final report

June 20, 2022

Traffic Impact Study

Bull Run Townhomes
Herr Lane (KY 2050)
Louisville, KY

Prepared for

Louisville Metro Planning Commission
Kentucky Transportation Cabinet

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INTRODUCTION

The development plan for Bull Run Townhomes on Herr Lane shows 72 townhome units. **Figure 1** displays a map of the site. Access to the development will be on Herr Lane opposite Wesboro Road. This is a shared entrance with Providence Point. 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 Herr Lane intersection with Brownsboro Road and the proposed entrance. The entrance on Herr Lane reflects the improvements agreed to with Providence Point –left turn lanes at Wesboro Road.

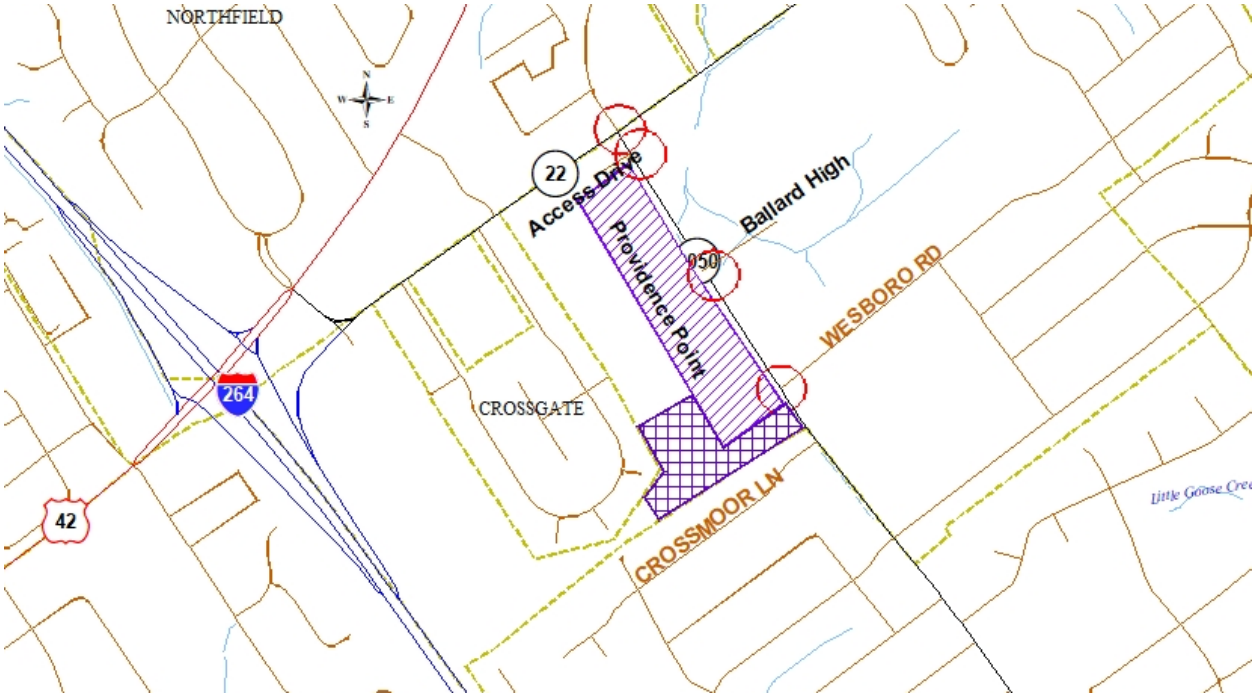

Figure 1. Site Map

EXISTING CONDITIONS

Herr Lane, KY 2050, is a state-maintained road with an estimated 2022 ADT of 11,500 vehicles per day between Brownsboro Road and Westport Road, as provided by the Kentucky Transportation Cabinet at station 195. The road is a two-lane highway with eleven-foot lanes, a five-foot shoulder (provided by the Kentucky Transportation Cabinet). The speed limit is 35 mph. There is a sidewalk on the east side of Herr Lane. The intersection with Brownsboro Road is controlled with a traffic signal. There are left turn lanes on all approaches. The eastbound and southbound approaches also have a right turn lane. TARC provides service along Herr Lane.

Peak hour traffic count for the intersections were obtained on Wednesday, August 21, 2019. The peak hours varied between the intersections. **Figure 2** illustrates the existing a.m. and p.m. peak hour traffic volumes. The Appendix contains the full count data.

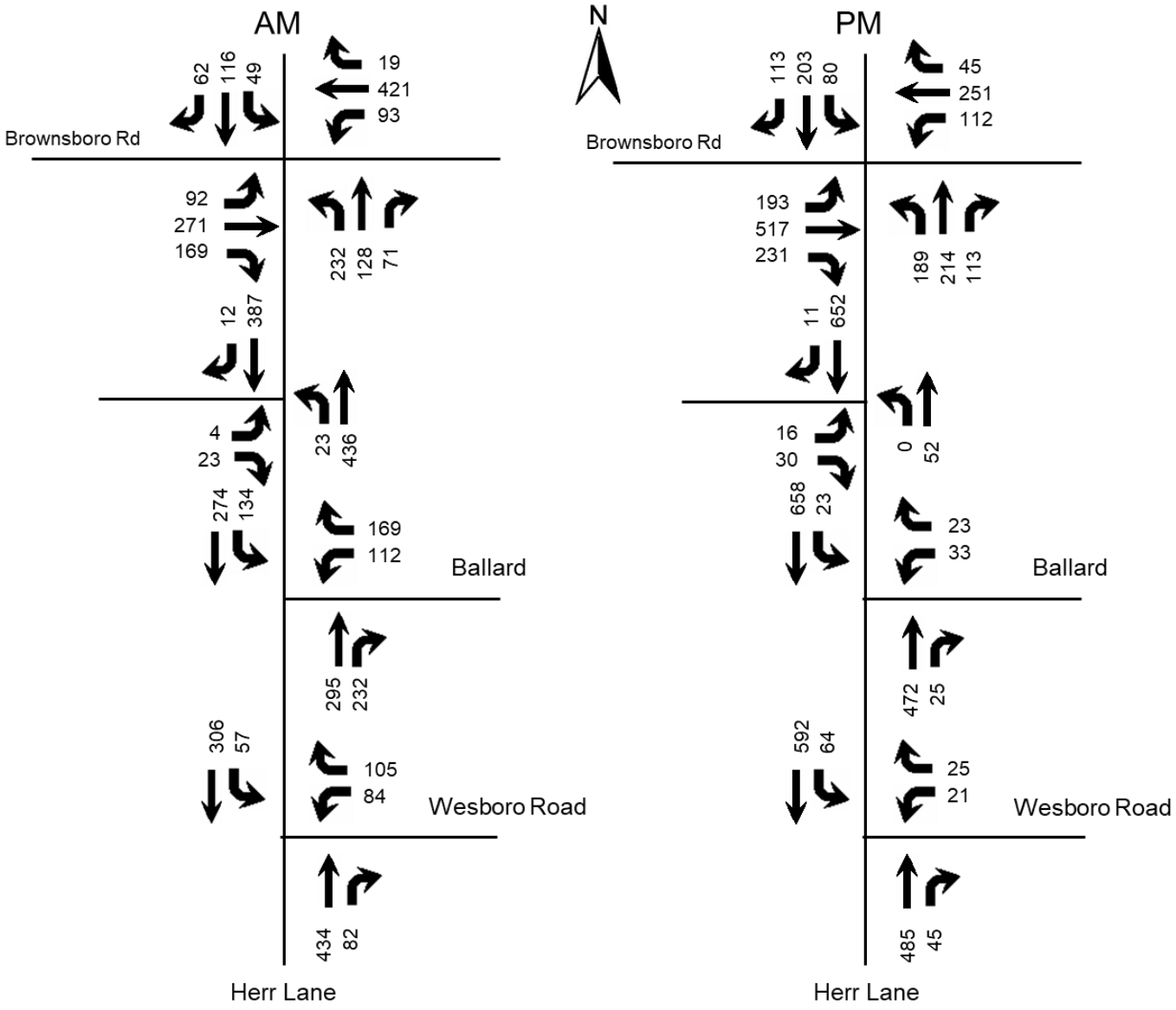

Figure 2. Existing Peak Hour Volumes

FUTURE CONDITIONS

The project completion date is 2025. An annual growth rate of 0.5 percent was applied to the 2020 thru volumes on Herr Lane and all of Brownsboro Road. This was determined by the historical growth at KYTC station 195 and 196. Additionally, trip generation for the proposed Veterans Administration hospital and Providence Point has been included. The trip generation and distribution for the Veterans Administration hospital are from the October 2016 traffic impact study for the site. **Figure 3** displays the 2025 No Build peak hour volumes. These are the Build volumes from the Providence Point traffic impact study dated October 30, 2020.

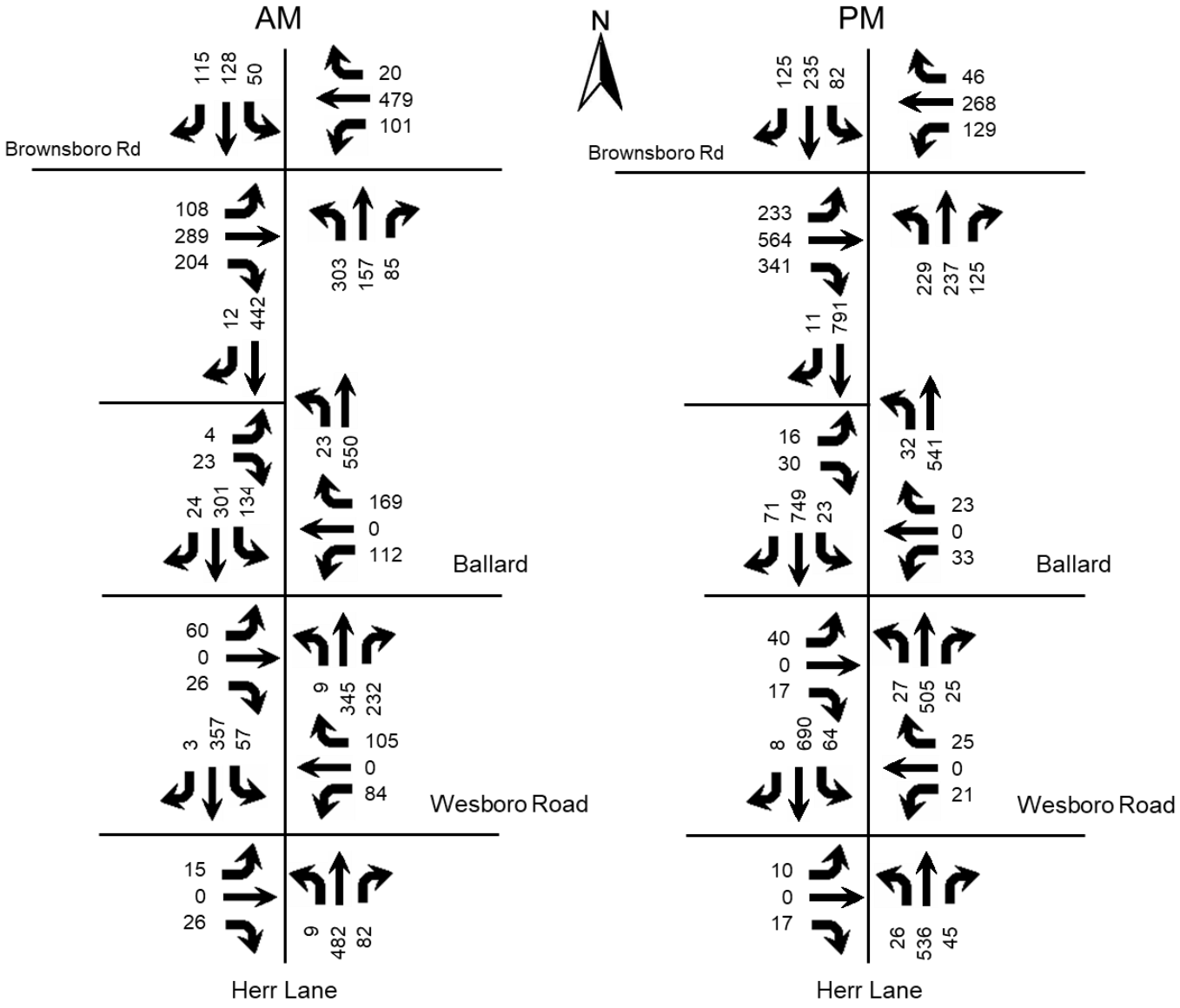

Figure 3. 2025 No Build Peak Hour Volumes

TRIP GENERATION

The Institute of Transportation Engineers Trip Generation Manual, 10th Edition contains trip generation rates for a wide range of developments. The land use of "Multi-family (Low-Rise) (220)" was reviewed and determined to be the best match. The trip generation results are listed in **Table 1**. The trips were assigned to the highway network with the percentages shown in **Figure 4**. **Figure 5** shows the trips generated by this development and distributed throughout the road network during the peak hours. **Figure 6** displays the individual turning movements for the peak hours when the development is completed.

Table 1. Peak Hour Trips Generated by Site

	A.M. Peak Hour			P.M. Peak Hour		
Land Use	**Trips**	**In**	**Out**	**Trips**	**In**	**Out**
Multi-family (Low-Rise) 72 units	45	11	34	52	33	19

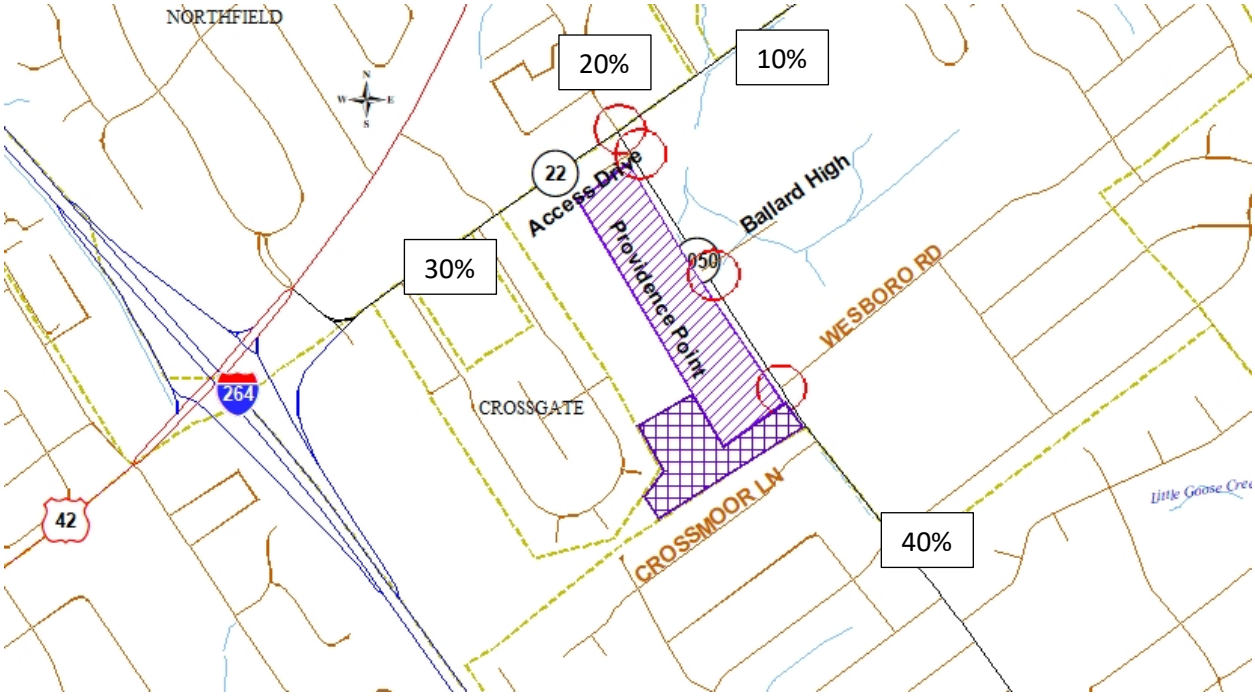

Figure 4. Trip Distribution Percentages

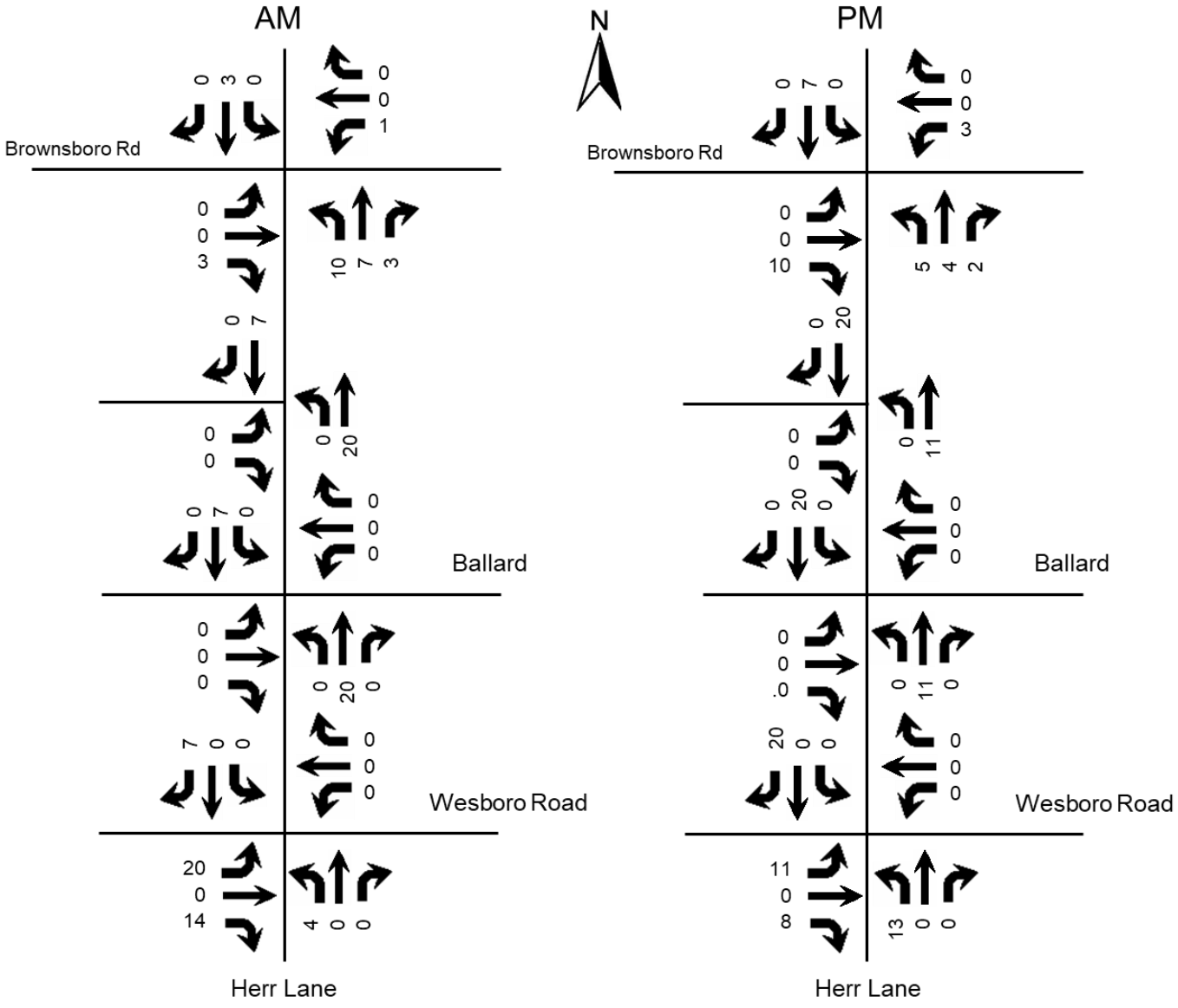

Figure 5. Peak Hour Trips Generated by Site

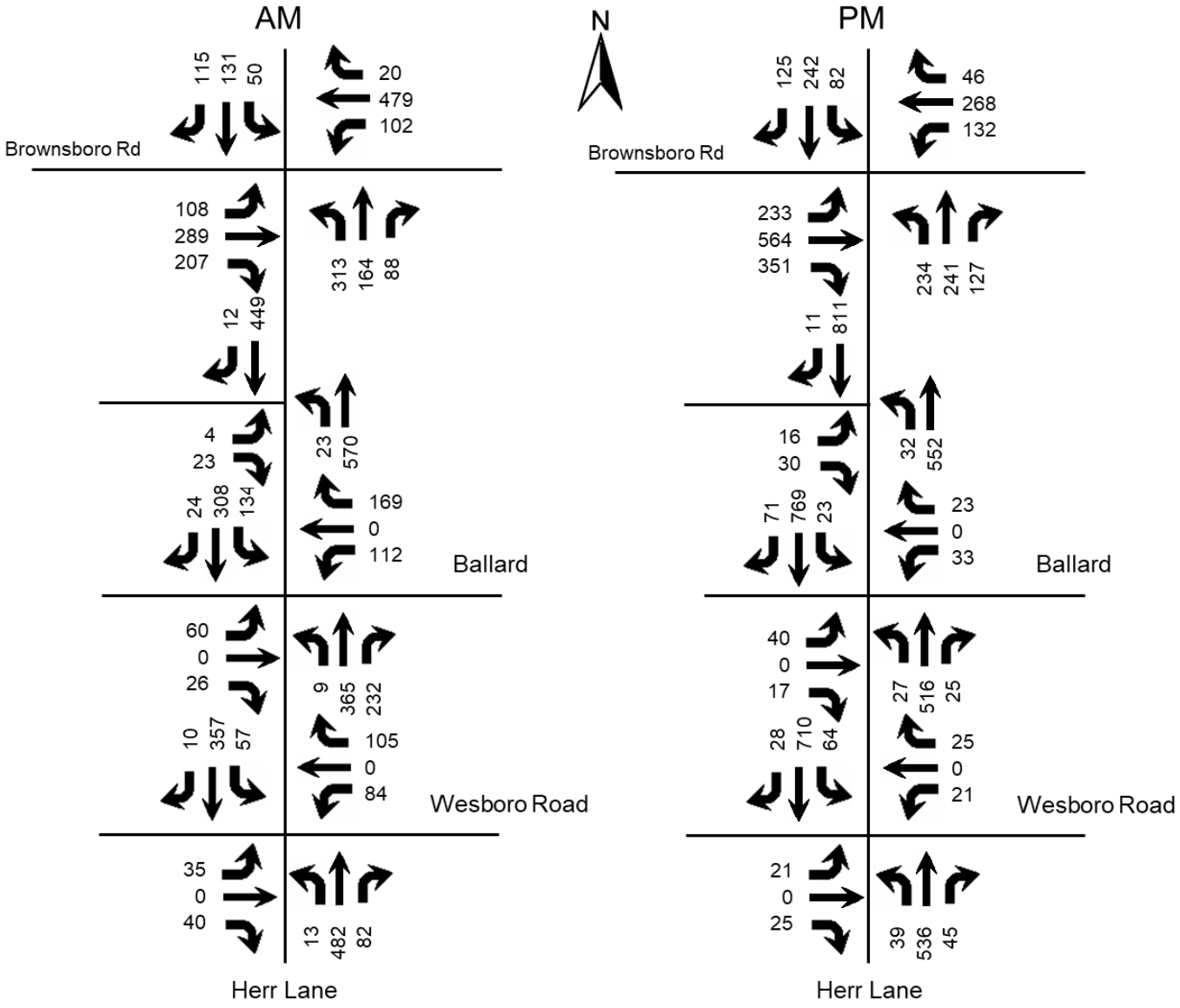

Figure 6. 2025 Build Peak Hour Volumes

ANALYSIS

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

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 Two-Way Stop Control (version 2022) software. The delays and Level of Service are summarized in **Table 2**.

The Build scenarios include left and right turn lanes at the entrance opposite Ballard High School, as well as widening the Ballard driveway to accommodate two exit lanes (a shared left/thru and a right). A two-way left turn lane will be constructed between Ballard and Wesboro Road. The Providence Point approved plan includes a traffic signal at the entrance opposite Ballard.

Table 2. Peak Hour Level of Service

	A.M.			P.M.		
Approach	2019 Existing	2025 No Build	2025 Build	2019 Existing	2025 No Build	2025 Build
Herr Lane at Brownsboro Road	**C 30.7**	**D 39.5**	**D 40.6**	**D 40.9**	**E 56.5**	**E 58.8**
Brownsboro Road Eastbound	C 23.0	C 28.1	C 28.9	D 35.2	D 46.5	D 48.1
Brownsboro Road Westbound	C 29.5	D 38.7	D 39.8	C 32.6	D 41.3	D 42.8
Herr Lane Northbound	D 36.0	D 45.4	D 46.5	D 50.9	E 74.2	E 77.8
Lime Kiln Southbound	D 40.8	D 52.6	D 53.8	D 52.6	E 77.4	F 80.0
Herr Lane at Access Road						
Access Road Eastbound	B 11.6	B 12.3	B 12.4	C 15.1	C 17.5	C 17.8
Herr Lane Northbound (left)	A 8.3	A 8.4	A 8.5	A 9.1	A 9.6	A 9.7
Herr Lane at Ballard High		**B 15.7**	**B 15.5**		**A 7.0**	**A 7.0**
Development Entrance Eastbound		D 37.5	D 37.5		D 47.0	D 47.0
Ballard High Westbound	D 32.1	D 46.5	D 46.5	D 25.1	D 46.9	D 46.9
Herr Lane Northbound (left)		A 5.3	A 5.4		A 3.1	A 3.2
Herr Lane Southbound (left)	A 9.3	A 5.9	A 6.0	A 8.6	A 4.1	A 4.3
Herr Lane at Wesboro Road						
Development Entrance Eastbound		C 18.1	C 21.1		C 18.7	C 21.5
Wesboro Road Westbound	D 27.2	C 21.1	C 20.4	C 16.9	B 14.7	C 16.4
Herr Lane Northbound (left)		A 8.2	A 8.3		A 9.3	A 9.4
Herr Lane Southbound (left)	A 9.8	B 10.1	B 10.1	A 8.8	A 9.0	A 9.0

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 opening date, or 2035. The 2035 volumes were determined applying a 0.5 percent annual growth rate from 2025. Figure 7 illustrates the 2035 No Build volumes. Figure 8 illustrates the 2035 Build Volumes. Using the volumes in Figure 8, left turn lanes will be required at the entrances opposite Ballard High and Wesboro Road. Table 3 summarizes the delay and Level of Service for 2035.

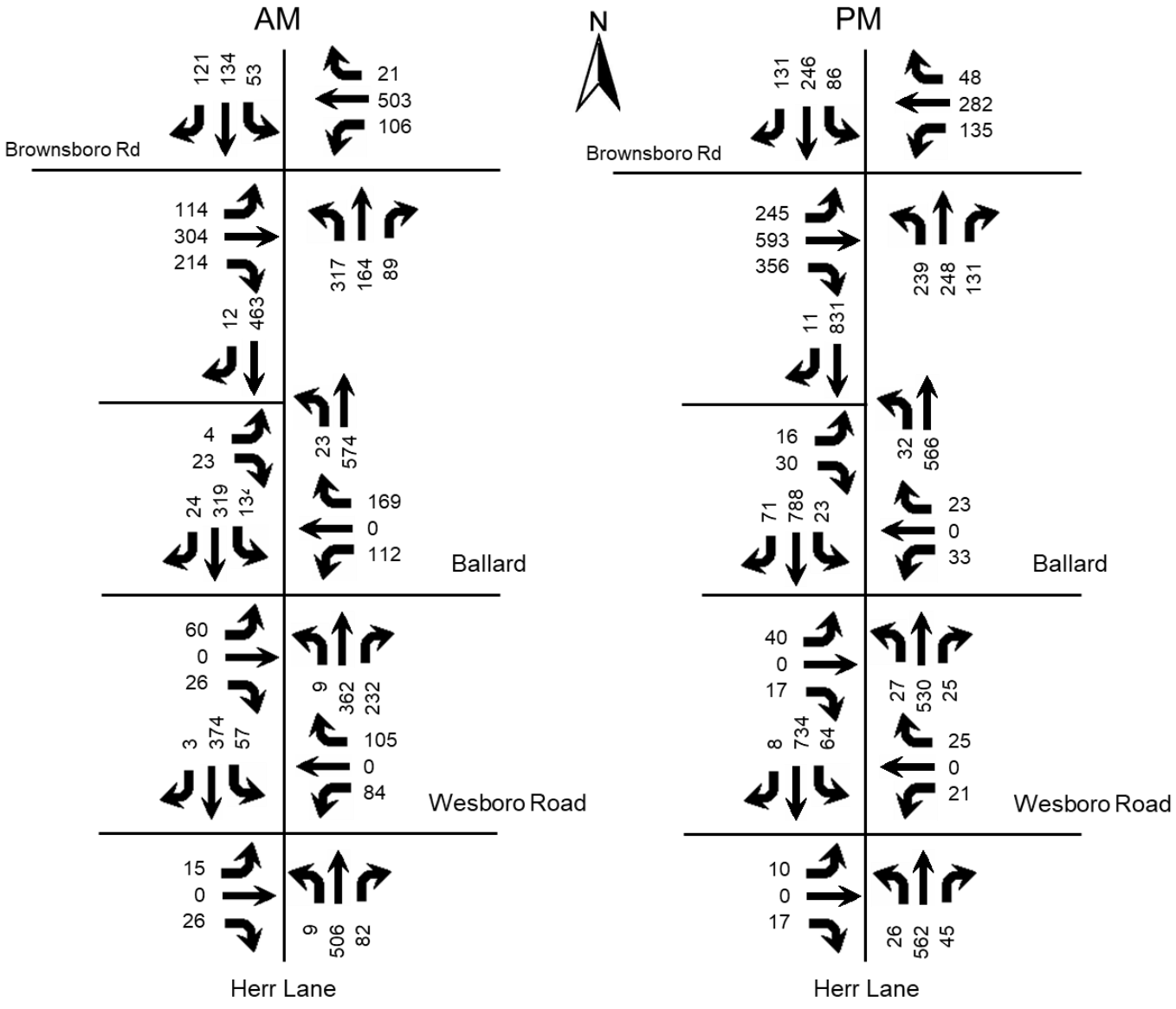

Figure 7. 2035 No Build Peak Hour Volumes

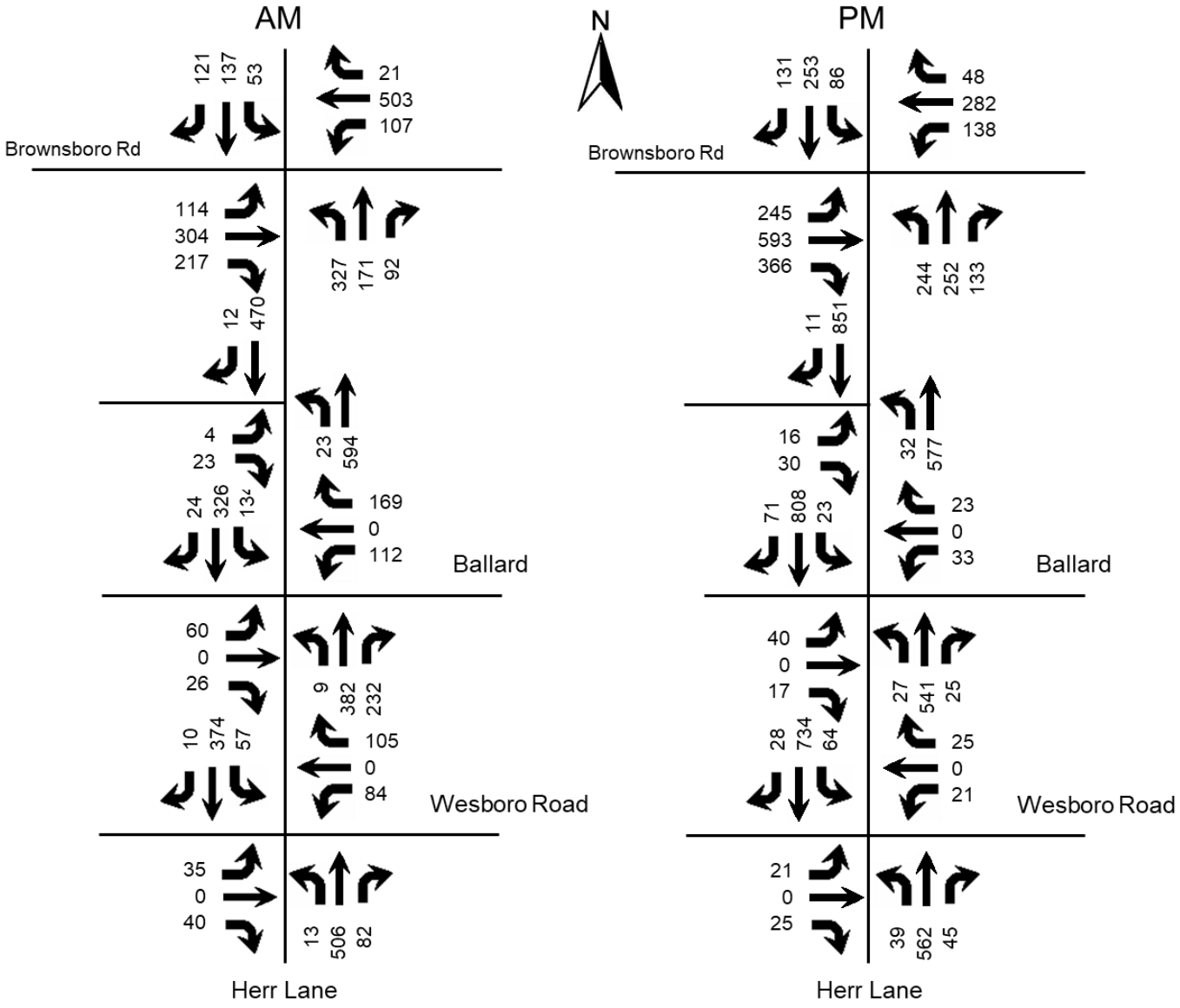

Figure 8. 2035 Build Peak Hour Volumes

Table 3. Peak Hour Level of Service (2035)

	A.M.			P.M.		
Approach	2019 Existing	2035 No Build	2035 Build	2019 Existing	2035 No Build	2035 Build
Herr Lane at Brownsboro Road	**C 30.7**	**D 43.3**	**D 44.7**	**D 40.9**	**E 62.7**	**E 65.8**
Brownsboro Road Eastbound	C 23.0	C 30.0	C 30.9	D 35.2	E 56.3	E 62.8
Brownsboro Road Westbound	C 29.5	D 42.7	D 44.1	C 32.6	D 47.4	D 45.5
Herr Lane Northbound	D 36.3	D 50.5	D 52.2	D 50.9	E 77.7	E 78.1
Lime Kiln Southbound	D 40.8	D 57.2	E 58.4	D 52.6	E 77.2	E 79.6
Herr Lane at Access Road						
Access Road Eastbound	B 11.6	B 12.5	B 12.6	C 15.1	C 18.2	C 18.7
Herr Lane Northbound (left)	A 8.3	A 8.5	A 8.5	A 9.1	A 9.8	A 9.9
Herr Lane at Ballard High		**B 15.5**	**B 15.4**		**A** 7.0	**A** 7.1
Development Entrance Eastbound		D 37.5	D 37.5		D 47.0	D 47.0
Ballard High Westbound	D 32.1	D 46.5	D 46.5	D 25.1	D 46.9	D 46.9
Herr Lane Northbound (left)		A 5.4	A 5.4		A 3.2	A 3.3
Herr Lane Southbound (left)	A 9.3	A 6.0	A 6.1	A 8.6	A 4.4	A 4.6
Herr Lane at Wesboro Road						
Development Entrance Eastbound		C 18.9	C 22.4		C 19.7	C 22.8
Wesboro Road Westbound	D 27.2	C 22.6	C 21.8	C 16.9	C 15.5	C 17.4
Herr Lane Northbound (left)		A 8.3	A 8.3		A 9.4	A 9.6
Herr Lane Southbound (left)	A 9.8	B 10.2	B 10.2	A 8.8	A 9.1	A 9.1

Key: Level of Service, Delay in seconds per vehicle

CONCLUSIONS

Based upon the volume of traffic generated by the development and the amount of traffic forecasted for the year 2025 and 2035, there will be an impact to the existing highway network. The improvements required of Providence Point will be sufficient to handle the traffic generated by Bull Run Townhomes. The 2035 PM Build results reflect a

modification to the signal timing to allow more green time on Herr Lane at Brownsboro Road. If Bull Run Townhomes proceeds to construction before Providence Point, the improvements shown on Herr Lane at the entrance opposite Wesboro Road will be constructed and are sufficient for traffic generated by this development. No additional improvements are needed as a result of this development.

APPENDIX

Traffic Counts

Louisville, KY
Classified Turn Movement Count

Site 1 of 4
Lime Kiln Ln
SR-22 Brownsboro Rd (East)
Herr Ln
SR-22 Brownsboro Rd (West)

Lat/Long
38.283890°, -85.627964°

Weather
Mostly Cloudy
83°F

Date
Wednesday, August 21, 2019

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

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	Southbound						Westbound						Northbound						Eastbound						
	Lime Kiln Ln						SR-22 Brownsboro Rd (East)						Herr Ln						SR-22 Brownsboro Rd (West)						
	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	U-Turn	Left	Thru	Right	Peds	App	Int
0700 - 0715	0	6	14	5	2	27	0	29	71	1	5	106	0	57	17	12	11	97	0	8	125	64	2	199	429
0715 - 0730	0	35	33	17	1	86	0	15	72	3	8	98	0	72	18	13	37	140	0	14	119	70	2	205	529
0730 - 0745	0	6	29	21	0	56	0	15	120	6	0	141	0	82	33	29	7	151	0	15	57	33	0	105	453
0745 - 0800	0	2	24	13	1	40	0	31	95	5	1	132	0	43	41	18	2	104	0	36	39	31	1	107	383
0800 - 0815	0	6	30	11	0	47	0	32	134	5	1	172	0	35	36	11	5	87	0	27	56	35	0	118	424
0815 - 0830	0	2	37	15	0	54	0	41	90	6	0	137	0	36	24	10	0	70	0	32	54	47	0	133	394
0830 - 0845	0	3	34	19	0	56	0	33	93	5	1	132	0	37	24	7	0	68	0	21	42	41	0	104	360
0845 - 0900	0	7	33	22	0	62	0	31	91	11	0	133	0	72	35	25	0	132	0	34	58	47	0	139	466
1600 - 1615	0	13	50	26	1	90	0	32	84	12	1	129	0	56	49	33	1	139	0	54	154	76	0	284	642
1615 - 1630	0	20	58	41	0	119	0	23	61	11	0	95	0	51	55	24	1	131	0	61	136	58	1	256	601
1630 - 1645	0	21	60	25	0	106	0	26	52	11	0	89	0	43	54	24	3	124	0	43	127	50	0	220	539
1645 - 1700	0	26	35	21	0	82	0	31	54	11	0	96	0	34	56	32	0	122	0	35	100	47	0	182	482
1700 - 1715	0	15	67	36	4	122	0	26	58	7	5	96	0	38	43	21	8	110	0	29	103	72	0	204	532
1715 - 1730	0	13	60	26	1	100	0	33	70	9	2	114	0	49	72	32	9	162	0	23	97	67	1	188	564
1730 - 1745	0	13	55	27	1	96	0	37	66	6	1	110	0	51	53	26	1	131	0	27	110	58	0	195	532
1745 - 1800	0	16	76	22	0	114	0	36	54	10	0	100	0	46	42	8	0	96	0	22	91	61	0	174	484

0715 - 0730	0	35	33	17	1	86	0	15	72	3	8	98	0	72	18	13	37	140	0	14	119	70	2	205	529
0730 - 0745	0	6	29	21	0	56	0	15	120	6	0	141	0	82	33	29	7	151	0	15	57	33	0	105	453
0745 - 0800	0	2	24	13	1	40	0	31	95	5	1	132	0	43	41	18	2	104	0	36	39	31	1	107	383
0800 - 0815	0	6	30	11	0	47	0	32	134	5	1	172	0	35	36	11	5	87	0	27	56	35	0	118	424
AM PEAK	**0**	**49**	**116**	**62**	**2**	**229**	**0**	**93**	**421**	**19**	**10**	**543**	**0**	**232**	**128**	**71**	**51**	**482**	**0**	**92**	**271**	**169**	**3**	**535**	**1789**
1600 - 1615	0	13	50	26	1	90	0	32	84	12	1	129	0	56	49	33	1	139	0	54	154	76	0	284	642
1615 - 1630	0	20	58	41	0	119	0	23	61	11	0	95	0	51	55	24	1	131	0	61	136	58	1	256	601
1630 - 1645	0	21	60	25	0	106	0	26	52	11	0	89	0	43	54	24	3	124	0	43	127	50	0	220	539
1645 - 1700	0	26	35	21	0	82	0	31	54	11	0	96	0	34	56	32	0	122	0	35	100	47	0	182	482
PM PEAK	**0**	**80**	**203**	**113**	**1**	**397**	**0**	**112**	**251**	**45**	**1**	**409**	**0**	**184**	**214**	**113**	**5**	**516**	**0**	**193**	**517**	**231**	**1**	**942**	**2264**

Louisville, KY
Classified Turn Movement Count

Site 2 of 4
Herr Ln (North)

Herr Ln (South)
Local Access

Lat/Long
38.283288°, -85.627485°

Marr Traffic
Transportation Data Collection

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

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1 (800) 615-3765

Date
Wednesday, August 21, 2019

Weather
Mostly Cloudy
83°F

	Southbound					Northbound					Eastbound					
	Herr Ln (North)					Herr Ln (South)					Local Access					
	U-Turn	Thru	Right	Peds	App	U-Turn	Left	Thru	Peds	App	U-Turn	Left	Right	Peds	App	Int
0700 - 0715	0	112	3	0	115	0	4	90	0	94	0	0	4	0	4	213
0715 - 0730	0	106	3	0	109	0	4	100	0	104	0	1	9	0	10	223
0730 - 0745	0	83	4	0	87	0	8	146	0	154	0	0	6	0	6	247
0745 - 0800	0	86	2	0	88	0	7	100	0	107	0	3	4	0	7	202
0800 - 0815	0	88	5	0	93	0	8	87	0	95	0	1	7	0	8	196
0815 - 0830	0	125	4	0	129	0	3	63	0	66	0	3	4	0	7	202
0830 - 0845	0	100	3	0	103	0	5	74	0	79	0	1	5	0	6	188
0845 - 0900	0	111	2	0	113	0	13	124	0	137	0	1	7	0	8	258
1600 - 1615	0	153	6	0	159	0	9	143	0	152	0	6	15	0	21	332
1615 - 1630	0	139	7	0	146	0	5	133	0	138	0	4	13	0	17	301
1630 - 1645	0	131	7	0	138	0	6	113	1	120	0	2	11	1	14	272
1645 - 1700	0	114	2	0	116	0	6	131	0	137	0	3	2	0	5	258
1700 - 1715	0	169	1	0	170	0	10	110	0	120	0	3	7	0	10	300
1715 - 1730	0	159	5	0	164	0	4	137	0	141	0	1	6	0	7	312
1730 - 1745	0	150	3	0	153	0	11	122	0	133	0	10	8	0	18	304
1745 - 1800	0	174	2	0	176	0	7	99	0	106	0	2	9	0	11	293

0700 - 0715	0	112	3	0	115	0	4	90	0	94	0	0	4	0	4	213
0715 - 0730	0	106	3	0	109	0	4	100	0	104	0	1	9	0	10	223
0730 - 0745	0	83	4	0	87	0	8	146	0	154	0	0	6	0	6	247
0745 - 0800	0	86	2	0	88	0	7	100	0	107	0	3	4	0	7	202
AM PEAK	**0**	**387**	**12**	**0**	**399**	**0**	**23**	**436**	**0**	**459**	**0**	**4**	**23**	**0**	**27**	**885**
1700 - 1715	0	169	1	0	170	0	10	110	0	120	0	3	7	0	10	300
1715 - 1730	0	159	5	0	164	0	4	137	0	141	0	1	6	0	7	312
1730 - 1745	0	150	3	0	153	0	11	122	0	133	0	10	8	0	18	304
1745 - 1800	0	174	2	0	176	0	7	99	0	106	0	2	9	0	11	293
PM PEAK	**0**	**652**	**11**	**0**	**663**	**0**	**32**	**468**	**0**	**500**	**0**	**16**	**30**	**0**	**46**	**1209**

Louisville, KY
Classified Turn Movement Count

Site 3 of 4
Herr Ln (North)
Local Access
Herr Ln (South)

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1 (800) 615-3765

Lat/Long
38.281641°, -85.626151°

Weather
Mostly Cloudy
83°F

Date
Wednesday, August 21, 2019

	Southbound					Westbound					Northbound					
	Herr Ln (North)					Ballard High School					Herr Ln (South)					
	U-Turn	Left	Thru	Peds	App	U-Turn	Left	Right	Peds	App	U-Turn	Thru	Right	Peds	App	Int
0700 - 0715	0	51	62	0	113	0	33	52	5	90	0	49	90	0	139	342
0715 - 0730	0	42	58	0	100	0	37	64	4	105	0	34	97	0	131	336
0730 - 0745	0	30	76	0	106	0	39	45	4	88	0	112	39	0	151	345
0745 - 0800	0	11	78	0	89	0	3	8	0	11	0	100	6	0	106	206
0800 - 0815	0	4	91	0	95	0	6	6	1	13	0	85	1	0	86	194
0815 - 0830	0	1	129	0	130	0	1	0	2	3	0	69	0	0	69	202
0830 - 0845	0	3	100	0	103	0	1	3	0	4	0	90	0	0	90	197
0845 - 0900	0	3	118	0	121	0	1	1	0	2	0	119	2	0	121	244
1600 - 1615	0	12	155	0	167	0	9	9	0	18	0	144	10	0	154	339
1615 - 1630	1	6	143	0	150	0	9	13	1	23	0	133	4	0	137	310
1630 - 1645	0	5	127	0	132	0	5	0	0	5	0	121	7	0	128	265
1645 - 1700	1	2	125	0	128	0	2	5	2	9	0	122	10	0	132	269
1700 - 1715	1	2	168	0	171	0	5	5	0	10	0	113	4	0	117	298
1715 - 1730	0	11	159	0	170	0	15	11	0	26	0	142	12	0	154	350
1730 - 1745	0	5	156	0	161	0	7	6	0	13	0	116	5	0	121	295
1745 - 1800	0	4	175	0	179	0	6	1	0	7	0	101	4	0	105	291

0700 - 0715	0	51	62	0	113	0	33	52	5	90	0	49	90	0	139	342
0715 - 0730	0	42	58	0	100	0	37	64	4	105	0	34	97	0	131	336
0730 - 0745	0	30	76	0	106	0	39	45	4	88	0	112	39	0	151	345
0745 - 0800	0	11	78	0	89	0	3	8	0	11	0	100	6	0	106	206
AM PEAK	**0**	**134**	**274**	**0**	**408**	**0**	**112**	**169**	**13**	**294**	**0**	**295**	**232**	**0**	**527**	**1229**
1700 - 1715	1	2	168	0	171	0	5	5	0	10	0	113	4	0	117	298
1715 - 1730	0	11	159	0	170	0	15	11	0	26	0	142	12	0	154	350
1730 - 1745	0	5	156	0	161	0	7	6	0	13	0	116	5	0	121	295
1745 - 1800	0	4	175	0	179	0	6	1	0	7	0	101	4	0	105	291
PM PEAK	**1**	**22**	**658**	**0**	**681**	**0**	**33**	**23**	**0**	**56**	**0**	**472**	**25**	**0**	**497**	**1234**

Louisville, KY
Classified Turn Movement Count

Site 4 of 4
Herr Ln (North)
Wesboro Rd
Herr Ln (South)

Lat/Long
38.279709°, -85.624571°

Marr Traffic
Transportation Data Collection

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

hello@marrtraffic.com
www.marrtraffic.com

1 (800) 615-3765

Date
Wednesday, August 21, 2019

Weather
Mostly Cloudy
83°F

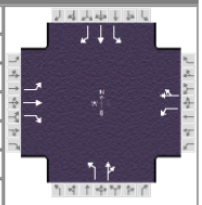
	Southbound					Westbound					Northbound					
	Herr Ln (North)					Wesboro Rd					Herr Ln (South)					
	U-Turn	Left	Thru	Peds	App	U-Turn	Left	Right	Peds	App	U-Turn	Thru	Right	Peds	App	Int
0700 - 0715	0	25	69	0	94	0	26	27	0	53	0	133	45	0	178	325
0715 - 0730	0	19	66	0	85	0	28	35	0	63	0	102	28	0	130	278
0730 - 0745	0	8	106	0	114	0	22	31	2	55	0	105	7	0	112	281
0745 - 0800	0	5	65	0	70	0	8	12	0	20	0	94	2	0	96	186
0800 - 0815	0	5	89	0	94	0	6	8	0	14	0	83	0	0	83	191
0815 - 0830	0	4	107	0	111	0	6	9	0	15	0	57	4	0	61	187
0830 - 0845	0	5	88	0	93	0	12	12	0	24	0	82	3	0	85	202
0845 - 0900	0	5	90	0	95	0	7	5	3	15	0	122	11	0	133	243
1600 - 1615	0	8	158	0	166	0	2	6	0	8	0	123	8	0	131	305
1615 - 1630	0	11	147	0	158	0	4	4	1	9	0	117	11	0	128	295
1630 - 1645	0	12	127	0	139	0	5	4	0	9	0	119	12	0	131	279
1645 - 1700	0	11	113	0	124	0	2	7	0	9	0	126	10	0	136	269
1700 - 1715	0	15	161	0	176	0	6	5	1	12	0	114	7	0	121	309
1715 - 1730	0	17	147	0	164	0	3	3	0	6	0	149	10	0	159	329
1730 - 1745	0	14	145	0	159	0	7	11	0	18	0	116	13	0	129	306
1745 - 1800	0	18	139	0	157	0	5	6	0	11	0	106	15	0	121	289

0700 - 0715	0	25	69	0	94	0	26	27	0	53	0	133	45	0	178	325
0715 - 0730	0	19	66	0	85	0	28	35	0	63	0	102	28	0	130	278
0730 - 0745	0	8	106	0	114	0	22	31	2	55	0	105	7	0	112	281
0745 - 0800	0	5	65	0	70	0	8	12	0	20	0	94	2	0	96	186
AM PEAK	**0**	**57**	**306**	**0**	**363**	**0**	**84**	**105**	**2**	**191**	**0**	**434**	**82**	**0**	**516**	**1070**
1700 - 1715	0	15	161	0	176	0	6	5	1	12	0	114	7	0	121	309
1715 - 1730	0	17	147	0	164	0	3	3	0	6	0	149	10	0	159	329
1730 - 1745	0	14	145	0	159	0	7	11	0	18	0	116	13	0	129	306
1745 - 1800	0	18	139	0	157	0	5	6	0	11	0	106	15	0	121	289
PM PEAK	**0**	**64**	**592**	**0**	**656**	**0**	**21**	**25**	**1**	**47**	**0**	**485**	**45**	**0**	**530**	**1233**

HCS Reports

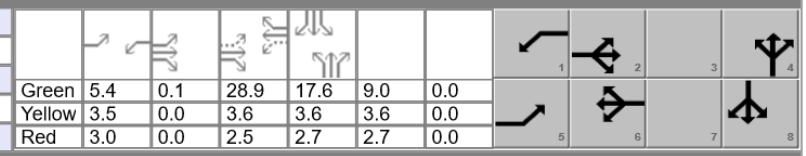
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Jul 23, 2020	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.85
Urban Street	Herr Lane	Analysis Year	2019	Analysis Period	1> 7:15
Intersection	Brownsboror Road	File Name	AM 19 Herr.xus		
Project Description	Providence Point				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	92	271	169	93	421	19	232	128	71	49	116	62

Signal Information			
Cycle, s	86.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off



	EB			WB			NB			SB		
Green	5.4	0.1		28.9	17.6	9.0	0.0					
Yellow	3.5	0.0		3.6	3.6	3.6	0.0					
Red	3.0	0.0		2.5	2.7	2.7	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		10.0		9.0
Phase Duration, s	12.0	35.1	11.9	35.0		23.9		15.3
Change Period, (*Y+R c*), s	6.5	6.1	6.5	6.1		6.3		6.3
Max Allow Headway (*MAH*), s	5.1	6.1	5.1	6.0		5.1		5.1
Queue Clearance Time (*g s*), s	5.5	14.0	5.4	23.7		14.6		8.0
Green Extension Time (*g e*), s	0.4	4.0	0.4	5.1		3.0		1.0
Phase Call Probability	0.93	1.00	0.93	1.00		1.00		0.99
Max Out Probability	0.00	0.00	0.00	0.00		0.00		0.00

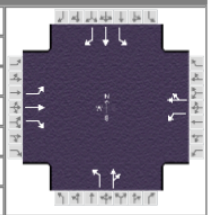
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	108	319	112	109	514		273	228		58	136	26
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1697	1841	1598	1781	1873		1767	1679		1781	1885	1610
Queue Service Time (*g s*), s	3.5	12.0	4.3	3.4	21.7		12.6	10.8		2.6	6.0	1.3
Cycle Queue Clearance Time (*g c*), s	3.5	12.0	4.3	3.4	21.7		12.6	10.8		2.6	6.0	1.3
Green Ratio (*g/C*)	0.40	0.34	0.34	0.40	0.34		0.20	0.20		0.10	0.10	0.10
Capacity (*c*), veh/h	263	620	538	382	629		361	343		186	197	168
Volume-to-Capacity Ratio (*X*)	0.411	0.514	0.208	0.287	0.817		0.757	0.666		0.309	0.692	0.154
Back of Queue (*Q*), ft/ln (95 th percentile)	67.3	229.8	72.5	62.9	384.4		243.5	213.1		53.2	137.7	23
Back of Queue (*Q*), veh/ln (95 th percentile)	2.5	8.9	2.9	2.5	15.3		9.5	8.0		2.1	5.5	0.9
Queue Storage Ratio (*RQ*) (95 th percentile)	0.45	0.23	0.21	0.42	0.38		0.70	0.21		0.35	0.14	0.15
Uniform Delay (*d 1*), s/veh	19.8	23.0	20.4	17.9	26.3		32.4	31.7		35.8	37.3	35.2
Incremental Delay (*d 2*), s/veh	1.5	1.4	0.4	0.6	5.6		4.6	3.2		1.3	6.1	0.6
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	21.2	24.4	20.8	18.5	31.8		36.9	34.8		37.1	43.4	35.8
Level of Service (LOS)	C	C	C	B	C		D	C		D	D	D
Approach Delay, s/veh / LOS	23.0	C		29.5	C		36.0	D		40.8	D	
Intersection Delay, s/veh / LOS	30.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.92	B	2.16	B	1.94	B	2.25	B
Bicycle LOS Score / LOS	1.38	A	1.52	B	1.31	A	0.85	A

 HCS™ Streets Version 7.8.5 Generated: 7/23/2020 2:13:27 PM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Oct 30, 2020	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.85
Urban Street	Herr Lane	Analysis Year	2025 Build	Analysis Period	1> 7:15
Intersection	Brownsboror Road	File Name	AM 25 B Herr.xus		
Project Description	Providence Point				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	289	204	101	479	20	303	157	85	50	129	115

Signal Information			
Cycle, s	112.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off

Green	6.9	0.6	40.2	27.0	12.1	0.0	
Yellow	3.5	0.0	3.6	3.6	3.6	0.0	
Red	3.0	0.0	2.5	2.7	2.7	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		10.0		9.0
Phase Duration, s	14.0	46.9	13.4	46.3		33.3		18.4
Change Period, (*Y+R c*), s	6.5	6.1	6.5	6.1		6.3		6.3
Max Allow Headway (*MAH*), s	5.1	6.1	5.1	6.0		5.1		5.1
Queue Clearance Time (*g s*), s	7.2	18.2	6.7	34.6		23.5		10.8
Green Extension Time (*g e*), s	0.4	4.7	0.4	5.6		3.4		1.3
Phase Call Probability	0.98	1.00	0.98	1.00		1.00		1.00
Max Out Probability	0.01	0.00	0.00	0.05		0.09		0.03

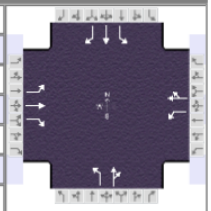
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	127	340	153	119	584		356	279		59	152	88
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1697	1841	1598	1781	1874		1767	1679		1781	1885	1610
Queue Service Time (*g s*), s	5.2	16.2	7.6	4.7	32.6		21.5	17.0		3.4	8.8	5.8
Cycle Queue Clearance Time (*g c*), s	5.2	16.2	7.6	4.7	32.6		21.5	17.0		3.4	8.8	5.8
Green Ratio (*g/C*)	0.43	0.36	0.36	0.42	0.36		0.24	0.24		0.11	0.11	0.11
Capacity (*c*), veh/h	232	671	582	385	672		426	405		193	204	174
Volume-to-Capacity Ratio (*X*)	0.547	0.507	0.263	0.308	0.868		0.836	0.688		0.305	0.744	0.506
Back of Queue (*Q*), ft/ln (95 th percentile)	105.9	299.5	131.9	90.1	565.4		391.7	308.7		71.8	200.9	110.7
Back of Queue (*Q*), veh/ln (95 th percentile)	4.0	11.6	5.2	3.5	22.4		15.3	11.6		2.8	8.0	4.4
Queue Storage Ratio (*RQ*) (95 th percentile)	0.71	0.30	0.38	0.60	0.57		1.12	0.31		0.48	0.20	0.74
Uniform Delay (*d 1*), s/veh	25.6	27.8	25.1	21.7	33.5		40.5	38.7		46.2	48.5	47.2
Incremental Delay (*d 2*), s/veh	2.8	1.3	0.5	0.6	8.5		7.8	3.0		1.3	7.4	3.2
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
Control Delay (*d*), s/veh	28.5	29.1	25.6	22.4	42.0		48.3	41.7		47.4	56.0	50.4
Level of Service (LOS)	C	C	C	C	D		D	D		D	E	D
Approach Delay, s/veh / LOS	28.1	C		38.7	D		45.4	D		52.6	D	
Intersection Delay, s/veh / LOS	39.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.93	B	2.17	B	1.95	B	2.26	B
Bicycle LOS Score / LOS	1.51	B	1.65	B	1.54	B	0.98	A

 HCS™ Streets Version 7.9 Generated: 10/30/2020 3:03:49 PM

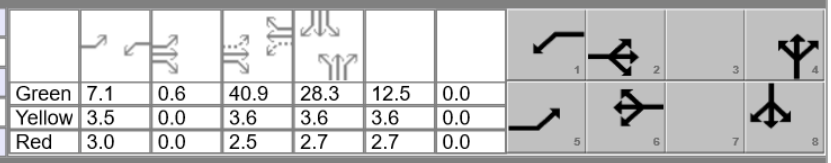
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Jun 20, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.85
Urban Street	Herr Lane	Analysis Year	2025 Build	Analysis Period	1> 7:15
Intersection	Brownsboror Road	File Name	AM 25 B Herr.xus		
Project Description	Bull Run Townhouses				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	108	289	207	102	479	20	313	164	88	50	131	115

Signal Information			
Cycle, s	114.5	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off



Green	7.1	0.6	40.9	28.3	12.5	0.0						
Yellow	3.5	0.0	3.6	3.6	3.6	0.0						
Red	3.0	0.0	2.5	2.7	2.7	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		10.0		9.0
Phase Duration, s	14.2	47.6	13.6	47.0		34.6		18.8
Change Period, (*Y+R c*), s	6.5	6.1	6.5	6.1		6.3		6.3
Max Allow Headway (*MAH*), s	5.1	6.1	5.1	6.0		5.1		5.1
Queue Clearance Time (*g s*), s	7.3	18.6	6.8	35.3		24.7		11.1
Green Extension Time (*g e*), s	0.4	4.7	0.4	5.5		3.5		1.3
Phase Call Probability	0.98	1.00	0.98	1.00		1.00		1.00
Max Out Probability	0.01	0.00	0.00	0.06		0.13		0.03

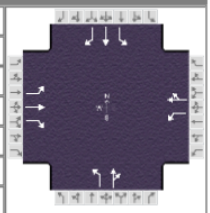
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	127	340	156	120	584		368	291		59	154	88
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1697	1841	1598	1781	1874		1767	1680		1781	1885	1610
Queue Service Time (*g s*), s	5.3	16.6	7.9	4.8	33.3		22.7	18.1		3.5	9.1	5.9
Cycle Queue Clearance Time (*g c*), s	5.3	16.6	7.9	4.8	33.3		22.7	18.1		3.5	9.1	5.9
Green Ratio (*g/C*)	0.43	0.36	0.36	0.42	0.36		0.25	0.25		0.11	0.11	0.11
Capacity (*c*), veh/h	229	667	579	383	670		437	415		194	205	175
Volume-to-Capacity Ratio (*X*)	0.555	0.509	0.270	0.314	0.871		0.844	0.700		0.303	0.751	0.503
Back of Queue (*Q*), ft/ln (95 th percentile)												
Back of Queue (*Q*), veh/ln (95 th percentile)	4.1	11.9	5.5	3.7	23.0		16.2	12.2		2.9	8.2	4.5
Queue Storage Ratio (*RQ*) (95 th percentile)	0.73	0.31	0.40	0.62	0.58		1.18	0.33		0.49	0.21	0.75
Uniform Delay (*d 1*), s/veh	26.3	28.6	25.8	22.3	34.4		41.1	39.3		47.1	49.6	48.2
Incremental Delay (*d 2*), s/veh	3.0	1.3	0.5	0.7	8.9		8.8	3.1		1.2	7.6	3.2
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
Control Delay (*d*), s/veh	29.3	29.9	26.4	23.0	43.3		49.8	42.4		48.3	57.2	51.3
Level of Service (LOS)	C	C	C	C	D		D	D		D	E	D
Approach Delay, s/veh / LOS	28.9	C		39.8	D		46.5	D		53.8	D	
Intersection Delay, s/veh / LOS	40.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.93	B	2.17	B	1.95	B	2.26	B
Bicycle LOS Score / LOS	1.52	B	1.65	B	1.57	B	0.98	A

 HCS™ Streets Version 2022 Generated: 6/20/2022 2:46:54 PM

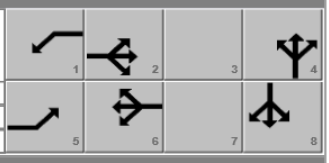
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Oct 30, 2020	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.85
Urban Street	Herr Lane	Analysis Year	2035 Build	Analysis Period	1> 7:15
Intersection	Brownsboror Road	File Name	AM 35 B Herr.xus		
Project Description	Providence Point				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	114	304	214	106	503	21	317	164	89	53	134	121

Signal Information											
Cycle, s	121.5	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	7.5	0.7	44.9	29.9	13.3	0.0	
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	3.5	0.0	3.6	3.6	3.6	0.0	
Force Mode	Fixed	Simult. Gap N/S	Off	Red	3.0	0.0	2.5	2.7	2.7	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		10.0		9.0
Phase Duration, s	14.8	51.7	14.0	51.0		36.2		19.6
Change Period, (*Y+R c*), s	6.5	6.1	6.5	6.1		6.3		6.3
Max Allow Headway (*MAH*), s	5.1	6.1	5.1	6.0		5.1		5.1
Queue Clearance Time (*g s*), s	7.9	20.3	7.2	39.3		26.5		11.9
Green Extension Time (*g e*), s	0.4	5.0	0.4	5.5		3.3		1.4
Phase Call Probability	0.99	1.00	0.99	1.00		1.00		1.00
Max Out Probability	0.01	0.00	0.01	0.12		0.19		0.05

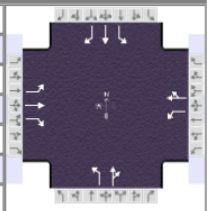
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	134	358	165	125	613		373	292		62	158	95
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1697	1841	1598	1781	1874		1767	1679		1781	1885	1610
Queue Service Time (*g s*), s	5.9	18.3	8.7	5.2	37.3		24.5	19.3		3.9	9.9	6.8
Cycle Queue Clearance Time (*g c*), s	5.9	18.3	8.7	5.2	37.3		24.5	19.3		3.9	9.9	6.8
Green Ratio (*g/C*)	0.44	0.38	0.38	0.43	0.37		0.25	0.25		0.11	0.11	0.11
Capacity (*c*), veh/h	223	691	600	383	692		435	413		195	206	176
Volume-to-Capacity Ratio (*X*)	0.602	0.518	0.275	0.325	0.886		0.857	0.706		0.320	0.765	0.541
Back of Queue (*Q*), ft/ln (95 th percentile)	121.7	334.2	154	101.9	647.9		448.6	346.7		83	222.1	131.1
Back of Queue (*Q*), veh/ln (95 th percentile)	4.6	13.0	6.1	4.0	25.7		17.5	13.0		3.3	8.8	5.2
Queue Storage Ratio (*RQ*) (95 th percentile)	0.81	0.33	0.44	0.68	0.65		1.28	0.35		0.55	0.22	0.87
Uniform Delay (*d 1*), s/veh	27.8	29.5	26.5	22.9	36.0		43.8	41.8		50.0	52.7	51.3
Incremental Delay (*d 2*), s/veh	3.7	1.3	0.5	0.7	10.6		10.7	3.5		1.3	8.1	3.7
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	31.5	30.7	27.0	23.6	46.6		54.5	45.4		51.3	60.8	54.9
Level of Service (LOS)	C	C	C	C	D		D	D		D	E	D
Approach Delay, s/veh / LOS	30.0	C		42.7	D		50.5	D		57.2	E	
Intersection Delay, s/veh / LOS	43.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.93	B	2.17	B	1.96	B	2.26	B
Bicycle LOS Score / LOS	1.57	B	1.70	B	1.58	B	1.01	A

 HCS™ Streets Version 7.9 Generated: 10/30/2020 3:09:21 PM

HCS Signalized Intersection Results Summary

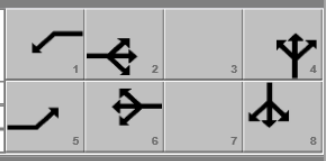
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Jun 20, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.85
Urban Street	Herr Lane	Analysis Year	2035 Build	Analysis Period	1> 7:15
Intersection	Brownsboror Road	File Name	AM 35 B Herr.xus		
Project Description	Bull Run Townhomes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	114	304	217	107	503	21	327	171	92	53	137	121

Signal Information			
Cycle, s	124.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off

Green	7.7	0.7	45.7	31.2	13.7	0.0						
Yellow	3.5	0.0	3.6	3.6	3.6	0.0						
Red	3.0	0.0	2.5	2.7	2.7	0.0						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		10.0		9.0
Phase Duration, s	14.9	52.5	14.2	51.8		37.5		20.0
Change Period, ($Y+R_c$), s	6.5	6.1	6.5	6.1		6.3		6.3
Max Allow Headway (*MAH*), s	5.1	6.1	5.1	6.0		5.1		5.1
Queue Clearance Time (g_s), s	8.0	20.8	7.4	40.2		27.9		12.3
Green Extension Time (g_e), s	0.4	5.0	0.4	5.4		3.3		1.4
Phase Call Probability	0.99	1.00	0.99	1.00		1.00		1.00
Max Out Probability	0.01	0.00	0.01	0.14		0.26		0.06

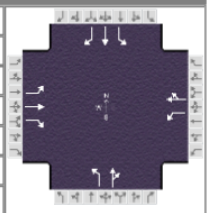
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	134	358	168	126	613		385	304		62	161	95
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1697	1841	1598	1781	1874		1767	1679		1781	1885	1610
Queue Service Time (g_s), s	6.0	18.8	9.2	5.4	38.2		25.9	20.5		4.0	10.3	7.0
Cycle Queue Clearance Time (g_c), s	6.0	18.8	9.2	5.4	38.2		25.9	20.5		4.0	10.3	7.0
Green Ratio (*g/C*)	0.44	0.37	0.37	0.43	0.37		0.25	0.25		0.11	0.11	0.11
Capacity (*c*), veh/h	219	687	596	380	689		444	422		197	208	178
Volume-to-Capacity Ratio (*X*)	0.612	0.520	0.282	0.331	0.889		0.866	0.719		0.317	0.774	0.535
Back of Queue (*Q*), ft/ln (95 th percentile)												
Back of Queue (*Q*), veh/ln (95 th percentile)	4.7	13.3	6.4	4.2	26.4		18.5	13.8		3.3	9.2	5.3
Queue Storage Ratio (*RQ*) (95 th percentile)	0.84	0.34	0.46	0.71	0.67		1.36	0.37		0.57	0.23	0.89
Uniform Delay (d_1), s/veh	28.6	30.3	27.3	23.6	36.9		44.6	42.6		51.0	53.8	52.3
Incremental Delay (d_2), s/veh	3.9	1.3	0.5	0.7	11.2		12.1	4.2		1.3	8.4	3.5
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
Control Delay (*d*), s/veh	32.6	31.6	27.9	24.3	48.2		56.6	46.7		52.3	62.2	55.8
Level of Service (LOS)	C	C	C	C	D		E	D		D	E	E
Approach Delay, s/veh / LOS	30.9	C		44.1	D		52.2	D		58.4	E	
Intersection Delay, s/veh / LOS	44.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.93	B	2.17	B	1.96	B	2.26	B
Bicycle LOS Score / LOS	1.58	B	1.71	B	1.62	B	1.01	A

 HCS™ Streets Version 2022 Generated: 6/20/2022 2:59:04 PM

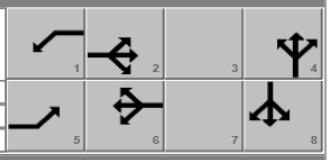
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Jul 23, 2020	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.88
Urban Street	Herr Lane	Analysis Year	2019	Analysis Period	1> 4:00
Intersection	Brownsboror Road	File Name	PM Herr 19.xus		
Project Description	Providence Point				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	193	517	231	112	251	45	184	214	113	80	203	113

Signal Information					EB			WB			NB			SB		
Cycle, s	124.8	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	7.7	4.3		42.3	27.7	17.6	0.0					
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	3.5	0.0		3.6	3.6	3.6	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Red	3.0	0.0		2.5	2.7	2.7	0.0					



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		10.0		9.0
Phase Duration, s	18.5	52.7	14.2	48.4		34.0		23.9
Change Period, (*Y+R* $_c$), s	6.5	6.1	6.5	6.1		6.3		6.3
Max Allow Headway (*MAH*), s	3.1	6.1	3.1	3.1		3.1		3.1
Queue Clearance Time (g_s), s	11.8	37.5	7.7	20.1		26.6		17.0
Green Extension Time (g_e), s	0.1	9.0	0.1	0.6		1.0		0.5
Phase Call Probability	1.00	1.00	0.99	1.00		1.00		1.00
Max Out Probability	0.96	0.02	0.01	0.00		0.00		0.00

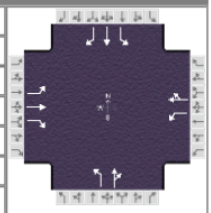
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	219	588	218	127	328		209	363		91	231	22
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1885	1560	1810	1827		1781	1780		1810	1870	1572
Queue Service Time (g_s), s	9.8	35.5	12.8	5.7	18.1		12.9	24.6		5.7	15.0	1.5
Cycle Queue Clearance Time (g_c), s	9.8	35.5	12.8	5.7	18.1		12.9	24.6		5.7	15.0	1.5
Green Ratio (*g/C*)	0.44	0.37	0.37	0.40	0.34		0.23	0.23		0.15	0.15	0.15
Capacity (*c*), veh/h	437	704	583	231	620		396	410		255	278	222
Volume-to-Capacity Ratio (*X*)	0.502	0.834	0.374	0.550	0.530		0.528	0.884		0.357	0.828	0.097
Back of Queue (*Q*), ft/ln (50 th percentile)	104.8	429.1	125.8	61.8	203.2		145.1	296.3		64.6	181.8	15.1
Back of Queue (*Q*), veh/ln (50 th percentile)	4.2	17.0	4.9	2.5	8.0		5.7	11.8		2.6	7.2	0.6
Queue Storage Ratio (*RQ*) (50 th percentile)	0.70	0.43	0.36	0.41	0.20		0.41	0.30		0.43	0.18	0.10
Uniform Delay (d_1), s/veh	24.4	35.7	28.6	29.4	33.3		42.9	46.5		48.6	52.2	46.8
Incremental Delay (d_2), s/veh	0.3	5.5	0.9	0.8	0.3		0.4	8.7		0.3	2.4	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	24.7	41.2	29.4	30.1	33.6		43.3	55.3		48.9	54.6	46.9
Level of Service (LOS)	C	D	C	C	C		D	E		D	D	D
Approach Delay, s/veh / LOS	35.2		D	32.6		C	50.9		D	52.6		D
Intersection Delay, s/veh / LOS	40.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	2.25	B	1.96	B	2.21	B
Bicycle LOS Score / LOS	2.18	B	1.24	A	1.43	A	1.05	A

 HCS™ Streets Version 7.8.5 Generated: 7/23/2020 3:05:06 PM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Oct 30, 2020	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.88
Urban Street	Herr Lane	Analysis Year	2025 Build	Analysis Period	1> 4:00
Intersection	Brownsboror Road	File Name	PM Herr 25 B.xus		
Project Description	Providence Point				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	233	564	341	129	268	46	229	237	125	82	235	125

Signal Information											
Cycle, s	161.9	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	10.3	4.7	58.4	38.3	25.1	0.0	
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	3.5	0.0	3.6	3.6	3.6	0.0	
Force Mode	Fixed	Simult. Gap N/S	Off	Red	3.0	0.0	2.5	2.7	2.7	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		10.0		9.0
Phase Duration, s	21.5	69.2	16.8	64.5		44.6		31.4
Change Period, (*Y+R* $_c$), s	6.5	6.1	6.5	6.1		6.3		6.3
Max Allow Headway (*MAH*), s	3.1	6.1	3.1	3.1		3.1		3.1
Queue Clearance Time (*g* $_s$), s	17.0	52.9	10.2	26.4		37.8		24.6
Green Extension Time (*g* $_e$), s	0.0	10.2	0.1	0.7		0.4		0.4
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	1.00	0.21	0.15	0.00		1.00		0.19

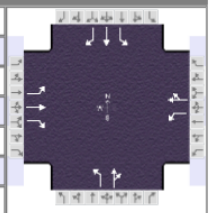
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	265	641	343	147	349		260	402		93	267	35
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1885	1560	1810	1829		1781	1779		1810	1870	1572
Queue Service Time (*g* $_s$), s	15.0	50.9	27.9	8.2	24.4		21.2	35.8		7.4	22.6	3.1
Cycle Queue Clearance Time (*g* $_c$), s	15.0	50.9	27.9	8.2	24.4		21.2	35.8		7.4	22.6	3.1
Green Ratio (*g/C*)	0.45	0.39	0.39	0.42	0.36		0.24	0.24		0.16	0.16	0.16
Capacity (*c*), veh/h	429	735	608	210	660		421	432		280	301	243
Volume-to-Capacity Ratio (*X*)	0.617	0.872	0.565	0.698	0.529		0.618	0.932		0.333	0.887	0.145
Back of Queue (*Q*), ft/ln (50 th percentile)	173.3	644.9	284.1	96	282		246.9	481.7		86.3	313.3	32.4
Back of Queue (*Q*), veh/ln (50 th percentile)	6.9	25.6	11.0	3.8	11.1		9.7	19.1		3.5	12.3	1.3
Queue Storage Ratio (*RQ*) (50 th percentile)	1.16	0.64	0.81	0.64	0.28		0.71	0.48		0.58	0.31	0.22
Uniform Delay (*d* $_1$), s/veh	31.1	45.7	38.7	38.0	40.9		55.3	60.0		61.0	67.0	59.2
Incremental Delay (*d* $_2$), s/veh	2.0	9.5	1.8	3.6	0.2		1.7	25.2		0.3	18.4	0.1
Initial Queue Delay (*d* $_3$), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	33.1	55.2	40.4	41.6	41.1		57.0	85.3		61.3	85.4	59.3
Level of Service (LOS)	C	E	D	D	D		E	F		E	F	E
Approach Delay, s/veh / LOS	46.5	D		41.3	D		74.2	E		77.4	E	
Intersection Delay, s/veh / LOS	56.5						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.95	B	2.26	B	1.97	B	2.22	B
Bicycle LOS Score / LOS	2.55	C	1.31	A	1.58	B	1.14	A

 HCS™ Streets Version 7.9 Generated: 10/30/2020 3:13:49 PM

HCS Signalized Intersection Results Summary

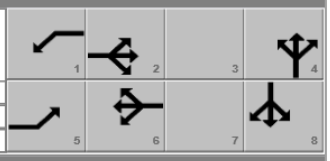
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Jun 20, 2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.88
Urban Street	Herr Lane	Analysis Year	2025 Build	Analysis Period	1> 4:00
Intersection	Brownsboror Road	File Name	PM Herr 25 B.xus		
Project Description	Bull Run Townhomes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	233	564	351	132	268	46	234	241	127	82	242	125

Signal Information			
Cycle, s	166.6	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off

Green	10.7	4.3	60.3	39.7	26.4	0.0	
Yellow	3.5	0.0	3.6	3.6	3.6	0.0	
Red	3.0	0.0	2.5	2.7	2.7	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		10.0		9.0
Phase Duration, s	21.5	70.7	17.2	66.4		46.0		32.7
Change Period, ($Y+R_c$), s	6.5	6.1	6.5	6.1		6.3		6.3
Max Allow Headway (*MAH*), s	3.1	6.1	3.1	3.1		3.1		3.1
Queue Clearance Time (g_s), s	17.5	54.5	10.6	27.1		39.6		26.0
Green Extension Time (g_e), s	0.0	10.0	0.1	0.7		0.1		0.4
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	1.00	0.25	0.24	0.00		1.00		0.25

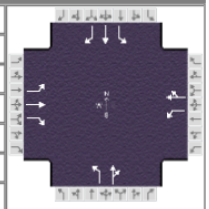
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	265	641	355	150	349		266	409		93	275	35
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1885	1560	1810	1829		1781	1779		1810	1870	1572
Queue Service Time (g_s), s	15.5	52.5	30.0	8.6	25.1		22.3	37.6		7.6	24.0	3.2
Cycle Queue Clearance Time (g_c), s	15.5	52.5	30.0	8.6	25.1		22.3	37.6		7.6	24.0	3.2
Green Ratio (*g/C*)	0.46	0.39	0.39	0.43	0.36		0.24	0.24		0.16	0.16	0.16
Capacity (*c*), veh/h	434	731	605	208	662		424	435		287	308	249
Volume-to-Capacity Ratio (*X*)	0.611	0.877	0.586	0.721	0.527		0.627	0.941		0.325	0.894	0.141
Back of Queue (*Q*), ft/ln (50 th percentile)												
Back of Queue (*Q*), veh/ln (50 th percentile)	7.0	26.5	11.9	4.1	11.4		10.3	20.3		3.5	13.2	1.3
Queue Storage Ratio (*RQ*) (50 th percentile)	1.18	0.67	0.88	0.69	0.29		0.75	0.51		0.59	0.33	0.22
Uniform Delay (d_1), s/veh	31.2	47.3	40.4	39.2	41.9		56.8	61.8		62.2	68.7	60.3
Incremental Delay (d_2), s/veh	1.8	10.2	1.9	5.3	0.2		2.1	28.2		0.2	19.8	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	33.0	57.5	42.3	44.4	42.1		58.9	90.0		62.4	88.5	60.4
Level of Service (LOS)	C	E	D	D	D		E	F		E	F	E
Approach Delay, s/veh / LOS	48.1	D		42.8	D		77.8	E		80.0	F	
Intersection Delay, s/veh / LOS	58.8						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.95	B	2.26	B	1.97	B	2.22	B
Bicycle LOS Score / LOS	2.57	C	1.31	A	1.60	B	1.15	A

 HCS™ Streets Version 2022 Generated: 6/20/2022 2:46:24 PM

HCS7 Signalized Intersection Results Summary

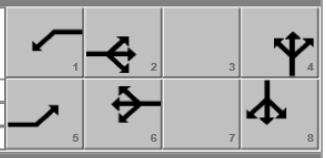
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Oct 30, 2020	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.88
Urban Street	Herr Lane	Analysis Year	2035 Build	Analysis Period	1> 4:00
Intersection	Brownsboror Road	File Name	PM Herr 35 B2.xus		
Project Description	Providence Point				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	245	593	356	135	282	48	239	248	131	86	246	131

Signal Information			
Cycle, s	173.7	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	Off

Green	11.2	3.8	62.6	42.9	28.1	0.0						
Yellow	3.5	0.0	3.6	3.6	3.6	0.0						
Red	3.0	0.0	2.5	2.7	2.7	0.0						



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		10.0		9.0
Phase Duration, s	21.5	72.6	17.7	68.7		49.2		34.4
Change Period, (*Y+R c*), s	6.5	6.1	6.5	6.1		6.3		6.3
Max Allow Headway (*MAH*), s	3.1	6.1	3.1	3.1		3.1		3.1
Queue Clearance Time (*g s*), s	17.0	61.1	11.1	29.9		42.3		27.4
Green Extension Time (*g e*), s	0.0	5.4	0.1	0.7		0.5		0.7
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	1.00	0.83	0.40	0.00		1.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	278	674	360	153	367		272	422		98	280	42
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1885	1560	1810	1829		1781	1779		1810	1870	1572
Queue Service Time (*g s*), s	15.0	59.1	32.2	9.1	27.9		23.5	40.3		8.3	25.4	4.0
Cycle Queue Clearance Time (*g c*), s	15.0	59.1	32.2	9.1	27.9		23.5	40.3		8.3	25.4	4.0
Green Ratio (*g/C*)	0.45	0.39	0.39	0.44	0.36		0.25	0.25		0.17	0.17	0.17
Capacity (*c*), veh/h	401	732	597	192	659		439	449		292	313	254
Volume-to-Capacity Ratio (*X*)	0.695	0.921	0.604	0.799	0.557		0.618	0.939		0.334	0.893	0.165
Back of Queue (*Q*), ft/ln (95 th percentile)	172	1014.6	484.9	206	474.3		412.7	730.9		174.5	488.6	74.6
Back of Queue (*Q*), veh/ln (95 th percentile)	6.8	40.3	18.8	8.2	18.7		16.2	29.0		7.0	19.2	2.9
Queue Storage Ratio (*RQ*) (95 th percentile)	1.15	1.01	1.39	1.37	0.47		1.18	0.73		1.16	0.49	0.50
Uniform Delay (*d 1*), s/veh	37.8	51.0	43.1	41.4	44.5		58.2	63.6		64.5	71.3	62.7
Incremental Delay (*d 2*), s/veh	4.3	16.8	2.5	12.4	0.3		1.6	25.7		0.2	12.4	0.1
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	42.2	67.8	45.5	53.8	44.7		59.8	89.3		64.8	83.7	62.9
Level of Service (LOS)	D	E	D	D	D		E	F		E	F	E
Approach Delay, s/veh / LOS	56.3	E		47.4	D		77.7	E		77.2	E	
Intersection Delay, s/veh / LOS	62.7						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.95	B	2.27	B	1.97	B	2.23	B
Bicycle LOS Score / LOS	2.65	C	1.35	A	1.63	B	1.18	A

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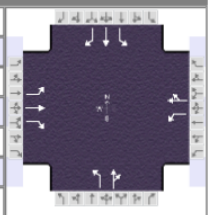
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic			Duration, h	0.250
Analyst	DBZ	Analysis Date	Jun 20, 2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.88
Urban Street	Herr Lane	Analysis Year	2035 Build	Analysis Period	1> 4:00
Intersection	Brownsboror Road	File Name	PM Herr 35 B.xus		
Project Description	Bull Run Townhomes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	245	593	366	138	282	48	244	252	133	86	253	131

Signal Information													
Cycle, s	171.9	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	10.0	1.1	63.9	43.3	28.4	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	3.5	0.0	3.6	3.6	3.6	0.0			
				Red	3.0	0.0	2.5	2.7	2.7	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		10.0		9.0
Phase Duration, s	16.5	70.0	17.6	71.1		49.6		34.7
Change Period, (*Y+R c*), s	6.5	6.1	6.5	6.1		6.3		6.3
Max Allow Headway (*MAH*), s	3.1	6.1	3.1	3.1		3.1		3.1
Queue Clearance Time (*g s*), s	12.0	61.5	11.0	28.8		42.5		27.9
Green Extension Time (*g e*), s	0.0	2.4	0.1	0.7		0.8		0.6
Phase Call Probability	1.00	1.00	1.00	1.00		1.00		1.00
Max Out Probability	1.00	1.00	0.37	0.00		0.53		0.04

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	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	278	674	372	157	367		277	428		98	288	42
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1885	1560	1810	1829		1781	1779		1810	1870	1572
Queue Service Time (*g s*), s	10.0	59.5	33.7	9.0	26.8		23.7	40.5		8.2	25.9	3.9
Cycle Queue Clearance Time (*g c*), s	10.0	59.5	33.7	9.0	26.8		23.7	40.5		8.2	25.9	3.9
Green Ratio (*g/C*)	0.43	0.38	0.38	0.45	0.38		0.26	0.26		0.17	0.17	0.17
Capacity (*c*), veh/h	362	712	580	194	692		448	448		299	320	260
Volume-to-Capacity Ratio (*X*)	0.770	0.946	0.640	0.809	0.531		0.619	0.957		0.327	0.898	0.162
Back of Queue (*Q*), ft/ln (95 th percentile)												
Back of Queue (*Q*), veh/ln (95 th percentile)	11.7	41.5	19.7	8.2	18.0		16.3	29.4		6.9	20.1	2.9
Queue Storage Ratio (*RQ*) (95 th percentile)	1.96	1.05	1.45	1.37	0.46		1.18	0.74		1.14	0.51	0.49
Uniform Delay (*d 1*), s/veh	46.8	52.2	44.5	40.5	41.6		57.0	62.6		63.3	70.2	61.5
Incremental Delay (*d 2*), s/veh	8.9	21.7	3.3	13.2	0.4		1.3	28.3		0.2	17.5	0.1
Initial Queue Delay (*d 3*), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (*d*), s/veh	55.6	74.0	47.8	53.7	42.0		58.3	90.9		63.5	87.8	61.6
Level of Service (LOS)	E	E	D	D	D		E	F		E	F	E
Approach Delay, s/veh / LOS	62.8	E		45.5	D		78.1	E		79.6	E	
Intersection Delay, s/veh / LOS	65.8						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.95	B	2.26	B	1.97	B	2.22	B
Bicycle LOS Score / LOS	2.67	C	1.35	A	1.65	B	1.19	A

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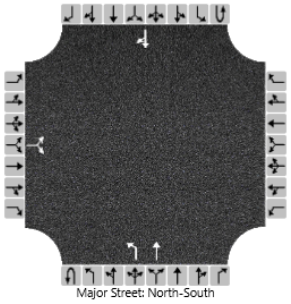
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Aceess Rd
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	7/23/2020	East/West Street	Access Road
Analysis Year	2019	North/South Street	Herr Lane
Time Analyzed	AM Peak	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		4		23						23	436				387	12
Percent Heavy Vehicles (%)		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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			30							26						
Capacity, c (veh/h)			578							1127						
v/c Ratio			0.05							0.02						
95% Queue Length, Q_{95} (veh)			0.2							0.1						
Control Delay (s/veh)			11.6							8.3						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		11.6								0.4						
Approach LOS		B														

HCS™ TWSC Version 7.8.5
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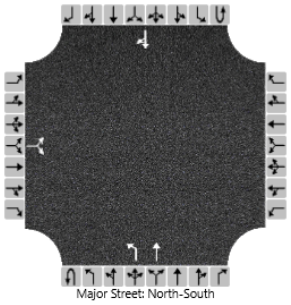
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Aceess Rd
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/30/2020	East/West Street	Access Road
Analysis Year	2025	North/South Street	Herr Lane
Time Analyzed	AM Peak Build	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		4		23						23	550				442	12
Percent Heavy Vehicles (%)		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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			30							26						
Capacity, c (veh/h)			526							1071						
v/c Ratio			0.06							0.02						
95% Queue Length, Q_{95} (veh)			0.2							0.1						
Control Delay (s/veh)			12.3							8.4						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		12.3								0.3						
Approach LOS		B														

HCS™ TWSC Version 7.9
Access Rd AM 25 B.xtw
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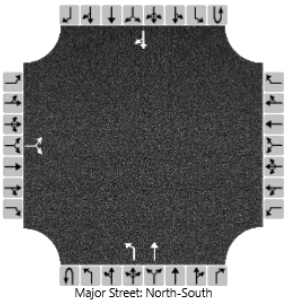
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Aceess Rd
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	6/20/22	East/West Street	Access Road
Analysis Year	2025	North/South Street	Herr Lane
Time Analyzed	AM Peak Build	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Bull Run Townhomes		

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	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		4		23						23	570				449	12
Percent Heavy Vehicles (%)		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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			30							26						
Capacity, c (veh/h)			519							1063						
v/c Ratio			0.06							0.02						
95% Queue Length, Q_{95} (veh)			0.2							0.1						
Control Delay (s/veh)			12.4							8.5						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		12.4								0.3						
Approach LOS		B								A						

HCS™ TWSC Version 2022
Access Rd AM 25 B.xtw

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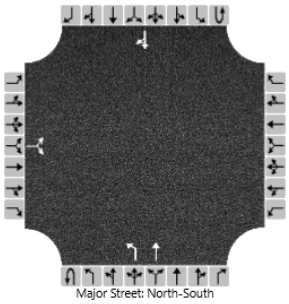
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Aceess Rd
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/30/2020	East/West Street	Access Road
Analysis Year	2035	North/South Street	Herr Lane
Time Analyzed	AM Peak Build	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		4		23						23	574				463	12
Percent Heavy Vehicles (%)		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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			30							26						
Capacity, c (veh/h)			509							1050						
v/c Ratio			0.06							0.02						
95% Queue Length, Q_{95} (veh)			0.2							0.1						
Control Delay (s/veh)			12.5							8.5						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		12.5								0.3						
Approach LOS		B														

HCS™ TWSC Version 7.9
Access Rd AM 35 B.xtw
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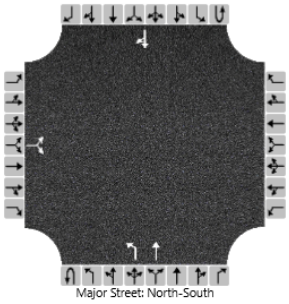
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Aceess Rd
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	6/20/22	East/West Street	Access Road
Analysis Year	2035	North/South Street	Herr Lane
Time Analyzed	AM Peak Build	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Bull Run Townhomes		

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	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		4		23						23	594				470	12
Percent Heavy Vehicles (%)		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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			30							26						
Capacity, c (veh/h)			502							1043						
v/c Ratio			0.06							0.02						
95% Queue Length, Q_{95} (veh)			0.2							0.1						
Control Delay (s/veh)			12.6							8.5						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		12.6								0.3						
Approach LOS		B								A						

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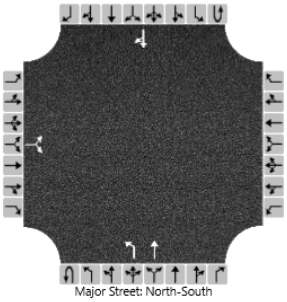
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Aceess Rd
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	7/23/2020	East/West Street	Access Road
Analysis Year	2019	North/South Street	Herr Lane
Time Analyzed	PM Peak	Peak Hour Factor	0.97
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		16		30						32	468				652	11
Percent Heavy Vehicles (%)		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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			47							33						
Capacity, c (veh/h)			403							919						
v/c Ratio			0.12							0.04						
95% Queue Length, Q_{95} (veh)			0.4							0.1						
Control Delay (s/veh)			15.1							9.1						
Level of Service (LOS)			C							A						
Approach Delay (s/veh)		15.1								0.6						
Approach LOS		C														

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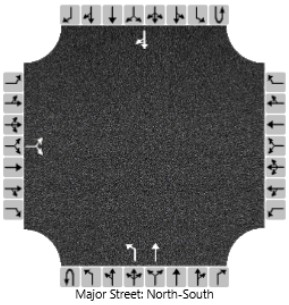
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Aceess Rd
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/30/2020	East/West Street	Access Road
Analysis Year	2025	North/South Street	Herr Lane
Time Analyzed	PM Peak Build	Peak Hour Factor	0.97
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		16		30						32	541				791	11
Percent Heavy Vehicles (%)		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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			47							33						
Capacity, c (veh/h)			336							813						
v/c Ratio			0.14							0.04						
95% Queue Length, Q_{95} (veh)			0.5							0.1						
Control Delay (s/veh)			17.5							9.6						
Level of Service (LOS)			C							A						
Approach Delay (s/veh)		17.5								0.5						
Approach LOS		C														

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Access Rd PM 25 B.xtw
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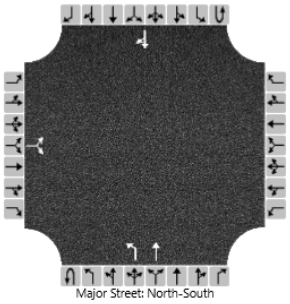
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Aceess Rd
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	6/20/22	East/West Street	Access Road
Analysis Year	2025	North/South Street	Herr Lane
Time Analyzed	PM Peak Build	Peak Hour Factor	0.97
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Bull Run Townhomes		

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	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		16		30						32	552				811	11
Percent Heavy Vehicles (%)		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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			47							33						
Capacity, c (veh/h)			328							799						
v/c Ratio			0.14							0.04						
95% Queue Length, Q_{95} (veh)			0.5							0.1						
Control Delay (s/veh)			17.8							9.7						
Level of Service (LOS)			C							A						
Approach Delay (s/veh)		17.8								0.5						
Approach LOS		C								A						

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Access Rd PM 25 B.xtw
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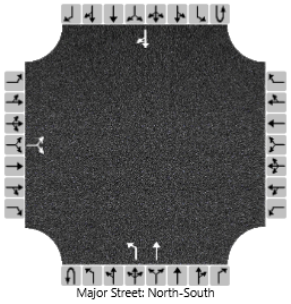
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Aceess Rd
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/30/2020	East/West Street	Access Road
Analysis Year	2035	North/South Street	Herr Lane
Time Analyzed	PM Peak Build	Peak Hour Factor	0.97
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		16		30						32	566				831	11
Percent Heavy Vehicles (%)		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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			47							33						
Capacity, c (veh/h)			319							785						
v/c Ratio			0.15							0.04						
95% Queue Length, Q_{95} (veh)			0.5							0.1						
Control Delay (s/veh)			18.2							9.8						
Level of Service (LOS)			C							A						
Approach Delay (s/veh)		18.2								0.5						
Approach LOS		C														

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Access Rd PM 35 B.xtw
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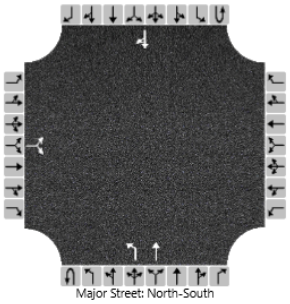
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Aceess Rd
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	6/20/22	East/West Street	Access Road
Analysis Year	2035	North/South Street	Herr Lane
Time Analyzed	PM Peak Build	Peak Hour Factor	0.97
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Bull Run Townhomes		

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	0	0	0	1	1	0	0	0	1	0
Configuration			LR							L	T					TR
Volume (veh/h)		16		30						32	577				851	11
Percent Heavy Vehicles (%)		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)		7.1		6.2						4.1						
Critical Headway (sec)		6.40		6.20						4.10						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.50		3.30						2.20						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			47							33						
Capacity, c (veh/h)			311							771						
v/c Ratio			0.15							0.04						
95% Queue Length, Q_{95} (veh)			0.5							0.1						
Control Delay (s/veh)			18.7							9.9						
Level of Service (LOS)			C							A						
Approach Delay (s/veh)		18.7								0.5						
Approach LOS		C								A						

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Access Rd PM 35 B.xtw
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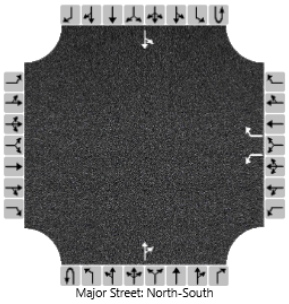
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Ballard
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	7/23/2020	East/West Street	Ballard
Analysis Year	2019	North/South Street	Herr Lane
Time Analyzed	AM Peak	Peak Hour Factor	0.89
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	1	0	0	0	1	0
Configuration						L		R				TR		LT		
Volume (veh/h)						112		169			295	232		134	274	
Percent Heavy Vehicles (%)						22		6						1		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.62		6.26						4.11		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.70		3.35						2.21		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						126		190						151		
Capacity, c (veh/h)						183		592						989		
v/c Ratio						0.69		0.32						0.15		
95% Queue Length, Q_{95} (veh)						4.2		1.4						0.5		
Control Delay (s/veh)						59.5		13.9						9.3		
Level of Service (LOS)						F		B						A		
Approach Delay (s/veh)						32.1								4.2		
Approach LOS						D										

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Ballard AM 19.xtw
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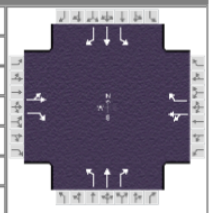
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering			Duration, h	0.250
Analyst	DBZ	Analysis Date	Oct 30, 2020	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.89
Urban Street	Herr Lane	Analysis Year	2025	Analysis Period	1> 7:00
Intersection	Ballard/Entrance	File Name	Ballard AM 25 B.xus		
Project Description	Providence Point				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	60	0	26	112	0	169	9	345	232	134	301	24

Signal Information											
Cycle, s	100.0	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	72.2	15.6	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.6	3.6	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.5	2.5	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		5.0		5.0
Phase Duration, s		21.7		21.7		78.3		78.3
Change Period, (*Y+R* $_c$), s		6.1		6.1		6.1		6.1
Max Allow Headway (*MAH*), s		5.2		5.2		0.0		0.0
Queue Clearance Time (g_s), s		6.1		13.9				
Green Extension Time (g_e), s		2.2		1.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.02		0.23				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		67	29		126	190	10	388	261	151	338	27
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1440	1610		1193	1535	1059	1841	1610	1004	1870	1610
Queue Service Time (g_s), s		0.0	1.6		5.8	11.9	0.3	7.4	5.4	6.2	6.1	0.5
Cycle Queue Clearance Time (g_c), s		4.1	1.6		10.0	11.9	6.5	7.4	5.4	13.6	6.1	0.5
Green Ratio (*g/C*)		0.16	0.16		0.16	0.16	0.72	0.72	0.72	0.72	0.72	0.72
Capacity (*c*), veh/h		296	251		258	239	772	1330	1163	723	1351	1163
Volume-to-Capacity Ratio (*X*)		0.228	0.117		0.488	0.795	0.013	0.292	0.224	0.208	0.250	0.023
Back of Queue (*Q*), ft/ln (95 th percentile)		66.8	28.2		157.6	227	3.2	114.6	71	59.5	94.4	6.2
Back of Queue (*Q*), veh/ln (95 th percentile)		2.7	1.1		5.4	8.7	0.1	4.4	2.8	2.4	3.7	0.2
Queue Storage Ratio (*RQ*) (95 th percentile)		0.67	0.28		0.90	0.76	0.03	0.00	0.95	0.59	0.00	0.08
Uniform Delay (d_1), s/veh		37.4	36.3		39.9	40.7	5.8	4.9	4.6	7.3	4.7	3.9
Incremental Delay (d_2), s/veh		0.6	0.3		2.0	8.9	0.0	0.6	0.4	0.7	0.4	0.0
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		37.9	36.6		41.9	49.5	5.8	5.4	5.0	7.9	5.1	4.0
Level of Service (LOS)		D	D		D	D	A	A	A	A	A	A
Approach Delay, s/veh / LOS	37.5	D		46.5	D		5.3	A		5.9	A	
Intersection Delay, s/veh / LOS	15.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	1.85	B	1.85	B
Bicycle LOS Score / LOS	0.65	A	1.01	A	1.57	B	1.34	A

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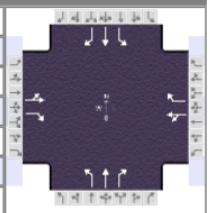
HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering			Duration, h	0.250
Analyst	DBZ	Analysis Date	Jun 20, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.89
Urban Street	Herr Lane	Analysis Year	2025	Analysis Period	1> 7:00
Intersection	Ballard/Entrance	File Name	Ballard AM 25 B.xus		
Project Description	Bull Run Townhomes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	60	0	26	112	0	169	9	365	232	134	308	24

Signal Information			
Cycle, s	100.0	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	72.2	15.6	0.0	0.0	0.0	0.0	
Yellow	3.6	3.6	0.0	0.0	0.0	0.0	
Red	2.5	2.5	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		5.0		5.0
Phase Duration, s		21.7		21.7		78.3		78.3
Change Period, ($Y+R_c$), s		6.1		6.1		6.1		6.1
Max Allow Headway (*MAH*), s		5.2		5.2		0.0		0.0
Queue Clearance Time (g_s), s		6.1		13.9				
Green Extension Time (g_e), s		2.2		1.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.02		0.23				

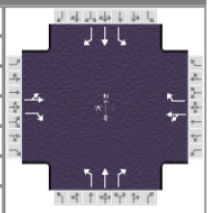
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		67	29		126	190	10	410	261	151	346	27
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1440	1610		1193	1535	1051	1841	1610	983	1870	1610
Queue Service Time (g_s), s		0.0	1.6		5.8	11.9	0.3	8.0	5.4	6.5	6.3	0.5
Cycle Queue Clearance Time (g_c), s		4.1	1.6		10.0	11.9	6.6	8.0	5.4	14.4	6.3	0.5
Green Ratio (*g/C*)		0.16	0.16		0.16	0.16	0.72	0.72	0.72	0.72	0.72	0.72
Capacity (*c*), veh/h		296	251		258	239	765	1330	1163	704	1351	1163
Volume-to-Capacity Ratio (*X*)		0.228	0.117		0.488	0.795	0.013	0.308	0.224	0.214	0.256	0.023
Back of Queue (*Q*), ft/ln (95 th percentile)												
Back of Queue (*Q*), veh/ln (95 th percentile)		2.7	1.1		5.4	8.7	0.1	4.8	2.8	2.4	3.8	0.2
Queue Storage Ratio (*RQ*) (95 th percentile)		0.67	0.28		0.90	0.76	0.03	0.00	0.95	0.61	0.00	0.08
Uniform Delay (d_1), s/veh		37.4	36.3		39.9	40.7	5.9	5.0	4.6	7.5	4.7	3.9
Incremental Delay (d_2), s/veh		0.6	0.3		2.0	8.9	0.0	0.6	0.4	0.7	0.5	0.0
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		37.9	36.6		41.9	49.5	5.9	5.6	5.0	8.2	5.2	4.0
Level of Service (LOS)		D	D		D	D	A	A	A	A	A	A
Approach Delay, s/veh / LOS	37.5	D		46.5	D		5.4	A		6.0	A	
Intersection Delay, s/veh / LOS	15.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	1.85	B	1.85	B
Bicycle LOS Score / LOS	0.65	A	1.01	A	1.61	B	1.35	A

 HCS™ Streets Version 2022 Generated: 6/20/2022 3:20:21 PM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering			Duration, h	0.250
Analyst	DBZ	Analysis Date	Sep 30, 2020	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.89
Urban Street	Herr Lane	Analysis Year	2035	Analysis Period	1> 7:00
Intersection	Ballard/Entrance	File Name	Ballard AM 35 B.xus		
Project Description	Providence Point				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	60	0	26	112	0	169	9	362	232	134	319	24

Signal Information					EB			WB			NB			SB		
Cycle, s	100.0	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	0	Reference Point	End	Green	72.2	15.6		0.0	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.6	3.6		0.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.5	2.5		0.0	0.0	0.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		5.0		5.0
Phase Duration, s		21.7		21.7		78.3		78.3
Change Period, (*Y+R c*), s		6.1		6.1		6.1		6.1
Max Allow Headway (*MAH*), s		5.2		5.2		0.0		0.0
Queue Clearance Time (*g s*), s		6.1		13.9				
Green Extension Time (*g e*), s		2.2		1.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.02		0.23				

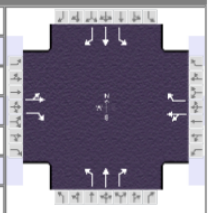
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		67	29		126	190	10	407	261	151	358	27
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1440	1610		1193	1535	1039	1841	1610	986	1870	1610
Queue Service Time (*g s*), s		0.0	1.6		5.8	11.9	0.3	7.9	5.4	6.4	6.6	0.5
Cycle Queue Clearance Time (*g c*), s		4.1	1.6		10.0	11.9	6.9	7.9	5.4	14.3	6.6	0.5
Green Ratio (*g/C*)		0.16	0.16		0.16	0.16	0.72	0.72	0.72	0.72	0.72	0.72
Capacity (*c*), veh/h		296	251		258	239	754	1330	1163	707	1351	1163
Volume-to-Capacity Ratio (*X*)		0.228	0.117		0.488	0.795	0.013	0.306	0.224	0.213	0.265	0.023
Back of Queue (*Q*), ft/ln (95 th percentile)		66.8	28.2		157.6	227	3.3	122	71	61	101.6	6.2
Back of Queue (*Q*), veh/ln (95 th percentile)		2.7	1.1		5.4	8.7	0.1	4.7	2.8	2.4	4.0	0.2
Queue Storage Ratio (*RQ*) (95 th percentile)		0.67	0.28		0.90	0.76	0.03	0.00	0.95	0.61	0.00	0.08
Uniform Delay (*d 1*), s/veh		37.4	36.3		39.9	40.7	6.0	4.9	4.6	7.5	4.8	3.9
Incremental Delay (*d 2*), s/veh		0.6	0.3		2.0	8.9	0.0	0.6	0.4	0.7	0.5	0.0
Initial Queue Delay (*d 3*), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		37.9	36.6		41.9	49.5	6.0	5.5	5.0	8.2	5.2	4.0
Level of Service (LOS)		D	D		D	D	A	A	A	A	A	A
Approach Delay, s/veh / LOS	37.5	D		46.5	D		5.4	A		6.0	A	
Intersection Delay, s/veh / LOS	15.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	1.85	B	1.85	B
Bicycle LOS Score / LOS	0.65	A	1.01	A	1.61	B	1.37	A

 HCS™ Streets Version 7.9 Generated: 10/30/2020 3:11:39 PM

HCS Signalized Intersection Results Summary

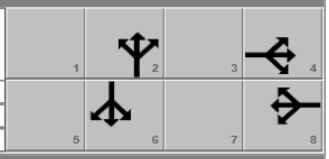
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering			Duration, h	0.250
Analyst	DBZ	Analysis Date	Jun 20, 2022	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.89
Urban Street	Herr Lane	Analysis Year	2035	Analysis Period	1> 7:00
Intersection	Ballard/Entrance	File Name	Ballard AM 35 B.xus		
Project Description	Bull Run Townhomes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	60	0	26	112	0	169	9	382	232	134	326	24

Signal Information			
Cycle, s	100.0	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	72.2	15.6	0.0	0.0	0.0	0.0	
Yellow	3.6	3.6	0.0	0.0	0.0	0.0	
Red	2.5	2.5	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		5.0		5.0
Phase Duration, s		21.7		21.7		78.3		78.3
Change Period, (*Y+R c*), s		6.1		6.1		6.1		6.1
Max Allow Headway (*MAH*), s		5.2		5.2		0.0		0.0
Queue Clearance Time (*g s*), s		6.1		13.9				
Green Extension Time (*g e*), s		2.2		1.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.02		0.23				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		67	29		126	190	10	429	261	151	366	27
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1440	1610		1193	1535	1032	1841	1610	966	1870	1610
Queue Service Time (*g s*), s		0.0	1.6		5.8	11.9	0.3	8.4	5.4	6.7	6.8	0.5
Cycle Queue Clearance Time (*g c*), s		4.1	1.6		10.0	11.9	7.1	8.4	5.4	15.1	6.8	0.5
Green Ratio (*g/C*)		0.16	0.16		0.16	0.16	0.72	0.72	0.72	0.72	0.72	0.72
Capacity (*c*), veh/h		296	251		258	239	748	1330	1163	688	1351	1163
Volume-to-Capacity Ratio (*X*)		0.228	0.117		0.488	0.795	0.014	0.323	0.224	0.219	0.271	0.023
Back of Queue (*Q*), ft/ln (95 th percentile)												
Back of Queue (*Q*), veh/ln (95 th percentile)		2.7	1.1		5.4	8.7	0.1	5.1	2.8	2.5	4.1	0.2
Queue Storage Ratio (*RQ*) (95 th percentile)		0.67	0.28		0.90	0.76	0.03	0.00	0.95	0.63	0.00	0.08
Uniform Delay (*d 1*), s/veh		37.4	36.3		39.9	40.7	6.0	5.0	4.6	7.8	4.8	3.9
Incremental Delay (*d 2*), s/veh		0.6	0.3		2.0	8.9	0.0	0.6	0.4	0.7	0.5	0.0
Initial Queue Delay (*d 3*), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		37.9	36.6		41.9	49.5	6.1	5.7	5.0	8.5	5.3	4.0
Level of Service (LOS)		D	D		D	D	A	A	A	A	A	A
Approach Delay, s/veh / LOS	37.5	D		46.5	D		5.4	A		6.1	A	
Intersection Delay, s/veh / LOS	15.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.13	B	1.85	B	1.85	B
Bicycle LOS Score / LOS	0.65	A	1.01	A	1.64	B	1.38	A

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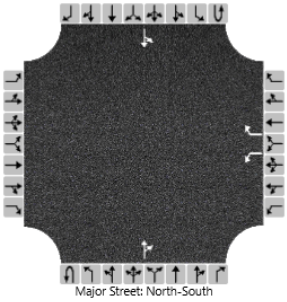
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Ballard
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	7/23/2020	East/West Street	Ballard
Analysis Year	2019	North/South Street	Herr Lane
Time Analyzed	PM Peak	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	1	0	0	0	1	0
Configuration						L		R				TR		LT		
Volume (veh/h)						33		23			472	25		23	658	
Percent Heavy Vehicles (%)						0		0						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized						No										
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.20						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.30						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						38		26						26		
Capacity, c (veh/h)						160		538						1017		
v/c Ratio						0.23		0.05						0.03		
95% Queue Length, Q_{95} (veh)						0.9		0.2						0.1		
Control Delay (s/veh)						34.2		12.0						8.6		
Level of Service (LOS)						D		B						A		
Approach Delay (s/veh)						25.1								0.7		
Approach LOS						D										

HCS™ TWSC Version 7.8.5
Ballard PM 19.xtw
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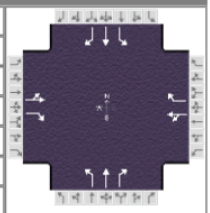
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering			Duration, h	0.250
Analyst	DBZ	Analysis Date	Oct 30, 2020	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.88
Urban Street	Herr Lane	Analysis Year	2025	Analysis Period	1> 7:00
Intersection	Ballard/Entrance	File Name	Ballard PM 25 B.xus		
Project Description	Providence Point				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	0	17	33	0	23	27	505	23	23	749	71

Signal Information											
Cycle, s	100.0	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	82.0	5.8	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.6	3.6	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.5	2.5	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		5.0		5.0
Phase Duration, s		11.9		11.9		88.1		88.1
Change Period, (*Y+R c*), s		6.1		6.1		6.1		6.1
Max Allow Headway (*MAH*), s		5.1		5.1		0.0		0.0
Queue Clearance Time (*g s*), s		5.1		4.5				
Green Extension Time (*g e*), s		0.5		0.5		0.0		0.0
Phase Call Probability		0.97		0.97				
Max Out Probability		0.00		0.00				

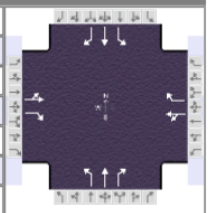
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		45	19		38	26	31	574	26	26	851	81
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1440	1610		1440	1610	658	1885	1610	852	1885	1610
Queue Service Time (*g s*), s		0.6	1.1		0.0	1.6	1.6	7.9	0.3	0.8	14.8	1.0
Cycle Queue Clearance Time (*g c*), s		3.1	1.1		2.5	1.6	16.5	7.9	0.3	8.7	14.8	1.0
Green Ratio (*g/C*)		0.06	0.06		0.06	0.06	0.82	0.82	0.82	0.82	0.82	0.82
Capacity (*c*), veh/h		156	94		156	94	514	1545	1320	703	1545	1320
Volume-to-Capacity Ratio (*X*)		0.291	0.206		0.240	0.278	0.060	0.371	0.020	0.037	0.551	0.061
Back of Queue (*Q*), ft/ln (95 th percentile)		51.5	22.1		42.1	30.2	10.1	84.9	2.7	5.8	161.7	8.7
Back of Queue (*Q*), veh/ln (95 th percentile)		2.1	0.9		1.7	1.2	0.4	3.4	0.1	0.2	6.4	0.3
Queue Storage Ratio (*RQ*) (95 th percentile)		0.52	0.22		0.24	0.10	0.10	0.00	0.04	0.06	0.00	0.12
Uniform Delay (*d 1*), s/veh		45.8	44.9		45.5	45.1	5.7	2.3	1.7	3.5	3.0	1.7
Incremental Delay (*d 2*), s/veh		1.5	1.5		1.1	2.3	0.2	0.7	0.0	0.1	1.4	0.1
Initial Queue Delay (*d 3*), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		47.2	46.4		46.6	47.3	5.9	3.0	1.7	3.6	4.4	1.8
Level of Service (LOS)		D	D		D	D	A	A	A	A	A	A
Approach Delay, s/veh / LOS	47.0	D		46.9	D		3.1	A		4.1	A	
Intersection Delay, s/veh / LOS	7.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.14	B	2.14	B	1.82	B	1.82	B
Bicycle LOS Score / LOS	0.59	A	0.59	A	1.53	B	2.07	B

 HCS™ Streets Version 7.9 Generated: 10/30/2020 3:18:56 PM

HCS Signalized Intersection Results Summary

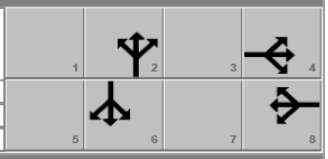
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering			Duration, h	0.250
Analyst	DBZ	Analysis Date	Jun 20, 2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.88
Urban Street	Herr Lane	Analysis Year	2025	Analysis Period	1> 7:00
Intersection	Ballard/Entrance	File Name	Ballard PM 25 B.xus		
Project Description	Bull Run Townhomes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	0	17	33	0	23	27	516	23	23	769	71

Signal Information			
Cycle, s	100.0	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	82.0	5.8	0.0	0.0	0.0	0.0	
Yellow	3.6	3.6	0.0	0.0	0.0	0.0	
Red	2.5	2.5	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		5.0		5.0
Phase Duration, s		11.9		11.9		88.1		88.1
Change Period, (*Y+R c*), s		6.1		6.1		6.1		6.1
Max Allow Headway (*MAH*), s		5.1		5.1		0.0		0.0
Queue Clearance Time (*g s*), s		5.1		4.5				
Green Extension Time (*g e*), s		0.5		0.5		0.0		0.0
Phase Call Probability		0.97		0.97				
Max Out Probability		0.00		0.00				

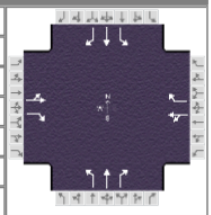
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		45	19		38	26	31	586	26	26	874	81
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1440	1610		1440	1610	644	1885	1610	842	1885	1610
Queue Service Time (*g s*), s		0.6	1.1		0.0	1.6	1.7	8.1	0.3	0.8	15.6	1.0
Cycle Queue Clearance Time (*g c*), s		3.1	1.1		2.5	1.6	17.3	8.1	0.3	9.0	15.6	1.0
Green Ratio (*g/C*)		0.06	0.06		0.06	0.06	0.82	0.82	0.82	0.82	0.82	0.82
Capacity (*c*), veh/h		156	94		156	94	500	1545	1320	694	1545	1320
Volume-to-Capacity Ratio (*X*)		0.291	0.206		0.240	0.278	0.061	0.379	0.020	0.038	0.566	0.061
Back of Queue (*Q*), ft/ln (95 th percentile)												
Back of Queue (*Q*), veh/ln (95 th percentile)		2.1	0.9		1.7	1.2	0.4	3.5	0.1	0.2	6.8	0.3
Queue Storage Ratio (*RQ*) (95 th percentile)		0.52	0.22		0.24	0.10	0.11	0.00	0.04	0.06	0.00	0.12
Uniform Delay (*d 1*), s/veh		45.8	44.9		45.5	45.1	5.9	2.4	1.7	3.5	3.0	1.7
Incremental Delay (*d 2*), s/veh		1.5	1.5		1.1	2.3	0.2	0.7	0.0	0.1	1.5	0.1
Initial Queue Delay (*d 3*), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		47.2	46.4		46.6	47.3	6.2	3.1	1.7	3.6	4.5	1.8
Level of Service (LOS)		D	D		D	D	A	A	A	A	A	A
Approach Delay, s/veh / LOS	47.0	D		46.9	D		3.2	A		4.3	A	
Intersection Delay, s/veh / LOS	7.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.14	B	2.14	B	1.82	B	1.82	B
Bicycle LOS Score / LOS	0.59	A	0.59	A	1.55	B	2.11	B

 HCS™ Streets Version 2022 Generated: 6/20/2022 3:22:18 PM

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering			Duration, h	0.250
Analyst	DBZ	Analysis Date	Oct 30, 2020	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.88
Urban Street	Herr Lane	Analysis Year	2035	Analysis Period	1> 4:00
Intersection	Ballard/Entrance	File Name	Ballard PM 35 B.xus		
Project Description	Providence Point				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	0	17	33	0	23	27	530	25	23	788	71

Signal Information			
Cycle, s	100.0	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	82.0	5.8	0.0	0.0	0.0	0.0	
Yellow	3.6	3.6	0.0	0.0	0.0	0.0	
Red	2.5	2.5	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		5.0		5.0
Phase Duration, s		11.9		11.9		88.1		88.1
Change Period, ($Y+R_c$), s		6.1		6.1		6.1		6.1
Max Allow Headway (*MAH*), s		5.1		5.1		0.0		0.0
Queue Clearance Time (g_s), s		5.1		4.5				
Green Extension Time (g_e), s		0.5		0.5		0.0		0.0
Phase Call Probability		0.97		0.97				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		45	19		38	26	31	602	28	26	895	81
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1440	1610		1440	1610	631	1885	1610	830	1885	1610
Queue Service Time (g_s), s		0.6	1.1		0.0	1.6	1.8	8.5	0.3	0.9	16.3	1.0
Cycle Queue Clearance Time (g_c), s		3.1	1.1		2.5	1.6	18.1	8.5	0.3	9.3	16.3	1.0
Green Ratio (*g/C*)		0.06	0.06		0.06	0.06	0.82	0.82	0.82	0.82	0.82	0.82
Capacity (*c*), veh/h		156	94		156	94	486	1545	1320	682	1545	1320
Volume-to-Capacity Ratio (*X*)		0.291	0.206		0.240	0.278	0.063	0.390	0.022	0.038	0.579	0.061
Back of Queue (*Q*), ft/ln (95 th percentile)		51.5	22.1		42.1	30.2	10.8	91.1	3	6.1	178.8	8.7
Back of Queue (*Q*), veh/ln (95 th percentile)		2.1	0.9		1.7	1.2	0.4	3.6	0.1	0.2	7.1	0.3
Queue Storage Ratio (*RQ*) (95 th percentile)		0.52	0.22		0.24	0.10	0.11	0.00	0.04	0.06	0.00	0.12
Uniform Delay (d_1), s/veh		45.8	44.9		45.5	45.1	6.2	2.4	1.7	3.6	3.1	1.7
Incremental Delay (d_2), s/veh		1.5	1.5		1.1	2.3	0.2	0.7	0.0	0.1	1.6	0.1
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		47.2	46.4		46.6	47.3	6.5	3.1	1.7	3.7	4.7	1.8
Level of Service (LOS)		D	D		D	D	A	A	A	A	A	A
Approach Delay, s/veh / LOS	47.0	D		46.9	D		3.2	A		4.4	A	
Intersection Delay, s/veh / LOS	7.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.14	B	2.14	B	1.82	B	1.82	B
Bicycle LOS Score / LOS	0.59	A	0.59	A	1.58	B	2.14	B

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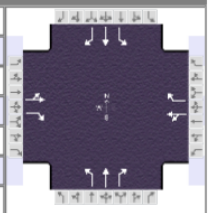
HCS Signalized Intersection Results Summary

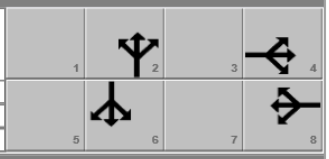
General Information				Intersection Information	
Agency	Diane B. Zimmerman Traffic Engineering			Duration, h	0.250
Analyst	DBZ	Analysis Date	Jun 20, 2022	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.88
Urban Street	Herr Lane	Analysis Year	2035	Analysis Period	1> 4:00
Intersection	Ballard/Entrance	File Name	Ballard PM 35 B.xus		
Project Description	Bull Run Townhomes				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	0	17	33	0	23	27	541	25	23	808	71

Signal Information			
Cycle, s	100.0	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	82.0	5.8	0.0	0.0	0.0	0.0	
Yellow	3.6	3.6	0.0	0.0	0.0	0.0	
Red	2.5	2.5	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		5.0		5.0
Phase Duration, s		11.9		11.9		88.1		88.1
Change Period, (*Y+R c*), s		6.1		6.1		6.1		6.1
Max Allow Headway (*MAH*), s		5.1		5.1		0.0		0.0
Queue Clearance Time (*g s*), s		5.1		4.5				
Green Extension Time (*g e*), s		0.5		0.5		0.0		0.0
Phase Call Probability		0.97		0.97				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		45	19		38	26	31	615	28	26	918	81
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1440	1610		1440	1610	618	1885	1610	820	1885	1610
Queue Service Time (*g s*), s		0.6	1.1		0.0	1.6	1.8	8.7	0.3	0.9	17.1	1.0
Cycle Queue Clearance Time (*g c*), s		3.1	1.1		2.5	1.6	19.0	8.7	0.3	9.6	17.1	1.0
Green Ratio (*g/C*)		0.06	0.06		0.06	0.06	0.82	0.82	0.82	0.82	0.82	0.82
Capacity (*c*), veh/h		156	94		156	94	473	1545	1320	673	1545	1320
Volume-to-Capacity Ratio (*X*)		0.291	0.206		0.240	0.278	0.065	0.398	0.022	0.039	0.594	0.061
Back of Queue (*Q*), ft/ln (95 th percentile)												
Back of Queue (*Q*), veh/ln (95 th percentile)		2.1	0.9		1.7	1.2	0.4	3.7	0.1	0.2	7.5	0.3
Queue Storage Ratio (*RQ*) (95 th percentile)		0.52	0.22		0.24	0.10	0.11	0.00	0.04	0.06	0.00	0.12
Uniform Delay (*d 1*), s/veh		45.8	44.9		45.5	45.1	6.5	2.4	1.7	3.7	3.2	1.7
Incremental Delay (*d 2*), s/veh		1.5	1.5		1.1	2.3	0.3	0.8	0.0	0.1	1.7	0.1
Initial Queue Delay (*d 3*), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		47.2	46.4		46.6	47.3	6.8	3.2	1.7	3.8	4.9	1.8
Level of Service (LOS)		D	D		D	D	A	A	A	A	A	A
Approach Delay, s/veh / LOS	47.0	D		46.9	D		3.3	A		4.6	A	
Intersection Delay, s/veh / LOS	7.1						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.14	B	2.14	B	1.82	B	1.82	B
Bicycle LOS Score / LOS	0.59	A	0.59	A	1.60	B	2.18	B

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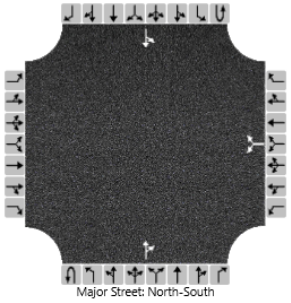
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Wesboro
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	7/23/2020	East/West Street	Wesboro
Analysis Year	2019	North/South Street	Herr Lane
Time Analyzed	AM Peak	Peak Hour Factor	0.82
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						84		105			434	82		57	306	
Percent Heavy Vehicles (%)						8		7						33		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized																
Median Type | Storage							Undivided									

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.48		6.27						4.43		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.57		3.36						2.50		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							230							70		
Capacity, c (veh/h)							386							820		
v/c Ratio							0.60							0.08		
95% Queue Length, Q_{95} (veh)							3.7							0.3		
Control Delay (s/veh)							27.2							9.8		
Level of Service (LOS)							D							A		
Approach Delay (s/veh)						27.2								2.4		
Approach LOS						D										

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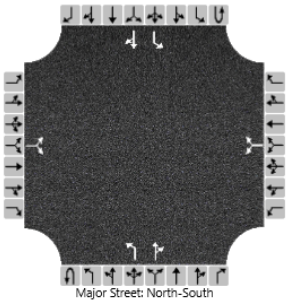
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Wesboro
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/30/2020	East/West Street	Wesboro
Analysis Year	2025	North/South Street	Herr Lane
Time Analyzed	AM Peak Build	Peak Hour Factor	0.82
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	1	0	0	1	1	0
Configuration			LR				LR			L		TR		L		TR
Volume (veh/h)		15		26		84		105		9	482	82		57	357	3
Percent Heavy Vehicles (%)		0		0		8		7		0				33		
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)		7.1		6.2		7.1		6.2		4.1				4.1		
Critical Headway (sec)		7.10		6.20		7.18		6.27		4.10				4.43		
Base Follow-Up Headway (sec)		3.5		3.3		3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50		3.30		3.57		3.36		2.20				2.50		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			50				230			11				70		
Capacity, c (veh/h)			325				450			1132				778		
v/c Ratio			0.15				0.51			0.01				0.09		
95% Queue Length, Q_{95} (veh)			0.5				2.8			0.0				0.3		
Control Delay (s/veh)			18.1				21.1			8.2				10.1		
Level of Service (LOS)			C				C			A				B		
Approach Delay (s/veh)		18.1				21.1				0.1				1.4		
Approach LOS		C				C										

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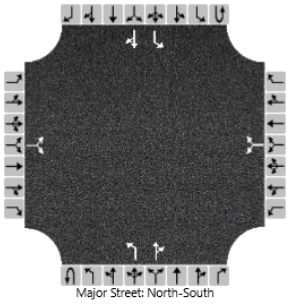
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Wesboro
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	6/20/22	East/West Street	Wesboro
Analysis Year	2025	North/South Street	Herr Lane
Time Analyzed	AM Peak Build	Peak Hour Factor	0.82
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Bull Run Townhomes		

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	1	0	0	1	1	0
Configuration			LR				LR			L		TR		L		TR
Volume (veh/h)		35		40		84		105		13	482	82		57	357	10
Percent Heavy Vehicles (%)		0		0		8		7		0				33		
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)		7.1		6.2		7.1		6.2		4.1				4.1		
Critical Headway (sec)		7.10		6.20		7.18		6.27		4.10				4.43		
Base Follow-Up Headway (sec)		3.5		3.3		3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50		3.30		3.57		3.36		2.20				2.50		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			91				230			16				70		
Capacity, c (veh/h)			314				460			1123				778		
v/c Ratio			0.29				0.50			0.01				0.09		
95% Queue Length, Q_{95} (veh)			1.2				2.7			0.0				0.3		
Control Delay (s/veh)			21.1				20.4			8.3				10.1		
Level of Service (LOS)			C				C			A				B		
Approach Delay (s/veh)	21.1				20.4				0.2				1.4			
Approach LOS	C				C				A				A			

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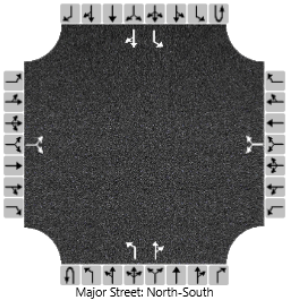
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Wesboro
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/30/2020	East/West Street	Wesboro
Analysis Year	2035	North/South Street	Herr Lane
Time Analyzed	AM Peak Build	Peak Hour Factor	0.82
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	1	0	0	1	1	0
Configuration			LR				LR			L		TR		L		TR
Volume (veh/h)		15		26		84		105		9	506	82		57	374	3
Percent Heavy Vehicles (%)		0		0		8		7		0				33		
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)		7.1		6.2		7.1		6.2		4.1				4.1		
Critical Headway (sec)		7.10		6.20		7.18		6.27		4.10				4.43		
Base Follow-Up Headway (sec)		3.5		3.3		3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50		3.30		3.57		3.36		2.20				2.50		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			50				230			11				70		
Capacity, c (veh/h)			308				431			1112				757		
v/c Ratio			0.16				0.54			0.01				0.09		
95% Queue Length, Q_{95} (veh)			0.6				3.1			0.0				0.3		
Control Delay (s/veh)			18.9				22.6			8.3				10.2		
Level of Service (LOS)			C				C			A				B		
Approach Delay (s/veh)	18.9				22.6				0.1				1.3			
Approach LOS	C				C											

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Wesboro AM 35 B.xtw
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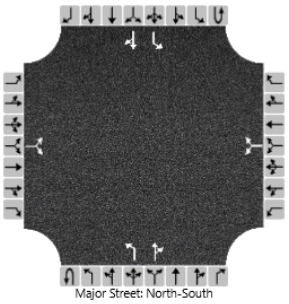
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Wesboro
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	6/20/22	East/West Street	Wesboro
Analysis Year	2035	North/South Street	Herr Lane
Time Analyzed	AM Peak Build	Peak Hour Factor	0.82
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Bull Run Townhomes		

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	1	0	0	1	1	0
Configuration			LR				LR			L		TR		L		TR
Volume (veh/h)		35		40		84		105		13	506	82		57	374	10
Percent Heavy Vehicles (%)		0		0		8		7		0				33		
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)		7.1		6.2		7.1		6.2		4.1				4.1		
Critical Headway (sec)		7.10		6.20		7.18		6.27		4.10				4.43		
Base Follow-Up Headway (sec)		3.5		3.3		3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50		3.30		3.57		3.36		2.20				2.50		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			91				230			16				70		
Capacity, c (veh/h)			297				440			1104				757		
v/c Ratio			0.31				0.52			0.01				0.09		
95% Queue Length, Q_{95} (veh)			1.3				3.0			0.0				0.3		
Control Delay (s/veh)			22.4				21.8			8.3				10.2		
Level of Service (LOS)			C				C			A				B		
Approach Delay (s/veh)		22.4				21.8				0.2				1.3		
Approach LOS		C				C				A				A		

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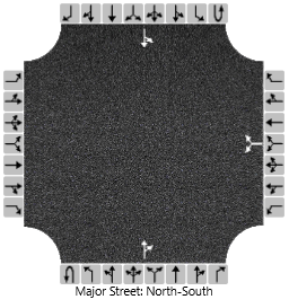
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Wesboro
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	7/23/2020	East/West Street	Wesboro
Analysis Year	2019	North/South Street	Herr Lane
Time Analyzed	PM Peak	Peak Hour Factor	0.94
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						21		25			485	45		64	592	
Percent Heavy Vehicles (%)						0		4						0		
Proportion Time Blocked																
Percent Grade (%)						0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.40		6.24						4.10		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.50		3.34						2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)							49							68		
Capacity, c (veh/h)							350							1018		
v/c Ratio							0.14							0.07		
95% Queue Length, Q_{95} (veh)							0.5							0.2		
Control Delay (s/veh)							16.9							8.8		
Level of Service (LOS)							C							A		
Approach Delay (s/veh)						16.9								1.7		
Approach LOS						C										

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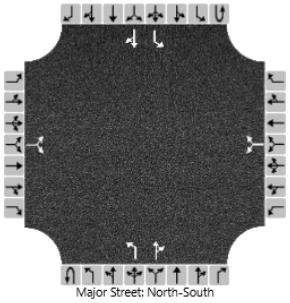
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Wesboro
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/30/2020	East/West Street	Wesboro
Analysis Year	2025	North/South Street	Herr Lane
Time Analyzed	PM Peak Build	Peak Hour Factor	0.94
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	1	0	0	1	1	0
Configuration			LR				LR			L		TR		L		TR
Volume (veh/h)		10		17		21		25		26	536	45		64	690	8
Percent Heavy Vehicles (%)		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)		7.1		6.2		7.1		6.2		4.1				4.1		
Critical Headway (sec)		7.10		6.20		7.10		6.24		4.10				4.10		
Base Follow-Up Headway (sec)		3.5		3.3		3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50		3.30		3.50		3.34		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			29				49			28				68		
Capacity, c (veh/h)			291				421			874				972		
v/c Ratio			0.10				0.12			0.03				0.07		
95% Queue Length, Q_{95} (veh)			0.3				0.4			0.1				0.2		
Control Delay (s/veh)			18.7				14.7			9.3				9.0		
Level of Service (LOS)			C				B			A				A		
Approach Delay (s/veh)		18.7				14.7				0.4				0.8		
Approach LOS		C				B										

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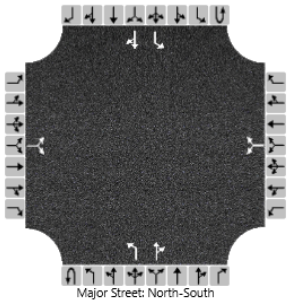
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Wesboro
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	6/20/22	East/West Street	Wesboro
Analysis Year	2025	North/South Street	Herr Lane
Time Analyzed	PM Peak Build	Peak Hour Factor	0.94
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Bull Run Townhomes		

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	1	0	0	1	1	0
Configuration			LR				LR			L		TR		L		TR
Volume (veh/h)		21		25		21		25		39	536	45		64	690	28
Percent Heavy Vehicles (%)		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)		7.1		6.2		7.1		6.2		4.1				4.1		
Critical Headway (sec)		7.10		6.20		7.10		6.24		4.10				4.10		
Base Follow-Up Headway (sec)		3.5		3.3		3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50		3.30		3.50		3.34		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			49				49			41				68		
Capacity, c (veh/h)			267				364			858				972		
v/c Ratio			0.18				0.13			0.05				0.07		
95% Queue Length, Q_{95} (veh)			0.7				0.5			0.2				0.2		
Control Delay (s/veh)			21.5				16.4			9.4				9.0		
Level of Service (LOS)			C				C			A				A		
Approach Delay (s/veh)		21.5				16.4				0.6				0.7		
Approach LOS		C				C				A				A		

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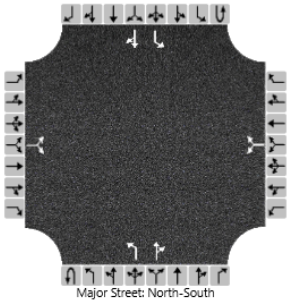
HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Wesboro
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	10/30/2020	East/West Street	Wesboro
Analysis Year	2035	North/South Street	Herr Lane
Time Analyzed	PM Peak Build	Peak Hour Factor	0.94
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Providence Point		

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	1	0	0	1	1	0
Configuration			LR				LR			L		TR		L		TR
Volume (veh/h)		10		17		21		25		26	562	45		64	734	8
Percent Heavy Vehicles (%)		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)		7.1		6.2		7.1		6.2		4.1				4.1		
Critical Headway (sec)		7.10		6.20		7.10		6.24		4.10				4.10		
Base Follow-Up Headway (sec)		3.5		3.3		3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50		3.30		3.50		3.34		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			29				49			28				68		
Capacity, c (veh/h)			273				392			839				949		
v/c Ratio			0.11				0.12			0.03				0.07		
95% Queue Length, Q_{95} (veh)			0.3				0.4			0.1				0.2		
Control Delay (s/veh)			19.7				15.5			9.4				9.1		
Level of Service (LOS)			C				C			A				A		
Approach Delay (s/veh)	19.7				15.5				0.4				0.7			
Approach LOS	C				C											

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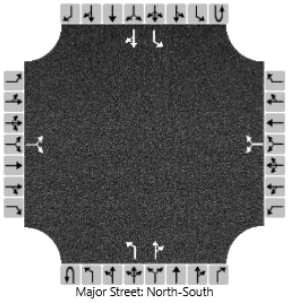
HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	DBZ	Intersection	Herr Lane at Wesboro
Agency/Co.	Diane B Zimmerman Traffic Engineering	Jurisdiction	
Date Performed	6/20/22	East/West Street	Wesboro
Analysis Year	2035	North/South Street	Herr Lane
Time Analyzed	PM Peak Build	Peak Hour Factor	0.94
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Bull Run Townhomes		

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	1	0	0	1	1	0
Configuration			LR				LR			L		TR		L		TR
Volume (veh/h)		21		25		21		25		39	562	45		64	734	28
Percent Heavy Vehicles (%)		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)		7.1		6.2		7.1		6.2		4.1				4.1		
Critical Headway (sec)		7.10		6.20		7.10		6.24		4.10				4.10		
Base Follow-Up Headway (sec)		3.5		3.3		3.5		3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50		3.30		3.50		3.34		2.20				2.20		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			49				49			41				68		
Capacity, c (veh/h)			250				340			824				949		
v/c Ratio			0.20				0.14			0.05				0.07		
95% Queue Length, Q_{95} (veh)			0.7				0.5			0.2				0.2		
Control Delay (s/veh)			22.8				17.4			9.6				9.1		
Level of Service (LOS)			C				C			A				A		
Approach Delay (s/veh)		22.8				17.4				0.6				0.7		
Approach LOS		C				C				A				A		

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