final report

May 23, 2023

Traffic Impact Study

Okolona Center
Preston Highway at Outer Loop
Louisville, KY

Prepared for

Louisville Metro Planning Commission
Kentucky Transportation Cabinet

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INTRODUCTION

The development plan for Okolona Center on the northeast corner of Preston Highway (KY 61) and Outer Loop (KY 1065) in Louisville, KY shows four restaurants and a retail building. **Figure 1** displays a map of the site. Access to the development will be from two entrances on Preston Highway, one entrance on Outer Loop, and two entrances on Carol Avenue. Two of the entrances are shared with the existing CVS Pharmacy. 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 Preston Highway with Outer Loop and Markwell Lane, and Outer Loop with Carol Avenue and the proposed entrances.

Figure 1. Site Map

EXISTING CONDITIONS

Preston Highway (KY 61) is maintained by the Kentucky Transportation Cabinet (KYTC) with an estimated 2023 ADT of 27,000 vehicles per day between KY 1065 (Outer Loop) and KY 1747 (Fern Valley Road), as estimated from 2018 count KYTC station 501. The road has four lanes with twelve-foot lanes with curb and gutter. The posted speed limit is 35 mph. There are sidewalks. The intersection with Outer Loop is controlled with a traffic signal. There are dual left turn lanes at the intersection. There are right turn lanes on each approach except eastbound. The right turn lanes for north and southbound approaches are channelized with yield control.

Outer Loop (KY 1065) is maintained by the Kentucky Transportation Cabinet (KYTC) with an estimated 2023 ADT of 32,500 vehicles per day east of KY 61 (Preston Highway), as estimated from turning movement count using the K factor 8.2. The road has four lanes with twelve-foot lanes with curb and gutter. There is a raised median with a left turn lane for Carol Avenue. The posted speed limit is 45 mph. There are sidewalks.

Carol Avenue is maintained by Metro Louisville with an estimated 2023 ADT of 300 vehicles per day north of Outer Loop, as estimated from the turning movement count and applying a K factor of 10.0. The road has two lanes with eleven-foot lanes with no shoulders. The posted speed limit is 25 mph. There is a sidewalk on the west side.

Peak hour traffic counts for the intersections were obtained on Thursday, February 9, 2023 (see Appendix). The peak hours varied between the intersections. **Figure 2** illustrates the existing a.m. and p.m. peak hour traffic volumes.

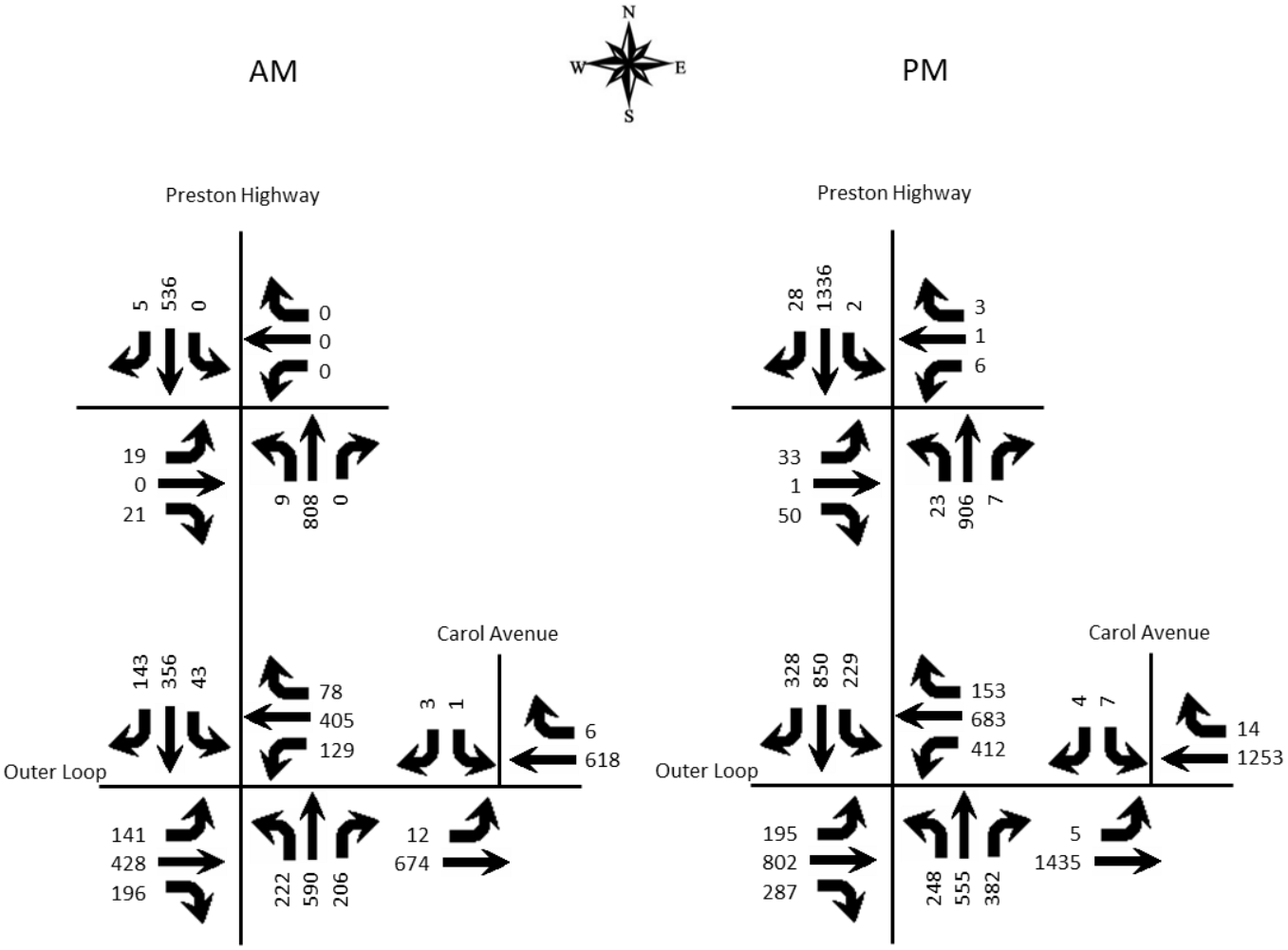

Figure 2. Existing Peak Hour Volumes

FUTURE CONDITIONS

The requested analysis year for this project is 2025. To predict traffic volumes in 2025, 0.5percent annual growth in traffic was added to the 2023 volumes. **Figure 3** displays the 2025 No Build volumes.

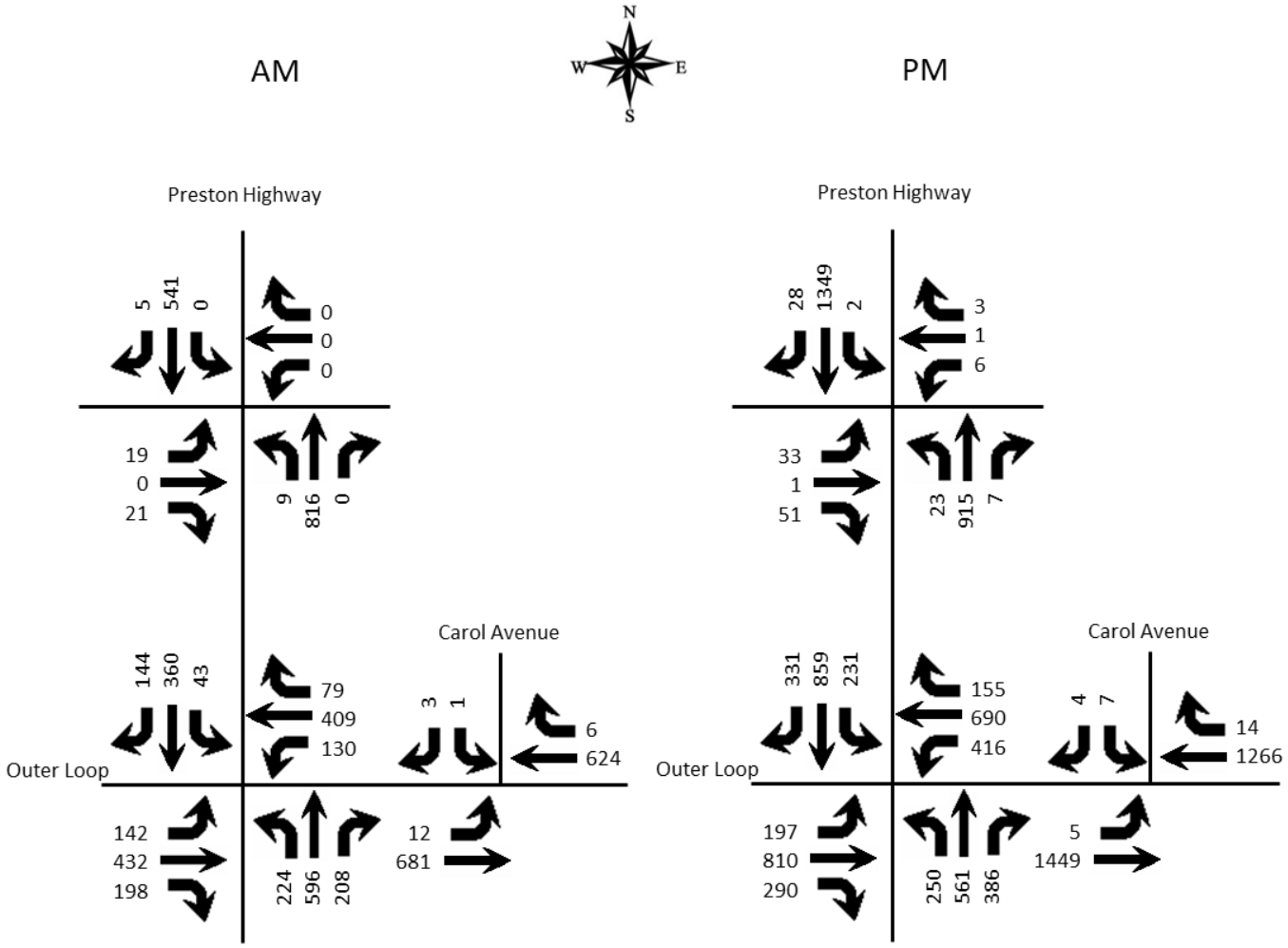

Figure 3. 2025 No Build Peak Hour Volumes

TRIP GENERATION

The Institute of Transportation Engineers Trip Generation Manual, 11th Edition contains trip generation rates for a wide range of developments. The land uses in Table 1 were reviewed and determined to be the best match. The trip generation results are listed in **Table 1**. The primary trips were assigned to the highway network with the percentages shown in **Figure 4**. The pass-by trips are assigned using the existing traffic passing the site. These trips are shown in parenthesis. **Figure 5** shows the trips generated by this development and distributed throughout the road network for the year 2025 during the peak hours. **Figure 6** displays the individual turning movements for the year 2025 for the peak hours when the development is completed.

Table 1. Peak Hour Trips Generated by Site

		A.M.			P.M.		
	ITE Code	**Total Trips**	**Entering**	**Exiting**	**Total Trips**	**Entering**	**Exiting**
Fast-Food (9,110 sq ft)	934	406	207	199	301	157	144
Strip Retail Center (23,000 sq ft)	822	50	30	20	141	71	70
TOTAL		**456**	**237**	**219**	**442**	**228**	**214**
Pass-by trips		203	103	100	166	86	80
NEW TRIPS		**253**	**134**	**119**	**276**	**142**	**134**

Figure 4. Trip Distribution Percentages

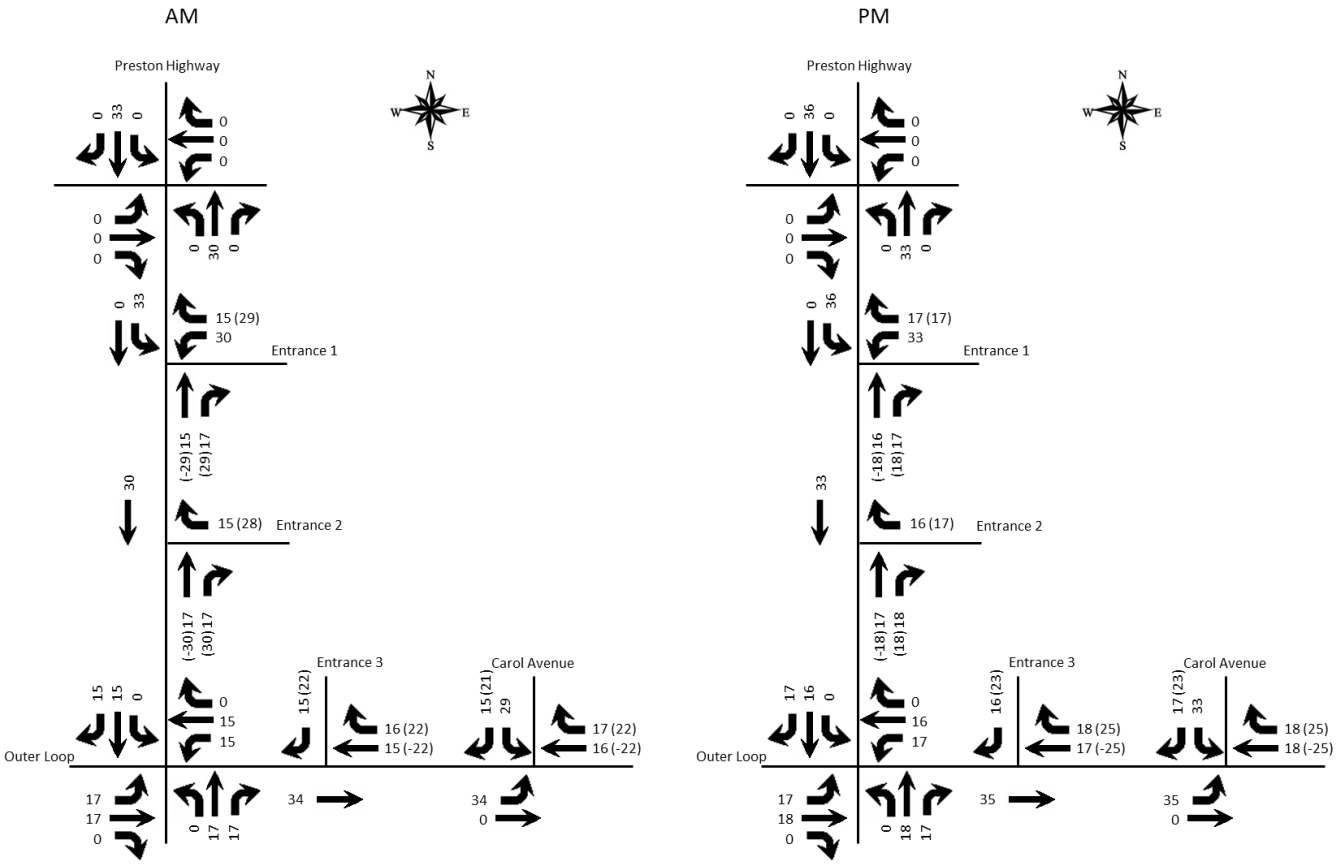

Figure 5. Peak Hour Trips Generated by Site

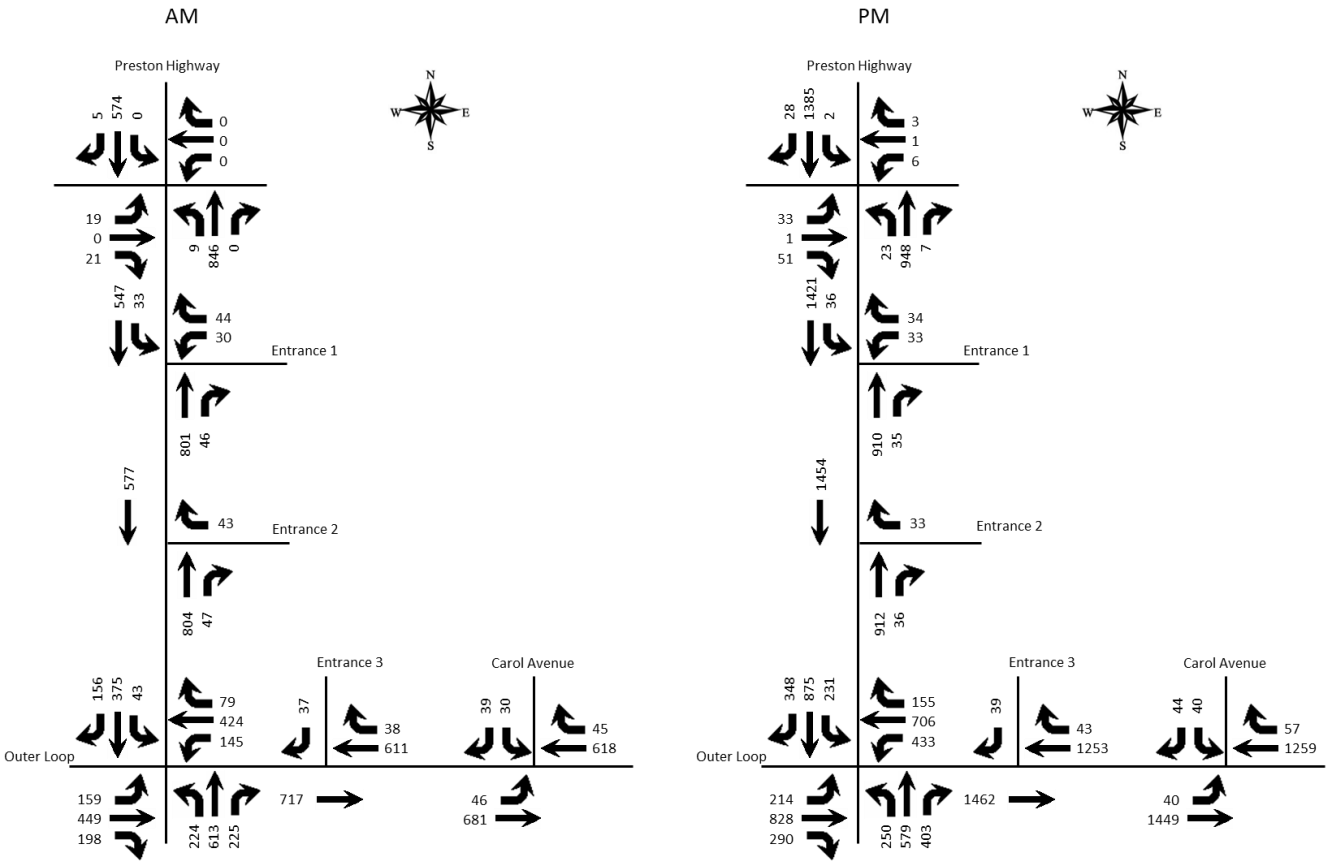

Figure 6. 2025 Peak Hour Build

ANALYSIS

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

To evaluate the impact of the proposed development, the vehicle delays at the intersections were determined using procedures detailed in the Highway Capacity Manual, 7th edition. Future delays and Level of Service were determined for the intersections using the HCS Streets and TWSC, (version 2023) software. The delays and Level of Service are summarized in **Table 2**.

Table 2. Peak Hour Level of Service

	A.M.			P.M.		
Approach	2023 Existing	2025 No Build	2025 Build	2023 Existing	2025 No Build	2025 Build
Preston Highway at Outer Loop	**D 47.6**	**D 47.7**	**D 48.5**	**D 49.0**	**D 49.4**	**D 50.5**
Outer Loop Eastbound	D 46.6	D 46.7	D 47.8	D 50.8	D 51.4	D 53.4
Outer Loop Westbound	E 56.1	E 56.1	E 56.6	E 55.0	E 55.4	E 57.1
Preston Highway Northbound	D 48.4	D 48.5	D 49.2	D 45.2	D 45.4	D 45.6
Preston Highway Southbound	D 38.1	D 38.2	D 38.9	D 45.3	D 45.8	D 46.3
Preston Highway at Markwell Lane						
Markwell Lane Eastbound	B 11.6	B 11.6	B 11.9	D 32.3	D 33.0	E 35.9
Driveway Westbound	0	0	0	E 40.0	E 41.0	E 44.3
Preston Highway Northbound	A 8.9	A 8.9	A 9.1	B 13.7	B 13.8	B 14.1
Preston Highway Southbound	0	0	0	B 10.1	B 10.2	B 10.3
Preston Highway at Entrance						
Entrance Westbound			C 15.4			C 21.2
Preston Highway Northbound			B 10.1			B 10.6
Preston Highway Southbound						
Outer Loop at Carol Avenue						
Outer Loop Eastbound	A 9.3	A 9.3	A 9.7	B 11.9	B 11.9	B 12.7
Carol Avenue Southbound	B 12.6	B 12.6	C 15.3	C 24.5	C 24.8	D 34.2

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 2035. The 2035 volumes were determined applying a 0.5 percent annual growth rate from 2025 No Build. **Figure 7** illustrates the 2035 No Build volumes. **Figure 8** illustrates the 2035 Build Volumes. Using the volumes in Figure 8, the volume warrant is not satisfied for a right turn lane at the entrances. **Table 3** summarizes the delay and Level of Service for 2035.

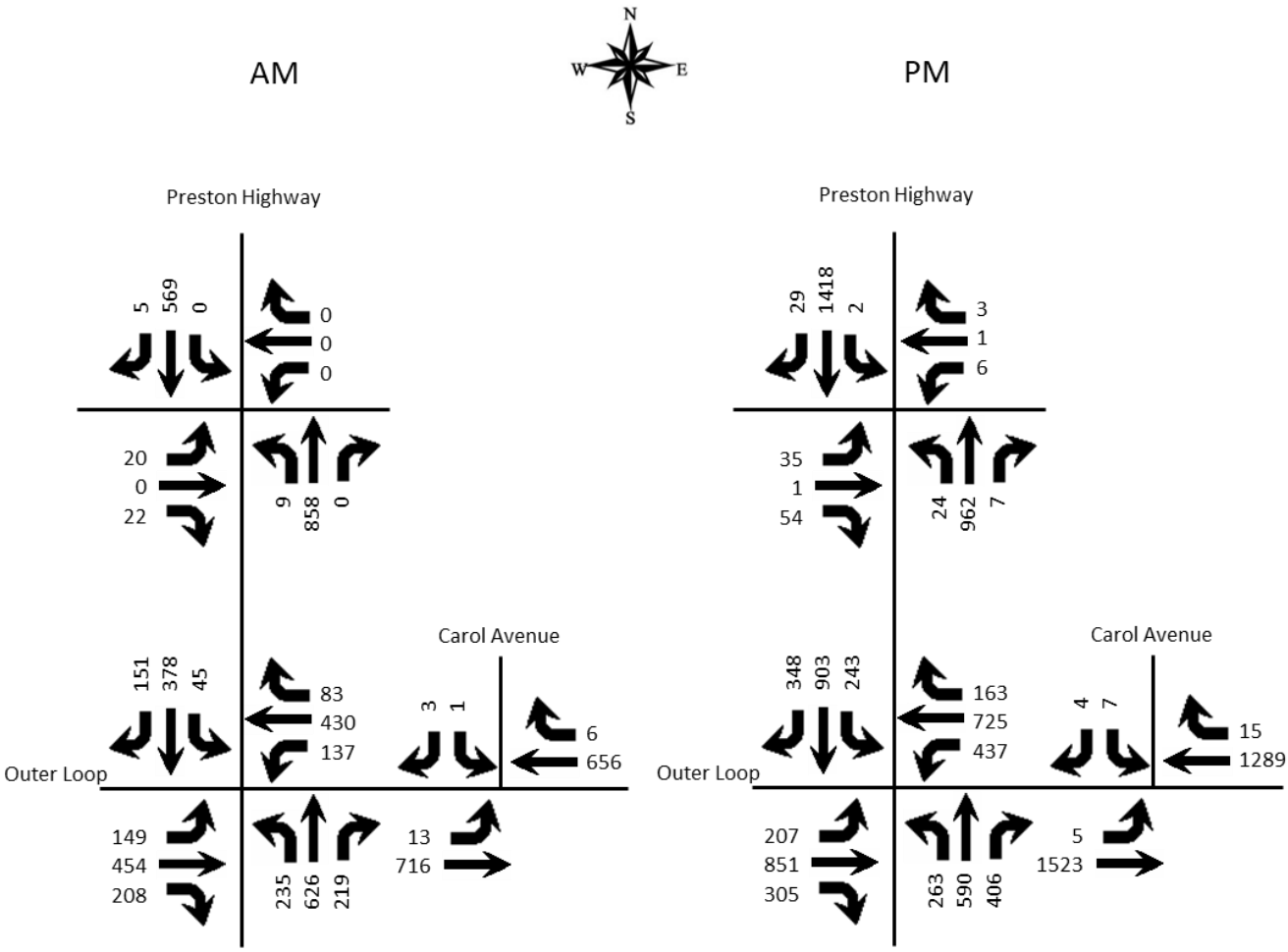

Figure 7. 2035 Peak Hour No Build

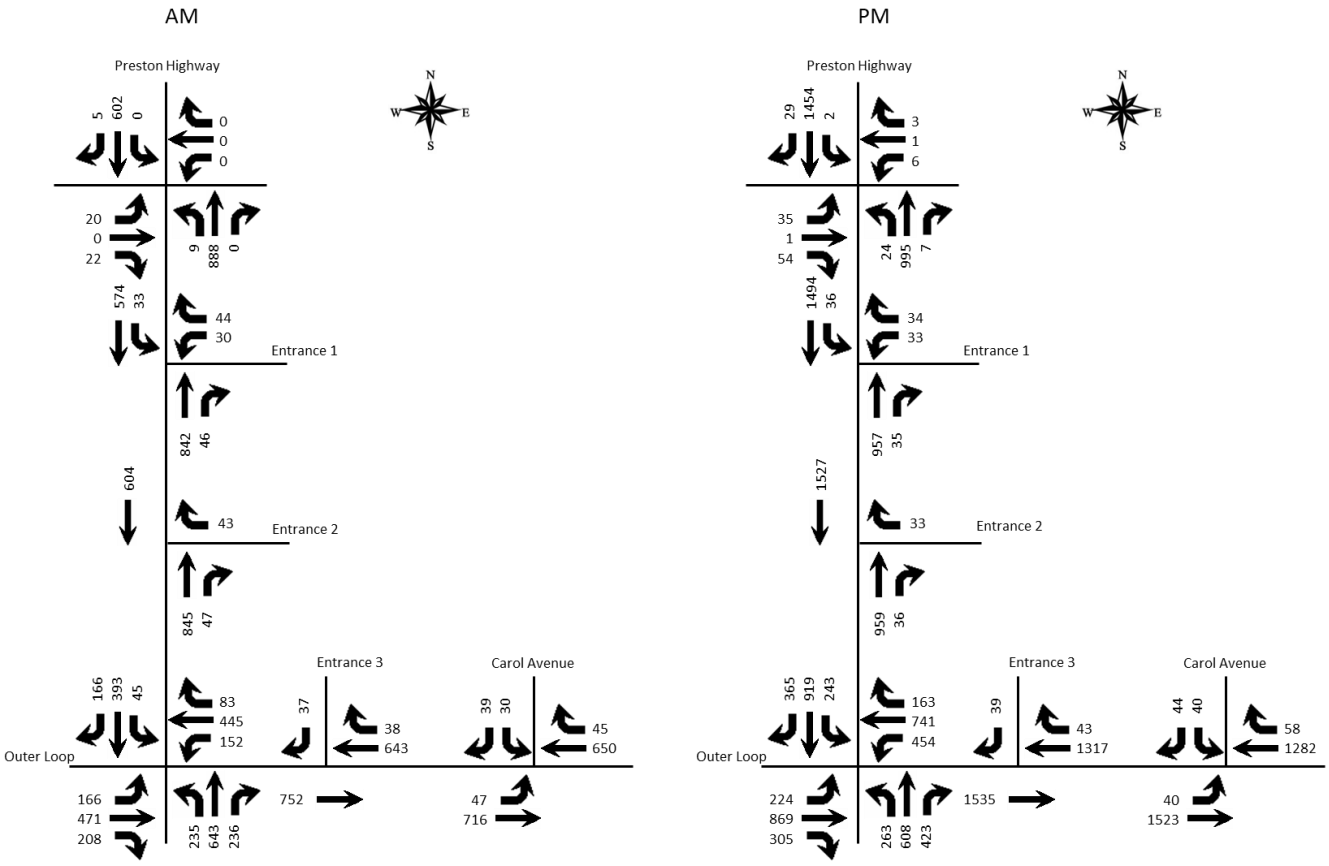

Figure 8. 2035 Peak Hour Build

Table 3. Peak Hour Level of Service

	A.M.			P.M.		
Approach	2023 Existing	2035 No Build	2035 Build	2023 Existing	2035 No Build	2035 Build
Preston Highway at Outer Loop	**D 47.6**	**D 48.4**	**D 49.1**	**D 49.0**	**D 51.3**	**D 52.7**
Outer Loop Eastbound	D 46.6	D 47.3	D 48.2	D 50.8	D 52.7	D 54.9
Outer Loop Westbound	E 56.1	E 56.4	E 57.1	E 55.0	E 57.5	E 59.7
Preston Highway Northbound	D 48.4	D 49.2	D 50.0	D 45.2	D 46.5	D 46.8
Preston Highway Southbound	D 38.1	D 39.2	E 39.9	D 45.3	D 48.6	D 49.3

	A.M.			P.M.		
Approach	2023 Existing	2035 No Build	2035 Build	2023 Existing	2035 No Build	2035 Build
Preston Highway at Markwell Lane						
Markwell Lane Eastbound	B 11.6	B 11.9	B 12.3	D 32.3	E 40.1	E 44.3
Driveway Westbound	0	0	0	E 40.0	E 47.1	F 51.2
Preston Highway Northbound	A 8.9	A 9.0	A 9.2	B 13.7	B 14.5	B 14.8
Preston Highway Southbound	0	0	0	B 10.1	B 10.4	B 10.6
Preston Highway at Entrance						
Entrance Westbound			C 15.9			C 22.5
Preston Highway Northbound			B 10.3			B 10.9
Preston Highway Southbound						
Outer Loop at Carol Avenue						
Outer Loop Eastbound	A 9.3	A 9.5	A 9.9	B 11.9	B 12.1	B 12.9
Carol Avenue Southbound	B 12.6	B 12.9	C 15.9	C 24.5	D 25.6	E 36.0

Key: Level of Service, Delay in seconds per vehicle

CONCLUSIONS

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2025 and 2035, there will be an impact to the existing highway network. No improvements are required to maintain acceptable levels of service.

APPENDIX

Traffic Counts

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION
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Jefferson County, KY

Site 1 of 3
KY-61 Preston Hwy (South)
KY-61 Preston Hwy (North)
KY-1065 Outer Loop (West)
KY-1065 Outer Loop (East)

Date
Thursday, February 9, 2023

Weather
Cloudy
58°F

Lat/Long
38.138376°, -85.686736°

0700 - 0900 (Weekday 2h Session) (02-09-2023)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	KY-61 Preston Hwy (South)					KY-61 Preston Hwy (North)					KY-1065 Outer Loop (West)					KY-1065 Outer Loop (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
0700 - 0715	40	115	37	0	192	12	66	21	0	99	34	82	34	0	150	24	104	18	0	146	587
0715 - 0730	63	163	58	0	284	13	120	31	0	164	38	93	65	0	196	37	92	15	0	144	788
0730 - 0745	52	139	65	0	256	8	98	37	0	143	52	129	50	0	231	26	126	24	0	176	806
0745 - 0800	50	170	40	0	260	15	72	47	0	134	26	124	46	0	196	36	94	26	0	156	746
Hourly Total	205	587	200	0	**992**	48	356	136	0	**540**	150	428	195	0	**773**	123	416	83	0	**622**	**2927**
0800 - 0815	57	118	43	0	218	7	66	28	0	101	25	82	35	0	142	30	93	13	0	136	597
0815 - 0830	35	101	47	0	183	17	56	28	0	101	28	105	45	0	178	38	111	20	0	169	631
0830 - 0845	45	140	42	0	227	25	83	30	0	138	41	91	41	0	173	27	71	31	0	129	667
0845 - 0900	36	136	62	0	234	27	112	28	0	167	32	120	46	0	198	26	94	38	0	158	757
Hourly Total	173	495	194	0	**862**	76	317	114	0	**507**	126	398	167	0	**691**	121	369	102	0	**592**	**2652**
Grand Total	378	1082	394	0	**1854**	124	673	250	0	**1047**	276	826	362	0	**1464**	244	785	185	0	**1214**	**5579**
Approach %	20.39	58.36	21.25	0.00	-	11.84	64.28	23.88	0.00	-	18.85	56.42	24.73	0.00	-	20.10	64.66	15.24	0.00	-	
Intersection %	6.78	19.39	7.06	0.00	33.23	2.22	12.06	4.48	0.00	18.77	4.95	14.81	6.49	0.00	26.24	4.37	14.07	3.32	0.00	21.76	
PHF	0.88	0.87	0.79	0.00	**0.90**	0.72	0.74	0.76	0.00	**0.83**	0.68	0.83	0.75	0.00	**0.83**	0.87	0.80	0.75	0.00	**0.87**	**0.91**

1600 - 1800 (Weekday 2h Session) (02-09-2023)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	KY-61 Preston Hwy (South)					KY-61 Preston Hwy (North)					KY-1065 Outer Loop (West)					KY-1065 Outer Loop (East)					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	1.1	1.2	1.3	1.4	Total	1.5	1.6	1.7	1.8	Total	1.9	1.10	1.11	1.12	Total	1.13	1.14	1.15	1.16	Total	Total
1600 - 1615	49	135	98	0	282	63	185	64	0	312	50	221	75	0	346	98	141	39	0	278	1218
1615 - 1630	56	150	99	0	305	47	213	74	0	334	48	182	82	0	312	111	161	41	0	313	1264
1630 - 1645	48	124	92	0	264	72	213	105	0	390	56	212	65	0	333	104	196	41	1	342	1329
1645 - 1700	66	152	96	0	314	52	207	73	0	332	49	217	66	0	332	86	163	36	0	285	1263
Hourly Total	219	561	385	0	**1165**	234	818	316	0	**1368**	203	832	288	0	**1323**	399	661	157	1	**1218**	**5074**
1700 - 1715	78	129	95	0	302	58	217	76	0	351	42	191	74	0	307	111	163	35	0	309	1269
1715 - 1730	67	119	99	0	285	56	162	56	0	274	53	215	86	0	354	99	174	40	1	314	1227
1730 - 1745	51	144	115	0	310	42	182	82	0	306	50	207	52	0	309	80	154	34	1	269	1194
1745 - 1800	55	104	89	0	248	57	170	65	0	292	41	178	61	0	280	82	161	39	1	283	1103
Hourly Total	251	496	398	0	**1145**	213	731	279	0	**1223**	186	791	273	0	**1250**	372	652	148	3	**1175**	**4793**
Grand Total	470	1057	783	0	**2310**	447	1549	595	0	**2591**	389	1623	561	0	**2573**	771	1313	305	4	**2393**	**9867**
Approach %	20.35	45.76	33.90	0.00	-	17.25	59.78	22.96	0.00	-	15.12	63.08	21.80	0.00	-	32.22	54.87	12.75	0.17	-	
Intersection %	4.76	10.71	7.94	0.00	23.41	4.53	15.70	6.03	0.00	26.26	3.94	16.45	5.69	0.00	26.08	7.81	13.31	3.09	0.04	24.25	
PHF	0.79	0.91	0.96	0.00	**0.94**	0.80	0.98	0.78	0.00	**0.90**	0.87	0.92	0.88	0.00	**0.96**	0.93	0.87	0.93	0.25	**0.91**	**0.96**
					4164					3638					4037					3607	15446
					0.27					0.236					0.261					0.234	

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Jefferson County, KY

Site 2 of 3
KY-61 Preston Hwy (South)
KY-61 Preston Hwy (North)
Markwell Ln
Driveway

Date
Thursday, February 9, 2023

Lat/Long
38.139979°, -85.687676°

Weather
Cloudy
58°F

0700 - 0900 (Weekday 2h Session) (02-09-2023)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	KY-61 Preston Hwy (South)					KY-61 Preston Hwy (North)					Markwell Ln					Driveway					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	2.1	2.2	2.3	2.4	Total	2.5	2.6	2.7	2.8	Total	2.9	2.10	2.11	2.12	Total	2.13	2.14	2.15	2.16	Total	Total
0700 - 0715	2	169	0	1	172	0	108	2	1	111	3	0	7	0	10	0	0	0	0	0	293
0715 - 0730	1	208	0	0	209	0	154	1	0	155	7	0	6	0	13	0	0	0	0	0	377
0730 - 0745	5	209	0	0	214	0	152	2	0	154	3	0	2	0	5	0	0	0	0	0	373
0745 - 0800	0	222	0	0	222	0	122	0	0	122	6	0	6	0	12	0	0	0	0	0	356
Hourly Total	8	808	0	1	**817**	0	536	5	1	**542**	19	0	21	0	**40**	0	0	0	0	**0**	**1399**
0800 - 0815	2	156	1	0	159	0	100	5	0	105	2	0	2	0	4	0	0	0	0	0	268
0815 - 0830	9	152	0	0	161	0	107	5	0	112	4	0	2	0	6	0	0	0	0	0	279
0830 - 0845	21	186	0	0	207	0	120	2	0	122	14	0	25	0	39	0	0	0	0	0	368
0845 - 0900	26	174	5	0	205	0	130	0	0	130	23	0	36	0	59	0	0	0	0	0	394
Hourly Total	58	668	6	0	**732**	0	457	12	0	**469**	43	0	65	0	**108**	0	0	0	0	**0**	**1309**
Grand Total	66	1476	6	1	**1549**	0	993	17	1	**1011**	62	0	86	0	**148**	0	0	0	0	**0**	**2708**
Approach %	4.26	95.29	0.39	0.06	-	0.00	98.22	1.68	0.10	-	41.89	0.00	58.11	0.00	-	0.00	0.00	0.00	0.00	-	
Intersection %	2.44	54.51	0.22	0.04	57.20	0.00	36.67	0.63	0.04	37.33	2.29	0.00	3.18	0.00	5.47	0.00	0.00	0.00	0.00	0.00	
PHF	0.40	0.91	0.00	0.25	**0.92**	0.00	0.87	0.63	0.25	**0.87**	0.68	0.00	0.75	0.00	**0.77**	0.00	0.00	0.00	0.00	**0.00**	**0.93**

1600 - 1800 (Weekday 2h Session) (02-09-2023)
All vehicles

	Northbound					Southbound					Eastbound					Westbound					
	KY-61 Preston Hwy (South)					KY-61 Preston Hwy (North)					Markwell Ln					Driveway					
	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Left	Thru	Right	U-Turn	App	Int
TIME	2.1	2.2	2.3	2.4	Total	2.5	2.6	2.7	2.8	Total	2.9	2.10	2.11	2.12	Total	2.13	2.14	2.15	2.16	Total	Total
1600 - 1615	7	233	4	0	244	0	301	7	0	308	14	1	18	0	33	1	1	1	0	3	588
1615 - 1630	4	212	0	0	216	1	319	7	0	327	4	0	5	0	9	2	0	0	0	2	554
1630 - 1645	6	219	2	0	227	1	388	8	0	397	10	0	14	0	24	2	0	1	0	3	651
1645 - 1700	6	242	1	0	249	0	328	6	0	334	5	0	13	0	18	1	0	1	0	2	603
Hourly Total	23	906	7	0	**936**	2	1336	28	0	**1366**	33	1	50	0	**84**	6	1	3	0	**10**	**2396**
1700 - 1715	3	202	1	0	206	0	341	6	0	347	4	0	9	0	13	1	0	1	0	2	568
1715 - 1730	8	212	2	0	222	0	274	5	1	280	4	0	4	0	8	0	0	1	0	1	511
1730 - 1745	7	216	1	0	224	0	292	5	0	297	4	0	6	0	10	1	0	0	0	1	532
1745 - 1800	4	181	0	0	185	0	264	13	0	277	8	0	7	0	15	3	0	0	0	3	480
Hourly Total	22	811	4	0	**837**	0	1171	29	1	**1201**	20	0	26	0	**46**	5	0	2	0	**7**	**2091**
Grand Total	45	1717	11	0	**1773**	2	2507	57	1	**2567**	53	1	76	0	**130**	11	1	5	0	**17**	**4487**
Approach %	2.54	96.84	0.62	0.00	-	0.08	97.66	2.22	0.04	-	40.77	0.77	58.46	0.00	-	64.71	5.88	29.41	0.00	-	
Intersection %	1.00	38.27	0.25	0.00	39.51	0.04	55.87	1.27	0.02	57.21	1.18	0.02	1.69	0.00	2.90	0.25	0.02	0.11	0.00	0.38	
PHF	0.82	0.94	0.44	0.00	**0.94**	0.50	0.86	0.88	0.00	**0.86**	0.59	0.25	0.69	0.00	**0.64**	0.75	0.25	0.75	0.00	**0.83**	**0.92**

Classified Turn Movement Count || All vehicles

Marr Traffic DATA COLLECTION
www.marrtraffic.com

Jefferson County, KY

Site 3 of 3

Carol Ave
KY-1065 Outer Loop (West)
KY-1065 Outer Loop (East)

Date
Thursday, February 9, 2023

Lat/Long
38.138419°, -85.684780°

Weather
Cloudy
58°F

0700 - 0900 (Weekday 2h Session) (02-09-2023)

All vehicles

TIME	Southbound Carol Ave				Eastbound KY-1065 Outer Loop (West)				Westbound KY-1065 Outer Loop (East)				
	Left 3.1	Right 3.2	U-Turn 3.3	App Total	Left 3.4	Thru 3.5	U-Turn 3.6	App Total	Thru 3.7	Right 3.8	U-Turn 3.9	App Total	Int Total
0700 - 0715	1	0	0	1	1	130	2	133	141	3	0	144	278
0715 - 0730	0	0	0	0	2	166	0	168	166	2	0	168	336
0730 - 0745	0	2	0	2	2	205	0	207	159	0	0	159	368
0745 - 0800	0	1	0	1	4	173	1	178	152	1	0	153	332
Hourly Total	1	3	0	**4**	9	674	3	**686**	618	6	0	**624**	**1314**
0800 - 0815	0	1	0	1	1	132	0	133	134	2	0	136	270
0815 - 0830	0	1	0	1	4	165	2	171	157	1	0	158	330
0830 - 0845	2	0	0	2	1	151	0	152	152	4	0	156	310
0845 - 0900	2	0	0	2	1	223	2	226	140	2	0	142	370
Hourly Total	4	2	0	**6**	7	671	4	**682**	583	9	0	**592**	**1280**
Grand Total	5	5	0	**10**	16	1345	7	**1368**	1201	15	0	**1216**	**2594**
Approach %	50.00	50.00	0.00	-	1.17	98.32	0.51	-	98.77	1.23	0.00	-	
Intersection %	0.19	0.19	0.00	0.39	0.62	51.85	0.27	52.74	46.30	0.58	0.00	46.88	
PHF	0.25	0.38	0.00	**0.50**	0.56	0.82	0.38	**0.83**	0.93	0.50	0.00	**0.93**	**0.89**

1600 - 1800 (Weekday 2h Session) (02-09-2023)

All vehicles

TIME	Southbound Carol Ave				Eastbound KY-1065 Outer Loop (West)				Westbound KY-1065 Outer Loop (East)				
	Left 3.1	Right 3.2	U-Turn 3.3	App Total	Left 3.4	Thru 3.5	U-Turn 3.6	App Total	Thru 3.7	Right 3.8	U-Turn 3.9	App Total	Int Total
1600 - 1615	1	1	0	2	0	384	0	384	283	3	0	286	672
1615 - 1630	0	1	0	1	0	340	2	342	318	3	1	322	665
1630 - 1645	4	1	0	5	0	379	1	380	323	4	0	327	712
1645 - 1700	1	0	0	1	2	353	0	355	286	4	0	290	646
Hourly Total	6	3	0	**9**	2	1456	3	**1461**	1210	14	1	**1225**	**2695**
1700 - 1715	2	2	0	4	0	363	0	363	326	3	0	329	696
1715 - 1730	0	0	0	0	1	372	0	373	291	1	0	292	665
1730 - 1745	0	2	0	2	2	354	1	357	276	4	0	280	639
1745 - 1800	0	1	0	1	2	341	1	344	287	4	0	291	636
Hourly Total	2	5	0	**7**	5	1430	2	**1437**	1180	12	0	**1192**	**2636**
Grand Total	8	8	0	**16**	7	2886	5	**2898**	2390	26	1	**2417**	**5331**
Approach %	50.00	50.00	0.00	-	0.24	99.59	0.17	-	98.88	1.08	0.04	-	
Intersection %	0.15	0.15	0.00	0.30	0.13	54.14	0.09	54.36	44.83	0.49	0.02	45.34	
PHF	0.44	0.50	0.00	**0.55**	0.25	0.95	0.38	**0.95**	0.96	0.88	0.25	**0.96**	**0.95**

TIS Simplified Traffic Forecast

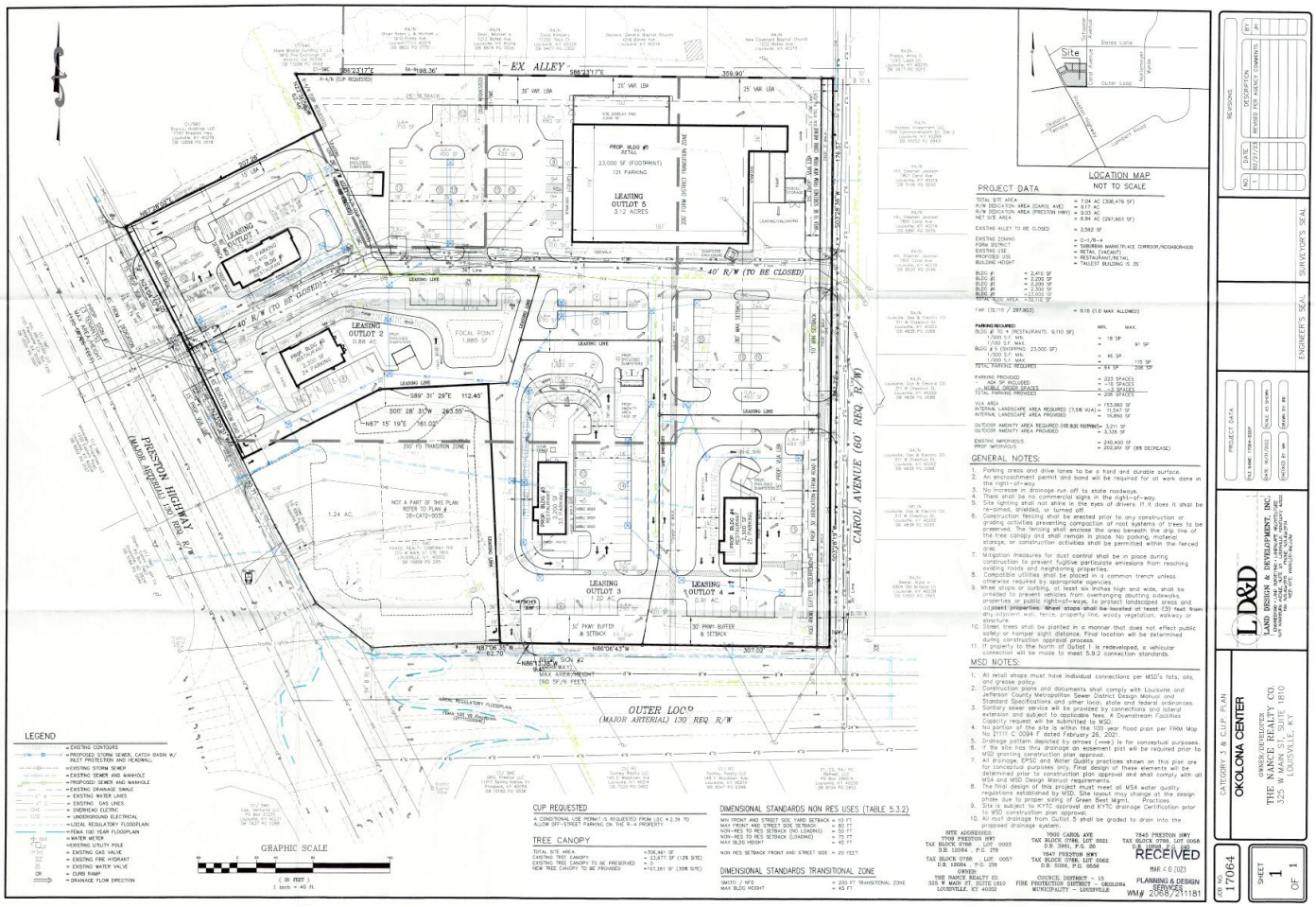
Count Year	2023
Opening Year	2025
Design Year	2035
Years Back	15

Number of Counts	17
Growth Rate	-1.21%

KYTC Traffic Count Station #1	
STA ID	501
Paste Count Data Here	
2023	
2022	
2021	
2020	
2019	
2018	27081
2017	26290
2016	25940
2015	25321
2014	25715
2013	24150
2012	25551
2011	26100
2010	27800
2009	29300
2008	
2007	30000
2006	28500
2005	30000
2004	30900
2003	36700
2002	36000
2001	35600
2000	
1999	
1998	33800
1997	35500
1996	
1995	27200
1994	

KYTC Traffic Count Station #2	
STA ID	599
Paste Count Data Here	
2023	
2022	
2021	
2020	24927
2019	
2018	25711
2017	
2016	
2015	
2014	
2013	
2012	
2011	27200
2010	
2009	
2008	22300
2007	
2006	31800
2005	
2004	
2003	39500
2002	
2001	
2000	40400
1999	
1998	
1997	
1996	
1995	
1994	32200

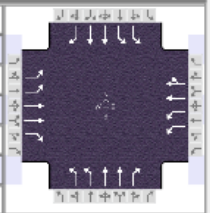
KYTC Traffic Count Station #3	
STA ID	999
Paste Count Data Here	
2023	
2022	
2021	
2020	26293
2019	
2018	28922
2017	
2016	28389
2015	
2014	
2013	
2012	
2011	31500
2010	
2009	
2008	
2007	
2006	
2005	
2004	36400
2003	36900
2002	
2001	
2000	
1999	
1998	
1997	
1996	
1995	
1994	


EX ALLEY
PRESTON HIGHWAY
(MAJOR ARTERIAL) 130' REQ. R/W
CAROL AVENUE (60' REQ. R/W)
OUTER LOOP
(MAJOR ARTERIAL) 130' REQ. R/W
40' R/W (TO BE CLOSED)
LEASING OUTLOT 1
LEASING OUTLOT 2
LEASING OUTLOT 3
LEASING OUTLOT 4
LEASING OUTLOT 5
3.12 ACRES
PROP. BLDG #5 RETAIL
23,000 SF (FOOTPRINT)
121 PARKING
FOCAL POINT
1,885 SF
1.24 AC.
200' FORM DISTRICT TRANSITION ZONE
30' PKWY BUFFER & SETBACK
LOCATION MAP
NOT TO SCALE
PROJECT DATA
GENERAL NOTES:
MSD NOTES:
LEGEND
CUP REQUESTED
TREE CANOPY
DIMENSIONAL STANDARDS NON RES USES (TABLE 5.3.2)
DIMENSIONAL STANDARDS TRANSITIONAL ZONE
GRAPHIC SCALE
RECEIVED
MAR 4 0 2022
PLANNING & DESIGN SERVICES
WM# 29687/211181
L D&D
LAND DESIGN & DEVELOPMENT, INC.
OKOLONA CENTER
THE NANCE REALTY CO.
325 W MAIN ST, SUITE 1810
LOUISVILLE, KY
CATEGORY 3 & CUP PLAN
JOB NO. 17064
SHEET 1 OF 1

HCS Reports

HCS Signalized Intersection Results Summary

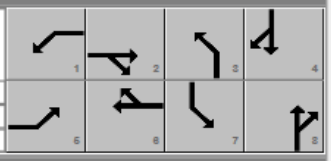
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/24/2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Outer Loop	Analysis Year	2023	Analysis Period	1> 7:15
Intersection	Preston	File Name	AM 23.xus		
Project Description	Okolona Center				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	141	428	196	129	405	78	222	590	206	43	356	146

Signal Information			
Cycle, s	160.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.0	27.4	11.4	14.3	37.4	15.7
Yellow	4.3	4.3	4.3	4.3	4.3	4.3
Red	3.0	3.0	3.0	3.0	3.0	3.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	17.3	52.0	18.7	53.4	21.6	66.3	23.0	67.7
Change Period, ($Y+R_c$), s	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Max Allow Headway (*MAH*), s	5.0	0.0	5.0	0.0	5.0	5.0	5.0	5.0
Queue Clearance Time (g_s), s	9.2		8.5		13.1	25.2	4.0	14.9
Green Extension Time (g_e), s	0.5	0.0	2.9	0.0	1.2	6.2	2.8	4.0
Phase Call Probability	1.00		1.00		1.00	1.00	0.88	1.00
Max Out Probability	0.03		0.27		0.00	0.01	0.19	0.00

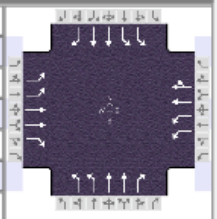
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	155	470	215	142	272	259	244	648	226	47	391	160
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1702	1752	1535	1689	1870	1765	1730	1738	1572	1757	1710	1535
Queue Service Time (g_s), s	7.2	17.9	18.8	6.5	19.3	19.6	11.1	23.2	17.0	2.0	12.9	11.6
Cycle Queue Clearance Time (g_c), s	7.2	17.9	18.8	6.5	19.3	19.6	11.1	23.2	17.0	2.0	12.9	11.6
Green Ratio (*g/C*)	0.06	0.28	0.28	0.07	0.29	0.29	0.09	0.37	0.37	0.10	0.38	0.38
Capacity (*c*), veh/h	213	979	429	241	539	509	309	1282	580	345	1291	579
Volume-to-Capacity Ratio (*X*)	0.729	0.480	0.502	0.589	0.504	0.509	0.790	0.506	0.390	0.137	0.303	0.277
Back of Queue (*Q*), ft/ln (95 th percentile)	152.8	324.6	165	135.6	366.7	349.4	224.2	395.6	283.4	39.9	244.6	209.4
Back of Queue (*Q*), veh/ln (95 th percentile)	5.9	12.6	6.3	5.2	14.4	14.0	8.8	15.2	11.1	1.6	9.3	8.0
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	0.00
Uniform Delay (d_1), s/veh	73.7	48.0	11.4	72.0	47.4	47.5	71.4	39.2	37.2	66.0	35.0	34.6
Incremental Delay (d_2), s/veh	6.6	1.7	4.2	3.2	3.3	3.6	6.3	1.4	2.0	0.3	0.6	1.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	80.3	49.7	15.6	75.3	50.7	51.1	77.7	40.6	39.2	66.2	35.6	35.8
Level of Service (LOS)	F	D	B	E	D	D	E	D	D	E	D	D
Approach Delay, s/veh / LOS	46.6	D		56.1	E		48.4	D		38.1	D	
Intersection Delay, s/veh / LOS	47.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.60	C	2.48	B	2.59	C
Bicycle LOS Score / LOS	1.18	A	1.04	A	1.41	A	0.98	A

 HCS™ Streets Version 2023 Generated: 5/24/2023 11:26:09 AM

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/24/2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Outer Loop	Analysis Year	2025 No Build	Analysis Period	1> 7:15
Intersection	Preston	File Name	AM 25 NB.xus		
Project Description	Okolona Center				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	142	432	198	130	409	79	224	596	208	43	360	144

Signal Information												
Cycle, s	160.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	10.0	27.4	11.5	14.4	37.2	15.7		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	4.3	4.3	4.3	4.3	4.3		
				Red	3.0	3.0	3.0	3.0	3.0	3.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	17.3	52.0	18.8	53.5	21.7	66.2	23.0	67.5
Change Period, ($Y+R_c$), s	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Max Allow Headway (*MAH*), s	5.0	0.0	5.0	0.0	5.0	5.0	5.0	5.0
Queue Clearance Time (g_s), s	9.2		8.6		13.2	25.5	4.0	15.1
Green Extension Time (g_e), s	0.5	0.0	2.9	0.0	1.2	6.2	2.8	4.0
Phase Call Probability	1.00		1.00		1.00	1.00	0.88	1.00
Max Out Probability	0.03		0.28		0.00	0.01	0.19	0.00

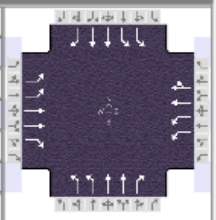
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	156	475	218	143	274	262	246	655	229	47	396	158
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1702	1752	1535	1689	1870	1765	1730	1738	1572	1757	1710	1535
Queue Service Time (g_s), s	7.2	18.1	19.0	6.6	19.6	19.8	11.2	23.5	17.2	2.0	13.1	11.5
Cycle Queue Clearance Time (g_c), s	7.2	18.1	19.0	6.6	19.6	19.8	11.2	23.5	17.2	2.0	13.1	11.5
Green Ratio (*g/C*)	0.06	0.28	0.28	0.07	0.29	0.29	0.09	0.37	0.37	0.10	0.38	0.38
Capacity (*c*), veh/h	213	979	429	242	540	510	311	1280	579	345	1287	578
Volume-to-Capacity Ratio (*X*)	0.734	0.485	0.507	0.589	0.508	0.514	0.791	0.512	0.395	0.137	0.307	0.274
Back of Queue (*Q*), ft/ln (95 th percentile)	154	327.4	167.2	136.6	370.2	352.5	225.6	399.7	286.3	39.9	247	207.1
Back of Queue (*Q*), veh/ln (95 th percentile)	6.0	12.7	6.4	5.3	14.6	14.1	8.9	15.4	11.2	1.6	9.4	7.9
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	0.00
Uniform Delay (d_1), s/veh	73.7	48.0	11.4	72.0	47.4	47.5	71.3	39.3	37.4	66.0	35.2	34.7
Incremental Delay (d_2), s/veh	6.8	1.7	4.2	3.2	3.4	3.7	6.3	1.5	2.0	0.3	0.6	1.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	80.5	49.8	15.7	75.2	50.8	51.2	77.6	40.8	39.4	66.2	35.8	35.9
Level of Service (LOS)	F	D	B	E	D	D	E	D	D	E	D	D
Approach Delay, s/veh / LOS	46.7	D		56.1	E		48.5	D		38.2	D	
Intersection Delay, s/veh / LOS	47.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.60	C	2.48	B	2.59	C
Bicycle LOS Score / LOS	1.19	A	1.05	A	1.42	A	0.98	A

 HCS™ Streets Version 2023 Generated: 5/24/2023 11:26:09 AM

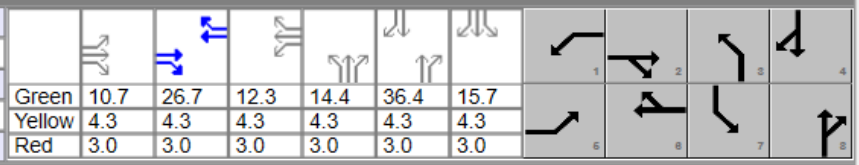
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/24/2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Outer Loop	Analysis Year	2025 Build	Analysis Period	1> 7:15
Intersection	Preston	File Name	AM 25 B.xus		
Project Description	Okolona Center				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	159	449	198	145	424	79	224	613	225	43	375	156

Signal Information			
Cycle, s	160.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	10.7	26.7	12.3	14.4	36.4	15.7
Yellow	4.3	4.3	4.3	4.3	4.3	4.3
Red	3.0	3.0	3.0	3.0	3.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	18.0	52.0	19.6	53.6	21.7	65.4	23.0	66.7
Change Period, ($Y+R_c$), s	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Max Allow Headway (*MAH*), s	5.0	0.0	5.0	0.0	5.0	5.0	5.0	5.0
Queue Clearance Time (g_s), s	10.1		9.3		13.2	26.5	4.0	15.8
Green Extension Time (g_e), s	0.6	0.0	3.0	0.0	1.2	6.5	2.9	4.2
Phase Call Probability	1.00		1.00		1.00	1.00	0.88	1.00
Max Out Probability	0.06		0.34		0.00	0.02	0.21	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	175	493	218	159	283	270	246	674	247	47	412	171
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1702	1752	1535	1689	1870	1768	1730	1738	1572	1757	1710	1535
Queue Service Time (g_s), s	8.1	18.9	19.0	7.3	20.2	20.5	11.2	24.5	19.0	2.0	13.8	12.6
Cycle Queue Clearance Time (g_c), s	8.1	18.9	19.0	7.3	20.2	20.5	11.2	24.5	19.0	2.0	13.8	12.6
Green Ratio (*g/C*)	0.07	0.28	0.28	0.08	0.29	0.29	0.09	0.36	0.36	0.10	0.37	0.37
Capacity (*c*), veh/h	227	979	429	259	542	512	311	1263	571	345	1270	570
Volume-to-Capacity Ratio (*X*)	0.770	0.504	0.507	0.615	0.522	0.527	0.792	0.534	0.433	0.137	0.324	0.301
Back of Queue (Q), ft/ln (95 th percentile)	173.3	339.8	167.2	152.3	381.2	363	225.7	415.1	311.5	39.9	258.5	224.1
Back of Queue (Q), veh/ln (95 th percentile)	6.7	13.2	6.4	5.9	15.0	14.5	8.9	16.0	12.2	1.6	9.8	8.6
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	73.5	48.3	11.4	71.6	47.6	47.7	71.4	40.2	38.5	66.0	35.9	35.6
Incremental Delay (d_2), s/veh	7.6	1.9	4.2	3.3	3.6	3.9	6.4	1.6	2.4	0.3	0.7	1.4
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	81.1	50.2	15.7	74.9	51.1	51.5	77.7	41.9	40.9	66.2	36.6	36.9
Level of Service (LOS)	F	D	B	E	D	D	E	D	D	E	D	D
Approach Delay, s/veh / LOS	47.8	D		56.6	E		49.2	D		38.9	D	
Intersection Delay, s/veh / LOS	48.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.60	C	2.48	B	2.59	C
Bicycle LOS Score / LOS	1.22	A	1.08	A	1.45	A	1.01	A

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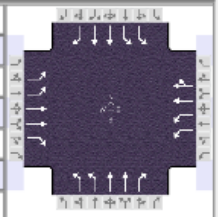
HCS Signalized Intersection Results Summary

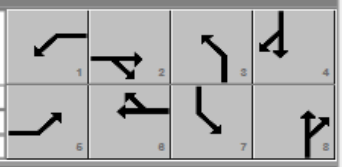
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/24/2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Outer Loop	Analysis Year	2035 No Build	Analysis Period	1> 7:15
Intersection	Preston	File Name	AM 35 NB.xus		
Project Description	Okolona Center				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	149	454	208	137	430	83	235	626	219	45	378	151

Signal Information			
Cycle, s	160.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	10.1	27.3	11.9	15.0	36.2	15.7	
Yellow	4.3	4.3	4.3	4.3	4.3	4.3	
Red	3.0	3.0	3.0	3.0	3.0	3.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	17.4	52.0	19.2	53.8	22.3	65.7	23.0	66.5
Change Period, ($Y+R_c$), s	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Max Allow Headway (*MAH*), s	5.0	0.0	5.0	0.0	5.0	5.0	5.0	5.0
Queue Clearance Time (g_s), s	9.6		8.9		13.7	27.1	4.1	15.9
Green Extension Time (g_e), s	0.6	0.0	3.1	0.0	1.3	6.6	2.9	4.2
Phase Call Probability	1.00		1.00		1.00	1.00	0.89	1.00
Max Out Probability	0.04		0.32		0.01	0.02	0.21	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	164	499	229	151	289	275	258	688	241	49	415	166
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1702	1752	1535	1689	1870	1765	1730	1738	1572	1757	1710	1535
Queue Service Time (g_s), s	7.6	19.1	20.2	6.9	20.7	21.0	11.7	25.1	18.4	2.1	13.9	12.2
Cycle Queue Clearance Time (g_c), s	7.6	19.1	20.2	6.9	20.7	21.0	11.7	25.1	18.4	2.1	13.9	12.2
Green Ratio (*g/C*)	0.06	0.28	0.28	0.07	0.29	0.29	0.09	0.37	0.37	0.10	0.37	0.37
Capacity (*c*), veh/h	215	979	429	252	544	513	324	1270	574	345	1265	568
Volume-to-Capacity Ratio (*X*)	0.760	0.509	0.533	0.597	0.531	0.536	0.797	0.542	0.419	0.143	0.328	0.292
Back of Queue (*Q*), ft/ln (95 th percentile)	162.6	343.9	178.1	143.8	388.5	369.4	234.3	422.9	302.3	41.8	261	218.2
Back of Queue (*Q*), veh/ln (95 th percentile)	6.3	13.3	6.8	5.5	15.3	14.8	9.2	16.3	11.8	1.7	9.9	8.3
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	73.7	48.4	11.5	71.7	47.6	47.7	71.0	40.2	38.1	66.0	36.2	35.6
Incremental Delay (d_2), s/veh	7.6	1.9	4.7	3.2	3.7	4.0	6.3	1.7	2.2	0.3	0.7	1.3
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	0.0
Control Delay (*d*), s/veh	81.3	50.3	16.2	74.9	51.3	51.6	77.3	41.8	40.3	66.3	36.9	36.9
Level of Service (LOS)	F	D	B	E	D	D	E	D	D	E	D	D
Approach Delay, s/veh / LOS	47.3	D		56.4	E		49.2	D		39.2	D	
Intersection Delay, s/veh / LOS	48.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.60	C	2.48	B	2.59	C
Bicycle LOS Score / LOS	1.22	A	1.08	A	1.47	A	1.01	A

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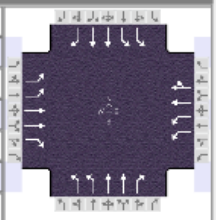
HCS Signalized Intersection Results Summary

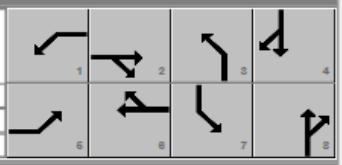
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/24/2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.91
Urban Street	Outer Loop	Analysis Year	2035 Build	Analysis Period	1> 7:15
Intersection	Preston	File Name	AM 35 B.xus		
Project Description	Okolona Center				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	166	471	208	152	445	83	235	643	236	45	393	166

Signal Information			
Cycle, s	160.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	11.0	26.4	12.7	14.9	35.4	15.7	
Yellow	4.3	4.3	4.3	4.3	4.3	4.3	
Red	3.0	3.0	3.0	3.0	3.0	3.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	18.3	52.0	20.0	53.7	22.2	65.0	23.0	65.7
Change Period, ($Y+R_c$), s	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Max Allow Headway (*MAH*), s	5.0	0.0	5.0	0.0	5.0	5.0	5.0	5.0
Queue Clearance Time (g_s), s	10.4		9.7		13.7	28.1	4.1	16.7
Green Extension Time (g_e), s	0.6	0.0	3.1	0.0	1.2	6.8	3.1	4.5
Phase Call Probability	1.00		1.00		1.00	1.00	0.89	1.00
Max Out Probability	0.08		0.39		0.01	0.03	0.23	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	182	518	229	167	297	283	258	707	259	49	432	182
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1702	1752	1535	1689	1870	1768	1730	1738	1572	1757	1710	1535
Queue Service Time (g_s), s	8.4	20.0	20.2	7.7	21.4	21.7	11.7	26.1	20.2	2.1	14.7	13.7
Cycle Queue Clearance Time (g_c), s	8.4	20.0	20.2	7.7	21.4	21.7	11.7	26.1	20.2	2.1	14.7	13.7
Green Ratio (*g/C*)	0.07	0.28	0.28	0.08	0.29	0.29	0.09	0.36	0.36	0.10	0.37	0.37
Capacity (*c*), veh/h	235	979	429	269	542	513	323	1253	567	345	1249	560
Volume-to-Capacity Ratio (*X*)	0.777	0.529	0.533	0.621	0.548	0.552	0.799	0.564	0.458	0.143	0.346	0.326
Back of Queue (*Q*), ft/ln (95 th percentile)	180.7	356.5	178.1	159.2	400.7	381.1	234.3	438.5	328	41.8	272.2	239.3
Back of Queue (*Q*), veh/ln (95 th percentile)	7.0	13.8	6.8	6.1	15.8	15.2	9.2	16.9	12.8	1.7	10.3	9.1
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	0.00
Uniform Delay (d_1), s/veh	73.3	48.7	11.5	71.3	47.9	48.0	71.1	41.1	39.2	66.0	36.9	36.6
Incremental Delay (d_2), s/veh	7.6	2.0	4.7	3.3	3.9	4.2	6.4	1.8	2.7	0.3	0.8	1.5
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	80.9	50.8	16.2	74.6	51.9	52.3	77.4	42.9	41.8	66.3	37.7	38.1
Level of Service (LOS)	F	D	B	E	D	D	E	D	D	E	D	D
Approach Delay, s/veh / LOS	48.2	D		57.1	E		50.0	D		39.9	D	
Intersection Delay, s/veh / LOS	49.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.60	C	2.48	B	2.59	C
Bicycle LOS Score / LOS	1.25	A	1.10	A	1.50	A	1.04	A

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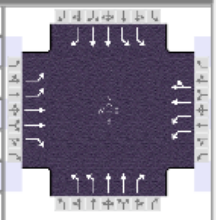
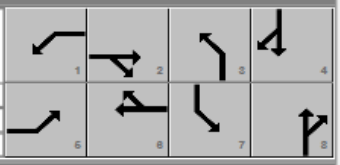
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/24/2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Outer Loop	Analysis Year	2023	Analysis Period	1> 4:15
Intersection	Preston	File Name	PM 23.xus		
Project Description	Okolona Center				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	195	802	287	412	683	153	248	555	382	229	850	328

Signal Information					EB			WB			NB		
Cycle, s	160.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	11.7	23.7		23.4	14.2		21.5	21.7	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.3	4.3		4.3	4.3		4.3	4.3	
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	3.0		3.0	3.0		3.0	3.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	19.0	50.0	30.7	61.7	21.5	50.3	29.0	57.8
Change Period, (*Y+R c*), s	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Max Allow Headway (*MAH*), s	5.0	0.0	5.0	0.0	5.0	5.1	5.0	5.0
Queue Clearance Time (*g s*), s	11.2		21.0		13.8	41.6	12.2	38.2
Green Extension Time (*g e*), s	0.5	0.0	2.4	0.0	0.4	0.8	5.9	7.1
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.43		1.00		1.00	1.00	0.72	0.60

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	203	835	299	429	450	421	258	578	398	239	885	342
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1795		1757	1870	1751	1730	1766		1743	1781	
Queue Service Time (*g s*), s	9.2	34.8		19.0	30.9	31.0	11.8	22.9		10.2	36.2	
Cycle Queue Clearance Time (*g c*), s	9.2	34.8		19.0	30.9	31.0	11.8	22.9		10.2	36.2	
Green Ratio (*g/C*)	0.07	0.27		0.15	0.34	0.34	0.09	0.27		0.14	0.32	
Capacity (*c*), veh/h	255	958		515	636	596	307	949		473	1124	
Volume-to-Capacity Ratio (*X*)	0.796	0.872		0.834	0.707	0.707	0.842	0.609		0.504	0.788	
Back of Queue (*Q*), ft/ln (95 th percentile)	196.2	565.2		353.8	513.8	480.8	247.9	401.5		202.7	594.6	
Back of Queue (*Q*), veh/ln (95 th percentile)	7.8	22.4		14.2	20.2	19.2	9.8	15.7		8.0	23.4	
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	
Uniform Delay (*d 1*), s/veh	73.0	49.0		66.4	37.3	37.3	71.8	51.2		64.2	49.9	
Incremental Delay (*d 2*), s/veh	8.6	10.8		10.9	6.5	6.9	15.2	2.9		1.2	5.6	
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	
Control Delay (*d*), s/veh	81.6	59.8	5.0	77.3	43.8	44.2	87.0	54.1	5.0	65.4	55.5	5.0
Level of Service (LOS)	F	E	A	E	D	D	F	D	A	E	E	A
Approach Delay, s/veh / LOS	50.8	D		55.0	E		45.2	D		45.3	D	
Intersection Delay, s/veh / LOS	49.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.59	C	2.47	B	2.60	C
Bicycle LOS Score / LOS	1.59	B	1.56	B	1.51	B	1.70	B

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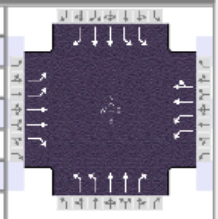
HCS Signalized Intersection Results Summary

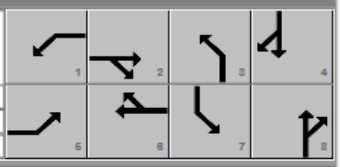
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/24/2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Outer Loop	Analysis Year	2025 No Build	Analysis Period	1> 4:15
Intersection	Preston	File Name	PM 25 NB.xus		
Project Description	Okolona Center				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	197	810	290	416	690	155	250	561	386	231	859	331

Signal Information			
Cycle, s	160.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	11.8	23.6	23.5	14.3	21.3	21.7
Yellow	4.3	4.3	4.3	4.3	4.3	4.3
Red	3.0	3.0	3.0	3.0	3.0	3.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	19.1	50.0	30.8	61.7	21.6	50.2	29.0	57.6
Change Period, ($Y+R_c$), s	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Max Allow Headway (*MAH*), s	5.0	0.0	5.0	0.0	5.0	5.1	5.0	5.0
Queue Clearance Time (g_s), s	11.3		21.2		13.9	42.2	12.3	38.8
Green Extension Time (g_e), s	0.5	0.0	2.3	0.0	0.4	0.4	5.9	6.8
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.45		1.00		1.00	1.00	0.73	0.63

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	205	844	302	433	455	426	260	584	402	241	895	345
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1795		1757	1870	1751	1730	1766		1743	1781	
Queue Service Time (g_s), s	9.3	35.3		19.2	31.4	31.5	11.9	23.2		10.3	36.8	
Cycle Queue Clearance Time (g_c), s	9.3	35.3		19.2	31.4	31.5	11.9	23.2		10.3	36.8	
Green Ratio (*g/C*)	0.07	0.27		0.15	0.34	0.34	0.09	0.27		0.14	0.31	
Capacity (*c*), veh/h	257	958		517	636	596	308	947		473	1120	
Volume-to-Capacity Ratio (*X*)	0.797	0.881		0.838	0.714	0.715	0.844	0.617		0.509	0.799	
Back of Queue (Q), ft/ln (95 th percentile)	198	574.1		357.4	521.5	487.8	250.1	405.9		204.2	604	
Back of Queue (Q), veh/ln (95 th percentile)	7.9	22.8		14.3	20.5	19.5	9.8	15.9		8.1	23.8	
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	
Uniform Delay (d_1), s/veh	72.9	49.1		66.4	37.4	37.4	71.8	51.4		64.2	50.2	
Incremental Delay (d_2), s/veh	8.8	11.4		11.3	6.7	7.2	15.6	3.0		1.3	6.0	
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	
Control Delay (*d*), s/veh	81.7	60.6	5.0	77.7	44.2	44.6	87.4	54.4	5.0	65.5	56.2	5.0
Level of Service (LOS)	F	E	A	E	D	D	F	D	A	E	E	A
Approach Delay, s/veh / LOS	51.4	D		55.4	E		45.4	D		45.8	D	
Intersection Delay, s/veh / LOS	49.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.59	C	2.47	B	2.60	C
Bicycle LOS Score / LOS	1.60	B	1.57	B	1.52	B	1.71	B

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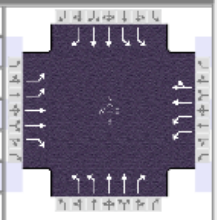
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/24/2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Outer Loop	Analysis Year	2025 Build	Analysis Period	1> 4:15
Intersection	Preston	File Name	PM 25 B.xus		
Project Description	Okolona Center				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	214	828	290	433	706	155	250	579	403	231	875	348

Signal Information			
Cycle, s	160.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	12.6	22.8	23.9	14.2	21.0	21.7						
Yellow	4.3	4.3	4.3	4.3	4.3	4.3						
Red	3.0	3.0	3.0	3.0	3.0	3.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	19.9	50.0	31.2	61.3	21.5	49.8	29.0	57.3
Change Period, ($Y+R_c$), s	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Max Allow Headway (*MAH*), s	5.0	0.0	5.0	0.0	5.0	5.1	5.0	5.0
Queue Clearance Time (g_s), s	12.1		22.0		13.9	44.5	12.3	39.8
Green Extension Time (g_e), s	0.5	0.0	1.9	0.0	0.4	0.0	6.0	6.3
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.72		1.00		1.00	1.00	0.74	0.71

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	223	863	302	451	463	434	260	603	420	241	911	363
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1795		1757	1870	1753	1730	1766		1743	1781	
Queue Service Time (g_s), s	10.1	36.4		20.0	32.5	32.5	11.9	24.2		10.3	37.8	
Cycle Queue Clearance Time (g_c), s	10.1	36.4		20.0	32.5	32.5	11.9	24.2		10.3	37.8	
Green Ratio (*g/C*)	0.08	0.27		0.15	0.34	0.34	0.09	0.27		0.14	0.31	
Capacity (*c*), veh/h	275	958		525	631	591	308	938		473	1112	
Volume-to-Capacity Ratio (*X*)	0.811	0.900		0.859	0.734	0.734	0.847	0.643		0.509	0.819	
Back of Queue (*Q*), ft/ln (95 th percentile)	213	595.6		374.2	539.5	505.1	251.1	421.2		204.2	621.6	
Back of Queue (*Q*), veh/ln (95 th percentile)	8.5	23.6		15.0	21.2	20.2	9.9	16.5		8.1	24.5	
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	
Uniform Delay (d_1), s/veh	72.5	49.5		66.4	38.1	38.1	71.8	52.0		64.2	50.8	
Incremental Delay (d_2), s/veh	10.4	13.1		13.3	7.4	7.9	16.4	3.4		1.3	6.8	
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	
Control Delay (*d*), s/veh	82.9	62.6	5.0	79.7	45.5	46.0	88.2	55.4	5.0	65.5	57.6	5.0
Level of Service (LOS)	F	E	A	E	D	D	F	E	A	E	E	A
Approach Delay, s/veh / LOS	53.4	D		57.1	E		45.6	D		46.3	D	
Intersection Delay, s/veh / LOS	50.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.59	C	2.47	B	2.60	C
Bicycle LOS Score / LOS	1.63	B	1.60	B	1.55	B	1.74	B

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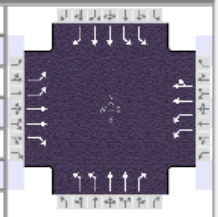
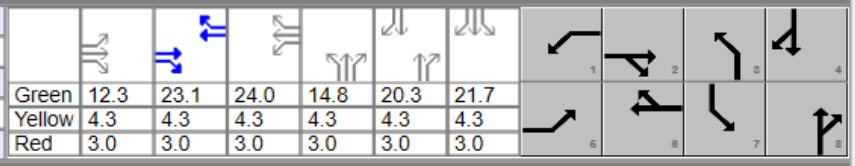
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/24/2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Outer Loop	Analysis Year	2035 No Build	Analysis Period	1> 4:15
Intersection	Preston	File Name	PM 35 NB.xus		
Project Description	Okolona Center				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	207	851	305	437	725	163	263	590	406	243	903	348

Signal Information			
Cycle, s	160.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	12.3	23.1	24.0	14.8	20.3	21.7
Yellow	4.3	4.3	4.3	4.3	4.3	4.3
Red	3.0	3.0	3.0	3.0	3.0	3.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	19.6	50.0	31.3	61.7	22.1	49.7	29.0	56.6
Change Period, ($Y+R_c$), s	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Max Allow Headway (*MAH*), s	5.0	0.0	5.0	0.0	5.0	5.1	5.0	5.0
Queue Clearance Time (g_s), s	11.7		22.2		14.5	44.4	12.8	41.7
Green Extension Time (g_e), s	0.5	0.0	1.8	0.0	0.3	0.0	5.9	5.2
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.60		1.00		1.00	1.00	0.78	0.85

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	216	886	318	455	478	447	274	615	423	253	941	363
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1795		1757	1870	1751	1730	1766		1743	1781	
Queue Service Time (g_s), s	9.7	37.5		20.2	33.9	33.9	12.5	24.8		10.8	39.7	
Cycle Queue Clearance Time (g_c), s	9.7	37.5		20.2	33.9	33.9	12.5	24.8		10.8	39.7	
Green Ratio (*g/C*)	0.08	0.27		0.15	0.34	0.34	0.09	0.27		0.14	0.31	
Capacity (*c*), veh/h	268	980		527	636	595	319	936		473	1098	
Volume-to-Capacity Ratio (*X*)	0.805	0.904		0.864	0.751	0.751	0.858	0.656		0.535	0.857	
Back of Queue (Q), ft/ln (95 th percentile)	206.9	608.6		378.3	559.3	523	263.6	430.1		213.7	654.9	
Back of Queue (Q), veh/ln (95 th percentile)	8.2	24.1		15.1	22.0	20.9	10.4	16.8		8.5	25.8	
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	
Uniform Delay (d_1), s/veh	72.7	49.3		66.4	38.1	38.1	71.6	52.3		64.5	52.0	
Incremental Delay (d_2), s/veh	9.8	13.3		13.7	8.0	8.5	18.1	3.6		1.6	8.6	
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	
Control Delay (*d*), s/veh	82.4	62.6	5.0	80.1	46.1	46.6	89.7	55.9	5.0	66.0	60.7	5.0
Level of Service (LOS)	F	E	A	F	D	D	F	E	A	E	E	A
Approach Delay, s/veh / LOS	52.7	D		57.5	E		46.5	D		48.6	D	
Intersection Delay, s/veh / LOS	51.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.59	C	2.47	B	2.60	C
Bicycle LOS Score / LOS	1.66	B	1.63	B	1.57	B	1.77	B

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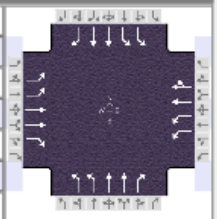
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering LLC			Duration, h	0.250
Analyst	DBZ	Analysis Date	5/24/2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.96
Urban Street	Outer Loop	Analysis Year	2035 Build	Analysis Period	1> 4:15
Intersection	Preston	File Name	PM 35 B.xus		
Project Description	Okolona Center				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	224	869	305	454	741	163	263	608	423	243	919	365

Signal Information												
Cycle, s	160.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	13.1	22.3	24.3	14.7	20.1	21.7		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	4.3	4.3	4.3	4.3	4.3		
				Red	3.0	3.0	3.0	3.0	3.0	3.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	20.4	50.0	31.6	61.2	22.0	49.4	29.0	56.4
Change Period, ($Y+R_c$), s	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3
Max Allow Headway (*MAH*), s	5.0	0.0	5.0	0.0	5.0	5.1	5.0	5.0
Queue Clearance Time (g_s), s	12.5		23.1		14.5	44.1	12.8	42.8
Green Extension Time (g_e), s	0.5	0.0	1.2	0.0	0.2	0.0	6.0	4.5
Phase Call Probability	1.00		1.00		1.00	1.00	1.00	1.00
Max Out Probability	0.93		1.00		1.00	1.00	0.79	0.93

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	233	905	318	473	486	456	274	633	441	253	957	380
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1795		1757	1870	1753	1730	1766		1743	1781	
Queue Service Time (g_s), s	10.5	38.7		21.1	35.0	35.0	12.5	25.8		10.8	40.8	
Cycle Queue Clearance Time (g_c), s	10.5	38.7		21.1	35.0	35.0	12.5	25.8		10.8	40.8	
Green Ratio (*g/C*)	0.08	0.27		0.15	0.34	0.34	0.09	0.26		0.14	0.31	
Capacity (*c*), veh/h	285	980		534	630	591	319	930		473	1092	
Volume-to-Capacity Ratio (*X*)	0.818	0.923		0.886	0.771	0.771	0.860	0.681		0.535	0.877	
Back of Queue (*Q*), ft/ln (95 th percentile)	222	631.9		396.9	579.6	542.4	264.6	445.3		213.7	674.7	
Back of Queue (*Q*), veh/ln (95 th percentile)	8.8	25.1		15.9	22.8	21.7	10.4	17.4		8.5	26.6	
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	72.3	49.7		66.5	38.9	38.9	71.6	52.9		64.5	52.6	
Incremental Delay (d_2), s/veh	11.3	15.3		16.4	8.9	9.4	18.8	4.0		1.6	9.9	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (*d*), s/veh	83.6	65.0	5.0	82.9	47.7	48.3	90.4	56.9	5.0	66.0	62.5	5.0
Level of Service (LOS)	F	E	A	F	D	D	F	E	A	E	E	A
Approach Delay, s/veh / LOS	54.9	D		59.7	E		46.8	D		49.3	D	
Intersection Delay, s/veh / LOS	52.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.59	C	2.47	B	2.60	C
Bicycle LOS Score / LOS	1.69	B	1.65	B	1.60	B	1.80	B

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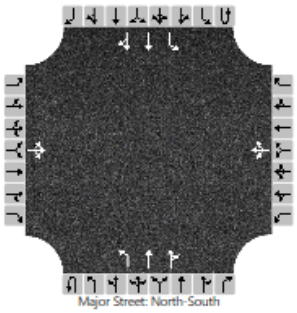
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Preston at Markwell Lane
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Markwell Ln
Analysis Year	2023	North/South Street	Preston Highway
Time Analyzed	AM Peak	Peak Hour Factor	0.93
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

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	0		0	1	0	0	1	2	0	0	1	2	0
Configuration			LTR				LTR			L	T	TR		L	T	TR
Volume (veh/h)		19	0	20		0	0	0	0	9	808	0	0	0	536	5
Percent Heavy Vehicles (%)		0	0	10		0	0	0	0	11			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
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	7.10		7.50	6.50	6.90		4.32				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	3.40		3.50	4.00	3.30		2.31				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			42				0			10				0		
Capacity, c (veh/h)			586				0			929				784		
v/c Ratio			0.07							0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.2							0.0				0.0		
Control Delay (s/veh)			11.6							8.9				9.6		
Level of Service (LOS)			B							A				A		
Approach Delay (s/veh)		11.6								0.1				0.0		
Approach LOS		B								A				A		

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Markwell AM 23.xtw

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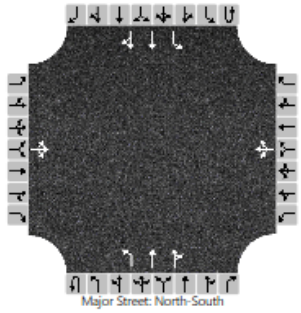
HCS Two-Way Stop-Control Report

General Information

Analyst	DBZ	Intersection	Preston at Markwell Lane
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Markwell Ln
Analysis Year	2025	North/South Street	Preston Highway
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.93
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

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	0		0	1	0	0	1	2	0	0	1	2	0
Configuration			LTR				LTR			L	T	TR		L	T	TR
Volume (veh/h)		19	0	21		0	0	0	0	9	816	0	0	0	541	5
Percent Heavy Vehicles (%)		0	0	10		0	0	0	0	11			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
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	7.10		7.50	6.50	6.90		4.32				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	3.40		3.50	4.00	3.30		2.31				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			43				0			10				0		
Capacity, c (veh/h)			590				0			925				778		
v/c Ratio			0.07							0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.2							0.0				0.0		
Control Delay (s/veh)			11.6							8.9				9.6		
Level of Service (LOS)			B							A				A		
Approach Delay (s/veh)		11.6								0.1				0.0		
Approach LOS		B								A				A		

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Markwell AM 25 NB.xtw

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HCS Two-Way Stop-Control Report

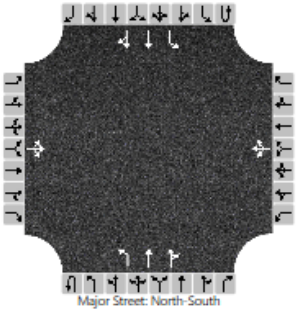
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2025
Time Analyzed	AM Peak Build
Intersection Orientation	North-South
Project Description	Okolona Center

Site Information

Intersection	Preston at Markwell Lane
Jurisdiction	
East/West Street	Markwell Ln
North/South Street	Preston Highway
Peak Hour Factor	0.93
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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	1	2	0
Configuration			LTR				LTR			L	T	TR		L	T	TR
Volume (veh/h)		19	0	21		0	0	0	0	9	846	0	0	0	574	5
Percent Heavy Vehicles (%)		0	0	10		0	0	0	0	11			0	0		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
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	7.10		7.50	6.50	6.90		4.32				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	3.40		3.50	4.00	3.30		2.31				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			43				0			10				0		
Capacity, c (veh/h)			564				0			896				757		
v/c Ratio			0.08							0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.2							0.0				0.0		
Control Delay (s/veh)			11.9							9.1				9.8		
Level of Service (LOS)			B							A				A		
Approach Delay (s/veh)	11.9								0.1				0.0			
Approach LOS	B								A				A			

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Markwell AM 25 B.xtw

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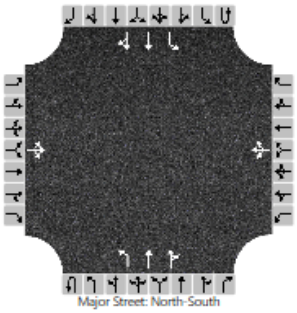
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Preston at Markwell Lane
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Markwell Ln
Analysis Year	2035	North/South Street	Preston Highway
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.93
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

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	0		0	1	0	0	1	2	0	0	1	2	0
Configuration			LTR				LTR			L	T	TR		L	T	TR
Volume (veh/h)		20	0	22		0	0	0	0	9	858	0	0	0	569	5
Percent Heavy Vehicles (%)		0	0	10		0	0	0	0	11			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
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	7.10		7.50	6.50	6.90		4.32				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	3.40		3.50	4.00	3.30		2.31				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			45				0			10				0		
Capacity, c (veh/h)			563				0			900				749		
v/c Ratio			0.08							0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.3							0.0				0.0		
Control Delay (s/veh)			11.9							9.0				9.8		
Level of Service (LOS)			B							A				A		
Approach Delay (s/veh)		11.9								0.1				0.0		
Approach LOS		B								A				A		

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Markwell AM 35 NB.xtw

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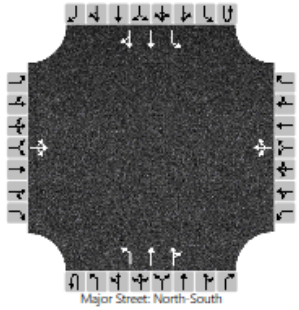
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Preston at Markwell Lane
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Markwell Ln
Analysis Year	2035	North/South Street	Preston Highway
Time Analyzed	AM Peak Build	Peak Hour Factor	0.93
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

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	0		0	1	0	0	1	2	0	0	1	2	0
Configuration			LTR				LTR			L	T	TR		L	T	TR
Volume (veh/h)		20	0	22		0	0	0	0	9	888	0	0	0	602	5
Percent Heavy Vehicles (%)		0	0	10		0	0	0	0	11			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
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	7.10		7.50	6.50	6.90		4.32				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	3.40		3.50	4.00	3.30		2.31				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			45				0			10				0		
Capacity, c (veh/h)			538				0			872				728		
v/c Ratio			0.08							0.01				0.00		
95% Queue Length, Q_{95} (veh)			0.3							0.0				0.0		
Control Delay (s/veh)			12.3							9.2				9.9		
Level of Service (LOS)			B							A				A		
Approach Delay (s/veh)		12.3								0.1				0.0		
Approach LOS		B								A				A		

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HCS Two-Way Stop-Control Report

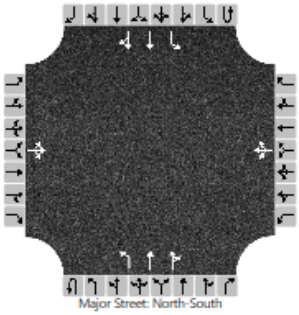
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2023
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Okolona Center

Site Information

Intersection	Preston at Markwell Lane
Jurisdiction	
East/West Street	Markwell Ln
North/South Street	Preston Highway
Peak Hour Factor	0.92
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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	1	2	0
Configuration			LTR				LTR			L	T	TR		L	T	TR
Volume (veh/h)		33	1	50		6	1	3	0	23	906	7	0	2	1336	28
Percent Heavy Vehicles (%)		0	0	2		0	0	0	0	4			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
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	6.94		7.50	6.50	6.90		4.18				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	3.32		3.50	4.00	3.30		2.24				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			91				11			25				2		
Capacity, c (veh/h)			221				114			440				705		
v/c Ratio			0.41				0.10			0.06				0.00		
95% Queue Length, Q_{95} (veh)			1.9				0.3			0.2				0.0		
Control Delay (s/veh)			32.3				40.0			13.7				10.1		
Level of Service (LOS)			D				E			B				B		
Approach Delay (s/veh)		32.3				40.0				0.3				0.0		
Approach LOS		D				E				A				A		

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HCS Two-Way Stop-Control Report

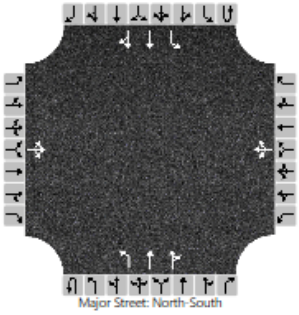
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2025
Time Analyzed	PM Peak No Build
Intersection Orientation	North-South
Project Description	Okolona Center

Site Information

Intersection	Preston at Markwell Lane
Jurisdiction	
East/West Street	Markwell Ln
North/South Street	Preston Highway
Peak Hour Factor	0.92
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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	1	2	0
Configuration			LTR				LTR			L	T	TR		L	T	TR
Volume (veh/h)		33	1	51		6	1	3	0	23	915	7	0	2	1349	28
Percent Heavy Vehicles (%)		0	0	2		0	0	0	0	4			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
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	6.94		7.50	6.50	6.90		4.18				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	3.32		3.50	4.00	3.30		2.24				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			92				11			25				2		
Capacity, c (veh/h)			219				111			434				699		
v/c Ratio			0.42				0.10			0.06				0.00		
95% Queue Length, Q_{95} (veh)			2.0				0.3			0.2				0.0		
Control Delay (s/veh)			33.0				41.0			13.8				10.2		
Level of Service (LOS)			D				E			B				B		
Approach Delay (s/veh)		33.0				41.0				0.3				0.0		
Approach LOS		D				E				A				A		

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Markwell PM 25 NB.xtw

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HCS Two-Way Stop-Control Report

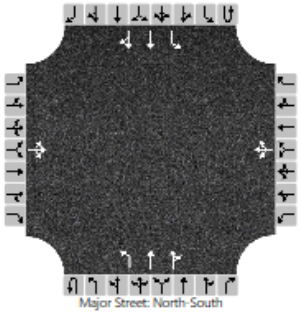
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2025
Time Analyzed	PM Peak Build
Intersection Orientation	North-South
Project Description	Okolona Center

Site Information

Intersection	Preston at Markwell Lane
Jurisdiction	
East/West Street	Markwell Ln
North/South Street	Preston Highway
Peak Hour Factor	0.92
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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	1	2	0
Configuration			LTR				LTR			L	T	TR		L	T	TR
Volume (veh/h)		33	1	51		6	1	3	0	23	948	7	0	2	1385	28
Percent Heavy Vehicles (%)		0	0	2		0	0	0	0	4			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
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	6.94		7.50	6.50	6.90		4.18				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	3.32		3.50	4.00	3.30		2.24				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			92				11			25				2		
Capacity, c (veh/h)			206				102			419				678		
v/c Ratio			0.45				0.11			0.06				0.00		
95% Queue Length, Q_{95} (veh)			2.1				0.3			0.2				0.0		
Control Delay (s/veh)			35.9				44.3			14.1				10.3		
Level of Service (LOS)			E				E			B				B		
Approach Delay (s/veh)		35.9				44.3				0.3				0.0		
Approach LOS		E				E				A				A		

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Markwell PM 25 B.xtw

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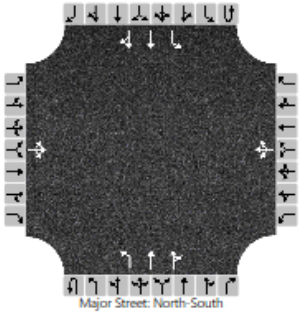
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Preston at Markwell Lane
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Markwell Ln
Analysis Year	2035	North/South Street	Preston Highway
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

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	0		0	1	0	0	1	2	0	0	1	2	0
Configuration			LTR				LTR			L	T	TR		L	T	TR
Volume (veh/h)		35	1	54		6	1	3	0	24	962	7	0	2	1418	29
Percent Heavy Vehicles (%)		0	0	2		0	0	0	0	4			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
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	6.94		7.50	6.50	6.90		4.18				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	3.32		3.50	4.00	3.30		2.24				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			98				11			26				2		
Capacity, c (veh/h)			197				96			406				669		
v/c Ratio			0.50				0.11			0.06				0.00		
95% Queue Length, Q_{95} (veh)			2.5				0.4			0.2				0.0		
Control Delay (s/veh)			40.1				47.1			14.5				10.4		
Level of Service (LOS)			E				E			B				B		
Approach Delay (s/veh)		40.1				47.1				0.4				0.0		
Approach LOS		E				E				A				A		

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Markwell PM 35 NB.xtw

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HCS Two-Way Stop-Control Report

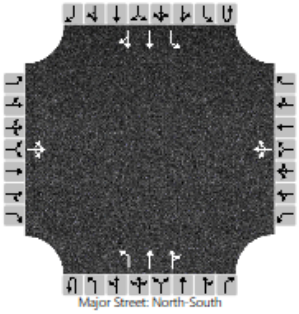
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2035
Time Analyzed	PM Peak Build
Intersection Orientation	North-South
Project Description	Okolona Center

Site Information

Intersection	Preston at Markwell Lane
Jurisdiction	
East/West Street	Markwell Ln
North/South Street	Preston Highway
Peak Hour Factor	0.92
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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	1	2	0	0	1	2	0
Configuration			LTR				LTR			L	T	TR		L	T	TR
Volume (veh/h)		35	1	54		6	1	3	0	24	995	7	0	2	1454	29
Percent Heavy Vehicles (%)		0	0	2		0	0	0	0	4			0	0		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
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	6.94		7.50	6.50	6.90		4.18				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	3.32		3.50	4.00	3.30		2.24				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			98				11			26				2		
Capacity, c (veh/h)			185				89			392				648		
v/c Ratio			0.53				0.12			0.07				0.00		
95% Queue Length, Q_{95} (veh)			2.7				0.4			0.2				0.0		
Control Delay (s/veh)			44.3				51.2			14.8				10.6		
Level of Service (LOS)			E				F			B				B		
Approach Delay (s/veh)		44.3				51.2				0.3				0.0		
Approach LOS		E				F				A				A		

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Markwell PM 35 B.xtw

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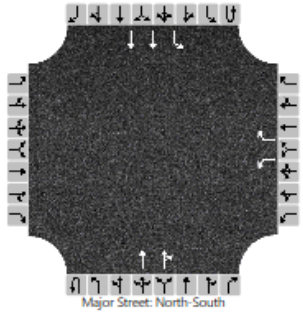
HCS Two-Way Stop-Control Report

General Information

Analyst	DBZ	Intersection	Preston Highway at Entrance 1
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Entrance 1
Analysis Year	2025	North/South Street	Preston Highway
Time Analyzed	AM Peak	Peak Hour Factor	0.91
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

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		1	0	1	0	0	2	0	0	1	2	0
Configuration						L		R			T	TR		L	T	
Volume (veh/h)						30		44			801	46	0	33	547	
Percent Heavy Vehicles (%)						0		0					0	0		
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		6.90						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33		48						36		
Capacity, c (veh/h)						272		549						743		
v/c Ratio						0.12		0.09						0.05		
95% Queue Length, Q_{95} (veh)						0.4		0.3						0.2		
Control Delay (s/veh)						20.1		12.2						10.1		
Level of Service (LOS)						C		B						B		
Approach Delay (s/veh)						15.4								0.6		
Approach LOS						C								A		

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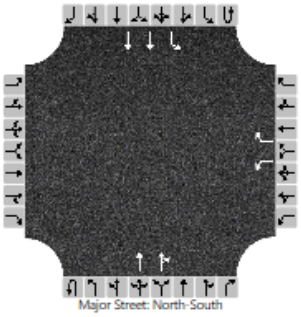
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Preston Highway at Entrance 1
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Entrance 1
Analysis Year	2035	North/South Street	Preston Highway
Time Analyzed	AM Peak	Peak Hour Factor	0.91
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

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		1	0	1	0	0	2	0	0	1	2	0
Configuration						L		R			T	TR		L	T	
Volume (veh/h)						30		44			842	46	0	33	574	
Percent Heavy Vehicles (%)						0		0					0	0		
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		6.90						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						33		48						36		
Capacity, c (veh/h)						257		531						715		
v/c Ratio						0.13		0.09						0.05		
95% Queue Length, Q_{95} (veh)						0.4		0.3						0.2		
Control Delay (s/veh)						21.0		12.5						10.3		
Level of Service (LOS)						C		B						B		
Approach Delay (s/veh)						15.9								0.6		
Approach LOS						C								A		

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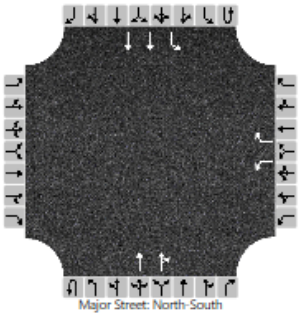
HCS Two-Way Stop-Control Report

General Information

Analyst	DBZ	Intersection	Preston Highway at Entrance 1
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Entrance 1
Analysis Year	2025	North/South Street	Preston Highway
Time Analyzed	PM Peak	Peak Hour Factor	0.91
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

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		1	0	1	0	0	2	0	0	1	2	0
Configuration						L		R			T	TR		L	T	
Volume (veh/h)						33		34			910	35	0	36	1421	
Percent Heavy Vehicles (%)						0		0					0	0		
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		6.90						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						36		37						40		
Capacity, c (veh/h)						180		507						677		
v/c Ratio						0.20		0.07						0.06		
95% Queue Length, Q_{95} (veh)						0.7		0.2						0.2		
Control Delay (s/veh)						30.0		12.7						10.6		
Level of Service (LOS)						D		B						B		
Approach Delay (s/veh)						21.2								0.3		
Approach LOS						C								A		

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HCS Two-Way Stop-Control Report

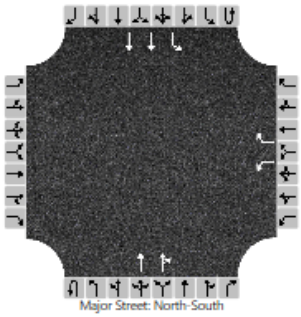
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2035
Time Analyzed	PM Peak
Intersection Orientation	North-South
Project Description	Okolona Center

Site Information

Intersection	Preston Highway at Entrance 1
Jurisdiction	
East/West Street	Entrance 1
North/South Street	Preston Highway
Peak Hour Factor	0.91
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		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		1	0	1	0	0	2	0	0	1	2	0
Configuration						L		R			T	TR		L	T	
Volume (veh/h)						33		34			957	35	0	36	1494	
Percent Heavy Vehicles (%)						0		0					0	0		
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		6.90						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						36		37						40		
Capacity, c (veh/h)						168		488						648		
v/c Ratio						0.22		0.08						0.06		
95% Queue Length, Q_{95} (veh)						0.8		0.2						0.2		
Control Delay (s/veh)						32.3		13.0						10.9		
Level of Service (LOS)						D		B						B		
Approach Delay (s/veh)						22.5								0.3		
Approach LOS						C								A		

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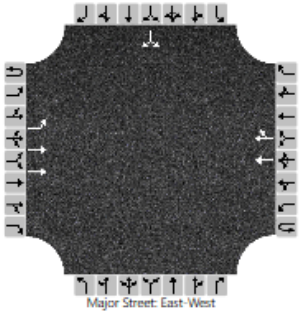
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Outer Loop at Carol Ave
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Outer Loop
Analysis Year	2023	North/South Street	Carol Ave
Time Analyzed	AM Peak	Peak Hour Factor	0.89
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	12	674				618	6						1		3
Percent Heavy Vehicles (%)	0	8												0		33
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.26												6.80		7.56
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.28												3.50		3.63

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13													4	
Capacity, c (veh/h)		853													481	
v/c Ratio		0.02													0.01	
95% Queue Length, Q_{95} (veh)		0.0													0.0	
Control Delay (s/veh)		9.3													12.6	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	0.2												12.6			
Approach LOS	A												B			

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Carol AM 23.xtw
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HCS Two-Way Stop-Control Report

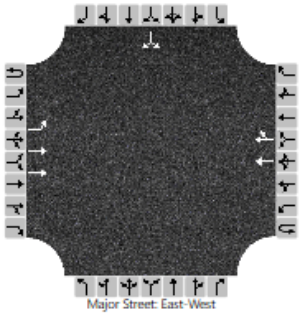
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2025
Time Analyzed	AM Peak No Build
Intersection Orientation	East-West
Project Description	Okolona Center

Site Information

Intersection	Outer Loop at Carol Ave
Jurisdiction	
East/West Street	Outer Loop
North/South Street	Carol Ave
Peak Hour Factor	0.89
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	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	12	681				624	6						1		3
Percent Heavy Vehicles (%)	0	8												0		33
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.26												6.80		7.56
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.28												3.50		3.63

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		13													4	
Capacity, c (veh/h)		848													478	
v/c Ratio		0.02													0.01	
95% Queue Length, Q_{95} (veh)		0.0													0.0	
Control Delay (s/veh)		9.3													12.6	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	0.2												12.6			
Approach LOS	A												B			

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Carol AM 25 NB.xtw

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HCS Two-Way Stop-Control Report

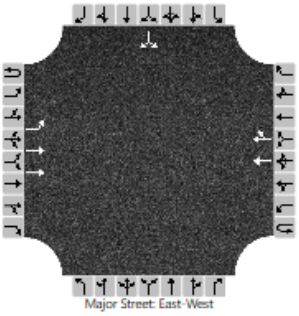
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2025
Time Analyzed	AM Peak Build
Intersection Orientation	East-West
Project Description	Okolona Center

Site Information

Intersection	Outer Loop at Carol Ave
Jurisdiction	
East/West Street	Outer Loop
North/South Street	Carol Ave
Peak Hour Factor	0.89
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	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	46	681				618	45						30		39
Percent Heavy Vehicles (%)	0	8												0		3
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.26												6.80		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.28												3.50		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		52													78	
Capacity, c (veh/h)		820													425	
v/c Ratio		0.06													0.18	
95% Queue Length, Q_{95} (veh)		0.2													0.7	
Control Delay (s/veh)		9.7													15.3	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)	0.6												15.3			
Approach LOS	A												C			

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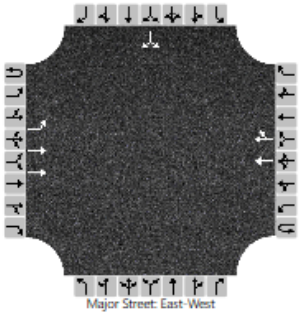
HCS Two-Way Stop-Control Report

General Information

Analyst	DBZ	Intersection	Outer Loop at Carol Ave
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Outer Loop
Analysis Year	2035	North/South Street	Carol Ave
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.89
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	13	716				656	6						1		3
Percent Heavy Vehicles (%)	0	8												0		33
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.26												6.80		7.56
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.28												3.50		3.63

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		15													4	
Capacity, c (veh/h)		821													460	
v/c Ratio		0.02													0.01	
95% Queue Length, Q_{95} (veh)		0.1													0.0	
Control Delay (s/veh)		9.5													12.9	
Level of Service (LOS)		A													B	
Approach Delay (s/veh)	0.2												12.9			
Approach LOS	A												B			

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Carol AM 35 NB.xtw

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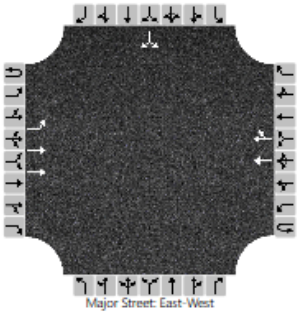
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Outer Loop at Carol Ave
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Outer Loop
Analysis Year	2035	North/South Street	Carol Ave
Time Analyzed	AM Peak Build	Peak Hour Factor	0.89
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	47	716				650	45						30		39
Percent Heavy Vehicles (%)	0	8												0		3
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage			Left Only								1					

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.26												6.80		6.96
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.28												3.50		3.33

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		53													78	
Capacity, c (veh/h)		794													408	
v/c Ratio		0.07													0.19	
95% Queue Length, Q_{95} (veh)		0.2													0.7	
Control Delay (s/veh)		9.9													15.9	
Level of Service (LOS)		A													C	
Approach Delay (s/veh)		0.6												15.9		
Approach LOS		A												C		

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Carol AM 35 B.xtw

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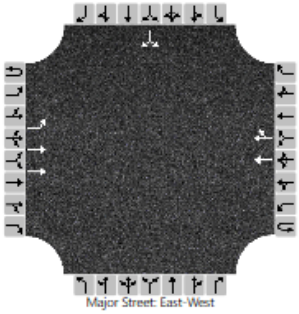
HCS Two-Way Stop-Control Report

General Information

Analyst	DBZ	Intersection	Outer Loop at Carol Ave
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Outer Loop
Analysis Year	2023	North/South Street	Carol Ave
Time Analyzed	PM Peak	Peak Hour Factor	0.96
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	5	1435				1253	14						7		4
Percent Heavy Vehicles (%)	0	0												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												6.80		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5													11	
Capacity, c (veh/h)		530													196	
v/c Ratio		0.01													0.06	
95% Queue Length, Q_{95} (veh)		0.0													0.2	
Control Delay (s/veh)		11.9													24.5	
Level of Service (LOS)		B													C	
Approach Delay (s/veh)	0.0												24.5			
Approach LOS	A												C			

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HCS Two-Way Stop-Control Report

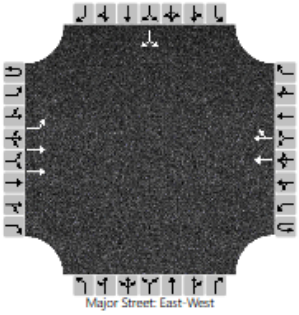
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2025
Time Analyzed	PM Peak No Build
Intersection Orientation	East-West
Project Description	Okolona Center

Site Information

Intersection	Outer Loop at Carol Ave
Jurisdiction	
East/West Street	Outer Loop
North/South Street	Carol Ave
Peak Hour Factor	0.96
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	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	5	1449				1266	14						7		4
Percent Heavy Vehicles (%)	0	0												0		0
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												6.80		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5													11	
Capacity, c (veh/h)		524													193	
v/c Ratio		0.01													0.06	
95% Queue Length, Q_{95} (veh)		0.0													0.2	
Control Delay (s/veh)		11.9													24.8	
Level of Service (LOS)		B													C	
Approach Delay (s/veh)	0.0												24.8			
Approach LOS	A												C			

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Carol PM 25 NB.xtw

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HCS Two-Way Stop-Control Report

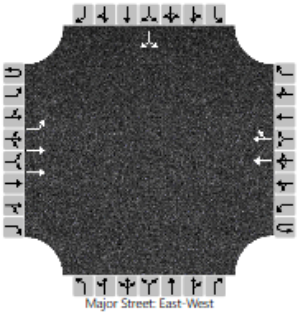
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2025
Time Analyzed	PM Peak Build
Intersection Orientation	East-West
Project Description	Okolona Center

Site Information

Intersection	Outer Loop at Carol Ave
Jurisdiction	
East/West Street	Outer Loop
North/South Street	Carol Ave
Peak Hour Factor	0.96
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	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	40	1449				1259	57						40		44
Percent Heavy Vehicles (%)	0	0												0		0
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												6.80		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		42													88	
Capacity, c (veh/h)		507													208	
v/c Ratio		0.08													0.42	
95% Queue Length, Q_{95} (veh)		0.3													1.9	
Control Delay (s/veh)		12.7													34.2	
Level of Service (LOS)		B													D	
Approach Delay (s/veh)	0.3												34.2			
Approach LOS	A												D			

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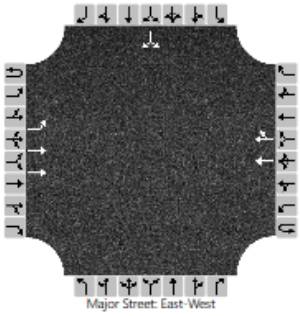
HCS Two-Way Stop-Control Report

General Information

Analyst	DBZ	Intersection	Outer Loop at Carol Ave
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC	Jurisdiction	
Date Performed	5/23/2023	East/West Street	Outer Loop
Analysis Year	2035	North/South Street	Carol Ave
Time Analyzed	PM Peak No Build	Peak Hour Factor	0.96
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Okolona Center		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	5	1523				1289	15						7		4
Percent Heavy Vehicles (%)	0	0												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage	Left Only								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												6.80		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		5													11	
Capacity, c (veh/h)		513													186	
v/c Ratio		0.01													0.06	
95% Queue Length, Q_{95} (veh)		0.0													0.2	
Control Delay (s/veh)		12.1													25.6	
Level of Service (LOS)		B													D	
Approach Delay (s/veh)	0.0												25.6			
Approach LOS	A												D			

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HCS Two-Way Stop-Control Report

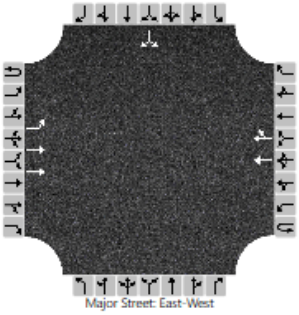
General Information

Analyst	DBZ
Agency/Co.	Diane B. Zimmerman Traffic Engineering LLC
Date Performed	5/23/2023
Analysis Year	2035
Time Analyzed	PM Peak Build
Intersection Orientation	East-West
Project Description	Okolona Center

Site Information

Intersection	Outer Loop at Carol Ave
Jurisdiction	
East/West Street	Outer Loop
North/South Street	Carol Ave
Peak Hour Factor	0.96
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	1	2	0	0	0	2	0		0	0	0		0	1	0
Configuration		L	T				T	TR							LR	
Volume (veh/h)	0	40	1523				1282	58						40		44
Percent Heavy Vehicles (%)	0	0												0		0
Proportion Time Blocked																
Percent Grade (%)														0		
Right Turn Channelized																
Median Type | Storage			Left Only								1					

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1												7.5		6.9
Critical Headway (sec)		4.10												6.80		6.90
Base Follow-Up Headway (sec)		2.2												3.5		3.3
Follow-Up Headway (sec)		2.20												3.50		3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		42													88	
Capacity, c (veh/h)		496													201	
v/c Ratio		0.08													0.44	
95% Queue Length, Q_{95} (veh)		0.3													2.0	
Control Delay (s/veh)		12.9													36.0	
Level of Service (LOS)		B													E	
Approach Delay (s/veh)		0.3												36.0		
Approach LOS		A												E		

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Outer Loop Entrance

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	43	Speed Limit (mph)	45
Advancing Volume (vph)	1360		

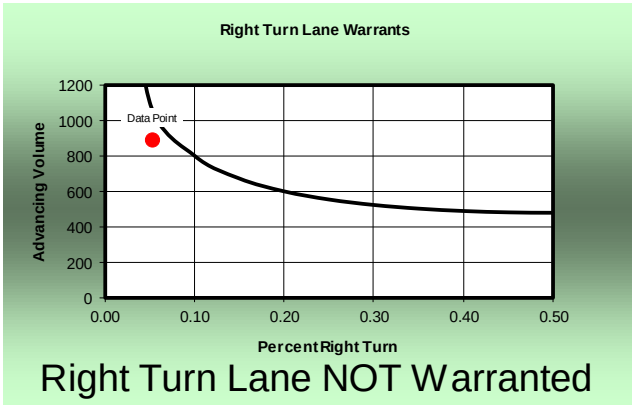
Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Preston Highway Entrance

Right Turn Lane Warrants

Input Fields

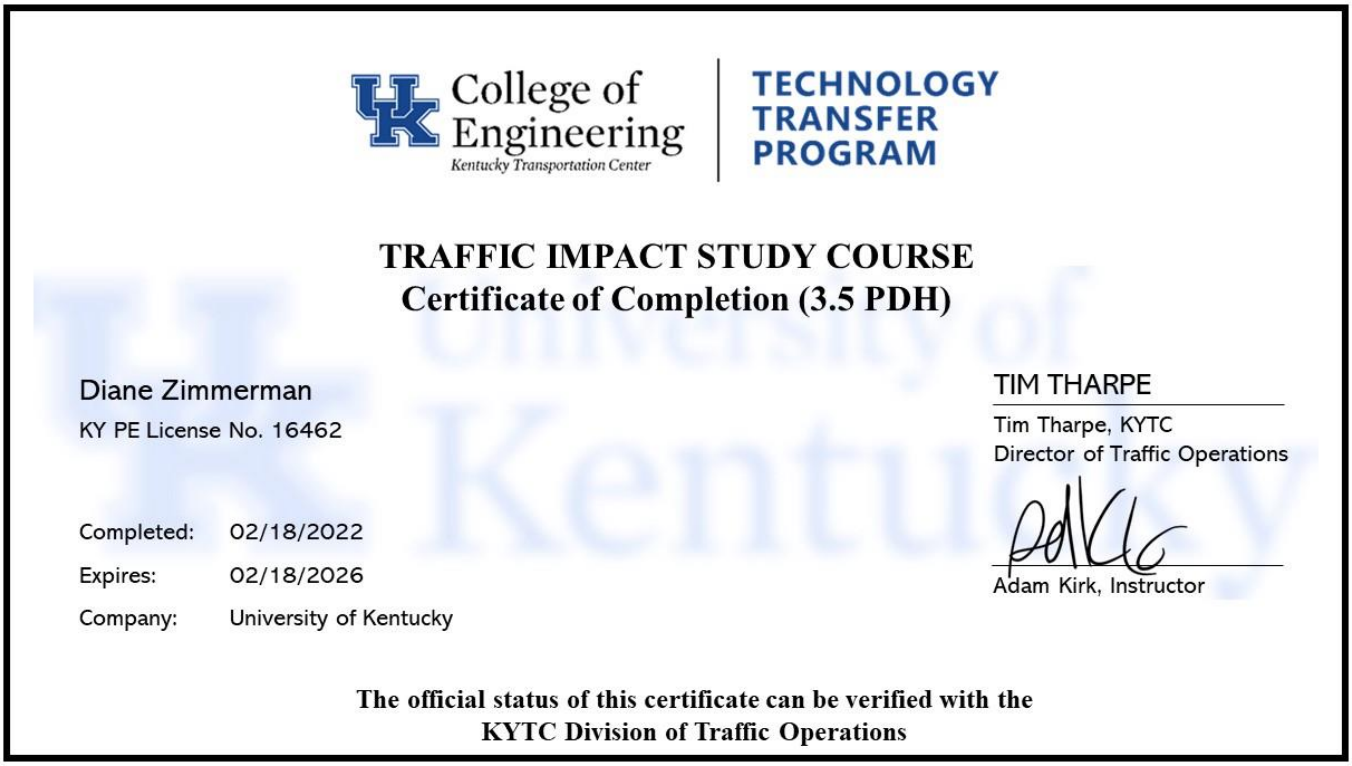
Right Turn Volume (vph)	47	Speed Limit (mph)	45
Advancing Volume (vph)	892		



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: 02/18/2022
Expires: 02/18/2026
Company: University of Kentucky

TIM THARPE
Tim Tharpe, KYTC
Director of Traffic Operations

Adam Kirk, Instructor

The official status of this certificate can be verified with the KYTC Division of Traffic Operations