final report

July 31, 2020
*Revised October 30, 2020*

# Traffic Impact Study

*Providence Point*
*Herr Lane (KY 2050)*
*Louisville, KY*

Prepared for

Louisville Metro Planning Commission
Kentucky Transportation Cabinet


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20-DDP-0045

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# INTRODUCTION

The development plan for Providence Point on Herr Lane shows 520 apartment units. **Figure 1** displays a map of the site. Access to the development will be at two locations on Herr Lane. 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 entrances. The entrances on Herr Lane reflect the improvements agreed to with the 2006 plan for this site – left and right turn lanes at Ballard High School, as well as a traffic signal, and left turn lanes at Wesboro Road.


**Figure 1. Site Map**

# EXISTING CONDITIONS

Herr Lane, KY 2050, is a state-maintained road with an estimated 2020 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.

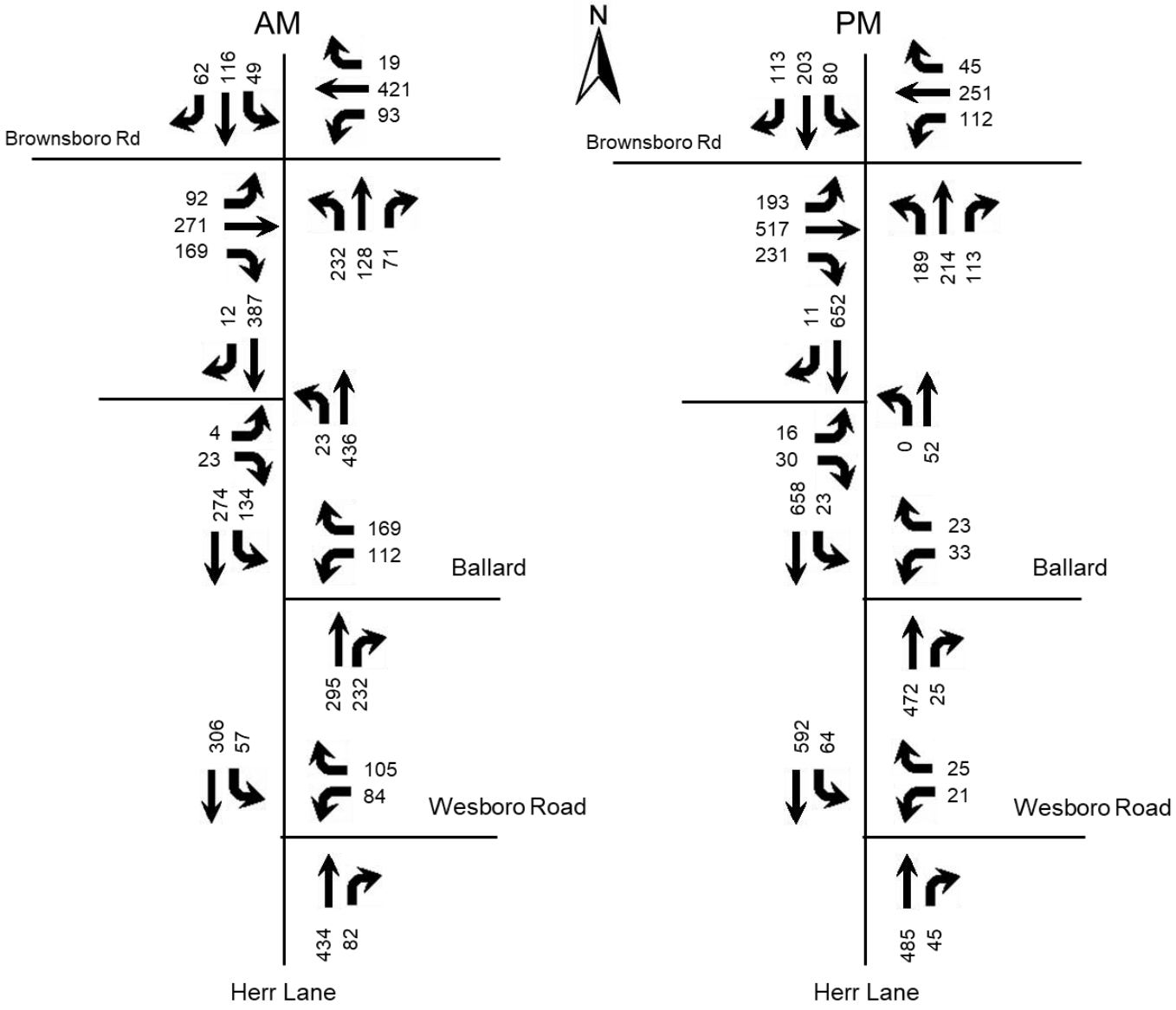


**Figure 2. Existing Peak Hour Volumes**

## 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 has been included. The trip generation and distribution are from the October 2016 traffic impact study for the site. **Figure 3** displays the 2025 No Build peak hour volumes.

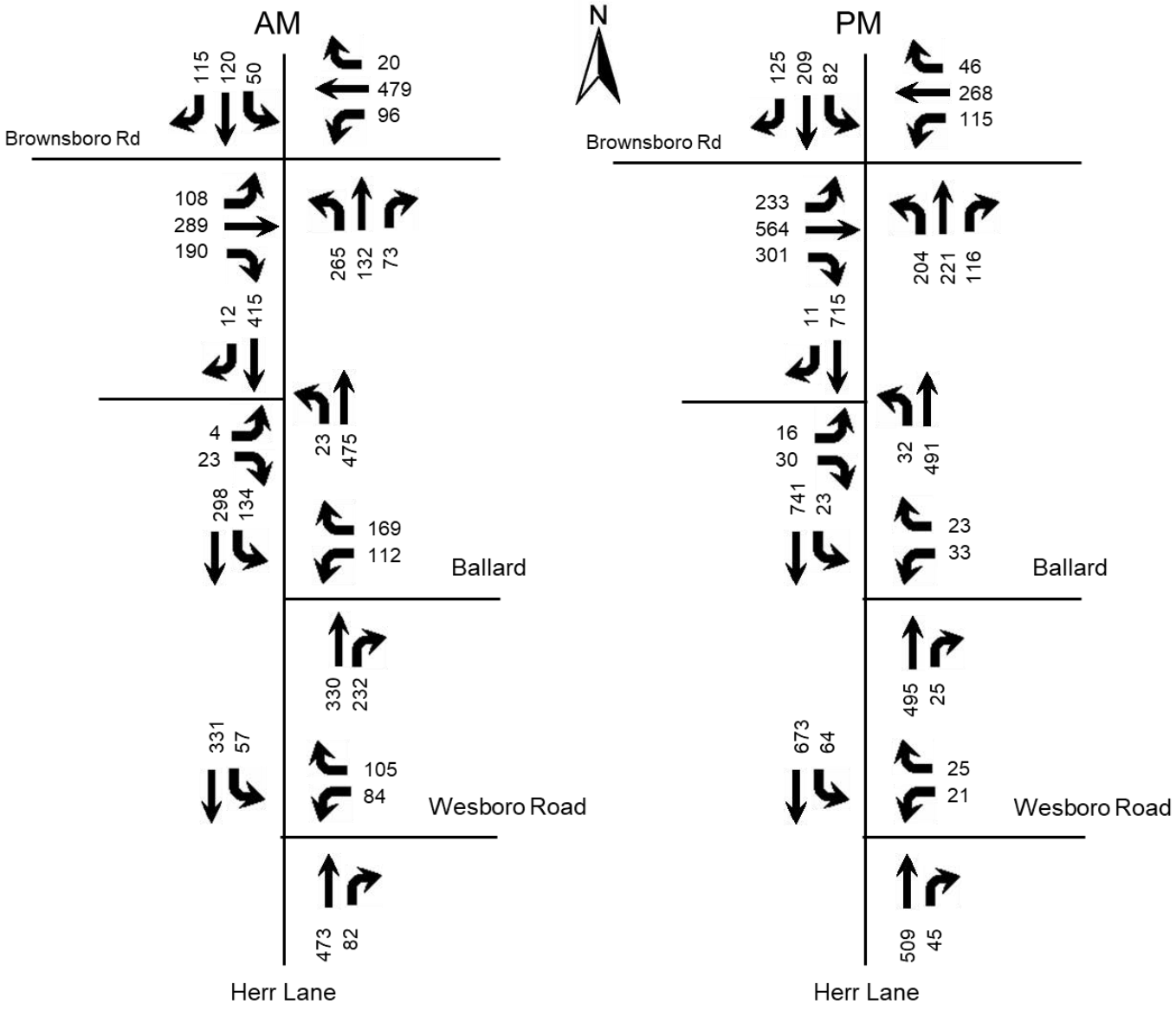


**Figure 3. 2025 No Build Peak Hour Volumes**

## 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 (Mid-Rise) (221)" was reviewed and determined to be the best match. The trip generation results are listed in **Table 1**. The trips were assigned to the highway network with the percentages shown in **Figure 4**. **Figure 5** shows the trips generated by this development and distributed throughout the road network during the peak hours. **Figure 6** displays the individual turning movements for the peak hours when the development is completed.

**Table 1. Peak Hour Trips Generated by Site**

| | A.M. Peak Hour | | | P.M. Peak Hour | | |
|---|---|---|---|---|---|---|
| **Land Use** | **Trips** | **In** | **Out** | **Trips** | **In** | **Out** |
| Multi-family (Mid-Rise) 520 units | 172 | 45 | 127 | 216 | 132 | 84 |


**Figure 4. Trip Distribution Percentages**

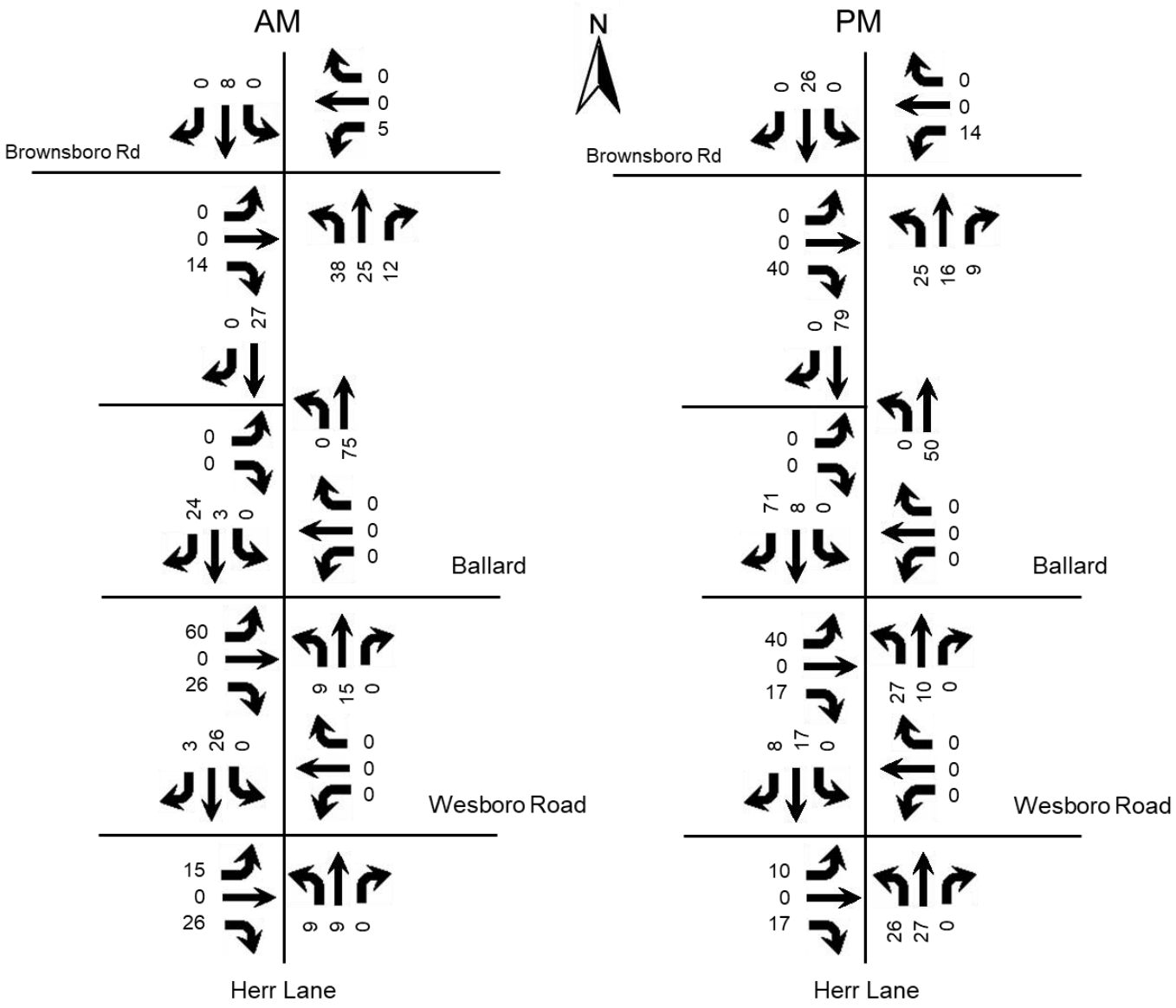


**Figure 5. Peak Hour Trips Generated by Site**

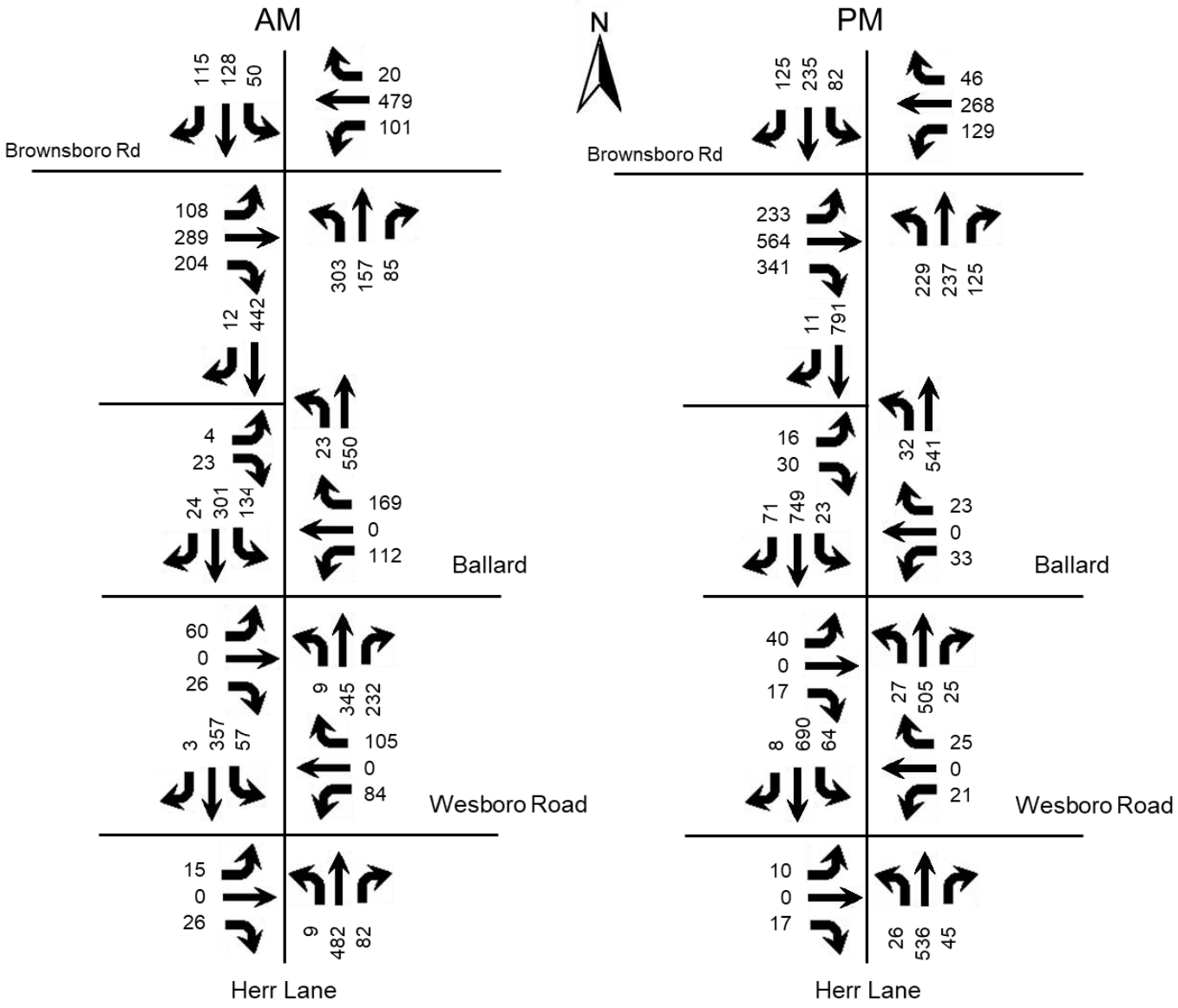


**Figure 6. 2025 Build Peak Hour Volumes**

## 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, 6th edition. Future delays and Level of Service were determined for the intersections using the HCS Streets (version 7.9) software. The delays and Level of Service are summarized in **Table 2**.

The Build 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 2006 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** | **C 35.7** | **D 39.5** | **D 40.9** | **D 47.4** | **E 56.5** |
| Brownsboro Road Eastbound | C 23.0 | C 25.2 | C 28.1 | D 35.2 | D 39.4 | D 46.5 |
| Brownsboro Road Westbound | C 29.5 | C 34.5 | D 38.7 | C 32.6 | D 36.6 | D 41.3 |
| Herr Lane Northbound | D 36.3 | D 42.0 | D 45.4 | D 50.9 | E 61.9 | E 74.2 |
| Lime Kiln Southbound | D 40.8 | D 48.6 | D 52.6 | D 52.6 | E 63.9 | E 77.4 |
| **Herr Lane at Access Road** | | | | | | |
| Access Road Eastbound | B 11.6 | B 11.9 | B 12.3 | C 15.1 | C 16.1 | C 17.5 |
| Herr Lane Northbound (left) | A 8.3 | A 8.4 | A 8.4 | A 9.1 | A 9.3 | A 9.6 |
| **Herr Lane at Ballard High** | | | **B 15.7** | | | **A 7.0** |
| Development Entrance Eastbound | | | D 37.5 | | | D 47.0 |
| Ballard High Westbound | D 32.1 | E 39.0 | D 46.5 | D 25.1 | D 29.7 | D 46.9 |
| Herr Lane Northbound (left) | | | A 5.3 | | | A 3.1 |
| Herr Lane Southbound (left) | A 9.3 | A 9.5 | A 5.9 | A 8.6 | A 8.7 | A 4.1 |
| **Herr Lane at Wesboro Road** | | | | | | |
| Development Entrance Eastbound | | | C 18.1 | | | C 18.7 |
| Wesboro Road Westbound | D 27.2 | D 33.9 | C 21.1 | C 16.9 | C 19.6 | B 14.7 |
| Herr Lane Northbound (left) | | | A 8.2 | | | A 9.3 |
| Herr Lane Southbound (left) | A 9.8 | B 10.0 | B 10.1 | A 8.8 | A 8.9 | 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.

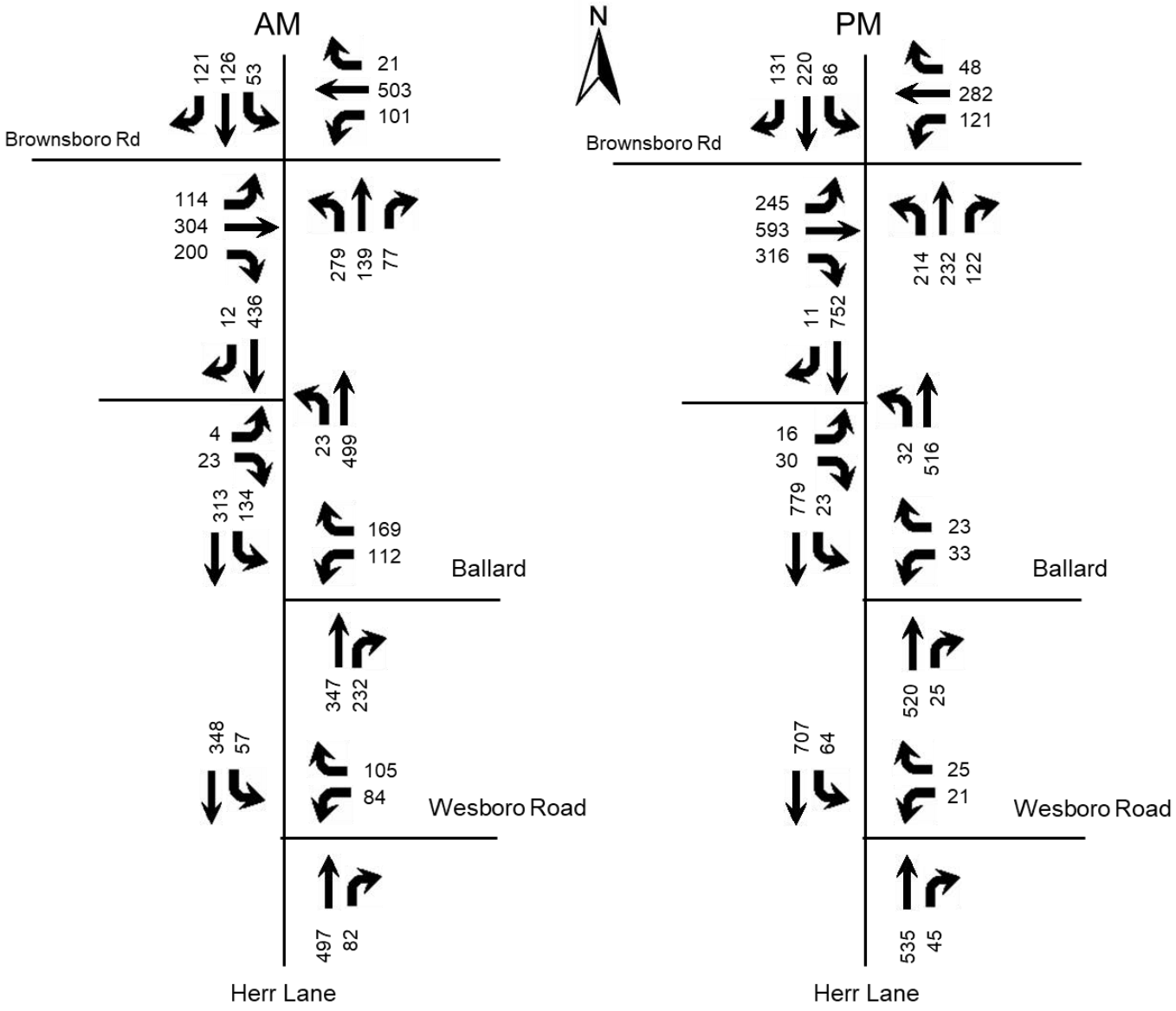


**Figure 7. 2035 No Build Peak Hour Volumes**

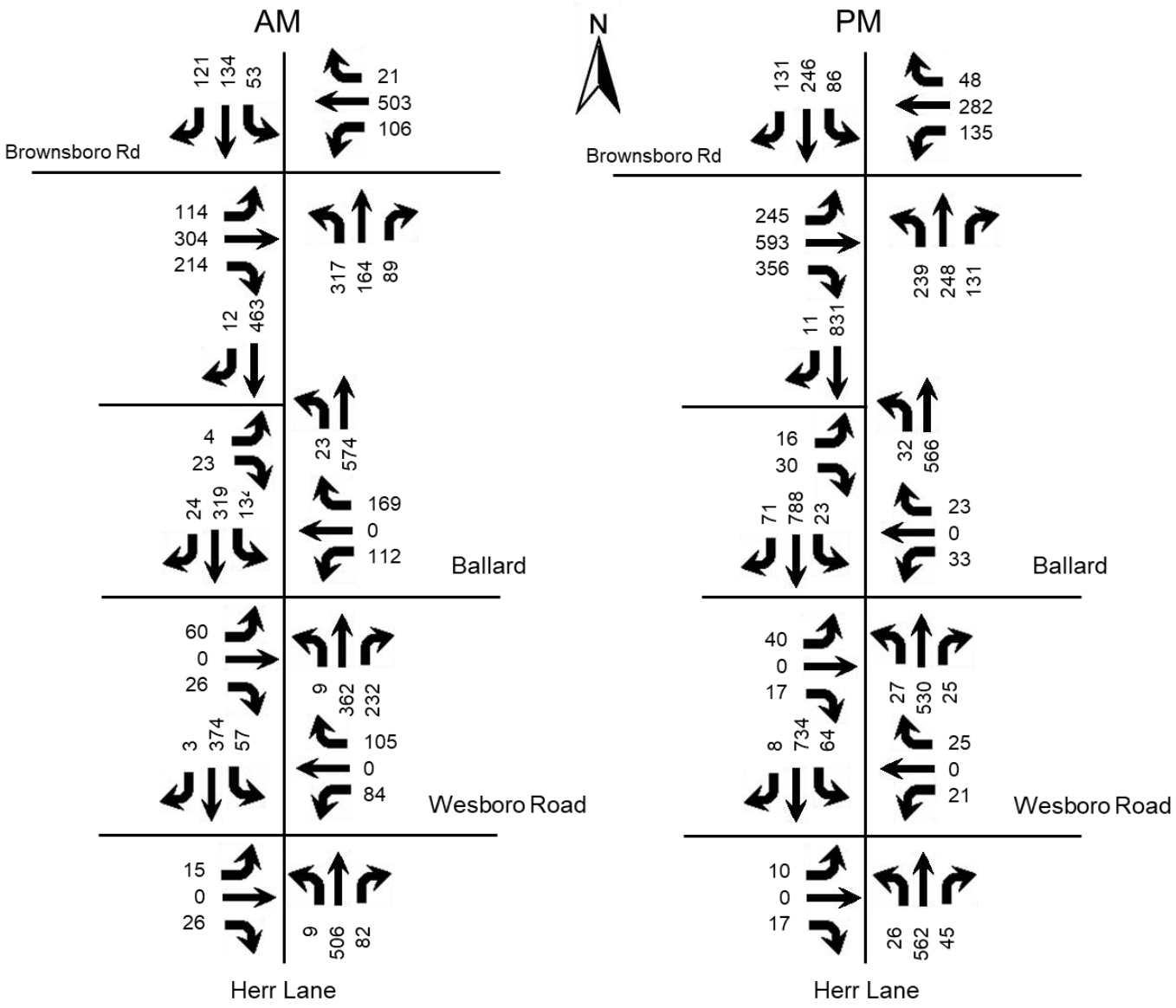


**Figure 8. 2035 Build Peak Hour Volumes**

**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** | **C 38.8** | **D 43.3** | **D 40.9** | **D 54.8** | **E 62.7** |
| Brownsboro Road Eastbound | C 23.0 | C 26.9 | C 30.0 | D 35.2 | D 45.4 | E 56.3 |
| Brownsboro Road Westbound | C 29.5 | D 38.1 | D 42.7 | C 32.6 | D 40.0 | D 47.4 |
| Herr Lane Northbound | D 36.3 | D 45.7 | D 50.5 | D 50.9 | E 73.0 | E 77.7 |
| Lime Kiln Southbound | D 40.8 | D 52.8 | D 57.2 | D 52.6 | E 75.0 | E 77.2 |
| **Herr Lane at Access Road** | | | | | | |
| Access Road Eastbound | B 11.6 | B 12.1 | B 12.5 | C 15.1 | C 16.7 | C 18.2 |
| Herr Lane Northbound (left) | A 8.3 | A 8.4 | A 8.5 | A 9.1 | A 9.5 | A 9.8 |
| **Herr Lane at Ballard High** | | | **B 15.5** | | | **A** 7.0 |
| Development Entrance Eastbound | | | D 37.5 | | | D 47.0 |
| Ballard High Westbound | D 32.1 | E 43.7 | D 46.5 | D 25.1 | D 33.2 | D 46.9 |
| Herr Lane Northbound (left) | | | A 5.4 | | | A 3.2 |
| Herr Lane Southbound (left) | A 9.3 | A 9.6 | A 6.0 | A 8.6 | A 8.8 | A 4.4 |
| **Herr Lane at Wesboro Road** | | | | | | |
| Development Entrance Eastbound | | | C 18.9 | | | C 19.7 |
| Wesboro Road Westbound | D 27.2 | E 46.8 | C 22.6 | C 16.9 | C 21.4 | C 15.5 |
| Herr Lane Northbound (left) | | | A 8.3 | | | A 9.4 |
| Herr Lane Southbound (left) | A 9.8 | B 10.2 | B 10.2 | A 8.8 | A 9.0 | 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 proposed improvements of left and right turn lanes and a traffic signal at the entrance across from Ballard High School, and left turn lanes at Wesboro

Road will mitigate the impacts. The 2035 PM Build results reflect a modification to the signal timing to allow more green time on Herr Lane at Brownsboro Road.

# 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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www.marrtraffic.com

1 (800) 615-3765

| | 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

hello@marrtraffic.com
www.marrtraffic.com

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)

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

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

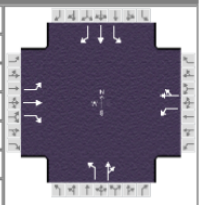
| | Southbound | | | | | Westbound | | | | | Northbound | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herr Ln (North) | | | | | Wesboro Rd | | | | | Herr Ln (South) | | | | | |
| | U-Turn | Left | Thru | Peds | App | U-Turn | Left | Right | Peds | App | U-Turn | 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

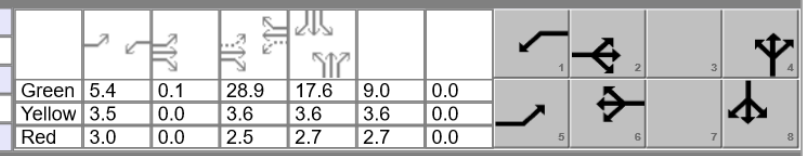
## HCS7 Signalized Intersection Results Summary

| 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 |




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 |

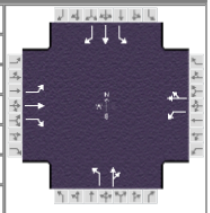
| Movement Group Results | EB | | | WB | | | NB | | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach Movement | L | T | R | L | T | R | L | T | R | L | T | R |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| Adjusted Flow Rate ( *v* ), veh/h | 108 | 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

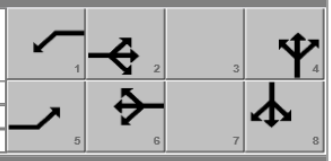
| General Information | | | | Intersection Information | |
|---|---|---|---|---|---|
| Agency | Diane B. Zimmerman Traffic | | | Duration, h | 0.250 |
| Analyst | DBZ | Analysis Date | Jul 23, 2020 | Area Type | Other |
| Jurisdiction | | Time Period | AM Peak | PHF | 0.85 |
| Urban Street | Herr Lane | Analysis Year | 2025 No Build | Analysis Period | 1> 7:15 |
| Intersection | Brownsboror Road | File Name | AM 25 NB 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 | 190 | 96 | 479 | 20 | 265 | 132 | 73 | 50 | 120 | 115 |

| Signal Information | | | |
|---|---|---|---|
| Cycle, s | 103.0 | 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 | 6.2 | 0.8 | 37.5 | 22.5 | 10.8 | 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 | 13.5 | 44.5 | 12.7 | 43.6 | | 28.8 | | 17.1 |
| 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 | | 5.2 |
| Queue Clearance Time ( *g s* ), s | 6.7 | 16.7 | 6.0 | 31.7 | | 19.3 | | 9.5 |
| Green Extension Time ( *g e* ), s | 0.4 | 4.5 | 0.4 | 5.7 | | 3.1 | | 1.3 |
| Phase Call Probability | 0.97 | 1.00 | 0.96 | 1.00 | | 1.00 | | 1.00 |
| Max Out Probability | 0.00 | 0.00 | 0.00 | 0.03 | | 0.02 | | 0.01 |

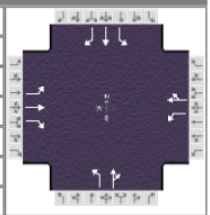
| Movement Group Results | EB | | | WB | | | NB | | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach Movement | L | T | R | L | T | R | L | T | R | L | T | R |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| Adjusted Flow Rate ( *v* ), veh/h | 127 | 340 | 136 | 113 | 584 | | 312 | 235 | | 59 | 141 | 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 | 4.7 | 14.7 | 6.1 | 4.0 | 29.7 | | 17.3 | 13.2 | | 3.2 | 7.5 | 5.4 |
| Cycle Queue Clearance Time ( *g c* ), s | 4.7 | 14.7 | 6.1 | 4.0 | 29.7 | | 17.3 | 13.2 | | 3.2 | 7.5 | 5.4 |
| Green Ratio ( *g/C* ) | 0.43 | 0.37 | 0.37 | 0.43 | 0.36 | | 0.22 | 0.22 | | 0.11 | 0.11 | 0.11 |
| Capacity ( *c* ), veh/h | 246 | 686 | 595 | 397 | 683 | | 386 | 366 | | 187 | 198 | 169 |
| Volume-to-Capacity Ratio ( *X* ) | 0.516 | 0.496 | 0.229 | 0.284 | 0.855 | | 0.808 | 0.642 | | 0.314 | 0.712 | 0.521 |
| Back of Queue ( *Q* ), ft/ln ( 95 th percentile) | 94.1 | 273.2 | 103.9 | 76.4 | 512.1 | | 321.1 | 250.7 | | 65.9 | 172.4 | 102.2 |
| Back of Queue ( *Q* ), veh/ln ( 95 th percentile) | 3.5 | 10.6 | 4.1 | 3.0 | 20.3 | | 12.5 | 9.4 | | 2.6 | 6.8 | 4.1 |
| Queue Storage Ratio ( *RQ* ) ( 95 th percentile) | 0.63 | 0.27 | 0.30 | 0.51 | 0.51 | | 0.92 | 0.25 | | 0.44 | 0.17 | 0.68 |
| Uniform Delay ( *d 1* ), s/veh | 23.1 | 24.9 | 22.2 | 19.6 | 30.3 | | 38.3 | 36.7 | | 42.7 | 44.7 | 43.7 |
| Incremental Delay ( *d 2* ), s/veh | 2.4 | 1.2 | 0.4 | 0.6 | 7.0 | | 5.7 | 2.7 | | 1.3 | 6.6 | 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 | 25.4 | 26.1 | 22.6 | 20.2 | 37.3 | | 44.0 | 39.4 | | 44.1 | 51.3 | 47.2 |
| Level of Service (LOS) | C | C | C | C | D | | D | D | | D | D | D |
| Approach Delay, s/veh / LOS | 25.2 | C | | 34.5 | C | | 42.0 | D | | 48.6 | D | |
| Intersection Delay, s/veh / LOS | 35.7 | | | | | | 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 | 1.48 | A | 1.64 | B | 1.39 | A | 0.96 | 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 |

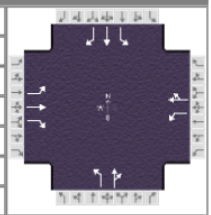
| Movement Group Results | EB | | | WB | | | NB | | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach Movement | L | T | R | L | T | R | L | T | R | L | T | R |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| Adjusted Flow Rate ( *v* ), veh/h | 127 | 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

## 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 | 2035 No Build | Analysis Period | 1> 7:15 |
| Intersection | Brownsboror Road | File Name | AM 35 NB 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 | 200 | 101 | 503 | 21 | 279 | 139 | 77 | 53 | 126 | 121 |

| Signal Information | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cycle, s | 111.9 | Reference Phase | 2 | | | | | | | |
| Offset, s | 0 | Reference Point | End | Green | 6.8 | 0.9 | 42.0 | 25.1 | 12.0 | 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 | 14.2 | 49.0 | 13.3 | 48.1 | | 31.4 | | 18.3 |
| 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 | | 5.2 |
| Queue Clearance Time ( *g s* ), s | 7.3 | 18.7 | 6.5 | 36.1 | | 21.8 | | 10.5 |
| Green Extension Time ( *g e* ), s | 0.5 | 4.8 | 0.4 | 5.8 | | 3.2 | | 1.4 |
| Phase Call Probability | 0.98 | 1.00 | 0.98 | 1.00 | | 1.00 | | 1.00 |
| Max Out Probability | 0.01 | 0.00 | 0.00 | 0.08 | | 0.05 | | 0.03 |

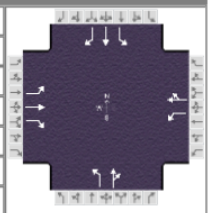
| Movement Group Results | EB | | | WB | | | NB | | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach Movement | L | T | R | L | T | R | L | T | R | L | T | R |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| Adjusted Flow Rate ( *v* ), veh/h | 134 | 358 | 148 | 119 | 613 | | 328 | 248 | | 62 | 148 | 95 |
| Adjusted Saturation Flow Rate ( *s* ), veh/h/ln | 1697 | 1841 | 1598 | 1781 | 1874 | | 1767 | 1678 | | 1781 | 1885 | 1610 |
| Queue Service Time ( *g s* ), s | 5.3 | 16.7 | 7.1 | 4.5 | 34.1 | | 19.8 | 15.1 | | 3.6 | 8.5 | 6.3 |
| Cycle Queue Clearance Time ( *g c* ), s | 5.3 | 16.7 | 7.1 | 4.5 | 34.1 | | 19.8 | 15.1 | | 3.6 | 8.5 | 6.3 |
| Green Ratio ( *g/C* ) | 0.44 | 0.38 | 0.38 | 0.44 | 0.37 | | 0.22 | 0.22 | | 0.11 | 0.11 | 0.11 |
| Capacity ( *c* ), veh/h | 236 | 706 | 613 | 395 | 703 | | 396 | 376 | | 190 | 201 | 172 |
| Volume-to-Capacity Ratio ( *X* ) | 0.568 | 0.507 | 0.242 | 0.301 | 0.872 | | 0.828 | 0.660 | | 0.328 | 0.736 | 0.554 |
| Back of Queue ( *Q* ), ft/ln ( 95 th percentile) | 108.2 | 305.3 | 122.7 | 87.1 | 587.2 | | 363.7 | 281.4 | | 76.4 | 196.8 | 120.9 |
| Back of Queue ( *Q* ), veh/ln ( 95 th percentile) | 4.1 | 11.8 | 4.9 | 3.4 | 23.3 | | 14.2 | 10.6 | | 3.0 | 7.8 | 4.8 |
| Queue Storage Ratio ( *RQ* ) ( 95 th percentile) | 0.72 | 0.31 | 0.35 | 0.58 | 0.59 | | 1.04 | 0.28 | | 0.51 | 0.20 | 0.81 |
| Uniform Delay ( *d 1* ), s/veh | 25.1 | 26.4 | 23.5 | 20.7 | 32.5 | | 41.4 | 39.6 | | 46.3 | 48.5 | 47.5 |
| Incremental Delay ( *d 2* ), s/veh | 3.0 | 1.2 | 0.4 | 0.6 | 8.8 | | 6.8 | 2.8 | | 1.4 | 7.2 | 3.9 |
| Initial Queue Delay ( *d 3* ), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Control Delay ( *d* ), s/veh | 28.1 | 27.6 | 23.9 | 21.3 | 41.3 | | 48.2 | 42.4 | | 47.7 | 55.7 | 51.4 |
| Level of Service (LOS) | C | C | C | C | D | | D | D | | D | E | D |
| Approach Delay, s/veh / LOS | 26.9 | C | | 38.1 | D | | 45.7 | D | | 52.8 | D | |
| Intersection Delay, s/veh / LOS | 38.8 | | | | | | 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 | 1.54 | B | 1.70 | B | 1.44 | A | 0.99 | A |

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

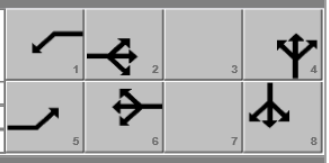
## HCS7 Signalized Intersection Results Summary

| 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 | 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 |

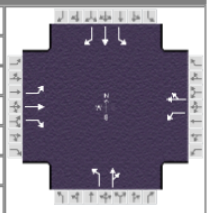
| Movement Group Results | EB | | | WB | | | NB | | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach Movement | L | T | R | L | T | R | L | T | R | L | T | R |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| Adjusted Flow Rate ( *v* ), veh/h | 134 | 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

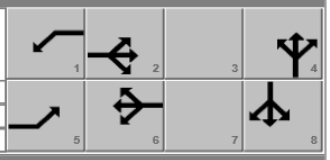
# HCS7 Signalized Intersection Results Summary

| 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 |

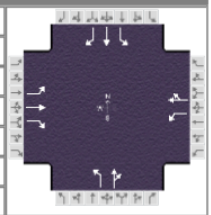
| Movement Group Results | EB | | | WB | | | NB | | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach Movement | L | T | R | L | T | R | L | T | R | L | T | R |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| Adjusted Flow Rate ( *v* ), veh/h | 219 | 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

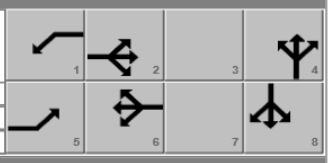
## HCS7 Signalized Intersection Results Summary

| General Information | | | | Intersection Information | |
|---|---|---|---|---|---|
| Agency | Diane B. Zimmerman Traffic | | | Duration, h | 0.250 |
| Analyst | DBZ | Analysis Date | Jul 23, 2020 | Area Type | Other |
| Jurisdiction | | Time Period | PM Peak | PHF | 0.88 |
| Urban Street | Herr Lane | Analysis Year | 2025 No Build | Analysis Period | 1> 4:00 |
| Intersection | Brownsboror Road | File Name | PM Herr 25 NB.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 | 301 | 115 | 268 | 46 | 204 | 221 | 116 | 82 | 209 | 125 |

| Signal Information | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cycle, s | 143.7 | Reference Phase | 2 | | | | | | | | | |
| Offset, s | 0 | Reference Point | End | Green | 8.6 | 6.4 | 50.7 | 32.4 | 20.4 | 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 | 63.2 | 15.1 | 56.8 | | 38.7 | | 26.7 |
| 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 | 15.2 | 46.6 | 8.6 | 23.9 | | 31.4 | | 19.8 |
| Green Extension Time ( *g* $_e$ ), s | 0.0 | 10.4 | 0.1 | 0.7 | | 0.9 | | 0.5 |
| Phase Call Probability | 1.00 | 1.00 | 0.99 | 1.00 | | 1.00 | | 1.00 |
| Max Out Probability | 1.00 | 0.11 | 0.02 | 0.00 | | 0.06 | | 0.00 |

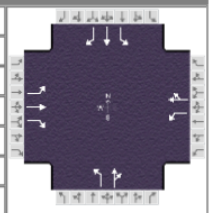
| Movement Group Results | EB | | | WB | | | NB | | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach Movement | L | T | R | L | T | R | L | T | R | L | T | R |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| Adjusted Flow Rate ( *v* ), veh/h | 265 | 641 | 298 | 131 | 349 | | 232 | 374 | | 93 | 238 | 35 |
| Adjusted Saturation Flow Rate ( *s* ), veh/h/ln | 1795 | 1885 | 1560 | 1810 | 1829 | | 1781 | 1780 | | 1810 | 1870 | 1572 |
| Queue Service Time ( *g* $_s$ ), s | 13.2 | 44.6 | 20.4 | 6.6 | 21.9 | | 16.7 | 29.4 | | 6.7 | 17.8 | 2.8 |
| Cycle Queue Clearance Time ( *g* $_c$ ), s | 13.2 | 44.6 | 20.4 | 6.6 | 21.9 | | 16.7 | 29.4 | | 6.7 | 17.8 | 2.8 |
| Green Ratio ( *g/C* ) | 0.47 | 0.40 | 0.40 | 0.41 | 0.35 | | 0.23 | 0.23 | | 0.15 | 0.15 | 0.15 |
| Capacity ( *c* ), veh/h | 447 | 749 | 620 | 217 | 646 | | 401 | 413 | | 257 | 278 | 223 |
| Volume-to-Capacity Ratio ( *X* ) | 0.592 | 0.855 | 0.480 | 0.601 | 0.540 | | 0.578 | 0.904 | | 0.363 | 0.853 | 0.158 |
| Back of Queue ( *Q* ), ft/ln ( 50 th percentile) | 145.6 | 551.7 | 204.6 | 72.9 | 250.3 | | 190 | 374.1 | | 77.1 | 229.6 | 28.9 |
| Back of Queue ( *Q* ), veh/ln ( 50 th percentile) | 5.8 | 21.9 | 7.9 | 2.9 | 9.9 | | 7.5 | 14.8 | | 3.1 | 9.0 | 1.1 |
| Queue Storage Ratio ( *RQ* ) ( 50 th percentile) | 0.97 | 0.55 | 0.58 | 0.49 | 0.25 | | 0.54 | 0.37 | | 0.51 | 0.23 | 0.19 |
| Uniform Delay ( *d* $_1$ ), s/veh | 26.3 | 39.6 | 32.3 | 33.4 | 37.2 | | 49.6 | 53.7 | | 55.8 | 60.2 | 54.2 |
| Incremental Delay ( *d* $_2$ ), s/veh | 1.5 | 7.4 | 1.2 | 1.0 | 0.3 | | 0.5 | 15.6 | | 0.3 | 8.2 | 0.1 |
| Initial Queue Delay ( *d* $_3$ ), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Control Delay ( *d* ), s/veh | 27.7 | 47.0 | 33.5 | 34.4 | 37.4 | | 50.1 | 69.3 | | 56.2 | 68.4 | 54.3 |
| Level of Service (LOS) | C | D | C | C | D | | D | E | | E | E | D |
| Approach Delay, s/veh / LOS | 39.4 | D | | 36.6 | D | | 61.9 | E | | 63.9 | E | |
| Intersection Delay, s/veh / LOS | 47.4 | | | | | | D | | | | | |

| Multimodal Results | EB | | WB | | NB | | SB | |
|---|---|---|---|---|---|---|---|---|
| Pedestrian LOS Score / LOS | 1.94 | B | 2.26 | B | 1.97 | B | 2.22 | B |
| Bicycle LOS Score / LOS | 2.47 | B | 1.28 | A | 1.49 | A | 1.09 | 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 |
| Uncoordinated | Yes | Simult. Gap E/W | On |
| Force Mode | Fixed | Simult. Gap N/S | Off |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Green | 10.3 | 4.7 | 58.4 | 38.3 | 25.1 | 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 | 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 |

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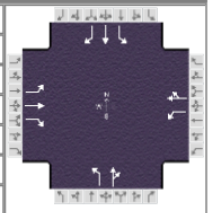
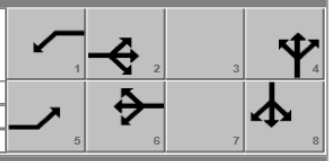
## HCS7 Signalized Intersection Results Summary

| 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 | 2035 No Build | Analysis Period | 1> 4:00 |
| Intersection | Brownsboror Road | File Name | PM Herr 35 NB.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 | 316 | 121 | 282 | 48 | 214 | 232 | 122 | 86 | 220 | 131 |

| Signal Information | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cycle, s | 160.7 | Reference Phase | 2 | | | | | | | | | |
| Offset, s | 0 | Reference Point | End | | | | | | | | | |
| Uncoordinated | Yes | Simult. Gap E/W | On | Green | 9.6 | 5.4 | 59.7 | 37.3 | 23.5 | 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 | 21.5 | 71.2 | 16.1 | 65.8 | | 43.6 | | 29.8 |
| 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 | 55.2 | 9.5 | 27.4 | | 36.7 | | 23.0 |
| Green Extension Time ( *g e* ), s | 0.0 | 9.9 | 0.1 | 0.7 | | 0.5 | | 0.5 |
| Phase Call Probability | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | | 1.00 |
| Max Out Probability | 1.00 | 0.26 | 0.06 | 0.00 | | 0.94 | | 0.06 |

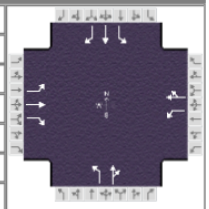
| Movement Group Results | EB | | | WB | | | NB | | | SB | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach Movement | L | T | R | L | T | R | L | T | R | L | T | R |
| Assigned Movement | 5 | 2 | 12 | 1 | 6 | 16 | 7 | 4 | 14 | 3 | 8 | 18 |
| Adjusted Flow Rate ( *v* ), veh/h | 278 | 674 | 315 | 138 | 367 | | 243 | 393 | | 98 | 250 | 42 |
| Adjusted Saturation Flow Rate ( *s* ), veh/h/ln | 1795 | 1885 | 1560 | 1810 | 1829 | | 1781 | 1780 | | 1810 | 1870 | 1572 |
| Queue Service Time ( *g s* ), s | 15.0 | 53.2 | 24.2 | 7.5 | 25.4 | | 19.5 | 34.7 | | 7.8 | 21.0 | 3.8 |
| Cycle Queue Clearance Time ( *g c* ), s | 15.0 | 53.2 | 24.2 | 7.5 | 25.4 | | 19.5 | 34.7 | | 7.8 | 21.0 | 3.8 |
| Green Ratio ( *g/C* ) | 0.47 | 0.41 | 0.41 | 0.43 | 0.37 | | 0.24 | 0.24 | | 0.15 | 0.15 | 0.15 |
| Capacity ( *c* ), veh/h | 431 | 764 | 632 | 201 | 680 | | 413 | 424 | | 265 | 285 | 230 |
| Volume-to-Capacity Ratio ( *X* ) | 0.646 | 0.882 | 0.498 | 0.685 | 0.540 | | 0.588 | 0.927 | | 0.369 | 0.877 | 0.183 |
| Back of Queue ( *Q* ), ft/ln ( 50 th percentile) | 178.2 | 675.3 | 244.6 | 86.1 | 292.3 | | 226.1 | 463.3 | | 91 | 285.5 | 38.9 |
| Back of Queue ( *Q* ), veh/ln ( 50 th percentile) | 7.1 | 26.8 | 9.5 | 3.4 | 11.5 | | 8.9 | 18.4 | | 3.6 | 11.2 | 1.5 |
| Queue Storage Ratio ( *RQ* ) ( 50 th percentile) | 1.19 | 0.68 | 0.70 | 0.57 | 0.29 | | 0.65 | 0.46 | | 0.61 | 0.29 | 0.26 |
| Uniform Delay ( *d 1* ), s/veh | 30.4 | 44.3 | 35.6 | 37.5 | 39.7 | | 54.9 | 59.9 | | 62.0 | 67.1 | 60.2 |
| Incremental Delay ( *d 2* ), s/veh | 2.6 | 10.3 | 1.3 | 2.4 | 0.2 | | 1.1 | 23.7 | | 0.3 | 15.3 | 0.1 |
| Initial Queue Delay ( *d 3* ), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Control Delay ( *d* ), s/veh | 33.0 | 54.6 | 36.9 | 39.9 | 40.0 | | 56.0 | 83.5 | | 62.3 | 82.5 | 60.4 |
| Level of Service (LOS) | C | D | D | D | D | | E | F | | E | F | E |
| Approach Delay, s/veh / LOS | 45.4 | D | | 40.0 | D | | 73.0 | E | | 75.0 | E | |
| Intersection Delay, s/veh / LOS | 54.8 | | | | | | D | | | | | |

| Multimodal Results | EB | | WB | | NB | | SB | |
|---|---|---|---|---|---|---|---|---|
| Pedestrian LOS Score / LOS | 1.94 | B | 2.26 | B | 1.97 | B | 2.22 | B |
| Bicycle LOS Score / LOS | 2.58 | C | 1.32 | A | 1.54 | B | 1.13 | A |

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

# HCS7 Signalized Intersection Results Summary

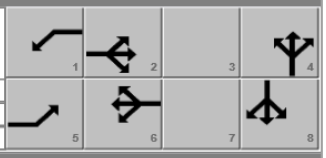
| General Information | | | | Intersection Information | |
|---|---|---|---|---|---|
| Agency | Diane B. Zimmerman Traffic | | | Duration, h | 0.250 |
| Analyst | DBZ | Analysis Date | Oct 30, 2020 | Area Type | Other |
| Jurisdiction | | Time Period | PM Peak | PHF | 0.88 |
| Urban Street | Herr Lane | Analysis Year | 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 | | | | | |

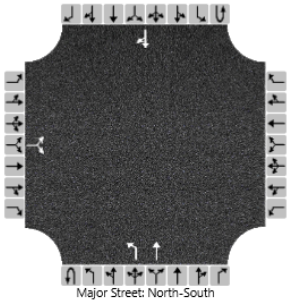
| Multimodal Results | EB | | WB | | NB | | SB | |
|---|---|---|---|---|---|---|---|---|
| Pedestrian LOS Score / LOS | 1.95 | B | 2.27 | B | 1.97 | B | 2.23 | B |
| Bicycle LOS Score / LOS | 2.65 | C | 1.35 | A | 1.63 | B | 1.18 | A |

 HCS™ Streets Version 7.9 Generated: 10/30/2020 3:16:21 PM

# 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

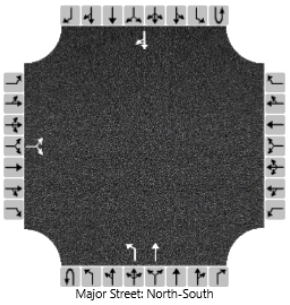
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 30 | | | | | | | 26 | | | | | | |
| Capacity, c (veh/h) | | | 578 | | | | | | | 1127 | | | | | | |
| v/c Ratio | | | 0.05 | | | | | | | 0.02 | | | | | | |
| 95% Queue 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
Access Rd AM 19.xtw
Generated: 7/23/2020 12:00:18 PM

# 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 | 2025 | North/South Street | Herr Lane |
| Time Analyzed | AM Peak No 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 | 475 | | | | 415 | 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

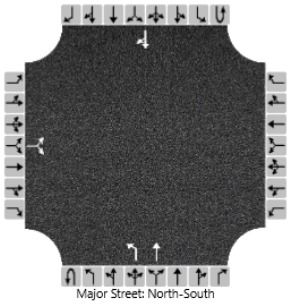
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 30 | | | | | | | 26 | | | | | | |
| Capacity, c (veh/h) | | | 553 | | | | | | | 1098 | | | | | | |
| v/c Ratio | | | 0.05 | | | | | | | 0.02 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.2 | | | | | | | 0.1 | | | | | | |
| Control Delay (s/veh) | | | 11.9 | | | | | | | 8.4 | | | | | | |
| Level of Service (LOS) | | | B | | | | | | | A | | | | | | |
| Approach Delay (s/veh) | | 11.9 | | | | | | | | 0.4 | | | | | | |
| Approach LOS | | B | | | | | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Access Rd AM 25 NB.xtw
Generated: 7/23/2020 12:01:43 PM

# 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

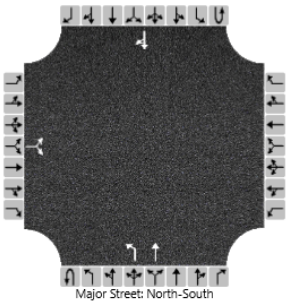
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 30 | | | | | | | 26 | | | | | | |
| Capacity, c (veh/h) | | | 526 | | | | | | | 1071 | | | | | | |
| v/c Ratio | | | 0.06 | | | | | | | 0.02 | | | | | | |
| 95% Queue 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
Generated: 10/30/2020 3:25:56 PM

# 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 | 2035 | North/South Street | Herr Lane |
| Time Analyzed | AM Peak No 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 | 499 | | | | 436 | 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

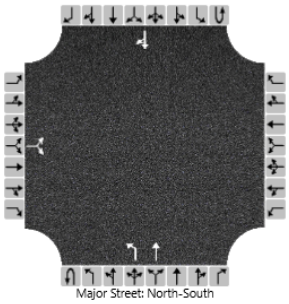
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 30 | | | | | | | 26 | | | | | | |
| Capacity, c (veh/h) | | | 535 | | | | | | | 1077 | | | | | | |
| v/c Ratio | | | 0.06 | | | | | | | 0.02 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.2 | | | | | | | 0.1 | | | | | | |
| Control Delay (s/veh) | | | 12.1 | | | | | | | 8.4 | | | | | | |
| Level of Service (LOS) | | | B | | | | | | | A | | | | | | |
| Approach Delay (s/veh) | | 12.1 | | | | | | | | 0.4 | | | | | | |
| Approach LOS | | B | | | | | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Access Rd AM 35 NB.xtw
Generated: 7/23/2020 12:04:01 PM

# 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

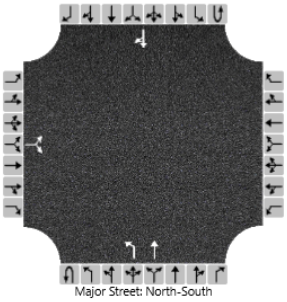
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 30 | | | | | | | 26 | | | | | | |
| Capacity, c (veh/h) | | | 509 | | | | | | | 1050 | | | | | | |
| v/c Ratio | | | 0.06 | | | | | | | 0.02 | | | | | | |
| 95% Queue 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
Generated: 10/30/2020 3:27:46 PM

# 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

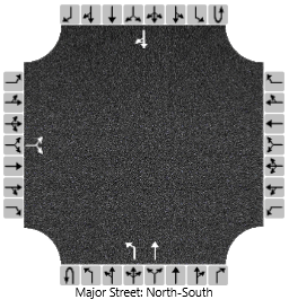
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 47 | | | | | | | 33 | | | | | | |
| Capacity, c (veh/h) | | | 403 | | | | | | | 919 | | | | | | |
| v/c Ratio | | | 0.12 | | | | | | | 0.04 | | | | | | |
| 95% Queue 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 | | | | | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Access Rd PM 19.xtw
Generated: 7/23/2020 12:11:44 PM

# 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 | 2025 | North/South Street | Herr Lane |
| Time Analyzed | PM Peak No 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 | 491 | | | | 715 | 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) | | | 372 | | | | | | | 869 | | | | | | |
| v/c Ratio | | | 0.13 | | | | | | | 0.04 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.4 | | | | | | | 0.1 | | | | | | |
| Control Delay (s/veh) | | | 16.1 | | | | | | | 9.3 | | | | | | |
| Level of Service (LOS) | | | C | | | | | | | A | | | | | | |
| Approach Delay (s/veh) | | 16.1 | | | | | | | | 0.6 | | | | | | |
| Approach LOS | | C | | | | | | | | | | | | | | |



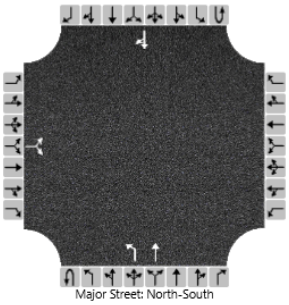
HCS™ TWSC Version 7.8.5
Access Rd PM 25 NB.xtw

Generated: 7/23/2020 12:12:34 PM

# 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

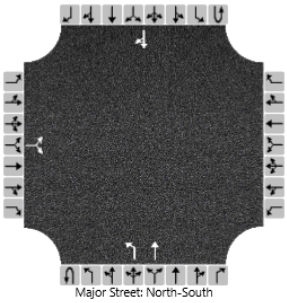
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 47 | | | | | | | 33 | | | | | | |
| Capacity, c (veh/h) | | | 336 | | | | | | | 813 | | | | | | |
| v/c Ratio | | | 0.14 | | | | | | | 0.04 | | | | | | |
| 95% Queue 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 | | | | | | | | | | | | | | |


HCS™ TWSC Version 7.9
Access Rd PM 25 B.xtw
Generated: 10/30/2020 3:29:36 PM

# 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 | 2035 | North/South Street | Herr Lane |
| Time Analyzed | PM Peak No 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 | 516 | | | | 752 | 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) | | | 354 | | | | | | | 841 | | | | | | |
| v/c Ratio | | | 0.13 | | | | | | | 0.04 | | | | | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | 0.5 | | | | | | | 0.1 | | | | | | |
| Control Delay (s/veh) | | | 16.7 | | | | | | | 9.5 | | | | | | |
| Level of Service (LOS) | | | C | | | | | | | A | | | | | | |
| Approach Delay (s/veh) | | 16.7 | | | | | | | | 0.6 | | | | | | |
| Approach LOS | | C | | | | | | | | | | | | | | |



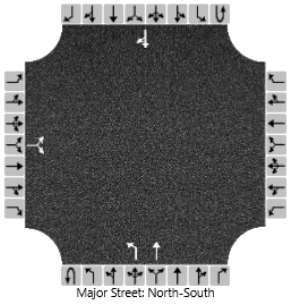
HCS™ TWSC Version 7.8.5
Access Rd PM 35 NB.xtw

Generated: 7/23/2020 12:13:39 PM

# 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

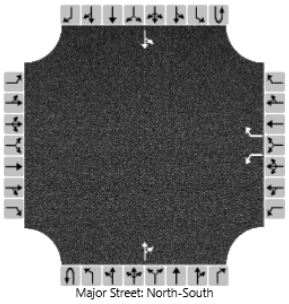
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 47 | | | | | | | 33 | | | | | | |
| Capacity, c (veh/h) | | | 319 | | | | | | | 785 | | | | | | |
| v/c Ratio | | | 0.15 | | | | | | | 0.04 | | | | | | |
| 95% Queue 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 | | | | | | | | | | | | | | |


HCS™ TWSC Version 7.9
Access Rd PM 35 B.xtw
Generated: 10/30/2020 3:30:51 PM

# 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

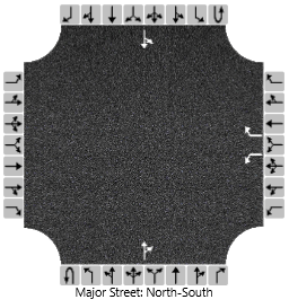
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 126 | | 190 | | | | | | 151 | | |
| Capacity, c (veh/h) | | | | | | 183 | | 592 | | | | | | 989 | | |
| v/c Ratio | | | | | | 0.69 | | 0.32 | | | | | | 0.15 | | |
| 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 | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Ballard AM 19.xtw
Generated: 7/23/2020 12:21:40 PM

# 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 | 2025 | North/South Street | Herr Lane |
| Time Analyzed | AM Peak No Build | 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 | | | 330 | 232 | | 134 | 298 | |
| 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 | | |

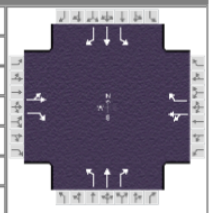
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 126 | | 190 | | | | | | 151 | | |
| Capacity, c (veh/h) | | | | | | 164 | | 562 | | | | | | 956 | | |
| v/c Ratio | | | | | | 0.77 | | 0.34 | | | | | | 0.16 | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 4.9 | | 1.5 | | | | | | 0.6 | | |
| Control Delay (s/veh) | | | | | | 75.7 | | 14.6 | | | | | | 9.5 | | |
| Level of Service (LOS) | | | | | | F | | B | | | | | | A | | |
| Approach Delay (s/veh) | | | | | | 39.0 | | | | | | | | 4.2 | | |
| Approach LOS | | | | | | E | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Ballard AM 25 NB.xtw
Generated: 7/23/2020 12:22:51 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 | 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 | | | | | |

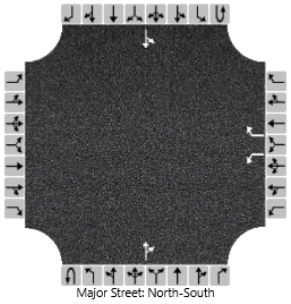
| Multimodal Results | EB | | WB | | NB | | SB | |
|---|---|---|---|---|---|---|---|---|
| Pedestrian LOS Score / LOS | 2.13 | B | 2.13 | B | 1.85 | B | 1.85 | B |
| Bicycle LOS Score / LOS | 0.65 | A | 1.01 | A | 1.57 | B | 1.34 | A |

 HCS™ Streets Version 7.9 Generated: 10/30/2020 3:07:12 PM

# 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 | 2035 | North/South Street | Herr Lane |
| Time Analyzed | AM Peak No Build | 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 | | | 347 | 232 | | 134 | 313 | |
| 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 | | |

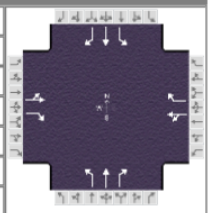
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 126 | | 190 | | | | | | 151 | | |
| Capacity, c (veh/h) | | | | | | 155 | | 548 | | | | | | 940 | | |
| v/c Ratio | | | | | | 0.81 | | 0.35 | | | | | | 0.16 | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 5.3 | | 1.5 | | | | | | 0.6 | | |
| Control Delay (s/veh) | | | | | | 87.0 | | 15.0 | | | | | | 9.6 | | |
| Level of Service (LOS) | | | | | | F | | C | | | | | | A | | |
| Approach Delay (s/veh) | | | | | | 43.7 | | | | | | | | 4.2 | | |
| Approach LOS | | | | | | E | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Ballard AM 35 NB.xtw
Generated: 7/23/2020 12:27:46 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 | | | | | |

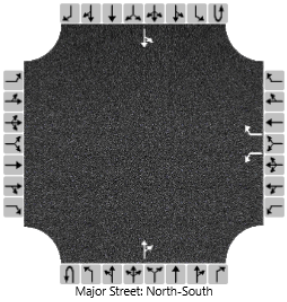
| Multimodal Results | EB | | WB | | NB | | SB | |
|---|---|---|---|---|---|---|---|---|
| Pedestrian LOS Score / LOS | 2.13 | B | 2.13 | B | 1.85 | B | 1.85 | B |
| Bicycle LOS Score / LOS | 0.65 | A | 1.01 | A | 1.61 | B | 1.37 | A |

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

# 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

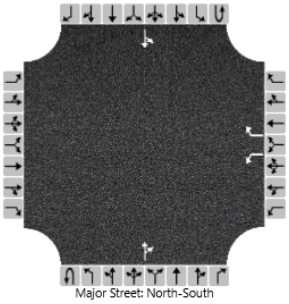
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 38 | | 26 | | | | | | 26 | | |
| Capacity, c (veh/h) | | | | | | 160 | | 538 | | | | | | 1017 | | |
| v/c Ratio | | | | | | 0.23 | | 0.05 | | | | | | 0.03 | | |
| 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
Generated: 7/23/2020 12:30:42 PM

# 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 | 2025 | North/South Street | Herr Lane |
| Time Analyzed | PM Peak No Build | 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 | | | 495 | 25 | | 23 | 741 | |
| 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 | | |

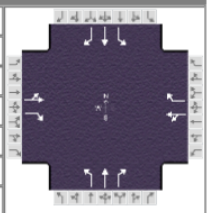
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 38 | | 26 | | | | | | 26 | | |
| Capacity, c (veh/h) | | | | | | 134 | | 520 | | | | | | 995 | | |
| v/c Ratio | | | | | | 0.28 | | 0.05 | | | | | | 0.03 | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 1.1 | | 0.2 | | | | | | 0.1 | | |
| Control Delay (s/veh) | | | | | | 41.8 | | 12.3 | | | | | | 8.7 | | |
| Level of Service (LOS) | | | | | | E | | B | | | | | | A | | |
| Approach Delay (s/veh) | | | | | | 29.7 | | | | | | | | 0.7 | | |
| Approach LOS | | | | | | D | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Ballard PM 25 NB.xtw
Generated: 7/23/2020 12:31:43 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 | 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 | | | | | |

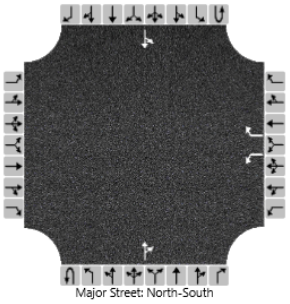
| Multimodal Results | EB | | WB | | NB | | SB | |
|---|---|---|---|---|---|---|---|---|
| Pedestrian LOS Score / LOS | 2.14 | B | 2.14 | B | 1.82 | B | 1.82 | B |
| Bicycle LOS Score / LOS | 0.59 | A | 0.59 | A | 1.53 | B | 2.07 | B |

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

# 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 | 2035 | North/South Street | Herr Lane |
| Time Analyzed | PM Peak No Build | 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 | | | 520 | 25 | | 23 | 779 | |
| 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 | | |

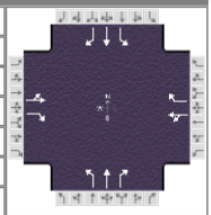
## Delay, Queue Length, and Level of Service

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | 38 | | 26 | | | | | | 26 | | |
| Capacity, c (veh/h) | | | | | | 121 | | 501 | | | | | | 971 | | |
| v/c Ratio | | | | | | 0.31 | | 0.05 | | | | | | 0.03 | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | 1.2 | | 0.2 | | | | | | 0.1 | | |
| Control Delay (s/veh) | | | | | | 47.5 | | 12.6 | | | | | | 8.8 | | |
| Level of Service (LOS) | | | | | | E | | B | | | | | | A | | |
| Approach Delay (s/veh) | | | | | | 33.2 | | | | | | | | 0.7 | | |
| Approach LOS | | | | | | D | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Ballard PM 35 NB.xtw
Generated: 7/23/2020 12:38:45 PM

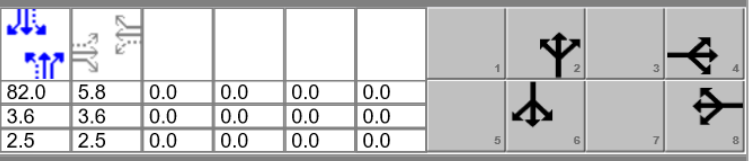
# HCS7 Signalized Intersection Results Summary

| 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 | | | | | |

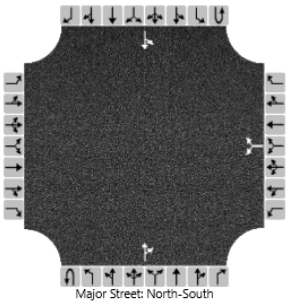
| Multimodal Results | EB | | WB | | NB | | SB | |
|---|---|---|---|---|---|---|---|---|
| Pedestrian LOS Score / LOS | 2.14 | B | 2.14 | B | 1.82 | B | 1.82 | B |
| Bicycle LOS Score / LOS | 0.59 | A | 0.59 | A | 1.58 | B | 2.14 | B |

 HCS™ Streets Version 7.9 Generated: 10/30/2020 3:22:33 PM

# 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

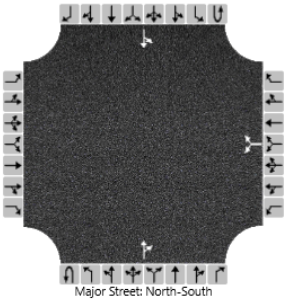
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | | 230 | | | | | | | 70 | | |
| Capacity, c (veh/h) | | | | | | | 386 | | | | | | | 820 | | |
| v/c Ratio | | | | | | | 0.60 | | | | | | | 0.08 | | |
| 95% Queue 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 | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Wesboro AM 19.xtw
Generated: 7/23/2020 12:44:52 PM

# 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 | 2025 | North/South Street | Herr Lane |
| Time Analyzed | AM Peak No 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 | 0 | 0 | | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| Configuration | | | | | | | LR | | | | | TR | | LT | | |
| Volume (veh/h) | | | | | | 84 | | 105 | | | 473 | 82 | | 57 | 331 | |
| 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) | | | | | | | 346 | | | | | | | 785 | | |
| v/c Ratio | | | | | | | 0.67 | | | | | | | 0.09 | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | | 4.5 | | | | | | | 0.3 | | |
| Control Delay (s/veh) | | | | | | | 33.9 | | | | | | | 10.0 | | |
| Level of Service (LOS) | | | | | | | D | | | | | | | B | | |
| Approach Delay (s/veh) | | | | | 33.9 | | | | | | | | 2.4 | | | |
| Approach LOS | | | | | D | | | | | | | | | | | |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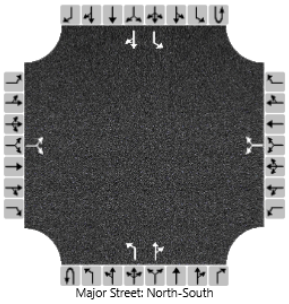
Wesboro AM 25 NB.xtw
Generated: 7/23/2020 12:46:06 PM

# 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

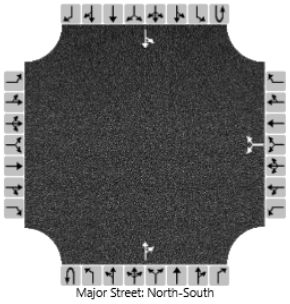
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 50 | | | | 230 | | | 11 | | | | 70 | | |
| Capacity, c (veh/h) | | | 325 | | | | 450 | | | 1132 | | | | 778 | | |
| v/c Ratio | | | 0.15 | | | | 0.51 | | | 0.01 | | | | 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 | | | | | | | | | | | |


HCS™ TWSC Version 7.9
Wesboro AM 25 B.xtw
Generated: 10/30/2020 3:38:31 PM

# 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 | 2035 | North/South Street | Herr Lane |
| Time Analyzed | AM Peak No 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 | 0 | 0 | | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| Configuration | | | | | | | LR | | | | | TR | | LT | | |
| Volume (veh/h) | | | | | | 84 | | 105 | | | 497 | 82 | | 57 | 348 | |
| 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

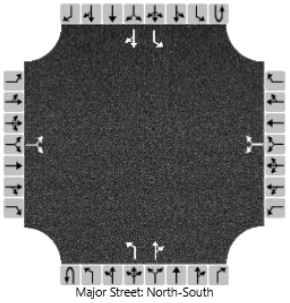
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | | 230 | | | | | | | 70 | | |
| Capacity, c (veh/h) | | | | | | | 302 | | | | | | | 765 | | |
| v/c Ratio | | | | | | | 0.76 | | | | | | | 0.09 | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | | 5.8 | | | | | | | 0.3 | | |
| Control Delay (s/veh) | | | | | | | 46.8 | | | | | | | 10.2 | | |
| Level of Service (LOS) | | | | | | | E | | | | | | | B | | |
| Approach Delay (s/veh) | | | | | | 46.8 | | | | | | | | 2.5 | | |
| Approach LOS | | | | | | E | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Wesboro AM 35 NB.xtw
Generated: 7/23/2020 12:47:14 PM

# 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

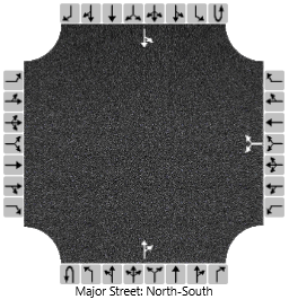
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 50 | | | | 230 | | | 11 | | | | 70 | | |
| Capacity, c (veh/h) | | | 308 | | | | 431 | | | 1112 | | | | 757 | | |
| v/c Ratio | | | 0.16 | | | | 0.54 | | | 0.01 | | | | 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 | | | | | | | | | | | |


HCS™ TWSC Version 7.9
Wesboro AM 35 B.xtw
Generated: 10/30/2020 3:39:50 PM

# 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

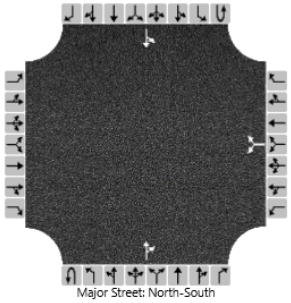
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | | 49 | | | | | | | 68 | | |
| Capacity, c (veh/h) | | | | | | | 350 | | | | | | | 1018 | | |
| v/c Ratio | | | | | | | 0.14 | | | | | | | 0.07 | | |
| 95% Queue 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 | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Wesboro PM 19.xtw
Generated: 7/23/2020 12:52:05 PM

# 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 | 2025 | North/South Street | Herr Lane |
| Time Analyzed | PM Peak No 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 | 0 | 0 | | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| Configuration | | | | | | | LR | | | | | TR | | LT | | |
| Volume (veh/h) | | | | | | 21 | | 25 | | | 509 | 45 | | 64 | 673 | |
| 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

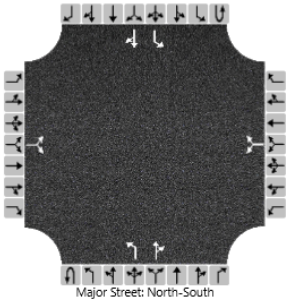
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | | 49 | | | | | | | 68 | | |
| Capacity, c (veh/h) | | | | | | | 296 | | | | | | | 996 | | |
| v/c Ratio | | | | | | | 0.17 | | | | | | | 0.07 | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | | 0.6 | | | | | | | 0.2 | | |
| Control Delay (s/veh) | | | | | | | 19.6 | | | | | | | 8.9 | | |
| Level of Service (LOS) | | | | | | | C | | | | | | | A | | |
| Approach Delay (s/veh) | | | | | 19.6 | | | | | | | | 1.7 | | | |
| Approach LOS | | | | | C | | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Wesboro PM 25 NB.xtw
Generated: 7/23/2020 12:59:10 PM

# 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

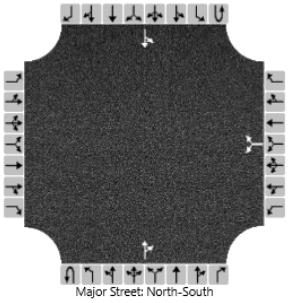
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | 29 | | | | 49 | | | 28 | | | | 68 | | |
| Capacity, c (veh/h) | | | 291 | | | | 421 | | | 874 | | | | 972 | | |
| v/c Ratio | | | 0.10 | | | | 0.12 | | | 0.03 | | | | 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 | | | | | | | | | | |


HCS™ TWSC Version 7.9
Wesboro PM 25 B.xtw
Generated: 10/30/2020 3:40:58 PM

# 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 | 2035 | North/South Street | Herr Lane |
| Time Analyzed | PM Peak No 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 | 0 | 0 | | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| Configuration | | | | | | | LR | | | | | TR | | LT | | |
| Volume (veh/h) | | | | | | 21 | | 25 | | | 535 | 45 | | 64 | 707 | |
| 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

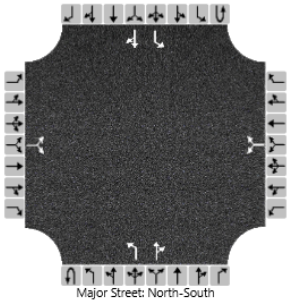
| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow Rate, v (veh/h) | | | | | | | 49 | | | | | | | 68 | | |
| Capacity, c (veh/h) | | | | | | | 269 | | | | | | | 973 | | |
| v/c Ratio | | | | | | | 0.18 | | | | | | | 0.07 | | |
| 95% Queue Length, $Q_{95}$ (veh) | | | | | | | 0.7 | | | | | | | 0.2 | | |
| Control Delay (s/veh) | | | | | | | 21.4 | | | | | | | 9.0 | | |
| Level of Service (LOS) | | | | | | | C | | | | | | | A | | |
| Approach Delay (s/veh) | | | | | 21.4 | | | | | | | | 1.7 | | | |
| Approach LOS | | | | | C | | | | | | | | | | | |


HCS™ TWSC Version 7.8.5
Wesboro PM 35 NB.xtw
Generated: 7/23/2020 1:00:11 PM

# 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 | | | | | | | | | | |


HCS™ TWSC Version 7.9
Wesboro PM 35 B.xtw
Generated: 10/30/2020 3:42:18 PM