final report

May 29, 2026

Traffic Impact Study

Buckner Crossing Retail
KY 393
Buckner, KY

Prepared for

Oldham County Planning and Zoning Commission
Kentucky Transportation Cabinet

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INTRODUCTION

The preliminary development plan for Buckner Crossing at the northeast corner of KY 393 and Commerce Parkway in Buckner, KY shows a retail center anchored with a grocery store and seven outlots. **Figure 1** displays a map of the site. Access to the development will be from KY 393 and Commerce Parkway. 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 KY 393 with KY 146, Commerce Parkway, and the I 71 south ramps, as well as the proposed entrances.

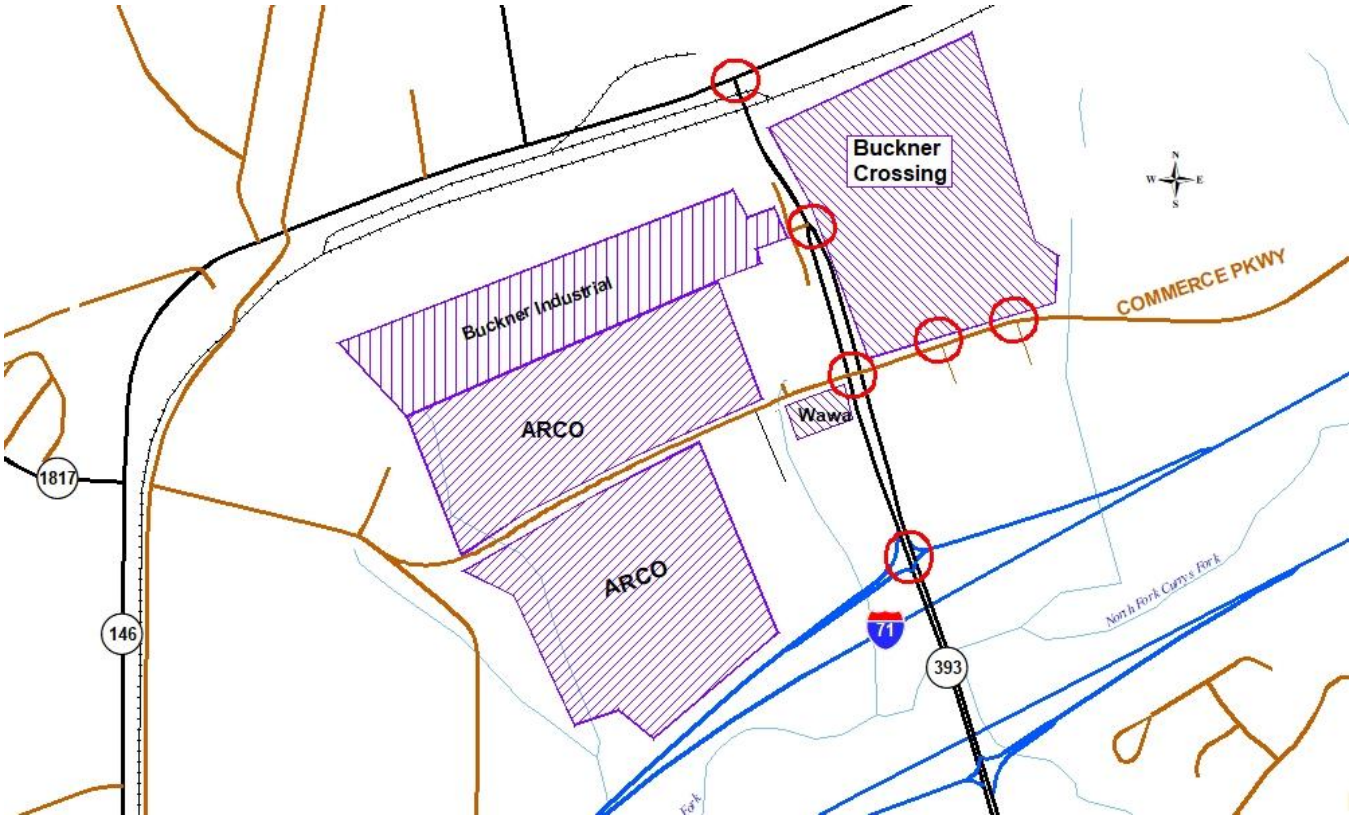


Figure 1. Site Map

EXISTING CONDITIONS

KY 393, is maintained by the Kentucky Transportation Cabinet (KYTC) with an estimated 2026 ADT of 8,000 vehicles per day north of Commerce Parkway, as estimated from the count data collected for this study. (Estimated ADT is derived by dividing peak hour volume by 0.104, the reported K factor for KYTC station 250). Between the access to Old KY 393 and KY 146 the road is a two-lane road with eleven-foot lanes and a two-foot shoulder. The road is classified as an arterial in the Oldham County Functional Classification system. The speed limit is 35 mph. There are no sidewalks. South of the access to Old KY 393, the road has four lanes. The intersection with KY 146 is controlled with a stop sign on KY 393. There are no turn lanes. The intersection with Commerce Parkway is controlled with a traffic signal. There are left turn lanes and a northbound and westbound right turn lane. The intersection with I 71 southbound ramps is controlled with a stop sign on the ramp. There is a northbound left turn lane and a southbound right turn lane.

A.m. and p.m. peak hour turning movement counts for the intersections of KY 393 with I 71 South and Commerce Parkway, and Commerce Parkway at both Kroger center entrances were collected on Tuesday, February 24, 2026. The a.m. peak occurred between 7:45 and 8:45 and the p.m. peak hour occurred between 3:45 and 4:45 p.m. **Figure 2** illustrates the 2026 peak hour traffic volumes. Counts at KY 146 and the access road were collected on different dates. The full count data is included in the Appendix.

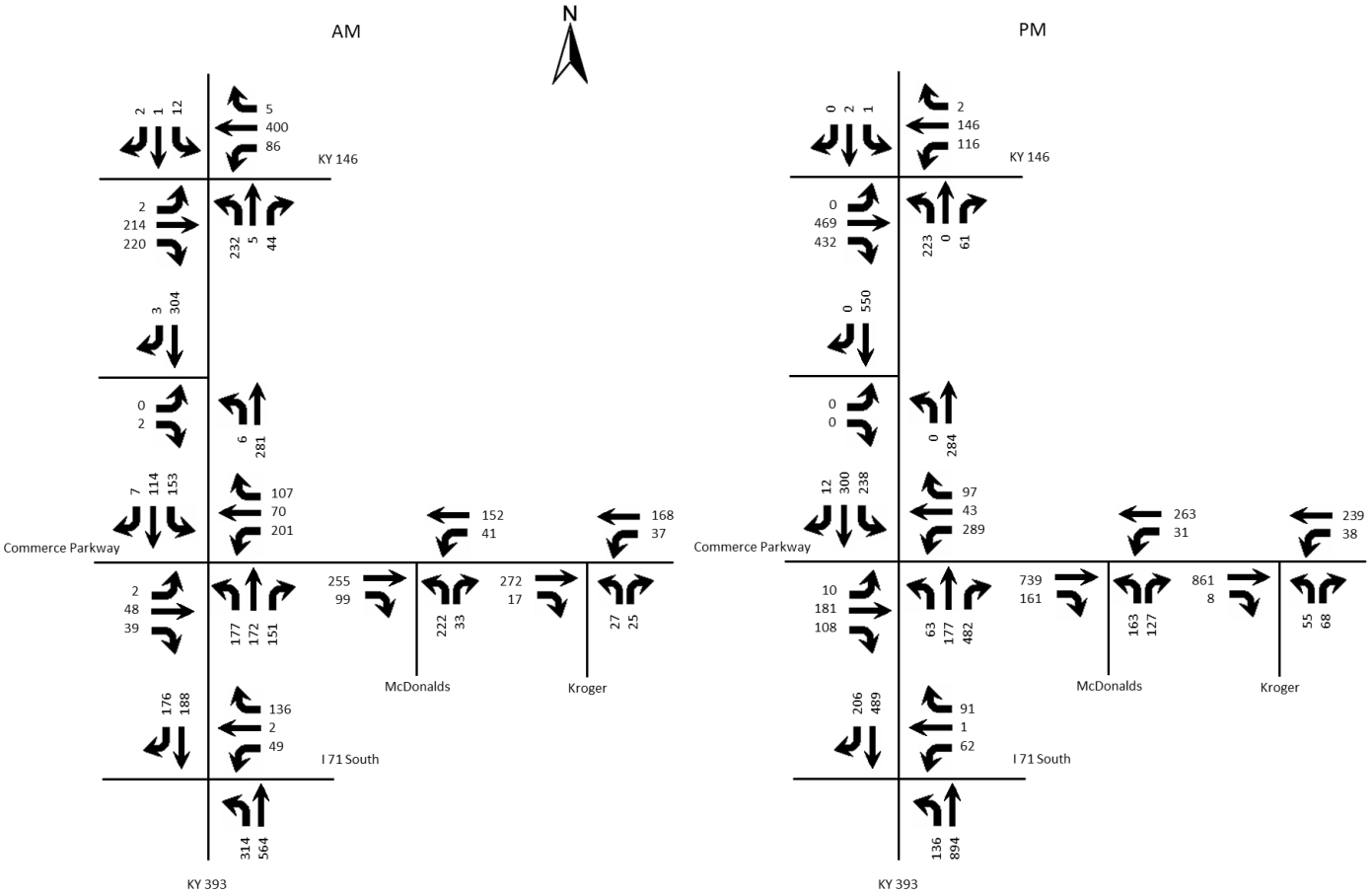


Figure 2. Existing Peak Hour Volumes

FUTURE CONDITIONS

The projected completion year for this project is 2028. The volumes are projected to increase by 0.5 percent per year. This is based upon the historical growth at KYTC traffic station 250, 256, and 330. The forecast spreadsheet is included in the appendix. Additionally, trip generation for the Wawa and warehouses west of KY 393 has been included. The trip generation for each of those sites is included in the appendix. **Figure 3** displays the 2028 No Build volumes.

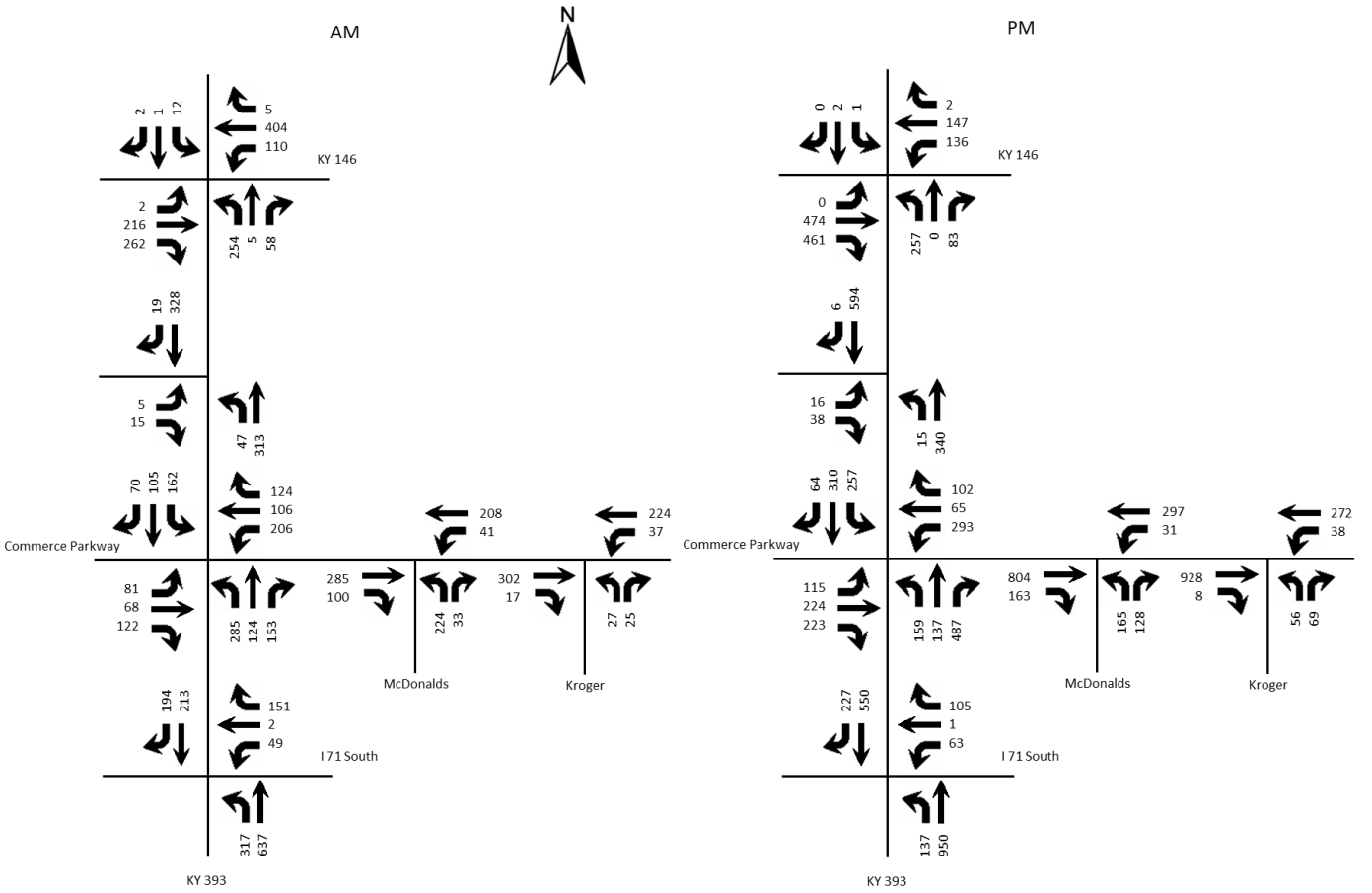


Figure 3. No Build Peak Hour Volumes

TRIP GENERATION

The Institute of Transportation Engineers Trip Generation Manual, 12th Edition contains trip generation rates for a wide range of developments. The categories of "Shopping Plaza (40-150K) with Grocery (821)", "Home Improvement Superstore (862)" best describes the proposed uses. 5,000 square feet were used for the six smaller outlots. The trip generation results are listed in **Table 1**.

The trips at the driveway 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. The pass-by trips are assigned based upon the existing directional travel on KY 393 and Commerce Parkway. These trips are shown in parenthesis. **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 Plaza with Grocery (88,653 sf)	314	188	126	761	373	388
Home Improvement (107,504 sf)	161	92	69	245	120	125
TOTAL	**475**	**280**	**195**	**1,006**	**493**	**513**
Pass-by Trips	0	0	0	407	199	208
New Trips	475	280	195	599	294	305

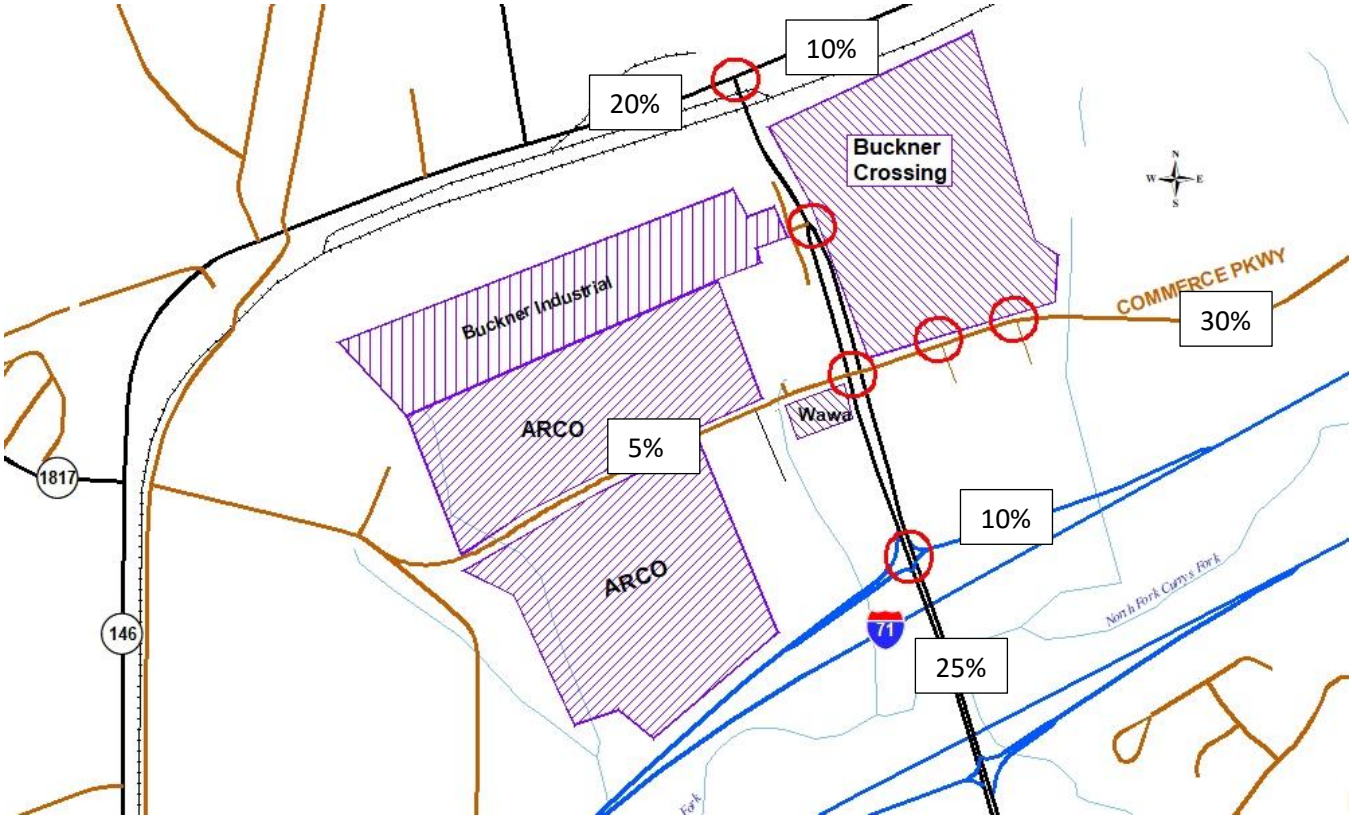


Figure 4. Trip Distribution Percentages

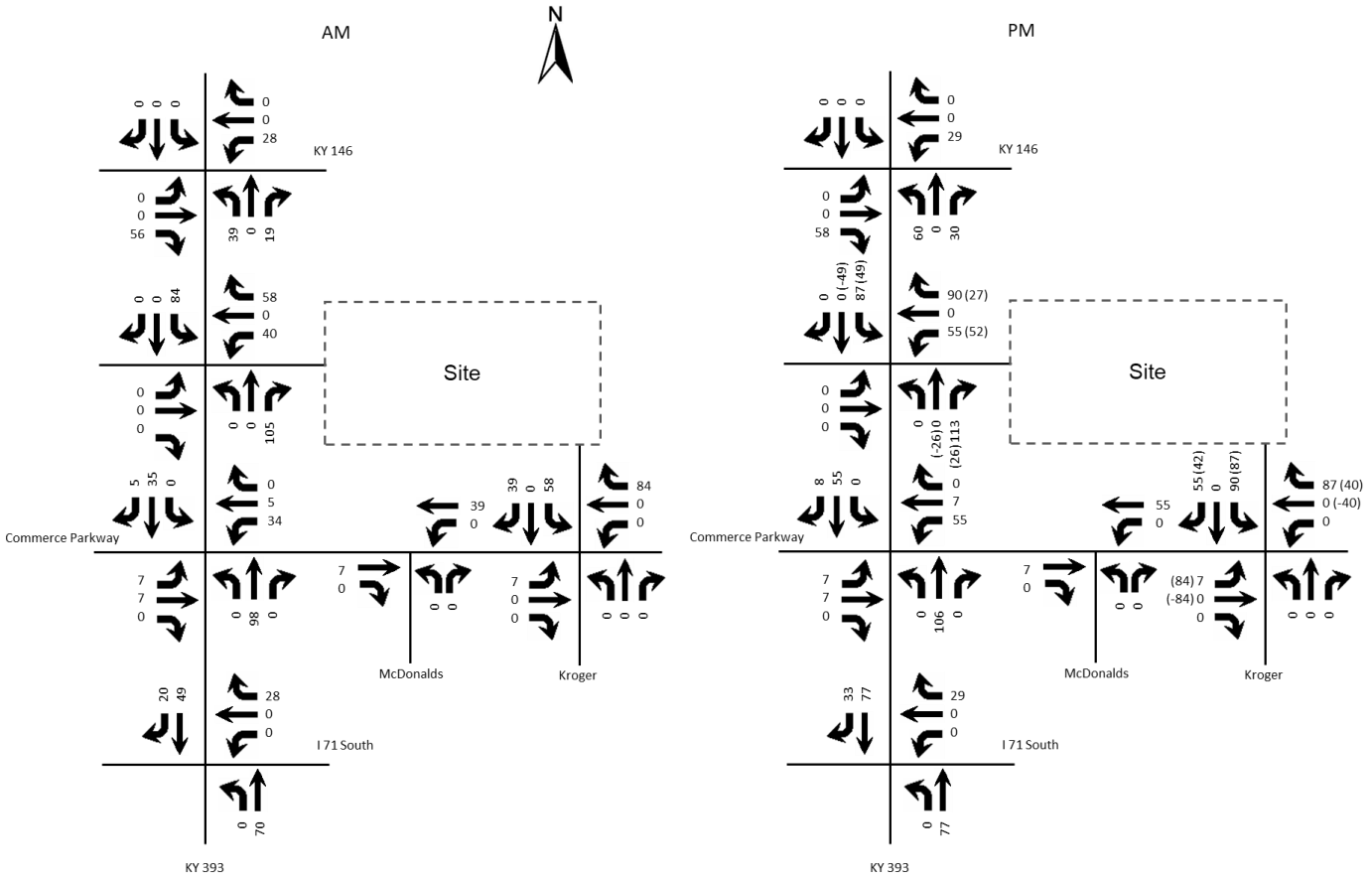


Figure 5. Peak Hour Trips Generated by Site

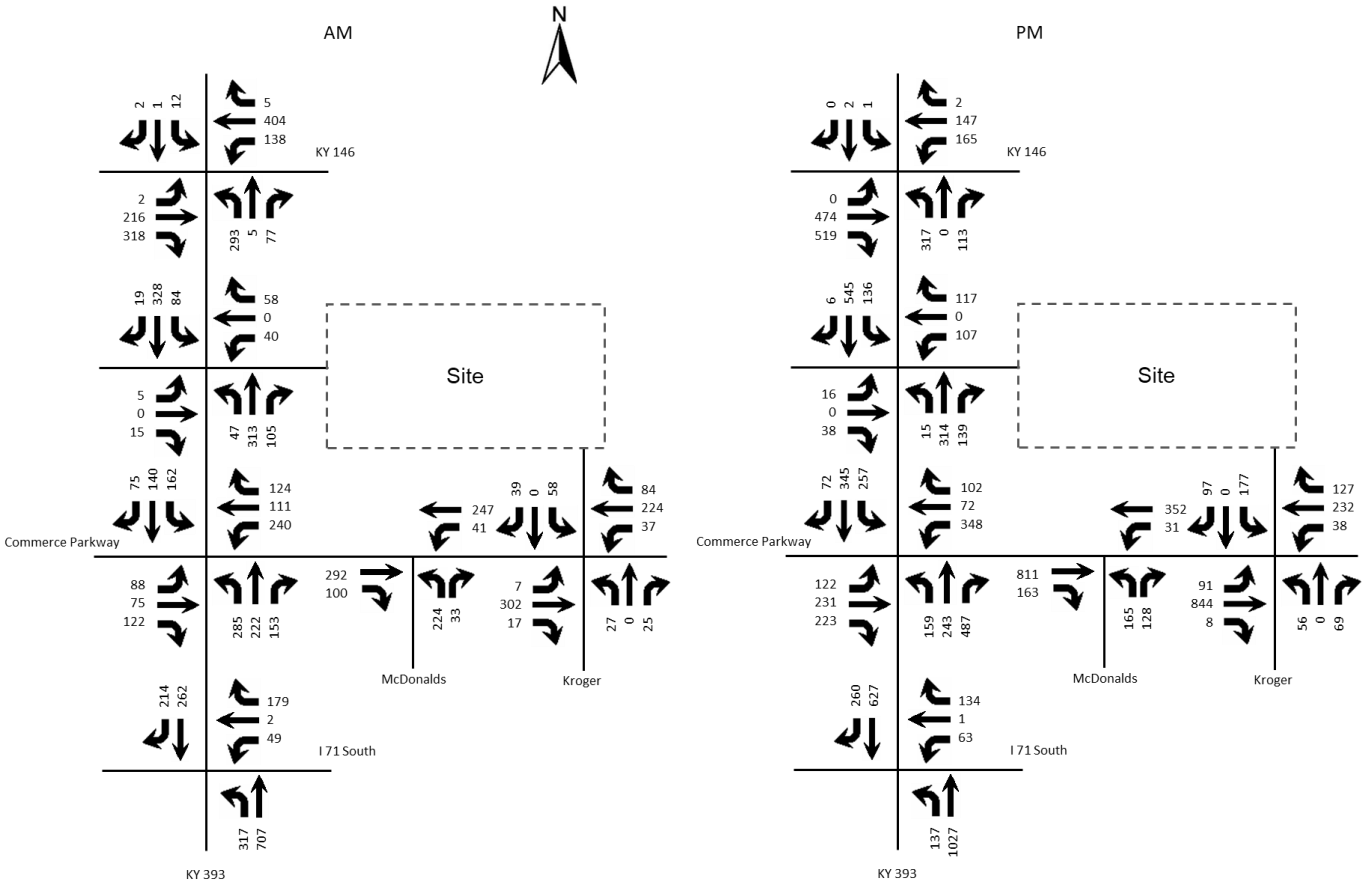


Figure 6. 2028 Build Peak Hour Volumes

ANALYSIS

The qualitative measure of operation for a roadway facility or intersection is evaluated by assigning a "Level of Service" or LOS. Level of Service is a ranking scale from A through F with each level representing a range. LOS results depend upon the type of facility that is analyzed. In this case, the LOS is based upon the average vehicle delay each movement experiences at an intersection.

To evaluate the impact of the proposed development, the vehicle delays at the intersection were determined using procedures detailed in the Highway Capacity Manual, 7th edition. Average delay and Level of Service were determined for the intersection using Highway Capacity Software Streets and TWSC (version 2026). **Table 2** shows the results of the analysis. The full printouts are included in the appendix.

Table 2. Peak Hour Level of Service Summary

	A.M.			P.M.		
Approach	2026 Existing	2028 No Build	2028 Build	2026 Existing	2028 No Build	2028 Build
KY 393 at I 71 South						
I 71 South Ramp Westbound	D 34.7	E 42.3	F 53.1	E 38.0	E 45.0	F 58.3
KY 393 Northbound (left)	A 8.7	A 8.8	A 9.1	A 9.0	A 9.3	A 9.7
KY 393 at Commerce Parkway	**C 24.8**	**C 30.1**	**C 32.1**	**D 42.0**	**D 48.7**	**D 53.1**
Commerce Parkway Eastbound	D 41.0	D 47.7	D 49.3	E 73.2	F 88.7	F 97.5
Commerce Parkway Westbound	D 37.6	D 42.6	D 46.5	E 62.7	E 56.5	E 67.9
KY 393 Northbound	B 16.2	B 17.7	B 19.6	C 29.2	C 30.1	C 30.9
KY 393 Southbound	B 18.4	C 22.8	C 24.8	C 27.5	C 34.7	D 37.6
KY 393 at Entrance						
Access Road Eastbound	B 11.0	B 11.5	B 13.1	None	B 14.2	C 17.7
Buckner Crossing Entrance Westbound			B 15.0			D 28.5
KY 393 Northbound	A 8.2	A 8.4	A 8.4	None	A 9.1	A 8.9
KY 393 Southbound			A 8.6			A 8.8
KY 393 at KY 146						
KY 146 Eastbound	A 9.0	A 9.0	A 9.0	A 7.6	A 7.6	A 7.6
KY 146 Westbound	A 8.0	A 8.0	A 8.1	A 9.2	A 9.3	A 9.5
KY 393 Northbound	F 261.7	F 444.5	F 765.4	F 725.3	F 1107.4	F 1819.9
KY 393 Southbound (current driveway)	D 25.3	D 29.4	E 35.3	D 30.8	E 36.4	E 47.4
Commerce Parkway at McDonald's						
Commerce Parkway Westbound	A 8.1	A 8.2	A 8.2	B 10.2	B 10.6	B 10.6
McDonald's Drive Northbound	B 14.4	C 15.7	C 16.5	C 23.5	D 27.2	D 28.7
Commerce Parkway at Kroger	**A 4.6**	**A 4.5**	**A 6.7**	**A 7.7**	**A 8.3**	**B 10.6**

Commerce Parkway Eastbound	A 3.0	A 3.1	A 3.9	A 6.8	A 7.7	A 8.5
Commerce Parkway Westbound	A 3.0	A 3.0	A 4.0	A 5.1	A 5.3	A 6.4
Kroger Drive Northbound	C 20.3	C 20.3	B 19.1	C 20.1	C 20.1	B 18.6
Buckner Crossing Southbound			B 19.4			B 19.9

Key: Level of Service, Delay in seconds per vehicle

The entrances were 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 2038. The 2038 volumes were determined applying a 0.5 percent annual growth rate to the 2028 No Build volumes. **Figure 7** illustrates the 2038 No Build volumes. The Kentucky Transportation Cabinet has begun construction on the widening of KY 393. This project will also include the realignment of KY 393 north of KY 146 and installation of a traffic signal. The project is expected to open to traffic in October 2029. The volumes reflect the opening and were determined using the traffic forecast provided for the KY 146 planning study.

Figure 8 illustrates the 2038 Build Volumes. Using the volumes in Figure 8, the volume warrant is not satisfied for a right turn lane at either entrance. Both entrances have existing left turn lanes. **Table 3** summarizes the delay and Level of Service for 2038. Signal timing modifications have been applied.

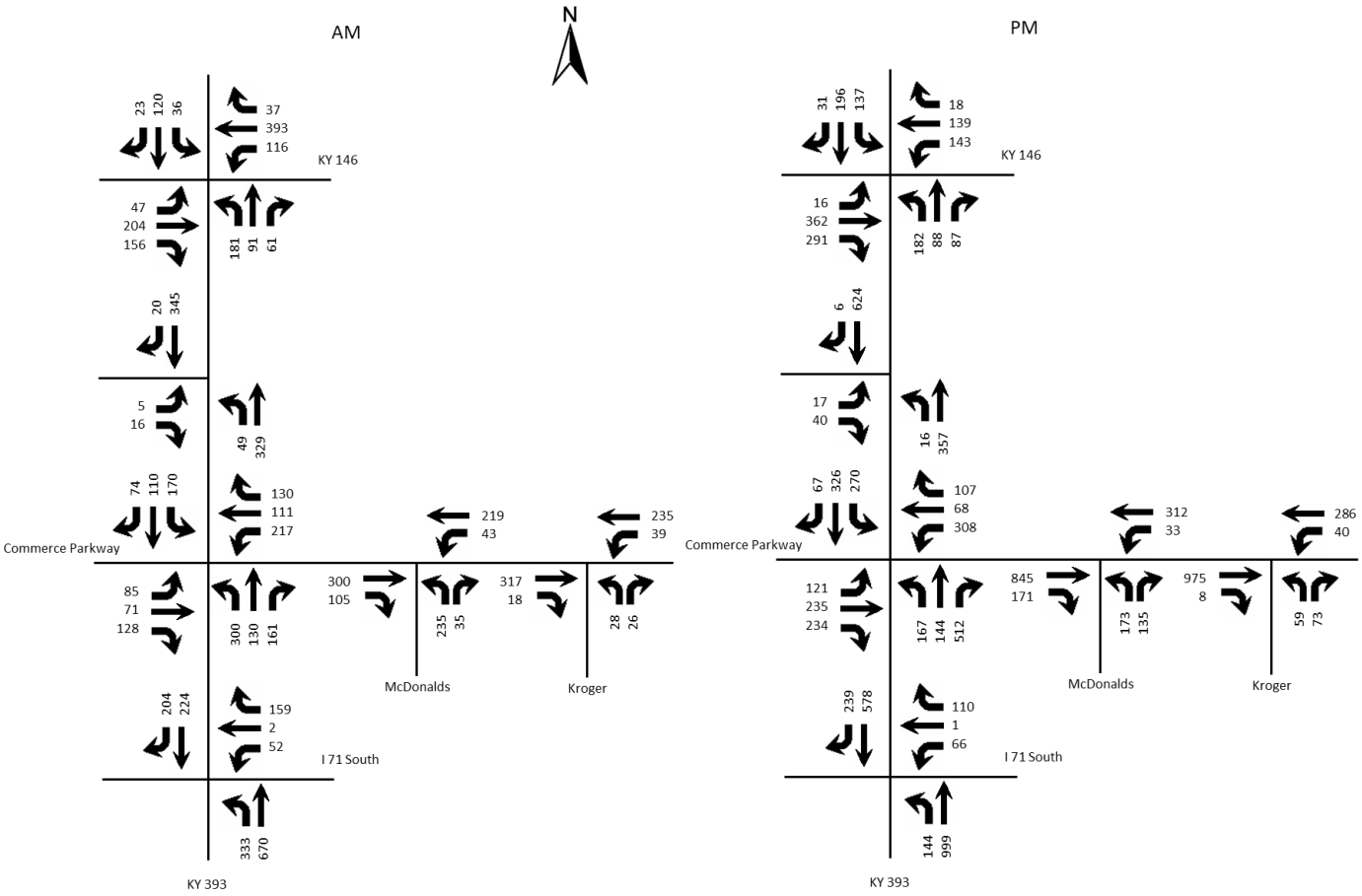


Figure 7. 2038 No Build Peak Hour Volumes

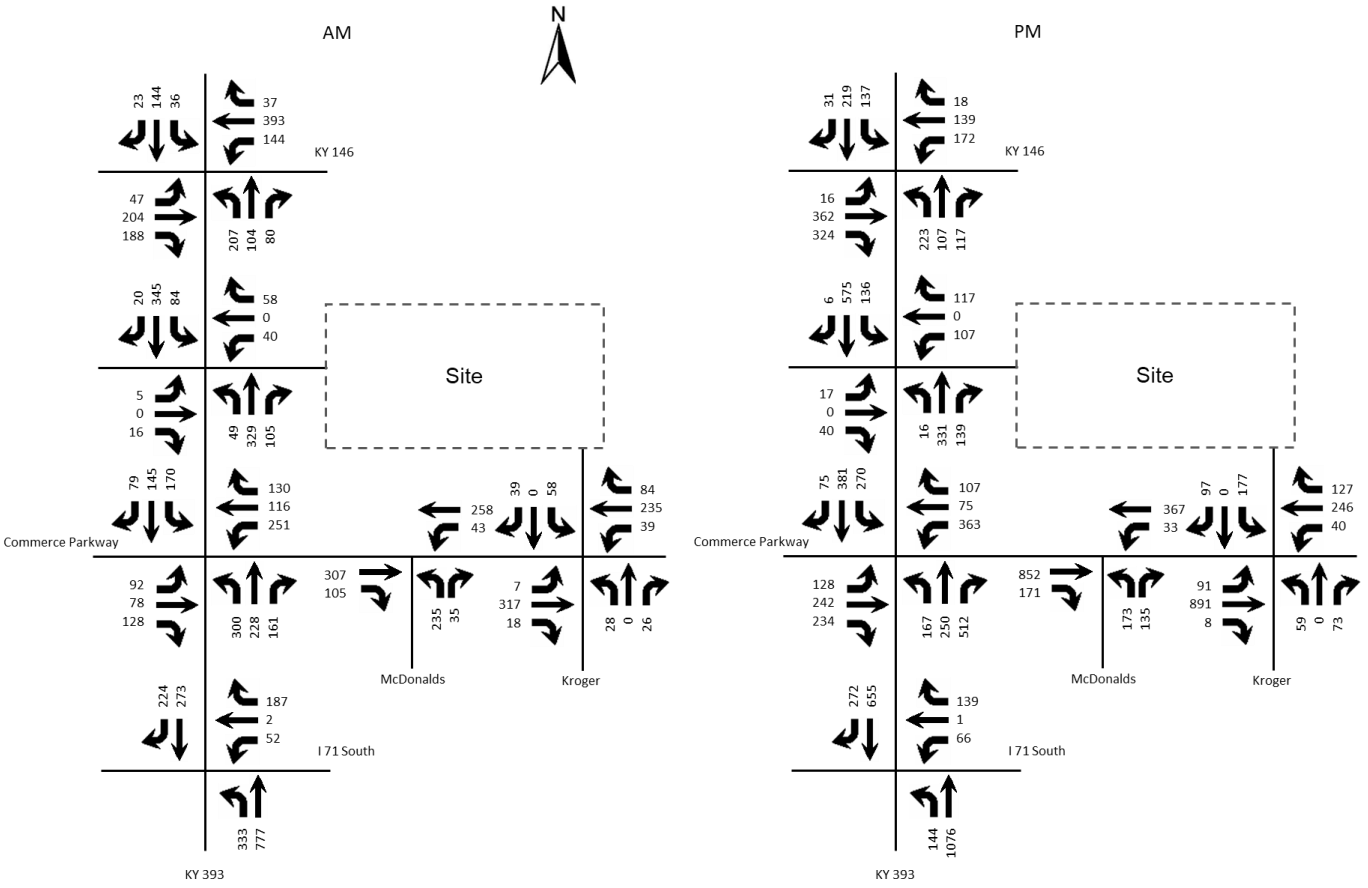


Figure 8. 2038 Build Peak Hour Volumes

Table 3. 2038 Peak Hour Level of Service Summary

	A.M.			P.M.		
Approach	2026 Existing	2038 No Build	2038 Build	2026 Existing	2038 No Build	2038 Build
KY 393 at I 71 South						
I 71 South Ramp Westbound	D 34.7	F 54.4	F 78.1	E 38.0	F 55.8	F 74.5
KY 393 Northbound (left)	A 8.7	A 9.0	A 9.2	A 9.0	A 9.5	A 9.9
KY 393 at Commerce Parkway	**C 24.8**	**C 31.4**	**C 33.7**	**D 42.0**	**D 52.7**	**D 54.0**
Commerce Parkway Eastbound	D 41.0	D 49.1	D 51.6	E 73.2	F 97.5	F 88.7
Commerce Parkway Westbound	D 37.6	D 44.4	D 49.0	E 62.7	E 67.9	E 60.8

KY 393 Northbound	B 16.2	B 18.4	C 20.4	C 29.2	C 30.9	C 35.3
KY 393 Southbound	B 18.4	C 24.0	C 26.1	C 27.5	D 37.6	D 47.2
KY 393 at Entrance						
Access Road Eastbound	B 11.0	B 10.6	B 14.5	None	B 12.4	C 15.6
Buckner Crossing Entrance Westbound			C 15.2			C 20.1
KY 393 Northbound	A 8.2	A 8.5	A 9.8	None	A 9.3	A 9.1
KY 393 Southbound			A 8.6			A 8.9
KY 393 at KY 146		**B 18.9**	**B 19.6**		**C 20.2**	**C 23.2**
KY 146 Eastbound	A 9.0	B 15.7	B 16.4	A 7.6	B 18.5	C 21.6
KY 146 Westbound	A 8.0	B 17.9	B 18.4	A 9.2	B 14.2	B 16.2
KY 393 Northbound	F 261.7	C 21.7	C 22.2	F 725.3	C 23.8	C 25.6
KY 393 Southbound (current driveway)	D 25.3	C 24.1	C 24.7	D 30.8	C 25.4	C 28.9
Commerce Parkway at McDonald's						
Commerce Parkway Westbound	A 8.1	A 8.3	A 8.3	B 10.2	B 10.9	B 10.9
McDonald's Drive Northbound	B 14.4	C 16.6	C 17.5	C 23.5	D 31.2	D 33.1
Commerce Parkway at Kroger	**A 4.6**	**A 4.5**	**A 6.7**	**A 7.7**	**A 8.6**	**B 11.0**
Commerce Parkway Eastbound	A 3.0	A 3.1	A 3.9	A 6.8	A 7.8	A 8.9
Commerce Parkway Westbound	A 3.0	A 3.0	A 4.1	A 5.1	A 5.4	A 6.5
Kroger Drive Northbound	C 20.3	C 20.3	B 19.1	C 20.1	C 22.1	C 20.1
Buckner Crossing Southbound			B 19.4			C 21.3

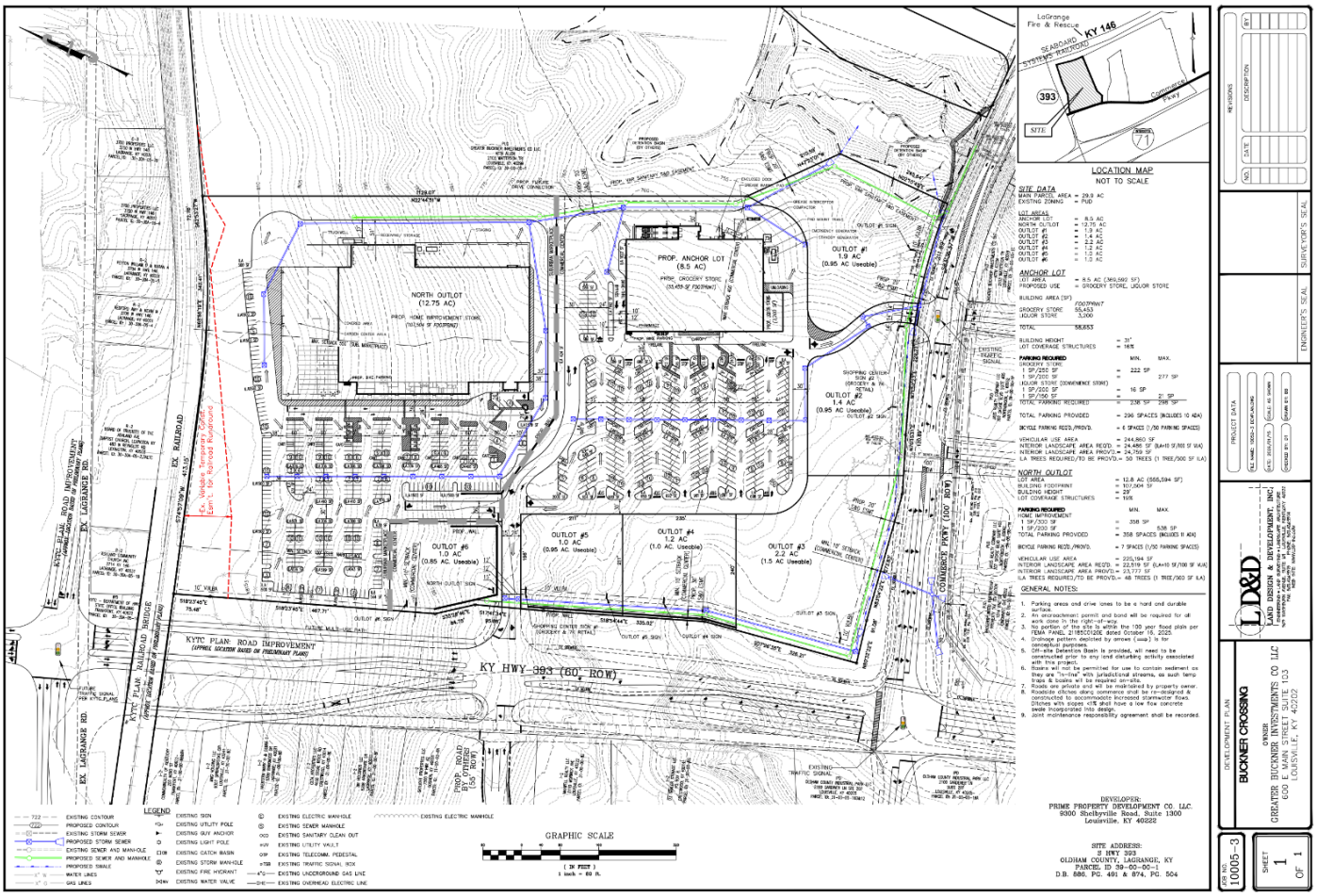
Key: Level of Service, Delay in seconds per vehicle

At the intersection of KY 393 with Commerce Parkway, the delays are impacted by the Oldham County Buckner campus school times. Beginning in August 2026, the school release time will move from 4:00 to 3:45. This change will reduce the volume of school traffic at the intersection during the p.m. peak hour.

CONCLUSIONS

Based upon the volume of traffic generated by Buckner Crossing for the years 2028 and 2038 there will be an impact to the existing highway network. There are no additional roadway improvements that will improve the Level of Service therefore, no mitigation is necessary for the roadway capacity because of this development. The volumes at the entrance do not meet the KYTC volume warrant for right turn lanes. The major roadway improvements being provided with the KY 393 project will greatly enhance operations within the area.

APPENDIX


LOCATION MAP
NOT TO SCALE
SITE DATA
ANCHOR LOT
NORTH OUTLOT
GENERAL NOTES:
DEVELOPER:
PRIME PROPERTY DEVELOPMENT CO. LLC.
9300 Shelbyville Road, Suite 1300
Louisville, KY 40222
SITE ADDRESS:
S HWY 393
OLDHAM COUNTY, LAGRANGE, KY
PARCEL ID 39-00-00-1
D.B. 886, PG. 491 & 874, PG. 504
BUCKNER CROSSING
OWNER
GREATER BUCKNER INVESTMENTS CO LLC
600 E MAIN STREET SUITE 103
LOUISVILLE, KY 40202
LD&D
LAND DESIGN & DEVELOPMENT, INC.
JOB NO. 10005-3
SHEET 1 OF 1
KY HWY 393 (60' ROW)
KYTC PLAN ROAD IMPROVEMENT
EX. LAGRANGE RD.
EX. RAILROAD
COMMERCE PKWY (100' ROW)
PROP. ANCHOR LOT (8.5 AC)
NORTH OUTLOT (12.75 AC)
OUTLOT #1 1.9 AC (0.95 AC Useable)
OUTLOT #2 1.4 AC (0.95 AC Useable)
OUTLOT #3 2.2 AC (1.5 AC Useable)
OUTLOT #4 1.2 AC (1.0 AC. Useable)
OUTLOT #5 1.0 AC (0.95 AC Useable)
OUTLOT #6 1.0 AC (0.85 AC. Useable)
GRAPHIC SCALE
LEGEND

Traffic Count

Classified Turn Movement Count || All vehicles

Buckner, KY

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Site 3
I-71 S/Bound On-Ramp
I-71 S/Bound Off-Ramp
KY-393 (West)
KY-393 (East)

Date
Tuesday, February 24, 2026

Lat/Long
38.378642°, -85.428326°
Click here for Map

Weather
Fair
33°F
Click here for Detailed Weather
#####

0700 - 0900 (Weekday 2h Session) (02-24-2026)
All vehicles

	Northbound				Southbound				Eastbound				Westbound				
	I-71 S/Bound On-Ramp				I-71 S/Bound Off-Ramp				KY-393 (West)				KY-393 (East)				
					Left	Thru	Right	App	Thru	Right	U-Turn	App	Left	Thru	U-Turn	App	Int
TIME					3.1	3.2	3.3	Total	3.4	3.5	3.6	Total	3.7	3.8	3.9	Total	Total
0700 - 0715					14	0	38	52	31	29	0	60	82	81	0	163	275
0715 - 0730					19	0	17	36	52	48	0	100	102	114	0	216	352
0730 - 0745					21	1	25	47	50	50	0	100	103	140	0	243	390
0745 - 0800					17	1	30	48	43	48	0	91	79	127	0	206	345
Hourly Total					71	2	110	**183**	176	175	0	**351**	366	462	0	**828**	**1362**
0800 - 0815					11	1	24	36	33	50	0	83	80	115	0	195	314
0815 - 0830					10	0	40	50	49	30	0	79	78	143	0	221	350
0830 - 0845					11	0	42	53	63	48	0	111	77	179	0	256	420
0845 - 0900					11	0	24	35	77	40	0	117	66	118	0	184	336
Hourly Total					43	1	130	**174**	222	168	0	**390**	301	555	0	**856**	**1420**
Grand Total					114	3	240	**357**	398	343	0	**741**	667	1017	0	**1684**	**2782**
Approach %					31.93	0.84	67.23	-	53.71	46.29	0.00	-	39.61	60.39	0.00	-	
Intersection %					4.10	0.11	8.63	12.83	14.31	12.33	0.00	26.64	23.98	36.56	0.00	60.53	
Heavy Vehicle %					4	0	4	**4**	4	5	-	**4**	1	4	-	**3**	**3**
PHF					0.72	0.50	0.81	**0.88**	0.75	0.88	0.00	**0.82**	0.98	0.79	0.00	**0.86**	**0.85**
Peak Hour Total					49	2	136	**187**	188	176	0	**364**	314	564	0	**878**	**1429**
Peak Hour HV %					6	0	3	**4**	4	5	0	**4**	2	4	0	**3**	**4**

1545 - 1745 (Weekday 2h Session) (02-24-2026)
All vehicles

	Northbound				Southbound				Eastbound				Westbound				
	I-71 S/Bound On-Ramp				I-71 S/Bound Off-Ramp				KY-393 (West)				KY-393 (East)				
					Left	Thru	Right	App	Thru	Right	U-Turn	App	Left	Thru	U-Turn	App	Int
TIME					3.1	3.2	3.3	Total	3.4	3.5	3.6	Total	3.7	3.8	3.9	Total	Total
1545 - 1600					10	1	25	36	81	46	0	127	26	248	0	274	437
1600 - 1615					16	0	27	43	147	61	0	208	26	234	0	260	511
1615 - 1630					22	0	16	38	122	36	0	158	50	235	0	285	481
1630 - 1645					14	0	23	37	139	63	0	202	34	177	0	211	450
Hourly Total					62	1	91	**154**	489	206	0	**695**	136	894	0	**1030**	**1879**
1645 - 1700					17	0	11	28	111	49	0	160	41	146	0	187	375
1700 - 1715					23	0	19	42	115	29	0	144	37	94	0	131	317
1715 - 1730					19	0	19	38	85	47	0	132	35	116	0	151	321
1730 - 1745					12	0	25	37	88	46	0	134	35	107	0	142	313
Hourly Total					71	0	74	**145**	399	171	0	**570**	148	463	0	**611**	**1326**
Grand Total					133	1	165	**299**	888	377	0	**1265**	284	1357	0	**1641**	**3205**
Approach %					44.48	0.33	55.18	-	70.20	29.80	0.00	-	17.31	82.69	0.00	-	
Intersection %					4.15	0.03	5.15	9.33	27.71	11.76	0.00	39.47	8.86	42.34	0.00	51.20	
Heavy Vehicle %					2	0	2	**2**	1	2	-	**1**	1	4	-	**3**	**2**
PHF					0.70	0.25	0.84	**0.90**	0.83	0.82	0.00	**0.84**	0.68	0.90	0.00	**0.90**	**0.92**
Peak Hour Total					62	1	91	**154**	489	206	0	**695**	136	894	0	**1030**	**1879**
Peak Hour HV %					2	0	2	**2**	1	2	0	**2**	1	4	0	**3**	**3**

Classified Turn Movement Count || All vehicles

Buckner, KY

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Site 2
KY-393 (South)
KY-393 (North)
Commerce Pkwy (West)
Commerce Pkwy (East)

Date
Tuesday, February 24, 2026

Lat/Long
38.381426°, -85.429470°
Click here for Map

Weather
Fair
33°F
Click here for Detailed Weather
######

0700 - 0900 (Weekday 2h Session) (02-24-2026)
All vehicles

	Northbound KY-393 (South)					Southbound KY-393 (North)					Eastbound Commerce Pkwy (West)					Westbound Commerce Pkwy (East)					
TIME	Left 2.1	Thru 2.2	Right 2.3	U-Turn 2.4	App Total	Left 2.5	Thru 2.6	Right 2.7	U-Turn 2.8	App Total	Left 2.9	Thru 2.10	Right 2.11	U-Turn 2.12	App Total	Left 2.13	Thru 2.14	Right 2.15	U-Turn 2.16	App Total	Int Total
0700 - 0715	17	54	33	0	104	15	26	0	0	41	0	3	4	0	7	28	8	14	0	50	202
0715 - 0730	11	40	44	0	95	21	53	2	0	76	0	10	6	0	16	42	7	15	0	64	251
0730 - 0745	24	43	52	0	119	40	51	3	0	94	0	7	1	0	8	48	10	18	0	76	297
0745 - 0800	30	46	43	0	119	38	25	1	0	64	2	4	4	0	10	61	10	18	0	89	282
Hourly Total	82	183	172	0	**437**	114	155	6	0	**275**	2	24	15	0	**41**	179	35	65	0	**279**	**1032**
0800 - 0815	31	37	36	0	104	35	26	2	0	63	0	6	4	0	10	52	14	37	0	103	280
0815 - 0830	42	44	41	0	127	39	36	2	0	77	1	15	9	0	25	41	20	31	0	92	321
0830 - 0845	63	57	34	1	155	30	37	2	0	69	0	11	15	0	26	53	22	18	0	93	343
0845 - 0900	41	34	40	1	116	49	48	1	0	98	1	16	11	0	28	55	14	21	0	90	332
Hourly Total	177	172	151	2	**502**	153	147	7	0	**307**	2	48	39	0	**89**	201	70	107	0	**378**	**1276**
Grand Total	259	355	323	2	**939**	267	302	13	0	**582**	4	72	54	0	**130**	380	105	172	0	**657**	**2308**
Approach %	27.58	37.81	34.40	0.21	-	45.88	51.89	2.23	0.00	-	3.08	55.38	41.54	0.00	-	57.84	15.98	26.18	0.00	-	
Intersection %	11.22	15.38	13.99	0.09	40.68	11.57	13.08	0.56	0.00	25.22	0.17	3.12	2.34	0.00	5.63	16.46	4.55	7.45	0.00	28.47	
Heavy Vehicle %	3	5	6	0	**5**	3	4	8	-	**4**	0	0	11	-	**5**	3	1	2	-	**3**	**4**
PHF	0.70	0.75	0.92	0.50	**0.81**	0.78	0.77	0.88	0.00	**0.78**	0.50	0.75	0.65	0.00	**0.79**	0.91	0.80	0.72	0.00	**0.92**	**0.93**
Peak Hour Total	177	172	151	2	**502**	153	147	7	0	**307**	2	48	39	0	**89**	201	70	107	0	**378**	**1276**
Peak Hour HV %	2	5	7	0	**5**	3	5	14	0	**4**	0	0	5	0	**2**	3	0	3	0	**3**	**4**

1545 - 1745 (Weekday 2h Session) (02-24-2026)
All vehicles

	Northbound KY-393 (South)					Southbound KY-393 (North)					Eastbound Commerce Pkwy (West)					Westbound Commerce Pkwy (East)					
TIME	Left 2.1	Thru 2.2	Right 2.3	U-Turn 2.4	App Total	Left 2.5	Thru 2.6	Right 2.7	U-Turn 2.8	App Total	Left 2.9	Thru 2.10	Right 2.11	U-Turn 2.12	App Total	Left 2.13	Thru 2.14	Right 2.15	U-Turn 2.16	App Total	Int Total
1545 - 1600	13	46	141	0	200	41	47	2	0	90	2	25	17	0	44	61	13	26	0	100	434
1600 - 1615	22	43	125	0	190	82	112	2	0	196	3	52	25	0	80	70	8	14	0	92	558
1615 - 1630	13	64	136	0	213	70	75	1	0	146	4	58	23	0	85	61	12	25	0	98	542
1630 - 1645	14	24	80	1	119	45	66	7	0	118	1	46	43	0	90	97	10	32	0	139	466
Hourly Total	62	177	482	1	**722**	238	300	12	0	**550**	10	181	108	0	**299**	289	43	97	0	**429**	**2000**
1645 - 1700	12	28	46	1	87	39	59	8	0	106	0	19	23	0	42	76	9	28	0	113	348
1700 - 1715	7	28	31	0	66	46	38	0	0	84	0	20	22	0	42	85	8	28	0	121	313
1715 - 1730	5	27	53	0	85	50	31	1	0	82	2	13	15	0	30	83	6	27	0	116	313
1730 - 1745	16	27	30	0	73	27	41	1	0	69	1	14	15	0	30	76	12	27	0	115	287
Hourly Total	40	110	160	1	**311**	162	169	10	0	**341**	3	66	75	0	**144**	320	35	110	0	**465**	**1261**
Grand Total	102	287	642	2	**1033**	400	469	22	0	**891**	13	247	183	0	**443**	609	78	207	0	**894**	**3261**
Approach %	9.87	27.78	62.15	0.19	-	44.89	52.64	2.47	0.00	-	2.93	55.76	41.31	0.00	-	68.12	8.72	23.15	0.00	-	
Intersection %	3.13	8.80	19.69	0.06	31.68	12.27	14.38	0.67	0.00	27.32	0.40	7.57	5.61	0.00	13.58	18.68	2.39	6.35	0.00	27.41	
Heavy Vehicle %	1	3	6	0	**4**	2	2	0	-	**2**	8	1	0	-	**1**	1	0	1	-	**1**	**2**
PHF	0.70	0.69	0.85	0.25	**0.85**	0.73	0.67	0.43	0.00	**0.70**	0.63	0.78	0.63	0.00	**0.83**	0.74	0.83	0.76	0.00	**0.77**	**0.90**
Peak Hour Total	62	177	482	1	**722**	238	300	12	0	**550**	10	181	108	0	**299**	289	43	97	0	**429**	**2000**
Peak Hour HV %	2	3	5	0	**4**	2	2	0	0	**2**	10	0	0	0	**0**	2	0	3	0	**2**	**3**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION
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Oldham County, KY

Site 1
KY-393
KY-393 W Elder Park Rd
Frontage Road

Date
Tuesday, April 22, 2025

Lat/Long
38.383625°, -85.430276°
Click here for Map

Weather
Mostly Cloudy
64°F
Click here for Detailed Weather

0700 - 0900 (Weekday 2h Session) (04-22-2025)
All vehicles

	Northbound KY-393				Southbound KY-393 W Elder Park Rd				Eastbound Frontage Road				
TIME	Left 1.1	Thru 1.2	U-Turn 1.3	App Total	Thru 1.4	Right 1.5	U-Turn 1.6	App Total	Left 1.7	Right 1.8	U-Turn 1.9	App Total	Int Total
0700 - 0715	0	53	0	53	53	0	0	53	0	0	0	0	106
0715 - 0730	0	54	1	55	95	0	0	95	0	0	0	0	150
0730 - 0745	3	57	1	61	98	2	0	100	0	0	0	0	161
0745 - 0800	1	81	0	82	70	0	0	70	0	1	0	1	153
Hourly Total	4	245	2	**251**	316	2	0	**318**	0	1	0	**1**	**570**
0800 - 0815	2	45	0	47	58	1	0	59	0	1	0	1	107
0815 - 0830	0	50	1	51	67	0	0	67	0	0	0	0	118
0830 - 0845	0	71	0	71	86	0	0	86	0	1	0	1	158
0845 - 0900	1	40	6	47	75	0	0	75	1	1	0	2	124
Hourly Total	3	206	7	**216**	286	1	0	**287**	1	3	0	**4**	**507**
Grand Total	7	451	9	**467**	602	3	0	**605**	1	4	0	**5**	**1077**
Approach %	1.50	96.57	1.93	-	99.50	0.50	0.00	-	20.00	80.00	0.00	-	
Intersection %	0.65	41.88	0.84	43.36	55.90	0.28	0.00	56.17	0.09	0.37	0.00	0.46	
Heavy Vehicle %	14	5	0	**5**	4	0	-	**4**	0	75	-	**60**	**4**
PHF	0.50	0.73	0.50	**0.75**	0.82	0.38	0.00	**0.81**	0.00	0.50	0.00	**0.50**	**0.89**
Peak Hour Total	6	237	2	**245**	321	3	0	**324**	0	2	0	**2**	**571**
Peak Hour HV %	17	5	0	**5**	4	0	0	**4**	0	50	0	**50**	**4**

1600 - 1800 (Weekday 2h Session) (04-22-2025)
All vehicles

	Northbound KY-393				Southbound KY-393 W Elder Park Rd				Eastbound Frontage Road				
TIME	Left 1.1	Thru 1.2	U-Turn 1.3	App Total	Thru 1.4	Right 1.5	U-Turn 1.6	App Total	Left 1.7	Right 1.8	U-Turn 1.9	App Total	Int Total
1600 - 1615	0	38	1	39	165	0	0	165	0	0	0	0	204
1615 - 1630	0	54	2	56	143	0	0	143	0	0	0	0	199
1630 - 1645	0	77	0	77	97	0	0	97	0	0	0	0	174
1645 - 1700	0	69	0	69	111	0	0	111	0	0	0	0	180
Hourly Total	0	238	3	**241**	516	0	0	**516**	0	0	0	**0**	**757**
1700 - 1715	0	86	2	88	95	0	0	95	0	0	0	0	183
1715 - 1730	0	64	14	78	100	1	0	101	0	0	0	0	179
1730 - 1745	0	53	22	75	69	0	0	69	0	0	0	0	144
1745 - 1800	0	93	1	94	87	0	0	87	0	1	0	1	182
Hourly Total	0	296	39	**335**	351	1	0	**352**	0	1	0	**1**	**688**
Grand Total	0	534	42	**576**	867	1	0	**868**	0	1	0	**1**	**1445**
Approach %	0.00	92.71	7.29	-	99.88	0.12	0.00	-	0.00	100.00	0.00	-	
Intersection %	0.00	36.96	2.91	39.86	60.00	0.07	0.00	60.07	0.00	0.07	0.00	0.07	
Heavy Vehicle %	-	2	2	**2**	4	0	-	**4**	-	0	-	**0**	**3**
PHF	0.00	0.77	0.38	**0.78**	0.78	0.00	0.00	**0.78**	0.00	0.00	0.00	**0.00**	**0.93**
Peak Hour Total	0	238	3	**241**	516	0	0	**516**	0	0	0	**0**	**757**
Peak Hour HV %	0	2	0	**2**	5	0	0	**5**	0	0	0	**0**	**4**

Classified Turn Movement Count || All vehicles

Buckner, KY

Marr Traffic DATA COLLECTION
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Site 2
KY-393 W Elder Park Rd
Driveway
KY-146 Lagrange Rd (West)
KY-146 Lagrange Rd (East)

Date
Wednesday, September 25, 2024

Lat/Long
38.385754°, -85.431643°
Click here for Map

Weather
Mostly Cloudy
71°F
Click here for Detailed Weather

0715 - 0915 (Weekday 2h Session) (09-25-2024)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	KY-393 W Elder Park Rd					Driveway					KY-146 Lagrange Rd (West)					KY-146 Lagrange Rd (East)					
TIME	Left 2.1	Thru 2.2	Right 2.3	U-Turn 2.4	App Total	Left 2.5	Thru 2.6	Right 2.7	U-Turn 2.8	App Total	Left 2.9	Thru 2.10	Right 2.11	U-Turn 2.12	App Total	Left 2.13	Thru 2.14	Right 2.15	U-Turn 2.16	App Total	Int Total
0715 - 0730	38	0	9	0	47	0	0	0	0	0	2	39	55	0	96	40	76	1	0	117	260
0730 - 0745	38	0	23	0	61	1	1	0	0	2	0	46	33	0	79	37	85	1	0	123	265
0745 - 0800	57	1	13	0	71	0	0	0	0	0	1	41	43	0	85	16	60	0	0	76	232
0800 - 0815	42	5	3	0	50	0	0	2	0	2	1	32	39	0	72	17	86	0	0	103	227
Hourly Total	175	6	48	0	**229**	1	1	2	0	**4**	4	158	170	0	**332**	110	307	2	0	**419**	**984**
0815 - 0830	58	0	11	1	70	3	0	0	0	3	0	61	67	0	128	10	124	2	0	136	337
0830 - 0845	49	0	6	0	55	3	0	0	0	3	0	68	69	0	137	14	115	2	0	131	326
0845 - 0900	42	0	12	0	54	6	1	0	0	7	1	72	65	0	138	8	75	1	0	84	283
0900 - 0915	30	2	16	0	48	0	0	2	0	2	0	42	43	0	85	11	45	0	0	56	191
Hourly Total	179	2	45	1	**227**	12	1	2	0	**15**	1	243	244	0	**488**	43	359	5	0	**407**	**1137**
Grand Total	354	8	93	1	**456**	13	2	4	0	**19**	5	401	414	0	**820**	153	666	7	0	**826**	**2121**
Approach %	77.63	1.75	20.39	0.22	-	68.42	10.53	21.05	0.00	-	0.61	48.90	50.49	0.00	-	18.52	80.63	0.85	0.00	-	
Intersection %	16.69	0.38	4.38	0.05	21.50	0.61	0.09	0.19	0.00	0.90	0.24	18.91	19.52	0.00	38.66	7.21	31.40	0.33	0.00	38.94	
Heavy Vehicle %	5	25	5	0	**5**	46	0	25	-	**37**	40	12	5	-	**9**	5	4	43	-	**5**	**7**
PHF	0.82	0.25	0.67	0.25	**0.82**	0.50	0.25	0.25	0.00	**0.54**	0.50	0.81	0.87	0.00	**0.86**	0.72	0.81	0.63	0.00	**0.83**	**0.87**

1545 - 1800 (Weekday 2.25h Session) (09-25-2024)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	KY-393 W Elder Park Rd					Driveway					KY-146 Lagrange Rd (West)					KY-146 Lagrange Rd (East)					
TIME	Left 2.1	Thru 2.2	Right 2.3	U-Turn 2.4	App Total	Left 2.5	Thru 2.6	Right 2.7	U-Turn 2.8	App Total	Left 2.9	Thru 2.10	Right 2.11	U-Turn 2.12	App Total	Left 2.13	Thru 2.14	Right 2.15	U-Turn 2.16	App Total	Int Total
1545 - 1600	43	0	10	0	53	0	1	0	0	1	0	48	50	0	98	24	81	0	0	105	257
1600 - 1615	23	0	4	0	27	1	0	0	0	1	0	108	131	0	239	33	66	2	0	101	368
1615 - 1630	41	0	10	0	51	0	1	0	0	1	0	89	83	0	172	14	49	0	0	63	287
1630 - 1645	45	0	10	0	55	0	1	0	0	1	0	88	79	0	167	28	42	0	0	70	293
Hourly Total	152	0	34	0	**186**	1	3	0	0	**4**	0	333	343	0	**676**	99	238	2	0	**339**	**1205**
1645 - 1700	38	0	16	0	54	0	0	0	0	0	0	85	64	0	149	20	48	0	0	68	271
1700 - 1715	53	0	3	0	56	0	0	0	0	0	0	72	58	0	130	30	68	1	0	99	285
1715 - 1730	42	0	15	0	57	0	1	0	0	1	0	89	56	0	145	17	62	1	0	80	283
1730 - 1745	54	0	15	0	69	0	1	1	0	2	0	90	70	0	160	17	75	4	0	96	327
Hourly Total	187	0	49	0	**236**	0	2	1	0	**3**	0	336	248	0	**584**	84	253	6	0	**343**	**1166**
1745 - 1800	69	0	14	0	83	0	1	0	0	1	0	80	70	0	150	15	81	0	0	96	330
1/4 Hourly Total	69	0	14	0	**83**	0	1	0	0	**1**	0	80	70	0	**150**	15	81	0	0	**96**	**330**
Grand Total	408	0	97	0	**505**	1	6	1	0	**8**	0	749	661	0	**1410**	198	572	8	0	**778**	**2701**
Approach %	80.79	0.00	19.21	0.00	-	12.50	75.00	12.50	0.00	-	0.00	53.12	46.88	0.00	-	25.45	73.52	1.03	0.00	-	
Intersection %	15.11	0.00	3.59	0.00	18.70	0.04	0.22	0.04	0.00	0.30	0.00	27.73	24.47	0.00	52.20	7.33	21.18	0.30	0.00	28.80	
Heavy Vehicle %	1	-	5	-	**2**	100	0	0	-	**13**	-	3	2	-	**2**	3	1	50	-	**2**	**2**
PHF	0.82	0.00	0.63	0.00	**0.85**	0.25	0.50	0.00	0.00	**0.75**	0.00	0.86	0.68	0.00	**0.76**	0.72	0.78	0.25	0.00	**0.75**	**0.83**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION
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Buckner, KY

Site 5
McDonald's Driveway

Commerce Pkwy (West)
Commerce Pkwy (East)

Date
Tuesday, February 24, 2026

Lat/Long
38.381902°, -85.427583°
Click here for Map

Weather
Fair
33°F
#####
Click here for Detailed Weather

0700 - 0900 (Weekday 2h Session) (02-24-2026)
All vehicles

	Northbound McDonald's Driveway				Eastbound Commerce Pkwy (West)				Westbound Commerce Pkwy (East)				
TIME	Left 5.1	Right 5.2	U-Turn 5.3	App Total	Thru 5.4	Right 5.5	U-Turn 5.6	App Total	Left 5.7	Thru 5.8	U-Turn 5.9	App Total	Int Total
0700 - 0715	22	6	0	28	39	11	0	50	11	30	0	41	119
0715 - 0730	38	12	0	50	52	24	0	76	6	25	0	31	157
0730 - 0745	51	16	0	67	69	27	0	96	3	28	0	31	194
0745 - 0800	45	16	0	61	65	22	0	87	5	45	0	50	198
Hourly Total	156	50	0	**206**	225	84	0	**309**	25	128	0	**153**	**668**
0800 - 0815	57	4	0	61	54	24	0	78	13	42	0	55	194
0815 - 0830	53	10	0	63	65	33	0	98	10	37	0	47	208
0830 - 0845	61	14	0	75	56	18	0	74	8	34	0	42	191
0845 - 0900	51	5	0	56	80	24	0	104	10	39	0	49	209
Hourly Total	222	33	0	**255**	255	99	0	**354**	41	152	0	**193**	**802**
Grand Total	378	83	0	**461**	480	183	0	**663**	66	280	0	**346**	**1470**
Approach %	82.00	18.00	0.00	-	72.40	27.60	0.00	-	19.08	80.92	0.00	-	
Intersection %	25.71	5.65	0.00	31.36	32.65	12.45	0.00	45.10	4.49	19.05	0.00	23.54	
Heavy Vehicle %	1	1	-	**1**	5	1	-	**4**	0	6	-	**5**	**3**
PHF	0.91	0.59	0.00	**0.85**	0.80	0.75	0.00	**0.85**	0.79	0.90	0.00	**0.88**	**0.96**
Peak Hour Total	222	33	0	**255**	255	99	0	**354**	41	152	0	**193**	**802**
Peak Hour HV %	0	3	0	**1**	6	0	0	**4**	0	6	0	**5**	**3**

1545 - 1745 (Weekday 2h Session) (02-24-2026)
All vehicles

	Northbound McDonald's Driveway				Eastbound Commerce Pkwy (West)				Westbound Commerce Pkwy (East)				
TIME	Left 5.1	Right 5.2	U-Turn 5.3	App Total	Thru 5.4	Right 5.5	U-Turn 5.6	App Total	Left 5.7	Thru 5.8	U-Turn 5.9	App Total	Int Total
1545 - 1600	45	23	0	68	175	31	0	206	8	53	0	61	335
1600 - 1615	29	29	0	58	212	46	0	258	8	70	0	78	394
1615 - 1630	33	34	0	67	216	46	0	262	9	61	0	70	399
1630 - 1645	56	41	0	97	136	38	0	174	6	79	0	85	356
Hourly Total	163	127	0	**290**	739	161	0	**900**	31	263	0	**294**	**1484**
1645 - 1700	63	42	0	105	74	32	0	106	8	55	0	63	274
1700 - 1715	71	36	0	107	53	41	0	94	15	52	0	67	268
1715 - 1730	80	27	0	107	76	39	0	115	9	40	0	49	271
1730 - 1745	65	34	0	99	49	24	0	73	7	43	0	50	222
Hourly Total	279	139	0	**418**	252	136	0	**388**	39	190	0	**229**	**1035**
Grand Total	442	266	0	**708**	991	297	0	**1288**	70	453	0	**523**	**2519**
Approach %	62.43	37.57	0.00	-	76.94	23.06	0.00	-	13.38	86.62	0.00	-	
Intersection %	17.55	10.56	0.00	28.11	39.34	11.79	0.00	51.13	2.78	17.98	0.00	20.76	
Heavy Vehicle %	1	1	-	**1**	4	0	-	**3**	0	1	-	**1**	**2**
PHF	0.73	0.77	0.00	**0.75**	0.86	0.88	0.00	**0.86**	0.86	0.83	0.00	**0.86**	**0.93**
Peak Hour Total	163	127	0	**290**	739	161	0	**900**	31	263	0	**294**	**1484**
Peak Hour HV %	2	1	0	**1**	4	0	0	**3**	0	2	0	**2**	**3**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Buckner, KY

Site 4
Kroger Driveway

Commerce Pkwy (West)
Commerce Pkwy (East)

Date
Tuesday, February 24, 2026

Lat/Long
38.382135°, -85.426627°
Click here for Map

Weather
Fair
33°F
Click here for Detailed Weather

0700 - 0900 (Weekday 2h Session) (02-24-2026)
All vehicles

	Northbound				Eastbound				Westbound				
	Kroger Driveway				Commerce Pkwy (West)				Commerce Pkwy (East)				
TIME	Left 4.1	Right 4.2	U-Turn 4.3	App Total	Thru 4.4	Right 4.5	U-Turn 4.6	App Total	Left 4.7	Thru 4.8	U-Turn 4.9	App Total	Int Total
0700 - 0715	3	2	0	5	40	4	0	44	8	37	0	45	94
0715 - 0730	4	3	0	7	67	0	0	67	7	26	0	33	107
0730 - 0745	5	9	0	14	77	8	0	85	8	25	0	33	132
0745 - 0800	3	13	0	16	75	3	0	78	11	48	0	59	153
Hourly Total	15	27	0	**42**	259	15	0	**274**	34	136	0	**170**	**486**
0800 - 0815	10	8	0	18	52	7	0	59	12	44	0	56	133
0815 - 0830	5	5	0	10	70	3	0	73	8	45	0	53	136
0830 - 0845	5	5	0	10	69	2	0	71	12	38	0	50	131
0845 - 0900	7	7	0	14	81	5	0	86	5	41	0	46	146
Hourly Total	27	25	0	**52**	272	17	0	**289**	37	168	0	**205**	**546**
Grand Total	42	52	0	**94**	531	32	0	**563**	71	304	0	**375**	**1032**
Approach %	44.68	55.32	0.00	-	94.32	5.68	0.00	-	18.93	81.07	0.00	-	
Intersection %	4.07	5.04	0.00	9.11	51.45	3.10	0.00	54.55	6.88	29.46	0.00	36.34	
Heavy Vehicle %	10	4	-	**6**	4	13	-	**5**	0	4	-	**3**	**4**
PHF	0.58	0.67	0.00	**0.81**	0.89	0.66	0.00	**0.87**	0.81	0.84	0.00	**0.85**	**0.91**
Peak Hour Total	23	35	0	**58**	274	21	0	**295**	39	162	0	**201**	**554**
Peak Hour HV %	17	3	0	**9**	3	14	0	**4**	0	4	0	**3**	**4**

1545 - 1745 (Weekday 2h Session) (02-24-2026)
All vehicles

	Northbound				Eastbound				Westbound				
	Kroger Driveway				Commerce Pkwy (West)				Commerce Pkwy (East)				
TIME	Left 4.1	Right 4.2	U-Turn 4.3	App Total	Thru 4.4	Right 4.5	U-Turn 4.6	App Total	Left 4.7	Thru 4.8	U-Turn 4.9	App Total	Int Total
1545 - 1600	7	5	0	12	198	2	0	200	10	55	0	65	277
1600 - 1615	21	28	0	49	236	3	0	239	6	59	0	65	353
1615 - 1630	13	19	0	32	247	1	0	248	8	55	0	63	343
1630 - 1645	14	16	0	30	180	2	0	182	14	70	0	84	296
Hourly Total	55	68	0	**123**	861	8	0	**869**	38	239	0	**277**	**1269**
1645 - 1700	6	10	0	16	113	2	0	115	10	58	0	68	199
1700 - 1715	5	4	0	9	86	5	0	91	9	60	0	69	169
1715 - 1730	10	15	0	25	96	4	0	100	5	41	0	46	171
1730 - 1745	5	5	0	10	80	2	0	82	2	44	0	46	138
Hourly Total	26	34	0	**60**	375	13	0	**388**	26	203	0	**229**	**677**
Grand Total	81	102	0	**183**	1236	21	0	**1257**	64	442	0	**506**	**1946**
Approach %	44.26	55.74	0.00	-	98.33	1.67	0.00	-	12.65	87.35	0.00	-	
Intersection %	4.16	5.24	0.00	9.40	63.51	1.08	0.00	64.59	3.29	22.71	0.00	26.00	
Heavy Vehicle %	0	2	-	**1**	4	5	-	**4**	0	1	-	**1**	**3**
PHF	0.65	0.61	0.00	**0.63**	0.87	0.67	0.00	**0.88**	0.68	0.85	0.00	**0.82**	**0.90**
Peak Hour Total	55	68	0	**123**	861	8	0	**869**	38	239	0	**277**	**1269**
Peak Hour HV %	0	3	0	**2**	3	0	0	**3**	0	2	0	**2**	**3**

TIS Simplified Traffic Forecast

Count Year	2026
Opening Year	2028
Design Year	2038
Years Back	15

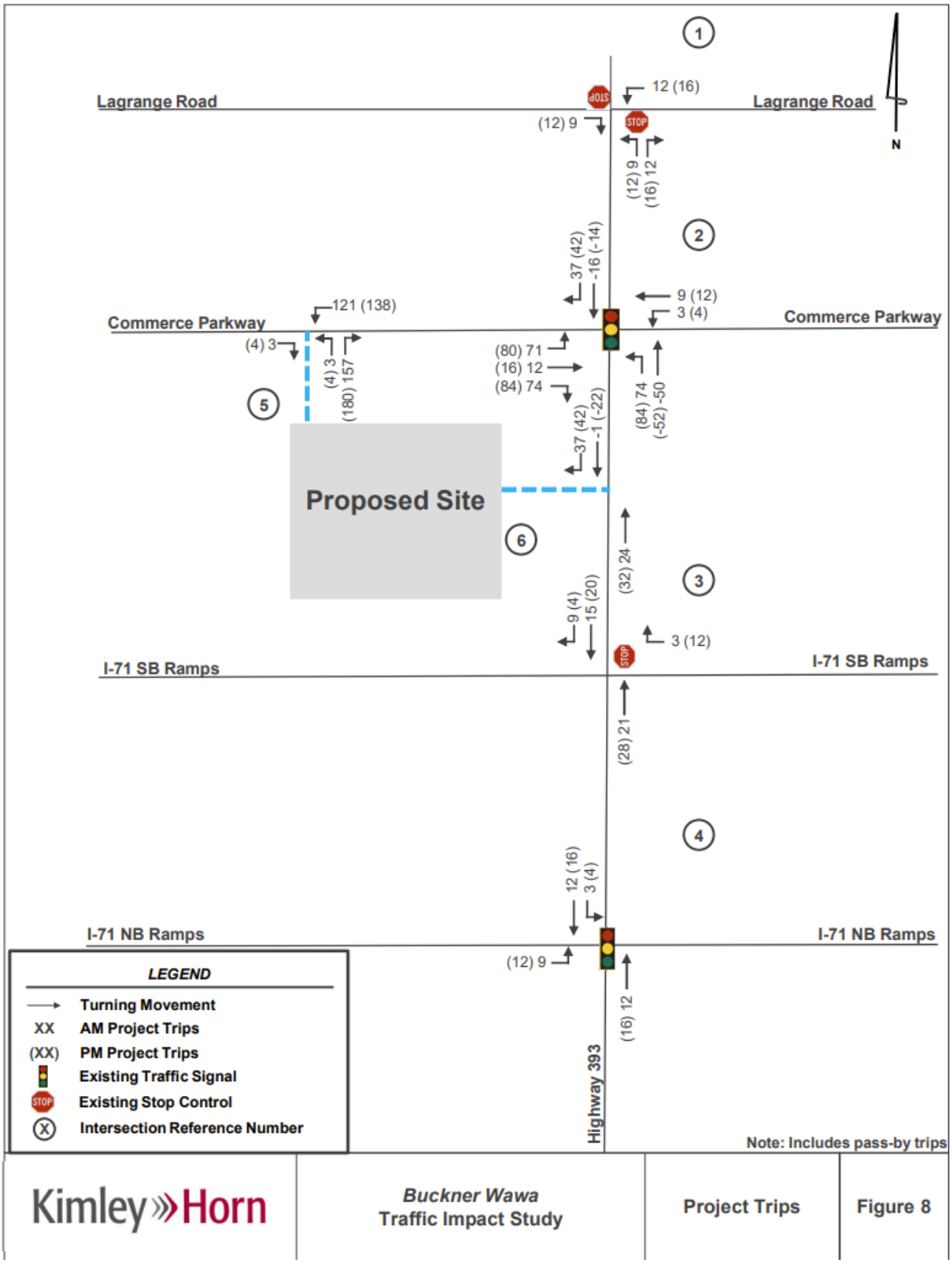
Number of Counts	10
Growth Rate	0.22%

*** 2020 Counts not used**

KYTC Traffic Count Station #1	
STA ID	093250
Paste Count Data Here	
2026	
2025	
2024	
2023	11632
2022	
2021	
2020	*8868
2019	
2018	
2017	10926
2016	
2015	
2014	
2013	
2012	
2011	11900
2010	
2009	
2008	10400
2007	
2006	
2005	11900
2004	
2003	11600
2002	
2001	9620
2000	

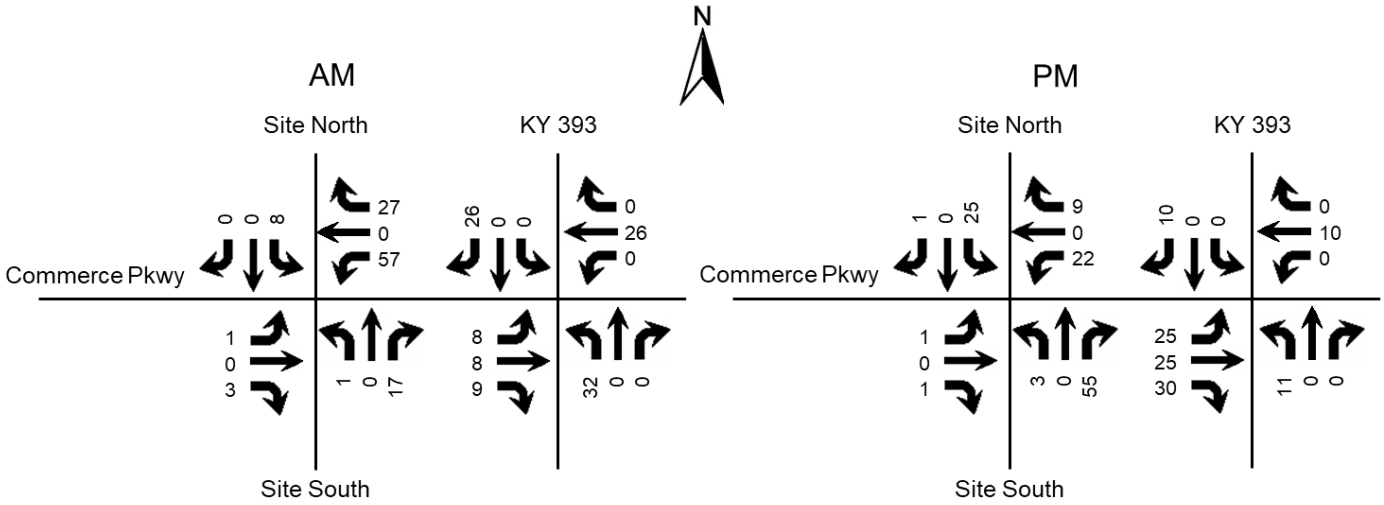
KYTC Traffic Count Station #2	
STA ID	093256
Paste Count Data Here	
2026	
2025	
2024	13185
2023	
2022	
2021	13771
2020	
2019	
2018	13728
2017	
2016	
2015	14023
2014	
2013	
2012	12401
2011	
2010	
2009	13800
2008	
2007	
2006	11000
2005	
2004	
2003	11700
2002	
2001	
2000	11100

KYTC Traffic Count Station #3	
STA ID	093330
Paste Count Data Here	
2026	
2025	
2024	
2023	9125
2022	
2021	
2020	*7006
2019	
2018	
2017	9589
2016	
2015	
2014	9650
2013	
2012	
2011	9760
2010	
2009	
2008	6720
2007	
2006	7630
2005	8490
2004	8550
2003	
2002	
2001	
2000	


1
Lagrange Road
Lagrange Road
STOP
12 (16)
(12) 9
STOP
(12) 9
(16) 12
N
2
37 (42)
-16 (-14)
9 (12)
3 (4)
Commerce Parkway
Commerce Parkway
121 (138)
(4) 3
(4) 3
(180) 157
5
(80) 71
(16) 12
(84) 74
(84) 74
(-52) -50
37 (42)
-1 (-22)
Proposed Site
6
(32) 24
3
9 (4)
15 (20)
3 (12)
STOP
I-71 SB Ramps
I-71 SB Ramps
(28) 21
4
12 (16)
3 (4)
I-71 NB Ramps
I-71 NB Ramps
(12) 9
(16) 12
Highway 393
LEGEND
Turning Movement
XX AM Project Trips
(XX) PM Project Trips
Existing Traffic Signal
STOP Existing Stop Control
X Intersection Reference Number
Note: Includes pass-by trips
Kimley»Horn
Buckner Wawa
Traffic Impact Study
Project Trips
Figure 8

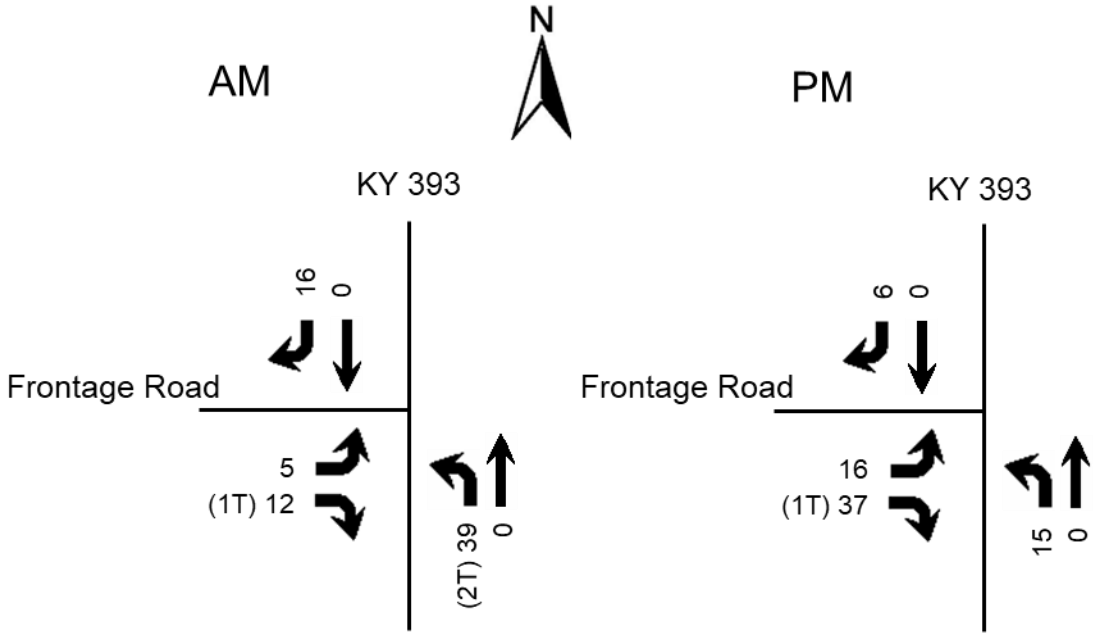
Peak Hour Trips for Commerce Parkway ARCO Warehouses

	A.M. Peak Hour			P.M. Peak Hour		
Land Use	Trips	In	Out	Trips	In	Out
Warehousing	114	88	26	117	33	84



Buckner Industrial Park

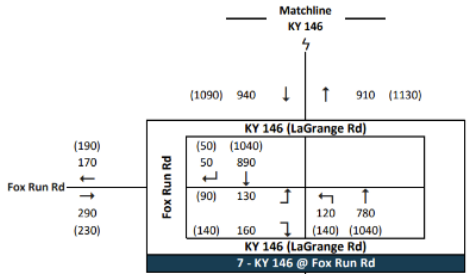
	A.M. Peak Hour			P.M. Peak Hour			Daily
Land Use	Trips	In	Out	Trips	In	Out	Trips
Warehousing (400,000 sq ft)	72	55	17	74	21	53	670

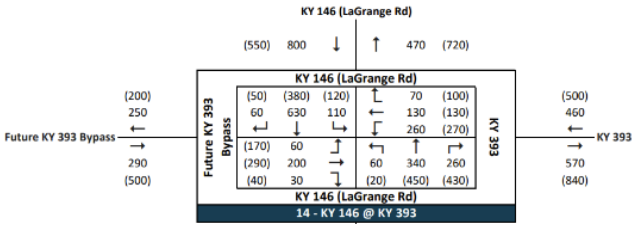


KY 146 Traffic Forecast prepared by HMB
For Item 5-80210

KY 146 Traffic Forecast
2050 Rounded and Adjusted AM & PM Peak Hour Turning Movement Volumes

→ Directional Movement
XX AM Peak Hour Volumes
(XX) PM Peak Hour Volumes



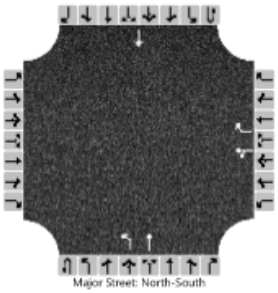


HCS Reports

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at I 71 South
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	I 71 South
Analysis Year	2026	North/South Street	KY 393
Time Analyzed	AM Peak	Peak Hour Factor	0.85
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	1	0	1	1	0	0	0	1	0
Configuration						LT		R		L	T				T	
Volume (veh/h)						49	2	136		314	564				188	
Percent Heavy Vehicles (%)						6	0	3		2						
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						Yes										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						7.16	6.50	6.23		4.12						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.55	4.00	3.33		2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						60		160		369						
Capacity, c (veh/h)						102		459		1348						
v/c Ratio						0.59		0.35		0.27						
95% Queue Length, Q_{95} (veh)						2.8		1.5		1.1						
95% Queue Length, Q_{95} (ft)						73.2		38.4		27.9						
Control Delay (s/veh)						82.0		17.0		8.7						
Level of Service (LOS)						F		C		A						
Approach Delay (s/veh)						34.7				3.1						
Approach LOS						D				A						

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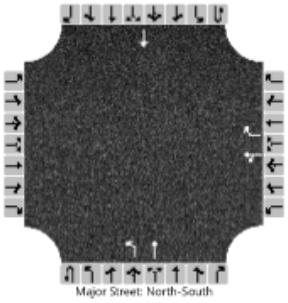
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at I 71 South
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	I 71 South
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.85
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	1	0	1	1	0	0	0	1	0
Configuration						LT		R		L	T				T	
Volume (veh/h)						49	2	151		317	637				213	
Percent Heavy Vehicles (%)						6	0	3		2						
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						Yes										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						7.16	6.50	6.23		4.12						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.55	4.00	3.33		2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						60		178		373						
Capacity, c (veh/h)						88		410		1315						
v/c Ratio						0.68		0.43		0.28						
95% Queue Length, Q_{95} (veh)						3.3		2.1		1.2						
95% Queue Length, Q_{95} (ft)						86.3		53.8		30.5						
Control Delay (s/veh)						107.3		20.3		8.8						
Level of Service (LOS)						F		C		A						
Approach Delay (s/veh)						42.3				2.9						
Approach LOS						E				A						

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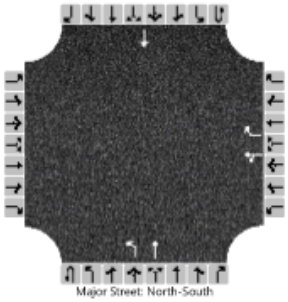
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at I 71 South
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	I 71 South
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	AM Peak Build	Peak Hour Factor	0.85
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	1	0	1	1	0	0	0	1	0
Configuration						LT		R		L	T				T	
Volume (veh/h)						49	2	179		317	707				262	
Percent Heavy Vehicles (%)						6	0	3		2						
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						Yes										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						7.16	6.50	6.23		4.12						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.55	4.00	3.33		2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						60		211		373						
Capacity, c (veh/h)						76		368		1252						
v/c Ratio						0.79		0.57		0.30						
95% Queue Length, Q_{95} (veh)						3.9		3.4		1.3						
95% Queue Length, Q_{95} (ft)						102.0		87.0		33.0						
Control Delay (s/veh)						144.3		27.1		9.1						
Level of Service (LOS)						F		D		A						
Approach Delay (s/veh)						53.1				2.8						
Approach LOS						F				A						

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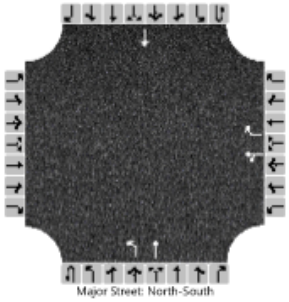
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at I 71 South
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	I 71 South
Analysis Year	2038	North/South Street	KY 393
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.85
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	1	0	1	1	0	0	0	1	0
Configuration						LT		R		L	T				T	
Volume (veh/h)						52	2	159		333	670				224	
Percent Heavy Vehicles (%)						6	0	3		2						
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						Yes										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						7.16	6.50	6.23		4.12						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.55	4.00	3.33		2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						64		187		392						
Capacity, c (veh/h)						77		389		1301						
v/c Ratio						0.82		0.48		0.30						
95% Queue Length, Q_{95} (veh)						4.1		2.5		1.3						
95% Queue Length, Q_{95} (ft)						107.2		64.0		33.0						
Control Delay (s/veh)						148.5		22.5		9.0						
Level of Service (LOS)						F		C		A						
Approach Delay (s/veh)						54.4				3.0						
Approach LOS						F				A						

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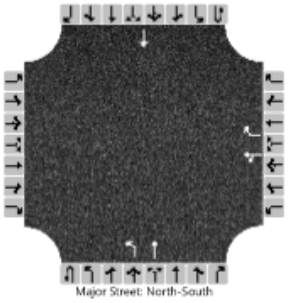
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at I 71 South
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	I 71 South
Analysis Year	2038	North/South Street	KY 393
Time Analyzed	AM Peak Build	Peak Hour Factor	0.85
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	1	0	1	1	0	0	0	1	0
Configuration						LT		R		L	T				T	
Volume (veh/h)						52	2	187		333	777				273	
Percent Heavy Vehicles (%)						6	0	3		2						
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						Yes										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						7.16	6.50	6.23		4.12						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.55	4.00	3.33		2.22						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						64		220		392						
Capacity, c (veh/h)						63		329		1239						
v/c Ratio						1.01		0.67		0.32						
95% Queue Length, Q_{95} (veh)						4.9		4.5		1.4						
95% Queue Length, Q_{95} (ft)						128.2		115.2		35.6						
Control Delay (s/veh)						226.2		35.4		9.2						
Level of Service (LOS)						F		E		A						
Approach Delay (s/veh)						78.1				2.8						
Approach LOS						F				A						

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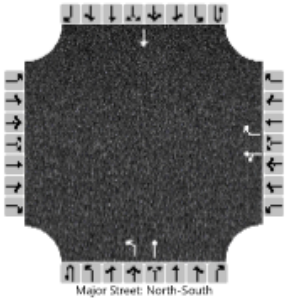
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at I 71 South
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	I 71 South
Analysis Year	2026	North/South Street	KY 393
Time Analyzed	PM Peak	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	1	0	1	1	0	0	0	1	0
Configuration						LT		R		L	T				T	
Volume (veh/h)						62	1	91		136	894				489	
Percent Heavy Vehicles (%)						2	0	2		1						
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						Yes										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						7.12	6.50	6.22		4.11						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.52	4.00	3.32		2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						68		99		148						
Capacity, c (veh/h)						129		306		1041						
v/c Ratio						0.53		0.32		0.14						
95% Queue Length, Q_{95} (veh)						2.5		1.4		0.5						
95% Queue Length, Q_{95} (ft)						63.5		35.6		12.6						
Control Delay (s/veh)						60.6		22.2		9.0						
Level of Service (LOS)						F		C		A						
Approach Delay (s/veh)						38.0				1.2						
Approach LOS						E				A						

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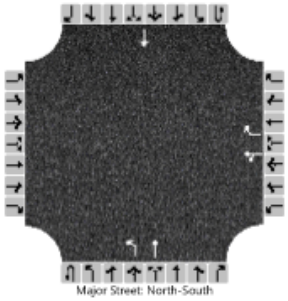
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at I 71 South
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	I 71 South
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	1	0	1	1	0	0	0	1	0
Configuration						LT		R		L	T				T	
Volume (veh/h)						63	1	105		137	950				550	
Percent Heavy Vehicles (%)						2	0	2		1						
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						Yes										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						7.12	6.50	6.22		4.11						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.52	4.00	3.32		2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						70		114		149						
Capacity, c (veh/h)						115		282		984						
v/c Ratio						0.61		0.40		0.15						
95% Queue Length, Q_{95} (veh)						3.0		1.9		0.5						
95% Queue Length, Q_{95} (ft)						76.2		48.3		12.6						
Control Delay (s/veh)						76.0		26.1		9.3						
Level of Service (LOS)						F		D		A						
Approach Delay (s/veh)						45.0				1.2						
Approach LOS						E				A						

HCS™ TWSC Version 2026
I 71 S PM 28 NB.xtw

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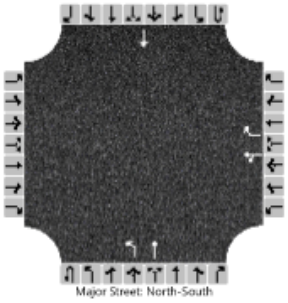
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at I 71 South
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	I 71 South
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	PM Peak Build	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	1	0	1	1	0	0	0	1	0
Configuration						LT		R		L	T				T	
Volume (veh/h)						63	1	134		137	1027				627	
Percent Heavy Vehicles (%)						2	0	2		1						
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						Yes										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						7.12	6.50	6.22		4.11						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.52	4.00	3.32		2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						70		146		149						
Capacity, c (veh/h)						98		252		916						
v/c Ratio						0.71		0.58		0.16						
95% Queue Length, Q_{95} (veh)						3.6		3.3		0.6						
95% Queue Length, Q_{95} (ft)						91.4		83.8		15.1						
Control Delay (s/veh)						102.7		37.0		9.7						
Level of Service (LOS)						F		E		A						
Approach Delay (s/veh)						58.3				1.1						
Approach LOS						F				A						

HCS™ TWSC Version 2026
I 71 S PM 28 B.xtw

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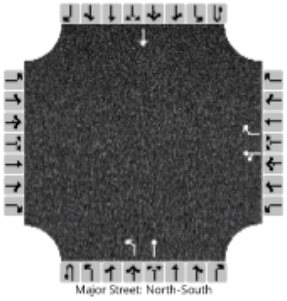
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at I 71 South
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	I 71 South
Analysis Year	2038	North/South Street	KY 393
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	1	0	1	1	0	0	0	1	0
Configuration						LT		R		L	T				T	
Volume (veh/h)						66	1	110		144	999				578	
Percent Heavy Vehicles (%)						2	0	2		1						
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						Yes										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						7.12	6.50	6.22		4.11						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.52	4.00	3.32		2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						73		120		157						
Capacity, c (veh/h)						103		263		959						
v/c Ratio						0.71		0.45		0.16						
95% Queue Length, Q_{95} (veh)						3.7		2.2		0.6						
95% Queue Length, Q_{95} (ft)						94.0		55.9		15.1						
Control Delay (s/veh)						98.8		29.6		9.5						
Level of Service (LOS)						F		D		A						
Approach Delay (s/veh)						55.8				1.2						
Approach LOS						F				A						

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I 71 S PM 38 NB.xtw

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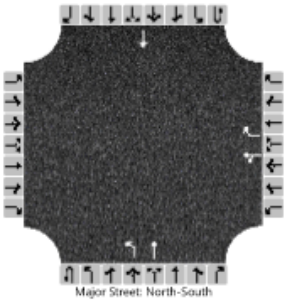
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at I 71 South
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	I 71 South
Analysis Year	2038	North/South Street	KY 393
Time Analyzed	PM Peak Build	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	1	0	1	1	0	0	0	1	0
Configuration						LT		R		L	T				T	
Volume (veh/h)						66	1	139		144	1076				655	
Percent Heavy Vehicles (%)						2	0	2		1						
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						Yes										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1	6.5	6.2		4.1						
Critical Headway (sec)						7.12	6.50	6.22		4.11						
Base Follow-Up Headway (sec)						3.5	4.0	3.3		2.2						
Follow-Up Headway (sec)						3.52	4.00	3.32		2.21						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						73		151		157						
Capacity, c (veh/h)						88		235		892						
v/c Ratio						0.83		0.64		0.18						
95% Queue Length, Q_{95} (veh)						4.4		3.9		0.6						
95% Queue Length, Q_{95} (ft)						111.7		99.1		15.1						
Control Delay (s/veh)						137.1		44.3		9.9						
Level of Service (LOS)						F		E		A						
Approach Delay (s/veh)						74.5				1.2						
Approach LOS						F				A						

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I 71 S PM 38 B.xtw

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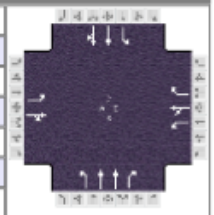
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	KY 393	Analysis Year	2026	Analysis Period	1> 8:00
Intersection	Commerce Parkway	File Name	KY 393 AM 26.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	2	48	39	201	70	107	177	172	151	153	147	7

Signal Information			
Cycle, s	88.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	7.5	0.9	30.0	13.7	9.0	0.0	1	2	3	4		
Yellow	3.5	0.0	4.7	3.5	3.5	0.0	5	6	7	8		
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	1.1	4.0
Phase Duration, s		15.5		20.2	14.9	38.6	14.0	37.7
Change Period, (*Y+R c*), s		6.5		6.5	6.5	7.7	6.5	7.7
Max Allow Headway (*MAH*), s		5.1		5.1	4.1	3.9	4.1	3.9
Queue Clearance Time (*g s*), s		6.6		12.4	8.0	7.2	7.2	4.8
Green Extension Time (*g e*), s		0.3		1.3	0.5	1.8	0.4	1.8
Phase Call Probability		0.90		1.00	0.99	1.00	0.98	1.00
Max Out Probability		0.00		0.44	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	2	94		216	75	115	190	185	162	165	83	83
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1717		1767	1841	1610	1781	1738	1522	1767	1826	1796
Queue Service Time (*g s*), s	0.1	4.6		10.4	3.2	5.2	6.0	3.2	5.2	5.2	2.8	2.8
Cycle Queue Clearance Time (*g c*), s	0.1	4.6		10.4	3.2	5.2	6.0	3.2	5.2	5.2	2.8	2.8
Green Ratio (*g/C*)	0.10	0.10		0.16	0.16	0.24	0.43	0.35	0.50	0.42	0.34	0.34
Capacity (*c*), veh/h	185	176		274	286	386	626	1215	769	577	620	610
Volume-to-Capacity Ratio (*X*)	0.012	0.532		0.788	0.263	0.298	0.304	0.152	0.211	0.285	0.134	0.135
Back of Queue (*Q*), ft/ln (95 th percentile)	2	92		217	65	87	107	59	112	94	54	52
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	3.6		8.5	2.5	3.5	4.2	2.3	4.3	3.7	2.1	2.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	35.6	37.6		35.9	32.9	27.5	15.9	19.7	12.1	16.3	20.2	20.2
Incremental Delay (*d 2*), s/veh	0.0	3.5		8.2	0.7	0.6	0.3	0.1	0.1	0.3	0.1	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
Control Delay (*d*), s/veh	35.7	41.2		44.1	33.6	28.1	16.1	19.8	12.2	16.5	20.3	20.3
Level of Service (LOS)	D	D		D	C	C	B	B	B	B	C	C
Approach Delay, s/veh / LOS	41.0	D		37.6	D		16.2	B		18.4	B	
Intersection Delay, s/veh / LOS	24.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.31	B	2.11	B	1.92	B
Bicycle LOS Score / LOS	0.65	A	1.16	A	0.93	A	0.76	A

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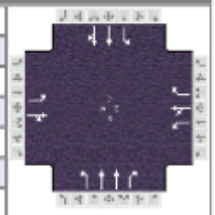
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	KY 393	Analysis Year	2028 No Build	Analysis Period	1> 8:00
Intersection	Commerce Parkway	File Name	KY 393 AM 28 NB.xus		
Project Description	Buckner 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	81	68	122	206	106	124	285	124	153	162	105	70

Signal Information													
Cycle, s	98.1	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	8.8	5.0	30.0	15.2	11.9	0.0			
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	3.5	0.0	4.7	3.5	3.5	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	1.1	4.0
Phase Duration, s		18.4		21.7	20.3	42.7	15.3	37.7
Change Period, (*Y+R c*), s		6.5		6.5	6.5	7.7	6.5	7.7
Max Allow Headway (*MAH*), s		5.1		5.1	4.1	4.0	4.1	4.0
Queue Clearance Time (*g s*), s		11.1		13.9	13.2	7.8	8.5	6.2
Green Extension Time (*g e*), s		0.8		1.3	0.6	1.7	0.4	1.7
Phase Call Probability		1.00		1.00	1.00	1.00	0.99	1.00
Max Out Probability		0.17		0.74	0.23	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	87	161		222	114	133	306	133	165	174	96	92
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1689		1767	1841	1610	1781	1738	1522	1767	1826	1591
Queue Service Time (*g s*), s	4.4	9.1		11.9	5.5	6.7	11.2	2.5	5.8	6.5	3.8	4.2
Cycle Queue Clearance Time (*g c*), s	4.4	9.1		11.9	5.5	6.7	11.2	2.5	5.8	6.5	3.8	4.2
Green Ratio (*g/C*)	0.12	0.12		0.16	0.16	0.24	0.45	0.36	0.51	0.40	0.31	0.31
Capacity (*c*), veh/h	219	205		274	285	394	639	1240	779	613	558	486
Volume-to-Capacity Ratio (*X*)	0.397	0.787		0.808	0.399	0.338	0.480	0.108	0.211	0.284	0.173	0.189
Back of Queue (*Q*), ft/ln (95 th percentile)	88	191		250	115	115	202	47	128	121	76	70
Back of Queue (*Q*), veh/ln (95 th percentile)	3.5	7.5		9.7	4.4	4.6	7.9	1.8	4.8	4.7	2.9	2.8
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	39.8	41.9		40.0	37.3	30.5	18.0	21.1	13.1	19.9	25.0	25.1
Incremental Delay (*d 2*), s/veh	1.7	9.1		11.4	1.3	0.7	0.6	0.0	0.1	0.3	0.1	0.2
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
Control Delay (*d*), s/veh	41.5	51.0		51.5	38.6	31.2	18.5	21.2	13.2	20.1	25.1	25.3
Level of Service (LOS)	D	D		D	D	C	B	C	B	C	C	C
Approach Delay, s/veh / LOS	47.7	D		42.6	D		17.7	B		22.8	C	
Intersection Delay, s/veh / LOS	30.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.31	B	2.11	B	1.98	B
Bicycle LOS Score / LOS	0.90	A	1.26	A	0.99	A	0.79	A

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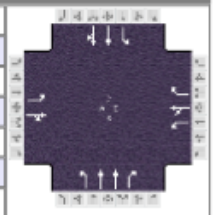
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	KY 393	Analysis Year	2028 Build	Analysis Period	1> 8:00
Intersection	Commerce Parkway	File Name	KY 393 AM 28 B.xus		
Project Description	Buckner 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	88	75	122	240	111	124	285	222	153	162	140	75

Signal Information													
Cycle, s	101.6	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	9.2	5.2	30.0	17.4	12.6	0.0			
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	3.5	0.0	4.7	3.5	3.5	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	1.1	4.0
Phase Duration, s		19.1		23.9	20.8	42.9	15.7	37.7
Change Period, (*Y+R c*), s		6.5		6.5	6.5	7.7	6.5	7.7
Max Allow Headway (*MAH*), s		5.1		5.1	4.1	4.0	4.1	4.0
Queue Clearance Time (*g s*), s		11.8		16.4	13.7	7.9	8.8	7.4
Green Extension Time (*g e*), s		0.8		1.0	0.6	2.3	0.4	2.3
Phase Call Probability		1.00		1.00	1.00	1.00	0.99	1.00
Max Out Probability		0.25		1.00	0.31	0.00	0.01	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	95	169		258	119	133	306	239	165	174	119	113
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1696		1767	1841	1610	1781	1738	1522	1767	1826	1617
Queue Service Time (*g s*), s	4.9	9.8		14.4	5.8	6.8	11.7	4.9	5.9	6.8	5.0	5.4
Cycle Queue Clearance Time (*g c*), s	4.9	9.8		14.4	5.8	6.8	11.7	4.9	5.9	6.8	5.0	5.4
Green Ratio (*g/C*)	0.12	0.12		0.17	0.17	0.26	0.44	0.35	0.52	0.39	0.30	0.30
Capacity (*c*), veh/h	225	211		302	315	421	601	1204	788	546	539	478
Volume-to-Capacity Ratio (*X*)	0.420	0.799		0.853	0.379	0.317	0.510	0.198	0.209	0.319	0.220	0.236
Back of Queue (*Q*), ft/ln (95 th percentile)	100	206		306	122	116	212	92	135	128	101	93
Back of Queue (*Q*), veh/ln (95 th percentile)	4.0	8.0		11.9	4.7	4.6	8.3	3.6	5.1	5.0	3.9	3.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	41.1	43.2		40.9	37.3	30.2	19.3	23.3	13.3	21.3	27.0	27.1
Incremental Delay (*d 2*), s/veh	1.8	9.7		17.6	1.1	0.6	0.7	0.1	0.1	0.3	0.2	0.2
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
Control Delay (*d*), s/veh	42.8	52.9		58.4	38.4	30.8	19.9	23.4	13.4	21.6	27.2	27.3
Level of Service (LOS)	D	D		E	D	C	B	C	B	C	C	C
Approach Delay, s/veh / LOS	49.3	D		46.5	D		19.6	B		24.8	C	
Intersection Delay, s/veh / LOS	32.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.31	B	2.11	B	1.98	B
Bicycle LOS Score / LOS	0.92	A	1.33	A	1.07	A	0.82	A

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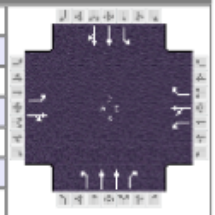
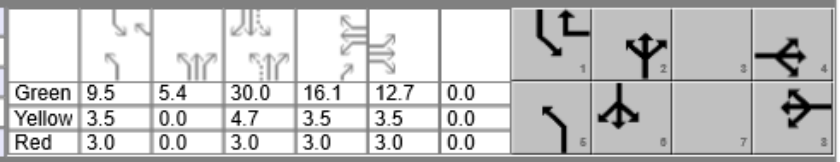
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	KY 393	Analysis Year	2038 No Build	Analysis Period	1> 8:00
Intersection	Commerce Parkway	File Name	KY 393 AM 38 NB.xus		
Project Description	Buckner 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	85	71	128	217	111	130	300	130	161	170	110	74

Signal Information			
Cycle, s	100.9	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	9.5	5.4	30.0	16.1	12.7	0.0	
Yellow	3.5	0.0	4.7	3.5	3.5	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	1.1	4.0
Phase Duration, s		19.2		22.6	21.3	43.1	16.0	37.7
Change Period, (*Y+R c*), s		6.5		6.5	6.5	7.7	6.5	7.7
Max Allow Headway (*MAH*), s		5.1		5.1	4.1	4.0	4.1	4.0
Queue Clearance Time (*g s*), s		11.9		14.9	14.2	8.3	9.1	6.6
Green Extension Time (*g e*), s		0.8		1.2	0.6	1.8	0.4	1.8
Phase Call Probability		1.00		1.00	1.00	1.00	0.99	1.00
Max Out Probability		0.26		0.99	0.42	0.00	0.01	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	91	171		233	119	140	323	140	173	183	102	96
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1687		1767	1841	1610	1781	1738	1522	1767	1826	1590
Queue Service Time (*g s*), s	4.7	9.9		12.9	5.9	7.2	12.2	2.7	6.3	7.1	4.2	4.6
Cycle Queue Clearance Time (*g c*), s	4.7	9.9		12.9	5.9	7.2	12.2	2.7	6.3	7.1	4.2	4.6
Green Ratio (*g/C*)	0.13	0.13		0.16	0.16	0.25	0.45	0.35	0.51	0.39	0.30	0.30
Capacity (*c*), veh/h	229	213		283	294	408	632	1218	777	605	543	473
Volume-to-Capacity Ratio (*X*)	0.400	0.802		0.826	0.406	0.342	0.511	0.115	0.223	0.302	0.187	0.204
Back of Queue (*Q*), ft/ln (95 th percentile)	95	207		272	123	123	217	52	141	133	84	78
Back of Queue (*Q*), veh/ln (95 th percentile)	3.8	8.1		10.6	4.8	4.9	8.6	2.0	5.4	5.2	3.2	3.1
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	40.6	42.8		41.0	38.1	30.8	18.7	22.2	13.6	20.9	26.4	26.5
Incremental Delay (*d 2*), s/veh	1.6	10.0		13.8	1.3	0.7	0.6	0.0	0.1	0.3	0.1	0.2
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
Control Delay (*d*), s/veh	42.2	52.8		54.8	39.4	31.5	19.3	22.2	13.8	21.1	26.5	26.7
Level of Service (LOS)	D	D		D	D	C	B	C	B	C	C	C
Approach Delay, s/veh / LOS	49.1	D		44.4	D		18.4	B		24.0	C	
Intersection Delay, s/veh / LOS	31.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.31	B	2.11	B	1.98	B
Bicycle LOS Score / LOS	0.92	A	1.30	A	1.01	A	0.80	A

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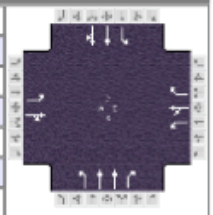
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	KY 393	Analysis Year	2038 Build	Analysis Period	1> 8:00
Intersection	Commerce Parkway	File Name	KY 393 AM 38 B.xus		
Project Description	Buckner 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	92	78	128	251	116	130	300	228	161	170	145	79

Signal Information													
Cycle, s	104.3	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	9.8	5.6	30.0	18.3	13.5	0.0			
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	3.5	0.0	4.7	3.5	3.5	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	3.0	3.0	3.0	0.0			

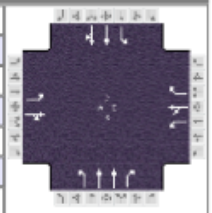
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		10.0		9.0	1.1	3.0	1.1	4.0
Phase Duration, s		20.0		24.8	21.9	43.3	16.3	37.7
Change Period, (*Y+R c*), s		6.5		6.5	6.5	7.7	6.5	7.7
Max Allow Headway (*MAH*), s		5.1		5.1	4.1	4.0	4.1	4.0
Queue Clearance Time (*g s*), s		12.7		17.5	14.8	8.5	9.4	7.8
Green Extension Time (*g e*), s		0.8		0.7	0.5	2.4	0.4	2.4
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		0.38		1.00	0.57	0.00	0.01	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	99	178		270	125	140	323	245	173	183	124	117
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1694		1767	1841	1610	1781	1738	1522	1767	1826	1615
Queue Service Time (*g s*), s	5.3	10.7		15.5	6.3	7.3	12.8	5.2	6.5	7.4	5.4	5.8
Cycle Queue Clearance Time (*g c*), s	5.3	10.7		15.5	6.3	7.3	12.8	5.2	6.5	7.4	5.4	5.8
Green Ratio (*g/C*)	0.13	0.13		0.18	0.18	0.27	0.44	0.34	0.52	0.38	0.29	0.29
Capacity (*c*), veh/h	234	219		309	322	433	595	1185	785	541	525	464
Volume-to-Capacity Ratio (*X*)	0.422	0.814		0.872	0.387	0.323	0.542	0.207	0.220	0.338	0.236	0.252
Back of Queue (*Q*), ft/ln (95 th percentile)	107	223		333	131	125	228	99	150	141	110	101
Back of Queue (*Q*), veh/ln (95 th percentile)	4.3	8.7		13.0	5.1	5.0	9.0	3.8	5.7	5.5	4.2	4.0
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	41.8	44.2		41.9	38.1	30.5	19.9	24.4	13.8	22.3	28.4	28.6
Incremental Delay (*d 2*), s/veh	1.7	11.8		20.9	1.1	0.6	0.8	0.1	0.1	0.4	0.2	0.3
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	43.5	56.0		62.8	39.2	31.1	20.7	24.5	13.9	22.6	28.6	28.8
Level of Service (LOS)	D	E		E	D	C	C	C	B	C	C	C
Approach Delay, s/veh / LOS	51.6	D		49.0	D		20.4	C		26.1	C	
Intersection Delay, s/veh / LOS	33.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.32	B	2.11	B	1.99	B
Bicycle LOS Score / LOS	0.95	A	1.37	A	1.10	A	0.84	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	KY 393	Analysis Year	2026	Analysis Period	1> 3:45
Intersection	Commerce Parkway	File Name	KY 393 PM 26.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	181	108	289	43	97	63	177	482	238	300	12

Signal Information												
Cycle, s	133.7	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	5.6	3.5	40.5	26.6	23.8	0.0		
Uncoordinated	Yes	Simult. Gap E/W	Off	Yellow	3.5	3.5	4.7	3.5	3.5	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	3.0	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	1.1	4.0
Phase Duration, s		30.3		33.1	12.1	48.2	22.1	58.2
Change Period, ($Y+R_c$), s		6.5		6.5	6.5	7.7	6.5	7.7
Max Allow Headway (*MAH*), s		5.0		5.1	4.1	4.0	4.1	4.0
Queue Clearance Time (g_s), s		22.9		25.5	5.6	37.2	15.2	10.6
Green Extension Time (g_e), s		0.9		1.1	0.1	3.3	0.4	4.4
Phase Call Probability		1.00		1.00	0.93	1.00	1.00	1.00
Max Out Probability		0.43		1.00	0.00	0.19	0.66	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	11	288		321	48	108	70	197	536	264	174	173
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1802		1781	1900	1572	1781	1766	1547	1781	1870	1845
Queue Service Time (g_s), s	0.7	20.9		23.5	2.8	6.7	3.6	5.5	35.2	13.2	8.5	8.6
Cycle Queue Clearance Time (g_c), s	0.7	20.9		23.5	2.8	6.7	3.6	5.5	35.2	13.2	8.5	8.6
Green Ratio (*g/C*)	0.18	0.18		0.20	0.20	0.32	0.34	0.30	0.50	0.43	0.38	0.38
Capacity (*c*), veh/h	297	320		355	378	497	437	1070	777	572	707	697
Volume-to-Capacity Ratio (*X*)	0.037	0.898		0.905	0.126	0.217	0.160	0.184	0.689	0.462	0.246	0.248
Back of Queue (*Q*), ft/ln (95 th percentile)	15	413		465	59	118	72	110	668	242	177	173
Back of Queue (*Q*), veh/ln (95 th percentile)	0.6	16.5		18.3	2.3	4.6	2.8	4.3	25.7	9.5	7.0	6.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	45.5	53.8		52.3	44.0	33.6	29.9	34.4	25.3	25.4	28.5	28.5
Incremental Delay (d_2), s/veh	0.1	20.5		22.9	0.2	0.3	0.2	0.1	1.8	0.6	0.2	0.2
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
Control Delay (*d*), s/veh	45.6	74.3		75.2	44.2	33.9	30.1	34.5	27.2	26.0	28.7	28.7
Level of Service (LOS)	D	E		E	D	C	C	C	C	C	C	C
Approach Delay, s/veh / LOS	73.2	E		62.7	E		29.2	C		27.5	C	
Intersection Delay, s/veh / LOS	42.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.33	B	2.13	B	1.97	B
Bicycle LOS Score / LOS	0.98	A	1.27	A	1.15	A	0.99	A

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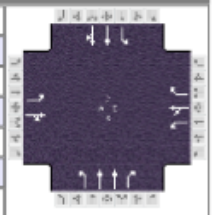
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	KY 393	Analysis Year	2028 No Build	Analysis Period	1> 3:45
Intersection	Commerce Parkway	File Name	KY 393 PM 28 NB.xus		
Project Description	Buckner Crossing				



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	224	223	293	65	102	159	137	487	257	310	64

Signal Information													
Cycle, s	115.5	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	10.0	30.0	23.3	25.0	0.0	0.0			
Uncoordinated	Yes	Simult. Gap E/W	Off	Yellow	3.5	4.7	3.5	3.5	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	3.0	3.0	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		10.0		9.0	1.1	3.0	1.1	4.0
Phase Duration, s		31.5		29.8	16.5	37.7	16.5	37.7
Change Period, (*Y+R c*), s		6.5		6.5	6.5	7.7	6.5	7.7
Max Allow Headway (*MAH*), s		5.1		5.1	4.1	4.0	4.1	4.0
Queue Clearance Time (*g s*), s		28.0		22.6	10.3	32.0	12.0	13.2
Green Extension Time (*g e*), s		0.0		0.7	0.0	0.0	0.0	4.0
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		1.00		1.00	1.00	1.00	1.00	0.10

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	128	419		326	72	113	177	152	541	286	212	203
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1771		1781	1900	1572	1781	1766	1547	1781	1870	1760
Queue Service Time (*g s*), s	7.5	26.0		20.6	3.6	6.4	8.3	3.9	30.0	10.0	10.9	11.2
Cycle Queue Clearance Time (*g c*), s	7.5	26.0		20.6	3.6	6.4	8.3	3.9	30.0	10.0	10.9	11.2
Green Ratio (*g/C*)	0.23	0.23		0.20	0.20	0.29	0.35	0.26	0.46	0.35	0.26	0.26
Capacity (*c*), veh/h	361	399		359	383	453	358	918	714	496	486	457
Volume-to-Capacity Ratio (*X*)	0.354	1.051		0.906	0.188	0.250	0.494	0.166	0.758	0.576	0.437	0.445
Back of Queue (*Q*), ft/ln (95 th percentile)	149	627		423	76	111	165	76	605	85	221	211
Back of Queue (*Q*), veh/ln (95 th percentile)	5.5	25.1		16.7	3.0	4.3	6.5	3.0	23.3	3.3	8.7	8.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	38.4	44.8		45.0	38.3	31.5	28.3	33.1	24.8	30.7	35.7	35.8
Incremental Delay (*d 2*), s/veh	0.8	59.1		24.1	0.3	0.4	1.1	0.1	4.6	1.6	0.6	0.6
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	39.2	103.8		69.1	38.6	31.9	29.4	33.2	29.4	32.4	36.3	36.4
Level of Service (LOS)	D	F		E	D	C	C	C	C	C	D	D
Approach Delay, s/veh / LOS	88.7	F		56.5	E		30.1	C		34.7	C	
Intersection Delay, s/veh / LOS	48.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.32	B	2.13	B	2.04	B
Bicycle LOS Score / LOS	1.39	A	1.33	A	1.21	A	1.07	A

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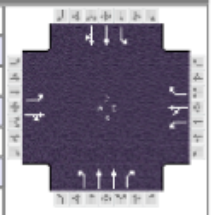
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	KY 393	Analysis Year	2028 Build	Analysis Period	1> 3:45
Intersection	Commerce Parkway	File Name	KY 393 PM 28 B.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	122	231	223	348	72	102	159	243	487	257	345	72

Signal Information													
Cycle, s	117.2	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	10.0	30.0	25.0	25.0	0.0	0.0			
Uncoordinated	Yes	Simult. Gap E/W	Off	Yellow	3.5	4.7	3.5	3.5	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	3.0	3.0	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		10.0		9.0	1.1	3.0	1.1	4.0
Phase Duration, s		31.5		31.5	16.5	37.7	16.5	37.7
Change Period, (*Y+R c*), s		6.5		6.5	6.5	7.7	6.5	7.7
Max Allow Headway (*MAH*), s		5.1		5.1	4.1	4.0	4.1	4.0
Queue Clearance Time (*g s*), s		28.0		27.3	10.5	32.0	12.0	14.9
Green Extension Time (*g e*), s		0.0		0.0	0.0	0.0	0.0	4.5
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		1.00		1.00	1.00	1.00	1.00	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	136	427		387	80	113	177	270	541	286	237	226
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1773		1781	1900	1572	1781	1766	1547	1781	1870	1759
Queue Service Time (*g s*), s	8.2	26.0		25.3	4.1	6.4	8.5	7.2	30.0	10.0	12.6	12.9
Cycle Queue Clearance Time (*g c*), s	8.2	26.0		25.3	4.1	6.4	8.5	7.2	30.0	10.0	12.6	12.9
Green Ratio (*g/C*)	0.22	0.22		0.21	0.21	0.30	0.34	0.26	0.47	0.34	0.26	0.26
Capacity (*c*), veh/h	356	393		395	405	470	333	904	726	429	479	450
Volume-to-Capacity Ratio (*X*)	0.381	1.085		0.978	0.197	0.241	0.530	0.299	0.745	0.666	0.495	0.503
Back of Queue (Q), ft/ln (95 th percentile)	163	673		545	84	111	171	143	610	123	248	237
Back of Queue (Q), veh/ln (95 th percentile)	6.0	26.9		21.5	3.4	4.3	6.7	5.6	23.5	4.8	9.8	9.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	39.5	45.6		45.3	37.5	31.1	29.4	35.1	24.5	33.0	37.1	37.2
Incremental Delay (*d 2*), s/veh	1.0	70.1		39.5	0.3	0.4	1.6	0.2	4.1	3.9	0.7	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	40.4	115.7		84.9	37.8	31.4	31.0	35.3	28.6	36.9	37.9	38.0
Level of Service (LOS)	D	F		F	D	C	C	D	C	D	D	D
Approach Delay, s/veh / LOS	97.5	F		67.9	E		30.9	C		37.6	D	
Intersection Delay, s/veh / LOS	53.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.32	B	2.13	B	2.04	B
Bicycle LOS Score / LOS	1.42	A	1.44	A	1.30	A	1.11	A

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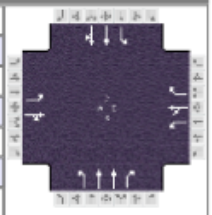
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	KY 393	Analysis Year	2038 No Build	Analysis Period	1> 3:45
Intersection	Commerce Parkway	File Name	KY 393 PM 38 NB.xus		
Project Description	Buckner Crossing				



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	235	234	308	68	107	167	144	512	270	326	67

Signal Information													
Cycle, s	116.3	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	10.0	30.0	24.1	25.0	0.0	0.0			
Uncoordinated	Yes	Simult. Gap E/W	Off	Yellow	3.5	4.7	3.5	3.5	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	3.0	3.0	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		10.0		9.0	1.1	3.0	1.1	4.0
Phase Duration, s		31.5		30.6	16.5	37.7	16.5	37.7
Change Period, ($Y+R_c$), s		6.5		6.5	6.5	7.7	6.5	7.7
Max Allow Headway (*MAH*), s		5.1		5.1	4.1	4.0	4.1	4.0
Queue Clearance Time (g_s), s		28.0		23.7	10.9	32.0	12.0	13.9
Green Extension Time (g_e), s		0.0		0.4	0.0	0.0	0.0	4.2
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		1.00		1.00	1.00	1.00	1.00	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	134	443		342	76	119	186	160	569	300	223	214
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1769		1781	1900	1572	1781	1766	1547	1781	1870	1760
Queue Service Time (g_s), s	8.0	26.0		21.7	3.8	6.7	8.9	4.1	30.0	10.0	11.7	11.9
Cycle Queue Clearance Time (g_c), s	8.0	26.0		21.7	3.8	6.7	8.9	4.1	30.0	10.0	11.7	11.9
Green Ratio (*g/C*)	0.22	0.22		0.21	0.21	0.29	0.34	0.26	0.47	0.34	0.26	0.26
Capacity (*c*), veh/h	359	395		385	394	461	347	911	720	488	482	454
Volume-to-Capacity Ratio (*X*)	0.375	1.121		0.890	0.192	0.258	0.535	0.176	0.790	0.615	0.462	0.471
Back of Queue (Q), ft/ln (95 th percentile)	159	728		433	80	116	178	81	642	114	233	222
Back of Queue (Q), veh/ln (95 th percentile)	5.9	29.1		17.0	3.2	4.5	7.0	3.2	24.7	4.5	9.2	8.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	39.0	45.2		44.3	37.7	31.4	29.0	33.5	24.7	31.8	36.4	36.4
Incremental Delay (d_2), s/veh	0.9	82.3		21.3	0.3	0.4	1.6	0.1	5.9	2.3	0.6	0.7
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	39.9	127.5		65.6	38.0	31.8	30.6	33.6	30.5	34.1	37.0	37.1
Level of Service (LOS)	D	F		E	D	C	C	C	C	C	D	D
Approach Delay, s/veh / LOS	107.1	F		54.2	D		31.1	C		35.9	D	
Intersection Delay, s/veh / LOS	52.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.32	B	2.13	B	2.04	B
Bicycle LOS Score / LOS	1.44	A	1.37	A	1.24	A	1.10	A

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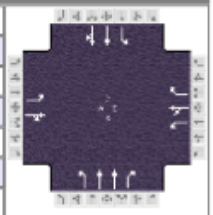
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	KY 393	Analysis Year	2038 Build	Analysis Period	1> 3:45
Intersection	Commerce Parkway	File Name	KY 393 PM 38 B.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	128	242	234	363	75	107	167	250	512	270	381	75

Signal Information													
Cycle, s	127.2	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	10.0	30.0	30.0	30.0	0.0	0.0			
Uncoordinated	Yes	Simult. Gap E/W	Off	Yellow	3.5	4.7	3.5	3.5	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	3.0	3.0	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		10.0		9.0	1.1	3.0	1.1	4.0
Phase Duration, s		36.5		36.5	16.5	37.7	16.5	37.7
Change Period, (*Y+R c*), s		6.5		6.5	6.5	7.7	6.5	7.7
Max Allow Headway (*MAH*), s		5.1		5.1	4.1	4.0	4.1	4.0
Queue Clearance Time (*g s*), s		33.0		30.2	12.0	32.0	12.0	17.9
Green Extension Time (*g e*), s		0.0		0.0	0.0	0.0	0.0	4.3
Phase Call Probability		1.00		1.00	1.00	1.00	1.00	1.00
Max Out Probability		1.00		1.00	1.00	1.00	1.00	0.32

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	142	451		403	83	119	186	278	569	300	259	248
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1668	1771		1781	1900	1572	1781	1766	1547	1781	1870	1764
Queue Service Time (*g s*), s	9.1	31.0		28.2	4.5	7.1	10.0	8.3	30.0	10.0	15.6	15.9
Cycle Queue Clearance Time (*g c*), s	9.1	31.0		28.2	4.5	7.1	10.0	8.3	30.0	10.0	15.6	15.9
Green Ratio (*g/C*)	0.24	0.24		0.24	0.24	0.31	0.31	0.24	0.47	0.31	0.24	0.24
Capacity (*c*), veh/h	393	432		434	448	494	282	833	730	385	441	416
Volume-to-Capacity Ratio (*X*)	0.361	1.045		0.929	0.186	0.240	0.659	0.333	0.779	0.780	0.587	0.595
Back of Queue (*Q*), ft/ln (95 th percentile)	181	698		551	94	125	213	167	692	222	302	288
Back of Queue (*Q*), veh/ln (95 th percentile)	6.7	27.9		21.7	3.7	4.9	8.4	6.5	26.6	8.7	11.9	11.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	40.6	48.1		47.0	38.5	32.3	35.2	40.3	25.7	40.7	43.1	43.2
Incremental Delay (*d 2*), s/veh	0.8	55.6		26.7	0.3	0.4	5.5	0.2	5.3	9.9	1.9	2.2
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
Control Delay (*d*), s/veh	41.4	103.7		73.7	38.7	32.7	40.7	40.5	31.0	50.6	45.0	45.4
Level of Service (LOS)	D	F		E	D	C	D	D	C	D	D	D
Approach Delay, s/veh / LOS	88.7	F		60.8	E		35.3	D		47.2	D	
Intersection Delay, s/veh / LOS	54.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.32	B	2.13	B	2.04	B
Bicycle LOS Score / LOS	1.47	A	1.49	A	1.34	A	1.15	A

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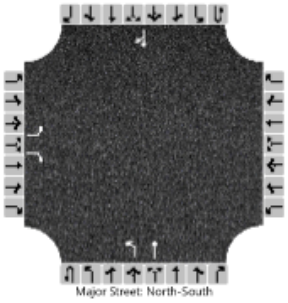
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Access Road
Analysis Year	2026	North/South Street	KY 393
Time Analyzed	AM Peak	Peak Hour Factor	0.89
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		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	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume (veh/h)		0		2						6	281				304	3
Percent Heavy Vehicles (%)		0		50						17						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.70						4.27						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.75						2.35						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0		2						7						
Capacity, c (veh/h)		524		603						1135						
v/c Ratio		0.00		0.00						0.01						
95% Queue Length, Q_{95} (veh)		0.0		0.0						0.0						
95% Queue Length, Q_{95} (ft)		0.0		0.0						0.0						
Control Delay (s/veh)		11.9		11.0						8.2						
Level of Service (LOS)		B		B						A						
Approach Delay (s/veh)		11.0								0.2						
Approach LOS		B								A						

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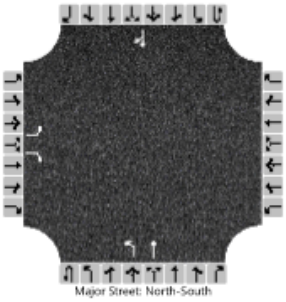
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Access Road
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.89
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		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	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume (veh/h)		5		15						47	313				328	19
Percent Heavy Vehicles (%)		0		20						10						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.40						4.20						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.48						2.29						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6		17						53						
Capacity, c (veh/h)		444		630						1126						
v/c Ratio		0.01		0.03						0.05						
95% Queue Length, Q_{95} (veh)		0.0		0.1						0.1						
95% Queue Length, Q_{95} (ft)		0.0		2.9						2.7						
Control Delay (s/veh)		13.2		10.9						8.4						
Level of Service (LOS)		B		B						A						
Approach Delay (s/veh)		11.5								1.1						
Approach LOS		B								A						

HCS™ TWSC Version 2026
Ent AM 28 NB.xtw

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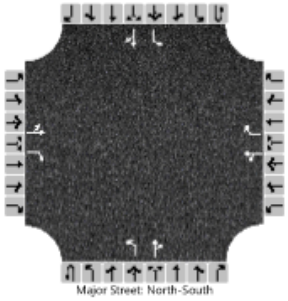
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Access Road
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	AM Peak Build	Peak Hour Factor	0.89
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	1	0	1	1	0	0	1	1	0
Configuration		LT		R		LT		R		L		TR		L		TR
Volume (veh/h)		5	0	15		40	0	58		47	313	105		84	328	19
Percent Heavy Vehicles (%)		0	3	20		0	0	0		10				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No										
Median Type | Storage		Left Only								1						

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	6.53	6.40		7.10	6.50	6.20		4.20				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	4.03	3.48		3.50	4.00	3.30		2.29				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6		17		45		65		53				94		
Capacity, c (veh/h)		249		630		278		645		1126				1103		
v/c Ratio		0.02		0.03		0.16		0.10		0.05				0.09		
95% Queue Length, Q_{95} (veh)		0.1		0.1		0.6		0.3		0.1				0.3		
95% Queue Length, Q_{95} (ft)		2.5		2.9		15.0		7.5		2.7				7.5		
Control Delay (s/veh)		19.8		10.9		20.4		11.2		8.4				8.6		
Level of Service (LOS)		C		B		C		B		A				A		
Approach Delay (s/veh)		13.1				15.0				0.8				1.7		
Approach LOS		B				B				A				A		

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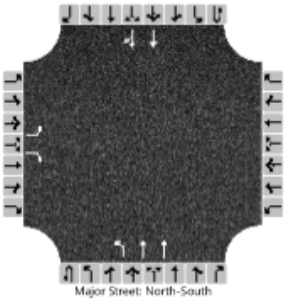
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Access Road
Analysis Year	2038	North/South Street	KY 393
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.89
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		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	2	0	0	0	2	0
Configuration		L		R						L	T				T	TR
Volume (veh/h)		5		16					0	49	329				345	20
Percent Heavy Vehicles (%)		0		20					3	10						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.80		7.30						4.30						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.50						2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6		18						55						
Capacity, c (veh/h)		473		749						1090						
v/c Ratio		0.01		0.02						0.05						
95% Queue Length, Q_{95} (veh)		0.0		0.1						0.2						
95% Queue Length, Q_{95} (ft)		0.0		2.9						5.4						
Control Delay (s/veh)		12.7		9.9						8.5						
Level of Service (LOS)		B		A						A						
Approach Delay (s/veh)		10.6								1.1						
Approach LOS		B								A						

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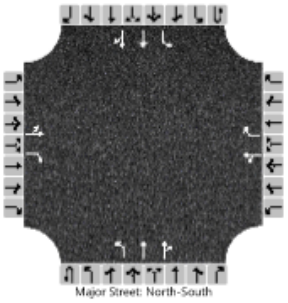
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Access Road
Analysis Year	2038	North/South Street	KY 393
Time Analyzed	AM Peak Build	Peak Hour Factor	0.89
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	1	0	1	2	0	0	1	2	0
Configuration		LT		R		LT		R		L	T	TR		L	T	TR
Volume (veh/h)		5	0	16		40	0	58	0	49	329	105	0	84	645	19
Percent Heavy Vehicles (%)		0	3	20		0	0	0	0	10			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.56	7.30		7.50	6.50	6.90		4.30				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	4.03	3.50		3.50	4.00	3.30		2.30				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6		18		45		65		55				94		
Capacity, c (veh/h)		194		576		252		763		807				1086		
v/c Ratio		0.03		0.03		0.18		0.09		0.07				0.09		
95% Queue Length, Q_{95} (veh)		0.1		0.1		0.6		0.3		0.2				0.3		
95% Queue Length, Q_{95} (ft)		2.5		2.9		15.0		7.5		5.4				7.5		
Control Delay (s/veh)		24.1		11.5		22.4		10.2		9.8				8.6		
Level of Service (LOS)		C		B		C		B		A				A		
Approach Delay (s/veh)		14.5				15.2				1.0				1.0		
Approach LOS		B				C				A				A		

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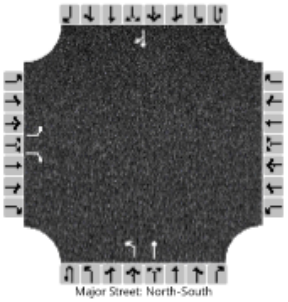
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Access Road
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.93
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		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	1	0	0	0	1	0
Configuration		L		R						L	T					TR
Volume (veh/h)		16		38						15	340				594	6
Percent Heavy Vehicles (%)		0		20						10						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.40						4.20						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.48						2.29						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		17		41						16						
Capacity, c (veh/h)		382		444						903						
v/c Ratio		0.05		0.09						0.02						
95% Queue Length, Q_{95} (veh)		0.1		0.3						0.1						
95% Queue Length, Q_{95} (ft)		2.5		8.7						2.7						
Control Delay (s/veh)		14.9		13.9						9.1						
Level of Service (LOS)		B		B						A						
Approach Delay (s/veh)		14.2								0.4						
Approach LOS		B								A						

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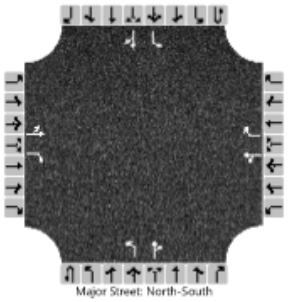
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Access Road
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	PM Peak Build	Peak Hour Factor	0.93
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	1	0	1	1	0	0	1	1	0
Configuration		LT		R		LT		R		L		TR		L		TR
Volume (veh/h)		16	0	38		107	0	117		15	314	136		136	545	6
Percent Heavy Vehicles (%)		0	0	20		0	0	0		10				0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No										
Median Type | Storage		Left Only								1						

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	6.40		7.10	6.50	6.20		4.20				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	3.48		3.50	4.00	3.30		2.29				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		17		41		115		126		16				146		
Capacity, c (veh/h)		172		476		196		645		945				1089		
v/c Ratio		0.10		0.09		0.59		0.19		0.02				0.13		
95% Queue Length, Q_{95} (veh)		0.3		0.3		3.2		0.7		0.1				0.5		
95% Queue Length, Q_{95} (ft)		7.5		8.7		80.0		17.5		2.7				12.5		
Control Delay (s/veh)		28.2		13.3		46.7		11.9		8.9				8.8		
Level of Service (LOS)		D		B		E		B		A				A		
Approach Delay (s/veh)		17.7				28.5				0.3				1.7		
Approach LOS		C				D				A				A		

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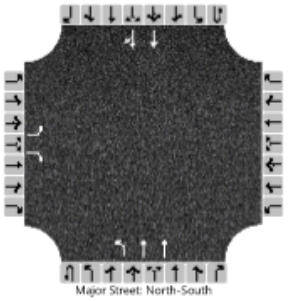
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Access Road
Analysis Year	2038	North/South Street	KY 393
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.93
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		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	2	0	0	0	2	0
Configuration		L		R						L	T				T	TR
Volume (veh/h)		17		40					0	16	357				624	6
Percent Heavy Vehicles (%)		0		20					3	10						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5		6.9						4.1						
Critical Headway (sec)		6.80		7.30						4.30						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.50						2.30						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		18		43						17						
Capacity, c (veh/h)		381		607						859						
v/c Ratio		0.05		0.07						0.02						
95% Queue Length, Q_{95} (veh)		0.2		0.2						0.1						
95% Queue Length, Q_{95} (ft)		5.0		5.8						2.7						
Control Delay (s/veh)		14.9		11.4						9.3						
Level of Service (LOS)		B		B						A						
Approach Delay (s/veh)		12.4								0.4						
Approach LOS		B								A						

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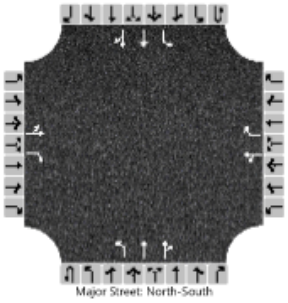
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at Entrance
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Access Road
Analysis Year	2038	North/South Street	KY 393
Time Analyzed	PM Peak Build	Peak Hour Factor	0.93
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	1		0	1	1	0	1	2	0	0	1	2	0
Configuration		LT		R		LT		R		L	T	TR		L	T	TR
Volume (veh/h)		17	0	40		107	0	117	0	16	331	139	0	136	575	6
Percent Heavy Vehicles (%)		0	0	20		0	0	0	0	10			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized		No				No										
Median Type | Storage		Left Only								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.50	7.30		7.50	6.50	6.90		4.30				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	3.50		3.50	4.00	3.30		2.30				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		18		43		115		126		17				146		
Capacity, c (veh/h)		189		633		254		753		900				1070		
v/c Ratio		0.10		0.07		0.45		0.17		0.02				0.14		
95% Queue Length, Q_{95} (veh)		0.3		0.2		2.2		0.6		0.1				0.5		
95% Queue Length, Q_{95} (ft)		7.5		5.8		55.0		15.0		2.7				12.5		
Control Delay (s/veh)		26.1		11.1		30.4		10.7		9.1				8.9		
Level of Service (LOS)		D		B		D		B		A				A		
Approach Delay (s/veh)		15.6				20.1				0.3				1.7		
Approach LOS		C				C				A				A		

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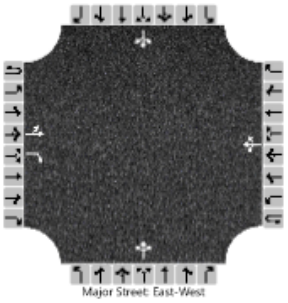
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at KY 146
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	KY 146
Analysis Year	2026	North/South Street	KY 393
Time Analyzed	AM Peak	Peak Hour Factor	0.90
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		2	214	220		86	400	5		232	5	44		12	1	2
Percent Heavy Vehicles (%)		50				6				6	40	3		50	0	50
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		Yes														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.60				4.16				7.16	6.90	6.23		7.60	6.50	6.70
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.65				2.25				3.55	4.36	3.33		3.95	4.00	3.75

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2				96					312				17	
Capacity, c (veh/h)		898				1306					218				194	
v/c Ratio		0.00				0.07					1.43				0.09	
95% Queue Length, Q_{95} (veh)		0.0				0.2					18.2				0.3	
95% Queue Length, Q_{95} (ft)		0.0				5.0					477.3				10.3	
Control Delay (s/veh)		9.0	0.0			8.0	0.8	0.8			261.7				25.3	
Level of Service (LOS)		A	A			A	A	A			F				D	
Approach Delay (s/veh)		0.1				2.0				261.7				25.3		
Approach LOS		A				A				F				D		

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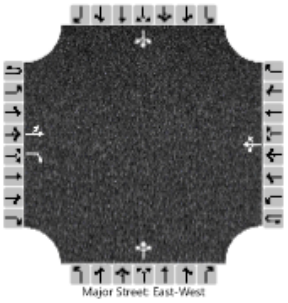
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at KY 146
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	KY 146
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.90
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		2	216	262		110	404	5		254	5	58		12	1	2
Percent Heavy Vehicles (%)		50				6				6	40	3		50	0	50
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		Yes														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.60				4.16				7.16	6.90	6.23		7.60	6.50	6.70
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.65				2.25				3.55	4.36	3.33		3.95	4.00	3.75

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2				122					352				17	
Capacity, c (veh/h)		894				1304					190				164	
v/c Ratio		0.00				0.09					1.85				0.10	
95% Queue Length, Q_{95} (veh)		0.0				0.3					25.4				0.3	
95% Queue Length, Q_{95} (ft)		0.0				7.5					665.4				10.3	
Control Delay (s/veh)		9.0	0.0			8.0	1.0	1.0			444.5				29.4	
Level of Service (LOS)		A	A			A	A	A			F				D	
Approach Delay (s/veh)		0.0				2.5				444.5				29.4		
Approach LOS		A				A				F				D		

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KY 146 AM 28 NB.xtw

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HCS Two-Way Stop-Control Report

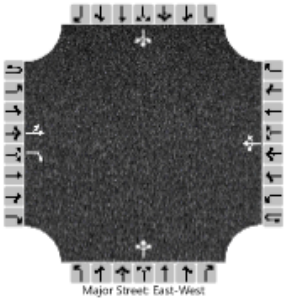
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/28/2026
Analysis Year	2028
Time Analyzed	AM Peak Build
Intersection Orientation	East-West
Project Description	Buckner Crossings

Site Information

Intersection	KY 393 at KY 146
Jurisdiction	
East/West Street	KY 146
North/South Street	KY 393
Peak Hour Factor	0.90
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		2	216	318		138	404	5		293	5	77		12	1	2
Percent Heavy Vehicles (%)		50				6				6	40	3		50	0	50
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		Yes														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.60				4.16				7.16	6.90	6.23		7.60	6.50	6.70
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.65				2.25				3.55	4.36	3.33		3.95	4.00	3.75

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		2				153					417				17	
Capacity, c (veh/h)		894				1304					163				135	
v/c Ratio		0.00				0.12					2.56				0.12	
95% Queue Length, Q_{95} (veh)		0.0				0.4					36.1				0.4	
95% Queue Length, Q_{95} (ft)		0.0				10.0					944.6				13.7	
Control Delay (s/veh)		9.0	0.0			8.1	1.3	1.3			765.4				35.3	
Level of Service (LOS)		A	A			A	A	A			F				E	
Approach Delay (s/veh)		0.0				3.0				765.4				35.3		
Approach LOS		A				A				F				E		

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KY 146 AM 28 B.xtw

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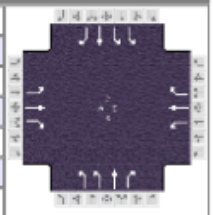
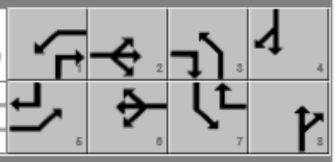
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/28/2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.90
Urban Street	KY 393	Analysis Year	2038 No Build	Analysis Period	1> 8:00
Intersection	KY 146	File Name	KY 146 AM 38 NB.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	47	204	156	116	393	37	181	91	61	36	120	23

Signal Information													
Cycle, s	55.5	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	3.3	1.9	14.2	2.8	3.0	6.4			
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0	0.0	2.0			



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	9.3	20.2	11.2	22.0	11.7	15.4	8.8	12.4
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.2	7.9	4.9	14.4	5.2	4.7	2.7	5.9
Green Extension Time (g_e), s	0.0	1.6	0.2	1.6	0.4	0.5	0.0	0.5
Phase Call Probability	0.55	1.00	0.86	1.00	0.96	1.00	0.46	1.00
Max Out Probability	0.00	0.00	0.00	0.00	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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	52	227	173	129	437	41	201	101	68	40	133	26
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1739	1826	1560	1725	1826	1485	1689	1826	1572	1620	1826	1547
Queue Service Time (g_s), s	1.2	5.9	4.5	2.9	12.4	1.0	3.2	2.7	1.8	0.7	3.9	0.8
Cycle Queue Clearance Time (g_c), s	1.2	5.9	4.5	2.9	12.4	1.0	3.2	2.7	1.8	0.7	3.9	0.8
Green Ratio (*g/C*)	0.32	0.26	0.36	0.35	0.29	0.34	0.10	0.17	0.26	0.05	0.12	0.18
Capacity (*c*), veh/h	262	467	560	461	528	503	349	308	412	162	211	272
Volume-to-Capacity Ratio (*X*)	0.199	0.486	0.310	0.280	0.827	0.082	0.576	0.328	0.164	0.247	0.633	0.094
Back of Queue (*Q*), ft/ln (95 th percentile)	18	98	58	43	205	14	52	47	26	11	71	11
Back of Queue (*Q*), veh/ln (95 th percentile)	0.7	3.8	2.2	1.6	7.9	0.5	2.0	1.8	1.0	0.4	2.7	0.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	14.9	17.6	12.8	13.1	18.4	12.5	23.7	20.3	15.8	25.4	23.4	19.2
Incremental Delay (d_2), s/veh	0.1	0.3	0.1	0.1	1.3	0.0	0.6	0.2	0.1	0.3	1.2	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	15.0	17.9	13.0	13.2	19.7	12.5	24.3	20.5	15.9	25.7	24.6	19.2
Level of Service (LOS)	B	B	B	B	B	B	C	C	B	C	C	B
Approach Delay, s/veh / LOS	15.7	B		17.9	B		21.7	C		24.1	C	
Intersection Delay, s/veh / LOS	18.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.27	B	2.26	B	2.28	B	2.28	B
Bicycle LOS Score / LOS	1.23	A	1.49	A	1.10	A	0.82	A

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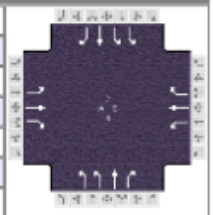
HCS Signalized Intersection Results Summary

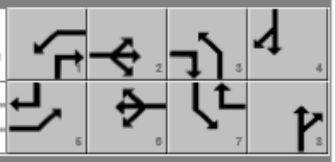
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/28/2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.90
Urban Street	KY 393	Analysis Year	2038 Build	Analysis Period	1> 8:00
Intersection	KY 146	File Name	KY 146 AM 38 B.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	47	204	188	144	393	37	207	104	80	36	144	23

Signal Information			
Cycle, s	57.5	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	3.4	2.2	14.4	2.8	3.2	7.5	
Yellow	4.0	0.0	4.0	4.0	0.0	4.0	
Red	2.0	0.0	2.0	2.0	0.0	2.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	9.4	20.4	11.6	22.6	12.0	16.7	8.8	13.5
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	3.2	8.1	5.8	14.9	5.8	5.2	2.7	6.8
Green Extension Time (g_e), s	0.0	1.7	0.2	1.7	0.4	0.6	0.0	0.6
Phase Call Probability	0.57	1.00	0.92	1.00	0.97	1.00	0.47	1.00
Max Out Probability	0.00	0.00	0.00	0.00	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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	52	227	209	160	437	41	230	116	89	40	160	26
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1739	1826	1560	1725	1826	1485	1689	1826	1572	1620	1826	1547
Queue Service Time (g_s), s	1.2	6.1	5.7	3.8	12.9	1.1	3.8	3.2	2.5	0.7	4.8	0.8
Cycle Queue Clearance Time (g_c), s	1.2	6.1	5.7	3.8	12.9	1.1	3.8	3.2	2.5	0.7	4.8	0.8
Green Ratio (*g/C*)	0.31	0.25	0.36	0.35	0.29	0.34	0.11	0.19	0.28	0.05	0.13	0.19
Capacity (*c*), veh/h	257	458	555	456	527	502	355	339	445	161	237	293
Volume-to-Capacity Ratio (*X*)	0.203	0.495	0.376	0.351	0.828	0.082	0.647	0.341	0.200	0.249	0.674	0.087
Back of Queue (*Q*), ft/ln (95 th percentile)	19	104	76	58	213	15	64	56	35	12	89	12
Back of Queue (*Q*), veh/ln (95 th percentile)	0.7	4.0	3.0	2.2	8.2	0.5	2.5	2.1	1.4	0.4	3.4	0.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	15.6	18.5	13.8	13.9	19.2	13.0	24.8	20.4	15.7	26.3	23.9	19.2
Incremental Delay (d_2), s/veh	0.1	0.3	0.2	0.2	1.3	0.0	0.7	0.2	0.1	0.3	1.2	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	15.7	18.8	14.0	14.0	20.4	13.0	25.5	20.6	15.8	26.6	25.1	19.3
Level of Service (LOS)	B	B	B	B	C	B	C	C	B	C	C	B
Approach Delay, s/veh / LOS	16.4	B		18.4	B		22.2	C		24.7	C	
Intersection Delay, s/veh / LOS	19.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.27	B	2.26	B	2.28	B	2.28	B
Bicycle LOS Score / LOS	1.29	A	1.54	B	1.20	A	0.86	A

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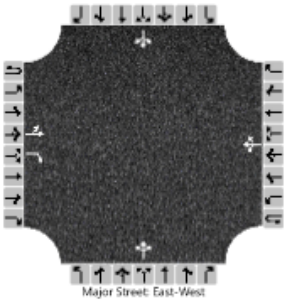
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at KY 146
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	KY 146
Analysis Year	2026	North/South Street	KY 393
Time Analyzed	PM Peak	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		0	469	432		116	146	2		223	0	61		1	2	0
Percent Heavy Vehicles (%)		0				2				1	0	8		100	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		Yes														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.12				7.11	6.50	6.28		8.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.22				3.51	4.00	3.37		4.40	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				140					342				4	
Capacity, c (veh/h)		1410				1007					140				143	
v/c Ratio		0.00				0.14					2.45				0.03	
95% Queue Length, Q_{95} (veh)		0.0				0.5					29.7				0.1	
95% Queue Length, Q_{95} (ft)		0.0				12.5					757.4				3.2	
Control Delay (s/veh)		7.6	0.0			9.2	1.4	1.4			725.3				30.8	
Level of Service (LOS)		A	A			A	A	A			F				D	
Approach Delay (s/veh)		0.0				4.8				725.3				30.8		
Approach LOS		A				A				F				D		

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KY 146 PM 26.xtw

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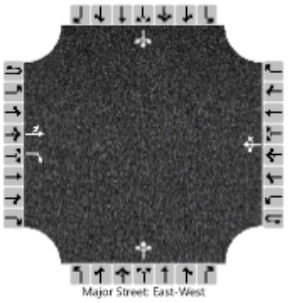
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at KY 146
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	KY 146
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		0	474	461		136	147	2		257	0	83		1	2	0
Percent Heavy Vehicles (%)		0				2				1	0	8		100	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		Yes														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.12				7.11	6.50	6.28		8.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.22				3.51	4.00	3.37		4.40	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				164					410				4	
Capacity, c (veh/h)		1408				1002					124				118	
v/c Ratio		0.00				0.16					3.30				0.03	
95% Queue Length, Q_{95} (veh)		0.0				0.6					39.6				0.1	
95% Queue Length, Q_{95} (ft)		0.0				15.0					1011.5				3.2	
Control Delay (s/veh)		7.6	0.0			9.3	1.7	1.7			1107.4				36.4	
Level of Service (LOS)		A	A			A	A	A			F				E	
Approach Delay (s/veh)		0.0				5.3				1107.4				36.4		
Approach LOS		A				A				F				E		

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KY 146 PM 28 NB.xtw

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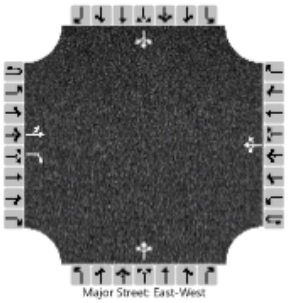
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	KY 393 at KY 146
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	KY 146
Analysis Year	2028	North/South Street	KY 393
Time Analyzed	PM Peak Build	Peak Hour Factor	0.83
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner 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	0	1	1	0	0	1	0		0	1	0		0	1	0
Configuration		LT		R			LTR				LTR				LTR	
Volume (veh/h)		0	474	519		165	147	2		317	0	113		1	2	0
Percent Heavy Vehicles (%)		0				2				1	0	8		100	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized		Yes														
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.10				4.12				7.11	6.50	6.28		8.10	6.50	6.20
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.22				3.51	4.00	3.37		4.40	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		0				199					518				4	
Capacity, c (veh/h)		1408				1002					103				88	
v/c Ratio		0.00				0.20					5.02				0.04	
95% Queue Length, Q_{95} (veh)		0.0				0.7					55.4				0.1	
95% Queue Length, Q_{95} (ft)		0.0				17.5					1416.5				3.2	
Control Delay (s/veh)		7.6	0.0			9.5	2.1	2.1			1891.9				47.4	
Level of Service (LOS)		A	A			A	A	A			F				E	
Approach Delay (s/veh)		0.0				6.0				1891.9				47.4		
Approach LOS		A				A				F				E		

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KY 146 PM 28 B.xtw

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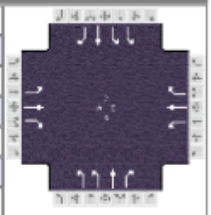
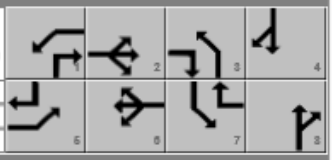
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/28/2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	KY 393	Analysis Year	2038 No Build	Analysis Period	1> 4:00
Intersection	KY 146	File Name	KY 146 PM 38 NB.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	16	362	291	143	139	18	182	88	87	137	144	31

Signal Information												
Cycle, s	58.8	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	1.5	4.0	15.9	5.5	0.3	7.6		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0	0.0	2.0		



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	7.5	21.9	11.6	25.9	11.8	13.9	11.5	13.6
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.0	3.1	3.0	3.1	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.4	14.1	5.8	5.6	5.4	5.0	4.6	6.9
Green Extension Time (g_e), s	0.0	1.7	0.2	1.7	0.4	0.7	0.3	0.6
Phase Call Probability	0.25	1.00	0.93	1.00	0.96	1.00	0.92	1.00
Max Out Probability	0.00	0.00	0.00	0.00	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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	18	402	323	159	154	20	202	98	97	152	160	34
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1739	1826	1560	1725	1826	1485	1689	1826	1572	1620	1826	1547
Queue Service Time (g_s), s	0.4	12.1	9.7	3.8	3.6	0.5	3.4	2.9	3.0	2.6	4.9	1.1
Cycle Queue Clearance Time (g_c), s	0.4	12.1	9.7	3.8	3.6	0.5	3.4	2.9	3.0	2.6	4.9	1.1
Green Ratio (*g/C*)	0.30	0.27	0.37	0.37	0.34	0.43	0.10	0.13	0.23	0.09	0.13	0.15
Capacity (*c*), veh/h	463	493	575	347	619	642	332	244	359	303	236	240
Volume-to-Capacity Ratio (*X*)	0.038	0.815	0.563	0.458	0.250	0.031	0.609	0.400	0.269	0.502	0.678	0.144
Back of Queue (*Q*), ft/ln (95 th percentile)	7	207	130	57	58	6	58	52	44	45	91	17
Back of Queue (*Q*), veh/ln (95 th percentile)	0.3	8.0	5.1	2.2	2.2	0.2	2.2	2.0	1.7	1.7	3.5	0.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	14.8	20.1	14.8	14.6	14.1	9.6	25.5	23.3	18.7	25.4	24.5	21.5
Incremental Delay (d_2), s/veh	0.0	1.3	0.3	0.4	0.1	0.0	0.7	0.4	0.1	0.5	1.3	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	14.8	21.4	15.1	14.9	14.1	9.6	26.1	23.7	18.8	25.8	25.7	21.6
Level of Service (LOS)	B	C	B	B	B	A	C	C	B	C	C	C
Approach Delay, s/veh / LOS	18.5	B		14.2	B		23.8	C		25.4	C	
Intersection Delay, s/veh / LOS	20.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.27	B	2.26	B	2.28	B	2.28	B
Bicycle LOS Score / LOS	1.71	B	1.04	A	1.14	A	1.06	A

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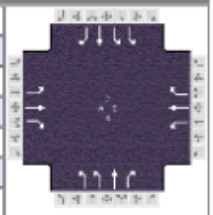
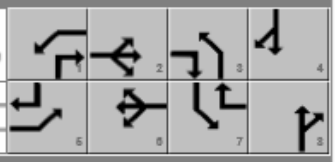
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/28/2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	KY 393	Analysis Year	2038 Build	Analysis Period	1> 4:00
Intersection	KY 146	File Name	KY 146 PM 38 B.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	16	362	324	172	139	18	223	107	117	137	219	31

Signal Information												
Cycle, s	68.1	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	1.7	5.5	18.0	5.7	1.6	11.6		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0	0.0	2.0		



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	1.1	3.0	1.1	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	7.7	24.0	13.2	29.5	13.2	19.2	11.7	17.6
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (*MAH*), s	3.0	3.1	3.0	3.1	3.0	3.0	3.0	3.0
Queue Clearance Time (g_s), s	2.5	16.2	7.2	6.1	6.8	6.3	5.1	10.7
Green Extension Time (g_e), s	0.0	1.8	0.2	1.8	0.4	0.9	0.2	0.9
Phase Call Probability	0.29	1.00	0.97	1.00	0.99	1.00	0.94	1.00
Max Out Probability	0.00	0.00	0.00	0.00	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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	18	402	360	191	154	20	248	119	130	152	243	34
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1739	1826	1560	1725	1826	1485	1689	1826	1572	1620	1826	1547
Queue Service Time (g_s), s	0.5	14.2	12.9	5.2	4.1	0.5	4.8	3.8	4.3	3.1	8.7	1.2
Cycle Queue Clearance Time (g_c), s	0.5	14.2	12.9	5.2	4.1	0.5	4.8	3.8	4.3	3.1	8.7	1.2
Green Ratio (*g/C*)	0.29	0.26	0.37	0.39	0.35	0.43	0.11	0.19	0.30	0.08	0.17	0.20
Capacity (*c*), veh/h	460	484	579	344	631	637	359	354	472	270	312	304
Volume-to-Capacity Ratio (*X*)	0.039	0.831	0.622	0.556	0.245	0.031	0.691	0.336	0.275	0.565	0.780	0.113
Back of Queue (*Q*), ft/ln (95 th percentile)	8	244	184	82	70	7	86	71	64	55	166	19
Back of Queue (*Q*), veh/ln (95 th percentile)	0.3	9.4	7.2	3.1	2.7	0.3	3.3	2.7	2.5	2.0	6.4	0.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	17.4	23.6	17.5	16.4	16.0	11.3	29.4	23.7	18.2	30.1	27.1	22.5
Incremental Delay (d_2), s/veh	0.0	1.4	0.4	0.5	0.1	0.0	0.9	0.2	0.1	0.7	1.6	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	17.4	25.1	17.9	16.9	16.0	11.3	30.3	23.9	18.3	30.8	28.7	22.6
Level of Service (LOS)	B	C	B	B	B	B	C	C	B	C	C	C
Approach Delay, s/veh / LOS	21.6	C		16.2	B		25.6	C		28.9	C	
Intersection Delay, s/veh / LOS	23.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.27	B	2.26	B	2.28	B	2.28	B
Bicycle LOS Score / LOS	1.77	B	1.09	A	1.31	A	1.20	A

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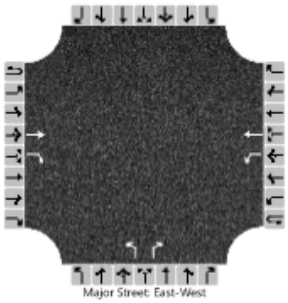
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Commerce Pkwy at McDonalds
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Commerce Parkway
Analysis Year	2026	North/South Street	McDonalds
Time Analyzed	AM Peak	Peak Hour Factor	0.96
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner Crossing		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			255	99		41	152			222		33				
Percent Heavy Vehicles (%)						0				1		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Left Only							1						

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.41		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.51		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						43				231		34				
Capacity, c (veh/h)						1201				585		771				
v/c Ratio						0.04				0.40		0.04				
95% Queue Length, Q_{95} (veh)						0.1				1.9		0.1				
95% Queue Length, Q_{95} (ft)						2.5				47.9		2.6				
Control Delay (s/veh)						8.1				15.1		9.9				
Level of Service (LOS)						A				C		A				
Approach Delay (s/veh)						1.7				14.4						
Approach LOS						A				B						

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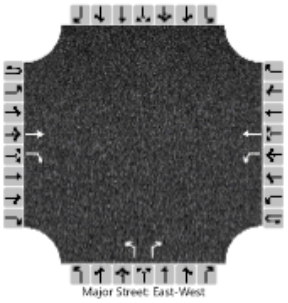
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Commerce Pkwy at McDonalds
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Commerce Parkway
Analysis Year	2028	North/South Street	McDonalds
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.96
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner Crossing		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			285	100		41	208			224		33				
Percent Heavy Vehicles (%)						0				1		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Left Only							1						

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.41		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.51		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						43				233		34				
Capacity, c (veh/h)						1169				543		740				
v/c Ratio						0.04				0.43		0.05				
95% Queue Length, Q_{95} (veh)						0.1				2.1		0.1				
95% Queue Length, Q_{95} (ft)						2.5				52.9		2.6				
Control Delay (s/veh)						8.2				16.5		10.1				
Level of Service (LOS)						A				C		B				
Approach Delay (s/veh)						1.3				15.7						
Approach LOS						A				C						

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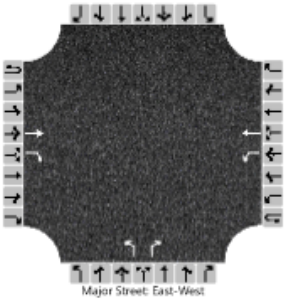
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Commerce Pkwy at McDonalds
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Commerce Parkway
Analysis Year	2028	North/South Street	McDonalds
Time Analyzed	AM Peak Build	Peak Hour Factor	0.96
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner Crossing		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			292	100		41	247			224		33				
Percent Heavy Vehicles (%)						0				1		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Left Only							1						

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.41		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.51		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						43				233		34				
Capacity, c (veh/h)						1161				521		733				
v/c Ratio						0.04				0.45		0.05				
95% Queue Length, Q_{95} (veh)						0.1				2.3		0.1				
95% Queue Length, Q_{95} (ft)						2.5				58.0		2.6				
Control Delay (s/veh)						8.2				17.4		10.2				
Level of Service (LOS)						A				C		B				
Approach Delay (s/veh)						1.2				16.5						
Approach LOS						A				C						

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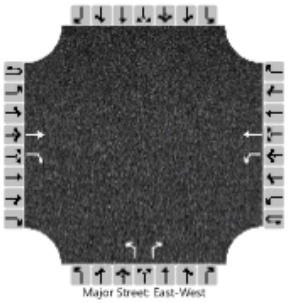
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Commerce Pkwy at McDonalds
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Commerce Parkway
Analysis Year	2038	North/South Street	McDonalds
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.96
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner Crossing		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			300	105		43	219			235		35				
Percent Heavy Vehicles (%)						0				1		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Left Only							1						

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.41		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.51		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						45				245		36				
Capacity, c (veh/h)						1148				528		725				
v/c Ratio						0.04				0.46		0.05				
95% Queue Length, Q_{95} (veh)						0.1				2.4		0.2				
95% Queue Length, Q_{95} (ft)						2.5				60.5		5.1				
Control Delay (s/veh)						8.3				17.6		10.2				
Level of Service (LOS)						A				C		B				
Approach Delay (s/veh)						1.4				16.6						
Approach LOS						A				C						

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McD AM 38 NB.xtw

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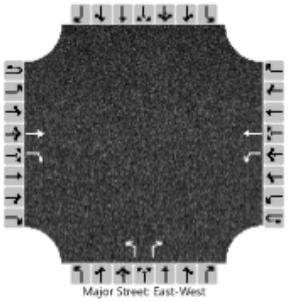
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Commerce Pkwy at McDonalds
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Commerce Parkway
Analysis Year	2038	North/South Street	McDonalds
Time Analyzed	AM Peak Build	Peak Hour Factor	0.96
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner Crossing		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			307	105		43	258			235		35				
Percent Heavy Vehicles (%)						0				1		3				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Left Only							1						

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.41		6.23				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.51		3.33				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						45				245		36				
Capacity, c (veh/h)						1141				507		719				
v/c Ratio						0.04				0.48		0.05				
95% Queue Length, Q_{95} (veh)						0.1				2.6		0.2				
95% Queue Length, Q_{95} (ft)						2.5				65.5		5.1				
Control Delay (s/veh)						8.3				18.6		10.3				
Level of Service (LOS)						A				C		B				
Approach Delay (s/veh)						1.2				17.5						
Approach LOS						A				C						

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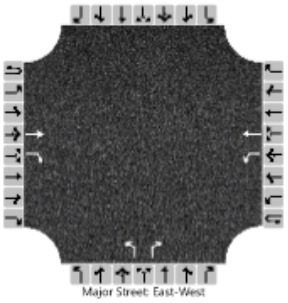
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Commerce Pkwy at McDonalds
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Commerce Parkway
Analysis Year	2026	North/South Street	McDonalds
Time Analyzed	PM Peak	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner Crossing		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			739	161		31	263			163		127				
Percent Heavy Vehicles (%)						0				2		1				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Left Only							1						

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.42		6.21				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.52		3.31				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33				175		137				
Capacity, c (veh/h)						720				335		389				
v/c Ratio						0.05				0.52		0.35				
95% Queue Length, Q_{95} (veh)						0.1				2.9		1.5				
95% Queue Length, Q_{95} (ft)						2.5				73.7		37.8				
Control Delay (s/veh)						10.2				27.0		19.2				
Level of Service (LOS)						B				D		C				
Approach Delay (s/veh)						1.1				23.5						
Approach LOS						A				C						

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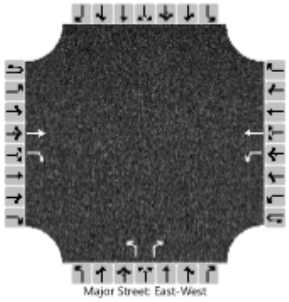
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Commerce Pkwy at McDonalds
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Commerce Parkway
Analysis Year	2028	North/South Street	McDonalds
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner Crossing		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			804	163		31	297			165		128				
Percent Heavy Vehicles (%)						0				2		1				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Left Only							1						

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.42		6.21				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.52		3.31				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33				177		138				
Capacity, c (veh/h)						677				307		355				
v/c Ratio						0.05				0.58		0.39				
95% Queue Length, Q_{95} (veh)						0.2				3.4		1.8				
95% Queue Length, Q_{95} (ft)						5.0				86.4		45.4				
Control Delay (s/veh)						10.6				31.6		21.4				
Level of Service (LOS)						B				D		C				
Approach Delay (s/veh)						1.0				27.2						
Approach LOS						A				D						

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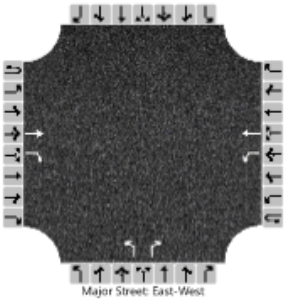
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Commerce Pkwy at McDonalds
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Commerce Parkway
Analysis Year	2028	North/South Street	McDonalds
Time Analyzed	PM Peak Build	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner Crossing		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			811	163		31	352			165		128				
Percent Heavy Vehicles (%)						0				2		1				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Left Only							1						

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.42		6.21				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.52		3.31				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33				177		138				
Capacity, c (veh/h)						672				295		351				
v/c Ratio						0.05				0.60		0.39				
95% Queue Length, Q_{95} (veh)						0.2				3.6		1.8				
95% Queue Length, Q_{95} (ft)						5.0				91.4		45.4				
Control Delay (s/veh)						10.6				34.1		21.7				
Level of Service (LOS)						B				D		C				
Approach Delay (s/veh)						0.9				28.7						
Approach LOS						A				D						

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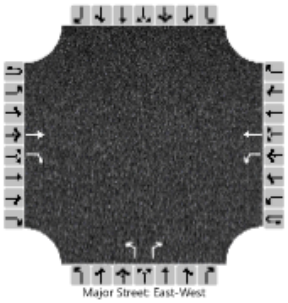
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Commerce Pkwy at McDonalds
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Commerce Parkway
Analysis Year	2038	North/South Street	McDonalds
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner Crossing		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			845	171		33	312			173		135				
Percent Heavy Vehicles (%)						0				2		1				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Left Only							1						

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.42		6.21				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.52		3.31				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						35				186		145				
Capacity, c (veh/h)						646				291		335				
v/c Ratio						0.05				0.64		0.43				
95% Queue Length, Q_{95} (veh)						0.2				4.1		2.1				
95% Queue Length, Q_{95} (ft)						5.0				104.1		52.9				
Control Delay (s/veh)						10.9				37.0		23.7				
Level of Service (LOS)						B				E		C				
Approach Delay (s/veh)						1.0				31.2						
Approach LOS						A				D						

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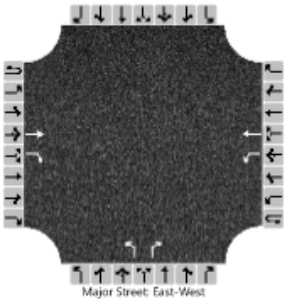
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Commerce Pkwy at McDonalds
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/28/2026	East/West Street	Commerce Parkway
Analysis Year	2038	North/South Street	McDonalds
Time Analyzed	PM Peak Build	Peak Hour Factor	0.93
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Buckner Crossing		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	1	0	1	1	0		1	0	1		0	0	0
Configuration			T	R		L	T			L		R				
Volume (veh/h)			852	171		33	367			173		135				
Percent Heavy Vehicles (%)						0				2		1				
Proportion Time Blocked																
Percent Grade (%)										0						
Right Turn Channelized			No							No						
Median Type | Storage			Left Only							1						

Critical and Follow-up Headways

Base Critical Headway (sec)						4.1				7.1		6.2				
Critical Headway (sec)						4.10				6.42		6.21				
Base Follow-Up Headway (sec)						2.2				3.5		3.3				
Follow-Up Headway (sec)						2.20				3.52		3.31				

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						35				186		145				
Capacity, c (veh/h)						642				279		331				
v/c Ratio						0.06				0.67		0.44				
95% Queue Length, Q_{95} (veh)						0.2				4.4		2.1				
95% Queue Length, Q_{95} (ft)						5.0				111.8		52.9				
Control Delay (s/veh)						10.9				40.2		24.1				
Level of Service (LOS)						B				E		C				
Approach Delay (s/veh)						0.9				33.1						
Approach LOS						A				D						

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McD PM 38 B.xtw

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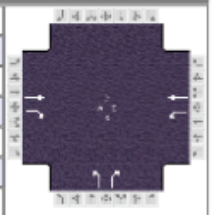
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	Commerce Parkway	Analysis Year	2026	Analysis Period	1> 8:00
Intersection	Kroger	File Name	Kroger AM 26.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		272	17	37	168		27		25			

Signal Information			
Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	30.0	3.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		7.0		6.0		9.0		
Phase Duration, s		36.0		36.0		9.0		
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		3.0		3.0		3.1		
Queue Clearance Time (g_s), s		4.8		5.5		2.7		
Green Extension Time (g_e), s		0.9		0.9		0.1		
Phase Call Probability		1.00		1.00		0.50		
Max Out Probability		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		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		292	18	40	181		29		27			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1856	1449	1104	1856		1810		1610			
Queue Service Time (g_s), s		2.8	0.2	0.7	1.6		0.7		0.7			
Cycle Queue Clearance Time (g_c), s		2.8	0.2	3.5	1.6		0.7		0.7			
Green Ratio (*g/C*)		0.67	0.67	0.67	0.67		0.07		0.07			
Capacity (*c*), veh/h		1236	966	827	1236		121		108			
Volume-to-Capacity Ratio (*X*)		0.237	0.019	0.048	0.146		0.239		0.249			
Back of Queue (*Q*), ft/ln (95 th percentile)		10	0	3	6		11		10			
Back of Queue (*Q*), veh/ln (95 th percentile)		0.4	0.0	0.1	0.2		0.5		0.4			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00			
Uniform Delay (d_1), s/veh		3.0	2.5	3.7	2.8		19.9		19.9			
Incremental Delay (d_2), s/veh		0.0	0.0	0.0	0.0		0.4		0.4			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		3.0	2.5	3.7	2.8		20.3		20.4			
Level of Service (LOS)		A	A	A	A		C		C			
Approach Delay, s/veh / LOS	3.0	A		3.0	A		20.3	C		0.0		
Intersection Delay, s/veh / LOS	4.6						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.83	B	0.64	A	1.92	B	1.92	B
Bicycle LOS Score / LOS	1.00	A	0.85	A		F		

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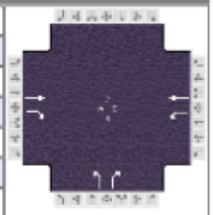
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	Commerce Parkway	Analysis Year	2028 No Build	Analysis Period	1> 8:00
Intersection	Kroger	File Name	Kroger AM 28 NB.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		302	17	37	224		27		25			

Signal Information			
Cycle, s	45.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	30.0	3.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		7.0		6.0		9.0		
Phase Duration, s		36.0		36.0		9.0		
Change Period, (*Y+R c*), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		3.0		3.0		3.1		
Queue Clearance Time (*g s*), s		5.2		5.9		2.7		
Green Extension Time (*g e*), s		1.1		1.1		0.1		
Phase Call Probability		1.00		1.00		0.50		
Max Out Probability		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		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		325	18	40	241		29		27			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1856	1449	1072	1856		1810		1610			
Queue Service Time (*g s*), s		3.2	0.2	0.7	2.2		0.7		0.7			
Cycle Queue Clearance Time (*g c*), s		3.2	0.2	3.9	2.2		0.7		0.7			
Green Ratio (*g/C*)		0.67	0.67	0.67	0.67		0.07		0.07			
Capacity (*c*), veh/h		1236	966	798	1236		121		108			
Volume-to-Capacity Ratio (*X*)		0.263	0.019	0.050	0.195		0.239		0.249			
Back of Queue (*Q*), ft/ln (95 th percentile)		12	0	3	8		11		10			
Back of Queue (*Q*), veh/ln (95 th percentile)		0.4	0.0	0.1	0.3		0.5		0.4			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00			
Uniform Delay (*d 1*), s/veh		3.0	2.5	3.8	2.9		19.9		19.9			
Incremental Delay (*d 2*), s/veh		0.0	0.0	0.0	0.0		0.4		0.4			
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		3.1	2.5	3.8	2.9		20.3		20.4			
Level of Service (LOS)		A	A	A	A		C		C			
Approach Delay, s/veh / LOS	3.1	A		3.0	A		20.3	C		0.0		
Intersection Delay, s/veh / LOS	4.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.83	B	0.64	A	1.92	B	1.92	B
Bicycle LOS Score / LOS	1.05	A	0.95	A		F		

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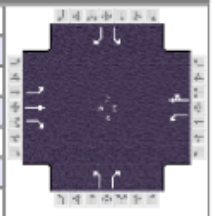
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	Commerce Parkway	Analysis Year	2028 Build	Analysis Period	1> 8:00
Intersection	Kroger	File Name	Kroger AM 28 B.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	7	302	17	37	224	84	27		25	58		39

Signal Information													
Cycle, s	47.3	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	30.0	5.3	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		5.0		5.0
Phase Duration, s		36.0		36.0		11.3		11.3
Change Period, (*Y+R c*), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0		3.0		3.1		3.1
Queue Clearance Time (*g s*), s		6.1		6.5		2.7		3.5
Green Extension Time (*g e*), s		1.3		1.3		0.3		0.3
Phase Call Probability		1.00		1.00		0.88		0.88
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	5	2	12	1	6	16	3		18	7		14
Adjusted Flow Rate (*v*), veh/h	8	325	18	40	331		29		27	62		42
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1066	1856	1449	1072	1769		1810		1610	1810		1610
Queue Service Time (*g s*), s	0.2	3.7	0.2	0.8	4.0		0.7		0.7	1.5		1.1
Cycle Queue Clearance Time (*g c*), s	4.1	3.7	0.2	4.5	4.0		0.7		0.7	1.5		1.1
Green Ratio (*g/C*)	0.63	0.63	0.63	0.63	0.63		0.11		0.11	0.11		0.11
Capacity (*c*), veh/h	739	1178	920	750	1123		354		180	354		180
Volume-to-Capacity Ratio (*X*)	0.010	0.276	0.020	0.053	0.295		0.082		0.150	0.176		0.234
Back of Queue (*Q*), ft/ln (95 th percentile)	1	23	1	4	24		11		10	24		16
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	0.9	0.0	0.2	0.9		0.4		0.4	1.0		0.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (*d 1*), s/veh	4.8	3.8	3.2	4.8	3.9		19.0		19.0	19.3		19.2
Incremental Delay (*d 2*), s/veh	0.0	0.0	0.0	0.0	0.1		0.0		0.1	0.1		0.2
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
Control Delay (*d*), s/veh	4.8	3.9	3.2	4.8	3.9		19.0		19.1	19.4		19.4
Level of Service (LOS)	A	A	A	A	A		B		B	B		B
Approach Delay, s/veh / LOS	3.9	A		4.0	A		19.1	B		19.4	B	
Intersection Delay, s/veh / LOS	6.7						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.84	B	1.84	B	1.91	B	2.11	B
Bicycle LOS Score / LOS	1.07	A	1.10	A		F		F

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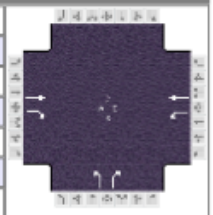
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	Commerce Parkway	Analysis Year	2038 No Build	Analysis Period	1> 8:00
Intersection	Kroger	File Name	Kroger AM 38 NB.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		317	18	39	235		28		26			

Signal Information													
Cycle, s	45.1	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	30.0	3.1	0.0	0.0	0.0	0.0			
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		7.0		6.0		9.0		
Phase Duration, s		36.0		36.0		9.1		
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		3.0		3.0		3.1		
Queue Clearance Time (g_s), s		5.4		6.2		2.7		
Green Extension Time (g_e), s		1.1		1.1		0.1		
Phase Call Probability		1.00		1.00		0.52		
Max Out Probability		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		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		341	19	42	253		30		28			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1856	1449	1056	1856		1810		1610			
Queue Service Time (g_s), s		3.4	0.2	0.8	2.4		0.7		0.7			
Cycle Queue Clearance Time (g_c), s		3.4	0.2	4.2	2.4		0.7		0.7			
Green Ratio (*g/C*)		0.67	0.67	0.67	0.67		0.07		0.07			
Capacity (*c*), veh/h		1234	964	783	1234		125		111			
Volume-to-Capacity Ratio (*X*)		0.276	0.020	0.054	0.205		0.242		0.252			
Back of Queue (*Q*), ft/ln (95 th percentile)		13	1	3	9		12		11			
Back of Queue (*Q*), veh/ln (95 th percentile)		0.5	0.0	0.1	0.3		0.5		0.4			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00			
Uniform Delay (d_1), s/veh		3.1	2.6	4.0	2.9		19.9		19.9			
Incremental Delay (d_2), s/veh		0.0	0.0	0.0	0.0		0.4		0.4			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		3.1	2.6	4.0	3.0		20.3		20.3			
Level of Service (LOS)		A	A	A	A		C		C			
Approach Delay, s/veh / LOS	3.1	A		3.1	A		20.3	C		0.0		
Intersection Delay, s/veh / LOS	4.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.83	B	0.64	A	1.92	B	1.92	B
Bicycle LOS Score / LOS	1.08	A	0.97	A		F		

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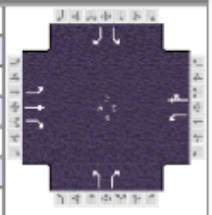
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.93
Urban Street	Commerce Parkway	Analysis Year	2038 Build	Analysis Period	1> 8:00
Intersection	Kroger	File Name	Kroger AM 38 B.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	7	317	18	39	235	84	28		26	58		39

Signal Information												
Cycle, s	47.3	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	30.0	5.3	0.0	0.0	0.0	0.0		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		5.0		5.0
Phase Duration, s		36.0		36.0		11.3		11.3
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.0		3.0		3.1		3.1
Queue Clearance Time (g_s), s		6.3		6.8		2.7		3.5
Green Extension Time (g_e), s		1.4		1.4		0.3		0.3
Phase Call Probability		1.00		1.00		0.88		0.88
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	5	2	12	1	6	16	3		18	7		14
Adjusted Flow Rate (*v*), veh/h	8	341	19	42	343		30		28	62		42
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1054	1856	1449	1056	1772		1810		1610	1810		1610
Queue Service Time (g_s), s	0.2	3.9	0.2	0.9	4.2		0.7		0.7	1.5		1.1
Cycle Queue Clearance Time (g_c), s	4.3	3.9	0.2	4.8	4.2		0.7		0.7	1.5		1.1
Green Ratio (*g/C*)	0.63	0.63	0.63	0.63	0.63		0.11		0.11	0.11		0.11
Capacity (*c*), veh/h	728	1177	919	735	1124		355		180	355		180
Volume-to-Capacity Ratio (*X*)	0.010	0.290	0.021	0.057	0.305		0.085		0.155	0.176		0.233
Back of Queue (*Q*), ft/ln (95 th percentile)	1	25	1	5	25		11		11	24		16
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	1.0	0.0	0.2	1.0		0.5		0.4	1.0		0.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d_1), s/veh	4.9	3.9	3.2	4.9	3.9		19.0		19.0	19.3		19.1
Incremental Delay (d_2), s/veh	0.0	0.1	0.0	0.0	0.1		0.0		0.1	0.1		0.2
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
Control Delay (*d*), s/veh	4.9	3.9	3.2	4.9	4.0		19.0		19.1	19.4		19.4
Level of Service (LOS)	A	A	A	A	A		B		B	B		B
Approach Delay, s/veh / LOS	3.9	A		4.1	A		19.1	B		19.4	B	
Intersection Delay, s/veh / LOS	6.7						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.84	B	1.84	B	1.91	B	2.11	B
Bicycle LOS Score / LOS	1.09	A	1.12	A		F		F

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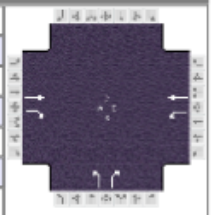
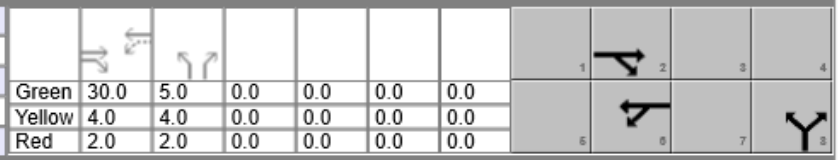
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	Commerce Parkway	Analysis Year	2026	Analysis Period	1> 3:45
Intersection	Kroger	File Name	Kroger PM 26.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		861	8	38	239		55		68			

Signal Information			
Cycle, s	47.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	30.0	5.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		7.0		6.0		9.0		
Phase Duration, s		36.0		36.0		11.0		
Change Period, (*Y+R c*), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		3.0		3.0		3.2		
Queue Clearance Time (*g s*), s		20.1		22.7		4.1		
Green Extension Time (*g e*), s		3.0		3.0		0.2		
Phase Call Probability		1.00		1.00		0.83		
Max Out Probability		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		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		957	9	42	266		61		76			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1856	1449	596	1856		1810		1610			
Queue Service Time (*g s*), s		18.1	0.1	2.7	2.8		1.5		2.1			
Cycle Queue Clearance Time (*g c*), s		18.1	0.1	20.7	2.8		1.5		2.1			
Green Ratio (*g/C*)		0.64	0.64	0.64	0.64		0.11		0.11			
Capacity (*c*), veh/h		1185	925	305	1185		192		171			
Volume-to-Capacity Ratio (*X*)		0.808	0.010	0.139	0.224		0.317		0.441			
Back of Queue (Q), ft/ln (95 th percentile)		114	0	13	17		24		30			
Back of Queue (Q), veh/ln (95 th percentile)		4.5	0.0	0.5	0.7		1.0		1.2			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00			
Uniform Delay (*d 1*), s/veh		6.3	3.1	14.1	3.6		19.4		19.7			
Incremental Delay (*d 2*), s/veh		0.5	0.0	0.1	0.0		0.3		0.7			
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		6.9	3.1	14.2	3.6		19.8		20.4			
Level of Service (LOS)		A	A	B	A		B		C			
Approach Delay, s/veh / LOS	6.8	A		5.1	A		20.1	C		0.0		
Intersection Delay, s/veh / LOS	7.7						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.84	B	0.64	A	1.92	B	1.92	B
Bicycle LOS Score / LOS	2.08	B	1.00	A		F		

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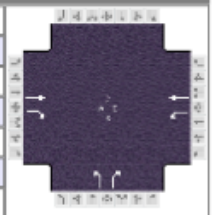
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	Commerce Parkway	Analysis Year	2028 No Build	Analysis Period	1> 3:45
Intersection	Kroger	File Name	Kroger PM 28 NB.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		928	8	38	272		56		69			

Signal Information													
Cycle, s	47.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	30.0	5.0	0.0	0.0	0.0	0.0			
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		7.0		6.0		9.0		
Phase Duration, s		36.0		36.0		11.0		
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		3.0		3.0		3.2		
Queue Clearance Time (g_s), s		23.3		26.4		4.1		
Green Extension Time (g_e), s		3.4		3.4		0.2		
Phase Call Probability		1.00		1.00		0.84		
Max Out Probability		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		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		1031	9	42	302		62		77			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1856	1449	556	1856		1810		1610			
Queue Service Time (g_s), s		21.3	0.1	3.1	3.3		1.5		2.1			
Cycle Queue Clearance Time (g_c), s		21.3	0.1	24.4	3.3		1.5		2.1			
Green Ratio (*g/C*)		0.64	0.64	0.64	0.64		0.11		0.11			
Capacity (*c*), veh/h		1184	925	257	1184		194		172			
Volume-to-Capacity Ratio (*X*)		0.871	0.010	0.164	0.255		0.321		0.445			
Back of Queue (*Q*), ft/ln (95 th percentile)		139	0	15	20		24		31			
Back of Queue (*Q*), veh/ln (95 th percentile)		5.4	0.0	0.6	0.8		1.0		1.2			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00			
Uniform Delay (d_1), s/veh		6.9	3.1	16.8	3.7		19.4		19.7			
Incremental Delay (d_2), s/veh		0.8	0.0	0.1	0.0		0.4		0.7			
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		7.8	3.1	17.0	3.7		19.8		20.4			
Level of Service (LOS)		A	A	B	A		B		C			
Approach Delay, s/veh / LOS	7.7	A		5.3	A		20.1	C		0.0		
Intersection Delay, s/veh / LOS	8.3						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.84	B	0.64	A	1.92	B	1.92	B
Bicycle LOS Score / LOS	2.20	B	1.06	A		F		

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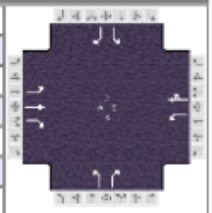
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	Commerce Parkway	Analysis Year	2028 Build	Analysis Period	1> 3:45
Intersection	Kroger	File Name	Kroger PM 28 B.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	91	844	8	38	232	127	56		69	177		97

Signal Information												
Cycle, s	49.9	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	30.0	7.9	0.0	0.0	0.0	0.0		
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		5.0		5.0
Phase Duration, s		36.0		36.0		13.9		13.9
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.1		3.1		3.1		3.1
Queue Clearance Time (g_s), s		22.3		25.4		4.1		7.1
Green Extension Time (g_e), s		3.7		3.7		0.8		0.8
Phase Call Probability		1.00		1.00		1.00		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	5	2	12	1	6	16	3		18	7		14
Adjusted Flow Rate (*v*), veh/h	101	938	9	42	399		62		77	197		108
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1001	1856	1449	607	1744		1810		1610	1810		1610
Queue Service Time (g_s), s	2.9	20.3	0.1	3.0	5.9		1.5		2.1	5.1		3.0
Cycle Queue Clearance Time (g_c), s	8.7	20.3	0.1	23.4	5.9		1.5		2.1	5.1		3.0
Green Ratio (*g/C*)	0.60	0.60	0.60	0.60	0.60		0.16		0.16	0.16		0.16
Capacity (*c*), veh/h	630	1116	872	262	1049		430		255	430		255
Volume-to-Capacity Ratio (*X*)	0.161	0.840	0.010	0.161	0.380		0.145		0.301	0.457		0.423
Back of Queue (*Q*), ft/ln (95 th percentile)	18	180	1	16	48		24		30	82		44
Back of Queue (*Q*), veh/ln (95 th percentile)	0.7	7.0	0.0	0.6	1.9		1.0		1.2	3.3		1.7
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d_1), s/veh	7.4	8.0	4.0	17.4	5.1		18.3		18.6	19.8		19.0
Incremental Delay (d_2), s/veh	0.0	0.7	0.0	0.1	0.1		0.1		0.2	0.3		0.4
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
Control Delay (*d*), s/veh	7.4	8.7	4.0	17.5	5.2		18.4		18.8	20.1		19.4
Level of Service (LOS)	A	A	A	B	A		B		B	C		B
Approach Delay, s/veh / LOS	8.5	A		6.4	A		18.6	B		19.9	B	
Intersection Delay, s/veh / LOS	10.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.85	B	1.85	B	1.91	B	2.10	B
Bicycle LOS Score / LOS	2.22	B	1.22	A		F		F

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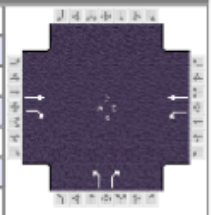
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	Commerce Parkway	Analysis Year	2038 No Build	Analysis Period	1> 3:45
Intersection	Kroger	File Name	Kroger PM 38 NB.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		975	8	40	286		59		73			

Signal Information			
Cycle, s	51.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	33.8	5.2	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		
Case Number		7.0		6.0		9.0		
Phase Duration, s		39.8		39.8		11.2		
Change Period, (*Y+R c*), s		6.0		6.0		6.0		
Max Allow Headway (*MAH*), s		3.0		3.0		3.2		
Queue Clearance Time (*g s*), s		26.2		30.3		4.4		
Green Extension Time (*g e*), s		3.8		3.7		0.2		
Phase Call Probability		1.00		1.00		0.87		
Max Out Probability		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		2	12	1	6		3		18			
Adjusted Flow Rate (*v*), veh/h		1083	9	44	318		66		81			
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1856	1449	529	1856		1810		1610			
Queue Service Time (*g s*), s		24.2	0.1	3.8	3.6		1.7		2.4			
Cycle Queue Clearance Time (*g c*), s		24.2	0.1	28.3	3.6		1.7		2.4			
Green Ratio (*g/C*)		0.66	0.66	0.66	0.66		0.10		0.10			
Capacity (*c*), veh/h		1227	958	237	1227		186		166			
Volume-to-Capacity Ratio (*X*)		0.883	0.009	0.188	0.259		0.352		0.490			
Back of Queue (Q), ft/ln (95 th percentile)		162	0	18	22		29		37			
Back of Queue (Q), veh/ln (95 th percentile)		6.3	0.0	0.7	0.9		1.2		1.5			
Queue Storage Ratio (*RQ*) (95 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00			
Uniform Delay (*d 1*), s/veh		7.0	2.9	18.7	3.5		21.2		21.5			
Incremental Delay (*d 2*), s/veh		0.9	0.0	0.1	0.0		0.4		0.8			
Initial Queue Delay (*d 3*), s/veh		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay (*d*), s/veh		7.9	2.9	18.8	3.6		21.7		22.4			
Level of Service (LOS)		A	A	B	A		C		C			
Approach Delay, s/veh / LOS	7.8	A		5.4	A		22.1	C		0.0		
Intersection Delay, s/veh / LOS	8.6						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.84	B	0.64	A	1.93	B	1.93	B
Bicycle LOS Score / LOS	2.29	B	1.09	A		F		

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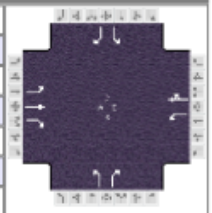
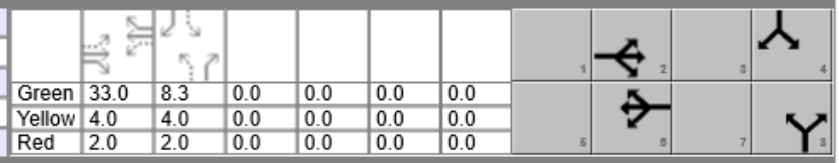
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	May 28, 2026	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.90
Urban Street	Commerce Parkway	Analysis Year	2038 Build	Analysis Period	1> 3:45
Intersection	Kroger	File Name	Kroger PM 38 B.xus		
Project Description	Buckner Crossing				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	91	891	8	40	246	127	59		73	177		97

Signal Information			
Cycle, s	53.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	33.0	8.3	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		6.0		5.0		5.0
Phase Duration, s		39.0		39.0		14.3		14.3
Change Period, ($Y+R_c$), s		6.0		6.0		6.0		6.0
Max Allow Headway (*MAH*), s		3.1		3.1		3.1		3.1
Queue Clearance Time (g_s), s		25.2		28.9		4.4		7.5
Green Extension Time (g_e), s		4.0		4.0		0.8		0.8
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.01		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	5	2	12	1	6	16	3		18	7		14
Adjusted Flow Rate (*v*), veh/h	101	990	9	44	414		66		81	197		108
Adjusted Saturation Flow Rate (*s*), veh/h/ln	987	1856	1449	578	1748		1810		1610	1810		1610
Queue Service Time (g_s), s	3.0	23.2	0.1	3.6	6.3		1.7		2.4	5.5		3.2
Cycle Queue Clearance Time (g_c), s	9.2	23.2	0.1	26.9	6.3		1.7		2.4	5.5		3.2
Green Ratio (*g*/*C*)	0.62	0.62	0.62	0.62	0.62		0.16		0.16	0.16		0.16
Capacity (*c*), veh/h	631	1149	897	241	1083		417		250	417		250
Volume-to-Capacity Ratio (*X*)	0.160	0.862	0.010	0.185	0.383		0.157		0.324	0.472		0.430
Back of Queue (*Q*), ft/ln (95 th percentile)	20	209	1	19	53		28		35	90		48
Back of Queue (*Q*), veh/ln (95 th percentile)	0.8	8.2	0.0	0.8	2.1		1.1		1.4	3.6		1.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d_1), s/veh	7.3	8.3	3.9	19.3	5.1		19.7		20.0	21.3		20.4
Incremental Delay (d_2), s/veh	0.0	0.8	0.0	0.1	0.1		0.1		0.3	0.3		0.4
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
Control Delay (*d*), s/veh	7.4	9.1	3.9	19.4	5.1		19.8		20.3	21.6		20.8
Level of Service (LOS)	A	A	A	B	A		B		C	C		C
Approach Delay, s/veh / LOS	8.9	A		6.5	A		20.1	C		21.3	C	
Intersection Delay, s/veh / LOS	11.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.85	B	1.85	B	1.92	B	2.11	B
Bicycle LOS Score / LOS	2.30	B	1.24	A		F		F

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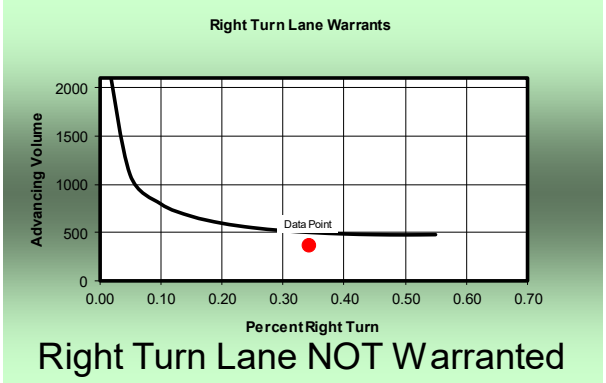
Turn Lane Volume Warrant
Commerce Parkway

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph) 127 Speed Limit (mph) 45

Advancing Volume (vph) 373



Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

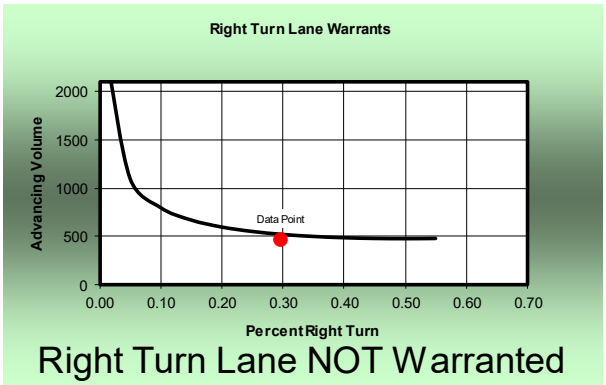
KY 393

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph) 139 Speed Limit (mph) 45

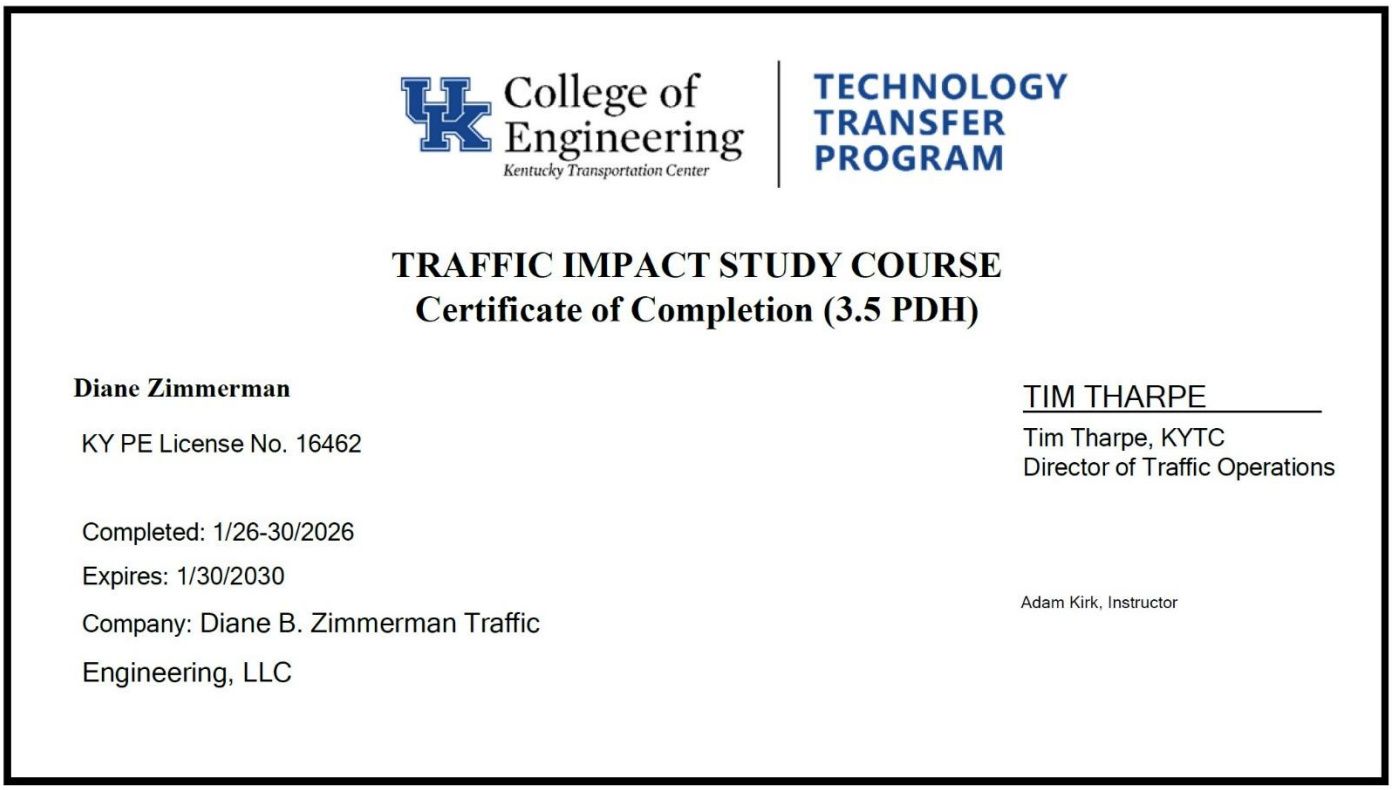
Advancing Volume (vph) 470



Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

I, Diane Bridwell Zimmerman, certify that this Traffic Impact Study has been prepared under my direct supervision, that I am a Professional Engineer registered in the State of Kentucky and have successfully completed the Traffic Impact Study Requirements training course required by KYTC. Furthermore, I certify that this study has been completed in accordance with the KYTC Traffic Impact Study Requirements and in accordance with engineering standards of practice. The results presented have been determined to be accurate representations of existing and anticipated conditions based on the assumptions and methodologies presented in this report.

Diane Bridwell Zimmerman, Professional Engineer License #16462



College of Engineering
Kentucky Transportation Center

TECHNOLOGY TRANSFER PROGRAM

TRAFFIC IMPACT STUDY COURSE
Certificate of Completion (3.5 PDH)

Diane Zimmerman

KY PE License No. 16462

Completed: 1/26-30/2026

Expires: 1/30/2030

Company: Diane B. Zimmerman Traffic Engineering, LLC

TIM THARPE

Tim Tharpe, KYTC
Director of Traffic Operations

Adam Kirk, Instructor