3.0	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	3.0
Phase Duration, s		55.0		55.0	25.0	153.1	16.9	145.0
Change Period, (*Y+R c*), s		6.6		6.6	6.5	6.8	6.5	6.8
Max Allow Headway (*MAH*), s		5.3		5.3	5.0	0.0	5.0	0.0
Queue Clearance Time (*g s*), s		47.2		51.4	20.8		9.9	
Green Extension Time (*g e*), s		0.7		0.0	0.0	0.0	0.5	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		1.00		1.00	1.00		0.12	

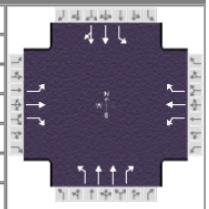
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	183	91	117	294	132	155	184	1583	66	177	2234	139
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1258	1856	1598	1326	1900	1610	1810	1781	1572	1810	1795	1585
Queue Service Time (*g s*), s	32.1	9.0	12.4	40.4	13.1	17.5	18.8	62.9	1.3	7.9	139.2	3.3
Cycle Queue Clearance Time (*g c*), s	45.2	9.0	12.4	49.4	13.1	17.5	18.8	62.9	1.3	7.9	139.2	3.3
Green Ratio (*g/C*)	0.22	0.22	0.31	0.22	0.22	0.27	0.71	0.65	0.87	0.66	0.62	0.62
Capacity (*c*), veh/h	235	407	489	270	409	435	189	2316	1361	234	2221	981
Volume-to-Capacity Ratio (*X*)	0.778	0.223	0.240	1.089	0.322	0.357	0.973	0.683	0.049	0.757	1.006	0.142
Back of Queue (*Q*), ft/ln (95 th percentile)	436	200.8	223.3	781	269.4	295.9	494	880.2	58.8	165.9	1214	45.2
Back of Queue (*Q*), veh/ln (95 th percentile)	17.2	7.8	8.9	31.2	10.8	11.8	19.8	34.7	2.3	6.6	48.2	1.8
Queue Storage Ratio (*RQ*) (95 th percentile)	2.91	0.20	1.49	2.60	0.90	1.32	2.47	1.26	0.29	0.83	1.21	0.23
Uniform Delay (*d 1*), s/veh	92.6	72.0	58.4	94.7	74.1	66.3	89.6	24.7	2.1	32.2	21.7	6.5
Incremental Delay (*d 2*), s/veh	16.0	0.4	0.4	80.5	0.6	0.7	57.5	1.7	0.1	1.5	8.8	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	0.0
Control Delay (*d*), s/veh	108.7	72.4	58.8	175.2	74.7	67.0	147.1	26.4	2.2	33.7	30.5	6.5
Level of Service (LOS)	F	E	E	F	E	E	F	C	A	C	F	A
Approach Delay, s/veh / LOS	85.3	F		123.5	F		37.6	D		29.4	C	
Intersection Delay, s/veh / LOS	46.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.48	B	2.09	B	2.10	B
Bicycle LOS Score / LOS	1.13	A	1.45	A	2.00	B	2.83	C

 HCS™ Streets Version 7.9 Generated: 2/25/2021 12:41:02 PM

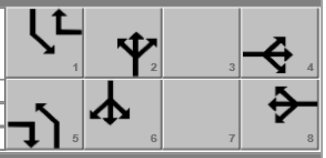
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 25, 2021	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Bardstown Road	Analysis Year	2033 No Build	Analysis Period	1> 4:45
Intersection	Brentlinger/Cedar Creek	File Name	Bardstown PM 33 NB.xus		
Project Description	Cedar Creek Crossings				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	121	61	84	303	105	160	85	1657	68	203	2515	160

Signal Information												
Cycle, s	225.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	7.5	2.3	146.9	48.4	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	5.1	3.6	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	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	14.0	153.7	16.3	156.0
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		32.4		51.4	7.3		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	1.00		1.00	
Max Out Probability		0.20		1.00	0.01		0.09	

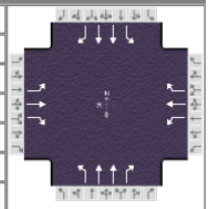
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	123	62	86	309	107	163	87	1691	69	183	1202	1202
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1287	1856	1598	1361	1900	1610	1810	1781	1572	1810	1885	1845
Queue Service Time (*g s*), s	19.9	6.1	9.6	43.3	10.6	18.8	5.3	70.6	1.4	7.2	116.6	129.8
Cycle Queue Clearance Time (*g c*), s	30.4	6.1	9.6	49.4	10.6	18.8	5.3	70.6	1.4	7.2	116.6	129.8
Green Ratio (*g/C*)	0.22	0.22	0.25	0.22	0.22	0.26	0.69	0.65	0.87	0.70	0.67	0.67
Capacity (*c*), veh/h	248	399	397	294	409	416	104	2326	1365	211	1258	1232
Volume-to-Capacity Ratio (*X*)	0.497	0.156	0.216	1.052	0.262	0.392	0.837	0.727	0.051	0.866	0.956	0.976
Back of Queue (*Q*), ft/ln (95 th percentile)	282.2	137.6	182	792.4	225.8	314.4	238.2	975.3	61.1	222.7	935.4	999.8
Back of Queue (*Q*), veh/ln (95 th percentile)	11.1	5.4	7.2	31.7	9.0	12.6	9.5	38.4	2.4	8.9	37.1	39.4
Queue Storage Ratio (*RQ*) (95 th percentile)	1.88	0.14	1.21	2.64	0.75	1.40	1.19	1.39	0.31	1.11	1.17	1.24
Uniform Delay (*d 1*), s/veh	86.1	71.7	67.1	93.2	73.1	68.8	70.1	25.8	2.0	41.0	15.8	15.9
Incremental Delay (*d 2*), s/veh	2.2	0.3	0.4	66.9	0.5	0.9	21.2	2.0	0.1	3.7	3.6	5.4
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	88.3	72.0	67.5	160.2	73.5	69.7	91.4	27.8	2.1	44.7	19.4	21.4
Level of Service (LOS)	F	E	E	F	E	E	F	C	A	D	B	C
Approach Delay, s/veh / LOS	78.0	E		118.7	F		29.8	C		22.1	C	
Intersection Delay, s/veh / LOS	38.2						D					

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	0.94	A	1.44	A	2.01	B	2.91	C

 HCS™ Streets Version 7.9 Generated: 2/25/2021 4:18:25 PM

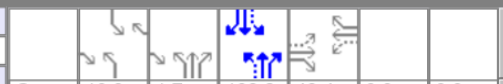
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 25, 2021	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.98
Urban Street	Bardstown Road	Analysis Year	2033 Build	Analysis Period	1> 4:45
Intersection	Brentlinger/Cedar Creek	File Name	Bardstown PM 33 B.xus		
Project Description	Cedar Creek Crossings				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	185	92	119	303	134	160	184	1632	68	203	2556	160

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	10.3	1.7		138.2	48.4	0.0	0.0					
Yellow	3.5	3.5		5.1	3.6	0.0	0.0					
Red	3.0	3.0		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	3.0
Phase Duration, s		55.0		55.0	25.0	153.2	16.8	145.0
Change Period, (*Y+R c*), s		6.6		6.6	6.5	6.8	6.5	6.8
Max Allow Headway (*MAH*), s		5.3		5.3	5.0	0.0	5.0	0.0
Queue Clearance Time (*g s*), s		49.3		51.4	21.4		9.8	
Green Extension Time (*g e*), s		0.0		0.0	0.0	0.0	0.5	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		1.00		1.00	1.00		0.12	

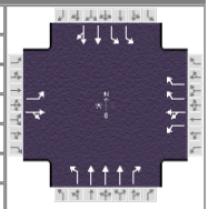
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	189	94	121	309	137	163	188	1665	69	179	2252	141
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1252	1856	1598	1323	1900	1610	1810	1781	1572	1810	1795	1585
Queue Service Time (*g s*), s	33.6	9.4	12.8	40.0	13.7	18.5	19.4	69.0	1.4	7.8	139.2	3.3
Cycle Queue Clearance Time (*g c*), s	47.3	9.4	12.8	49.4	13.7	18.5	19.4	69.0	1.4	7.8	139.2	3.3
Green Ratio (*g/C*)	0.22	0.22	0.31	0.22	0.22	0.27	0.71	0.65	0.87	0.67	0.62	0.62
Capacity (*c*), veh/h	231	407	489	267	409	434	189	2318	1362	224	2221	981
Volume-to-Capacity Ratio (*X*)	0.818	0.230	0.248	1.156	0.335	0.376	0.994	0.719	0.051	0.798	1.014	0.144
Back of Queue (*Q*), ft/ln (95 th percentile)	459.7	206.4	230.1	854.2	278.4	310.1	512	956.4	61.6	205.9	1223.7	44.1
Back of Queue (*Q*), veh/ln (95 th percentile)	18.1	8.1	9.1	34.2	11.1	12.4	20.5	37.7	2.4	8.2	48.6	1.7
Queue Storage Ratio (*RQ*) (95 th percentile)	3.06	0.21	1.53	2.85	0.93	1.38	2.56	1.37	0.31	1.03	1.22	0.22
Uniform Delay (*d 1*), s/veh	93.8	72.2	58.6	94.9	74.3	66.8	90.1	25.8	2.1	38.2	21.4	6.4
Incremental Delay (*d 2*), s/veh	20.9	0.4	0.4	104.0	0.7	0.8	63.8	2.0	0.1	1.9	10.9	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	0.0
Control Delay (*d*), s/veh	114.7	72.6	59.0	198.9	75.0	67.5	153.9	27.7	2.2	40.1	32.3	6.4
Level of Service (LOS)	F	E	E	F	E	E	F	C	A	D	F	A
Approach Delay, s/veh / LOS	88.2	F		135.9	F		39.1	D		31.4	C	
Intersection Delay, s/veh / LOS	49.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.48	B	2.09	B	2.10	B
Bicycle LOS Score / LOS	1.15	A	1.49	A	2.07	B	2.94	C

 HCS™ Streets Version 7.9 Generated: 2/25/2021 4:26:40 PM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 22, 2021	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.95
Urban Street	Bardstown Road	Analysis Year	2023 No Build	Analysis Period	1> 7:15
Intersection	Bartley/Southpointe	File Name	Bardstown AM 23 NB.xus		
Project Description	Cedar Creek Crossings				



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	2552	140	117	1174	10

Signal Information													
Cycle, s	180.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.6	5.7	124.0	8.4	11.6	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	5.1	3.6	3.6	0.0			
				Red	3.0	0.0	3.0	3.0	3.0	0.0			

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		15.0		18.2	9.1	132.1	14.7	137.7
Change Period, (*Y+R c*), s		6.6		6.6	6.5	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		10.4		10.8	2.3		7.8	
Green Extension Time (*g e*), s		0.0		0.8	0.0	0.0	0.5	0.0
Phase Call Probability		0.84		1.00	0.43		1.00	
Max Out Probability		1.00		0.02	0.00		0.00	

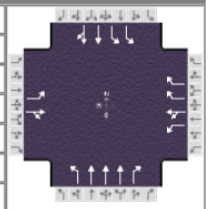
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	23	14		18	19	146	11	2604	143	112	568	566
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1781	1663		1781	1791	1403	1781	1698	1585	1702	1870	1865
Queue Service Time (*g s*), s	2.3	1.4		1.7	1.8	8.8	0.3	52.9	2.6	5.8	33.4	33.2
Cycle Queue Clearance Time (*g c*), s	2.3	1.4		1.7	1.8	8.8	0.3	52.9	2.6	5.8	33.4	33.2
Green Ratio (*g/C*)	0.05	0.05		0.06	0.06	0.11	0.70	0.69	0.75	0.83	0.72	0.72
Capacity (*c*), veh/h	83	78		115	116	309	325	3508	1194	156	1347	1343
Volume-to-Capacity Ratio (*X*)	0.279	0.176		0.157	0.163	0.473	0.034	0.742	0.120	0.719	0.421	0.421
Back of Queue (*Q*), ft/ln (95 th percentile)	48.5	28.5		37.7	39.2	149.1	6.1	570.5	35.7	123.6	570	564.5
Back of Queue (*Q*), veh/ln (95 th percentile)	1.9	1.1		1.5	1.5	5.9	0.2	22.5	1.4	4.8	22.4	22.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.16	0.09		0.25	0.20	0.37	0.04	0.52	0.18	0.31	0.63	0.63
Uniform Delay (*d 1*), s/veh	82.9	82.5		79.6	79.6	75.2	10.6	14.1	3.3	81.6	19.9	19.7
Incremental Delay (*d 2*), s/veh	0.7	0.4		0.9	0.9	1.6	0.0	0.4	0.1	8.1	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
Control Delay (*d*), s/veh	83.5	82.9		80.5	80.5	76.8	10.6	14.5	3.4	89.7	20.9	20.6
Level of Service (LOS)	F	F		F	F	E	B	B	A	F	C	C
Approach Delay, s/veh / LOS	83.3	F		77.5	E		13.9	B		27.0	C	
Intersection Delay, s/veh / LOS	21.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.63	C	2.63	C	2.40	B	1.88	B
Bicycle LOS Score / LOS	0.55	A	0.79	A	2.05	B	1.62	B

 HCS™ Streets Version 7.9 Generated: 2/22/2021 12:02:29 PM

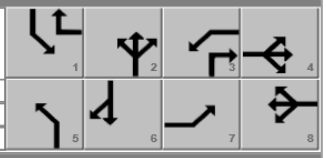
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 22, 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.xus		
Project Description	Cedar Creek Crossings				



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	2574	140	117	1200	10

Signal Information					EB			WB			NB		
Cycle, s	180.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	2.5	5.6		127.3	5.0		11.7	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		5.1	3.6		3.6	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0		3.0	3.0		3.0	0.0	



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		11.6		18.3	9.0	135.4	14.6	141.0
Change Period, (*Y+R c*), s		6.6		6.6	6.5	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		7.7	
Green Extension Time (*g e*), s		0.0		0.9	0.0	0.0	0.5	0.0
Phase Call Probability		0.84		1.00	0.42		1.00	
Max Out Probability		0.19		0.00	0.00		0.00	

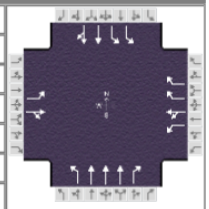
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	23	14		18	19	146	11	2585	141	110	569	567
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1781	1663		1781	1791	1403	1781	1698	1585	1702	1870	1865
Queue Service Time (*g s*), s	2.3	1.5		1.7	1.8	8.8	0.3	47.7	2.1	5.7	33.1	32.8
Cycle Queue Clearance Time (*g c*), s	2.3	1.5		1.7	1.8	8.8	0.3	47.7	2.1	5.7	33.1	32.8
Green Ratio (*g/C*)	0.03	0.03		0.07	0.07	0.11	0.72	0.71	0.77	0.05	0.74	0.74
Capacity (*c*), veh/h	50	47		116	117	310	335	3603	1224	154	1381	1377
Volume-to-Capacity Ratio (*X*)	0.463	0.293		0.156	0.161	0.473	0.033	0.718	0.115	0.713	0.412	0.412
Back of Queue (*Q*), ft/ln (95 th percentile)	50.4	29.5		37.7	39.2	149	5.2	460.4	25.9	120.6	555.5	549.7
Back of Queue (*Q*), veh/ln (95 th percentile)	2.0	1.2		1.5	1.5	5.9	0.2	18.1	1.0	4.7	21.9	21.6
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.10		0.25	0.20	0.37	0.03	0.42	0.13	0.30	0.62	0.61
Uniform Delay (*d 1*), s/veh	86.1	85.7		79.5	79.5	75.2	9.6	11.9	2.5	82.6	19.0	18.7
Incremental Delay (*d 2*), s/veh	2.5	1.3		0.9	0.9	1.6	0.0	0.3	0.1	8.0	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		80.3	80.4	76.7	9.6	12.2	2.6	90.5	19.8	19.6
Level of Service (LOS)	F	F		F	F	E	A	B	A	F	B	B
Approach Delay, s/veh / LOS	88.0	F		77.5	E		11.7	B		25.9	C	
Intersection Delay, s/veh / LOS	19.5						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	2.07	B	1.64	B

 HCS™ Streets Version 7.9 Generated: 2/25/2021 12:36:27 PM

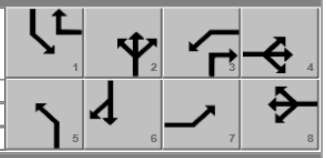
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 25, 2021	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.95
Urban Street	Bardstown Road	Analysis Year	2033 No Build	Analysis Period	1> 7:15
Intersection	Bartley/Southpointe	File Name	Bardstown AM 33 NB.xus		
Project Description	Cedar Creek Crossings				



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	2683	140	117	1234	10

Signal Information					EB			WB			NB			SB		
Cycle, s	180.0	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	2.6	5.4		127.4	5.0		11.7	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		5.1	3.6		3.6	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0		3.0	3.0		3.0	0.0				



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		11.6		18.3	9.1	135.5	14.5	140.9
Change Period, (*Y+R c*), s		6.6		6.6	6.5	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		7.5	
Green Extension Time (*g e*), s		0.0		0.9	0.0	0.0	0.5	0.0
Phase Call Probability		0.84		1.00	0.43		1.00	
Max Out Probability		0.19		0.00	0.00		0.00	

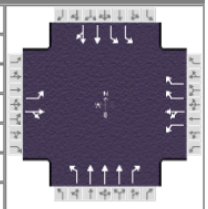
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	23	14		18	19	146	11	2745	143	107	570	568
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1781	1663		1781	1791	1403	1781	1698	1585	1702	1870	1865
Queue Service Time (*g s*), s	2.3	1.5		1.7	1.8	8.8	0.3	59.2	2.7	5.5	33.1	32.9
Cycle Queue Clearance Time (*g c*), s	2.3	1.5		1.7	1.8	8.8	0.3	59.2	2.7	5.5	33.1	32.9
Green Ratio (*g/C*)	0.03	0.03		0.07	0.07	0.11	0.72	0.71	0.77	0.04	0.74	0.74
Capacity (*c*), veh/h	50	47		116	117	307	334	3607	1225	151	1380	1376
Volume-to-Capacity Ratio (*X*)	0.463	0.293		0.156	0.161	0.476	0.034	0.761	0.117	0.709	0.413	0.413
Back of Queue (*Q*), ft/ln (95 th percentile)	50.4	29.5		37.7	39.2	149.3	5.3	586.8	33.4	117.6	555.9	550.6
Back of Queue (*Q*), veh/ln (95 th percentile)	2.0	1.2		1.5	1.5	5.9	0.2	23.1	1.3	4.6	21.9	21.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.10		0.25	0.20	0.37	0.04	0.53	0.17	0.29	0.62	0.61
Uniform Delay (*d 1*), s/veh	86.1	85.7		79.5	79.5	75.3	9.6	15.2	3.3	82.6	19.0	18.7
Incremental Delay (*d 2*), s/veh	2.5	1.3		0.9	0.9	1.6	0.0	0.3	0.0	8.0	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		80.3	80.4	76.9	9.6	15.5	3.3	90.6	19.8	19.6
Level of Service (LOS)	F	F		F	F	E	A	B	A	F	B	B
Approach Delay, s/veh / LOS	88.0	F		77.6	E		14.9	B		25.8	C	
Intersection Delay, s/veh / LOS	21.2						C					

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	2.13	B	1.67	B

 HCS™ Streets Version 7.9 Generated: 2/25/2021 3:45:02 PM

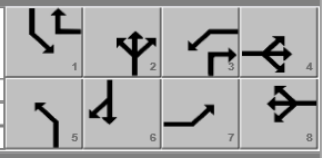
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 25, 2021	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.95
Urban Street	Bardstown Road	Analysis Year	2033 Build	Analysis Period	1> 7:15
Intersection	Bartley/Southpointe	File Name	Bardstown AM 33 B.xus		
Project Description	Cedar Creek Crossings				



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	2705	140	117	1260	10

Signal Information					EB			WB			NB		
Cycle, s	180.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	2.5	5.3		127.6	5.0		11.7	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0		5.1	3.6		3.6	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0		3.0	3.0		3.0	0.0	



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		11.6		18.3	9.0	135.7	14.4	141.0
Change Period, (*Y+R* $_c$), s		6.6		6.6	6.5	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		7.4	
Green Extension Time (g_e), s		0.0		0.9	0.0	0.0	0.5	0.0
Phase Call Probability		0.84		1.00	0.42		0.99	
Max Out Probability		0.19		0.00	0.00		0.00	

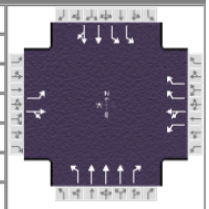
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	23	14		18	19	146	11	2714	140	105	571	569
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1781	1663		1781	1791	1403	1781	1698	1585	1702	1870	1865
Queue Service Time (g_s), s	2.3	1.5		1.7	1.8	8.8	0.3	54.2	2.3	5.4	33.2	33.0
Cycle Queue Clearance Time (g_c), s	2.3	1.5		1.7	1.8	8.8	0.3	54.2	2.3	5.4	33.2	33.0
Green Ratio (*g/C*)	0.03	0.03		0.07	0.07	0.11	0.72	0.71	0.77	0.04	0.74	0.74
Capacity (*c*), veh/h	50	47		116	117	305	333	3610	1227	149	1381	1377
Volume-to-Capacity Ratio (*X*)	0.463	0.293		0.156	0.161	0.479	0.033	0.752	0.115	0.706	0.414	0.414
Back of Queue (*Q*), ft/ln (95 th percentile)	50.4	29.5		37.7	39.2	149.5	5.2	506.1	27.6	115.4	557.3	551.7
Back of Queue (*Q*), veh/ln (95 th percentile)	2.0	1.2		1.5	1.5	5.9	0.2	19.9	1.1	4.5	21.9	21.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.17	0.10		0.25	0.20	0.37	0.03	0.46	0.14	0.29	0.62	0.61
Uniform Delay (d_1), s/veh	86.1	85.7		79.5	79.5	75.4	9.6	13.0	2.7	82.6	19.0	18.7
Incremental Delay (d_2), s/veh	2.5	1.3		0.9	0.9	1.7	0.0	0.2	0.0	8.0	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		80.3	80.4	77.1	9.6	13.2	2.8	90.6	19.8	19.6
Level of Service (LOS)	F	F		F	F	E	A	B	A	F	B	B
Approach Delay, s/veh / LOS	88.0	F		77.7	E		12.7	B		25.7	C	
Intersection Delay, s/veh / LOS	19.8						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	2.14	B	1.69	B

 HCS™ Streets Version 7.9 Generated: 2/25/2021 3:54:46 PM

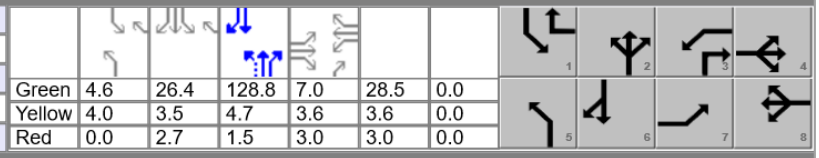
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 22, 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 Crossings				



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	1614	206	503	2345	12

Signal Information			
Cycle, s	225.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	On



Green	4.6	26.4	128.8	7.0	28.5	0.0
Yellow	4.0	3.5	4.7	3.6	3.6	0.0
Red	0.0	2.7	1.5	3.0	3.0	0.0

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		13.6		35.1	8.6	135.0	41.2	167.7
Change Period, (*Y+R* $_c$), s		6.6		6.6	4.0	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	3.2		33.9	
Green Extension Time (g_e), s		0.0		1.6	0.0	0.0	1.2	0.0
Phase Call Probability		0.98		1.00	0.77		1.00	
Max Out Probability		1.00		0.00	0.00		0.00	

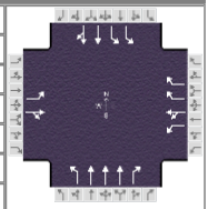
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	42	23		201	202	310	23	1647	210	497	1165	1165
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1691		1781	1786	1403	1795	1698	1585	1730	1885	1882
Queue Service Time (g_s), s	5.2	3.0		24.9	24.9	20.1	1.2	31.0	3.9	31.9	108.8	109.1
Cycle Queue Clearance Time (g_c), s	5.2	3.0		24.9	24.9	20.1	1.2	31.0	3.9	31.9	108.8	109.1
Green Ratio (*g/C*)	0.04	0.04		0.13	0.13	0.29	0.59	0.57	0.70	0.82	0.72	0.72
Capacity (*c*), veh/h	64	53		233	234	792	104	2917	1108	554	1361	1359
Volume-to-Capacity Ratio (*X*)	0.650	0.433		0.862	0.862	0.392	0.226	0.565	0.190	0.897	0.856	0.858
Back of Queue (*Q*), ft/ln (95 th percentile)	117.8	61.8		444.8	442.1	297.7	24.8	392	56.1	426.6	1354.5	1364.6
Back of Queue (*Q*), veh/ln (95 th percentile)	4.7	2.5		17.5	17.5	11.7	1.0	15.4	2.2	16.8	53.7	53.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.39	0.21		1.48	1.47	0.74	0.17	0.33	0.28	1.07	1.50	1.50
Uniform Delay (d_1), s/veh	107.1	106.4		95.8	95.8	65.1	35.7	15.6	3.7	96.0	29.6	29.1
Incremental Delay (d_2), s/veh	9.0	2.1		3.7	3.7	0.1	0.3	0.6	0.3	0.7	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	116.1	108.4		99.5	99.5	65.3	36.0	16.1	4.0	96.7	30.5	30.1
Level of Service (LOS)	F	F		F	F	E	D	B	A	F	C	C
Approach Delay, s/veh / LOS	113.4	F		84.6	F		15.0	B		42.0	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	1.54	B	2.95	C

 HCS™ Streets Version 7.9 Generated: 2/22/2021 3:04:31 PM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 22, 2021	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Bardstown Road	Analysis Year	2023 Build	Analysis Period	1> 4:45
Intersection	Bartley/Wingfield	File Name	Bardstown PM 23 B.xus		
Project Description	Cedar Creek Crossings				



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	1645	206	503	2374	12

Signal Information													
Cycle, s	225.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	4.6	26.0	129.3	7.0	28.5	0.0			
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	4.0	3.5	4.7	3.6	3.6	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.7	1.5	3.0	3.0	0.0			

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		13.6		35.1	8.6	135.5	40.8	167.7
Change Period, (*Y+R c*), s		6.6		6.6	4.0	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		7.2		26.9	3.2		33.6	
Green Extension Time (*g e*), s		0.0		1.6	0.0	0.0	1.1	0.0
Phase Call Probability		0.98		1.00	0.77		1.00	
Max Out Probability		1.00		0.00	0.00		0.00	

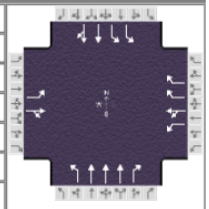
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	42	23		201	202	310	23	1677	210	492	1168	1168
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1691		1781	1786	1403	1795	1698	1585	1730	1885	1882
Queue Service Time (*g s*), s	5.2	3.0		24.9	24.9	20.1	1.2	33.4	3.9	31.6	111.1	111.3
Cycle Queue Clearance Time (*g c*), s	5.2	3.0		24.9	24.9	20.1	1.2	33.4	3.9	31.6	111.1	111.3
Green Ratio (*g/C*)	0.04	0.04		0.13	0.13	0.28	0.59	0.57	0.70	0.16	0.72	0.72
Capacity (*c*), veh/h	64	53		233	234	787	102	2927	1111	548	1361	1359
Volume-to-Capacity Ratio (*X*)	0.650	0.433		0.862	0.862	0.394	0.230	0.573	0.189	0.899	0.858	0.860
Back of Queue (*Q*), ft/ln (95 th percentile)	117.8	61.8		444.8	442.1	298.5	24.3	400.4	53.3	418.8	1355.5	1364.5
Back of Queue (*Q*), veh/ln (95 th percentile)	4.7	2.5		17.5	17.5	11.8	1.0	15.8	2.1	16.5	53.8	53.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.39	0.21		1.48	1.47	0.75	0.16	0.33	0.27	1.05	1.51	1.50
Uniform Delay (*d 1*), s/veh	107.1	106.4		95.8	95.8	65.5	36.6	16.8	3.7	96.3	31.4	31.0
Incremental Delay (*d 2*), s/veh	9.0	2.1		3.7	3.7	0.1	0.3	0.6	0.3	0.7	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	116.1	108.4		99.5	99.5	65.6	36.9	17.4	4.0	97.0	32.3	31.9
Level of Service (LOS)	F	F		F	F	E	D	B	A	F	C	C
Approach Delay, s/veh / LOS	113.4	F		84.7	F		16.1	B		43.4	D	
Intersection Delay, s/veh / LOS	40.1						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	1.56	B	2.97	C

 HCS™ Streets Version 7.9 Generated: 2/25/2021 12:57:51 PM

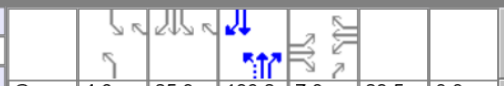
HCS7 Signalized Intersection Results Summary

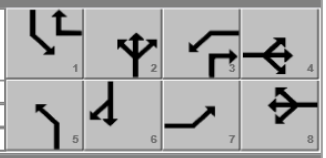
General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 25, 2021	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Bardstown Road	Analysis Year	2033 No Build	Analysis Period	1> 4:45
Intersection	Bartley/Wingfield	File Name	Bardstown PM 33 NB.xus		
Project Description	Cedar Creek Crossings				



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	1697	206	503	2465	12

Signal Information			
Cycle, s	225.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	On





Green	4.6	25.0	130.2	7.0	28.5	0.0
Yellow	4.0	3.5	4.7	3.6	3.6	0.0
Red	0.0	2.7	1.5	3.0	3.0	0.0

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		13.6		35.1	8.6	136.4	39.8	167.6
Change Period, (*Y+R* $_c$), s		6.6		6.6	4.0	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		7.2		26.9	3.2		32.6	
Green Extension Time (g_e), s		0.0		1.6	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	

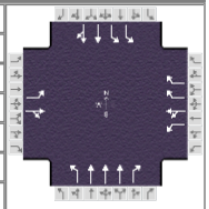
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	42	23		201	202	310	24	1742	212	477	1175	1175
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1691		1781	1786	1403	1795	1698	1585	1730	1885	1882
Queue Service Time (g_s), s	5.2	3.0		24.9	24.9	20.3	1.2	32.5	3.5	30.6	112.6	112.9
Cycle Queue Clearance Time (g_c), s	5.2	3.0		24.9	24.9	20.3	1.2	32.5	3.5	30.6	112.6	112.9
Green Ratio (*g/C*)	0.04	0.04		0.13	0.13	0.28	0.60	0.58	0.71	0.15	0.72	0.72
Capacity (*c*), veh/h	64	53		233	234	775	101	2949	1118	532	1361	1359
Volume-to-Capacity Ratio (*X*)	0.650	0.433		0.862	0.862	0.401	0.235	0.591	0.189	0.897	0.864	0.865
Back of Queue (*Q*), ft/ln (95 th percentile)	117.8	61.8		444.8	442.1	300.1	25.6	365.8	47.6	407.2	1372.8	1382.8
Back of Queue (*Q*), veh/ln (95 th percentile)	4.7	2.5		17.5	17.5	11.8	1.0	14.4	1.9	16.0	54.5	54.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.39	0.21		1.48	1.47	0.75	0.17	0.30	0.24	1.02	1.53	1.52
Uniform Delay (d_1), s/veh	107.1	106.4		95.8	95.8	66.3	37.5	14.7	3.2	96.9	31.6	31.2
Incremental Delay (d_2), s/veh	9.0	2.1		3.7	3.7	0.1	0.3	0.6	0.3	0.6	1.0	1.0
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	116.1	108.4		99.5	99.5	66.4	37.8	15.3	3.5	97.5	32.6	32.2
Level of Service (LOS)	F	F		F	F	E	D	B	A	F	C	C
Approach Delay, s/veh / LOS	113.4	F		85.1	F		14.3	B		43.4	D	
Intersection Delay, s/veh / LOS	39.2						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	1.59	B	3.05	C

 HCS™ Streets Version 7.9 Generated: 2/25/2021 4:18:25 PM

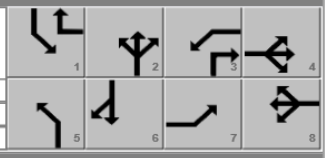
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	DBZ Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Feb 25, 2021	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Bardstown Road	Analysis Year	2033 Build	Analysis Period	1> 4:45
Intersection	Bartley/Wingfield	File Name	Bardstown PM 33 B.xus		
Project Description	Cedar Creek Crossings				



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	1728	206	503	2494	12

Signal Information					EB			WB			NB			SB		
Cycle, s	225.0	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	4.6	24.7		130.5	7.0	28.5	0.0					
Uncoordinated	No	Simult. Gap E/W	Off	Yellow	4.0	3.5		4.7	3.6	3.6	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	2.7		1.5	3.0	3.0	0.0					



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		13.6		35.1	8.6	136.7	39.5	167.6
Change Period, (*Y+R c*), s		6.6		6.6	4.0	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		7.2		26.9	3.2		32.3	
Green Extension Time (*g e*), s		0.0		1.6	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	24	1772	211	473	1178	1178
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1691		1781	1786	1403	1795	1698	1585	1730	1885	1882
Queue Service Time (*g s*), s	5.2	3.0		24.9	24.9	20.3	1.2	36.3	3.8	30.3	113.1	113.4
Cycle Queue Clearance Time (*g c*), s	5.2	3.0		24.9	24.9	20.3	1.2	36.3	3.8	30.3	113.1	113.4
Green Ratio (*g/C*)	0.04	0.04		0.13	0.13	0.28	0.60	0.58	0.71	0.15	0.72	0.72
Capacity (*c*), veh/h	64	53		233	234	771	100	2956	1120	528	1361	1359
Volume-to-Capacity Ratio (*X*)	0.650	0.433		0.862	0.862	0.403	0.235	0.600	0.189	0.895	0.865	0.867
Back of Queue (*Q*), ft/ln (95 th percentile)	117.8	61.8		444.8	442.1	300.6	25.8	424.2	51.9	404.3	1378.4	1388.4
Back of Queue (*Q*), veh/ln (95 th percentile)	4.7	2.5		17.5	17.5	11.8	1.0	16.7	2.0	15.9	54.7	54.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.39	0.21		1.48	1.47	0.75	0.17	0.35	0.26	1.01	1.53	1.53
Uniform Delay (*d 1*), s/veh	107.1	106.4		95.8	95.8	66.5	37.6	16.8	3.5	97.3	31.7	31.3
Incremental Delay (*d 2*), s/veh	9.0	2.1		3.7	3.7	0.1	0.3	0.6	0.2	0.6	1.0	1.0
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	116.1	108.4		99.5	99.5	66.7	37.9	17.4	3.8	97.9	32.7	32.2
Level of Service (LOS)	F	F		F	F	E	D	B	A	F	C	C
Approach Delay, s/veh / LOS	113.4	F		85.2	F		16.2	B		43.4	D	
Intersection Delay, s/veh / LOS	39.8						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	1.61	B	3.07	C

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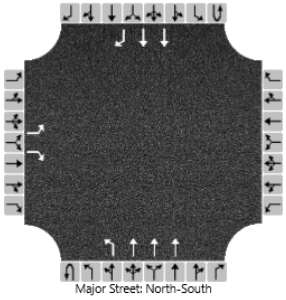
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	North Entrance
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	3/29/21	East/West Street	Entrance
Analysis Year	2023	North/South Street	Bardstown Road
Time Analyzed	AM Peak	Peak Hour Factor	0.98
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Hogan Bardstown		

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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	3	0	0	0	2	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		60		5					0	13	2662				1234	8
Percent Heavy Vehicles (%)		1		1					3	1						
Proportion Time Blocked		0.580		0.190						0.190						
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Left Only								2						

Critical and Follow-up Headways

Base Critical Headway (sec)		6.4		6.9						4.1						
Critical Headway (sec)		5.72		6.92						4.12						
Base Follow-Up Headway (sec)		3.8		3.3						2.2						
Follow-Up Headway (sec)		3.81		3.31						2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		61		5						13						
Capacity, c (veh/h)		190		791						634						
v/c Ratio		0.32		0.01						0.02						
95% Queue Length, Q_{95} (veh)		1.3		0.0						0.1						
Control Delay (s/veh)		32.7		9.6						10.8						
Level of Service (LOS)		D		A						B						
Approach Delay (s/veh)		30.9								0.1						
Approach LOS		D														

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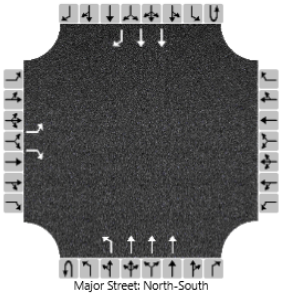
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	North Entrance
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	3/29/2021	East/West Street	Entrance
Analysis Year	2033	North/South Street	Bardstown Road
Time Analyzed	AM Peak	Peak Hour Factor	0.98
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Hogan Bardstown		

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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	3	0	0	0	2	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		60		5					0	13	2800				1296	8
Percent Heavy Vehicles (%)		1		1					3	1						
Proportion Time Blocked		0.670		0.190						0.190						
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Left Only								2						

Critical and Follow-up Headways

Base Critical Headway (sec)		6.4		6.9						4.1						
Critical Headway (sec)		5.72		6.92						4.12						
Base Follow-Up Headway (sec)		3.8		3.3						2.2						
Follow-Up Headway (sec)		3.81		3.31						2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		61		5						13						
Capacity, c (veh/h)		174		747						593						
v/c Ratio		0.35		0.01						0.02						
95% Queue Length, Q_{95} (veh)		1.5		0.0						0.1						
Control Delay (s/veh)		36.6		9.9						11.2						
Level of Service (LOS)		E		A						B						
Approach Delay (s/veh)		34.6								0.1						
Approach LOS		D														

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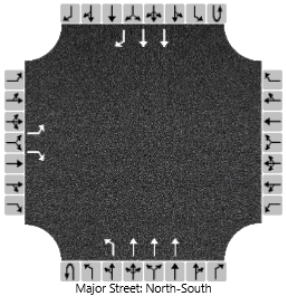
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	North Entrance
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	2/22/2021	East/West Street	Entrance
Analysis Year	2023	North/South Street	Bardstown Road
Time Analyzed	PM Peak	Peak Hour Factor	0.98
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Hogan Bardstown		

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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	3	0	0	0	2	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		5		5					0	15	1867				2738	31
Percent Heavy Vehicles (%)		1		1					3	1						
Proportion Time Blocked		0.720		0.720						0.720						
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Left Only								2						

Critical and Follow-up Headways

Base Critical Headway (sec)		6.4		6.9						4.1						
Critical Headway (sec)		5.72		6.92						4.12						
Base Follow-Up Headway (sec)		3.8		3.3						2.2						
Follow-Up Headway (sec)		3.81		3.31						2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5		5						15						
Capacity, c (veh/h)		17		305						57						
v/c Ratio		0.30		0.02						0.27						
95% Queue Length, Q_{95} (veh)		0.8		0.1						0.9						
Control Delay (s/veh)		291.0		17.0						89.7						
Level of Service (LOS)		F		C						F						
Approach Delay (s/veh)		154.0								0.7						
Approach LOS		F														

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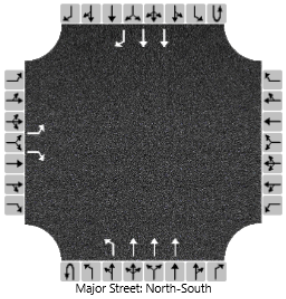
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	North Entrance
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	2/25/2021	East/West Street	Entrance
Analysis Year	2033	North/South Street	Bardstown Road
Time Analyzed	PM Peak	Peak Hour Factor	0.98
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Hogan Bardstown		

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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	1	3	0	0	0	2	1
Configuration		L		R						L	T				T	R
Volume (veh/h)		5		5					0	15	1962				2898	29
Percent Heavy Vehicles (%)		1		1					3	1						
Proportion Time Blocked		0.720		0.720						0.720						
Percent Grade (%)		0														
Right Turn Channelized		No												No		
Median Type | Storage		Left Only								2						

Critical and Follow-up Headways

Base Critical Headway (sec)		6.4		6.9						4.1						
Critical Headway (sec)		5.72		6.92						4.12						
Base Follow-Up Headway (sec)		3.8		3.3						2.2						
Follow-Up Headway (sec)		3.81		3.31						2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5		5						15						
Capacity, c (veh/h)		8		305						34						
v/c Ratio		0.64		0.02						0.45						
95% Queue Length, Q_{95} (veh)		1.2		0.1						1.5						
Control Delay (s/veh)		746.2		17.0						181.4						
Level of Service (LOS)		F		C						F						
Approach Delay (s/veh)		381.6								1.4						
Approach LOS		F														

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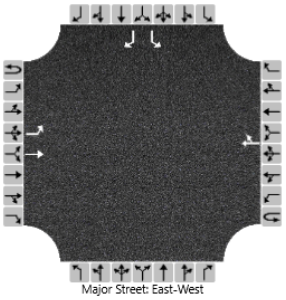
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Cedar Creek Entrance
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	3/29/21	East/West Street	Cedar Creek Road
Analysis Year	2023	North/South Street	Entrance
Time Analyzed	AM Peak	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Cedar Creek Crossings		

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	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		21	354				119	138						74		11
Percent Heavy Vehicles (%)		1												1		1
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)		4.11												6.41		6.21
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.21												3.51		3.31

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		23												80		12
Capacity, c (veh/h)		1289												436		839
v/c Ratio		0.02												0.18		0.01
95% Queue Length, Q_{95} (veh)		0.1												0.7		0.0
Control Delay (s/veh)		7.8												15.1		9.4
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)		0.4												14.4		
Approach LOS														B		

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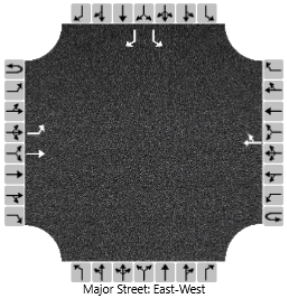
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Cedar Creek Entrance
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	3/29/2021	East/West Street	Cedar Creek Road
Analysis Year	2033	North/South Street	Entrance
Time Analyzed	AM Peak	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Cedar Creek Crossings		

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	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		21	381				125	138						74		11
Percent Heavy Vehicles (%)		1												1		1
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)		4.11												6.41		6.21
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.21												3.51		3.31

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		23												80		12
Capacity, c (veh/h)		1282												416		832
v/c Ratio		0.02												0.19		0.01
95% Queue Length, Q_{95} (veh)		0.1												0.7		0.0
Control Delay (s/veh)		7.9												15.7		9.4
Level of Service (LOS)		A												C		A
Approach Delay (s/veh)		0.4												14.9		
Approach LOS														B		

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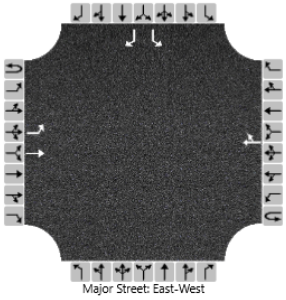
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Cedar Creek Entrance
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	2/22/2021	East/West Street	Cedar Creek Road
Analysis Year	2023	North/South Street	Entrance
Time Analyzed	PM Peak	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Cedar Creek Crossings		

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	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		21	247				333	128						136		15
Percent Heavy Vehicles (%)		1												1		1
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)		4.11												6.41		6.21
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.21												3.51		3.31

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		23												148		16
Capacity, c (veh/h)		1068												374		626
v/c Ratio		0.02												0.39		0.03
95% Queue Length, Q_{95} (veh)		0.1												1.8		0.1
Control Delay (s/veh)		8.4												20.7		10.9
Level of Service (LOS)		A												C		B
Approach Delay (s/veh)	0.7												19.8			
Approach LOS													C			

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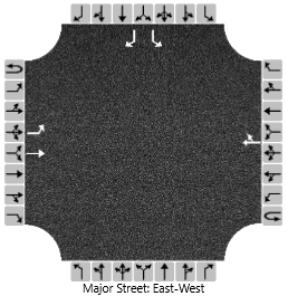
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Cedar Creek Entrance
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	2/25/2021	East/West Street	Cedar Creek Road
Analysis Year	2033	North/South Street	Entrance
Time Analyzed	PM Peak	Peak Hour Factor	0.92
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Cedar Creek Crossings		

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	1	1	0	0	0	1	0		0	0	0		1	0	1
Configuration		L	T					TR						L		R
Volume (veh/h)		21	266				350	128						136		15
Percent Heavy Vehicles (%)		1												1		1
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)		4.11												6.41		6.21
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.21												3.51		3.31

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		23												148		16
Capacity, c (veh/h)		1052												355		611
v/c Ratio		0.02												0.42		0.03
95% Queue Length, Q_{95} (veh)		0.1												2.0		0.1
Control Delay (s/veh)		8.5												22.2		11.1
Level of Service (LOS)		A												C		B
Approach Delay (s/veh)		0.6												21.1		
Approach LOS														C		

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