

# final report

June 17, 2022  
Revised August 8, 2022

## Traffic Impact Study

4700 Hurstbourne Parkway Apartments  
4700 Hurstbourne Parkway  
Louisville, KY

Prepared for

Louisville Metro Planning Commission  
Kentucky Transportation Cabinet



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## INTRODUCTION

The development plan for 4700 Hurstbourne Parkway shows 384 apartment units. The adjacent 4900 Hurstbourne Parkway shows 216 apartment units. The community will total 600 units. **Figure 1** displays a map of the site. Access to the development will be from the two existing access points on Hurstbourne Parkway and a connection to Bardstown Road. An emergency only, gated access is available at Laurel Spring Drive. 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 Hurstbourne Parkway intersections with Watterson Trail, Stony Brook Drive, Bardstown Road and the proposed entrances; Bardstown intersection with Watterson Trail.

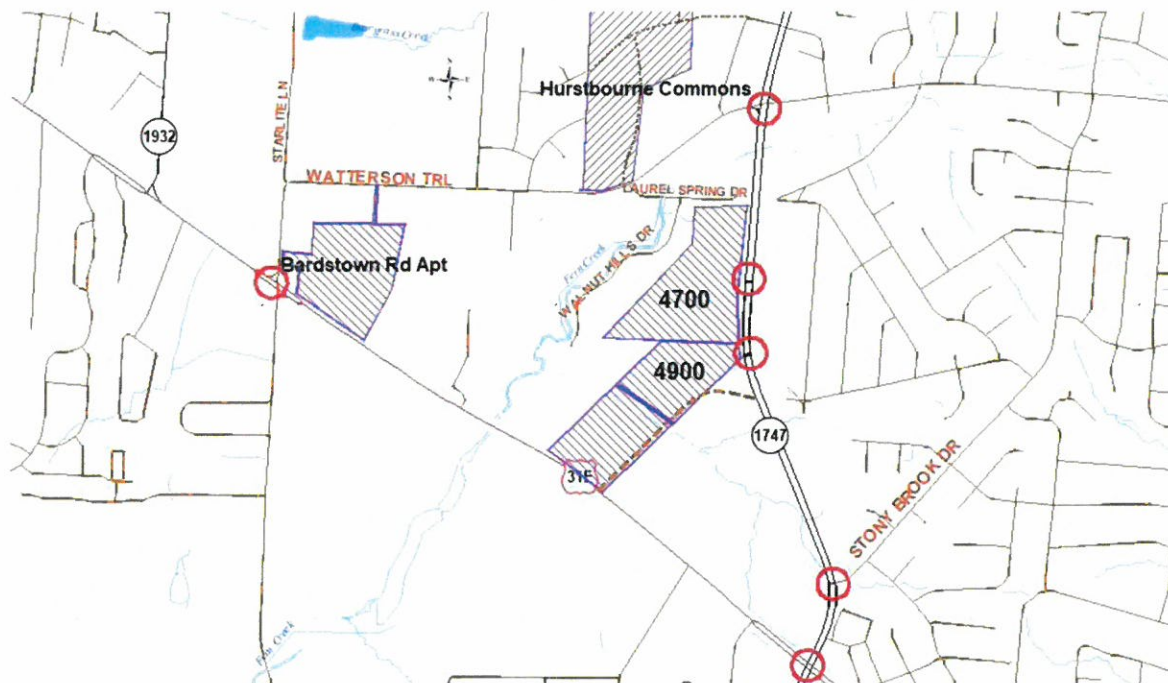


Figure 1. Site Map

## EXISTING CONDITIONS

Hurstbourne Parkway (KY 1747) is maintained by the Kentucky Transportation Cabinet an estimated 2020 Average Annual Daily Traffic (AADT) volume of 20,000 vehicles per day between Bardstown Road and Watterson Trail, as estimated at the Kentucky Transportation Cabinet count station M12. The road has four lanes of twelve feet with a thirty-six-foot median and curbs through study area. The speed limit is 45 mph. There are sidewalks where development has occurred. The intersections with Bardstown Road, Stony Brook Drive, and Watterson Trail are controlled with a traffic signal.

Bardstown Road is a state-maintained road (US 31E) with an estimated 2022 ADT of 25,500 vehicles per day between Watterson Trail and Hurstbourne Parkway, as estimated from the Kentucky Transportation Cabinet 2021 count at station P80. The road is a four-lane highway with twelve-foot lanes, four-foot paved shoulders, and a two-way left turn lane through the study area. The speed limit is 45 mph. There are no sidewalks. The intersection with

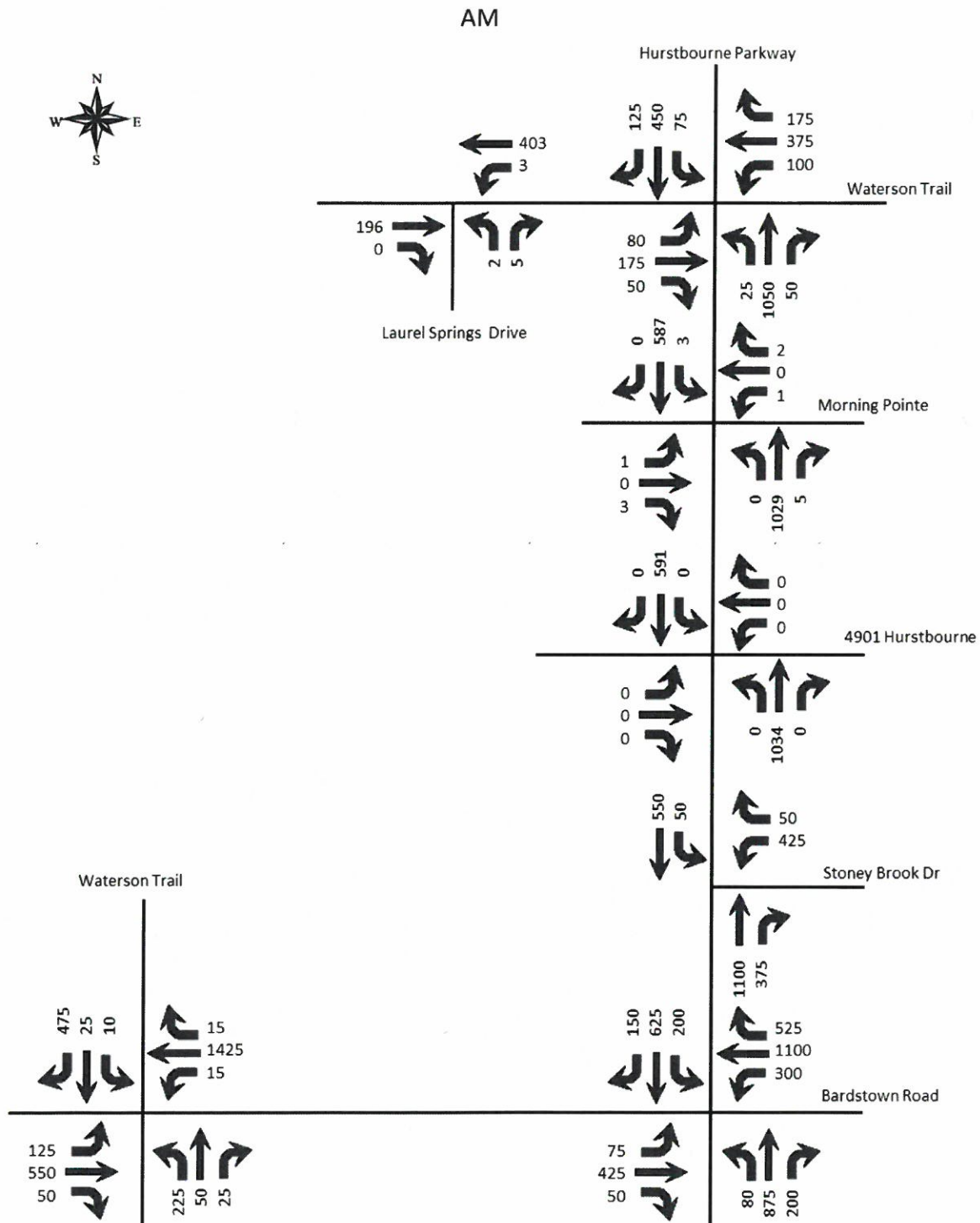


Watterson Trail is controlled with traffic signal and is part of a coordinated signal system. The intersection with Watterson Trail has left lanes and free-flow right-turn lanes to and from Watterson Trail. The Watterson Trail approach has a shared left and thru. TARC provides service along Bardstown Road.

Peak hour traffic count for the intersections were obtained from Metro Traffic Engineering Synchro models. The entrance to Morning Point (opposite 4700) was counted March 16, 2022. The peak hours occurred between 7:15 to 8:15 am and 4:15 to 5:15 pm. **Figure 2** illustrates the existing a.m. and p.m. peak hour traffic volumes. The Appendix contains the full count data.



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 4700 Hurstbourne Parkway  
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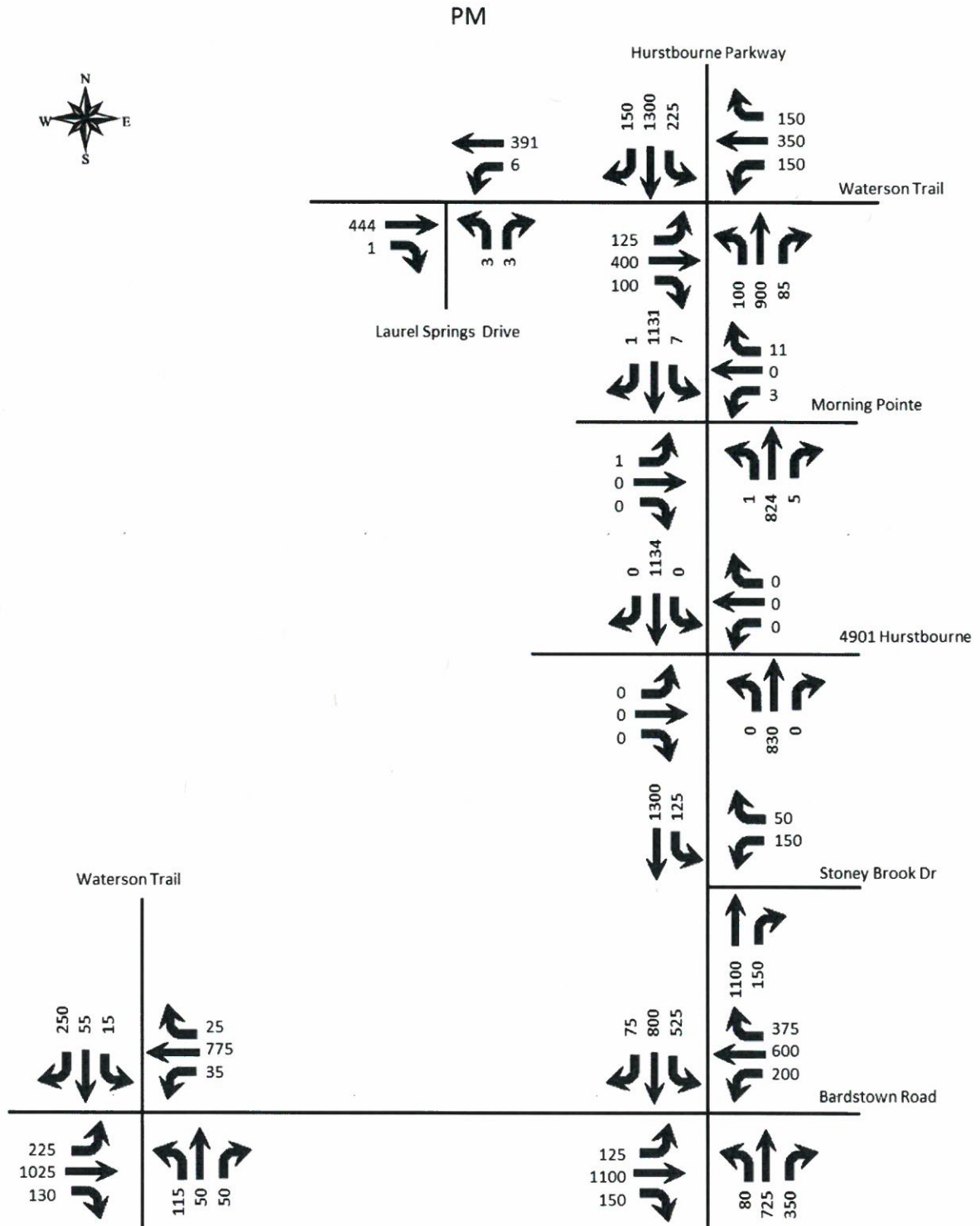


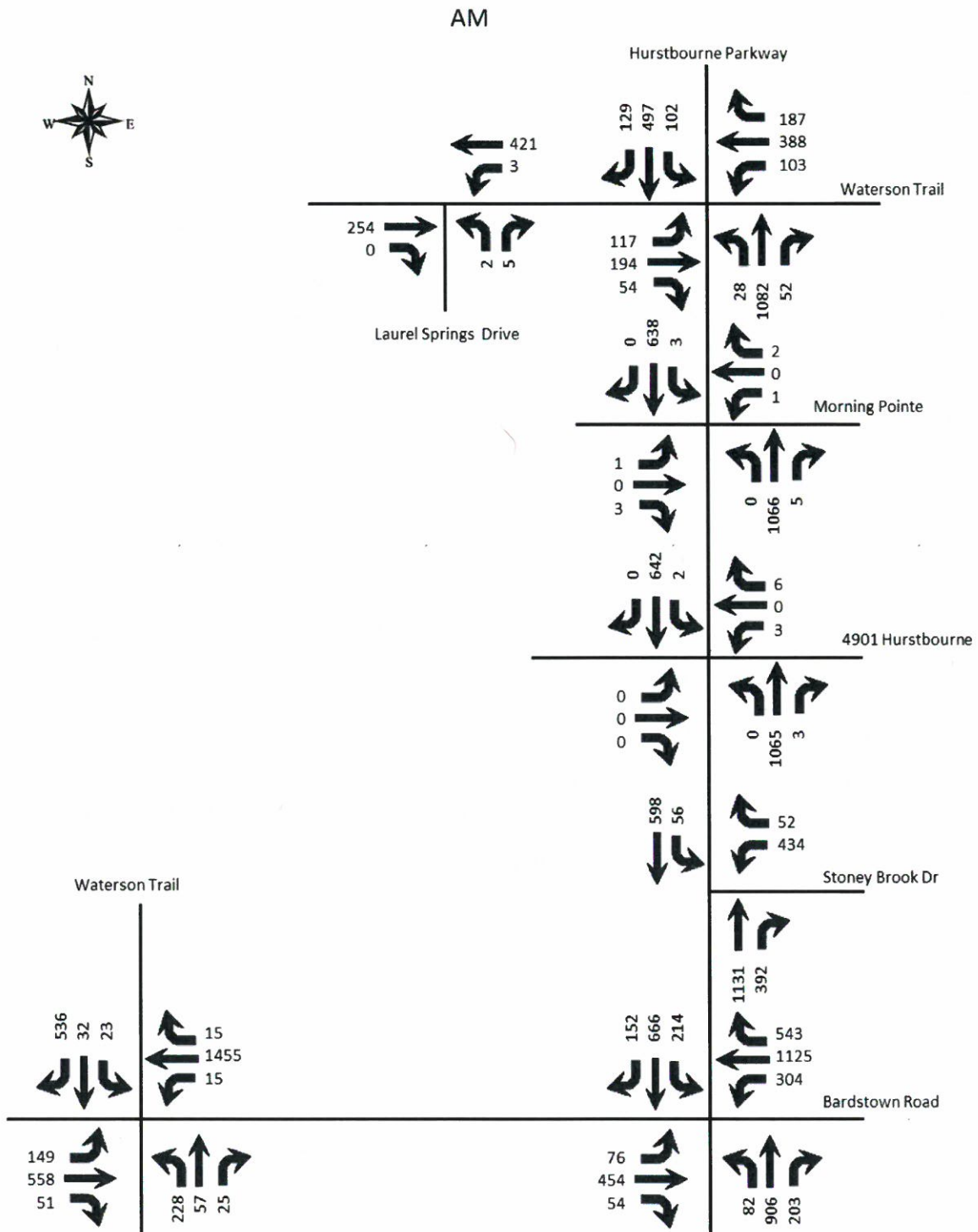
Figure 2. Existing Peak Hour Volumes

## **FUTURE CONDITIONS**

The project completion date is 2025. An annual growth rate of 0.5 percent was applied to the volumes. This was determined by the historical growth at KYTC station P80. Additionally, trip generation for the Bardstown Road Apartments, Hurstbourne Commons, 4901 Hurstbourne Senior Apartments, and an office building at 5206 Stony Brook Drive were also included. **Figure 3** displays the 2025 No Build peak hour volumes.



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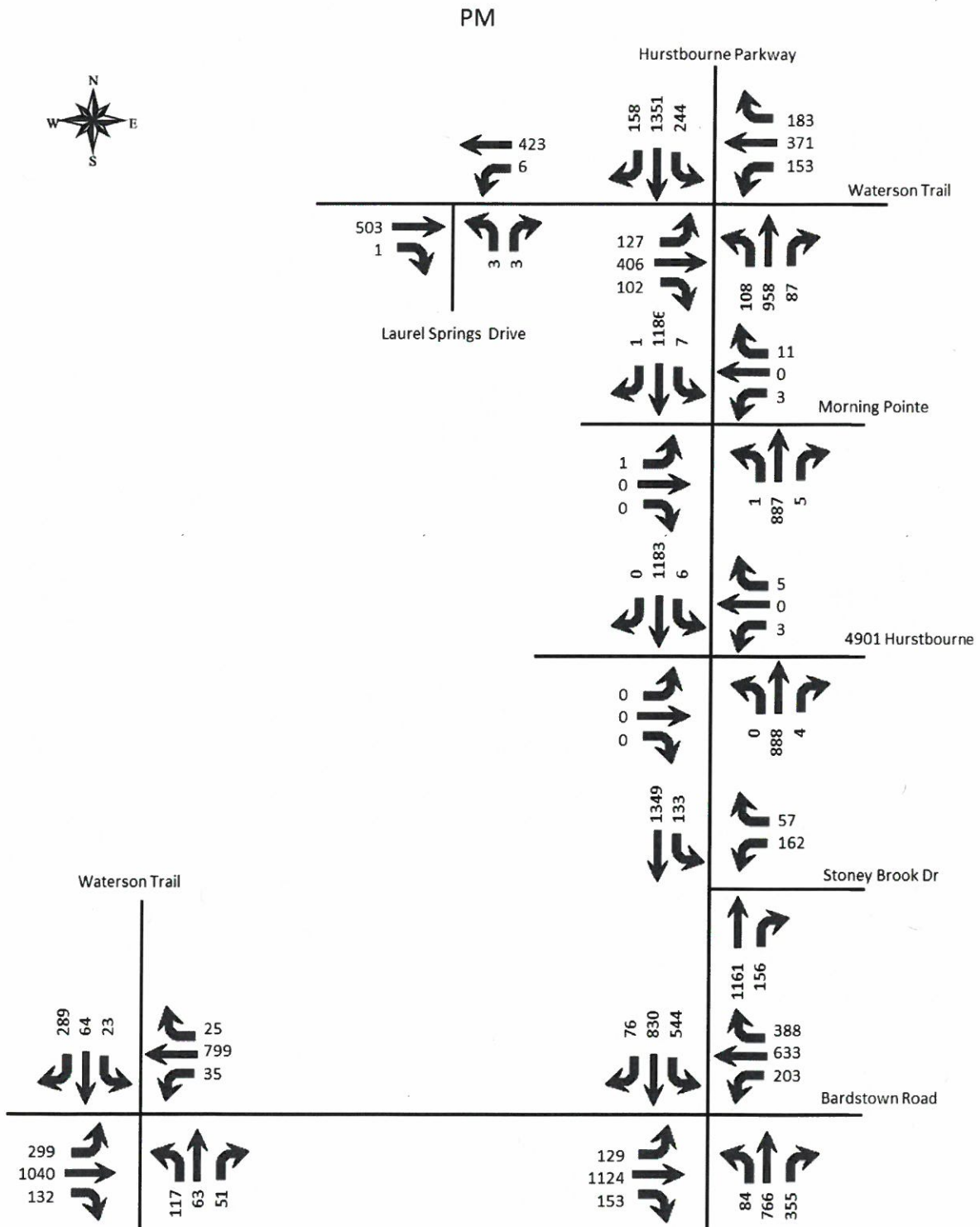


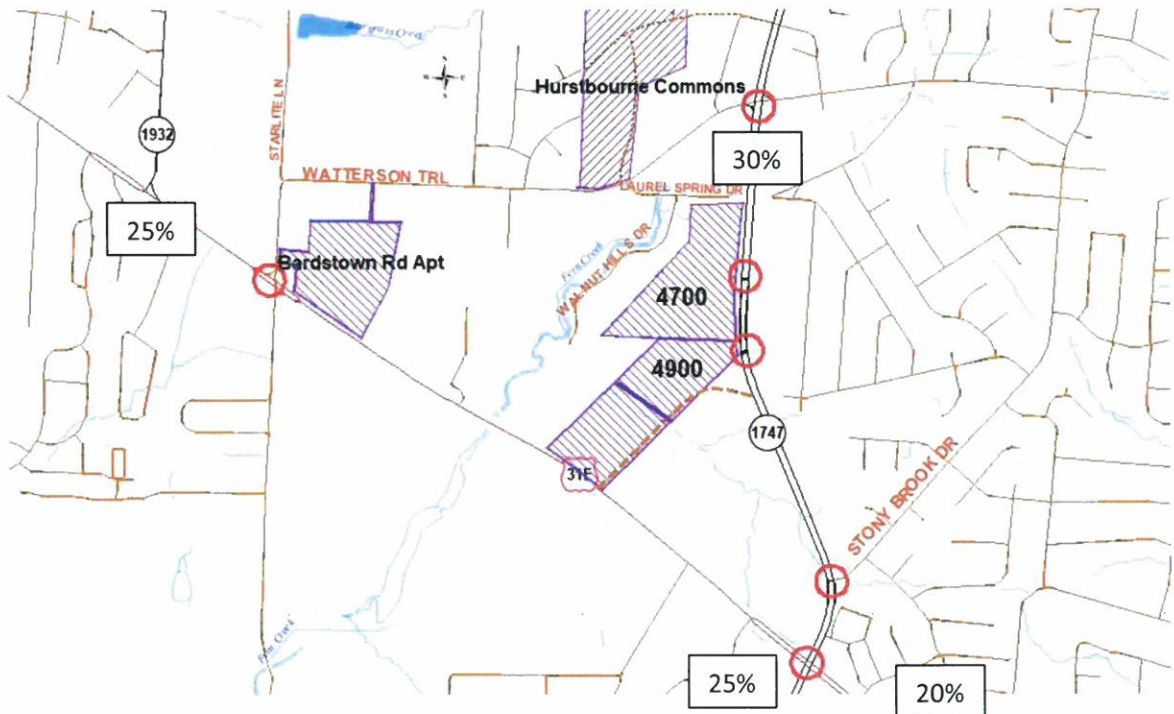
Figure 3. 2025 No Build Peak Hour Volumes

## TRIP GENERATION

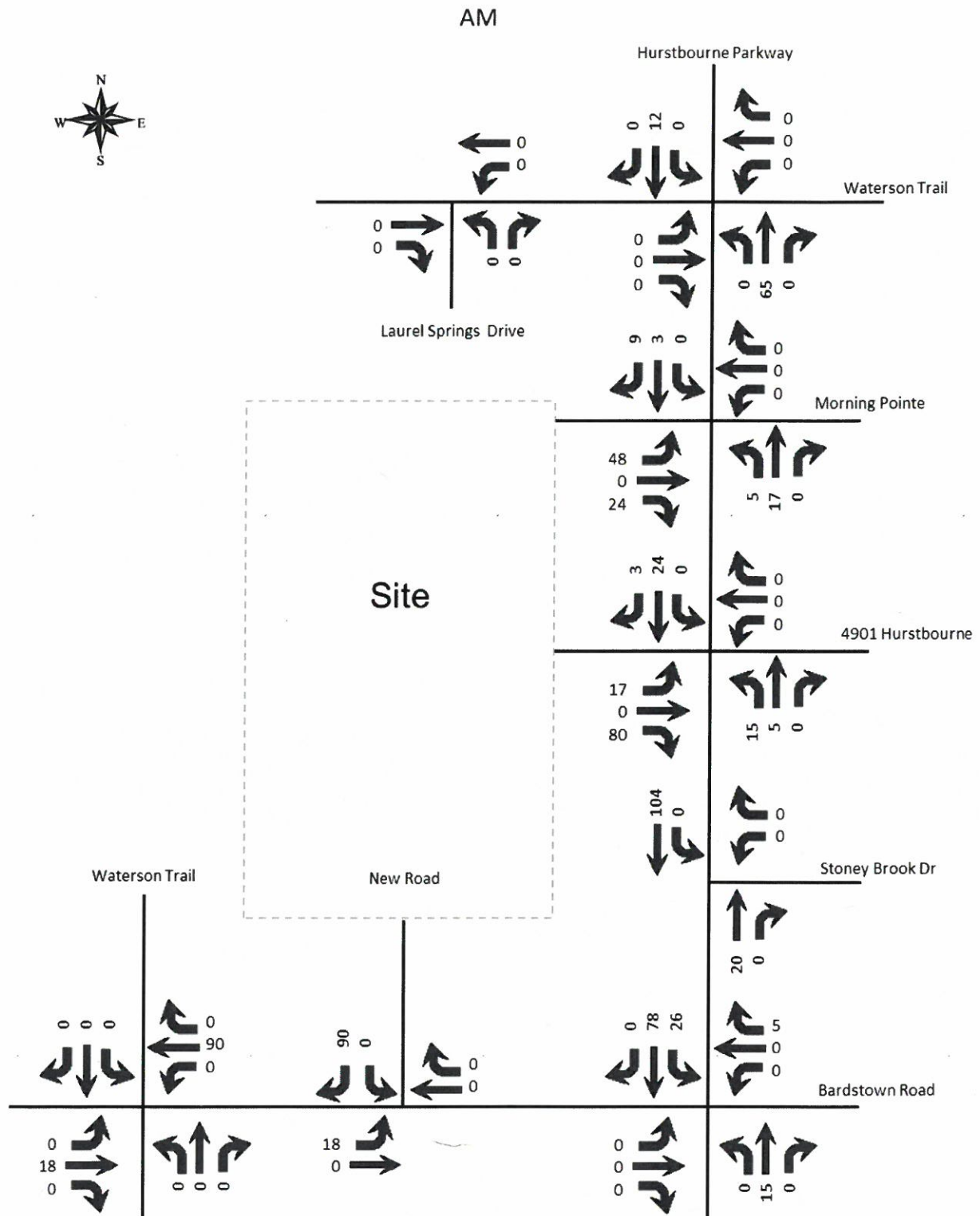
The Institute of Transportation Engineers Trip Generation Manual, 11<sup>th</sup> Edition contains trip generation rates for a wide range of developments. The land use of "Multi-family (Low-Rise) (220)" was reviewed and determined to be the best match. The trip generation results are listed in **Table 1**. The trips were assigned to the highway network with the percentages shown in **Figure 4**. **Figure 5** shows the trips generated by this development and distributed throughout the road network during the peak hours. **Figure 6** displays the individual turning movements for the peak hours when the development is completed.

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

| Land Use                          | A.M. Peak Hour |    |     | P.M. Peak Hour |     |     |
|-----------------------------------|----------------|----|-----|----------------|-----|-----|
|                                   | Trips          | In | Out | Trips          | In  | Out |
| Multi-family (Low-Rise) 600 units | 209            | 50 | 159 | 279            | 176 | 103 |



**Figure 4. Trip Distribution Percentages**





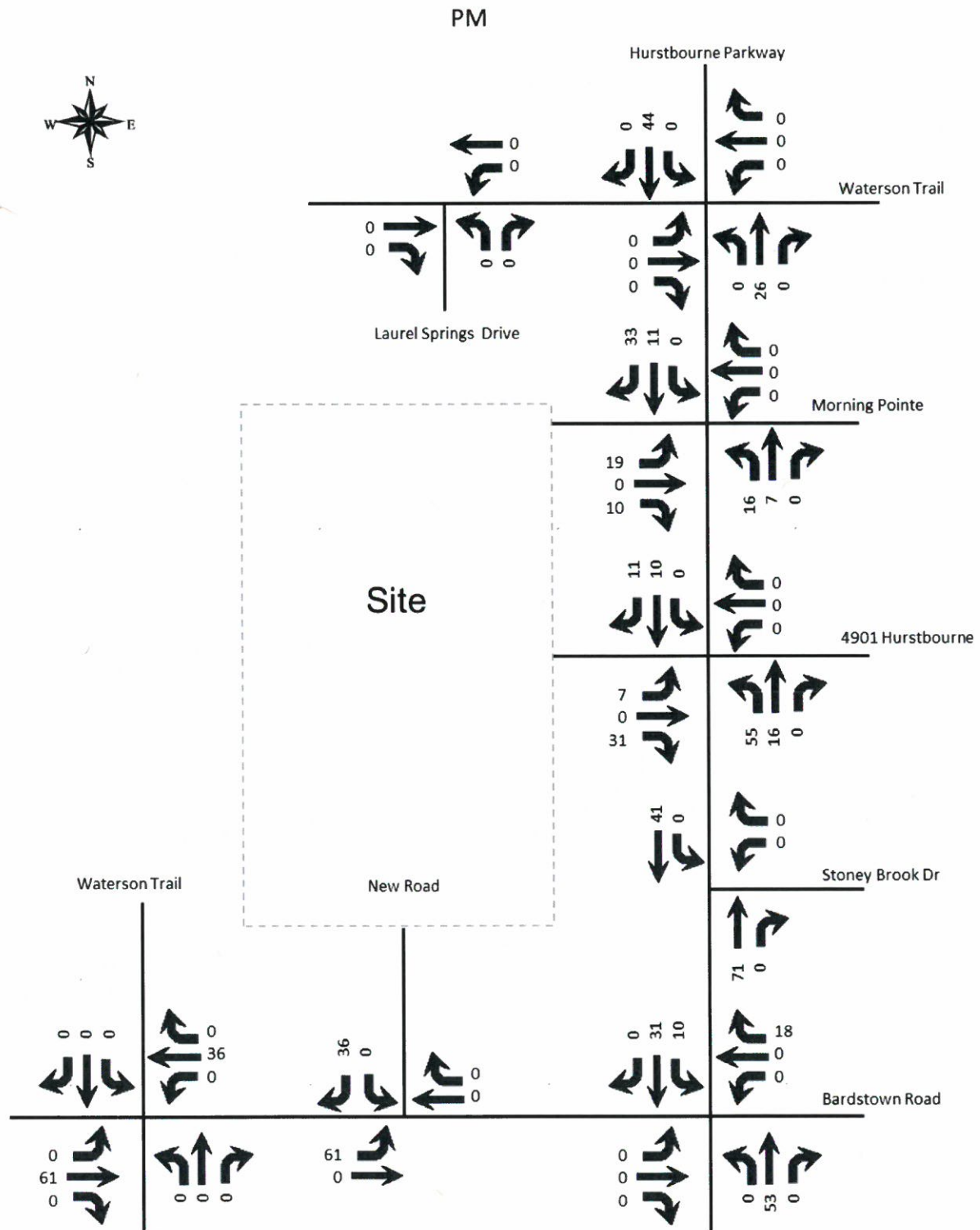
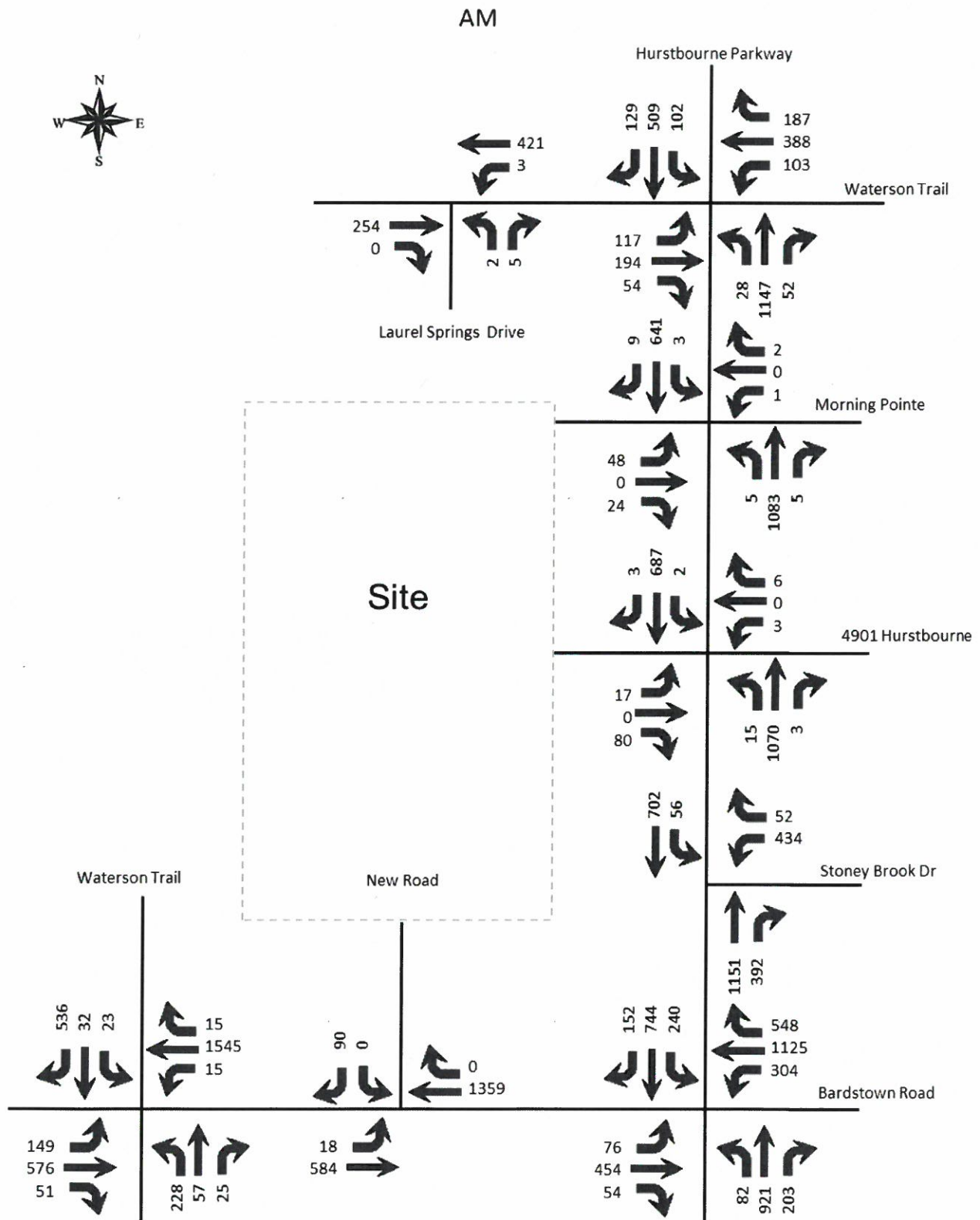


Figure 5. Peak Hour Trips Generated by Site



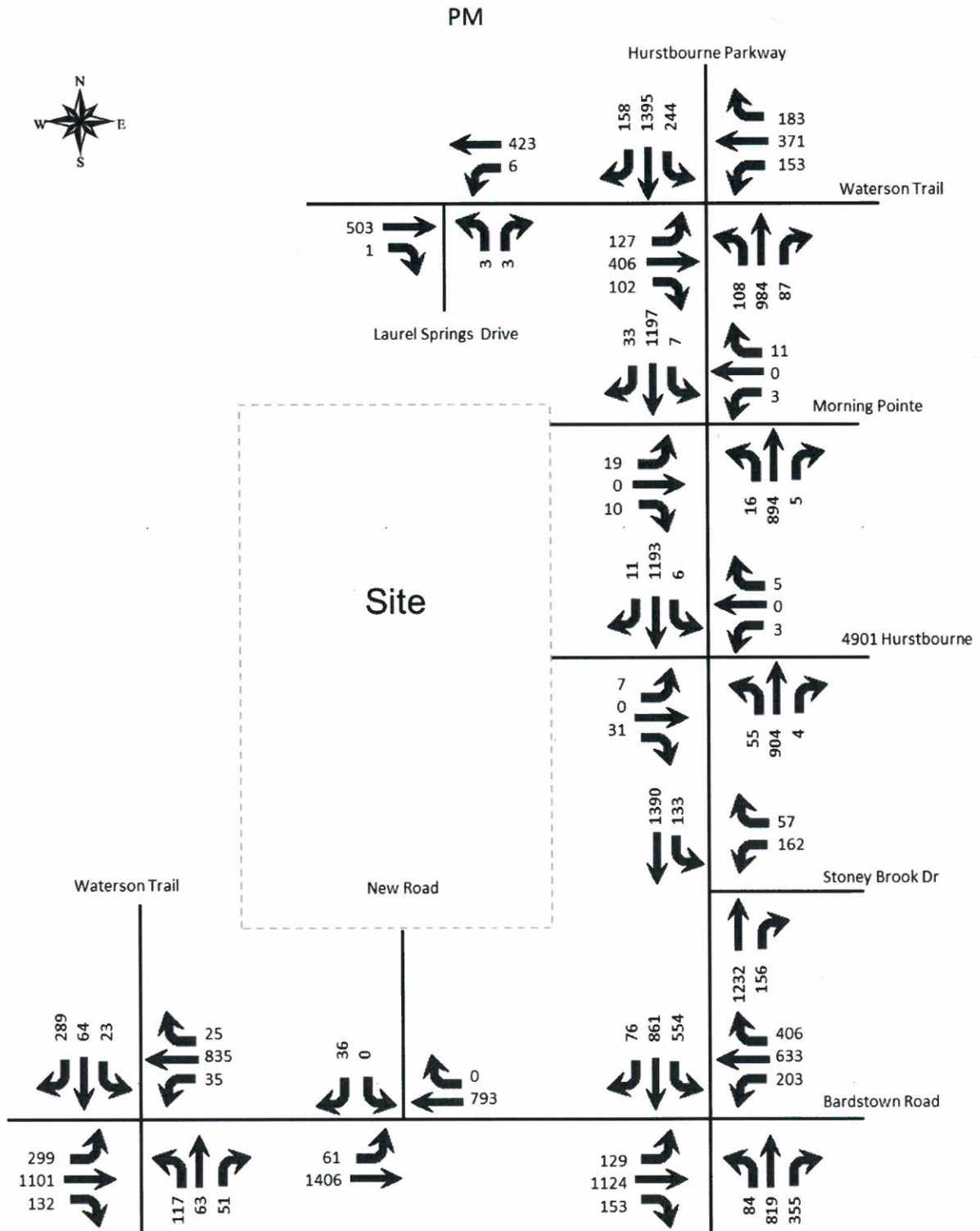


Figure 6. 2025 Build Peak Hour Volumes

## 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, 6<sup>th</sup> edition. Future delays and Level of Service were determined for the intersections using the Synchro (version 11) software. The initial Synchro models were provided by Louisville Metro Traffic Engineering. The delays and Level of Service are summarized in **Table 2**.

**Table 2. Peak Hour Level of Service**

| Approach                                   | A.M.                    |                         |                         | P.M.                    |                         |                         |
|--------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                                            | 2022 Existing           | 2025 No Build           | 2025 Build              | 2022 Existing           | 2025 No Build           | 2025 Build              |
| <b>Hurstbourne Pkwy at Watterson Tr</b>    | <b>D</b><br><b>44.8</b> | <b>D</b><br><b>45.7</b> | <b>D</b><br><b>45.7</b> | <b>D</b><br><b>44.9</b> | <b>D</b><br><b>46.0</b> | <b>D</b><br><b>48.2</b> |
| Watterson Tr Eastbound                     | D<br>52.4               | D<br>50.9               | D<br>50.9               | F<br>80.4               | F<br>80.9               | F<br>80.9               |
| Watterson Tr Westbound                     | E<br>59.0               | E<br>59.2               | E<br>59.2               | E<br>59.3               | E<br>60.3               | E<br>60.3               |
| Hurstbourne Pkwy Northbound                | E<br>57.8               | E<br>60.9               | E<br>60.9               | E<br>62.8               | E<br>62.8               | E<br>68.2               |
| Hurstbourne Pkwy Southbound                | A<br>4.6                | A<br>6.5                | A<br>6.5                | B<br>14.4               | B<br>17.1               | B<br>18.8               |
| <b>Hurstbourne Pkwy at Stoney Brook Dr</b> | <b>C</b><br><b>33.6</b> | <b>C</b><br><b>34.7</b> | <b>C</b><br><b>33.9</b> | <b>B</b><br><b>17.0</b> | <b>B</b><br><b>18.0</b> | <b>B</b><br><b>18.1</b> |
| Stoney Brook Dr Westbound                  | F<br>102.8              | F<br>108.3              | F<br>108.3              | E<br>76.9               | E<br>75.9               | E<br>75.9               |
| Hurstbourne Pkwy Northbound                | B<br>17.9               | B<br>18.1               | B<br>18.3               | B<br>12.5               | B<br>13.8               | B<br>14.3               |
| Hurstbourne Pkwy Southbound                | B<br>17.7               | B<br>18.4               | B<br>18.0               | B<br>12.5               | B<br>13.3               | B<br>13.2               |
| <b>Hurstbourne Pkwy at Bardstown Rd</b>    | <b>E</b><br><b>64.2</b> | <b>E</b><br><b>69.0</b> | <b>F</b><br><b>73.1</b> | <b>E</b><br><b>73.2</b> | <b>E</b><br><b>79.3</b> | <b>F</b><br><b>88.2</b> |
| Hurstbourne Pkwy Northbound                | F<br>95.3               | F<br>106.3              | F<br>111.9              | F<br>93.2               | F<br>107.9              | F<br>129.4              |
| Hurstbourne Pkwy Southbound                | D<br>53.6               | E<br>58.8               | E<br>71.0               | E<br>70.0               | E<br>72.4               | F<br>86.3               |
| Bardstown Rd Eastbound                     | D<br>46.5               | D<br>47.0               | D<br>47.4               | E<br>79.6               | F<br>87.0               | F<br>87.0               |



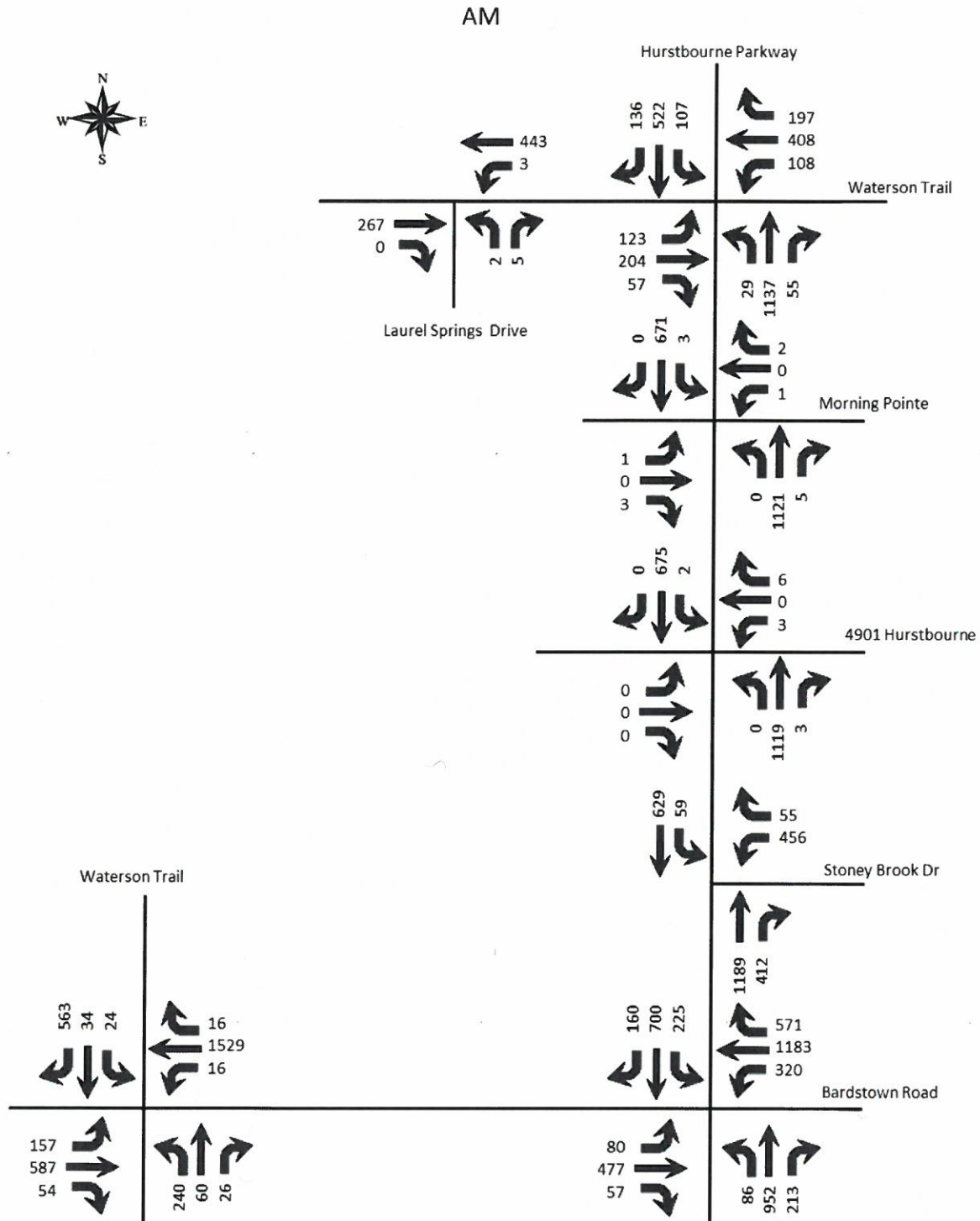
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|                                          | A.M.              |                   |                   | P.M.              |                   |                   |
|------------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Approach                                 | 2022 Existing     | 2025 No Build     | 2025 Build        | 2022 Existing     | 2025 No Build     | 2025 Build        |
| Bardstown Rd Westbound                   | E<br>56.0         | E<br>58.4         | E<br>58.3         | D<br>49.8         | D<br>50.3         | D<br>49.9         |
| <b>Bardstown Road at Watterson Trail</b> | <b>D<br/>45.3</b> | <b>D<br/>48.6</b> | <b>D<br/>48.6</b> | <b>D<br/>38.7</b> | <b>D<br/>40.8</b> | <b>D<br/>42.4</b> |
| Watterson Trail Northbound               | F<br>96.3         | F<br>97.5         | F<br>97.5         | F<br>86.8         | F<br>87.9         | F<br>87.9         |
| Watterson Trail Southbound               | E<br>75.0         | E<br>76.1         | E<br>76.1         | E<br>78.1         | F<br>82.8         | F<br>82.8         |
| Bardstown Rd Eastbound                   | D<br>36.3         | D<br>38.4         | D<br>38.4         | D<br>41.4         | D<br>41.8         | D<br>44.6         |
| Bardstown Rd Westbound                   | D<br>39.4         | D<br>43.4         | D<br>43.4         | C<br>21.3         | C<br>25.1         | C<br>25.6         |
| <b>Hurstbourne Pkwy at 4700 Entrance</b> |                   |                   |                   |                   |                   |                   |
| 4700 Hurstbourne Eastbound               |                   |                   | C<br>18.8         |                   |                   | D<br>27.3         |
| Morning Point Westbound                  |                   |                   | C<br>17.5         |                   |                   | B<br>14.7         |
| Hurstbourne Pkwy Northbound              |                   |                   | A<br>9.0          |                   |                   | B<br>11.6         |
| Hurstbourne Pkwy Southbound              |                   |                   | B<br>10.9         |                   |                   | A<br>9.8          |
| <b>Hurstbourne Pkwy at 4900 Entrance</b> |                   |                   |                   |                   |                   |                   |
| 4900 Hurstbourne Eastbound               |                   |                   | B<br>13.1         |                   |                   | C<br>18.2         |
| Morning Point Westbound                  |                   |                   | C<br>18.1         |                   |                   | C<br>19.4         |
| Hurstbourne Pkwy Northbound              |                   |                   | A<br>9.1          |                   |                   | B<br>12.4         |
| Hurstbourne Pkwy Southbound              |                   |                   | B<br>10.8         |                   |                   | B<br>10.1         |
| <b>Bardstown Road at Entrance</b>        |                   |                   |                   |                   |                   |                   |
| Bardstown Road Eastbound (left)          |                   |                   | B<br>13.1         |                   |                   | A<br>10.0         |
| Entrance Southbound                      |                   |                   | C<br>18.5         |                   |                   | B<br>11.7         |

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, no turn lanes will be required at the entrances. **Table 3** summarizes the delay and Level of Service for 2035.



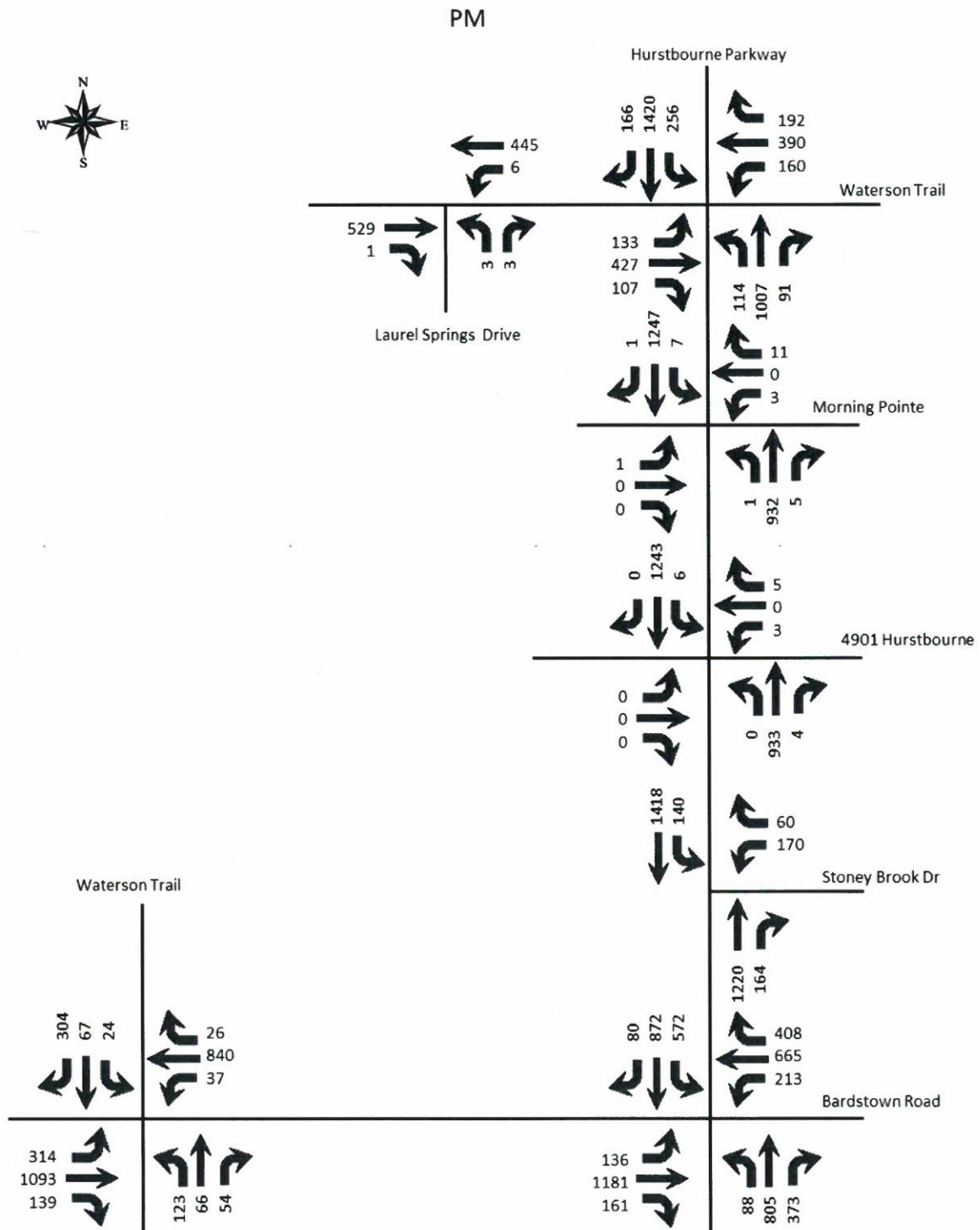
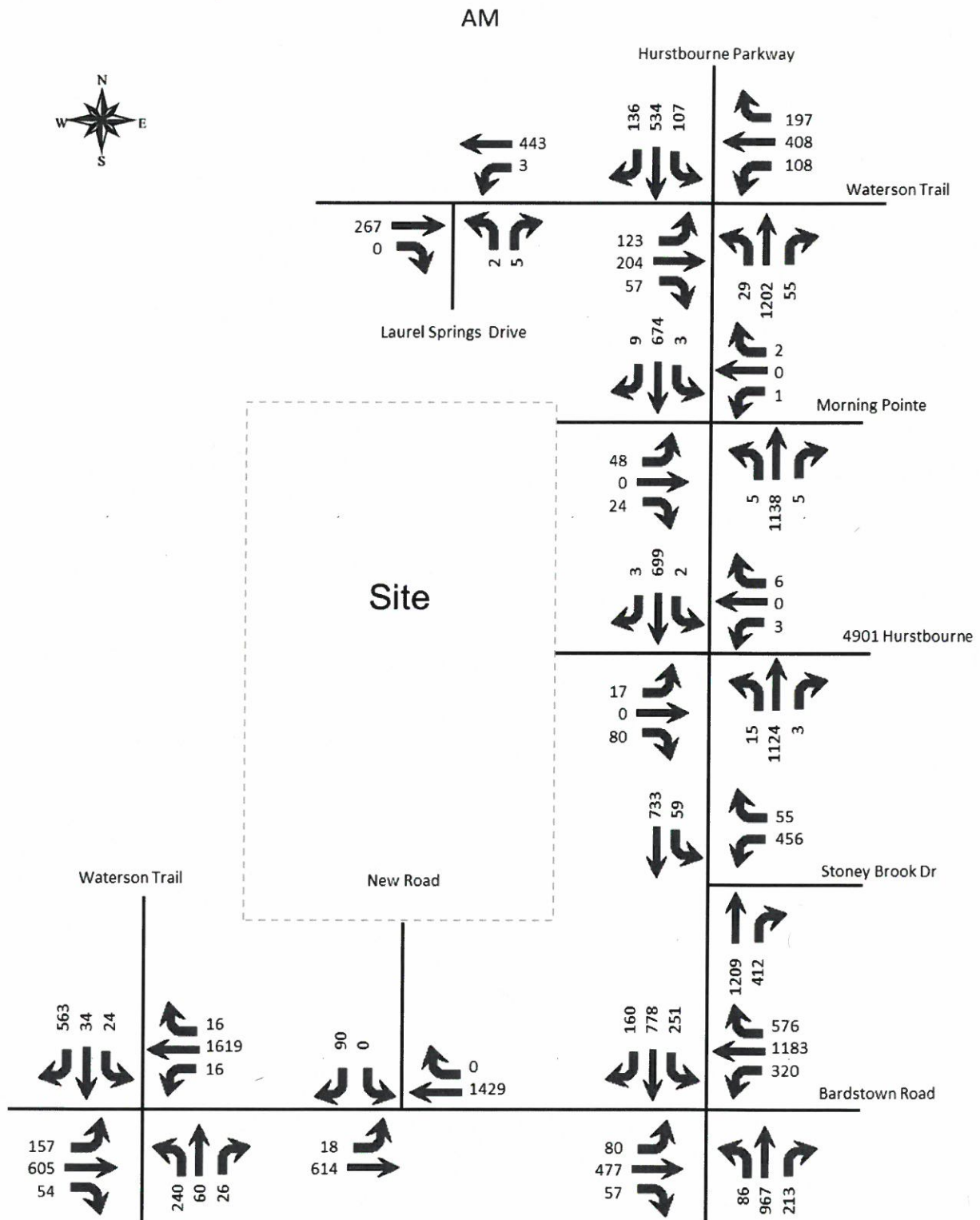


Figure 7. 2035 No Build Peak Hour Volumes





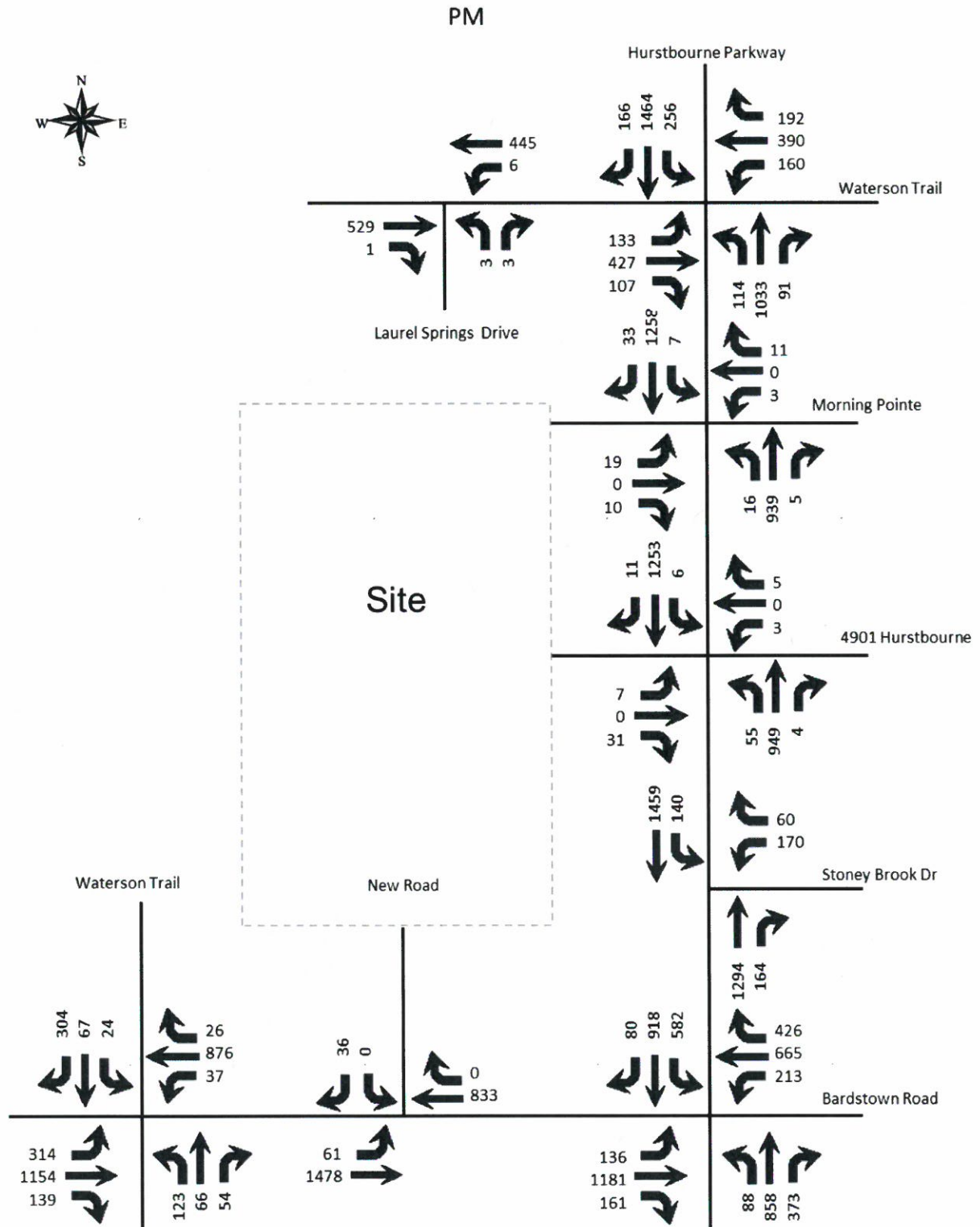


Figure 8. 2035 Build Peak Hour Volumes

**Table 3. Peak Hour Level of Service (2035)**

| Approach                                   | A.M.                    |                         |                         | P.M.                    |                         |                          |
|--------------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|
|                                            | 2022 Existing           | 2035 No Build           | 2035 Build              | 2022 Existing           | 2035 No Build           | 2035 Build               |
| <b>Hurstbourne Pkwy at Watterson Tr</b>    | <b>D</b><br><b>44.8</b> | <b>D</b><br><b>49.2</b> | <b>D</b><br><b>54.8</b> | <b>D</b><br><b>44.9</b> | <b>D</b><br><b>54.5</b> | <b>E</b><br><b>57.7</b>  |
| Watterson Tr Eastbound                     | D<br>52.4               | D<br>50.6               | D<br>50.6               | F<br>80.4               | F<br>83.2               | F<br>83.2                |
| Watterson Tr Westbound                     | E<br>59.0               | E<br>59.9               | E<br>59.9               | E<br>59.3               | E<br>61.9               | E<br>61.9                |
| Hurstbourne Pkwy Northbound                | E<br>57.8               | E<br>68.4               | F<br>81.7               | E<br>62.8               | E<br>70.9               | E<br>73.8                |
| Hurstbourne Pkwy Southbound                | A<br>4.6                | A<br>7.8                | A<br>7.8                | B<br>14.4               | C<br>30.3               | D<br>36.5                |
| <b>Hurstbourne Pkwy at Stoney Brook Dr</b> | <b>C</b><br><b>33.6</b> | <b>D</b><br><b>37.8</b> | <b>D</b><br><b>37.0</b> | <b>B</b><br><b>17.0</b> | <b>B</b><br><b>18.8</b> | <b>B</b><br><b>18.9</b>  |
| Stoney Brook Dr Westbound                  | F<br>102.8              | F<br>123.8              | F<br>123.8              | E<br>76.9               | E<br>75.7               | E<br>75.7                |
| Hurstbourne Pkwy Northbound                | B<br>17.9               | B<br>18.6               | B<br>18.8               | B<br>12.5               | B<br>14.7               | B<br>15.4                |
| Hurstbourne Pkwy Southbound                | B<br>17.7               | B<br>18.7               | B<br>18.3               | B<br>12.5               | B<br>13.9               | B<br>13.9                |
| <b>Hurstbourne Pkwy at Bardstown Rd</b>    | <b>E</b><br><b>64.2</b> | <b>E</b><br><b>78.9</b> | <b>F</b><br><b>83.4</b> | <b>E</b><br><b>73.2</b> | <b>F</b><br><b>98.6</b> | <b>F</b><br><b>100.6</b> |
| Hurstbourne Pkwy Northbound                | F<br>95.3               | F<br>123.4              | F<br>129.4              | F<br>93.2               | F<br>145.6              | F<br>145.6               |
| Hurstbourne Pkwy Southbound                | D<br>53.6               | E<br>65.5               | E<br>79.5               | E<br>70.0               | F<br>91.7               | F<br>100.3               |
| Bardstown Rd Eastbound                     | D<br>46.5               | D<br>47.7               | D<br>48.3               | E<br>79.6               | F<br>109.4              | F<br>109.4               |
| Bardstown Rd Westbound                     | E<br>56.0               | E<br>68.2               | E<br>68.0               | D<br>49.8               | D<br>46.0               | D<br>45.7                |
| <b>Bardstown Road at Watterson Trail</b>   | <b>D</b><br><b>45.3</b> | <b>E</b><br><b>56.2</b> | <b>E</b><br><b>66.4</b> | <b>D</b><br><b>38.7</b> | <b>D</b><br><b>43.1</b> | <b>D</b><br><b>45.2</b>  |
| Watterson Trail Northbound                 | F<br>96.3               | F<br>101.1              | F<br>101.1              | F<br>86.8               | F<br>88.7               | F<br>88.7                |
| Watterson Trail Southbound                 | E<br>75.0               | E<br>76.4               | E<br>76.4               | E<br>78.1               | F<br>84.2               | F<br>84.2                |
| Bardstown Rd Eastbound                     | D<br>36.3               | D<br>42.2               | D<br>43.2               | D<br>41.4               | D<br>44.5               | D<br>48.2                |
| Bardstown Rd Westbound                     | D<br>39.4               | D<br>53.9               | E<br>71.2               | C<br>21.3               | C<br>27.0               | C<br>27.6                |
| <b>Hurstbourne Pkwy at 4700 Entrance</b>   |                         |                         |                         |                         |                         |                          |
| 4700 Hurstbourne Eastbound                 |                         |                         | C<br>19.8               |                         |                         | D<br>29.6                |

| Approach                                 | A.M.             |                  |               | P.M.             |                  |               |
|------------------------------------------|------------------|------------------|---------------|------------------|------------------|---------------|
|                                          | 2022<br>Existing | 2035<br>No Build | 2035<br>Build | 2022<br>Existing | 2035<br>No Build | 2035<br>Build |
| Morning Point Westbound                  |                  |                  | C<br>18.3     |                  |                  | C<br>15.2     |
| Hurstbourne Pkwy Northbound              |                  |                  | A<br>9.1      |                  |                  | B<br>12.0     |
| Hurstbourne Pkwy Southbound              |                  |                  | B<br>11.2     |                  |                  | B<br>10.0     |
| <b>Hurstbourne Pkwy at 4900 Entrance</b> |                  |                  |               |                  |                  |               |
| 4900 Hurstbourne Eastbound               |                  |                  | B<br>10.7     |                  |                  | C<br>18.2     |
| Morning Point Westbound                  |                  |                  | C<br>18.2     |                  |                  | C<br>19.4     |
| Hurstbourne Pkwy Northbound              |                  |                  | A<br>7.8      |                  |                  | B<br>12.4     |
| Hurstbourne Pkwy Southbound              |                  |                  | B<br>11.1     |                  |                  | B<br>10.1     |
| <b>Bardstown Road at Entrance</b>        |                  |                  |               |                  |                  |               |
| Bardstown Road Eastbound (left)          |                  |                  | B<br>13.7     |                  |                  | B<br>10.2     |
| Entrance Southbound                      |                  |                  | C<br>19.6     |                  |                  | B<br>11.9     |

Key: Level of Service, Delay in seconds per vehicle

The intersection of Hurstbourne Parkway at Bardstown Road will experience Level of Service F in both peak hours. The connection to Bardstown Road will provide an improvement to the intersection. Due to right-of-way constraints and locations of utilities at the intersection, there are not cost-effective mitigation options for the intersection.

## CONCLUSIONS

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

## APPENDIX



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

## Traffic Counts

### Classified Turn Movement Count || All vehicles



19524 Jefferson County, KY

www.marrtraffic.com

**Site 1 of 2**

KY-1747 S Hurstbourne Pkwy (South)  
KY-1747 S Hurstbourne Pkwy (North)  
Driveway (West)  
Driveway (East)

**Date**

Wednesday, March 16, 2022

**Weather**

Mostly Cloudy  
58°F

**Lat/Long**

38.178940°, -85.607194°

**0700 - 0900 (Weekday 2h Session) (03-16-2022)**

All vehicles

| TIME           | Northbound                         |             |              |               |              | Southbound                         |             |              |               |              | Eastbound       |              |               |                |              | Westbound       |              |               |                |              | Int<br>Total |
|----------------|------------------------------------|-------------|--------------|---------------|--------------|------------------------------------|-------------|--------------|---------------|--------------|-----------------|--------------|---------------|----------------|--------------|-----------------|--------------|---------------|----------------|--------------|--------------|
|                | KY-1747 S Hurstbourne Pkwy (South) |             |              |               |              | KY-1747 S Hurstbourne Pkwy (North) |             |              |               |              | Driveway (West) |              |               |                |              | Driveway (East) |              |               |                |              |              |
|                | Left<br>1.1                        | Thru<br>1.2 | Right<br>1.3 | U-Turn<br>1.4 | App<br>Total | Left<br>1.5                        | Thru<br>1.6 | Right<br>1.7 | U-Turn<br>1.8 | App<br>Total | Left<br>1.9     | Thru<br>1.10 | Right<br>1.11 | U-Turn<br>1.12 | App<br>Total | Left<br>1.13    | Thru<br>1.14 | Right<br>1.15 | U-Turn<br>1.16 | App<br>Total |              |
| 0700 - 0715    | 0                                  | 186         | 1            | 0             | 187          | 0                                  | 114         | 0            | 0             | 114          | 0               | 0            | 0             | 0              | 0            | 3               | 0            | 0             | 0              | 3            | 304          |
| 0715 - 0730    | 0                                  | 228         | 2            | 0             | 230          | 0                                  | 165         | 0            | 0             | 165          | 0               | 0            | 2             | 0              | 2            | 0               | 0            | 2             | 0              | 2            | 399          |
| 0730 - 0745    | 0                                  | 267         | 1            | 0             | 268          | 1                                  | 160         | 0            | 1             | 162          | 1               | 0            | 1             | 0              | 2            | 1               | 0            | 0             | 0              | 1            | 433          |
| 0745 - 0800    | 0                                  | 267         | 1            | 0             | 268          | 1                                  | 139         | 0            | 0             | 140          | 0               | 0            | 0             | 0              | 0            | 0               | 0            | 0             | 0              | 0            | 408          |
| Hourly Total   | 0                                  | 948         | 5            | 0             | 953          | 2                                  | 578         | 0            | 1             | 581          | 1               | 0            | 3             | 0              | 4            | 4               | 0            | 2             | 0              | 6            | 1544         |
| 0800 - 0815    | 0                                  | 267         | 1            | 0             | 268          | 0                                  | 123         | 0            | 0             | 123          | 0               | 0            | 0             | 0              | 0            | 0               | 0            | 0             | 0              | 0            | 391          |
| 0815 - 0830    | 0                                  | 200         | 1            | 0             | 201          | 2                                  | 123         | 0            | 0             | 125          | 0               | 0            | 0             | 0              | 0            | 0               | 0            | 1             | 0              | 1            | 327          |
| 0830 - 0845    | 0                                  | 264         | 3            | 0             | 267          | 4                                  | 131         | 0            | 0             | 135          | 0               | 0            | 0             | 0              | 0            | 1               | 0            | 0             | 0              | 1            | 403          |
| 0845 - 0900    | 0                                  | 236         | 1            | 0             | 237          | 3                                  | 150         | 0            | 0             | 153          | 0               | 0            | 0             | 0              | 0            | 0               | 0            | 0             | 0              | 0            | 390          |
| Hourly Total   | 0                                  | 967         | 6            | 0             | 973          | 9                                  | 527         | 0            | 0             | 536          | 0               | 0            | 0             | 0              | 0            | 1               | 0            | 1             | 0              | 2            | 1511         |
| Grand Total    | 0                                  | 1915        | 11           | 0             | 1926         | 11                                 | 1105        | 0            | 1             | 1117         | 1               | 0            | 3             | 0              | 4            | 5               | 0            | 3             | 0              | 8            | 3055         |
| Approach %     | 0.00                               | 99.43       | 0.57         | 0.00          | -            | 0.98                               | 98.93       | 0.00         | 0.09          | -            | 25.00           | 0.00         | 75.00         | 0.00           | -            | 62.50           | 0.00         | 37.50         | 0.00           | -            |              |
| Intersection % | 0.00                               | 62.68       | 0.36         | 0.00          | 63.04        | 0.36                               | 36.17       | 0.00         | 0.03          | 36.56        | 0.03            | 0.00         | 0.10          | 0.00           | 0.13         | 0.16            | 0.00         | 0.10          | 0.00           | 0.26         |              |
| PHF            | 0.00                               | 0.96        | 0.63         | 0.00          | 0.96         | 0.50                               | 0.89        | 0.00         | 0.25          | 0.89         | 0.25            | 0.00         | 0.38          | 0.00           | 0.50         | 0.25            | 0.00         | 0.25          | 0.00           | 0.38         | 0.94         |

**1600 - 1800 (Weekday 2h Session) (03-16-2022)**

All vehicles

| TIME           | Northbound                         |             |              |               |              | Southbound                         |             |              |               |              | Eastbound       |              |               |                |              | Westbound       |              |               |                |              | Int<br>Total |
|----------------|------------------------------------|-------------|--------------|---------------|--------------|------------------------------------|-------------|--------------|---------------|--------------|-----------------|--------------|---------------|----------------|--------------|-----------------|--------------|---------------|----------------|--------------|--------------|
|                | KY-1747 S Hurstbourne Pkwy (South) |             |              |               |              | KY-1747 S Hurstbourne Pkwy (North) |             |              |               |              | Driveway (West) |              |               |                |              | Driveway (East) |              |               |                |              |              |
|                | Left<br>1.1                        | Thru<br>1.2 | Right<br>1.3 | U-Turn<br>1.4 | App<br>Total | Left<br>1.5                        | Thru<br>1.6 | Right<br>1.7 | U-Turn<br>1.8 | App<br>Total | Left<br>1.9     | Thru<br>1.10 | Right<br>1.11 | U-Turn<br>1.12 | App<br>Total | Left<br>1.13    | Thru<br>1.14 | Right<br>1.15 | U-Turn<br>1.16 | App<br>Total |              |
| 1600 - 1615    | 1                                  | 205         | 0            | 0             | 206          | 0                                  | 232         | 0            | 0             | 232          | 1               | 0            | 0             | 0              | 1            | 0               | 0            | 0             | 0              | 0            | 439          |
| 1615 - 1630    | 0                                  | 202         | 2            | 1             | 205          | 0                                  | 294         | 1            | 0             | 295          | 1               | 0            | 0             | 0              | 1            | 0               | 0            | 2             | 0              | 2            | 503          |
| 1630 - 1645    | 0                                  | 206         | 1            | 0             | 207          | 1                                  | 289         | 0            | 1             | 291          | 0               | 0            | 0             | 0              | 0            | 1               | 0            | 2             | 0              | 3            | 501          |
| 1645 - 1700    | 0                                  | 204         | 1            | 0             | 205          | 2                                  | 262         | 0            | 0             | 264          | 0               | 0            | 0             | 0              | 0            | 0               | 0            | 3             | 0              | 3            | 472          |
| Hourly Total   | 1                                  | 817         | 4            | 1             | 823          | 3                                  | 1077        | 1            | 1             | 1082         | 2               | 0            | 0             | 0              | 2            | 1               | 0            | 7             | 0              | 8            | 1915         |
| 1700 - 1715    | 0                                  | 212         | 1            | 0             | 213          | 1                                  | 286         | 0            | 2             | 289          | 0               | 0            | 0             | 0              | 0            | 2               | 0            | 4             | 0              | 6            | 508          |
| 1715 - 1730    | 0                                  | 230         | 0            | 0             | 230          | 1                                  | 253         | 3            | 0             | 257          | 0               | 0            | 1             | 0              | 1            | 2               | 0            | 2             | 0              | 4            | 492          |
| 1730 - 1745    | 0                                  | 228         | 0            | 0             | 228          | 1                                  | 277         | 0            | 0             | 278          | 0               | 0            | 0             | 0              | 0            | 0               | 0            | 3             | 0              | 3            | 509          |
| 1745 - 1800    | 0                                  | 166         | 0            | 0             | 166          | 0                                  | 240         | 0            | 0             | 240          | 1               | 0            | 0             | 0              | 1            | 0               | 0            | 0             | 0              | 0            | 407          |
| Hourly Total   | 0                                  | 836         | 1            | 0             | 837          | 3                                  | 1056        | 3            | 2             | 1064         | 1               | 0            | 1             | 0              | 2            | 4               | 0            | 9             | 0              | 13           | 1916         |
| Grand Total    | 1                                  | 1653        | 5            | 1             | 1660         | 6                                  | 2133        | 4            | 3             | 2146         | 3               | 0            | 1             | 0              | 4            | 5               | 0            | 16            | 0              | 21           | 3831         |
| Approach %     | 0.06                               | 99.58       | 0.30         | 0.06          | -            | 0.28                               | 99.39       | 0.19         | 0.14          | -            | 75.00           | 0.00         | 25.00         | 0.00           | -            | 23.81           | 0.00         | 76.19         | 0.00           | -            |              |
| Intersection % | 0.03                               | 43.15       | 0.13         | 0.03          | 43.33        | 0.16                               | 55.68       | 0.10         | 0.08          | 56.02        | 0.08            | 0.00         | 0.03          | 0.00           | 0.10         | 0.13            | 0.00         | 0.42          | 0.00           | 0.55         |              |
| PHF            | 0.00                               | 0.97        | 0.63         | 0.25          | 0.97         | 0.50                               | 0.96        | 0.25         | 0.38          | 0.97         | 0.25            | 0.00         | 0.00          | 0.00           | 0.25         | 0.38            | 0.00         | 0.69          | 0.00           | 0.58         | 0.98         |

Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

Classified Turn Movement Count || All vehicles

19524 Jefferson County, KY



Marr Traffic  
DATA COLLECTION

www.marrtraffic.com

Site 2 of 2

Laurel Spring Dr

Watterson Trail (West)

Watterson Trail (East)

Date

Wednesday, March 16, 2022

Lat/Long

38.181397°, -85.611134°

Weather

Mostly Cloudy  
58°F

0700 - 0900 (Weekday 2h Session) (03-16-2022)

All vehicles

| TIME           | Northbound<br>Laurel Spring Dr |              |               |              |
|----------------|--------------------------------|--------------|---------------|--------------|
|                | Left<br>2.1                    | Right<br>2.2 | U-Turn<br>2.3 | App<br>Total |
| 0700 - 0715    | 1                              | 2            | 0             | 3            |
| 0715 - 0730    | 2                              | 4            | 0             | 6            |
| 0730 - 0745    | 0                              | 0            | 0             | 0            |
| 0745 - 0800    | 0                              | 1            | 0             | 1            |
| Hourly Total   | 3                              | 7            | 0             | 10           |
| 0800 - 0815    | 0                              | 0            | 0             | 0            |
| 0815 - 0830    | 0                              | 0            | 0             | 0            |
| 0830 - 0845    | 0                              | 0            | 0             | 0            |
| 0845 - 0900    | 0                              | 0            | 0             | 0            |
| Hourly Total   | 0                              | 0            | 0             | 0            |
| Grand Total    | 3                              | 7            | 0             | 10           |
| Approach %     | 30.00                          | 70.00        | 0.00          | -            |
| Intersection % | 0.26                           | 0.61         | 0.00          | 0.87         |
| PHF            | 0.25                           | 0.31         | 0.00          | 0.29         |

| Eastbound<br>Watterson Trail (West) |              |               |              | Westbound<br>Watterson Trail (East) |             |               |              | Int<br>Total |
|-------------------------------------|--------------|---------------|--------------|-------------------------------------|-------------|---------------|--------------|--------------|
| Thru<br>2.4                         | Right<br>2.5 | U-Turn<br>2.6 | App<br>Total | Left<br>2.7                         | Thru<br>2.8 | U-Turn<br>2.9 | App<br>Total |              |
| 35                                  | 0            | 0             | 35           | 1                                   | 95          | 0             | 96           | 134          |
| 44                                  | 0            | 0             | 44           | 0                                   | 98          | 0             | 98           | 148          |
| 59                                  | 0            | 0             | 59           | 1                                   | 112         | 0             | 113          | 172          |
| 48                                  | 0            | 0             | 48           | 2                                   | 99          | 0             | 101          | 150          |
| 186                                 | 0            | 0             | 186          | 4                                   | 404         | 0             | 408          | 604          |
| 45                                  | 0            | 0             | 45           | 0                                   | 94          | 0             | 94           | 139          |
| 45                                  | 0            | 0             | 45           | 2                                   | 61          | 0             | 63           | 108          |
| 62                                  | 0            | 0             | 62           | 0                                   | 87          | 0             | 87           | 149          |
| 58                                  | 1            | 0             | 59           | 0                                   | 94          | 0             | 94           | 153          |
| 210                                 | 1            | 0             | 211          | 2                                   | 336         | 0             | 338          | 549          |
| 396                                 | 1            | 0             | 397          | 6                                   | 740         | 0             | 746          | 1153         |
| 99.75                               | 0.25         | 0.00          | -            | 0.80                                | 99.20       | 0.00          | -            |              |
| 34.35                               | 0.09         | 0.00          | 34.43        | 0.52                                | 64.18       | 0.00          | 64.70        |              |
| 0.83                                | 0.00         | 0.00          | 0.83         | 0.38                                | 0.90        | 0.00          | 0.90         | 0.89         |

1600 - 1800 (Weekday 2h Session) (03-16-2022)

All vehicles

| TIME           | Northbound<br>Laurel Spring Dr |              |               |              |
|----------------|--------------------------------|--------------|---------------|--------------|
|                | Left<br>2.1                    | Right<br>2.2 | U-Turn<br>2.3 | App<br>Total |
| 1600 - 1615    | 0                              | 1            | 0             | 1            |
| 1615 - 1630    | 0                              | 1            | 0             | 1            |
| 1630 - 1645    | 1                              | 1            | 0             | 2            |
| 1645 - 1700    | 0                              | 2            | 0             | 2            |
| Hourly Total   | 1                              | 5            | 0             | 6            |
| 1700 - 1715    | 0                              | 0            | 0             | 0            |
| 1715 - 1730    | 2                              | 0            | 0             | 2            |
| 1730 - 1745    | 0                              | 1            | 0             | 1            |
| 1745 - 1800    | 0                              | 0            | 0             | 0            |
| Hourly Total   | 2                              | 1            | 0             | 3            |
| Grand Total    | 3                              | 6            | 0             | 9            |
| Approach %     | 33.33                          | 66.67        | 0.00          | -            |
| Intersection % | 0.19                           | 0.37         | 0.00          | 0.56         |
| PHF            | 0.38                           | 0.38         | 0.00          | 0.75         |

| Eastbound<br>Watterson Trail (West) |              |               |              | Westbound<br>Watterson Trail (East) |             |               |              | Int<br>Total |
|-------------------------------------|--------------|---------------|--------------|-------------------------------------|-------------|---------------|--------------|--------------|
| Thru<br>2.4                         | Right<br>2.5 | U-Turn<br>2.6 | App<br>Total | Left<br>2.7                         | Thru<br>2.8 | U-Turn<br>2.9 | App<br>Total |              |
| 85                                  | 0            | 0             | 85           | 1                                   | 102         | 0             | 103          | 189          |
| 82                                  | 2            | 0             | 84           | 2                                   | 109         | 0             | 111          | 196          |
| 110                                 | 0            | 0             | 110          | 1                                   | 111         | 0             | 112          | 224          |
| 104                                 | 0            | 0             | 104          | 1                                   | 91          | 0             | 92           | 198          |
| 381                                 | 2            | 0             | 383          | 5                                   | 413         | 0             | 418          | 807          |
| 106                                 | 0            | 0             | 106          | 1                                   | 90          | 0             | 91           | 197          |
| 124                                 | 1            | 0             | 125          | 3                                   | 99          | 0             | 102          | 229          |
| 87                                  | 0            | 0             | 87           | 1                                   | 106         | 0             | 107          | 195          |
| 87                                  | 0            | 0             | 87           | 0                                   | 97          | 0             | 97           | 184          |
| 404                                 | 1            | 0             | 405          | 5                                   | 392         | 0             | 397          | 805          |
| 785                                 | 3            | 0             | 788          | 10                                  | 805         | 0             | 815          | 1612         |
| 99.62                               | 0.38         | 0.00          | -            | 1.23                                | 98.77       | 0.00          | -            |              |
| 48.70                               | 0.19         | 0.00          | 48.88        | 0.62                                | 49.94       | 0.00          | 50.56        |              |
| 0.90                                | 0.25         | 0.00          | 0.89         | 0.50                                | 0.88        | 0.00          | 0.89         | 0.93         |



## HCS Reports

### HCM 6th Signalized Intersection Summary 2216: KY-1747 & US-31E

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 80                                                                                | 875                                                                               | 200                                                                               | 200                                                                               | 625                                                                               | 150                                                                               | 75                                                                                 | 425                                                                                 | 50                                                                                  | 300                                                                                 | 1100                                                                                | 525                                                                                 |
| Future Volume (veh/h)        | 80                                                                                | 875                                                                               | 200                                                                               | 200                                                                               | 625                                                                               | 150                                                                               | 75                                                                                 | 425                                                                                 | 50                                                                                  | 300                                                                                 | 1100                                                                                | 525                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                               | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 87                                                                                | 951                                                                               | 217                                                                               | 217                                                                               | 679                                                                               | 163                                                                               | 82                                                                                 | 462                                                                                 | 54                                                                                  | 326                                                                                 | 1196                                                                                | 571                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 107                                                                               | 882                                                                               | 658                                                                               | 295                                                                               | 776                                                                               | 186                                                                               | 220                                                                                | 1127                                                                                | 503                                                                                 | 297                                                                                 | 1282                                                                                | 707                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.25                                                                              | 0.25                                                                              | 0.17                                                                              | 0.55                                                                              | 0.55                                                                              | 0.12                                                                               | 0.32                                                                                | 0.32                                                                                | 0.22                                                                                | 0.48                                                                                | 0.48                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 2843                                                                              | 682                                                                               | 1781                                                                               | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 87                                                                                | 951                                                                               | 217                                                                               | 217                                                                               | 424                                                                               | 418                                                                               | 82                                                                                 | 462                                                                                 | 54                                                                                  | 326                                                                                 | 1196                                                                                | 571                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1748                                                                              | 1781                                                                               | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 7.7                                                                               | 39.7                                                                              | 9.2                                                                               | 9.5                                                                               | 33.2                                                                              | 33.3                                                                              | 6.8                                                                                | 16.3                                                                                | 3.9                                                                                 | 26.7                                                                                | 50.7                                                                                | 31.4                                                                                |
| Cycle Q Clear(g_c), s        | 7.7                                                                               | 39.7                                                                              | 9.2                                                                               | 9.5                                                                               | 33.2                                                                              | 33.3                                                                              | 6.8                                                                                | 16.3                                                                                | 3.9                                                                                 | 26.7                                                                                | 50.7                                                                                | 31.4                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.39                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 107                                                                               | 882                                                                               | 658                                                                               | 295                                                                               | 485                                                                               | 477                                                                               | 220                                                                                | 1127                                                                                | 503                                                                                 | 297                                                                                 | 1282                                                                                | 707                                                                                 |
| V/C Ratio(X)                 | 0.81                                                                              | 1.08                                                                              | 0.33                                                                              | 0.74                                                                              | 0.87                                                                              | 0.88                                                                              | 0.37                                                                               | 0.41                                                                                | 0.11                                                                                | 1.10                                                                                | 0.93                                                                                | 0.81                                                                                |
| Avail Cap(c_a), veh/h        | 175                                                                               | 882                                                                               | 658                                                                               | 425                                                                               | 485                                                                               | 477                                                                               | 220                                                                                | 1127                                                                                | 503                                                                                 | 297                                                                                 | 1282                                                                                | 707                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.33                                                                                | 1.33                                                                                | 1.33                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.77                                                                              | 0.77                                                                              | 0.77                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.46                                                                                | 0.46                                                                                | 0.46                                                                                |
| Uniform Delay (d), s/veh     | 74.3                                                                              | 60.2                                                                              | 13.8                                                                              | 64.7                                                                              | 33.9                                                                              | 33.9                                                                              | 64.4                                                                               | 42.9                                                                                | 38.6                                                                                | 62.2                                                                                | 39.8                                                                                | 29.5                                                                                |
| Incr Delay (d2), s/veh       | 18.2                                                                              | 53.8                                                                              | 1.3                                                                               | 4.1                                                                               | 15.6                                                                              | 15.9                                                                              | 1.3                                                                                | 1.1                                                                                 | 0.4                                                                                 | 64.7                                                                                | 7.3                                                                                 | 4.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.0                                                                               | 24.1                                                                              | 3.4                                                                               | 4.0                                                                               | 12.7                                                                              | 12.5                                                                              | 3.1                                                                                | 7.3                                                                                 | 1.6                                                                                 | 16.7                                                                                | 21.2                                                                                | 9.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 92.5                                                                              | 113.9                                                                             | 15.1                                                                              | 68.7                                                                              | 49.5                                                                              | 49.8                                                                              | 65.7                                                                               | 44.0                                                                                | 39.0                                                                                | 127.0                                                                               | 47.1                                                                                | 34.1                                                                                |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | B                                                                                 | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | F                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1255                                                                              |                                                                                   |                                                                                   | 1059                                                                              |                                                                                   |                                                                                   | 598                                                                                |                                                                                     |                                                                                     | 2093                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 95.3                                                                              |                                                                                   |                                                                                   | 53.6                                                                              |                                                                                   |                                                                                   | 46.5                                                                               |                                                                                     |                                                                                     | 56.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 20.9                                                                              | 47.0                                                                              | 27.1                                                                              | 65.0                                                                              | 16.9                                                                              | 51.0                                                                              | 34.0                                                                               | 58.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                                | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 19.7                                                                              | 39.7                                                                              | 13.7                                                                              | 57.7                                                                              | 15.7                                                                              | 43.7                                                                              | 26.7                                                                               | 44.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 11.5                                                                              | 0.0                                                                               | 8.8                                                                               | 52.7                                                                              | 9.7                                                                               | 0.0                                                                               | 28.7                                                                               | 18.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.7                                                                               | 0.0                                                                               | 0.1                                                                               | 4.3                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                                | 4.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

#### Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 64.2 |
| HCM 6th LOS        | E    |

#### Notes

User approved pedestrian interval to be less than phase max green.



HCM 6th Signalized Intersection Summary  
2217: S Watterson Trail & US-31E

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                               | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 225                                                                               | 50                                                                                | 25                                                                                | 15                                                                                | 25                                                                                | 475                                                                               | 125                                                                               | 550                                                                                 | 50                                                                                  | 15                                                                                  | 1425                                                                                | 15                                                                                  |
| Future Volume (veh/h)        | 225                                                                               | 50                                                                                | 25                                                                                | 15                                                                                | 25                                                                                | 475                                                                               | 125                                                                               | 550                                                                                 | 50                                                                                  | 15                                                                                  | 1425                                                                                | 15                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 245                                                                               | 54                                                                                | 0                                                                                 | 16                                                                                | 27                                                                                | 0                                                                                 | 136                                                                               | 598                                                                                 | 54                                                                                  | 16                                                                                  | 1549                                                                                | 16                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 263                                                                               | 58                                                                                |                                                                                   | 44                                                                                | 74                                                                                |                                                                                   | 221                                                                               | 1393                                                                                | 621                                                                                 | 596                                                                                 | 1808                                                                                | 806                                                                                 |
| Arrive On Green              | 0.18                                                                              | 0.18                                                                              | 0.00                                                                              | 0.06                                                                              | 0.06                                                                              | 0.00                                                                              | 0.07                                                                              | 0.39                                                                                | 0.39                                                                                | 0.19                                                                                | 0.51                                                                                | 0.51                                                                                |
| Sat Flow, veh/h              | 1472                                                                              | 324                                                                               | 1585                                                                              | 683                                                                               | 1153                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 299                                                                               | 0                                                                                 | 0                                                                                 | 43                                                                                | 0                                                                                 | 0                                                                                 | 136                                                                               | 598                                                                                 | 54                                                                                  | 16                                                                                  | 1549                                                                                | 16                                                                                  |
| Grp Sat Flow(s), veh/h/ln    | 1797                                                                              | 0                                                                                 | 1585                                                                              | 1836                                                                              | 0                                                                                 | 1585                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 26.2                                                                              | 0.0                                                                               | 0.0                                                                               | 3.6                                                                               | 0.0                                                                               | 0.0                                                                               | 5.5                                                                               | 19.7                                                                                | 3.4                                                                                 | 0.0                                                                                 | 60.7                                                                                | 0.8                                                                                 |
| Cycle Q Clear(g_c), s        | 26.2                                                                              | 0.0                                                                               | 0.0                                                                               | 3.6                                                                               | 0.0                                                                               | 0.0                                                                               | 5.5                                                                               | 19.7                                                                                | 3.4                                                                                 | 0.0                                                                                 | 60.7                                                                                | 0.8                                                                                 |
| Prop In Lane                 | 0.82                                                                              |                                                                                   | 1.00                                                                              | 0.37                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 321                                                                               | 0                                                                                 |                                                                                   | 117                                                                               | 0                                                                                 |                                                                                   | 221                                                                               | 1393                                                                                | 621                                                                                 | 596                                                                                 | 1808                                                                                | 806                                                                                 |
| V/C Ratio(X)                 | 0.93                                                                              | 0.00                                                                              |                                                                                   | 0.37                                                                              | 0.00                                                                              |                                                                                   | 0.62                                                                              | 0.43                                                                                | 0.09                                                                                | 0.03                                                                                | 0.86                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h        | 341                                                                               | 0                                                                                 |                                                                                   | 303                                                                               | 0                                                                                 |                                                                                   | 374                                                                               | 1393                                                                                | 621                                                                                 | 596                                                                                 | 1808                                                                                | 806                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 64.7                                                                              | 0.0                                                                               | 0.0                                                                               | 71.8                                                                              | 0.0                                                                               | 0.0                                                                               | 32.5                                                                              | 35.6                                                                                | 30.6                                                                                | 23.8                                                                                | 34.2                                                                                | 19.5                                                                                |
| Incr Delay (d2), s/veh       | 31.6                                                                              | 0.0                                                                               | 0.0                                                                               | 3.3                                                                               | 0.0                                                                               | 0.0                                                                               | 4.7                                                                               | 1.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 5.5                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%), veh/ln    | 14.8                                                                              | 0.0                                                                               | 0.0                                                                               | 1.8                                                                               | 0.0                                                                               | 0.0                                                                               | 2.9                                                                               | 8.6                                                                                 | 1.4                                                                                 | 0.3                                                                                 | 26.5                                                                                | 0.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 96.3                                                                              | 0.0                                                                               | 0.0                                                                               | 75.0                                                                              | 0.0                                                                               | 0.0                                                                               | 37.2                                                                              | 36.5                                                                                | 30.9                                                                                | 23.8                                                                                | 39.7                                                                                | 19.6                                                                                |
| LnGrp LOS                    | F                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | A                                                                                 |                                                                                   | D                                                                                 | D                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 299                                                                               |                                                                                   |                                                                                   | 43                                                                                |                                                                                   |                                                                                   | 788                                                                               |                                                                                     |                                                                                     | 1581                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 96.3                                                                              |                                                                                   |                                                                                   | 75.0                                                                              |                                                                                   |                                                                                   | 36.3                                                                              |                                                                                     |                                                                                     | 39.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 19.3                                                                              | 88.7                                                                              |                                                                                   | 35.2                                                                              | 38.0                                                                              | 70.0                                                                              |                                                                                   | 16.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                               | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.7                                                                              | 49.7                                                                              |                                                                                   | 30.4                                                                              | 12.7                                                                              | 62.7                                                                              |                                                                                   | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.5                                                                               | 0.0                                                                               |                                                                                   | 28.2                                                                              | 2.0                                                                               | 0.0                                                                               |                                                                                   | 5.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.6                                                                               | 0.0                                                                               |                                                                                   | 0.4                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 45.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
3003: KY-1747 & S Stony Brook Dr

06/17/2022

| Movement                     | WBL   | WBR  | NBT  | NBR  | SBL  | SBT   |
|------------------------------|-------|------|------|------|------|-------|
| Lane Configurations          | ↰     | ↰    | ↕    | ↕    | ↰    | ↕     |
| Traffic Volume (veh/h)       | 425   | 50   | 1100 | 375  | 50   | 550   |
| Future Volume (veh/h)        | 425   | 50   | 1100 | 375  | 50   | 550   |
| Initial Q (Qb), veh          | 0     | 0    | 0    | 0    | 0    | 0     |
| Ped-Bike Adj(A_pbT)          | 1.00  | 1.00 |      | 1.00 | 1.00 |       |
| Parking Bus, Adj             | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Work Zone On Approach        | No    |      | No   |      |      | No    |
| Adj Sat Flow, veh/h/ln       | 1870  | 1870 | 1870 | 1870 | 1870 | 1870  |
| Adj Flow Rate, veh/h         | 462   | 54   | 1196 | 408  | 54   | 598   |
| Peak Hour Factor             | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  |
| Percent Heavy Veh, %         | 2     | 2    | 2    | 2    | 2    | 2     |
| Cap, veh/h                   | 450   | 400  | 2024 | 1303 | 81   | 2348  |
| Arrive On Green              | 0.25  | 0.25 | 0.57 | 0.57 | 0.05 | 0.66  |
| Sat Flow, veh/h              | 1781  | 1585 | 3647 | 1585 | 1781 | 3647  |
| Grp Volume(v), veh/h         | 462   | 54   | 1196 | 408  | 54   | 598   |
| Grp Sat Flow(s), veh/h/ln    | 1781  | 1585 | 1777 | 1585 | 1781 | 1777  |
| Q Serve(g_s), s              | 40.4  | 4.2  | 34.9 | 9.9  | 4.8  | 11.0  |
| Cycle Q Clear(g_c), s        | 40.4  | 4.2  | 34.9 | 9.9  | 4.8  | 11.0  |
| Prop In Lane                 | 1.00  | 1.00 |      | 1.00 | 1.00 |       |
| Lane Grp Cap(c), veh/h       | 450   | 400  | 2024 | 1303 | 81   | 2348  |
| V/C Ratio(X)                 | 1.03  | 0.13 | 0.59 | 0.31 | 0.67 | 0.25  |
| Avail Cap(c_a), veh/h        | 450   | 400  | 2024 | 1303 | 164  | 2348  |
| HCM Platoon Ratio            | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Upstream Filter(I)           | 1.00  | 1.00 | 0.32 | 0.32 | 1.00 | 1.00  |
| Uniform Delay (d), s/veh     | 59.8  | 46.3 | 22.3 | 3.4  | 75.2 | 11.1  |
| Incr Delay (d2), s/veh       | 49.6  | 0.3  | 0.4  | 0.2  | 12.6 | 0.3   |
| Initial Q Delay(d3),s/veh    | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   |
| %ile BackOfQ(50%),veh/ln     | 24.3  | 4.2  | 14.1 | 8.6  | 2.4  | 4.2   |
| Unsig. Movement Delay, s/veh |       |      |      |      |      |       |
| LnGrp Delay(d),s/veh         | 109.4 | 46.6 | 22.8 | 3.6  | 87.8 | 11.3  |
| LnGrp LOS                    | F     | D    | C    | A    | F    | B     |
| Approach Vol, veh/h          | 516   |      | 1604 |      |      | 652   |
| Approach Delay, s/veh        | 102.8 |      | 17.9 |      |      | 17.7  |
| Approach LOS                 | F     |      | B    |      |      | B     |
| Timer - Assigned Phs         | 1     | 2    |      | 4    |      | 6     |
| Phs Duration (G+Y+Rc), s     | 14.6  | 98.4 |      | 47.0 |      | 113.0 |
| Change Period (Y+Rc), s      | 7.3   | 7.3  |      | 6.6  |      | 7.3   |
| Max Green Setting (Gmax), s  | 14.7  | 83.7 |      | 40.4 |      | 105.7 |
| Max Q Clear Time (g_c+I1), s | 6.8   | 0.0  |      | 42.4 |      | 0.0   |
| Green Ext Time (p_c), s      | 0.1   | 0.0  |      | 0.0  |      | 0.0   |
| <b>Intersection Summary</b>  |       |      |      |      |      |       |
| HCM 6th Ctrl Delay           |       |      | 33.6 |      |      |       |
| HCM 6th LOS                  |       |      | C    |      |      |       |

Pattern 10 (Weekday AM Peak) KY-1747 (Hurstbourne Pkwy) 7:56 am 03/19/2021 Weekday AM Peak  
M. Brandon Shelley, PE

Synchro 11 Report  
Page 3



HCM 6th Signalized Intersection Summary  
3004: KY-1747 & Watterson Trail

06/17/2022

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 80                                                                                | 175                                                                               | 50                                                                                | 100                                                                               | 375                                                                               | 175                                                                               | 25                                                                                 | 1050                                                                                | 50                                                                                  | 75                                                                                  | 450                                                                                 | 125                                                                                 |
| Future Volume (veh/h)        | 80                                                                                | 175                                                                               | 50                                                                                | 100                                                                               | 375                                                                               | 175                                                                               | 25                                                                                 | 1050                                                                                | 50                                                                                  | 75                                                                                  | 450                                                                                 | 125                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                               | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 87                                                                                | 190                                                                               | 54                                                                                | 109                                                                               | 408                                                                               | 190                                                                               | 27                                                                                 | 1141                                                                                | 54                                                                                  | 82                                                                                  | 489                                                                                 | 136                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 153                                                                               | 426                                                                               | 361                                                                               | 310                                                                               | 445                                                                               | 377                                                                               | 54                                                                                 | 1270                                                                                | 567                                                                                 | 430                                                                                 | 1862                                                                                | 830                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.23                                                                              | 0.23                                                                              | 0.06                                                                              | 0.24                                                                              | 0.24                                                                              | 0.03                                                                               | 0.36                                                                                | 0.36                                                                                | 0.40                                                                                | 1.00                                                                                | 1.00                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                               | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 87                                                                                | 190                                                                               | 54                                                                                | 109                                                                               | 408                                                                               | 190                                                                               | 27                                                                                 | 1141                                                                                | 54                                                                                  | 82                                                                                  | 489                                                                                 | 136                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                               | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 5.9                                                                               | 14.0                                                                              | 4.4                                                                               | 7.4                                                                               | 34.0                                                                              | 10.5                                                                              | 2.4                                                                                | 48.6                                                                                | 2.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 5.9                                                                               | 14.0                                                                              | 4.4                                                                               | 7.4                                                                               | 34.0                                                                              | 10.5                                                                              | 2.4                                                                                | 48.6                                                                                | 2.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 153                                                                               | 426                                                                               | 361                                                                               | 310                                                                               | 445                                                                               | 377                                                                               | 54                                                                                 | 1270                                                                                | 567                                                                                 | 430                                                                                 | 1862                                                                                | 830                                                                                 |
| V/C Ratio(X)                 | 0.57                                                                              | 0.45                                                                              | 0.15                                                                              | 0.35                                                                              | 0.92                                                                              | 0.50                                                                              | 0.50                                                                               | 0.90                                                                                | 0.10                                                                                | 0.19                                                                                | 0.26                                                                                | 0.16                                                                                |
| Avail Cap(c_a), veh/h        | 230                                                                               | 514                                                                               | 436                                                                               | 368                                                                               | 514                                                                               | 436                                                                               | 127                                                                                | 1270                                                                                | 567                                                                                 | 430                                                                                 | 1862                                                                                | 830                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Uniform Delay (d), s/veh     | 46.8                                                                              | 53.1                                                                              | 49.4                                                                              | 44.0                                                                              | 59.4                                                                              | 21.1                                                                              | 76.3                                                                               | 48.6                                                                                | 21.3                                                                                | 36.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 3.3                                                                               | 1.0                                                                               | 0.3                                                                               | 0.7                                                                               | 20.4                                                                              | 1.5                                                                               | 9.6                                                                                | 10.2                                                                                | 0.3                                                                                 | 0.3                                                                                 | 0.3                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.8                                                                               | 6.7                                                                               | 1.8                                                                               | 3.4                                                                               | 18.6                                                                              | 4.1                                                                               | 1.2                                                                                | 22.8                                                                                | 1.5                                                                                 | 2.0                                                                                 | 0.1                                                                                 | 0.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 50.1                                                                              | 54.2                                                                              | 49.7                                                                              | 44.7                                                                              | 79.8                                                                              | 22.6                                                                              | 85.9                                                                               | 58.9                                                                                | 21.7                                                                                | 37.0                                                                                | 0.3                                                                                 | 0.4                                                                                 |
| LnGrp LOS                    | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | E                                                                                 | C                                                                                 | F                                                                                  | E                                                                                   | C                                                                                   | D                                                                                   | A                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 331                                                                               |                                                                                   |                                                                                   | 707                                                                               |                                                                                   |                                                                                   | 1222                                                                               |                                                                                     |                                                                                     | 707                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 52.4                                                                              |                                                                                   |                                                                                   | 59.0                                                                              |                                                                                   |                                                                                   | 57.8                                                                               |                                                                                     |                                                                                     | 4.6                                                                                 |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                  |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 38.8                                                                              | 63.0                                                                              | 15.8                                                                              | 42.4                                                                              | 11.5                                                                              | 90.3                                                                              | 14.1                                                                               | 44.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 6.5                                                                             | 5.8                                                                               | * 6.3                                                                             | 6.0                                                                               | 6.6                                                                               | * 6.5                                                                             | * 6.3                                                                              | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 20                                                                              | 57.2                                                                              | * 15                                                                              | 44.0                                                                              | 11.4                                                                              | * 65                                                                              | * 15                                                                               | 44.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.0                                                                               | 0.0                                                                               | 9.4                                                                               | 16.0                                                                              | 4.4                                                                               | 0.0                                                                               | 7.9                                                                                | 36.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.3                                                                               | 0.0                                                                               | 0.1                                                                               | 1.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.1                                                                                | 2.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 44.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



HCM 6th Signalized Intersection Summary  
2216: KY-1747 & US-31E

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 82                                                                                | 906                                                                               | 203                                                                               | 214                                                                               | 666                                                                               | 152                                                                               | 76                                                                                 | 454                                                                                 | 54                                                                                  | 304                                                                                 | 1125                                                                                | 543                                                                                 |
| Future Volume (veh/h)        | 82                                                                                | 906                                                                               | 203                                                                               | 214                                                                               | 666                                                                               | 152                                                                               | 76                                                                                 | 454                                                                                 | 54                                                                                  | 304                                                                                 | 1125                                                                                | 543                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                               | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 89                                                                                | 985                                                                               | 221                                                                               | 233                                                                               | 724                                                                               | 165                                                                               | 83                                                                                 | 493                                                                                 | 59                                                                                  | 330                                                                                 | 1223                                                                                | 590                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 109                                                                               | 882                                                                               | 658                                                                               | 299                                                                               | 785                                                                               | 179                                                                               | 218                                                                                | 1123                                                                                | 501                                                                                 | 297                                                                                 | 1282                                                                                | 709                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.25                                                                              | 0.25                                                                              | 0.17                                                                              | 0.55                                                                              | 0.55                                                                              | 0.12                                                                               | 0.32                                                                                | 0.32                                                                                | 0.22                                                                                | 0.48                                                                                | 0.48                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 2874                                                                              | 655                                                                               | 1781                                                                               | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 89                                                                                | 985                                                                               | 221                                                                               | 233                                                                               | 447                                                                               | 442                                                                               | 83                                                                                 | 493                                                                                 | 59                                                                                  | 330                                                                                 | 1223                                                                                | 590                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1752                                                                              | 1781                                                                               | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 7.9                                                                               | 39.7                                                                              | 9.4                                                                               | 10.3                                                                              | 36.8                                                                              | 36.9                                                                              | 6.9                                                                                | 17.6                                                                                | 4.2                                                                                 | 26.7                                                                                | 52.8                                                                                | 34.0                                                                                |
| Cycle Q Clear(g_c), s        | 7.9                                                                               | 39.7                                                                              | 9.4                                                                               | 10.3                                                                              | 36.8                                                                              | 36.9                                                                              | 6.9                                                                                | 17.6                                                                                | 4.2                                                                                 | 26.7                                                                                | 52.8                                                                                | 34.0                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.37                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 109                                                                               | 882                                                                               | 658                                                                               | 299                                                                               | 485                                                                               | 479                                                                               | 218                                                                                | 1123                                                                                | 501                                                                                 | 297                                                                                 | 1282                                                                                | 709                                                                                 |
| V/C Ratio(X)                 | 0.81                                                                              | 1.12                                                                              | 0.34                                                                              | 0.78                                                                              | 0.92                                                                              | 0.92                                                                              | 0.38                                                                               | 0.44                                                                                | 0.12                                                                                | 1.11                                                                                | 0.95                                                                                | 0.83                                                                                |
| Avail Cap(c_a), veh/h        | 175                                                                               | 882                                                                               | 658                                                                               | 425                                                                               | 485                                                                               | 479                                                                               | 218                                                                                | 1123                                                                                | 501                                                                                 | 297                                                                                 | 1282                                                                                | 709                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.33                                                                                | 1.33                                                                                | 1.33                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.76                                                                              | 0.76                                                                              | 0.76                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.46                                                                                | 0.46                                                                                | 0.46                                                                                |
| Uniform Delay (d), s/veh     | 74.2                                                                              | 60.2                                                                              | 13.8                                                                              | 64.7                                                                              | 34.7                                                                              | 34.8                                                                              | 64.6                                                                               | 43.5                                                                                | 38.9                                                                                | 62.2                                                                                | 40.4                                                                                | 29.9                                                                                |
| Incr Delay (d2), s/veh       | 18.7                                                                              | 67.8                                                                              | 1.4                                                                               | 5.7                                                                               | 20.9                                                                              | 21.2                                                                              | 1.3                                                                                | 1.2                                                                                 | 0.5                                                                                 | 69.6                                                                                | 9.3                                                                                 | 5.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.1                                                                               | 25.8                                                                              | 3.5                                                                               | 4.4                                                                               | 14.6                                                                              | 14.4                                                                              | 3.2                                                                                | 7.9                                                                                 | 1.7                                                                                 | 17.1                                                                                | 22.4                                                                                | 10.5                                                                                |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 92.9                                                                              | 128.0                                                                             | 15.2                                                                              | 70.4                                                                              | 55.6                                                                              | 55.9                                                                              | 66.0                                                                               | 44.7                                                                                | 39.4                                                                                | 131.8                                                                               | 49.7                                                                                | 35.3                                                                                |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | B                                                                                 | E                                                                                 | E                                                                                 | E                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | F                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h          | 1295                                                                              |                                                                                   |                                                                                   | 1122                                                                              |                                                                                   |                                                                                   | 835                                                                                |                                                                                     |                                                                                     | 2143                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 106.3                                                                             |                                                                                   |                                                                                   | 58.8                                                                              |                                                                                   |                                                                                   | 47.0                                                                               |                                                                                     |                                                                                     | 58.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 21.1                                                                              | 47.0                                                                              | 26.9                                                                              | 65.0                                                                              | 17.1                                                                              | 51.0                                                                              | 34.0                                                                               | 57.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                                | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 19.7                                                                              | 39.7                                                                              | 13.7                                                                              | 57.7                                                                              | 15.7                                                                              | 43.7                                                                              | 26.7                                                                               | 44.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.3                                                                              | 0.0                                                                               | 8.9                                                                               | 54.8                                                                              | 9.9                                                                               | 0.0                                                                               | 28.7                                                                               | 19.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.7                                                                               | 0.0                                                                               | 0.1                                                                               | 2.6                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                                | 4.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection Summary

|                    |      |
|--------------------|------|
| HCM 6th Ctrl Delay | 69.0 |
| HCM 6th LOS        | E    |

Notes

User approved pedestrian interval to be less than phase max green.



HCM 6th Signalized Intersection Summary  
2217: S Watterson Trail & US-31E

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                               | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 228                                                                               | 57                                                                                | 25                                                                                | 23                                                                                | 32                                                                                | 536                                                                               | 149                                                                               | 558                                                                                 | 51                                                                                  | 15                                                                                  | 1455                                                                                | 15                                                                                  |
| Future Volume (veh/h)        | 228                                                                               | 57                                                                                | 25                                                                                | 23                                                                                | 32                                                                                | 536                                                                               | 149                                                                               | 558                                                                                 | 51                                                                                  | 15                                                                                  | 1455                                                                                | 15                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 248                                                                               | 62                                                                                | 0                                                                                 | 25                                                                                | 35                                                                                | 0                                                                                 | 162                                                                               | 607                                                                                 | 55                                                                                  | 16                                                                                  | 1582                                                                                | 16                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 265                                                                               | 66                                                                                |                                                                                   | 53                                                                                | 75                                                                                |                                                                                   | 209                                                                               | 1393                                                                                | 621                                                                                 | 573                                                                                 | 1768                                                                                | 789                                                                                 |
| Arrive On Green              | 0.18                                                                              | 0.18                                                                              | 0.00                                                                              | 0.07                                                                              | 0.07                                                                              | 0.00                                                                              | 0.07                                                                              | 0.39                                                                                | 0.39                                                                                | 0.18                                                                                | 0.50                                                                                | 0.50                                                                                |
| Sat Flow, veh/h              | 1439                                                                              | 360                                                                               | 1585                                                                              | 763                                                                               | 1069                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 310                                                                               | 0                                                                                 | 0                                                                                 | 60                                                                                | 0                                                                                 | 0                                                                                 | 162                                                                               | 607                                                                                 | 55                                                                                  | 16                                                                                  | 1582                                                                                | 16                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1798                                                                              | 0                                                                                 | 1585                                                                              | 1832                                                                              | 0                                                                                 | 1585                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 27.2                                                                              | 0.0                                                                               | 0.0                                                                               | 5.0                                                                               | 0.0                                                                               | 0.0                                                                               | 7.4                                                                               | 20.0                                                                                | 3.5                                                                                 | 0.0                                                                                 | 64.5                                                                                | 0.8                                                                                 |
| Cycle Q Clear(g_c), s        | 27.2                                                                              | 0.0                                                                               | 0.0                                                                               | 5.0                                                                               | 0.0                                                                               | 0.0                                                                               | 7.4                                                                               | 20.0                                                                                | 3.5                                                                                 | 0.0                                                                                 | 64.5                                                                                | 0.8                                                                                 |
| Prop In Lane                 | 0.80                                                                              |                                                                                   | 1.00                                                                              | 0.42                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 331                                                                               | 0                                                                                 |                                                                                   | 128                                                                               | 0                                                                                 |                                                                                   | 209                                                                               | 1393                                                                                | 621                                                                                 | 573                                                                                 | 1768                                                                                | 789                                                                                 |
| V/C Ratio(X)                 | 0.94                                                                              | 0.00                                                                              |                                                                                   | 0.47                                                                              | 0.00                                                                              |                                                                                   | 0.78                                                                              | 0.44                                                                                | 0.09                                                                                | 0.03                                                                                | 0.89                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h        | 342                                                                               | 0                                                                                 |                                                                                   | 302                                                                               | 0                                                                                 |                                                                                   | 361                                                                               | 1393                                                                                | 621                                                                                 | 573                                                                                 | 1768                                                                                | 789                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 64.4                                                                              | 0.0                                                                               | 0.0                                                                               | 71.6                                                                              | 0.0                                                                               | 0.0                                                                               | 37.1                                                                              | 35.7                                                                                | 30.6                                                                                | 25.0                                                                                | 36.4                                                                                | 20.4                                                                                |
| Incr Delay (d2), s/veh       | 33.1                                                                              | 0.0                                                                               | 0.0                                                                               | 4.5                                                                               | 0.0                                                                               | 0.0                                                                               | 10.1                                                                              | 1.0                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 7.5                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 15.5                                                                              | 0.0                                                                               | 0.0                                                                               | 2.5                                                                               | 0.0                                                                               | 0.0                                                                               | 3.6                                                                               | 8.8                                                                                 | 1.4                                                                                 | 0.3                                                                                 | 28.6                                                                                | 0.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 97.5                                                                              | 0.0                                                                               | 0.0                                                                               | 76.1                                                                              | 0.0                                                                               | 0.0                                                                               | 47.2                                                                              | 36.7                                                                                | 30.9                                                                                | 25.0                                                                                | 43.9                                                                                | 20.4                                                                                |
| LnGrp LOS                    | F                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | A                                                                                 |                                                                                   | D                                                                                 | D                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 310                                                                               |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 824                                                                               |                                                                                     |                                                                                     | 1614                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 97.5                                                                              |                                                                                   |                                                                                   | 76.1                                                                              |                                                                                   |                                                                                   | 38.4                                                                              |                                                                                     |                                                                                     | 43.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 19.3                                                                              | 86.9                                                                              |                                                                                   | 36.0                                                                              | 36.2                                                                              | 70.0                                                                              |                                                                                   | 17.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                               | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.7                                                                              | 49.7                                                                              |                                                                                   | 30.4                                                                              | 12.7                                                                              | 62.7                                                                              |                                                                                   | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.4                                                                               | 0.0                                                                               |                                                                                   | 29.2                                                                              | 2.0                                                                               | 0.0                                                                               |                                                                                   | 7.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.7                                                                               | 0.0                                                                               |                                                                                   | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 48.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Pattern 10 (Weekday AM Peak) 1 2025 No Build 4:47 pm 06/17/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
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# HCM 6th Signalized Intersection Summary

3003: KY-1747 & S Stony Brook Dr

06/17/2022

|                              | <div>       </div> |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Movement                     | WBL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations          |                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |  |  |  |  |
| Traffic Volume (veh/h)       | 434                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 52                                                                                | 1131                                                                              | 392                                                                               | 56                                                                                | 598                                                                               |
| Future Volume (veh/h)        | 434                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 52                                                                                | 1131                                                                              | 392                                                                               | 56                                                                                | 598                                                                               |
| Initial Q (Qb), veh          | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |
| Parking Bus, Adj             | 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Work Zone On Approach        | No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |
| Adj Sat Flow, veh/h/ln       | 1870                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              |
| Adj Flow Rate, veh/h         | 472                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 57                                                                                | 1229                                                                              | 426                                                                               | 61                                                                                | 650                                                                               |
| Peak Hour Factor             | 0.92                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |
| Percent Heavy Veh, %         | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |
| Cap, veh/h                   | 450                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 400                                                                               | 2020                                                                              | 1301                                                                              | 83                                                                                | 2348                                                                              |
| Arrive On Green              | 0.25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.25                                                                              | 0.57                                                                              | 0.57                                                                              | 0.05                                                                              | 0.66                                                                              |
| Sat Flow, veh/h              | 1781                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1585                                                                              | 3647                                                                              | 1585                                                                              | 1781                                                                              | 3647                                                                              |
| Grp Volume(v), veh/h         | 472                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 57                                                                                | 1229                                                                              | 426                                                                               | 61                                                                                | 650                                                                               |
| Grp Sat Flow(s), veh/h/ln    | 1781                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1585                                                                              | 1777                                                                              | 1585                                                                              | 1781                                                                              | 1777                                                                              |
| Q Serve(g_s), s              | 40.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4.5                                                                               | 36.5                                                                              | 10.5                                                                              | 5.4                                                                               | 12.2                                                                              |
| Cycle Q Clear(g_c), s        | 40.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4.5                                                                               | 36.5                                                                              | 10.5                                                                              | 5.4                                                                               | 12.2                                                                              |
| Prop In Lane                 | 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   |
| Lane Grp Cap(c), veh/h       | 450                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 400                                                                               | 2020                                                                              | 1301                                                                              | 83                                                                                | 2348                                                                              |
| V/C Ratio(X)                 | 1.05                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.14                                                                              | 0.61                                                                              | 0.33                                                                              | 0.73                                                                              | 0.28                                                                              |
| Avail Cap(c_a), veh/h        | 450                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 400                                                                               | 2020                                                                              | 1301                                                                              | 164                                                                               | 2348                                                                              |
| HCM Platoon Ratio            | 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |
| Upstream Filter(I)           | 1.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1.00                                                                              | 0.26                                                                              | 0.26                                                                              | 1.00                                                                              | 1.00                                                                              |
| Uniform Delay (d), s/veh     | 59.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 46.4                                                                              | 22.8                                                                              | 3.5                                                                               | 75.3                                                                              | 11.3                                                                              |
| Incr Delay (d2), s/veh       | 56.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.3                                                                               | 0.4                                                                               | 0.2                                                                               | 16.2                                                                              | 0.3                                                                               |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| %ile BackOfQ(50%),veh/ln     | 25.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4.5                                                                               | 14.8                                                                              | 9.2                                                                               | 2.8                                                                               | 4.7                                                                               |
| Unsig. Movement Delay, s/veh |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| LnGrp Delay(d),s/veh         | 115.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 46.7                                                                              | 23.1                                                                              | 3.7                                                                               | 91.5                                                                              | 11.6                                                                              |
| LnGrp LOS                    | F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | D                                                                                 | C                                                                                 | A                                                                                 | F                                                                                 | B                                                                                 |
| Approach Vol, veh/h          | 529                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                   | 1655                                                                              |                                                                                   |                                                                                   | 711                                                                               |
| Approach Delay, s/veh        | 108.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                   | 18.1                                                                              |                                                                                   |                                                                                   | 18.4                                                                              |
| Approach LOS                 | F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |
| Timer - Assigned Phs         | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |
| Phs Duration (G+Y+Rc), s     | 14.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 98.2                                                                              |                                                                                   | 47.0                                                                              |                                                                                   | 113.0                                                                             |
| Change Period (Y+Rc), s      | 7.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 7.3                                                                               |                                                                                   | 6.6                                                                               |                                                                                   | 7.3                                                                               |
| Max Green Setting (Gmax), s  | 14.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 83.7                                                                              |                                                                                   | 40.4                                                                              |                                                                                   | 105.7                                                                             |
| Max Q Clear Time (g_c+I1), s | 7.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.0                                                                               |                                                                                   | 42.4                                                                              |                                                                                   | 0.0                                                                               |
| Green Ext Time (p_c), s      | 0.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.0                                                                               |                                                                                   | 0.0                                                                               |                                                                                   | 0.0                                                                               |
| <b>Intersection Summary</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| HCM 6th Ctrl Delay           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                   | 34.7                                                                              |                                                                                   |                                                                                   |                                                                                   |
| HCM 6th LOS                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

# HCM 6th Signalized Intersection Summary

3004: KY-1747 & Watterson Trail

06/17/2022

|                              | EBL   | EBT  | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|------------------------------|-------|------|-------|------|------|-------|-------|------|------|------|------|------|
| Movement                     | EBL   | EBT  | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations          | ↰     | ↑    | ↱     | ↰    | ↑    | ↱     | ↰     | ↑    | ↱    | ↰    | ↑    | ↱    |
| Traffic Volume (veh/h)       | 117   | 194  | 54    | 103  | 388  | 187   | 28    | 1082 | 52   | 102  | 497  | 129  |
| Future Volume (veh/h)        | 117   | 194  | 54    | 103  | 388  | 187   | 28    | 1082 | 52   | 102  | 497  | 129  |
| Initial Q (Qb), veh          | 0     | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        | No    |      |       | No   |      |       | No    |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln       | 1870  | 1870 | 1870  | 1870 | 1870 | 1870  | 1870  | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h         | 127   | 211  | 59    | 112  | 422  | 203   | 30    | 1176 | 57   | 111  | 540  | 140  |
| Peak Hour Factor             | 0.92  | 0.92 | 0.92  | 0.92 | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %         | 2     | 2    | 2     | 2    | 2    | 2     | 2     | 2    | 2    | 2    | 2    | 2    |
| Cap, veh/h                   | 182   | 471  | 399   | 324  | 458  | 388   | 57    | 1270 | 567  | 380  | 1771 | 790  |
| Arrive On Green              | 0.07  | 0.25 | 0.25  | 0.06 | 0.24 | 0.24  | 0.03  | 0.36 | 0.36 | 0.36 | 1.00 | 1.00 |
| Sat Flow, veh/h              | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 3554 | 1585 | 1781 | 3554 | 1585 |
| Grp Volume(v), veh/h         | 127   | 211  | 59    | 112  | 422  | 203   | 30    | 1176 | 57   | 111  | 540  | 140  |
| Grp Sat Flow(s), veh/h/ln    | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 3554 | 1585 | 1781 | 3554 | 1585 |
| Q Serve(g_s), s              | 8.5   | 15.2 | 4.6   | 7.4  | 35.2 | 11.7  | 2.7   | 50.8 | 3.0  | 0.9  | 0.1  | 0.1  |
| Cycle Q Clear(g_c), s        | 8.5   | 15.2 | 4.6   | 7.4  | 35.2 | 11.7  | 2.7   | 50.8 | 3.0  | 0.9  | 0.1  | 0.1  |
| Prop In Lane                 | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 182   | 471  | 399   | 324  | 458  | 388   | 57    | 1270 | 567  | 380  | 1771 | 790  |
| V/C Ratio(X)                 | 0.70  | 0.45 | 0.15  | 0.35 | 0.92 | 0.52  | 0.52  | 0.93 | 0.10 | 0.29 | 0.30 | 0.18 |
| Avail Cap(c_a), veh/h        | 229   | 514  | 436   | 382  | 514  | 436   | 127   | 1270 | 567  | 380  | 1771 | 790  |
| HCM Platoon Ratio            | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 |
| Upstream Filter(I)           | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 0.98 | 0.98 | 0.98 |
| Uniform Delay (d), s/veh     | 45.4  | 50.5 | 46.5  | 41.4 | 58.9 | 22.8  | 76.2  | 49.4 | 21.4 | 41.9 | 0.1  | 0.1  |
| Incr Delay (d2), s/veh       | 6.6   | 1.0  | 0.2   | 0.6  | 21.5 | 1.6   | 10.1  | 12.8 | 0.4  | 0.6  | 0.4  | 0.5  |
| Initial Q Delay(d3),s/veh    | 0.0   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 4.1   | 7.3  | 1.9   | 3.3  | 19.3 | 4.6   | 1.4   | 24.2 | 1.5  | 2.9  | 0.1  | 0.1  |
| Unsig. Movement Delay, s/veh |       |      |       |      |      |       |       |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 52.0  | 51.4 | 46.8  | 42.0 | 80.5 | 24.4  | 86.3  | 62.1 | 21.8 | 42.5 | 0.6  | 0.6  |
| LnGrp LOS                    | D     | D    | D     | D    | F    | C     | F     | E    | C    | D    | A    | A    |
| Approach Vol, veh/h          |       | 397  |       |      | 737  |       |       | 1263 |      |      | 791  |      |
| Approach Delay, s/veh        |       | 50.9 |       |      | 59.2 |       |       | 60.9 |      |      | 6.5  |      |
| Approach LOS                 |       | D    |       |      | E    |       |       | E    |      |      | A    |      |
| Timer - Assigned Phs         | 1     | 2    | 3     | 4    | 5    | 6     | 7     | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 35.0  | 63.0 | 15.7  | 46.3 | 11.8 | 86.2  | 16.8  | 45.2 |      |      |      |      |
| Change Period (Y+Rc), s      | * 6.5 | 5.8  | * 6.3 | 6.0  | 6.6  | * 6.5 | * 6.3 | 6.0  |      |      |      |      |
| Max Green Setting (Gmax), s  | * 20  | 57.2 | * 15  | 44.0 | 11.4 | * 65  | * 15  | 44.0 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 2.9   | 0.0  | 9.4   | 17.2 | 4.7  | 0.0   | 10.5  | 37.2 |      |      |      |      |
| Green Ext Time (p_c), s      | 0.4   | 0.0  | 0.1   | 1.4  | 0.0  | 0.0   | 0.1   | 2.0  |      |      |      |      |
| Intersection Summary         |       |      |       |      |      |       |       |      |      |      |      |      |
| HCM 6th Ctrl Delay           |       |      | 45.7  |      |      |       |       |      |      |      |      |      |
| HCM 6th LOS                  |       |      | D     |      |      |       |       |      |      |      |      |      |
| Notes                        |       |      |       |      |      |       |       |      |      |      |      |      |

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Apartment  
4700 Hurstbourne Parkway  
Traffic Impact Study

Pattern 10 (Weekday AM Peak) 25 Build  
2216: KY-1747 & US-31E

08/08/2022

|                                                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                                 | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)                                             | 82                                                                                | 921                                                                               | 203                                                                               | 240                                                                               | 744                                                                               | 152                                                                               | 76                                                                                  | 454                                                                                 | 54                                                                                  | 304                                                                                 | 1125                                                                                | 548                                                                                 |
| Future Volume (veh/h)                                              | 82                                                                                | 921                                                                               | 203                                                                               | 240                                                                               | 744                                                                               | 152                                                                               | 76                                                                                  | 454                                                                                 | 54                                                                                  | 304                                                                                 | 1125                                                                                | 548                                                                                 |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                              | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln                                             | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h                                               | 89                                                                                | 1001                                                                              | 221                                                                               | 261                                                                               | 809                                                                               | 165                                                                               | 83                                                                                  | 493                                                                                 | 59                                                                                  | 330                                                                                 | 1223                                                                                | 596                                                                                 |
| Peak Hour Factor                                                   | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 109                                                                               | 882                                                                               | 658                                                                               | 310                                                                               | 812                                                                               | 166                                                                               | 212                                                                                 | 1112                                                                                | 496                                                                                 | 297                                                                                 | 1282                                                                                | 714                                                                                 |
| Arrive On Green                                                    | 0.06                                                                              | 0.25                                                                              | 0.25                                                                              | 0.18                                                                              | 0.55                                                                              | 0.55                                                                              | 0.12                                                                                | 0.31                                                                                | 0.31                                                                                | 0.22                                                                                | 0.48                                                                                | 0.48                                                                                |
| Sat Flow, veh/h                                                    | 1781                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 2940                                                                              | 600                                                                               | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h                                               | 89                                                                                | 1001                                                                              | 221                                                                               | 261                                                                               | 489                                                                               | 485                                                                               | 83                                                                                  | 493                                                                                 | 59                                                                                  | 330                                                                                 | 1223                                                                                | 596                                                                                 |
| Grp Sat Flow(s),veh/h/ln                                           | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1762                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s                                                    | 7.9                                                                               | 39.7                                                                              | 9.3                                                                               | 11.7                                                                              | 43.8                                                                              | 43.8                                                                              | 6.9                                                                                 | 17.7                                                                                | 4.3                                                                                 | 26.7                                                                                | 52.8                                                                                | 33.9                                                                                |
| Cycle Q Clear(g_c), s                                              | 7.9                                                                               | 39.7                                                                              | 9.3                                                                               | 11.7                                                                              | 43.8                                                                              | 43.8                                                                              | 6.9                                                                                 | 17.7                                                                                | 4.3                                                                                 | 26.7                                                                                | 52.8                                                                                | 33.9                                                                                |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.34                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 109                                                                               | 882                                                                               | 658                                                                               | 310                                                                               | 491                                                                               | 487                                                                               | 212                                                                                 | 1112                                                                                | 496                                                                                 | 297                                                                                 | 1282                                                                                | 714                                                                                 |
| V/C Ratio(X)                                                       | 0.81                                                                              | 1.14                                                                              | 0.34                                                                              | 0.84                                                                              | 1.00                                                                              | 1.00                                                                              | 0.39                                                                                | 0.44                                                                                | 0.12                                                                                | 1.11                                                                                | 0.95                                                                                | 0.83                                                                                |
| Avail Cap(c_a), veh/h                                              | 175                                                                               | 882                                                                               | 658                                                                               | 425                                                                               | 491                                                                               | 487                                                                               | 212                                                                                 | 1112                                                                                | 496                                                                                 | 297                                                                                 | 1282                                                                                | 714                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.33                                                                                | 1.33                                                                                | 1.33                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.76                                                                              | 0.76                                                                              | 0.76                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.46                                                                                | 0.46                                                                                | 0.46                                                                                |
| Uniform Delay (d), s/veh                                           | 74.2                                                                              | 60.2                                                                              | 13.6                                                                              | 64.5                                                                              | 35.7                                                                              | 35.7                                                                              | 65.1                                                                                | 43.9                                                                                | 39.2                                                                                | 62.2                                                                                | 40.4                                                                                | 29.7                                                                                |
| Incr Delay (d2), s/veh                                             | 18.7                                                                              | 74.8                                                                              | 1.4                                                                               | 9.6                                                                               | 34.4                                                                              | 34.5                                                                              | 1.4                                                                                 | 1.3                                                                                 | 0.5                                                                                 | 69.6                                                                                | 9.3                                                                                 | 5.5                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 4.1                                                                               | 26.7                                                                              | 3.4                                                                               | 5.1                                                                               | 18.6                                                                              | 18.4                                                                              | 3.2                                                                                 | 7.9                                                                                 | 1.7                                                                                 | 17.1                                                                                | 22.4                                                                                | 10.4                                                                                |
| Unsig. Movement Delay, s/veh                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh                                               | 92.9                                                                              | 134.9                                                                             | 15.0                                                                              | 74.2                                                                              | 70.1                                                                              | 70.2                                                                              | 66.5                                                                                | 45.2                                                                                | 39.7                                                                                | 131.8                                                                               | 49.7                                                                                | 35.1                                                                                |
| LnGrp LOS                                                          | F                                                                                 | F                                                                                 | B                                                                                 | E                                                                                 | E                                                                                 | E                                                                                 | E                                                                                   | D                                                                                   | D                                                                                   | F                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h                                                | 1311                                                                              |                                                                                   |                                                                                   | 1235                                                                              |                                                                                   |                                                                                   | 635                                                                                 |                                                                                     |                                                                                     | 2149                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                              | 111.9                                                                             |                                                                                   |                                                                                   | 71.0                                                                              |                                                                                   |                                                                                   | 47.4                                                                                |                                                                                     |                                                                                     | 58.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                       | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           | 21.7                                                                              | 47.0                                                                              | 26.3                                                                              | 65.0                                                                              | 17.1                                                                              | 51.5                                                                              | 34.0                                                                                | 57.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                                 | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        | 19.7                                                                              | 39.7                                                                              | 13.7                                                                              | 57.7                                                                              | 15.7                                                                              | 43.7                                                                              | 26.7                                                                                | 44.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                       | 13.7                                                                              | 0.0                                                                               | 8.9                                                                               | 54.8                                                                              | 9.9                                                                               | 0.0                                                                               | 28.7                                                                                | 19.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            | 0.7                                                                               | 0.0                                                                               | 0.1                                                                               | 2.6                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                                 | 4.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay                                                 | 73.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                                                        | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Pattern 10 (Weekday AM Peak) 25 Build 2025 Build 12:58 pm 08/08/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
Page 1



# HCM 6th Signalized Intersection Summary 2217: S Watterson Trail & US-31E

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                               | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 228                                                                               | 57                                                                                | 25                                                                                | 23                                                                                | 32                                                                                | 536                                                                               | 149                                                                               | 576                                                                                 | 51                                                                                  | 15                                                                                  | 1545                                                                                | 15                                                                                  |
| Future Volume (veh/h)        | 228                                                                               | 57                                                                                | 25                                                                                | 23                                                                                | 32                                                                                | 536                                                                               | 149                                                                               | 576                                                                                 | 51                                                                                  | 15                                                                                  | 1545                                                                                | 15                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 248                                                                               | 62                                                                                | 0                                                                                 | 25                                                                                | 35                                                                                | 0                                                                                 | 162                                                                               | 626                                                                                 | 55                                                                                  | 16                                                                                  | 1679                                                                                | 16                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 285                                                                               | 66                                                                                |                                                                                   | 53                                                                                | 75                                                                                |                                                                                   | 192                                                                               | 1393                                                                                | 621                                                                                 | 566                                                                                 | 1768                                                                                | 789                                                                                 |
| Arrive On Green              | 0.18                                                                              | 0.18                                                                              | 0.00                                                                              | 0.07                                                                              | 0.07                                                                              | 0.00                                                                              | 0.07                                                                              | 0.39                                                                                | 0.39                                                                                | 0.18                                                                                | 0.50                                                                                | 0.50                                                                                |
| Sat Flow, veh/h              | 1439                                                                              | 360                                                                               | 1585                                                                              | 763                                                                               | 1069                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 310                                                                               | 0                                                                                 | 0                                                                                 | 60                                                                                | 0                                                                                 | 0                                                                                 | 162                                                                               | 626                                                                                 | 55                                                                                  | 16                                                                                  | 1679                                                                                | 16                                                                                  |
| Grp Sat Flow(s), veh/h/ln    | 1798                                                                              | 0                                                                                 | 1585                                                                              | 1832                                                                              | 0                                                                                 | 1585                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 27.2                                                                              | 0.0                                                                               | 0.0                                                                               | 5.0                                                                               | 0.0                                                                               | 0.0                                                                               | 9.0                                                                               | 20.8                                                                                | 3.5                                                                                 | 0.0                                                                                 | 72.0                                                                                | 0.8                                                                                 |
| Cycle Q Clear(g_c), s        | 27.2                                                                              | 0.0                                                                               | 0.0                                                                               | 5.0                                                                               | 0.0                                                                               | 0.0                                                                               | 9.0                                                                               | 20.8                                                                                | 3.5                                                                                 | 0.0                                                                                 | 72.0                                                                                | 0.8                                                                                 |
| Prop In Lane                 | 0.80                                                                              |                                                                                   | 1.00                                                                              | 0.42                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 331                                                                               | 0                                                                                 |                                                                                   | 128                                                                               | 0                                                                                 |                                                                                   | 192                                                                               | 1393                                                                                | 621                                                                                 | 566                                                                                 | 1768                                                                                | 789                                                                                 |
| V/C Ratio(X)                 | 0.94                                                                              | 0.00                                                                              |                                                                                   | 0.47                                                                              | 0.00                                                                              |                                                                                   | 0.84                                                                              | 0.45                                                                                | 0.09                                                                                | 0.03                                                                                | 0.95                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h        | 342                                                                               | 0                                                                                 |                                                                                   | 302                                                                               | 0                                                                                 |                                                                                   | 345                                                                               | 1393                                                                                | 621                                                                                 | 566                                                                                 | 1768                                                                                | 789                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 64.4                                                                              | 0.0                                                                               | 0.0                                                                               | 71.6                                                                              | 0.0                                                                               | 0.0                                                                               | 45.8                                                                              | 35.9                                                                                | 30.6                                                                                | 25.4                                                                                | 38.3                                                                                | 20.4                                                                                |
| Incr Delay (d2), s/veh       | 33.1                                                                              | 0.0                                                                               | 0.0                                                                               | 4.5                                                                               | 0.0                                                                               | 0.0                                                                               | 15.3                                                                              | 1.1                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 12.4                                                                                | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 15.5                                                                              | 0.0                                                                               | 0.0                                                                               | 2.5                                                                               | 0.0                                                                               | 0.0                                                                               | 7.2                                                                               | 9.1                                                                                 | 1.4                                                                                 | 0.4                                                                                 | 32.9                                                                                | 0.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 97.5                                                                              | 0.0                                                                               | 0.0                                                                               | 76.1                                                                              | 0.0                                                                               | 0.0                                                                               | 61.1                                                                              | 37.0                                                                                | 30.9                                                                                | 25.4                                                                                | 50.7                                                                                | 20.4                                                                                |
| LnGrp LOS                    | F                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | D                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 310                                                                               |                                                                                   |                                                                                   | 60                                                                                |                                                                                   |                                                                                   | 843                                                                               |                                                                                     |                                                                                     | 1711                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 97.5                                                                              |                                                                                   |                                                                                   | 76.1                                                                              |                                                                                   |                                                                                   | 41.2                                                                              |                                                                                     |                                                                                     | 50.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 19.3                                                                              | 86.9                                                                              |                                                                                   | 36.0                                                                              | 36.2                                                                              | 70.0                                                                              |                                                                                   | 17.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                               | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.7                                                                              | 49.7                                                                              |                                                                                   | 30.4                                                                              | 12.7                                                                              | 62.7                                                                              |                                                                                   | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 11.0                                                                              | 0.0                                                                               |                                                                                   | 29.2                                                                              | 2.0                                                                               | 0.0                                                                               |                                                                                   | 7.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.7                                                                               | 0.0                                                                               |                                                                                   | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 53.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

Pattern 10 (Weekday AM Peak) 25 Build

3003: KY-1747 & S Stony Brook Dr

08/08/2022

|                              | ↙     | ↖    | ↑    | ↗    | ↘    | ↓     |
|------------------------------|-------|------|------|------|------|-------|
| Movement                     | WBL   | WBR  | NBT  | NBR  | SBL  | SBT   |
| Lane Configurations          | ↙     | ↖    | ↑↑   | ↗    | ↘    | ↑↑    |
| Traffic Volume (veh/h)       | 434   | 52   | 1151 | 392  | 56   | 702   |
| Future Volume (veh/h)        | 434   | 52   | 1151 | 392  | 56   | 702   |
| Initial Q (Qb), veh          | 0     | 0    | 0    | 0    | 0    | 0     |
| Ped-Bike Adj(A_pbT)          | 1.00  | 1.00 |      | 1.00 | 1.00 |       |
| Parking Bus, Adj             | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Work Zone On Approach        | No    |      | No   |      |      | No    |
| Adj Sat Flow, veh/h/ln       | 1870  | 1870 | 1870 | 1870 | 1870 | 1870  |
| Adj Flow Rate, veh/h         | 472   | 57   | 1251 | 426  | 61   | 763   |
| Peak Hour Factor             | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  |
| Percent Heavy Veh, %         | 2     | 2    | 2    | 2    | 2    | 2     |
| Cap, veh/h                   | 450   | 400  | 2020 | 1301 | 83   | 2348  |
| Arrive On Green              | 0.25  | 0.25 | 0.57 | 0.57 | 0.05 | 0.66  |
| Sat Flow, veh/h              | 1781  | 1585 | 3647 | 1585 | 1781 | 3647  |
| Grp Volume(v), veh/h         | 472   | 57   | 1251 | 426  | 61   | 763   |
| Grp Sat Flow(s), veh/h/ln    | 1781  | 1585 | 1777 | 1585 | 1781 | 1777  |
| Q Serve(g_s), s              | 40.4  | 4.5  | 37.5 | 10.5 | 5.4  | 14.8  |
| Cycle Q Clear(g_c), s        | 40.4  | 4.5  | 37.5 | 10.5 | 5.4  | 14.8  |
| Prop In Lane                 | 1.00  | 1.00 |      | 1.00 | 1.00 |       |
| Lane Grp Cap(c), veh/h       | 450   | 400  | 2020 | 1301 | 83   | 2348  |
| V/C Ratio(X)                 | 1.05  | 0.14 | 0.62 | 0.33 | 0.73 | 0.33  |
| Avail Cap(c_a), veh/h        | 450   | 400  | 2020 | 1301 | 164  | 2348  |
| HCM Platoon Ratio            | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Upstream Filter(I)           | 1.00  | 1.00 | 0.22 | 0.22 | 1.00 | 1.00  |
| Uniform Delay (d), s/veh     | 59.8  | 46.4 | 23.0 | 3.5  | 75.3 | 11.7  |
| Incr Delay (d2), s/veh       | 58.0  | 0.3  | 0.3  | 0.1  | 16.2 | 0.4   |
| Initial Q Delay(d3),s/veh    | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   |
| %ile BackOfQ(50%),veh/ln     | 25.1  | 4.5  | 15.2 | 9.1  | 2.8  | 5.7   |
| Unsig. Movement Delay, s/veh |       |      |      |      |      |       |
| LnGrp Delay(d),s/veh         | 115.8 | 46.7 | 23.3 | 3.7  | 91.5 | 12.1  |
| LnGrp LOS                    | F     | D    | C    | A    | F    | B     |
| Approach Vol, veh/h          | 529   |      | 1677 |      |      | 824   |
| Approach Delay, s/veh        | 108.3 |      | 18.3 |      |      | 18.0  |
| Approach LOS                 | F     |      | B    |      |      | B     |
| Timer - Assigned Phs         | 1     | 2    |      | 4    |      | 6     |
| Phs Duration (G+Y+Rc), s     | 14.8  | 98.2 |      | 47.0 |      | 113.0 |
| Change Period (Y+Rc), s      | 7.3   | 7.3  |      | 6.6  |      | 7.3   |
| Max Green Setting (Gmax), s  | 14.7  | 83.7 |      | 40.4 |      | 105.7 |
| Max Q Clear Time (g_c+I1), s | 7.4   | 0.0  |      | 42.4 |      | 0.0   |
| Green Ext Time (p_c), s      | 0.1   | 0.0  |      | 0.0  |      | 0.0   |
| <b>Intersection Summary</b>  |       |      |      |      |      |       |
| HCM 6th Ctrl Delay           |       |      | 33.9 |      |      |       |
| HCM 6th LOS                  |       |      | C    |      |      |       |



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
3004: KY-1747 & Watterson Trail

06/17/2022

|                                                                                                    | EBL   | EBT  | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|----------------------------------------------------------------------------------------------------|-------|------|-------|------|------|-------|-------|------|------|------|------|------|
| Movement                                                                                           | EBL   | EBT  | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations                                                                                | ↰     | ↑    | ↱     | ↰    | ↑    | ↱     | ↰     | ↑↑   | ↱    | ↰    | ↑↑   | ↱    |
| Traffic Volume (veh/h)                                                                             | 117   | 194  | 54    | 103  | 388  | 187   | 28    | 1147 | 52   | 102  | 509  | 129  |
| Future Volume (veh/h)                                                                              | 117   | 194  | 54    | 103  | 388  | 187   | 28    | 1147 | 52   | 102  | 509  | 129  |
| Initial Q (Qb), veh                                                                                | 0     | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)                                                                                | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj                                                                                   | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach                                                                              | No    |      |       |      | No   |       |       | No   |      |      | No   |      |
| Adj Sat Flow, veh/h/ln                                                                             | 1870  | 1870 | 1870  | 1870 | 1870 | 1870  | 1870  | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h                                                                               | 127   | 211  | 59    | 112  | 422  | 203   | 30    | 1247 | 57   | 111  | 553  | 140  |
| Peak Hour Factor                                                                                   | 0.92  | 0.92 | 0.92  | 0.92 | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %                                                                               | 2     | 2    | 2     | 2    | 2    | 2     | 2     | 2    | 2    | 2    | 2    | 2    |
| Cap, veh/h                                                                                         | 182   | 471  | 399   | 324  | 458  | 388   | 57    | 1270 | 567  | 366  | 1771 | 790  |
| Arrive On Green                                                                                    | 0.07  | 0.25 | 0.25  | 0.06 | 0.24 | 0.24  | 0.03  | 0.36 | 0.36 | 0.36 | 1.00 | 1.00 |
| Sat Flow, veh/h                                                                                    | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 3554 | 1585 | 1781 | 3554 | 1585 |
| Grp Volume(v), veh/h                                                                               | 127   | 211  | 59    | 112  | 422  | 203   | 30    | 1247 | 57   | 111  | 553  | 140  |
| Grp Sat Flow(s), veh/h/ln                                                                          | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 1777 | 1585 | 1781 | 1777 | 1585 |
| Q Serve(g_s), s                                                                                    | 8.5   | 15.2 | 4.6   | 7.4  | 35.2 | 11.7  | 2.7   | 55.6 | 3.0  | 2.3  | 0.1  | 0.1  |
| Cycle Q Clear(g_c), s                                                                              | 8.5   | 15.2 | 4.6   | 7.4  | 35.2 | 11.7  | 2.7   | 55.6 | 3.0  | 2.3  | 0.1  | 0.1  |
| Prop In Lane                                                                                       | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h                                                                             | 182   | 471  | 399   | 324  | 458  | 388   | 57    | 1270 | 567  | 366  | 1771 | 790  |
| V/C Ratio(X)                                                                                       | 0.70  | 0.45 | 0.15  | 0.35 | 0.92 | 0.52  | 0.52  | 0.98 | 0.10 | 0.30 | 0.31 | 0.18 |
| Avail Cap(c_a), veh/h                                                                              | 229   | 514  | 436   | 382  | 514  | 436   | 127   | 1270 | 567  | 366  | 1771 | 790  |
| HCM Platoon Ratio                                                                                  | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 |
| Upstream Filter(I)                                                                                 | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 0.98 | 0.98 | 0.98 |
| Uniform Delay (d), s/veh                                                                           | 45.4  | 50.5 | 48.5  | 41.4 | 58.9 | 22.8  | 78.2  | 50.9 | 21.4 | 42.5 | 0.1  | 0.1  |
| Incr Delay (d2), s/veh                                                                             | 6.6   | 1.0  | 0.2   | 0.6  | 21.5 | 1.6   | 10.1  | 21.2 | 0.4  | 0.6  | 0.5  | 0.5  |
| Initial Q Delay(d3),s/veh                                                                          | 0.0   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln                                                                           | 4.1   | 7.3  | 1.9   | 3.3  | 19.3 | 4.6   | 1.4   | 27.7 | 1.5  | 3.0  | 0.1  | 0.1  |
| Unsig. Movement Delay, s/veh                                                                       |       |      |       |      |      |       |       |      |      |      |      |      |
| LnGrp Delay(d),s/veh                                                                               | 52.0  | 51.4 | 48.8  | 42.0 | 80.5 | 24.4  | 86.3  | 72.1 | 21.8 | 43.2 | 0.6  | 0.6  |
| LnGrp LOS                                                                                          | D     | D    | D     | D    | F    | C     | F     | E    | C    | D    | A    | A    |
| Approach Vol, veh/h                                                                                |       | 397  |       |      | 737  |       |       | 1334 |      |      | 804  |      |
| Approach Delay, s/veh                                                                              |       | 50.9 |       |      | 59.2 |       |       | 70.3 |      |      | 6.5  |      |
| Approach LOS                                                                                       |       | D    |       |      | E    |       |       | E    |      |      | A    |      |
| Timer - Assigned Phs                                                                               | 1     | 2    | 3     | 4    | 5    | 6     | 7     | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s                                                                           | 35.0  | 63.0 | 15.7  | 46.3 | 11.8 | 86.2  | 16.8  | 45.2 |      |      |      |      |
| Change Period (Y+Rc), s                                                                            | * 6.5 | 5.8  | * 6.3 | 6.0  | 6.6  | * 6.5 | * 6.3 | 6.0  |      |      |      |      |
| Max Green Setting (Gmax), s                                                                        | * 20  | 57.2 | * 15  | 44.0 | 11.4 | * 65  | * 15  | 44.0 |      |      |      |      |
| Max Q Clear Time (g_c+11), s                                                                       | 4.3   | 0.0  | 9.4   | 17.2 | 4.7  | 0.0   | 10.5  | 37.2 |      |      |      |      |
| Green Ext Time (p_c), s                                                                            | 0.4   | 0.0  | 0.1   | 1.4  | 0.0  | 0.0   | 0.1   | 2.0  |      |      |      |      |
| Intersection Summary                                                                               |       |      |       |      |      |       |       |      |      |      |      |      |
| HCM 6th Ctrl Delay                                                                                 |       |      | 49.7  |      |      |       |       |      |      |      |      |      |
| HCM 6th LOS                                                                                        |       |      | D     |      |      |       |       |      |      |      |      |      |
| Notes                                                                                              |       |      |       |      |      |       |       |      |      |      |      |      |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. |       |      |       |      |      |       |       |      |      |      |      |      |

Pattern 10 (Weekday AM Peak) 25 Build 2025 Build 5:20 pm 06/17/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
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HCM 6th Signalized Intersection Summary  
2216: KY-1747 & US-31E

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 86                                                                                | 952                                                                               | 213                                                                               | 225                                                                               | 700                                                                               | 180                                                                               | 80                                                                                 | 477                                                                                 | 57                                                                                  | 320                                                                                 | 1183                                                                                | 571                                                                                 |
| Future Volume (veh/h)        | 86                                                                                | 952                                                                               | 213                                                                               | 225                                                                               | 700                                                                               | 180                                                                               | 80                                                                                 | 477                                                                                 | 57                                                                                  | 320                                                                                 | 1183                                                                                | 571                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                               | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 93                                                                                | 1035                                                                              | 232                                                                               | 245                                                                               | 761                                                                               | 174                                                                               | 87                                                                                 | 518                                                                                 | 62                                                                                  | 348                                                                                 | 1286                                                                                | 621                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 114                                                                               | 882                                                                               | 658                                                                               | 307                                                                               | 784                                                                               | 179                                                                               | 214                                                                                | 1115                                                                                | 497                                                                                 | 297                                                                                 | 1282                                                                                | 712                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.25                                                                              | 0.25                                                                              | 0.18                                                                              | 0.55                                                                              | 0.55                                                                              | 0.12                                                                               | 0.31                                                                                | 0.31                                                                                | 0.22                                                                                | 0.48                                                                                | 0.48                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 2872                                                                              | 657                                                                               | 1781                                                                               | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 93                                                                                | 1035                                                                              | 232                                                                               | 245                                                                               | 471                                                                               | 464                                                                               | 87                                                                                 | 518                                                                                 | 62                                                                                  | 348                                                                                 | 1286                                                                                | 621                                                                                 |
| Grp Sat Flow(s), veh/h/ln    | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1752                                                                              | 1781                                                                               | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 8.3                                                                               | 39.7                                                                              | 9.9                                                                               | 10.9                                                                              | 40.9                                                                              | 40.9                                                                              | 7.2                                                                                | 18.7                                                                                | 4.5                                                                                 | 26.7                                                                                | 57.7                                                                                | 38.4                                                                                |
| Cycle Q Clear(g_c), s        | 8.3                                                                               | 39.7                                                                              | 9.9                                                                               | 10.9                                                                              | 40.9                                                                              | 40.9                                                                              | 7.2                                                                                | 18.7                                                                                | 4.5                                                                                 | 26.7                                                                                | 57.7                                                                                | 38.4                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.37                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 114                                                                               | 882                                                                               | 658                                                                               | 307                                                                               | 485                                                                               | 479                                                                               | 214                                                                                | 1115                                                                                | 497                                                                                 | 297                                                                                 | 1282                                                                                | 712                                                                                 |
| V/C Ratio(X)                 | 0.82                                                                              | 1.17                                                                              | 0.35                                                                              | 0.80                                                                              | 0.97                                                                              | 0.97                                                                              | 0.41                                                                               | 0.46                                                                                | 0.12                                                                                | 1.17                                                                                | 1.00                                                                                | 0.87                                                                                |
| Avail Cap(c_a), veh/h        | 175                                                                               | 882                                                                               | 658                                                                               | 425                                                                               | 485                                                                               | 479                                                                               | 214                                                                                | 1115                                                                                | 497                                                                                 | 297                                                                                 | 1282                                                                                | 712                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.33                                                                                | 1.33                                                                                | 1.33                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 0.46                                                                                | 0.46                                                                                | 0.46                                                                                |
| Uniform Delay (d), s/veh     | 74.0                                                                              | 60.2                                                                              | 13.8                                                                              | 64.4                                                                              | 35.7                                                                              | 35.7                                                                              | 65.1                                                                               | 44.1                                                                                | 39.2                                                                                | 62.2                                                                                | 41.6                                                                                | 30.6                                                                                |
| Incr Delay (d2), s/veh       | 20.1                                                                              | 90.2                                                                              | 1.5                                                                               | 6.5                                                                               | 28.3                                                                              | 28.5                                                                              | 1.5                                                                                | 1.4                                                                                 | 0.5                                                                                 | 92.7                                                                                | 17.9                                                                                | 7.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.4                                                                               | 28.5                                                                              | 3.6                                                                               | 4.6                                                                               | 16.9                                                                              | 16.7                                                                              | 3.3                                                                                | 8.4                                                                                 | 1.8                                                                                 | 19.1                                                                                | 25.8                                                                                | 12.2                                                                                |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 94.1                                                                              | 150.3                                                                             | 15.3                                                                              | 70.9                                                                              | 64.0                                                                              | 64.2                                                                              | 66.6                                                                               | 45.5                                                                                | 39.7                                                                                | 154.9                                                                               | 59.5                                                                                | 37.7                                                                                |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | B                                                                                 | E                                                                                 | E                                                                                 | E                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | F                                                                                   | F                                                                                   | D                                                                                   |
| Approach Vol, veh/h          | 1380                                                                              |                                                                                   |                                                                                   | 1180                                                                              |                                                                                   |                                                                                   | 667                                                                                |                                                                                     |                                                                                     | 2255                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 123.4                                                                             |                                                                                   |                                                                                   | 65.5                                                                              |                                                                                   |                                                                                   | 47.7                                                                               |                                                                                     |                                                                                     | 68.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 21.5                                                                              | 47.0                                                                              | 26.5                                                                              | 65.0                                                                              | 17.5                                                                              | 51.0                                                                              | 34.0                                                                               | 57.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                                | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 19.7                                                                              | 39.7                                                                              | 13.7                                                                              | 57.7                                                                              | 15.7                                                                              | 43.7                                                                              | 26.7                                                                               | 44.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.9                                                                              | 0.0                                                                               | 9.2                                                                               | 59.7                                                                              | 10.3                                                                              | 0.0                                                                               | 28.7                                                                               | 20.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.7                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                                | 4.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 78.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Pattern 10 (Weekday AM Peak) 35 No Build 2035 No Build 5:27 pm 06/17/2022 4700 Hurstbourne Pkwy  
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Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
2217: S Watterson Trail & US-31E

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                               | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   | ↕                                                                                 | ↕                                                                                 |                                                                                   | ↕                                                                                 | ↕                                                                                 | ↕                                                                                 | ↕                                                                                   | ↕                                                                                   | ↕                                                                                   | ↕                                                                                   | ↕                                                                                   |
| Traffic Volume (veh/h)       | 240                                                                               | 60                                                                                | 26                                                                                | 24                                                                                | 34                                                                                | 563                                                                               | 157                                                                               | 587                                                                                 | 54                                                                                  | 16                                                                                  | 1529                                                                                | 16                                                                                  |
| Future Volume (veh/h)        | 240                                                                               | 60                                                                                | 26                                                                                | 24                                                                                | 34                                                                                | 563                                                                               | 157                                                                               | 587                                                                                 | 54                                                                                  | 16                                                                                  | 1529                                                                                | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 261                                                                               | 65                                                                                | 0                                                                                 | 26                                                                                | 37                                                                                | 0                                                                                 | 171                                                                               | 638                                                                                 | 59                                                                                  | 17                                                                                  | 1662                                                                                | 17                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 274                                                                               | 68                                                                                |                                                                                   | 53                                                                                | 76                                                                                |                                                                                   | 198                                                                               | 1393                                                                                | 621                                                                                 | 548                                                                                 | 1724                                                                                | 769                                                                                 |
| Arrive On Green              | 0.19                                                                              | 0.19                                                                              | 0.00                                                                              | 0.07                                                                              | 0.07                                                                              | 0.00                                                                              | 0.08                                                                              | 0.39                                                                                | 0.39                                                                                | 0.17                                                                                | 0.49                                                                                | 0.49                                                                                |
| Sat Flow, veh/h              | 1440                                                                              | 359                                                                               | 1585                                                                              | 756                                                                               | 1076                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 326                                                                               | 0                                                                                 | 0                                                                                 | 63                                                                                | 0                                                                                 | 0                                                                                 | 171                                                                               | 638                                                                                 | 59                                                                                  | 17                                                                                  | 1662                                                                                | 17                                                                                  |
| Grp Sat Flow(s), veh/h/ln    | 1798                                                                              | 0                                                                                 | 1585                                                                              | 1833                                                                              | 0                                                                                 | 1585                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 28.7                                                                              | 0.0                                                                               | 0.0                                                                               | 5.3                                                                               | 0.0                                                                               | 0.0                                                                               | 10.2                                                                              | 21.3                                                                                | 3.8                                                                                 | 0.0                                                                                 | 72.4                                                                                | 0.9                                                                                 |
| Cycle Q Clear(g_c), s        | 28.7                                                                              | 0.0                                                                               | 0.0                                                                               | 5.3                                                                               | 0.0                                                                               | 0.0                                                                               | 10.2                                                                              | 21.3                                                                                | 3.8                                                                                 | 0.0                                                                                 | 72.4                                                                                | 0.9                                                                                 |
| Prop In Lane                 | 0.80                                                                              |                                                                                   | 1.00                                                                              | 0.41                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 342                                                                               | 0                                                                                 |                                                                                   | 129                                                                               | 0                                                                                 |                                                                                   | 198                                                                               | 1393                                                                                | 621                                                                                 | 548                                                                                 | 1724                                                                                | 769                                                                                 |
| V/C Ratio(X)                 | 0.95                                                                              | 0.00                                                                              |                                                                                   | 0.49                                                                              | 0.00                                                                              |                                                                                   | 0.86                                                                              | 0.46                                                                                | 0.09                                                                                | 0.03                                                                                | 0.96                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h        | 342                                                                               | 0                                                                                 |                                                                                   | 302                                                                               | 0                                                                                 |                                                                                   | 341                                                                               | 1393                                                                                | 621                                                                                 | 548                                                                                 | 1724                                                                                | 769                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 64.1                                                                              | 0.0                                                                               | 0.0                                                                               | 71.6                                                                              | 0.0                                                                               | 0.0                                                                               | 48.3                                                                              | 36.1                                                                                | 30.7                                                                                | 26.3                                                                                | 39.8                                                                                | 21.4                                                                                |
| Incr Delay (d2), s/veh       | 37.0                                                                              | 0.0                                                                               | 0.0                                                                               | 4.8                                                                               | 0.0                                                                               | 0.0                                                                               | 16.7                                                                              | 1.1                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 14.7                                                                                | 0.1                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%), veh/ln    | 16.6                                                                              | 0.0                                                                               | 0.0                                                                               | 2.7                                                                               | 0.0                                                                               | 0.0                                                                               | 7.7                                                                               | 9.3                                                                                 | 1.5                                                                                 | 0.4                                                                                 | 33.7                                                                                | 0.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 101.1                                                                             | 0.0                                                                               | 0.0                                                                               | 76.4                                                                              | 0.0                                                                               | 0.0                                                                               | 65.0                                                                              | 37.1                                                                                | 31.0                                                                                | 26.4                                                                                | 54.5                                                                                | 21.5                                                                                |
| LnGrp LOS                    | F                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | D                                                                                   | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 326                                                                               |                                                                                   |                                                                                   | 63                                                                                |                                                                                   |                                                                                   | 868                                                                               |                                                                                     |                                                                                     | 1696                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 101.1                                                                             |                                                                                   |                                                                                   | 76.4                                                                              |                                                                                   |                                                                                   | 42.2                                                                              |                                                                                     |                                                                                     | 53.9                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 20.2                                                                              | 84.9                                                                              |                                                                                   | 37.0                                                                              | 35.1                                                                              | 70.0                                                                              |                                                                                   | 17.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                               | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.7                                                                              | 49.7                                                                              |                                                                                   | 30.4                                                                              | 12.7                                                                              | 62.7                                                                              |                                                                                   | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.2                                                                              | 0.0                                                                               |                                                                                   | 30.7                                                                              | 2.0                                                                               | 0.0                                                                               |                                                                                   | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.7                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection Summary

HCM 6th Ctrl Delay 56.2  
HCM 6th LOS E

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

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Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
3003: KY-1747 & S Stony Brook Dr

06/17/2022

| Movement                     | WBL   | WBR  | NBT  | NBR  | SBL  | SBT   |
|------------------------------|-------|------|------|------|------|-------|
| Lane Configurations          | ↰     | ↰    | ↕↗   | ↗    | ↰    | ↕↗    |
| Traffic Volume (veh/h)       | 456   | 55   | 1189 | 412  | 59   | 629   |
| Future Volume (veh/h)        | 456   | 55   | 1189 | 412  | 59   | 629   |
| Initial Q (Qb), veh          | 0     | 0    | 0    | 0    | 0    | 0     |
| Ped-Bike Adj(A_pbT)          | 1.00  | 1.00 |      | 1.00 | 1.00 |       |
| Parking Bus, Adj             | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Work Zone On Approach        | No    |      | No   |      |      | No    |
| Adj Sat Flow, veh/h/ln       | 1870  | 1870 | 1870 | 1870 | 1870 | 1870  |
| Adj Flow Rate, veh/h         | 496   | 60   | 1292 | 448  | 64   | 684   |
| Peak Hour Factor             | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  |
| Percent Heavy Veh, %         | 2     | 2    | 2    | 2    | 2    | 2     |
| Cap, veh/h                   | 450   | 400  | 2018 | 1300 | 84   | 2348  |
| Arrive On Green              | 0.25  | 0.25 | 0.57 | 0.57 | 0.05 | 0.66  |
| Sat Flow, veh/h              | 1781  | 1585 | 3647 | 1585 | 1781 | 3647  |
| Grp Volume(v), veh/h         | 496   | 60   | 1292 | 448  | 64   | 684   |
| Grp Sat Flow(s), veh/h/ln    | 1781  | 1585 | 1777 | 1585 | 1781 | 1777  |
| Q Serve(g_s), s              | 40.4  | 4.7  | 39.5 | 11.3 | 5.7  | 12.9  |
| Cycle Q Clear(g_c), s        | 40.4  | 4.7  | 39.5 | 11.3 | 5.7  | 12.9  |
| Prop In Lane                 | 1.00  | 1.00 |      | 1.00 | 1.00 |       |
| Lane Grp Cap(c), veh/h       | 450   | 400  | 2018 | 1300 | 84   | 2348  |
| V/C Ratio(X)                 | 1.10  | 0.15 | 0.64 | 0.34 | 0.76 | 0.29  |
| Avail Cap(c_a), veh/h        | 450   | 400  | 2018 | 1300 | 164  | 2348  |
| HCM Platoon Ratio            | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Upstream Filter(I)           | 1.00  | 1.00 | 0.15 | 0.15 | 1.00 | 1.00  |
| Uniform Delay (d), s/veh     | 59.8  | 46.5 | 23.5 | 3.6  | 75.3 | 11.4  |
| Incr Delay (d2), s/veh       | 73.3  | 0.4  | 0.2  | 0.1  | 18.2 | 0.3   |
| Initial Q Delay(d3), s/veh   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   |
| %ile BackOfQ(50%),veh/ln     | 27.3  | 4.7  | 15.9 | 9.8  | 3.0  | 5.0   |
| Unsig. Movement Delay, s/veh |       |      |      |      |      |       |
| LnGrp Delay(d), s/veh        | 133.1 | 46.8 | 23.7 | 3.7  | 93.5 | 11.7  |
| LnGrp LOS                    | F     | D    | C    | A    | F    | B     |
| Approach Vol, veh/h          | 556   |      | 1740 |      |      | 748   |
| Approach Delay, s/veh        | 123.8 |      | 18.6 |      |      | 18.7  |
| Approach LOS                 | F     |      | B    |      |      | B     |
| Timer - Assigned Phs         | 1     | 2    |      | 4    |      | 6     |
| Phs Duration (G+Y+Rc), s     | 14.8  | 98.2 |      | 47.0 |      | 113.0 |
| Change Period (Y+Rc), s      | 7.3   | 7.3  |      | 6.6  |      | 7.3   |
| Max Green Setting (Gmax), s  | 14.7  | 83.7 |      | 40.4 |      | 105.7 |
| Max Q Clear Time (g_c+I1), s | 7.7   | 0.0  |      | 42.4 |      | 0.0   |
| Green Ext Time (p_c), s      | 0.1   | 0.0  |      | 0.0  |      | 0.0   |
| <b>Intersection Summary</b>  |       |      |      |      |      |       |
| HCM 6th Ctrl Delay           |       |      | 37.8 |      |      |       |
| HCM 6th LOS                  |       |      | D    |      |      |       |

Pattern 10 (Weekday AM Peak) 35 No Build 2035 No Build 5:27 pm 06/17/2022 4700 Hurstbourne Pkwy  
DBZ

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Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
3004: KY-1747 & Watterson Trail

06/17/2022

|                                                                                                    | EBL   | EBT  | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|----------------------------------------------------------------------------------------------------|-------|------|-------|------|------|-------|-------|------|------|------|------|------|
| Movement                                                                                           | EBL   | EBT  | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations                                                                                | ↰     | ↑    | ↱     | ↰    | ↑    | ↱     | ↰     | ↑↑   | ↱    | ↰    | ↑↑   | ↱    |
| Traffic Volume (veh/h)                                                                             | 123   | 204  | 57    | 108  | 408  | 197   | 29    | 1137 | 55   | 107  | 522  | 136  |
| Future Volume (veh/h)                                                                              | 123   | 204  | 57    | 108  | 408  | 197   | 29    | 1137 | 55   | 107  | 522  | 136  |
| Initial Q (Qb), veh                                                                                | 0     | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)                                                                                | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj                                                                                   | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach                                                                              | No    | No   | No    | No   | No   | No    | No    | No   | No   | No   | No   | No   |
| Adj Sat Flow, veh/h/ln                                                                             | 1870  | 1870 | 1870  | 1870 | 1870 | 1870  | 1870  | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h                                                                               | 134   | 222  | 62    | 117  | 443  | 214   | 32    | 1236 | 60   | 116  | 567  | 148  |
| Peak Hour Factor                                                                                   | 0.92  | 0.92 | 0.92  | 0.92 | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %                                                                               | 2     | 2    | 2     | 2    | 2    | 2     | 2     | 2    | 2    | 2    | 2    | 2    |
| Cap, veh/h                                                                                         | 184   | 490  | 415   | 331  | 476  | 403   | 59    | 1270 | 567  | 348  | 1726 | 770  |
| Arrive On Green                                                                                    | 0.07  | 0.26 | 0.26  | 0.06 | 0.25 | 0.25  | 0.03  | 0.36 | 0.36 | 0.33 | 0.97 | 0.97 |
| Sat Flow, veh/h                                                                                    | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 3554 | 1585 | 1781 | 3554 | 1585 |
| Grp Volume(v), veh/h                                                                               | 134   | 222  | 62    | 117  | 443  | 214   | 32    | 1236 | 60   | 116  | 567  | 148  |
| Grp Sat Flow(s), veh/h/ln                                                                          | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 1777 | 1585 | 1781 | 1777 | 1585 |
| Q Serve(g_s), s                                                                                    | 8.8   | 15.9 | 4.8   | 7.6  | 37.0 | 12.5  | 2.8   | 54.8 | 3.2  | 2.7  | 1.1  | 0.5  |
| Cycle Q Clear(g_c), s                                                                              | 8.8   | 15.9 | 4.8   | 7.6  | 37.0 | 12.5  | 2.8   | 54.8 | 3.2  | 2.7  | 1.1  | 0.5  |
| Prop In Lane                                                                                       | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h                                                                             | 184   | 490  | 415   | 331  | 476  | 403   | 59    | 1270 | 567  | 348  | 1726 | 770  |
| V/C Ratio(X)                                                                                       | 0.73  | 0.45 | 0.15  | 0.35 | 0.93 | 0.53  | 0.54  | 0.97 | 0.11 | 0.33 | 0.33 | 0.19 |
| Avail Cap(c_a), veh/h                                                                              | 226   | 514  | 436   | 387  | 514  | 436   | 127   | 1270 | 567  | 348  | 1726 | 770  |
| HCM Platoon Ratio                                                                                  | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 |
| Upstream Filter(I)                                                                                 | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 0.98 | 0.98 | 0.98 |
| Uniform Delay (d), s/veh                                                                           | 44.6  | 49.4 | 45.4  | 40.2 | 58.3 | 23.2  | 76.1  | 50.6 | 21.3 | 44.8 | 1.2  | 1.2  |
| Incr Delay (d2), s/veh                                                                             | 8.8   | 0.9  | 0.2   | 0.6  | 23.5 | 1.5   | 10.5  | 19.5 | 0.4  | 0.8  | 0.5  | 0.5  |
| Initial Q Delay(d3), s/veh                                                                         | 0.0   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%), veh/ln                                                                          | 4.4   | 7.6  | 1.9   | 3.4  | 20.5 | 4.9   | 1.5   | 27.1 | 1.6  | 3.2  | 0.4  | 0.3  |
| Unsig. Movement Delay, s/veh                                                                       |       |      |       |      |      |       |       |      |      |      |      |      |
| LnGrp Delay(d), s/veh                                                                              | 53.4  | 50.4 | 45.6  | 40.8 | 81.8 | 24.8  | 86.7  | 70.2 | 21.7 | 45.5 | 1.7  | 1.7  |
| LnGrp LOS                                                                                          | D     | D    | D     | D    | F    | C     | F     | E    | C    | D    | A    | A    |
| Approach Vol, veh/h                                                                                |       | 418  |       |      | 774  |       |       | 1328 |      |      | 831  |      |
| Approach Delay, s/veh                                                                              |       | 50.6 |       |      | 59.9 |       |       | 68.4 |      |      | 7.8  |      |
| Approach LOS                                                                                       |       | D    |       |      | E    |       |       | E    |      |      | A    |      |
| Timer - Assigned Phs                                                                               | 1     | 2    | 3     | 4    | 5    | 6     | 7     | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s                                                                           | 33.1  | 63.0 | 16.0  | 47.9 | 11.9 | 84.2  | 17.2  | 46.7 |      |      |      |      |
| Change Period (Y+Rc), s                                                                            | * 6.5 | 5.8  | * 6.3 | 6.0  | 6.6  | * 6.5 | * 6.3 | 6.0  |      |      |      |      |
| Max Green Setting (Gmax), s                                                                        | * 20  | 57.2 | * 15  | 44.0 | 11.4 | * 65  | * 15  | 44.0 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s                                                                       | 4.7   | 0.0  | 9.6   | 17.9 | 4.8  | 0.0   | 10.8  | 39.0 |      |      |      |      |
| Green Ext Time (p_c), s                                                                            | 0.4   | 0.0  | 0.1   | 1.4  | 0.0  | 0.0   | 0.1   | 1.7  |      |      |      |      |
| Intersection Summary                                                                               |       |      |       |      |      |       |       |      |      |      |      |      |
| HCM 6th Ctrl Delay                                                                                 |       |      | 49.2  |      |      |       |       |      |      |      |      |      |
| HCM 6th LOS                                                                                        |       |      | D     |      |      |       |       |      |      |      |      |      |
| Notes                                                                                              |       |      |       |      |      |       |       |      |      |      |      |      |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. |       |      |       |      |      |       |       |      |      |      |      |      |

Pattern 10 (Weekday AM Peak) 35 No Build 2035 No Build 5:27 pm 06/17/2022 4700 Hurstbourne Pkwy  
DBZ

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Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

Pattern 10 (Weekday AM Peak) 35 Build 1  
2216: KY-1747 & US-31E

08/08/2022

|                                                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                               | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)                                             | 86                                                                                | 967                                                                               | 213                                                                               | 251                                                                               | 778                                                                               | 180                                                                               | 80                                                                                | 477                                                                                 | 57                                                                                  | 320                                                                                 | 1183                                                                                | 576                                                                                 |
| Future Volume (veh/h)                                              | 86                                                                                | 967                                                                               | 213                                                                               | 251                                                                               | 778                                                                               | 180                                                                               | 80                                                                                | 477                                                                                 | 57                                                                                  | 320                                                                                 | 1183                                                                                | 576                                                                                 |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                              | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln                                             | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h                                               | 93                                                                                | 1051                                                                              | 232                                                                               | 273                                                                               | 846                                                                               | 174                                                                               | 87                                                                                | 518                                                                                 | 62                                                                                  | 348                                                                                 | 1286                                                                                | 626                                                                                 |
| Peak Hour Factor                                                   | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 114                                                                               | 882                                                                               | 658                                                                               | 321                                                                               | 814                                                                               | 167                                                                               | 206                                                                               | 1100                                                                                | 491                                                                                 | 297                                                                                 | 1282                                                                                | 719                                                                                 |
| Arrive On Green                                                    | 0.06                                                                              | 0.25                                                                              | 0.25                                                                              | 0.19                                                                              | 0.55                                                                              | 0.55                                                                              | 0.12                                                                              | 0.31                                                                                | 0.31                                                                                | 0.22                                                                                | 0.48                                                                                | 0.48                                                                                |
| Sat Flow, veh/h                                                    | 1781                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 2935                                                                              | 604                                                                               | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h                                               | 93                                                                                | 1051                                                                              | 232                                                                               | 273                                                                               | 512                                                                               | 508                                                                               | 87                                                                                | 518                                                                                 | 62                                                                                  | 348                                                                                 | 1286                                                                                | 626                                                                                 |
| Grp Sat Flow(s), veh/h/ln                                          | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1762                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s                                                    | 8.3                                                                               | 39.7                                                                              | 9.7                                                                               | 12.2                                                                              | 44.4                                                                              | 44.4                                                                              | 7.3                                                                               | 18.9                                                                                | 4.5                                                                                 | 26.7                                                                                | 57.7                                                                                | 37.9                                                                                |
| Cycle Q Clear(g_c), s                                              | 8.3                                                                               | 39.7                                                                              | 9.7                                                                               | 12.2                                                                              | 44.4                                                                              | 44.4                                                                              | 7.3                                                                               | 18.9                                                                                | 4.5                                                                                 | 26.7                                                                                | 57.7                                                                                | 37.9                                                                                |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.34                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 114                                                                               | 882                                                                               | 658                                                                               | 321                                                                               | 493                                                                               | 489                                                                               | 206                                                                               | 1100                                                                                | 491                                                                                 | 297                                                                                 | 1282                                                                                | 719                                                                                 |
| V/C Ratio(X)                                                       | 0.82                                                                              | 1.19                                                                              | 0.35                                                                              | 0.85                                                                              | 1.04                                                                              | 1.04                                                                              | 0.42                                                                              | 0.47                                                                                | 0.13                                                                                | 1.17                                                                                | 1.00                                                                                | 0.87                                                                                |
| Avail Cap(c_a), veh/h                                              | 175                                                                               | 882                                                                               | 658                                                                               | 425                                                                               | 493                                                                               | 489                                                                               | 206                                                                               | 1100                                                                                | 491                                                                                 | 297                                                                                 | 1282                                                                                | 719                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.33                                                                                | 1.33                                                                                | 1.33                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.46                                                                                | 0.46                                                                                | 0.46                                                                                |
| Uniform Delay (d), s/veh                                           | 74.0                                                                              | 60.2                                                                              | 13.6                                                                              | 64.0                                                                              | 35.6                                                                              | 35.6                                                                              | 65.8                                                                              | 44.7                                                                                | 39.7                                                                                | 62.2                                                                                | 41.6                                                                                | 30.3                                                                                |
| Incr Delay (d2), s/veh                                             | 20.1                                                                              | 97.6                                                                              | 1.5                                                                               | 10.1                                                                              | 45.3                                                                              | 45.5                                                                              | 1.7                                                                               | 1.4                                                                                 | 0.5                                                                                 | 92.7                                                                                | 17.9                                                                                | 6.9                                                                                 |
| Initial Q Delay(d3),s/veh                                          | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 4.4                                                                               | 29.5                                                                              | 3.6                                                                               | 5.3                                                                               | 20.2                                                                              | 20.1                                                                              | 3.4                                                                               | 8.4                                                                                 | 1.8                                                                                 | 19.1                                                                                | 25.8                                                                                | 11.8                                                                                |
| Unsig. Movement Delay, s/veh                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh                                               | 94.1                                                                              | 157.7                                                                             | 15.1                                                                              | 74.1                                                                              | 80.9                                                                              | 81.1                                                                              | 67.4                                                                              | 46.1                                                                                | 40.2                                                                                | 154.9                                                                               | 59.5                                                                                | 37.2                                                                                |
| LnGrp LOS                                                          | F                                                                                 | F                                                                                 | B                                                                                 | E                                                                                 | F                                                                                 | F                                                                                 | E                                                                                 | D                                                                                   | D                                                                                   | F                                                                                   | F                                                                                   | D                                                                                   |
| Approach Vol, veh/h                                                | 1376                                                                              |                                                                                   |                                                                                   | 1293                                                                              |                                                                                   |                                                                                   | 667                                                                               |                                                                                     |                                                                                     | 2260                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                              | 129.4                                                                             |                                                                                   |                                                                                   | 79.5                                                                              |                                                                                   |                                                                                   | 48.3                                                                              |                                                                                     |                                                                                     | 68.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                       | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           | 22.2                                                                              | 47.0                                                                              | 25.8                                                                              | 65.0                                                                              | 17.5                                                                              | 51.7                                                                              | 34.0                                                                              | 56.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        | 19.7                                                                              | 39.7                                                                              | 13.7                                                                              | 57.7                                                                              | 15.7                                                                              | 43.7                                                                              | 26.7                                                                              | 44.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                       | 14.2                                                                              | 0.0                                                                               | 9.3                                                                               | 59.7                                                                              | 10.3                                                                              | 0.0                                                                               | 28.7                                                                              | 20.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            | 0.7                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 4.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay                                                 | 83.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                                                        | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Pattern 10 (Weekday AM Peak) 35 Build 1 2035 Build 1:02 pm 08/08/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
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Apartments  
 4700 Hurstbourne Parkway  
 Traffic Impact Study

HCM 6th Signalized Intersection Summary  
 2217: S Watterson Trail & US-31E

06/17/2022

|                              |  |  |  |  |  |    |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                                 | SEL                                                                                 | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 240                                                                               | 60                                                                                | 26                                                                                | 24                                                                                | 34                                                                                | 563                                                                                 | 157                                                                                 | 605                                                                                 | 54                                                                                  | 16                                                                                  | 1619                                                                                | 16                                                                                  |
| Future Volume (veh/h)        | 240                                                                               | 60                                                                                | 26                                                                                | 24                                                                                | 34                                                                                | 563                                                                                 | 157                                                                                 | 605                                                                                 | 54                                                                                  | 16                                                                                  | 1619                                                                                | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                     | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 261                                                                               | 65                                                                                | 0                                                                                 | 26                                                                                | 37                                                                                | 0                                                                                   | 171                                                                                 | 658                                                                                 | 59                                                                                  | 17                                                                                  | 1760                                                                                | 17                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 274                                                                               | 68                                                                                |                                                                                   | 53                                                                                | 76                                                                                |                                                                                     | 198                                                                                 | 1393                                                                                | 621                                                                                 | 541                                                                                 | 1705                                                                                | 761                                                                                 |
| Arrive On Green              | 0.19                                                                              | 0.19                                                                              | 0.00                                                                              | 0.07                                                                              | 0.07                                                                              | 0.00                                                                                | 0.09                                                                                | 0.39                                                                                | 0.39                                                                                | 0.17                                                                                | 0.48                                                                                | 0.48                                                                                |
| Sat Flow, veh/h              | 1440                                                                              | 359                                                                               | 1585                                                                              | 756                                                                               | 1076                                                                              | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 326                                                                               | 0                                                                                 | 0                                                                                 | 63                                                                                | 0                                                                                 | 0                                                                                   | 171                                                                                 | 658                                                                                 | 59                                                                                  | 17                                                                                  | 1760                                                                                | 17                                                                                  |
| Grp Sat Flow(s), veh/h/ln    | 1798                                                                              | 0                                                                                 | 1585                                                                              | 1833                                                                              | 0                                                                                 | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 28.7                                                                              | 0.0                                                                               | 0.0                                                                               | 5.3                                                                               | 0.0                                                                               | 0.0                                                                                 | 11.1                                                                                | 22.1                                                                                | 3.8                                                                                 | 0.0                                                                                 | 76.8                                                                                | 0.9                                                                                 |
| Cycle Q Clear(g_c), s        | 28.7                                                                              | 0.0                                                                               | 0.0                                                                               | 5.3                                                                               | 0.0                                                                               | 0.0                                                                                 | 11.1                                                                                | 22.1                                                                                | 3.8                                                                                 | 0.0                                                                                 | 76.8                                                                                | 0.9                                                                                 |
| Prop In Lane                 | 0.80                                                                              |                                                                                   | 1.00                                                                              | 0.41                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 342                                                                               | 0                                                                                 |                                                                                   | 129                                                                               | 0                                                                                 |                                                                                     | 198                                                                                 | 1393                                                                                | 621                                                                                 | 541                                                                                 | 1705                                                                                | 761                                                                                 |
| V/C Ratio(X)                 | 0.95                                                                              | 0.00                                                                              |                                                                                   | 0.49                                                                              | 0.00                                                                              |                                                                                     | 0.86                                                                                | 0.47                                                                                | 0.09                                                                                | 0.03                                                                                | 1.03                                                                                | 0.02                                                                                |
| Avail Cap(c_a), veh/h        | 342                                                                               | 0                                                                                 |                                                                                   | 302                                                                               | 0                                                                                 |                                                                                     | 331                                                                                 | 1393                                                                                | 621                                                                                 | 541                                                                                 | 1705                                                                                | 761                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 64.1                                                                              | 0.0                                                                               | 0.0                                                                               | 71.6                                                                              | 0.0                                                                               | 0.0                                                                                 | 52.2                                                                                | 36.3                                                                                | 30.7                                                                                | 26.8                                                                                | 41.6                                                                                | 21.9                                                                                |
| Incr Delay (d2), s/veh       | 37.0                                                                              | 0.0                                                                               | 0.0                                                                               | 4.8                                                                               | 0.0                                                                               | 0.0                                                                                 | 17.5                                                                                | 1.2                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 30.5                                                                                | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 16.6                                                                              | 0.0                                                                               | 0.0                                                                               | 2.7                                                                               | 0.0                                                                               | 0.0                                                                                 | 7.8                                                                                 | 9.7                                                                                 | 1.5                                                                                 | 0.4                                                                                 | 39.3                                                                                | 0.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 101.1                                                                             | 0.0                                                                               | 0.0                                                                               | 76.4                                                                              | 0.0                                                                               | 0.0                                                                                 | 69.7                                                                                | 37.5                                                                                | 31.0                                                                                | 26.9                                                                                | 72.1                                                                                | 21.9                                                                                |
| LnGrp LOS                    | F                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | A                                                                                 |                                                                                     | E                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   | F                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 326                                                                               |                                                                                   |                                                                                   | 63                                                                                |                                                                                   |                                                                                     | 888                                                                                 |                                                                                     |                                                                                     | 1794                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 101.1                                                                             |                                                                                   |                                                                                   | 76.4                                                                              |                                                                                   |                                                                                     | 43.2                                                                                |                                                                                     |                                                                                     | 71.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                   |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 21.0                                                                              | 84.1                                                                              |                                                                                   | 37.0                                                                              | 35.1                                                                              | 70.0                                                                                |                                                                                     | 17.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                               | 7.3                                                                               | 7.3                                                                                 |                                                                                     | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.7                                                                              | 49.7                                                                              |                                                                                   | 30.4                                                                              | 12.7                                                                              | 62.7                                                                                |                                                                                     | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 13.1                                                                              | 0.0                                                                               |                                                                                   | 30.7                                                                              | 2.0                                                                               | 0.0                                                                                 |                                                                                     | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.7                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |                                                                                     | 0.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection Summary

HCM 6th Ctrl Delay 66.4  
 HCM 6th LOS E

Notes

User approved pedestrian interval to be less than phase max green.  
 Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Pattern 10 (Weekday AM Peak) 35 Build 1 2035 Build 5:33 pm 06/17/2022 4700 Hurstbourne Pkwy  
 DBZ

Synchro 11 Report  
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Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

Pattern 10 (Weekday AM Peak) 35 Build 1

3003: KY-1747 & S Stony Brook Dr

08/08/2022

|                              | ↙     | ↖    | ↑    | ↗    | ↘    | ↓     |
|------------------------------|-------|------|------|------|------|-------|
| Movement                     | WBL   | WBR  | NBT  | NBR  | SBL  | SBT   |
| Lane Configurations          | ↙     | ↖    | ↑↑   | ↗    | ↘    | ↑↑    |
| Traffic Volume (veh/h)       | 456   | 55   | 1209 | 412  | 59   | 733   |
| Future Volume (veh/h)        | 456   | 55   | 1209 | 412  | 59   | 733   |
| Initial Q (Qb), veh          | 0     | 0    | 0    | 0    | 0    | 0     |
| Ped-Bike Adj(A_pbT)          | 1.00  | 1.00 |      | 1.00 | 1.00 |       |
| Parking Bus, Adj             | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Work Zone On Approach        | No    |      | No   |      |      | No    |
| Adj Sat Flow, veh/h/ln       | 1870  | 1870 | 1870 | 1870 | 1870 | 1870  |
| Adj Flow Rate, veh/h         | 496   | 60   | 1314 | 448  | 64   | 797   |
| Peak Hour Factor             | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92  |
| Percent Heavy Veh, %         | 2     | 2    | 2    | 2    | 2    | 2     |
| Cap, veh/h                   | 450   | 400  | 2018 | 1300 | 84   | 2348  |
| Arrive On Green              | 0.25  | 0.25 | 0.57 | 0.57 | 0.05 | 0.66  |
| Sat Flow, veh/h              | 1781  | 1585 | 3647 | 1585 | 1781 | 3647  |
| Grp Volume(v), veh/h         | 496   | 60   | 1314 | 448  | 64   | 797   |
| Grp Sat Flow(s), veh/h/ln    | 1781  | 1585 | 1777 | 1585 | 1781 | 1777  |
| Q Serve(g_s), s              | 40.4  | 4.7  | 40.6 | 11.3 | 5.7  | 15.7  |
| Cycle Q Clear(g_c), s        | 40.4  | 4.7  | 40.6 | 11.3 | 5.7  | 15.7  |
| Prop In Lane                 | 1.00  | 1.00 |      | 1.00 | 1.00 |       |
| Lane Grp Cap(c), veh/h       | 450   | 400  | 2018 | 1300 | 84   | 2348  |
| V/C Ratio(X)                 | 1.10  | 0.15 | 0.65 | 0.34 | 0.76 | 0.34  |
| Avail Cap(c_a), veh/h        | 450   | 400  | 2018 | 1300 | 164  | 2348  |
| HCM Platoon Ratio            | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00  |
| Upstream Filter(I)           | 1.00  | 1.00 | 0.12 | 0.12 | 1.00 | 1.00  |
| Uniform Delay (d), s/veh     | 59.8  | 46.5 | 23.7 | 3.6  | 75.3 | 11.9  |
| Incr Delay (d2), s/veh       | 73.3  | 0.4  | 0.2  | 0.1  | 18.2 | 0.4   |
| Initial Q Delay(d3),s/veh    | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0   |
| %ile BackOfQ(50%),veh/ln     | 27.3  | 4.7  | 16.4 | 9.8  | 3.0  | 6.1   |
| Unsig. Movement Delay, s/veh |       |      |      |      |      |       |
| LnGrp Delay(d),s/veh         | 133.1 | 46.8 | 23.9 | 3.7  | 93.5 | 12.3  |
| LnGrp LOS                    | F     | D    | C    | A    | F    | B     |
| Approach Vol, veh/h          | 556   |      | 1762 |      |      | 861   |
| Approach Delay, s/veh        | 123.8 |      | 18.8 |      |      | 18.3  |
| Approach LOS                 | F     |      | B    |      |      | B     |
| Timer - Assigned Phs         | 1     | 2    |      | 4    |      | 6     |
| Phs Duration (G+Y+Rc), s     | 14.8  | 98.2 |      | 47.0 |      | 113.0 |
| Change Period (Y+Rc), s      | 7.3   | 7.3  |      | 6.6  |      | 7.3   |
| Max Green Setting (Gmax), s  | 14.7  | 83.7 |      | 40.4 |      | 105.7 |
| Max Q Clear Time (g_c+11), s | 7.7   | 0.0  |      | 42.4 |      | 0.0   |
| Green Ext Time (p_c), s      | 0.1   | 0.0  |      | 0.0  |      | 0.0   |
| Intersection Summary         |       |      |      |      |      |       |
| HCM 6th Ctrl Delay           |       |      | 37.0 |      |      |       |
| HCM 6th LOS                  |       |      | D    |      |      |       |

Pattern 10 (Weekday AM Peak) 35 Build 1 2035 Build 1:02 pm 08/08/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
Page 1



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
3004: KY-1747 & Watterson Trail

06/17/2022

|                              | EBL   | EBT  | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|------------------------------|-------|------|-------|------|------|-------|-------|------|------|------|------|------|
| Movement                     | ←     | →    | ↘     | ←    | →    | ↘     | ←     | →    | ↘    | ←    | →    | ↘    |
| Lane Configurations          | ↘     | ↗    | ↘     | ↘    | ↗    | ↘     | ↘     | ↗    | ↘    | ↘    | ↗    | ↘    |
| Traffic Volume (veh/h)       | 123   | 204  | 57    | 108  | 408  | 197   | 29    | 1202 | 55   | 107  | 534  | 136  |
| Future Volume (veh/h)        | 123   | 204  | 57    | 108  | 408  | 197   | 29    | 1202 | 55   | 107  | 534  | 136  |
| Initial Q (Qb), veh          | 0     | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        | No    |      |       | No   |      |       | No    |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln       | 1870  | 1870 | 1870  | 1870 | 1870 | 1870  | 1870  | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h         | 134   | 222  | 62    | 117  | 443  | 214   | 32    | 1307 | 60   | 116  | 580  | 148  |
| Peak Hour Factor             | 0.92  | 0.92 | 0.92  | 0.92 | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %         | 2     | 2    | 2     | 2    | 2    | 2     | 2     | 2    | 2    | 2    | 2    | 2    |
| Cap, veh/h                   | 184   | 490  | 415   | 331  | 476  | 403   | 59    | 1270 | 567  | 341  | 1726 | 770  |
| Arrive On Green              | 0.07  | 0.26 | 0.26  | 0.06 | 0.25 | 0.25  | 0.03  | 0.36 | 0.36 | 0.33 | 0.97 | 0.97 |
| Sat Flow, veh/h              | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 3554 | 1585 | 1781 | 3554 | 1585 |
| Grp Volume(v), veh/h         | 134   | 222  | 62    | 117  | 443  | 214   | 32    | 1307 | 60   | 116  | 580  | 148  |
| Grp Sat Flow(s), veh/h/ln    | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 1777 | 1585 | 1781 | 1777 | 1585 |
| Q Serve(g_s), s              | 8.8   | 15.9 | 4.8   | 7.6  | 37.0 | 12.5  | 2.8   | 57.2 | 3.2  | 3.3  | 1.1  | 0.5  |
| Cycle Q Clear(g_c), s        | 8.8   | 15.9 | 4.8   | 7.6  | 37.0 | 12.5  | 2.8   | 57.2 | 3.2  | 3.3  | 1.1  | 0.5  |
| Prop In Lane                 | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 184   | 490  | 415   | 331  | 476  | 403   | 59    | 1270 | 567  | 341  | 1726 | 770  |
| V/C Ratio(X)                 | 0.73  | 0.45 | 0.15  | 0.35 | 0.93 | 0.53  | 0.54  | 1.03 | 0.11 | 0.34 | 0.34 | 0.19 |
| Avail Cap(c_a), veh/h        | 226   | 514  | 436   | 387  | 514  | 436   | 127   | 1270 | 567  | 341  | 1726 | 770  |
| HCM Platoon Ratio            | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 |
| Upstream Filter(I)           | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 0.98 | 0.98 | 0.98 |
| Uniform Delay (d), s/veh     | 44.6  | 49.4 | 45.4  | 40.2 | 58.3 | 23.2  | 76.1  | 51.4 | 21.3 | 45.0 | 1.2  | 1.2  |
| Incr Delay (d2), s/veh       | 8.8   | 0.9  | 0.2   | 0.6  | 23.5 | 1.5   | 10.5  | 32.9 | 0.4  | 0.8  | 0.5  | 0.5  |
| Initial Q Delay(d3), s/veh   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%), veh/ln    | 4.4   | 7.6  | 1.9   | 3.4  | 20.5 | 4.9   | 1.5   | 30.5 | 1.6  | 3.2  | 0.4  | 0.3  |
| Unsig. Movement Delay, s/veh |       |      |       |      |      |       |       |      |      |      |      |      |
| LnGrp Delay(d), s/veh        | 53.4  | 50.4 | 45.6  | 40.8 | 81.8 | 24.8  | 86.7  | 84.3 | 21.7 | 45.8 | 1.7  | 1.7  |
| LnGrp LOS                    | D     | D    | D     | D    | F    | C     | F     | F    | C    | D    | A    | A    |
| Approach Vol, veh/h          | 418   |      |       | 774  |      |       | 1399  |      |      | 844  |      |      |
| Approach Delay, s/veh        | 50.6  |      |       | 59.9 |      |       | 81.7  |      |      | 7.8  |      |      |
| Approach LOS                 | D     |      |       | E    |      |       | F     |      |      | A    |      |      |
| Timer - Assigned Phs         | 1     | 2    | 3     | 4    | 5    | 6     | 7     | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 33.1  | 63.0 | 16.0  | 47.9 | 11.9 | 84.2  | 17.2  | 46.7 |      |      |      |      |
| Change Period (Y+Rc), s      | * 6.5 | 5.8  | * 6.3 | 6.0  | 6.6  | * 6.5 | * 6.3 | 6.0  |      |      |      |      |
| Max Green Setting (Gmax), s  | * 20  | 57.2 | * 15  | 44.0 | 11.4 | * 65  | * 15  | 44.0 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 5.3   | 0.0  | 9.6   | 17.9 | 4.8  | 0.0   | 10.8  | 39.0 |      |      |      |      |
| Green Ext Time (p_c), s      | 0.4   | 0.0  | 0.1   | 1.4  | 0.0  | 0.0   | 0.1   | 1.7  |      |      |      |      |

Intersection Summary

HCM 6th Ctrl Delay 54.8  
HCM 6th LOS D

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



HCM 6th Signalized Intersection Summary  
2216: KY-1747 & US-31E

06/19/2022

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                                 | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 80                                                                                | 725                                                                               | 350                                                                               | 525                                                                               | 800                                                                               | 75                                                                                | 125                                                                                 | 1100                                                                                | 150                                                                                 | 200                                                                                 | 600                                                                                 | 375                                                                                 |
| Future Volume (veh/h)        | 80                                                                                | 725                                                                               | 350                                                                               | 525                                                                               | 800                                                                               | 75                                                                                | 125                                                                                 | 1100                                                                                | 150                                                                                 | 200                                                                                 | 600                                                                                 | 375                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 83                                                                                | 755                                                                               | 365                                                                               | 547                                                                               | 833                                                                               | 78                                                                                | 130                                                                                 | 1146                                                                                | 156                                                                                 | 208                                                                                 | 625                                                                                 | 391                                                                                 |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 139                                                                               | 704                                                                               | 522                                                                               | 569                                                                               | 935                                                                               | 88                                                                                | 210                                                                                 | 1106                                                                                | 493                                                                                 | 234                                                                                 | 1154                                                                                | 776                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.20                                                                              | 0.20                                                                              | 0.22                                                                              | 0.38                                                                              | 0.38                                                                              | 0.12                                                                                | 0.31                                                                                | 0.31                                                                                | 0.04                                                                                | 0.11                                                                                | 0.11                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 3284                                                                              | 308                                                                               | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 83                                                                                | 755                                                                               | 365                                                                               | 547                                                                               | 451                                                                               | 460                                                                               | 130                                                                                 | 1146                                                                                | 156                                                                                 | 208                                                                                 | 625                                                                                 | 391                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1815                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 6.8                                                                               | 29.7                                                                              | 29.7                                                                              | 23.5                                                                              | 35.7                                                                              | 35.7                                                                              | 10.4                                                                                | 46.7                                                                                | 8.4                                                                                 | 17.4                                                                                | 25.0                                                                                | 13.1                                                                                |
| Cycle Q Clear(g_c), s        | 6.8                                                                               | 29.7                                                                              | 29.7                                                                              | 23.5                                                                              | 35.7                                                                              | 35.7                                                                              | 10.4                                                                                | 46.7                                                                                | 8.4                                                                                 | 17.4                                                                                | 25.0                                                                                | 13.1                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.17                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 139                                                                               | 704                                                                               | 522                                                                               | 569                                                                               | 506                                                                               | 517                                                                               | 210                                                                                 | 1106                                                                                | 493                                                                                 | 234                                                                                 | 1154                                                                                | 776                                                                                 |
| V/C Ratio(X)                 | 0.60                                                                              | 1.07                                                                              | 0.70                                                                              | 0.96                                                                              | 0.89                                                                              | 0.89                                                                              | 0.62                                                                                | 1.04                                                                                | 0.32                                                                                | 0.89                                                                                | 0.54                                                                                | 0.50                                                                                |
| Avail Cap(c_a), veh/h        | 139                                                                               | 704                                                                               | 522                                                                               | 569                                                                               | 506                                                                               | 517                                                                               | 210                                                                                 | 1106                                                                                | 493                                                                                 | 270                                                                                 | 1154                                                                                | 776                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                              | 1.33                                                                              | 1.33                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.83                                                                              | 0.83                                                                              | 0.83                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.76                                                                                | 0.76                                                                                | 0.76                                                                                |
| Uniform Delay (d), s/veh     | 66.9                                                                              | 60.1                                                                              | 43.8                                                                              | 58.1                                                                              | 44.4                                                                              | 44.4                                                                              | 62.9                                                                                | 51.7                                                                                | 21.9                                                                                | 70.7                                                                                | 58.4                                                                                | 12.3                                                                                |
| Incr Delay (d2), s/veh       | 8.1                                                                               | 55.2                                                                              | 7.6                                                                               | 25.2                                                                              | 17.7                                                                              | 17.4                                                                              | 5.9                                                                                 | 36.8                                                                                | 1.7                                                                                 | 22.2                                                                                | 1.4                                                                                 | 1.8                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.3                                                                               | 18.5                                                                              | 12.7                                                                              | 11.6                                                                              | 16.9                                                                              | 17.2                                                                              | 5.0                                                                                 | 25.8                                                                                | 3.3                                                                                 | 9.8                                                                                 | 12.2                                                                                | 5.5                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 75.0                                                                              | 115.4                                                                             | 51.4                                                                              | 83.3                                                                              | 62.1                                                                              | 61.9                                                                              | 68.8                                                                                | 88.4                                                                                | 23.6                                                                                | 92.8                                                                                | 57.8                                                                                | 14.0                                                                                |
| LnGrp LOS                    | E                                                                                 | F                                                                                 | D                                                                                 | F                                                                                 | E                                                                                 | E                                                                                 | E                                                                                   | F                                                                                   | C                                                                                   | F                                                                                   | E                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 1203                                                                              |                                                                                   |                                                                                   | 1458                                                                              |                                                                                   |                                                                                   | 1432                                                                                |                                                                                     |                                                                                     | 1224                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 93.2                                                                              |                                                                                   |                                                                                   | 70.0                                                                              |                                                                                   |                                                                                   | 79.6                                                                                |                                                                                     |                                                                                     | 49.8                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 32.0                                                                              | 37.0                                                                              | 25.0                                                                              | 56.0                                                                              | 19.0                                                                              | 50.0                                                                              | 27.0                                                                                | 54.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                                 | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 24.7                                                                              | 29.7                                                                              | 17.7                                                                              | 48.7                                                                              | 11.7                                                                              | 42.7                                                                              | 22.7                                                                                | 43.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 25.5                                                                              | 0.0                                                                               | 12.4                                                                              | 27.0                                                                              | 8.8                                                                               | 0.0                                                                               | 19.4                                                                                | 48.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 8.7                                                                               | 0.1                                                                               | 0.0                                                                               | 0.3                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection Summary

HCM 6th Ctrl Delay 73.2  
HCM 6th LOS E

Notes

User approved pedestrian interval to be less than phase max green.



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
2217: S Watterson Trail & US-31E

06/17/2022

|                                                                                                               |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                                                                      | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                               | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations                                                                                           |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)                                                                                        | 115                                                                               | 50                                                                                | 50                                                                                | 15                                                                                | 55                                                                                | 250                                                                               | 225                                                                               | 1025                                                                                | 130                                                                                 | 35                                                                                  | 775                                                                                 | 25                                                                                  |
| Future Volume (veh/h)                                                                                         | 115                                                                               | 50                                                                                | 50                                                                                | 15                                                                                | 55                                                                                | 250                                                                               | 225                                                                               | 1025                                                                                | 130                                                                                 | 35                                                                                  | 775                                                                                 | 25                                                                                  |
| Initial Q (Qb), veh                                                                                           | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                                                           | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                                                                         | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln                                                                                        | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h                                                                                          | 125                                                                               | 54                                                                                | 0                                                                                 | 16                                                                                | 60                                                                                | 0                                                                                 | 245                                                                               | 1114                                                                                | 141                                                                                 | 38                                                                                  | 842                                                                                 | 27                                                                                  |
| Peak Hour Factor                                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %                                                                                          | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                                                                    | 145                                                                               | 62                                                                                |                                                                                   | 28                                                                                | 106                                                                               |                                                                                   | 454                                                                               | 1393                                                                                | 621                                                                                 | 536                                                                                 | 1996                                                                                | 890                                                                                 |
| Arrive On Green                                                                                               | 0.11                                                                              | 0.11                                                                              | 0.00                                                                              | 0.07                                                                              | 0.07                                                                              | 0.00                                                                              | 0.08                                                                              | 0.39                                                                                | 0.39                                                                                | 0.25                                                                                | 0.56                                                                                | 0.56                                                                                |
| Sat Flow, veh/h                                                                                               | 1262                                                                              | 545                                                                               | 1585                                                                              | 390                                                                               | 1461                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h                                                                                          | 179                                                                               | 0                                                                                 | 0                                                                                 | 76                                                                                | 0                                                                                 | 0                                                                                 | 245                                                                               | 1114                                                                                | 141                                                                                 | 38                                                                                  | 842                                                                                 | 27                                                                                  |
| Grp Sat Flow(s), veh/h/ln                                                                                     | 1807                                                                              | 0                                                                                 | 1585                                                                              | 1851                                                                              | 0                                                                                 | 1585                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s                                                                                               | 15.6                                                                              | 0.0                                                                               | 0.0                                                                               | 6.4                                                                               | 0.0                                                                               | 0.0                                                                               | 9.2                                                                               | 44.4                                                                                | 9.5                                                                                 | 0.0                                                                                 | 21.8                                                                                | 1.2                                                                                 |
| Cycle Q Clear(g_c), s                                                                                         | 15.6                                                                              | 0.0                                                                               | 0.0                                                                               | 6.4                                                                               | 0.0                                                                               | 0.0                                                                               | 9.2                                                                               | 44.4                                                                                | 9.5                                                                                 | 0.0                                                                                 | 21.8                                                                                | 1.2                                                                                 |
| Prop In Lane                                                                                                  | 0.70                                                                              |                                                                                   | 1.00                                                                              | 0.21                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                                                                        | 207                                                                               | 0                                                                                 |                                                                                   | 134                                                                               | 0                                                                                 |                                                                                   | 454                                                                               | 1393                                                                                | 621                                                                                 | 536                                                                                 | 1996                                                                                | 890                                                                                 |
| V/C Ratio(X)                                                                                                  | 0.86                                                                              | 0.00                                                                              |                                                                                   | 0.57                                                                              | 0.00                                                                              |                                                                                   | 0.54                                                                              | 0.80                                                                                | 0.23                                                                                | 0.07                                                                                | 0.42                                                                                | 0.03                                                                                |
| Avail Cap(c_a), veh/h                                                                                         | 343                                                                               | 0                                                                                 |                                                                                   | 305                                                                               | 0                                                                                 |                                                                                   | 602                                                                               | 1393                                                                                | 621                                                                                 | 536                                                                                 | 1996                                                                                | 890                                                                                 |
| HCM Platoon Ratio                                                                                             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)                                                                                            | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh                                                                                      | 69.6                                                                              | 0.0                                                                               | 0.0                                                                               | 71.8                                                                              | 0.0                                                                               | 0.0                                                                               | 14.5                                                                              | 43.1                                                                                | 32.5                                                                                | 35.7                                                                                | 20.1                                                                                | 15.6                                                                                |
| Incr Delay (d2), s/veh                                                                                        | 17.2                                                                              | 0.0                                                                               | 0.0                                                                               | 6.3                                                                               | 0.0                                                                               | 0.0                                                                               | 1.7                                                                               | 4.9                                                                                 | 0.8                                                                                 | 0.1                                                                                 | 0.7                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh                                                                                     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                                                                      | 8.2                                                                               | 0.0                                                                               | 0.0                                                                               | 3.3                                                                               | 0.0                                                                               | 0.0                                                                               | 3.8                                                                               | 20.0                                                                                | 3.8                                                                                 | 1.0                                                                                 | 9.0                                                                                 | 0.5                                                                                 |
| Unsig. Movement Delay, s/veh                                                                                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh                                                                                          | 86.8                                                                              | 0.0                                                                               | 0.0                                                                               | 78.1                                                                              | 0.0                                                                               | 0.0                                                                               | 16.2                                                                              | 48.0                                                                                | 33.3                                                                                | 35.8                                                                                | 20.8                                                                                | 15.7                                                                                |
| LnGrp LOS                                                                                                     | F                                                                                 | A                                                                                 |                                                                                   | E                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | D                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h                                                                                           | 179                                                                               |                                                                                   |                                                                                   | 76                                                                                |                                                                                   |                                                                                   | 1500                                                                              |                                                                                     |                                                                                     | 907                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh                                                                                         | 86.8                                                                              |                                                                                   |                                                                                   | 78.1                                                                              |                                                                                   |                                                                                   | 41.4                                                                              |                                                                                     |                                                                                     | 21.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                                                                                                  | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs                                                                                          | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                                                                      | 19.7                                                                              | 97.2                                                                              |                                                                                   | 24.9                                                                              | 46.9                                                                              | 70.0                                                                              |                                                                                   | 18.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                                                                       | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                               | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                                                                   | 25.7                                                                              | 49.7                                                                              |                                                                                   | 30.4                                                                              | 12.7                                                                              | 62.7                                                                              |                                                                                   | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                                                                  | 11.2                                                                              | 0.0                                                                               |                                                                                   | 17.6                                                                              | 2.0                                                                               | 0.0                                                                               |                                                                                   | 8.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                                                                       | 1.2                                                                               | 0.0                                                                               |                                                                                   | 0.8                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                   | 0.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary                                                                                          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay                                                                                            |                                                                                   |                                                                                   | 38.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                                                                                                         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green.                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Pattern 50 (Weekday PM Peak) KY-1747 (Hurstbourne Pkwy) 4:51 pm 03/15/2021 Weekday PM Peak  
M. Brandon Shelley, PE

Synchro 11 Report  
Page 2



HCM 6th Signalized Intersection Summary  
3003: KY-1747 & S Stony Brook Dr

06/17/2022

| Movement                     | WBL  | WBR   | NBT  | NBR  | SBL  | SBT   |
|------------------------------|------|-------|------|------|------|-------|
| Lane Configurations          | ↰    | ↱     | ↕    | ↱    | ↰    | ↕     |
| Traffic Volume (veh/h)       | 150  | 50    | 1100 | 150  | 125  | 1300  |
| Future Volume (veh/h)        | 150  | 50    | 1100 | 150  | 125  | 1300  |
| Initial Q (Qb), veh          | 0    | 0     | 0    | 0    | 0    | 0     |
| Ped-Bike Adj(A_pbT)          | 1.00 | 1.00  |      | 1.00 | 1.00 |       |
| Parking Bus, Adj             | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  |
| Work Zone On Approach        | No   |       | No   |      | No   |       |
| Adj Sat Flow, veh/h/ln       | 1870 | 1870  | 1870 | 1870 | 1870 | 1870  |
| Adj Flow Rate, veh/h         | 163  | 54    | 1196 | 163  | 136  | 1413  |
| Peak Hour Factor             | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92  |
| Percent Heavy Veh, %         | 2    | 2     | 2    | 2    | 2    | 2     |
| Cap, veh/h                   | 198  | 176   | 2334 | 1217 | 162  | 2829  |
| Arrive On Green              | 0.11 | 0.11  | 0.66 | 0.66 | 0.09 | 0.80  |
| Sat Flow, veh/h              | 1781 | 1585  | 3647 | 1585 | 1781 | 3647  |
| Grp Volume(v), veh/h         | 163  | 54    | 1196 | 163  | 136  | 1413  |
| Grp Sat Flow(s), veh/h/ln    | 1781 | 1585  | 1777 | 1585 | 1781 | 1777  |
| Q Serve(g_s), s              | 13.4 | 4.7   | 26.1 | 4.0  | 11.3 | 20.2  |
| Cycle Q Clear(g_c), s        | 13.4 | 4.7   | 26.1 | 4.0  | 11.3 | 20.2  |
| Prop In Lane                 | 1.00 | 1.00  |      | 1.00 | 1.00 |       |
| Lane Grp Cap(c), veh/h       | 198  | 176   | 2334 | 1217 | 162  | 2829  |
| V/C Ratio(X)                 | 0.82 | 0.31  | 0.51 | 0.13 | 0.84 | 0.50  |
| Avail Cap(c_a), veh/h        | 361  | 321   | 2334 | 1217 | 281  | 2829  |
| HCM Platoon Ratio            | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  |
| Upstream Filter(I)           | 1.00 | 1.00  | 0.35 | 0.35 | 1.00 | 1.00  |
| Uniform Delay (d), s/veh     | 65.2 | 61.3  | 13.3 | 4.5  | 67.1 | 5.2   |
| Incr Delay (d2), s/veh       | 16.2 | 2.1   | 0.3  | 0.1  | 15.1 | 0.6   |
| Initial Q Delay(d3), s/veh   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   |
| %ile BackOfQ(50%),veh/ln     | 7.0  | 4.3   | 9.8  | 2.0  | 5.7  | 6.0   |
| Unsig. Movement Delay, s/veh |      |       |      |      |      |       |
| LnGrp Delay(d),s/veh         | 81.4 | 63.4  | 13.6 | 4.6  | 82.2 | 5.8   |
| LnGrp LOS                    | F    | E     | B    | A    | F    | A     |
| Approach Vol, veh/h          | 217  |       | 1359 |      |      | 1549  |
| Approach Delay, s/veh        | 76.9 |       | 12.5 |      |      | 12.5  |
| Approach LOS                 | E    |       | B    |      |      | B     |
| Timer - Assigned Phs         | 1    | 2     |      | 4    |      | 6     |
| Phs Duration (G+Y+Rc), s     | 20.9 | 105.8 |      | 23.3 |      | 126.7 |
| Change Period (Y+Rc), s      | 7.3  | 7.3   |      | 6.6  |      | 7.3   |
| Max Green Setting (Gmax), s  | 23.7 | 74.7  |      | 30.4 |      | 105.7 |
| Max Q Clear Time (g_c+I1), s | 13.3 | 0.0   |      | 15.4 |      | 0.0   |
| Green Ext Time (p_c), s      | 0.4  | 0.0   |      | 1.3  |      | 0.0   |
| <b>Intersection Summary</b>  |      |       |      |      |      |       |
| HCM 6th Ctrl Delay           |      |       | 17.0 |      |      |       |
| HCM 6th LOS                  |      |       | B    |      |      |       |

Pattern 50 (Weekday PM Peak) KY-1747 (Hurstbourne Pkwy) 4:51 pm 03/15/2021 Weekday PM Peak  
M. Brandon Shelley, PE

Synchro 11 Report  
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Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
3004: KY-1747 & Watterson Trail

06/17/2022

|                                                                                                    | EBL   | EBT  | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|----------------------------------------------------------------------------------------------------|-------|------|-------|------|------|-------|-------|------|------|------|------|------|
| Movement                                                                                           | EBL   | EBT  | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
| Lane Configurations                                                                                | ↰     | ↑    | ↱     | ↰    | ↑    | ↱     | ↰     | ↑↑   | ↱    | ↰    | ↑↑   | ↱    |
| Traffic Volume (veh/h)                                                                             | 125   | 400  | 100   | 150  | 350  | 150   | 100   | 900  | 85   | 225  | 1300 | 150  |
| Future Volume (veh/h)                                                                              | 125   | 400  | 100   | 150  | 350  | 150   | 100   | 900  | 85   | 225  | 1300 | 150  |
| Initial Q (Qb), veh                                                                                | 0     | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)                                                                                | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj                                                                                   | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach                                                                              | No    |      |       | No   |      |       | No    |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln                                                                             | 1870  | 1870 | 1870  | 1870 | 1870 | 1870  | 1870  | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h                                                                               | 136   | 435  | 109   | 163  | 380  | 163   | 109   | 978  | 92   | 245  | 1413 | 163  |
| Peak Hour Factor                                                                                   | 0.92  | 0.92 | 0.92  | 0.92 | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %                                                                               | 2     | 2    | 2     | 2    | 2    | 2     | 2     | 2    | 2    | 2    | 2    | 2    |
| Cap, veh/h                                                                                         | 219   | 458  | 388   | 196  | 481  | 407   | 129   | 1189 | 530  | 363  | 1641 | 732  |
| Arrive On Green                                                                                    | 0.07  | 0.24 | 0.24  | 0.08 | 0.26 | 0.26  | 0.07  | 0.33 | 0.33 | 0.41 | 0.92 | 0.92 |
| Sat Flow, veh/h                                                                                    | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 3554 | 1585 | 1781 | 3554 | 1585 |
| Grp Volume(v), veh/h                                                                               | 136   | 435  | 109   | 163  | 380  | 163   | 109   | 978  | 92   | 245  | 1413 | 163  |
| Grp Sat Flow(s), veh/h/ln                                                                          | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 1777 | 1585 | 1781 | 1777 | 1585 |
| Q Serve(g_s), s                                                                                    | 10.0  | 41.2 | 10.0  | 12.2 | 34.1 | 9.7   | 10.9  | 45.5 | 5.7  | 20.2 | 26.8 | 1.8  |
| Cycle Q Clear(g_c), s                                                                              | 10.0  | 41.2 | 10.0  | 12.2 | 34.1 | 9.7   | 10.9  | 45.5 | 5.7  | 20.2 | 26.8 | 1.8  |
| Prop In Lane                                                                                       | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h                                                                             | 219   | 458  | 388   | 196  | 481  | 407   | 129   | 1189 | 530  | 363  | 1641 | 732  |
| V/C Ratio(X)                                                                                       | 0.62  | 0.95 | 0.28  | 0.83 | 0.79 | 0.40  | 0.85  | 0.82 | 0.17 | 0.67 | 0.86 | 0.22 |
| Avail Cap(c_a), veh/h                                                                              | 293   | 478  | 405   | 249  | 481  | 407   | 192   | 1189 | 530  | 363  | 1641 | 732  |
| HCM Platoon Ratio                                                                                  | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 |
| Upstream Filter(I)                                                                                 | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 0.67 | 0.67 | 0.67 |
| Uniform Delay (d), s/veh                                                                           | 48.2  | 66.9 | 55.1  | 50.4 | 62.4 | 22.1  | 82.5  | 55.0 | 25.6 | 48.4 | 4.7  | 3.8  |
| Incr Delay (d2), s/veh                                                                             | 2.8   | 28.8 | 0.6   | 16.8 | 9.2  | 0.9   | 23.1  | 6.5  | 0.7  | 3.7  | 4.3  | 0.5  |
| Initial Q Delay(d3),s/veh                                                                          | 0.0   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln                                                                           | 4.7   | 23.3 | 4.1   | 6.4  | 17.5 | 3.8   | 5.8   | 21.1 | 3.0  | 8.0  | 3.5  | 0.7  |
| Unsig. Movement Delay, s/veh                                                                       |       |      |       |      |      |       |       |      |      |      |      |      |
| LnGrp Delay(d),s/veh                                                                               | 51.1  | 95.7 | 55.7  | 67.2 | 71.5 | 23.0  | 105.6 | 61.5 | 26.4 | 52.1 | 9.0  | 4.3  |
| LnGrp LOS                                                                                          | D     | F    | E     | E    | E    | C     | F     | E    | C    | D    | A    | A    |
| Approach Vol, veh/h                                                                                |       | 680  |       |      | 708  |       |       | 1179 |      |      | 1821 |      |
| Approach Delay, s/veh                                                                              |       | 80.4 |       |      | 59.3 |       |       | 62.8 |      |      | 14.4 |      |
| Approach LOS                                                                                       |       | F    |       |      | E    |       |       | E    |      |      | B    |      |
| Timer - Assigned Phs                                                                               | 1     | 2    | 3     | 4    | 5    | 6     | 7     | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s                                                                           | 43.2  | 66.0 | 20.7  | 50.0 | 19.6 | 89.6  | 18.5  | 52.3 |      |      |      |      |
| Change Period (Y+Rc), s                                                                            | * 6.5 | 5.8  | * 6.3 | 6.0  | 6.6  | * 6.5 | * 6.3 | 6.0  |      |      |      |      |
| Max Green Setting (Gmax), s                                                                        | * 30  | 80.2 | * 20  | 46.0 | 19.4 | * 70  | * 20  | 48.0 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s                                                                       | 22.2  | 0.0  | 14.2  | 43.2 | 12.9 | 0.0   | 12.0  | 36.1 |      |      |      |      |
| Green Ext Time (p_c), s                                                                            | 0.7   | 0.0  | 0.2   | 0.8  | 0.2  | 0.0   | 0.2   | 2.1  |      |      |      |      |
| Intersection Summary                                                                               |       |      |       |      |      |       |       |      |      |      |      |      |
| HCM 6th Ctrl Delay                                                                                 |       |      | 44.9  |      |      |       |       |      |      |      |      |      |
| HCM 6th LOS                                                                                        |       |      | D     |      |      |       |       |      |      |      |      |      |
| Notes                                                                                              |       |      |       |      |      |       |       |      |      |      |      |      |
| * HCM 6th computational engine requires equal clearance times for the phases crossing the barrier. |       |      |       |      |      |       |       |      |      |      |      |      |

Pattern 50 (Weekday PM Peak) KY-1747 (Hurstbourne Pkwy) 4:51 pm 03/15/2021 Weekday PM Peak  
M. Brandon Shelley, PE

Synchro 11 Report  
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Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
2216: KY-1747 & US-31E

06/19/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                                 | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 84                                                                                | 766                                                                               | 355                                                                               | 525                                                                               | 830                                                                               | 76                                                                                | 129                                                                                 | 1124                                                                                | 153                                                                                 | 203                                                                                 | 633                                                                                 | 388                                                                                 |
| Future Volume (veh/h)        | 84                                                                                | 766                                                                               | 355                                                                               | 525                                                                               | 830                                                                               | 76                                                                                | 129                                                                                 | 1124                                                                                | 153                                                                                 | 203                                                                                 | 633                                                                                 | 388                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 88                                                                                | 798                                                                               | 370                                                                               | 547                                                                               | 865                                                                               | 79                                                                                | 134                                                                                 | 1171                                                                                | 159                                                                                 | 211                                                                                 | 659                                                                                 | 404                                                                                 |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 139                                                                               | 704                                                                               | 525                                                                               | 569                                                                               | 937                                                                               | 86                                                                                | 210                                                                                 | 1101                                                                                | 491                                                                                 | 237                                                                                 | 1154                                                                                | 776                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.20                                                                              | 0.20                                                                              | 0.22                                                                              | 0.38                                                                              | 0.38                                                                              | 0.12                                                                                | 0.31                                                                                | 0.31                                                                                | 0.04                                                                                | 0.11                                                                                | 0.11                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 3292                                                                              | 301                                                                               | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 88                                                                                | 798                                                                               | 370                                                                               | 547                                                                               | 467                                                                               | 477                                                                               | 134                                                                                 | 1171                                                                                | 159                                                                                 | 211                                                                                 | 659                                                                                 | 404                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1816                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 7.2                                                                               | 29.7                                                                              | 29.7                                                                              | 23.5                                                                              | 37.6                                                                              | 37.6                                                                              | 10.8                                                                                | 46.5                                                                                | 8.6                                                                                 | 17.7                                                                                | 26.5                                                                                | 13.6                                                                                |
| Cycle Q Clear(g_c), s        | 7.2                                                                               | 29.7                                                                              | 29.7                                                                              | 23.5                                                                              | 37.6                                                                              | 37.6                                                                              | 10.8                                                                                | 46.5                                                                                | 8.6                                                                                 | 17.7                                                                                | 26.5                                                                                | 13.6                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.17                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 139                                                                               | 704                                                                               | 525                                                                               | 569                                                                               | 506                                                                               | 517                                                                               | 210                                                                                 | 1101                                                                                | 491                                                                                 | 237                                                                                 | 1154                                                                                | 776                                                                                 |
| V/C Ratio(X)                 | 0.63                                                                              | 1.13                                                                              | 0.71                                                                              | 0.96                                                                              | 0.92                                                                              | 0.92                                                                              | 0.64                                                                                | 1.06                                                                                | 0.32                                                                                | 0.89                                                                                | 0.57                                                                                | 0.52                                                                                |
| Avail Cap(c_a), veh/h        | 139                                                                               | 704                                                                               | 525                                                                               | 569                                                                               | 506                                                                               | 517                                                                               | 210                                                                                 | 1101                                                                                | 491                                                                                 | 270                                                                                 | 1154                                                                                | 776                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                              | 1.33                                                                              | 1.33                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(l)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.81                                                                              | 0.81                                                                              | 0.81                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.76                                                                                | 0.76                                                                                | 0.76                                                                                |
| Uniform Delay (d), s/veh     | 67.1                                                                              | 60.1                                                                              | 43.8                                                                              | 58.1                                                                              | 45.0                                                                              | 45.0                                                                              | 63.1                                                                                | 51.8                                                                                | 22.1                                                                                | 70.6                                                                                | 57.0                                                                                | 12.4                                                                                |
| Incr Delay (d2), s/veh       | 10.4                                                                              | 77.3                                                                              | 7.8                                                                               | 24.8                                                                              | 21.4                                                                              | 21.0                                                                              | 6.7                                                                                 | 45.8                                                                                | 1.7                                                                                 | 22.6                                                                                | 1.6                                                                                 | 1.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.6                                                                               | 20.6                                                                              | 12.9                                                                              | 11.6                                                                              | 18.2                                                                              | 18.5                                                                              | 5.2                                                                                 | 27.1                                                                                | 3.4                                                                                 | 10.0                                                                                | 12.9                                                                                | 5.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 77.4                                                                              | 137.4                                                                             | 51.6                                                                              | 82.9                                                                              | 66.4                                                                              | 66.1                                                                              | 69.8                                                                                | 97.6                                                                                | 23.8                                                                                | 93.2                                                                                | 58.6                                                                                | 14.3                                                                                |
| LnGrp LOS                    | E                                                                                 | F                                                                                 | D                                                                                 | F                                                                                 | E                                                                                 | E                                                                                 | E                                                                                   | F                                                                                   | C                                                                                   | F                                                                                   | E                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 1256                                                                              |                                                                                   |                                                                                   | 1491                                                                              |                                                                                   |                                                                                   | 1464                                                                                |                                                                                     |                                                                                     | 1274                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 107.9                                                                             |                                                                                   |                                                                                   | 72.4                                                                              |                                                                                   |                                                                                   | 87.0                                                                                |                                                                                     |                                                                                     | 50.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 32.0                                                                              | 37.0                                                                              | 25.0                                                                              | 56.0                                                                              | 19.0                                                                              | 50.0                                                                              | 27.2                                                                                | 53.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                                 | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 24.7                                                                              | 29.7                                                                              | 17.7                                                                              | 48.7                                                                              | 11.7                                                                              | 42.7                                                                              | 22.7                                                                                | 43.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 25.5                                                                              | 0.0                                                                               | 12.8                                                                              | 28.5                                                                              | 9.2                                                                               | 0.0                                                                               | 19.7                                                                                | 48.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 8.9                                                                               | 0.1                                                                               | 0.0                                                                               | 0.3                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 79.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Pattern 50 (Weekday PM Peak) 1 2025 No Build 5:19 pm 06/17/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
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# HCM 6th Signalized Intersection Summary

2217: S Watterson Trail & US-31E

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                               | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   | ↔                                                                                 | ↔                                                                                 |                                                                                   | ↔                                                                                 | ↔                                                                                 | ↔                                                                                 | ↔                                                                                   | ↔                                                                                   | ↔                                                                                   | ↔                                                                                   | ↔                                                                                   |
| Traffic Volume (veh/h)       | 117                                                                               | 63                                                                                | 51                                                                                | 23                                                                                | 64                                                                                | 289                                                                               | 299                                                                               | 1040                                                                                | 132                                                                                 | 35                                                                                  | 799                                                                                 | 25                                                                                  |
| Future Volume (veh/h)        | 117                                                                               | 63                                                                                | 51                                                                                | 23                                                                                | 64                                                                                | 289                                                                               | 299                                                                               | 1040                                                                                | 132                                                                                 | 35                                                                                  | 799                                                                                 | 25                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 127                                                                               | 68                                                                                | 0                                                                                 | 25                                                                                | 70                                                                                | 0                                                                                 | 325                                                                               | 1130                                                                                | 143                                                                                 | 38                                                                                  | 868                                                                                 | 27                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 145                                                                               | 78                                                                                |                                                                                   | 36                                                                                | 101                                                                               |                                                                                   | 462                                                                               | 1393                                                                                | 621                                                                                 | 515                                                                                 | 1866                                                                                | 832                                                                                 |
| Arrive On Green              | 0.12                                                                              | 0.12                                                                              | 0.00                                                                              | 0.07                                                                              | 0.07                                                                              | 0.00                                                                              | 0.10                                                                              | 0.39                                                                                | 0.39                                                                                | 0.24                                                                                | 0.52                                                                                | 0.52                                                                                |
| Sat Flow, veh/h              | 1180                                                                              | 632                                                                               | 1585                                                                              | 486                                                                               | 1360                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 195                                                                               | 0                                                                                 | 0                                                                                 | 95                                                                                | 0                                                                                 | 0                                                                                 | 325                                                                               | 1130                                                                                | 143                                                                                 | 38                                                                                  | 868                                                                                 | 27                                                                                  |
| Grp Sat Flow(s), veh/h/ln    | 1811                                                                              | 0                                                                                 | 1585                                                                              | 1846                                                                              | 0                                                                                 | 1585                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 16.9                                                                              | 0.0                                                                               | 0.0                                                                               | 8.0                                                                               | 0.0                                                                               | 0.0                                                                               | 13.2                                                                              | 45.4                                                                                | 9.6                                                                                 | 0.0                                                                                 | 24.6                                                                                | 1.3                                                                                 |
| Cycle Q Clear(g_c), s        | 16.9                                                                              | 0.0                                                                               | 0.0                                                                               | 8.0                                                                               | 0.0                                                                               | 0.0                                                                               | 13.2                                                                              | 45.4                                                                                | 9.6                                                                                 | 0.0                                                                                 | 24.6                                                                                | 1.3                                                                                 |
| Prop In Lane                 | 0.65                                                                              |                                                                                   | 1.00                                                                              | 0.26                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 223                                                                               | 0                                                                                 |                                                                                   | 136                                                                               | 0                                                                                 |                                                                                   | 462                                                                               | 1393                                                                                | 621                                                                                 | 515                                                                                 | 1866                                                                                | 832                                                                                 |
| V/C Ratio(X)                 | 0.87                                                                              | 0.00                                                                              |                                                                                   | 0.70                                                                              | 0.00                                                                              |                                                                                   | 0.70                                                                              | 0.81                                                                                | 0.23                                                                                | 0.07                                                                                | 0.47                                                                                | 0.03                                                                                |
| Avail Cap(c_a), veh/h        | 344                                                                               | 0                                                                                 |                                                                                   | 305                                                                               | 0                                                                                 |                                                                                   | 562                                                                               | 1393                                                                                | 621                                                                                 | 515                                                                                 | 1866                                                                                | 832                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 68.9                                                                              | 0.0                                                                               | 0.0                                                                               | 72.3                                                                              | 0.0                                                                               | 0.0                                                                               | 17.4                                                                              | 43.4                                                                                | 32.5                                                                                | 37.5                                                                                | 23.9                                                                                | 18.4                                                                                |
| Incr Delay (d2), s/veh       | 19.0                                                                              | 0.0                                                                               | 0.0                                                                               | 10.4                                                                              | 0.0                                                                               | 0.0                                                                               | 4.2                                                                               | 5.2                                                                                 | 0.9                                                                                 | 0.1                                                                                 | 0.8                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%), veh/ln    | 9.0                                                                               | 0.0                                                                               | 0.0                                                                               | 4.2                                                                               | 0.0                                                                               | 0.0                                                                               | 5.7                                                                               | 20.4                                                                                | 3.8                                                                                 | 1.1                                                                                 | 10.3                                                                                | 0.5                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 87.9                                                                              | 0.0                                                                               | 0.0                                                                               | 82.8                                                                              | 0.0                                                                               | 0.0                                                                               | 21.6                                                                              | 48.6                                                                                | 33.4                                                                                | 37.6                                                                                | 24.7                                                                                | 18.4                                                                                |
| LnGrp LOS                    | F                                                                                 | A                                                                                 |                                                                                   | F                                                                                 | A                                                                                 |                                                                                   | C                                                                                 | D                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 195                                                                               |                                                                                   |                                                                                   | 95                                                                                |                                                                                   |                                                                                   | 1598                                                                              |                                                                                     |                                                                                     | 933                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 87.9                                                                              |                                                                                   |                                                                                   | 82.8                                                                              |                                                                                   |                                                                                   | 41.8                                                                              |                                                                                     |                                                                                     | 25.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 24.0                                                                              | 91.3                                                                              |                                                                                   | 26.3                                                                              | 45.3                                                                              | 70.0                                                                              |                                                                                   | 18.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                               | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.7                                                                              | 49.7                                                                              |                                                                                   | 30.4                                                                              | 12.7                                                                              | 62.7                                                                              |                                                                                   | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 15.2                                                                              | 0.0                                                                               |                                                                                   | 18.9                                                                              | 2.0                                                                               | 0.0                                                                               |                                                                                   | 10.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 1.4                                                                               | 0.0                                                                               |                                                                                   | 0.8                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                   | 0.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Intersection Summary

HCM 6th Ctrl Delay 40.8  
HCM 6th LOS D

## Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
3003: KY-1747 & S Stony Brook Dr

06/17/2022

|                              | ↙    | ↖     | ↑    | ↗    | ↘    | ↓     |
|------------------------------|------|-------|------|------|------|-------|
| Movement                     | WBL  | WBR   | NBT  | NBR  | SBL  | SBT   |
| Lane Configurations          | ↙    | ↖     | ↑↑   | ↗    | ↘    | ↑↑    |
| Traffic Volume (veh/h)       | 162  | 57    | 1161 | 156  | 133  | 1349  |
| Future Volume (veh/h)        | 162  | 57    | 1161 | 156  | 133  | 1349  |
| Initial Q (Qb), veh          | 0    | 0     | 0    | 0    | 0    | 0     |
| Ped-Bike Adj(A_pbT)          | 1.00 | 1.00  |      | 1.00 | 1.00 |       |
| Parking Bus, Adj             | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  |
| Work Zone On Approach        | No   |       | No   |      |      | No    |
| Adj Sat Flow, veh/h/ln       | 1870 | 1870  | 1870 | 1870 | 1870 | 1870  |
| Adj Flow Rate, veh/h         | 176  | 62    | 1262 | 170  | 145  | 1466  |
| Peak Hour Factor             | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92  |
| Percent Heavy Veh, %         | 2    | 2     | 2    | 2    | 2    | 2     |
| Cap, veh/h                   | 212  | 189   | 2288 | 1209 | 171  | 2802  |
| Arrive On Green              | 0.12 | 0.12  | 0.64 | 0.64 | 0.10 | 0.79  |
| Sat Flow, veh/h              | 1781 | 1585  | 3647 | 1585 | 1781 | 3647  |
| Grp Volume(v), veh/h         | 176  | 62    | 1262 | 170  | 145  | 1466  |
| Grp Sat Flow(s), veh/h/ln    | 1781 | 1585  | 1777 | 1585 | 1781 | 1777  |
| Q Serve(g_s), s              | 14.5 | 5.4   | 29.4 | 4.3  | 12.0 | 22.3  |
| Cycle Q Clear(g_c), s        | 14.5 | 5.4   | 29.4 | 4.3  | 12.0 | 22.3  |
| Prop In Lane                 | 1.00 | 1.00  |      | 1.00 | 1.00 |       |
| Lane Grp Cap(c), veh/h       | 212  | 189   | 2288 | 1209 | 171  | 2802  |
| V/C Ratio(X)                 | 0.83 | 0.33  | 0.55 | 0.14 | 0.85 | 0.52  |
| Avail Cap(c_a), veh/h        | 361  | 321   | 2288 | 1209 | 281  | 2802  |
| HCM Platoon Ratio            | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  |
| Upstream Filter(I)           | 1.00 | 1.00  | 0.25 | 0.25 | 1.00 | 1.00  |
| Uniform Delay (d), s/veh     | 64.6 | 60.6  | 14.8 | 4.7  | 66.7 | 5.7   |
| Incr Delay (d2), s/veh       | 15.9 | 2.1   | 0.2  | 0.1  | 15.9 | 0.7   |
| Initial Q Delay(d3), s/veh   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   |
| %ile BackOfQ(50%),veh/ln     | 7.5  | 5.0   | 11.1 | 2.2  | 6.1  | 6.8   |
| Unsig. Movement Delay, s/veh |      |       |      |      |      |       |
| LnGrp Delay(d),s/veh         | 80.5 | 62.7  | 15.0 | 4.8  | 82.6 | 6.4   |
| LnGrp LOS                    | F    | E     | B    | A    | F    | A     |
| Approach Vol, veh/h          | 238  |       | 1432 |      |      | 1611  |
| Approach Delay, s/veh        | 75.9 |       | 13.8 |      |      | 13.3  |
| Approach LOS                 | E    |       | B    |      |      | B     |
| Timer - Assigned Phs         | 1    | 2     |      | 4    |      | 6     |
| Phs Duration (G+Y+Rc), s     | 21.7 | 103.9 |      | 24.4 |      | 125.6 |
| Change Period (Y+Rc), s      | 7.3  | 7.3   |      | 6.6  |      | 7.3   |
| Max Green Setting (Gmax), s  | 23.7 | 74.7  |      | 30.4 |      | 105.7 |
| Max Q Clear Time (g_c+I1), s | 14.0 | 0.0   |      | 16.5 |      | 0.0   |
| Green Ext Time (p_c), s      | 0.4  | 0.0   |      | 1.4  |      | 0.0   |
| <b>Intersection Summary</b>  |      |       |      |      |      |       |
| HCM 6th Ctrl Delay           |      |       | 18.0 |      |      |       |
| HCM 6th LOS                  |      |       | B    |      |      |       |

Pattern 50 (Weekday PM Peak) 1 2025 No Build 5:19 pm 06/17/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
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Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

# HCM 6th Signalized Intersection Summary

3004: KY-1747 & Watterson Trail

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 127                                                                               | 406                                                                               | 102                                                                               | 153                                                                               | 371                                                                               | 183                                                                               | 100                                                                               | 900                                                                                 | 85                                                                                  | 244                                                                                 | 1351                                                                                | 158                                                                                 |
| Future Volume (veh/h)        | 127                                                                               | 406                                                                               | 102                                                                               | 153                                                                               | 371                                                                               | 183                                                                               | 100                                                                               | 900                                                                                 | 85                                                                                  | 244                                                                                 | 1351                                                                                | 158                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 138                                                                               | 441                                                                               | 111                                                                               | 166                                                                               | 403                                                                               | 199                                                                               | 109                                                                               | 978                                                                                 | 92                                                                                  | 265                                                                                 | 1468                                                                                | 172                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 208                                                                               | 462                                                                               | 392                                                                               | 197                                                                               | 486                                                                               | 412                                                                               | 129                                                                               | 1189                                                                                | 530                                                                                 | 357                                                                                 | 1628                                                                                | 726                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.25                                                                              | 0.25                                                                              | 0.08                                                                              | 0.26                                                                              | 0.26                                                                              | 0.07                                                                              | 0.33                                                                                | 0.33                                                                                | 0.40                                                                                | 0.92                                                                                | 0.92                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 138                                                                               | 441                                                                               | 111                                                                               | 166                                                                               | 403                                                                               | 199                                                                               | 109                                                                               | 978                                                                                 | 92                                                                                  | 265                                                                                 | 1468                                                                                | 172                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 10.2                                                                              | 41.8                                                                              | 10.2                                                                              | 12.4                                                                              | 36.6                                                                              | 12.2                                                                              | 10.9                                                                              | 45.5                                                                                | 5.7                                                                                 | 22.8                                                                                | 35.8                                                                                | 2.1                                                                                 |
| Cycle Q Clear(g_c), s        | 10.2                                                                              | 41.8                                                                              | 10.2                                                                              | 12.4                                                                              | 36.6                                                                              | 12.2                                                                              | 10.9                                                                              | 45.5                                                                                | 5.7                                                                                 | 22.8                                                                                | 35.8                                                                                | 2.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 208                                                                               | 462                                                                               | 392                                                                               | 197                                                                               | 486                                                                               | 412                                                                               | 129                                                                               | 1189                                                                                | 530                                                                                 | 357                                                                                 | 1628                                                                                | 726                                                                                 |
| V/C Ratio(X)                 | 0.66                                                                              | 0.95                                                                              | 0.28                                                                              | 0.84                                                                              | 0.83                                                                              | 0.48                                                                              | 0.85                                                                              | 0.82                                                                                | 0.17                                                                                | 0.74                                                                                | 0.90                                                                                | 0.24                                                                                |
| Avail Cap(c_a), veh/h        | 281                                                                               | 478                                                                               | 405                                                                               | 248                                                                               | 486                                                                               | 412                                                                               | 192                                                                               | 1189                                                                                | 530                                                                                 | 357                                                                                 | 1628                                                                                | 726                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.67                                                                                | 0.67                                                                                | 0.67                                                                                |
| Uniform Delay (d), s/veh     | 48.5                                                                              | 66.7                                                                              | 54.8                                                                              | 50.2                                                                              | 62.8                                                                              | 22.8                                                                              | 82.5                                                                              | 55.0                                                                                | 25.5                                                                                | 50.0                                                                                | 5.6                                                                                 | 4.2                                                                                 |
| Incr Delay (d2), s/veh       | 3.6                                                                               | 29.6                                                                              | 0.6                                                                               | 18.4                                                                              | 11.9                                                                              | 1.3                                                                               | 23.1                                                                              | 6.5                                                                                 | 0.7                                                                                 | 5.9                                                                                 | 6.0                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.8                                                                               | 23.7                                                                              | 4.2                                                                               | 6.6                                                                               | 19.0                                                                              | 4.8                                                                               | 5.8                                                                               | 21.1                                                                                | 3.0                                                                                 | 9.2                                                                                 | 4.2                                                                                 | 0.8                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 52.0                                                                              | 96.3                                                                              | 55.4                                                                              | 68.6                                                                              | 74.7                                                                              | 24.0                                                                              | 105.6                                                                             | 61.5                                                                                | 26.3                                                                                | 55.9                                                                                | 11.6                                                                                | 4.7                                                                                 |
| LnGrp LOS                    | D                                                                                 | F                                                                                 | E                                                                                 | E                                                                                 | E                                                                                 | C                                                                                 | F                                                                                 | E                                                                                   | C                                                                                   | E                                                                                   | B                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 690                                                                               |                                                                                   |                                                                                   | 768                                                                               |                                                                                   |                                                                                   | 1179                                                                              |                                                                                     |                                                                                     | 1905                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 80.9                                                                              |                                                                                   |                                                                                   | 60.3                                                                              |                                                                                   |                                                                                   | 62.8                                                                              |                                                                                     |                                                                                     | 17.1                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 42.6                                                                              | 66.0                                                                              | 20.9                                                                              | 50.5                                                                              | 19.6                                                                              | 89.0                                                                              | 18.6                                                                              | 52.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 6.5                                                                             | 5.8                                                                               | * 6.3                                                                             | 6.0                                                                               | 6.6                                                                               | * 6.5                                                                             | * 6.3                                                                             | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 30                                                                              | 60.2                                                                              | * 20                                                                              | 46.0                                                                              | 19.4                                                                              | * 70                                                                              | * 20                                                                              | 46.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 24.8                                                                              | 0.0                                                                               | 14.4                                                                              | 43.8                                                                              | 12.9                                                                              | 0.0                                                                               | 12.2                                                                              | 38.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.5                                                                               | 0.0                                                                               | 0.2                                                                               | 0.7                                                                               | 0.2                                                                               | 0.0                                                                               | 0.2                                                                               | 2.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Intersection Summary

HCM 6th Ctrl Delay 46.0  
HCM 6th LOS D

## Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

Pattern 50 (Weekday PM Peak) 25 B  
2216: KY-1747 & US-31E

08/08/2022

|                                                                    |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                                                           | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                               | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations                                                |  |  |  |  |  |  |  |   |  |  |  |  |
| Traffic Volume (veh/h)                                             | 84                                                                                | 819                                                                               | 355                                                                               | 554                                                                               | 861                                                                               | 76                                                                                | 129                                                                               | 1124                                                                                | 153                                                                                 | 203                                                                                 | 633                                                                                 | 406                                                                                 |
| Future Volume (veh/h)                                              | 84                                                                                | 819                                                                               | 355                                                                               | 554                                                                               | 861                                                                               | 76                                                                                | 129                                                                               | 1124                                                                                | 153                                                                                 | 203                                                                                 | 633                                                                                 | 406                                                                                 |
| Initial Q (Qb), veh                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)                                                | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach                                              |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |
| Adj Sat Flow, veh/h/ln                                             | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h                                               | 88                                                                                | 853                                                                               | 370                                                                               | 577                                                                               | 897                                                                               | 79                                                                                | 134                                                                               | 1171                                                                                | 159                                                                                 | 211                                                                                 | 659                                                                                 | 423                                                                                 |
| Peak Hour Factor                                                   | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %                                               | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                                                         | 139                                                                               | 704                                                                               | 525                                                                               | 569                                                                               | 940                                                                               | 83                                                                                | 210                                                                               | 1101                                                                                | 491                                                                                 | 237                                                                                 | 1154                                                                                | 776                                                                                 |
| Arrive On Green                                                    | 0.08                                                                              | 0.20                                                                              | 0.20                                                                              | 0.16                                                                              | 0.28                                                                              | 0.28                                                                              | 0.12                                                                              | 0.31                                                                                | 0.31                                                                                | 0.04                                                                                | 0.11                                                                                | 0.11                                                                                |
| Sat Flow, veh/h                                                    | 1781                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 3304                                                                              | 291                                                                               | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h                                               | 88                                                                                | 853                                                                               | 370                                                                               | 577                                                                               | 482                                                                               | 494                                                                               | 134                                                                               | 1171                                                                                | 159                                                                                 | 211                                                                                 | 659                                                                                 | 423                                                                                 |
| Grp Sat Flow(s), veh/h/ln                                          | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1818                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s                                                    | 7.2                                                                               | 29.7                                                                              | 29.7                                                                              | 24.7                                                                              | 40.0                                                                              | 40.0                                                                              | 10.8                                                                              | 46.5                                                                                | 8.6                                                                                 | 17.7                                                                                | 26.5                                                                                | 14.3                                                                                |
| Cycle Q Clear(g_c), s                                              | 7.2                                                                               | 29.7                                                                              | 29.7                                                                              | 24.7                                                                              | 40.0                                                                              | 40.0                                                                              | 10.8                                                                              | 46.5                                                                                | 8.6                                                                                 | 17.7                                                                                | 26.5                                                                                | 14.3                                                                                |
| Prop In Lane                                                       | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.16                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h                                             | 139                                                                               | 704                                                                               | 525                                                                               | 569                                                                               | 506                                                                               | 518                                                                               | 210                                                                               | 1101                                                                                | 491                                                                                 | 237                                                                                 | 1154                                                                                | 776                                                                                 |
| V/C Ratio(X)                                                       | 0.63                                                                              | 1.21                                                                              | 0.71                                                                              | 1.01                                                                              | 0.95                                                                              | 0.95                                                                              | 0.64                                                                              | 1.06                                                                                | 0.32                                                                                | 0.89                                                                                | 0.57                                                                                | 0.55                                                                                |
| Avail Cap(c_a), veh/h                                              | 139                                                                               | 704                                                                               | 525                                                                               | 569                                                                               | 506                                                                               | 518                                                                               | 210                                                                               | 1101                                                                                | 491                                                                                 | 270                                                                                 | 1154                                                                                | 776                                                                                 |
| HCM Platoon Ratio                                                  | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.33                                                                                | 0.33                                                                                | 0.33                                                                                |
| Upstream Filter(I)                                                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.79                                                                              | 0.79                                                                              | 0.79                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.76                                                                                | 0.76                                                                                | 0.76                                                                                |
| Uniform Delay (d), s/veh                                           | 67.1                                                                              | 60.1                                                                              | 43.8                                                                              | 62.7                                                                              | 52.7                                                                              | 52.7                                                                              | 63.1                                                                              | 51.8                                                                                | 22.1                                                                                | 70.6                                                                                | 57.0                                                                                | 12.6                                                                                |
| Incr Delay (d2), s/veh                                             | 10.4                                                                              | 108.4                                                                             | 7.8                                                                               | 37.1                                                                              | 25.9                                                                              | 25.5                                                                              | 6.7                                                                               | 45.8                                                                                | 1.7                                                                                 | 22.6                                                                                | 1.6                                                                                 | 2.1                                                                                 |
| Initial Q Delay(d3), s/veh                                         | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln                                           | 3.6                                                                               | 23.7                                                                              | 12.9                                                                              | 13.6                                                                              | 21.0                                                                              | 21.4                                                                              | 5.2                                                                               | 27.1                                                                                | 3.4                                                                                 | 10.0                                                                                | 12.9                                                                                | 6.2                                                                                 |
| Unsig. Movement Delay, s/veh                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh                                               | 77.4                                                                              | 168.6                                                                             | 51.6                                                                              | 99.7                                                                              | 78.5                                                                              | 78.2                                                                              | 69.8                                                                              | 97.6                                                                                | 23.8                                                                                | 93.2                                                                                | 58.6                                                                                | 14.7                                                                                |
| LnGrp LOS                                                          | E                                                                                 | F                                                                                 | D                                                                                 | F                                                                                 | E                                                                                 | E                                                                                 | E                                                                                 | F                                                                                   | C                                                                                   | F                                                                                   | E                                                                                   | B                                                                                   |
| Approach Vol, veh/h                                                |                                                                                   | 1311                                                                              |                                                                                   |                                                                                   | 1553                                                                              |                                                                                   |                                                                                   | 1464                                                                                |                                                                                     |                                                                                     | 1293                                                                                |                                                                                     |
| Approach Delay, s/veh                                              |                                                                                   | 129.4                                                                             |                                                                                   |                                                                                   | 86.3                                                                              |                                                                                   |                                                                                   | 87.0                                                                                |                                                                                     |                                                                                     | 49.9                                                                                |                                                                                     |
| Approach LOS                                                       |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer - Assigned Phs                                               | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s                                           | 32.0                                                                              | 37.0                                                                              | 25.0                                                                              | 56.0                                                                              | 19.0                                                                              | 50.0                                                                              | 27.2                                                                              | 53.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s                                            | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s                                        | 24.7                                                                              | 29.7                                                                              | 17.7                                                                              | 48.7                                                                              | 11.7                                                                              | 42.7                                                                              | 22.7                                                                              | 43.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s                                       | 26.7                                                                              | 0.0                                                                               | 12.8                                                                              | 28.5                                                                              | 9.2                                                                               | 0.0                                                                               | 19.7                                                                              | 48.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s                                            | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 9.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.3                                                                               | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay                                                 |                                                                                   |                                                                                   | 88.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                                                        |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                                                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| User approved pedestrian interval to be less than phase max green. |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Pattern 50 (Weekday PM Peak) 25 B 2025 Build 1:05 pm 08/08/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
Page 1



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
2217: S Watterson Trail & US-31E

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                               | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 117                                                                               | 63                                                                                | 51                                                                                | 23                                                                                | 64                                                                                | 289                                                                               | 299                                                                               | 1101                                                                                | 132                                                                                 | 35                                                                                  | 835                                                                                 | 25                                                                                  |
| Future Volume (veh/h)        | 117                                                                               | 63                                                                                | 51                                                                                | 23                                                                                | 64                                                                                | 289                                                                               | 299                                                                               | 1101                                                                                | 132                                                                                 | 35                                                                                  | 835                                                                                 | 25                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 127                                                                               | 68                                                                                | 0                                                                                 | 25                                                                                | 70                                                                                | 0                                                                                 | 325                                                                               | 1197                                                                                | 143                                                                                 | 38                                                                                  | 908                                                                                 | 27                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 145                                                                               | 78                                                                                |                                                                                   | 36                                                                                | 101                                                                               |                                                                                   | 447                                                                               | 1393                                                                                | 621                                                                                 | 501                                                                                 | 1866                                                                                | 832                                                                                 |
| Arrive On Green              | 0.12                                                                              | 0.12                                                                              | 0.00                                                                              | 0.07                                                                              | 0.07                                                                              | 0.00                                                                              | 0.10                                                                              | 0.39                                                                                | 0.39                                                                                | 0.24                                                                                | 0.52                                                                                | 0.52                                                                                |
| Sat Flow, veh/h              | 1180                                                                              | 632                                                                               | 1585                                                                              | 486                                                                               | 1360                                                                              | 1585                                                                              | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 195                                                                               | 0                                                                                 | 0                                                                                 | 95                                                                                | 0                                                                                 | 0                                                                                 | 325                                                                               | 1197                                                                                | 143                                                                                 | 38                                                                                  | 908                                                                                 | 27                                                                                  |
| Grp Sat Flow(s), veh/h/ln    | 1811                                                                              | 0                                                                                 | 1585                                                                              | 1846                                                                              | 0                                                                                 | 1585                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 16.9                                                                              | 0.0                                                                               | 0.0                                                                               | 8.0                                                                               | 0.0                                                                               | 0.0                                                                               | 13.2                                                                              | 49.4                                                                                | 9.6                                                                                 | 0.0                                                                                 | 26.1                                                                                | 1.3                                                                                 |
| Cycle Q Clear(g_c), s        | 16.9                                                                              | 0.0                                                                               | 0.0                                                                               | 8.0                                                                               | 0.0                                                                               | 0.0                                                                               | 13.2                                                                              | 49.4                                                                                | 9.6                                                                                 | 0.0                                                                                 | 26.1                                                                                | 1.3                                                                                 |
| Prop In Lane                 | 0.65                                                                              |                                                                                   | 1.00                                                                              | 0.26                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 223                                                                               | 0                                                                                 |                                                                                   | 136                                                                               | 0                                                                                 |                                                                                   | 447                                                                               | 1393                                                                                | 621                                                                                 | 501                                                                                 | 1866                                                                                | 832                                                                                 |
| V/C Ratio(X)                 | 0.87                                                                              | 0.00                                                                              |                                                                                   | 0.70                                                                              | 0.00                                                                              |                                                                                   | 0.73                                                                              | 0.86                                                                                | 0.23                                                                                | 0.08                                                                                | 0.49                                                                                | 0.03                                                                                |
| Avail Cap(c_a), veh/h        | 344                                                                               | 0                                                                                 |                                                                                   | 305                                                                               | 0                                                                                 |                                                                                   | 548                                                                               | 1393                                                                                | 621                                                                                 | 501                                                                                 | 1866                                                                                | 832                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 68.9                                                                              | 0.0                                                                               | 0.0                                                                               | 72.3                                                                              | 0.0                                                                               | 0.0                                                                               | 18.1                                                                              | 44.6                                                                                | 32.5                                                                                | 40.8                                                                                | 24.2                                                                                | 18.4                                                                                |
| Incr Delay (d2), s/veh       | 19.0                                                                              | 0.0                                                                               | 0.0                                                                               | 10.4                                                                              | 0.0                                                                               | 0.0                                                                               | 5.0                                                                               | 7.1                                                                                 | 0.9                                                                                 | 0.1                                                                                 | 0.9                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3), s/veh   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%), veh/ln    | 9.0                                                                               | 0.0                                                                               | 0.0                                                                               | 4.2                                                                               | 0.0                                                                               | 0.0                                                                               | 5.8                                                                               | 22.5                                                                                | 3.8                                                                                 | 1.1                                                                                 | 11.0                                                                                | 0.5                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d), s/veh        | 87.9                                                                              | 0.0                                                                               | 0.0                                                                               | 82.8                                                                              | 0.0                                                                               | 0.0                                                                               | 23.1                                                                              | 51.7                                                                                | 33.4                                                                                | 40.9                                                                                | 25.2                                                                                | 18.4                                                                                |
| LnGrp LOS                    | F                                                                                 | A                                                                                 |                                                                                   | F                                                                                 | A                                                                                 |                                                                                   | C                                                                                 | D                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 195                                                                               |                                                                                   |                                                                                   | 95                                                                                |                                                                                   |                                                                                   | 1865                                                                              |                                                                                     |                                                                                     | 973                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 87.9                                                                              |                                                                                   |                                                                                   | 82.8                                                                              |                                                                                   |                                                                                   | 44.6                                                                              |                                                                                     |                                                                                     | 25.6                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 24.0                                                                              | 91.3                                                                              |                                                                                   | 26.3                                                                              | 45.3                                                                              | 70.0                                                                              |                                                                                   | 18.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                               | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.7                                                                              | 49.7                                                                              |                                                                                   | 30.4                                                                              | 12.7                                                                              | 62.7                                                                              |                                                                                   | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 15.2                                                                              | 0.0                                                                               |                                                                                   | 18.9                                                                              | 2.0                                                                               | 0.0                                                                               |                                                                                   | 10.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 1.4                                                                               | 0.0                                                                               |                                                                                   | 0.8                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                   | 0.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection Summary

HCM 6th Ctrl Delay 42.4  
HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

Pattern 50 (Weekday PM Peak) 25 B  
3003: KY-1747 & S Stony Brook Dr

08/08/2022

|                              | WBL  | WBR   | NBT  | NBR  | SBL  | SBT   |
|------------------------------|------|-------|------|------|------|-------|
| Movement                     | ↙    | ↘     | ↑    | ↗    | ↖    | ↘     |
| Lane Configurations          | ↙    | ↘     | ↑↑   | ↗    | ↖    | ↘     |
| Traffic Volume (veh/h)       | 162  | 57    | 1232 | 156  | 133  | 1390  |
| Future Volume (veh/h)        | 162  | 57    | 1232 | 156  | 133  | 1390  |
| Initial Q (Qb), veh          | 0    | 0     | 0    | 0    | 0    | 0     |
| Ped-Bike Adj(A_pbT)          | 1.00 | 1.00  |      | 1.00 | 1.00 |       |
| Parking Bus, Adj             | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  |
| Work Zone On Approach        | No   |       | No   |      |      | No    |
| Adj Sat Flow, veh/h/ln       | 1870 | 1870  | 1870 | 1870 | 1870 | 1870  |
| Adj Flow Rate, veh/h         | 176  | 62    | 1339 | 170  | 145  | 1511  |
| Peak Hour Factor             | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92  |
| Percent Heavy Veh, %         | 2    | 2     | 2    | 2    | 2    | 2     |
| Cap, veh/h                   | 212  | 189   | 2288 | 1209 | 171  | 2802  |
| Arrive On Green              | 0.12 | 0.12  | 0.64 | 0.64 | 0.10 | 0.79  |
| Sat Flow, veh/h              | 1781 | 1585  | 3647 | 1585 | 1781 | 3647  |
| Grp Volume(v), veh/h         | 176  | 62    | 1339 | 170  | 145  | 1511  |
| Grp Sat Flow(s), veh/h/ln    | 1781 | 1585  | 1777 | 1585 | 1781 | 1777  |
| Q Serve(g_s), s              | 14.5 | 5.4   | 32.3 | 4.3  | 12.0 | 23.5  |
| Cycle Q Clear(g_c), s        | 14.5 | 5.4   | 32.3 | 4.3  | 12.0 | 23.5  |
| Prop In Lane                 | 1.00 | 1.00  |      | 1.00 | 1.00 |       |
| Lane Grp Cap(c), veh/h       | 212  | 189   | 2288 | 1209 | 171  | 2802  |
| V/C Ratio(X)                 | 0.83 | 0.33  | 0.59 | 0.14 | 0.85 | 0.54  |
| Avail Cap(c_a), veh/h        | 361  | 321   | 2288 | 1209 | 281  | 2802  |
| HCM Platoon Ratio            | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  |
| Upstream Filter(I)           | 1.00 | 1.00  | 0.21 | 0.21 | 1.00 | 1.00  |
| Uniform Delay (d), s/veh     | 64.6 | 60.6  | 15.3 | 4.7  | 66.7 | 5.8   |
| Incr Delay (d2), s/veh       | 15.9 | 2.1   | 0.2  | 0.1  | 15.9 | 0.7   |
| Initial Q Delay(d3), s/veh   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   |
| %ile BackOfQ(50%), veh/ln    | 7.5  | 5.0   | 12.2 | 2.2  | 6.1  | 7.2   |
| Unsig. Movement Delay, s/veh |      |       |      |      |      |       |
| LnGrp Delay(d), s/veh        | 80.5 | 62.7  | 15.5 | 4.8  | 82.6 | 6.6   |
| LnGrp LOS                    | F    | E     | B    | A    | F    | A     |
| Approach Vol, veh/h          | 238  |       | 1509 |      |      | 1656  |
| Approach Delay, s/veh        | 75.9 |       | 14.3 |      |      | 13.2  |
| Approach LOS                 | E    |       | B    |      |      | B     |
| Timer - Assigned Phs         | 1    | 2     |      | 4    |      | 6     |
| Phs Duration (G+Y+Rc), s     | 21.7 | 103.9 |      | 24.4 |      | 125.6 |
| Change Period (Y+Rc), s      | 7.3  | 7.3   |      | 6.6  |      | 7.3   |
| Max Green Setting (Gmax), s  | 23.7 | 74.7  |      | 30.4 |      | 105.7 |
| Max Q Clear Time (g_c+I1), s | 14.0 | 0.0   |      | 16.5 |      | 0.0   |
| Green Ext Time (p_c), s      | 0.4  | 0.0   |      | 1.4  |      | 0.0   |
| <b>Intersection Summary</b>  |      |       |      |      |      |       |
| HCM 6th Ctrl Delay           |      |       | 18.1 |      |      |       |
| HCM 6th LOS                  |      |       | B    |      |      |       |

Pattern 50 (Weekday PM Peak) 25 B 2025 Build 1:05 pm 08/08/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
Page 1



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
3004: KY-1747 & Watterson Trail

06/17/2022

|                              | EBL   | EBT  | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|------------------------------|-------|------|-------|------|------|-------|-------|------|------|------|------|------|
| Movement                     | ←     | →    | ↘     | ←    | →    | ↘     | ←     | →    | ↘    | ←    | →    | ↘    |
| Lane Configurations          | ↘     | ↗    | ↘     | ↘    | ↗    | ↘     | ↘     | ↗    | ↘    | ↘    | ↗    | ↘    |
| Traffic Volume (veh/h)       | 127   | 406  | 102   | 153  | 371  | 183   | 100   | 984  | 85   | 244  | 1395 | 158  |
| Future Volume (veh/h)        | 127   | 406  | 102   | 153  | 371  | 183   | 100   | 984  | 85   | 244  | 1395 | 158  |
| Initial Q (Qb), veh          | 0     | 0    | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        | No    |      |       | No   |      |       | No    |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln       | 1870  | 1870 | 1870  | 1870 | 1870 | 1870  | 1870  | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h         | 138   | 441  | 111   | 166  | 403  | 199   | 109   | 1070 | 92   | 265  | 1516 | 172  |
| Peak Hour Factor             | 0.92  | 0.92 | 0.92  | 0.92 | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %         | 2     | 2    | 2     | 2    | 2    | 2     | 2     | 2    | 2    | 2    | 2    | 2    |
| Cap, veh/h                   | 208   | 462  | 392   | 197  | 486  | 412   | 129   | 1189 | 530  | 357  | 1628 | 726  |
| Arrive On Green              | 0.07  | 0.25 | 0.25  | 0.08 | 0.26 | 0.26  | 0.07  | 0.33 | 0.33 | 0.40 | 0.92 | 0.92 |
| Sat Flow, veh/h              | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 3554 | 1585 | 1781 | 3554 | 1585 |
| Grp Volume(v), veh/h         | 138   | 441  | 111   | 166  | 403  | 199   | 109   | 1070 | 92   | 265  | 1516 | 172  |
| Grp Sat Flow(s), veh/h/ln    | 1781  | 1870 | 1585  | 1781 | 1870 | 1585  | 1781  | 1777 | 1585 | 1781 | 1777 | 1585 |
| Q Serve(g_s), s              | 10.2  | 41.8 | 10.2  | 12.4 | 36.6 | 12.2  | 10.9  | 51.6 | 5.7  | 22.8 | 43.8 | 2.1  |
| Cycle Q Clear(g_c), s        | 10.2  | 41.8 | 10.2  | 12.4 | 36.6 | 12.2  | 10.9  | 51.6 | 5.7  | 22.8 | 43.8 | 2.1  |
| Prop In Lane                 | 1.00  |      | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 208   | 462  | 392   | 197  | 486  | 412   | 129   | 1189 | 530  | 357  | 1628 | 726  |
| V/C Ratio(X)                 | 0.66  | 0.95 | 0.28  | 0.84 | 0.83 | 0.48  | 0.85  | 0.90 | 0.17 | 0.74 | 0.93 | 0.24 |
| Avail Cap(c_a), veh/h        | 281   | 478  | 405   | 248  | 486  | 412   | 192   | 1189 | 530  | 357  | 1628 | 726  |
| HCM Platoon Ratio            | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 |
| Upstream Filter(I)           | 1.00  | 1.00 | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 0.67 | 0.67 | 0.67 |
| Uniform Delay (d), s/veh     | 48.5  | 66.7 | 54.8  | 50.2 | 62.8 | 22.8  | 82.5  | 57.0 | 25.5 | 50.0 | 5.9  | 4.2  |
| Incr Delay (d2), s/veh       | 3.6   | 29.6 | 0.6   | 18.4 | 11.9 | 1.3   | 23.1  | 11.0 | 0.7  | 5.9  | 8.0  | 0.5  |
| Initial Q Delay(d3), s/veh   | 0.0   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%), veh/ln    | 4.8   | 23.7 | 4.2   | 6.6  | 19.0 | 4.8   | 5.8   | 24.6 | 3.0  | 9.2  | 4.8  | 0.8  |
| Unsig. Movement Delay, s/veh |       |      |       |      |      |       |       |      |      |      |      |      |
| LnGrp Delay(d), s/veh        | 52.0  | 96.3 | 55.4  | 68.6 | 74.7 | 24.0  | 105.6 | 68.0 | 26.3 | 55.9 | 13.9 | 4.7  |
| LnGrp LOS                    | D     | F    | E     | E    | E    | C     | F     | E    | C    | E    | B    | A    |
| Approach Vol, veh/h          | 690   |      |       | 788  |      |       | 1271  |      |      | 1953 |      |      |
| Approach Delay, s/veh        | 80.9  |      |       | 60.3 |      |       | 68.2  |      |      | 18.8 |      |      |
| Approach LOS                 | F     |      |       | E    |      |       | E     |      |      | B    |      |      |
| Timer - Assigned Phs         | 1     | 2    | 3     | 4    | 5    | 6     | 7     | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 42.6  | 66.0 | 20.9  | 50.5 | 19.6 | 89.0  | 18.6  | 52.8 |      |      |      |      |
| Change Period (Y+Rc), s      | * 6.5 | 5.8  | * 6.3 | 6.0  | 6.6  | * 6.5 | * 6.3 | 6.0  |      |      |      |      |
| Max Green Setting (Gmax), s  | * 30  | 60.2 | * 20  | 46.0 | 19.4 | * 70  | * 20  | 46.0 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 24.8  | 0.0  | 14.4  | 43.8 | 12.9 | 0.0   | 12.2  | 38.6 |      |      |      |      |
| Green Ext Time (p_c), s      | 0.5   | 0.0  | 0.2   | 0.7  | 0.2  | 0.0   | 0.2   | 2.0  |      |      |      |      |

Intersection Summary

HCM 6th Ctrl Delay 48.2  
HCM 6th LOS D

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



HCM 6th Signalized Intersection Summary  
2216: KY-1747 & US-31E

06/19/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                                 | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 88                                                                                | 858                                                                               | 373                                                                               | 572                                                                               | 872                                                                               | 80                                                                                | 136                                                                                 | 1181                                                                                | 161                                                                                 | 213                                                                                 | 665                                                                                 | 408                                                                                 |
| Future Volume (veh/h)        | 88                                                                                | 858                                                                               | 373                                                                               | 572                                                                               | 872                                                                               | 80                                                                                | 136                                                                                 | 1181                                                                                | 161                                                                                 | 213                                                                                 | 665                                                                                 | 408                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 92                                                                                | 894                                                                               | 389                                                                               | 596                                                                               | 908                                                                               | 83                                                                                | 142                                                                                 | 1230                                                                                | 168                                                                                 | 222                                                                                 | 693                                                                                 | 425                                                                                 |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 139                                                                               | 704                                                                               | 533                                                                               | 569                                                                               | 937                                                                               | 86                                                                                | 210                                                                                 | 1082                                                                                | 483                                                                                 | 246                                                                                 | 1154                                                                                | 776                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.20                                                                              | 0.20                                                                              | 0.16                                                                              | 0.28                                                                              | 0.28                                                                              | 0.12                                                                                | 0.30                                                                                | 0.30                                                                                | 0.09                                                                                | 0.22                                                                                | 0.22                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 3292                                                                              | 301                                                                               | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 92                                                                                | 894                                                                               | 389                                                                               | 596                                                                               | 490                                                                               | 501                                                                               | 142                                                                                 | 1230                                                                                | 168                                                                                 | 222                                                                                 | 693                                                                                 | 425                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1816                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 7.5                                                                               | 29.7                                                                              | 29.7                                                                              | 24.7                                                                              | 40.9                                                                              | 40.9                                                                              | 11.5                                                                                | 45.7                                                                                | 9.2                                                                                 | 18.5                                                                                | 26.3                                                                                | 14.0                                                                                |
| Cycle Q Clear(g_c), s        | 7.5                                                                               | 29.7                                                                              | 29.7                                                                              | 24.7                                                                              | 40.9                                                                              | 40.9                                                                              | 11.5                                                                                | 45.7                                                                                | 9.2                                                                                 | 18.5                                                                                | 26.3                                                                                | 14.0                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.17                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 139                                                                               | 704                                                                               | 533                                                                               | 569                                                                               | 506                                                                               | 517                                                                               | 210                                                                                 | 1082                                                                                | 483                                                                                 | 246                                                                                 | 1154                                                                                | 776                                                                                 |
| V/C Ratio(X)                 | 0.66                                                                              | 1.27                                                                              | 0.73                                                                              | 1.05                                                                              | 0.97                                                                              | 0.97                                                                              | 0.68                                                                                | 1.14                                                                                | 0.35                                                                                | 0.90                                                                                | 0.60                                                                                | 0.55                                                                                |
| Avail Cap(c_a), veh/h        | 139                                                                               | 704                                                                               | 533                                                                               | 569                                                                               | 506                                                                               | 517                                                                               | 210                                                                                 | 1082                                                                                | 483                                                                                 | 270                                                                                 | 1154                                                                                | 776                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.67                                                                                | 0.67                                                                                | 0.67                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.76                                                                                | 0.76                                                                                | 0.76                                                                                |
| Uniform Delay (d), s/veh     | 67.2                                                                              | 60.1                                                                              | 43.8                                                                              | 62.7                                                                              | 53.0                                                                              | 53.0                                                                              | 63.4                                                                                | 52.2                                                                                | 22.7                                                                                | 67.1                                                                                | 49.9                                                                                | 10.8                                                                                |
| Incr Delay (d2), s/veh       | 12.5                                                                              | 132.8                                                                             | 8.5                                                                               | 46.4                                                                              | 28.5                                                                              | 28.1                                                                              | 8.8                                                                                 | 73.1                                                                                | 2.0                                                                                 | 24.8                                                                                | 1.8                                                                                 | 2.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.9                                                                               | 26.1                                                                              | 13.7                                                                              | 14.3                                                                              | 21.7                                                                              | 22.2                                                                              | 5.6                                                                                 | 30.8                                                                                | 3.7                                                                                 | 10.3                                                                                | 12.3                                                                                | 5.3                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 79.7                                                                              | 192.9                                                                             | 52.3                                                                              | 109.0                                                                             | 81.5                                                                              | 81.1                                                                              | 72.2                                                                                | 125.2                                                                               | 24.7                                                                                | 91.9                                                                                | 51.7                                                                                | 12.9                                                                                |
| LnGrp LOS                    | E                                                                                 | F                                                                                 | D                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | E                                                                                   | F                                                                                   | C                                                                                   | F                                                                                   | D                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 1375                                                                              |                                                                                   |                                                                                   | 1587                                                                              |                                                                                   |                                                                                   | 1540                                                                                |                                                                                     |                                                                                     | 1340                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 145.6                                                                             |                                                                                   |                                                                                   | 91.7                                                                              |                                                                                   |                                                                                   | 109.4                                                                               |                                                                                     |                                                                                     | 46.0                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 32.0                                                                              | 37.0                                                                              | 25.0                                                                              | 56.0                                                                              | 19.0                                                                              | 50.0                                                                              | 28.0                                                                                | 53.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                                 | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 24.7                                                                              | 29.7                                                                              | 17.7                                                                              | 48.7                                                                              | 11.7                                                                              | 42.7                                                                              | 22.7                                                                                | 43.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+1), s  | 26.7                                                                              | 0.0                                                                               | 13.5                                                                              | 28.3                                                                              | 9.5                                                                               | 0.0                                                                               | 20.5                                                                                | 47.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 9.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 98.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Pattern 50 (Weekday PM Peak) 35 NB 2035 No Build 6:20 pm 06/17/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
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HCM 6th Signalized Intersection Summary  
2217: S Watterson Trail & US-31E

06/17/2022

|                              | ↖    | ↑    | ↗    | ↙    | ↓    | ↘    | ↖    | ↗    | ↙    | ↘    | ↖    | ↗    |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Movement                     | NBL  | NBT  | NBR  | SBL  | SBT  | SBR  | SEL  | SET  | SER  | NWL  | NWT  | NWR  |
| Lane Configurations          |      | ↕    | ↗    |      | ↕    | ↗    | ↗    | ↕    | ↕    | ↗    | ↕    | ↗    |
| Traffic Volume (veh/h)       | 123  | 66   | 54   | 24   | 67   | 304  | 314  | 1093 | 139  | 37   | 840  | 26   |
| Future Volume (veh/h)        | 123  | 66   | 54   | 24   | 67   | 304  | 314  | 1093 | 139  | 37   | 840  | 26   |
| Initial Q (Qb), veh          | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        | No   |      |      | No   |      |      | No   |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln       | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h         | 134  | 72   | 0    | 26   | 73   | 0    | 341  | 1188 | 151  | 40   | 913  | 28   |
| Peak Hour Factor             | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %         | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    | 2    |
| Cap, veh/h                   | 152  | 82   |      | 36   | 101  |      | 447  | 1393 | 621  | 492  | 1820 | 812  |
| Arrive On Green              | 0.13 | 0.13 | 0.00 | 0.07 | 0.07 | 0.00 | 0.11 | 0.39 | 0.39 | 0.23 | 0.51 | 0.51 |
| Sat Flow, veh/h              | 1178 | 633  | 1585 | 485  | 1361 | 1585 | 1781 | 3554 | 1585 | 1781 | 3554 | 1585 |
| Grp Volume(v), veh/h         | 206  | 0    | 0    | 99   | 0    | 0    | 341  | 1188 | 151  | 40   | 913  | 28   |
| Grp Sat Flow(s), veh/h/ln    | 1811 | 0    | 1585 | 1846 | 0    | 1585 | 1781 | 1777 | 1585 | 1781 | 1777 | 1585 |
| Q Serve(g_s), s              | 17.9 | 0.0  | 0.0  | 8.4  | 0.0  | 0.0  | 14.3 | 48.9 | 10.2 | 0.0  | 27.0 | 1.4  |
| Cycle Q Clear(g_c), s        | 17.9 | 0.0  | 0.0  | 8.4  | 0.0  | 0.0  | 14.3 | 48.9 | 10.2 | 0.0  | 27.0 | 1.4  |
| Prop In Lane                 | 0.65 |      | 1.00 | 0.26 |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 234  | 0    |      | 137  | 0    |      | 447  | 1393 | 621  | 492  | 1820 | 812  |
| V/C Ratio(X)                 | 0.88 | 0.00 |      | 0.72 | 0.00 |      | 0.76 | 0.85 | 0.24 | 0.08 | 0.50 | 0.03 |
| Avail Cap(c_a), veh/h        | 344  | 0    |      | 305  | 0    |      | 536  | 1393 | 621  | 492  | 1820 | 812  |
| HCM Platoon Ratio            | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I)           | 1.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh     | 68.4 | 0.0  | 0.0  | 72.5 | 0.0  | 0.0  | 19.4 | 44.4 | 32.7 | 41.3 | 25.6 | 19.4 |
| Incr Delay (d2), s/veh       | 20.2 | 0.0  | 0.0  | 11.7 | 0.0  | 0.0  | 6.6  | 6.8  | 0.9  | 0.1  | 1.0  | 0.1  |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%),veh/ln     | 9.6  | 0.0  | 0.0  | 4.4  | 0.0  | 0.0  | 6.4  | 22.3 | 4.1  | 1.2  | 11.4 | 0.5  |
| Unsig. Movement Delay, s/veh |      |      |      |      |      |      |      |      |      |      |      |      |
| LnGrp Delay(d),s/veh         | 88.7 | 0.0  | 0.0  | 84.2 | 0.0  | 0.0  | 26.0 | 51.2 | 33.6 | 41.4 | 26.6 | 19.5 |
| LnGrp LOS                    | F    | A    |      | F    | A    |      | C    | D    | C    | D    | C    | B    |
| Approach Vol, veh/h          | 206  |      |      | 99   |      |      | 1680 |      |      | 981  |      |      |
| Approach Delay, s/veh        | 88.7 |      |      | 84.2 |      |      | 44.5 |      |      | 27.0 |      |      |
| Approach LOS                 | F    |      |      | F    |      |      | D    |      |      | C    |      |      |
| Timer - Assigned Phs         | 1    | 2    |      | 4    | 5    | 6    |      | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 25.0 | 89.3 |      | 27.3 | 44.3 | 70.0 |      | 18.5 |      |      |      |      |
| Change Period (Y+Rc), s      | 7.3  | 7.3  |      | 6.6  | 7.3  | 7.3  |      | 6.6  |      |      |      |      |
| Max Green Setting (Gmax), s  | 25.7 | 49.7 |      | 30.4 | 12.7 | 62.7 |      | 26.4 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 16.3 | 0.0  |      | 19.9 | 2.0  | 0.0  |      | 10.4 |      |      |      |      |
| Green Ext Time (p_c), s      | 1.4  | 0.0  |      | 0.8  | 0.1  | 0.0  |      | 0.4  |      |      |      |      |

Intersection Summary

HCM 6th Ctrl Delay 43.1

HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



HCM 6th Signalized Intersection Summary  
3003: KY-1747 & S Stony Brook Dr

06/17/2022

|                              | ↙    | ↖     | ↑    | ↗    | ↘    | ↓     |
|------------------------------|------|-------|------|------|------|-------|
| Movement                     | WBL  | WBR   | NBT  | NBR  | SBL  | SBT   |
| Lane Configurations          | ↙    | ↖     | ↑↑   | ↗    | ↘    | ↑↑    |
| Traffic Volume (veh/h)       | 170  | 60    | 1220 | 164  | 140  | 1418  |
| Future Volume (veh/h)        | 170  | 60    | 1220 | 164  | 140  | 1418  |
| Initial Q (Qb), veh          | 0    | 0     | 0    | 0    | 0    | 0     |
| Ped-Bike Adj(A_pbT)          | 1.00 | 1.00  |      | 1.00 | 1.00 |       |
| Parking Bus, Adj             | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  |
| Work Zone On Approach        | No   |       | No   |      |      | No    |
| Adj Sat Flow, veh/h/ln       | 1870 | 1870  | 1870 | 1870 | 1870 | 1870  |
| Adj Flow Rate, veh/h         | 185  | 65    | 1326 | 178  | 152  | 1541  |
| Peak Hour Factor             | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92  |
| Percent Heavy Veh, %         | 2    | 2     | 2    | 2    | 2    | 2     |
| Cap, veh/h                   | 221  | 197   | 2256 | 1203 | 178  | 2783  |
| Arrive On Green              | 0.12 | 0.12  | 0.63 | 0.63 | 0.10 | 0.78  |
| Sat Flow, veh/h              | 1781 | 1585  | 3647 | 1585 | 1781 | 3647  |
| Grp Volume(v), veh/h         | 185  | 65    | 1326 | 178  | 152  | 1541  |
| Grp Sat Flow(s), veh/h/ln    | 1781 | 1585  | 1777 | 1585 | 1781 | 1777  |
| Q Serve(g_s), s              | 15.2 | 5.6   | 32.6 | 4.6  | 12.6 | 24.9  |
| Cycle Q Clear(g_c), s        | 15.2 | 5.6   | 32.6 | 4.6  | 12.6 | 24.9  |
| Prop In Lane                 | 1.00 | 1.00  |      | 1.00 | 1.00 |       |
| Lane Grp Cap(c), veh/h       | 221  | 197   | 2256 | 1203 | 178  | 2783  |
| V/C Ratio(X)                 | 0.84 | 0.33  | 0.59 | 0.15 | 0.86 | 0.55  |
| Avail Cap(c_a), veh/h        | 361  | 321   | 2256 | 1203 | 281  | 2783  |
| HCM Platoon Ratio            | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  |
| Upstream Filter(I)           | 1.00 | 1.00  | 0.09 | 0.09 | 1.00 | 1.00  |
| Uniform Delay (d), s/veh     | 64.2 | 60.0  | 16.0 | 4.9  | 66.4 | 6.2   |
| Incr Delay (d2), s/veh       | 16.2 | 2.1   | 0.1  | 0.0  | 17.2 | 0.8   |
| Initial Q Delay(d3), s/veh   | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   |
| %ile BackOfQ(50%), veh/ln    | 7.9  | 5.2   | 12.4 | 2.3  | 6.5  | 7.8   |
| Unsig. Movement Delay, s/veh |      |       |      |      |      |       |
| LnGrp Delay(d), s/veh        | 80.4 | 62.1  | 16.1 | 4.9  | 83.6 | 7.0   |
| LnGrp LOS                    | F    | E     | B    | A    | F    | A     |
| Approach Vol, veh/h          | 250  |       | 1504 |      |      | 1693  |
| Approach Delay, s/veh        | 75.7 |       | 14.7 |      |      | 13.9  |
| Approach LOS                 | E    |       | B    |      |      | B     |
| Timer - Assigned Phs         | 1    | 2     |      | 4    |      | 6     |
| Phs Duration (G+Y+Rc), s     | 22.3 | 102.5 |      | 25.2 |      | 124.8 |
| Change Period (Y+Rc), s      | 7.3  | 7.3   |      | 6.6  |      | 7.3   |
| Max Green Setting (Gmax), s  | 23.7 | 74.7  |      | 30.4 |      | 105.7 |
| Max Q Clear Time (g_c+I1), s | 14.6 | 0.0   |      | 17.2 |      | 0.0   |
| Green Ext Time (p_c), s      | 0.4  | 0.0   |      | 1.4  |      | 0.0   |
| Intersection Summary         |      |       |      |      |      |       |
| HCM 6th Ctrl Delay           |      |       | 18.8 |      |      |       |
| HCM 6th LOS                  |      |       | B    |      |      |       |

Pattern 50 (Weekday PM Peak) 35 NB 2035 No Build 6:20 pm 06/17/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
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HCM 6th Signalized Intersection Summary  
3004: KY-1747 & Watterson Trail

06/17/2022

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 133                                                                               | 427                                                                               | 107                                                                               | 160                                                                               | 390                                                                               | 192                                                                               | 114                                                                                 | 1007                                                                                | 91                                                                                  | 256                                                                                 | 1420                                                                                | 166                                                                                 |
| Future Volume (veh/h)        | 133                                                                               | 427                                                                               | 107                                                                               | 160                                                                               | 390                                                                               | 192                                                                               | 114                                                                                 | 1007                                                                                | 91                                                                                  | 256                                                                                 | 1420                                                                                | 166                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                  |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 145                                                                               | 464                                                                               | 116                                                                               | 174                                                                               | 424                                                                               | 209                                                                               | 124                                                                                 | 1095                                                                                | 99                                                                                  | 278                                                                                 | 1543                                                                                | 180                                                                                 |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 209                                                                               | 478                                                                               | 405                                                                               | 197                                                                               | 502                                                                               | 426                                                                               | 144                                                                                 | 1189                                                                                | 530                                                                                 | 338                                                                                 | 1559                                                                                | 696                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.26                                                                              | 0.26                                                                              | 0.08                                                                              | 0.27                                                                              | 0.27                                                                              | 0.08                                                                                | 0.33                                                                                | 0.33                                                                                | 0.38                                                                                | 0.88                                                                                | 0.88                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 145                                                                               | 464                                                                               | 116                                                                               | 174                                                                               | 424                                                                               | 209                                                                               | 124                                                                                 | 1095                                                                                | 99                                                                                  | 278                                                                                 | 1543                                                                                | 180                                                                                 |
| Grp Sat Flow(s), veh/h/ln    | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                              | 1870                                                                              | 1585                                                                              | 1781                                                                                | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 10.5                                                                              | 44.2                                                                              | 10.6                                                                              | 12.9                                                                              | 38.6                                                                              | 12.9                                                                              | 12.4                                                                                | 53.4                                                                                | 6.2                                                                                 | 25.4                                                                                | 72.7                                                                                | 3.2                                                                                 |
| Cycle Q Clear(g_c), s        | 10.5                                                                              | 44.2                                                                              | 10.6                                                                              | 12.9                                                                              | 38.6                                                                              | 12.9                                                                              | 12.4                                                                                | 53.4                                                                                | 6.2                                                                                 | 25.4                                                                                | 72.7                                                                                | 3.2                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 209                                                                               | 478                                                                               | 405                                                                               | 197                                                                               | 502                                                                               | 426                                                                               | 144                                                                                 | 1189                                                                                | 530                                                                                 | 338                                                                                 | 1559                                                                                | 696                                                                                 |
| V/C Ratio(X)                 | 0.69                                                                              | 0.97                                                                              | 0.29                                                                              | 0.88                                                                              | 0.84                                                                              | 0.49                                                                              | 0.86                                                                                | 0.92                                                                                | 0.19                                                                                | 0.82                                                                                | 0.99                                                                                | 0.26                                                                                |
| Avail Cap(c_a), veh/h        | 278                                                                               | 478                                                                               | 405                                                                               | 243                                                                               | 502                                                                               | 426                                                                               | 192                                                                                 | 1189                                                                                | 530                                                                                 | 338                                                                                 | 1559                                                                                | 696                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 2.00                                                                                | 2.00                                                                                | 2.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.67                                                                                | 0.67                                                                                | 0.67                                                                                |
| Uniform Delay (d), s/veh     | 47.8                                                                              | 66.3                                                                              | 53.8                                                                              | 49.4                                                                              | 62.3                                                                              | 23.1                                                                              | 81.7                                                                                | 57.6                                                                                | 25.4                                                                                | 53.2                                                                                | 10.6                                                                                | 6.4                                                                                 |
| Incr Delay (d2), s/veh       | 4.7                                                                               | 33.7                                                                              | 0.5                                                                               | 25.4                                                                              | 12.9                                                                              | 1.2                                                                               | 27.6                                                                                | 13.0                                                                                | 0.8                                                                                 | 11.0                                                                                | 16.3                                                                                | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.0                                                                               | 25.5                                                                              | 4.3                                                                               | 7.2                                                                               | 20.1                                                                              | 5.1                                                                               | 6.8                                                                                 | 25.7                                                                                | 3.2                                                                                 | 10.7                                                                                | 8.1                                                                                 | 1.1                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 52.5                                                                              | 100.0                                                                             | 54.4                                                                              | 74.8                                                                              | 75.1                                                                              | 24.4                                                                              | 109.3                                                                               | 70.6                                                                                | 26.2                                                                                | 64.2                                                                                | 27.0                                                                                | 7.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | F                                                                                 | D                                                                                 | E                                                                                 | E                                                                                 | C                                                                                 | F                                                                                   | E                                                                                   | C                                                                                   | E                                                                                   | C                                                                                   | A                                                                                   |
| Approach Vol, veh/h          | 725                                                                               |                                                                                   |                                                                                   | 807                                                                               |                                                                                   |                                                                                   | 1318                                                                                |                                                                                     |                                                                                     | 2001                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 83.2                                                                              |                                                                                   |                                                                                   | 61.9                                                                              |                                                                                   |                                                                                   | 70.9                                                                                |                                                                                     |                                                                                     | 30.3                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 40.6                                                                              | 66.0                                                                              | 21.4                                                                              | 52.0                                                                              | 21.1                                                                              | 85.5                                                                              | 19.0                                                                                | 54.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | * 6.5                                                                             | 5.8                                                                               | * 6.3                                                                             | 6.0                                                                               | 6.6                                                                               | * 6.5                                                                             | * 6.3                                                                               | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | * 30                                                                              | 60.2                                                                              | * 20                                                                              | 46.0                                                                              | 19.4                                                                              | * 70                                                                              | * 20                                                                                | 46.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 27.4                                                                              | 0.0                                                                               | 14.9                                                                              | 46.2                                                                              | 14.4                                                                              | 0.0                                                                               | 12.5                                                                                | 40.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.3                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.2                                                                                 | 1.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 54.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Pattern 50 (Weekday PM Peak) 35 NB 2035 No Build 6:20 pm 06/17/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
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Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

Pattern 50 (Weekday PM Peak) 35 B  
2216: KY-1747 & US-31E

08/08/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                               | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 88                                                                                | 858                                                                               | 373                                                                               | 582                                                                               | 918                                                                               | 80                                                                                | 136                                                                               | 1181                                                                                | 161                                                                                 | 213                                                                                 | 665                                                                                 | 426                                                                                 |
| Future Volume (veh/h)        | 88                                                                                | 858                                                                               | 373                                                                               | 582                                                                               | 918                                                                               | 80                                                                                | 136                                                                               | 1181                                                                                | 161                                                                                 | 213                                                                                 | 665                                                                                 | 426                                                                                 |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 92                                                                                | 894                                                                               | 389                                                                               | 606                                                                               | 956                                                                               | 83                                                                                | 142                                                                               | 1230                                                                                | 168                                                                                 | 222                                                                                 | 693                                                                                 | 444                                                                                 |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 139                                                                               | 704                                                                               | 533                                                                               | 569                                                                               | 942                                                                               | 82                                                                                | 210                                                                               | 1082                                                                                | 483                                                                                 | 246                                                                                 | 1154                                                                                | 776                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.20                                                                              | 0.20                                                                              | 0.16                                                                              | 0.28                                                                              | 0.28                                                                              | 0.12                                                                              | 0.30                                                                                | 0.30                                                                                | 0.09                                                                                | 0.22                                                                                | 0.22                                                                                |
| Sat Flow, veh/h              | 1781                                                                              | 3554                                                                              | 1585                                                                              | 3456                                                                              | 3308                                                                              | 287                                                                               | 1781                                                                              | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 92                                                                                | 894                                                                               | 389                                                                               | 606                                                                               | 513                                                                               | 526                                                                               | 142                                                                               | 1230                                                                                | 168                                                                                 | 222                                                                                 | 693                                                                                 | 444                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1781                                                                              | 1777                                                                              | 1585                                                                              | 1728                                                                              | 1777                                                                              | 1819                                                                              | 1781                                                                              | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 7.5                                                                               | 29.7                                                                              | 29.7                                                                              | 24.7                                                                              | 42.7                                                                              | 42.7                                                                              | 11.5                                                                              | 45.7                                                                                | 9.2                                                                                 | 18.5                                                                                | 26.3                                                                                | 14.8                                                                                |
| Cycle Q Clear(g_c), s        | 7.5                                                                               | 29.7                                                                              | 29.7                                                                              | 24.7                                                                              | 42.7                                                                              | 42.7                                                                              | 11.5                                                                              | 45.7                                                                                | 9.2                                                                                 | 18.5                                                                                | 26.3                                                                                | 14.8                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.16                                                                              | 1.00                                                                              |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 139                                                                               | 704                                                                               | 533                                                                               | 569                                                                               | 506                                                                               | 518                                                                               | 210                                                                               | 1082                                                                                | 483                                                                                 | 246                                                                                 | 1154                                                                                | 776                                                                                 |
| V/C Ratio(X)                 | 0.66                                                                              | 1.27                                                                              | 0.73                                                                              | 1.06                                                                              | 1.02                                                                              | 1.02                                                                              | 0.68                                                                              | 1.14                                                                                | 0.35                                                                                | 0.90                                                                                | 0.60                                                                                | 0.57                                                                                |
| Avail Cap(c_a), veh/h        | 139                                                                               | 704                                                                               | 533                                                                               | 569                                                                               | 506                                                                               | 518                                                                               | 210                                                                               | 1082                                                                                | 483                                                                                 | 270                                                                                 | 1154                                                                                | 776                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.67                                                                                | 0.67                                                                                | 0.67                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.76                                                                              | 0.76                                                                              | 0.76                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 0.76                                                                                | 0.76                                                                                | 0.76                                                                                |
| Uniform Delay (d), s/veh     | 67.2                                                                              | 60.1                                                                              | 43.8                                                                              | 62.7                                                                              | 53.7                                                                              | 53.7                                                                              | 63.4                                                                              | 52.2                                                                                | 22.7                                                                                | 67.1                                                                                | 49.9                                                                                | 11.0                                                                                |
| Incr Delay (d2), s/veh       | 12.5                                                                              | 132.8                                                                             | 8.5                                                                               | 51.6                                                                              | 38.7                                                                              | 38.3                                                                              | 8.8                                                                               | 73.1                                                                                | 2.0                                                                                 | 24.8                                                                                | 1.8                                                                                 | 2.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.9                                                                               | 26.1                                                                              | 13.7                                                                              | 14.7                                                                              | 24.0                                                                              | 24.5                                                                              | 5.6                                                                               | 30.8                                                                                | 3.7                                                                                 | 10.3                                                                                | 12.3                                                                                | 5.6                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 79.7                                                                              | 192.9                                                                             | 52.3                                                                              | 114.2                                                                             | 92.3                                                                              | 92.0                                                                              | 72.2                                                                              | 125.2                                                                               | 24.7                                                                                | 91.9                                                                                | 51.7                                                                                | 13.3                                                                                |
| LnGrp LOS                    | E                                                                                 | F                                                                                 | D                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | E                                                                                 | F                                                                                   | C                                                                                   | F                                                                                   | D                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 1375                                                                              |                                                                                   |                                                                                   | 1645                                                                              |                                                                                   |                                                                                   | 1540                                                                              |                                                                                     |                                                                                     | 1359                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 145.6                                                                             |                                                                                   |                                                                                   | 100.3                                                                             |                                                                                   |                                                                                   | 109.4                                                                             |                                                                                     |                                                                                     | 45.7                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                 | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 32.0                                                                              | 37.0                                                                              | 25.0                                                                              | 56.0                                                                              | 19.0                                                                              | 50.0                                                                              | 28.0                                                                              | 53.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                               | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 24.7                                                                              | 29.7                                                                              | 17.7                                                                              | 48.7                                                                              | 11.7                                                                              | 42.7                                                                              | 22.7                                                                              | 43.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 26.7                                                                              | 0.0                                                                               | 13.5                                                                              | 28.3                                                                              | 9.5                                                                               | 0.0                                                                               | 20.5                                                                              | 47.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 9.6                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th Ctrl Delay           | 100.6                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 6th LOS                  | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Pattern 50 (Weekday PM Peak) 35 B 2035 Build 1:07 pm 08/08/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
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HCM 6th Signalized Intersection Summary  
2217: S Watterson Trail & US-31E

06/17/2022

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | NBL                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               | SBR                                                                               | SEL                                                                                | SET                                                                                 | SER                                                                                 | NWL                                                                                 | NWT                                                                                 | NWR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 123                                                                               | 66                                                                                | 54                                                                                | 24                                                                                | 67                                                                                | 304                                                                               | 314                                                                                | 1154                                                                                | 139                                                                                 | 37                                                                                  | 876                                                                                 | 26                                                                                  |
| Future Volume (veh/h)        | 123                                                                               | 66                                                                                | 54                                                                                | 24                                                                                | 67                                                                                | 304                                                                               | 314                                                                                | 1154                                                                                | 139                                                                                 | 37                                                                                  | 876                                                                                 | 26                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Work Zone On Approach        | No                                                                                |                                                                                   |                                                                                   | No                                                                                |                                                                                   |                                                                                   | No                                                                                 |                                                                                     |                                                                                     | No                                                                                  |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                              | 1870                                                                               | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                | 1870                                                                                |
| Adj Flow Rate, veh/h         | 134                                                                               | 72                                                                                | 0                                                                                 | 26                                                                                | 73                                                                                | 0                                                                                 | 341                                                                                | 1254                                                                                | 151                                                                                 | 40                                                                                  | 952                                                                                 | 28                                                                                  |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 152                                                                               | 82                                                                                |                                                                                   | 36                                                                                | 101                                                                               |                                                                                   | 434                                                                                | 1393                                                                                | 621                                                                                 | 480                                                                                 | 1820                                                                                | 812                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.13                                                                              | 0.00                                                                              | 0.07                                                                              | 0.07                                                                              | 0.00                                                                              | 0.11                                                                               | 0.39                                                                                | 0.39                                                                                | 0.23                                                                                | 0.51                                                                                | 0.51                                                                                |
| Sat Flow, veh/h              | 1178                                                                              | 633                                                                               | 1585                                                                              | 485                                                                               | 1361                                                                              | 1585                                                                              | 1781                                                                               | 3554                                                                                | 1585                                                                                | 1781                                                                                | 3554                                                                                | 1585                                                                                |
| Grp Volume(v), veh/h         | 206                                                                               | 0                                                                                 | 0                                                                                 | 99                                                                                | 0                                                                                 | 0                                                                                 | 341                                                                                | 1254                                                                                | 151                                                                                 | 40                                                                                  | 952                                                                                 | 28                                                                                  |
| Grp Sat Flow(s), veh/h/ln    | 1811                                                                              | 0                                                                                 | 1585                                                                              | 1846                                                                              | 0                                                                                 | 1585                                                                              | 1781                                                                               | 1777                                                                                | 1585                                                                                | 1781                                                                                | 1777                                                                                | 1585                                                                                |
| Q Serve(g_s), s              | 17.9                                                                              | 0.0                                                                               | 0.0                                                                               | 8.4                                                                               | 0.0                                                                               | 0.0                                                                               | 14.3                                                                               | 53.1                                                                                | 10.2                                                                                | 0.0                                                                                 | 28.6                                                                                | 1.4                                                                                 |
| Cycle Q Clear(g_c), s        | 17.9                                                                              | 0.0                                                                               | 0.0                                                                               | 8.4                                                                               | 0.0                                                                               | 0.0                                                                               | 14.3                                                                               | 53.1                                                                                | 10.2                                                                                | 0.0                                                                                 | 28.6                                                                                | 1.4                                                                                 |
| Prop In Lane                 | 0.65                                                                              |                                                                                   | 1.00                                                                              | 0.26                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 234                                                                               | 0                                                                                 |                                                                                   | 137                                                                               | 0                                                                                 |                                                                                   | 434                                                                                | 1393                                                                                | 621                                                                                 | 480                                                                                 | 1820                                                                                | 812                                                                                 |
| V/C Ratio(X)                 | 0.88                                                                              | 0.00                                                                              |                                                                                   | 0.72                                                                              | 0.00                                                                              |                                                                                   | 0.79                                                                               | 0.90                                                                                | 0.24                                                                                | 0.08                                                                                | 0.52                                                                                | 0.03                                                                                |
| Avail Cap(c_a), veh/h        | 344                                                                               | 0                                                                                 |                                                                                   | 305                                                                               | 0                                                                                 |                                                                                   | 523                                                                                | 1393                                                                                | 621                                                                                 | 480                                                                                 | 1820                                                                                | 812                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 68.4                                                                              | 0.0                                                                               | 0.0                                                                               | 72.5                                                                              | 0.0                                                                               | 0.0                                                                               | 20.3                                                                               | 45.7                                                                                | 32.7                                                                                | 44.5                                                                                | 26.0                                                                                | 19.4                                                                                |
| Incr Delay (d2), s/veh       | 20.2                                                                              | 0.0                                                                               | 0.0                                                                               | 11.7                                                                              | 0.0                                                                               | 0.0                                                                               | 7.9                                                                                | 9.6                                                                                 | 0.9                                                                                 | 0.1                                                                                 | 1.1                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 9.6                                                                               | 0.0                                                                               | 0.0                                                                               | 4.4                                                                               | 0.0                                                                               | 0.0                                                                               | 6.5                                                                                | 24.6                                                                                | 4.1                                                                                 | 1.2                                                                                 | 12.1                                                                                | 0.5                                                                                 |
| Unsig. Movement Delay, s/veh |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 88.7                                                                              | 0.0                                                                               | 0.0                                                                               | 84.2                                                                              | 0.0                                                                               | 0.0                                                                               | 28.3                                                                               | 55.3                                                                                | 33.6                                                                                | 44.6                                                                                | 27.1                                                                                | 19.5                                                                                |
| LnGrp LOS                    | F                                                                                 | A                                                                                 |                                                                                   | F                                                                                 | A                                                                                 |                                                                                   | C                                                                                  | E                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | B                                                                                   |
| Approach Vol, veh/h          | 206                                                                               |                                                                                   |                                                                                   | 99                                                                                |                                                                                   |                                                                                   | 1746                                                                               |                                                                                     |                                                                                     | 1020                                                                                |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 88.7                                                                              |                                                                                   |                                                                                   | 84.2                                                                              |                                                                                   |                                                                                   | 48.2                                                                               |                                                                                     |                                                                                     | 27.6                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                  |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Timer - Assigned Phs         | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 25.0                                                                              | 89.3                                                                              |                                                                                   | 27.3                                                                              | 44.3                                                                              | 70.0                                                                              |                                                                                    | 18.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 7.3                                                                               | 7.3                                                                               |                                                                                   | 6.6                                                                               | 7.3                                                                               | 7.3                                                                               |                                                                                    | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 25.7                                                                              | 49.7                                                                              |                                                                                   | 30.4                                                                              | 12.7                                                                              | 62.7                                                                              |                                                                                    | 26.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 16.3                                                                              | 0.0                                                                               |                                                                                   | 19.9                                                                              | 2.0                                                                               | 0.0                                                                               |                                                                                    | 10.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 1.4                                                                               | 0.0                                                                               |                                                                                   | 0.8                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    | 0.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

Intersection Summary

HCM 6th Ctrl Delay 45.2  
HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

Pattern 50 (Weekday PM Peak) 35 B  
3003: KY-1747 & S Stony Brook Dr

08/08/2022

|                              | ↙    | ↖     | ↑    | ↗    | ↘    | ↓     |
|------------------------------|------|-------|------|------|------|-------|
| Movement                     | WBL  | WBR   | NBT  | NBR  | SBL  | SBT   |
| Lane Configurations          | ↙    | ↖     | ↑↑   | ↗    | ↘    | ↑↑    |
| Traffic Volume (veh/h)       | 170  | 60    | 1294 | 164  | 140  | 1459  |
| Future Volume (veh/h)        | 170  | 60    | 1294 | 164  | 140  | 1459  |
| Initial Q (Qb), veh          | 0    | 0     | 0    | 0    | 0    | 0     |
| Ped-Bike Adj(A_pbT)          | 1.00 | 1.00  |      | 1.00 | 1.00 |       |
| Parking Bus, Adj             | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  |
| Work Zone On Approach        | No   |       | No   |      |      | No    |
| Adj Sat Flow, veh/h/ln       | 1870 | 1870  | 1870 | 1870 | 1870 | 1870  |
| Adj Flow Rate, veh/h         | 185  | 65    | 1407 | 178  | 152  | 1586  |
| Peak Hour Factor             | 0.92 | 0.92  | 0.92 | 0.92 | 0.92 | 0.92  |
| Percent Heavy Veh, %         | 2    | 2     | 2    | 2    | 2    | 2     |
| Cap, veh/h                   | 221  | 197   | 2256 | 1203 | 178  | 2783  |
| Arrive On Green              | 0.12 | 0.12  | 0.63 | 0.63 | 0.10 | 0.78  |
| Sat Flow, veh/h              | 1781 | 1585  | 3647 | 1585 | 1781 | 3647  |
| Grp Volume(v), veh/h         | 185  | 65    | 1407 | 178  | 152  | 1586  |
| Grp Sat Flow(s), veh/h/ln    | 1781 | 1585  | 1777 | 1585 | 1781 | 1777  |
| Q Serve(g_s), s              | 15.2 | 5.6   | 35.9 | 4.6  | 12.6 | 26.2  |
| Cycle Q Clear(g_c), s        | 15.2 | 5.6   | 35.9 | 4.6  | 12.6 | 26.2  |
| Prop In Lane                 | 1.00 | 1.00  |      | 1.00 | 1.00 |       |
| Lane Grp Cap(c), veh/h       | 221  | 197   | 2256 | 1203 | 178  | 2783  |
| V/C Ratio(X)                 | 0.84 | 0.33  | 0.62 | 0.15 | 0.86 | 0.57  |
| Avail Cap(c_a), veh/h        | 381  | 321   | 2256 | 1203 | 281  | 2783  |
| HCM Platoon Ratio            | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  |
| Upstream Filter(I)           | 1.00 | 1.00  | 0.10 | 0.10 | 1.00 | 1.00  |
| Uniform Delay (d), s/veh     | 64.2 | 60.0  | 16.6 | 4.9  | 66.4 | 6.4   |
| Incr Delay (d2), s/veh       | 16.2 | 2.1   | 0.1  | 0.0  | 17.2 | 0.9   |
| Initial Q Delay(d3),s/veh    | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   |
| %ile BackOfQ(50%),veh/ln     | 7.9  | 5.2   | 13.6 | 2.3  | 6.5  | 8.2   |
| Unsig. Movement Delay, s/veh |      |       |      |      |      |       |
| LnGrp Delay(d),s/veh         | 80.4 | 62.1  | 16.7 | 4.9  | 83.6 | 7.2   |
| LnGrp LOS                    | F    | E     | B    | A    | F    | A     |
| Approach Vol, veh/h          | 250  |       | 1585 |      |      | 1738  |
| Approach Delay, s/veh        | 75.7 |       | 15.4 |      |      | 13.9  |
| Approach LOS                 | E    |       | B    |      |      | B     |
| Timer - Assigned Phs         | 1    | 2     |      | 4    |      | 6     |
| Phs Duration (G+Y+Rc), s     | 22.3 | 102.5 |      | 25.2 |      | 124.8 |
| Change Period (Y+Rc), s      | 7.3  | 7.3   |      | 6.6  |      | 7.3   |
| Max Green Setting (Gmax), s  | 23.7 | 74.7  |      | 30.4 |      | 105.7 |
| Max Q Clear Time (g_c+I1), s | 14.6 | 0.0   |      | 17.2 |      | 0.0   |
| Green Ext Time (p_c), s      | 0.4  | 0.0   |      | 1.4  |      | 0.0   |
| <b>Intersection Summary</b>  |      |       |      |      |      |       |
| HCM 6th Ctrl Delay           |      |       | 18.9 |      |      |       |
| HCM 6th LOS                  |      |       | B    |      |      |       |

Pattern 50 (Weekday PM Peak) 35 B 2035 Build 1:07 pm 08/08/2022 4700 Hurstbourne Pkwy  
DBZ

Synchro 11 Report  
Page 1



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

HCM 6th Signalized Intersection Summary  
3004: KY-1747 & Watterson Trail

06/17/2022

|                              | EBL   | EBT   | EBR   | WBL  | WBT  | WBR   | NBL   | NBT  | NBR  | SBL  | SBT  | SBR  |
|------------------------------|-------|-------|-------|------|------|-------|-------|------|------|------|------|------|
| Movement                     | ←     | →     | ↘     | ←    | →    | ↘     | ←     | →    | ↘    | ←    | →    | ↘    |
| Lane Configurations          | ↘     | ↗     | ↗     | ↘    | ↗    | ↗     | ↘     | ↗    | ↗    | ↘    | ↗    | ↗    |
| Traffic Volume (veh/h)       | 133   | 427   | 107   | 160  | 390  | 192   | 114   | 1033 | 91   | 256  | 1484 | 166  |
| Future Volume (veh/h)        | 133   | 427   | 107   | 160  | 390  | 192   | 114   | 1033 | 91   | 256  | 1484 | 166  |
| Initial Q (Qb), veh          | 0     | 0     | 0     | 0    | 0    | 0     | 0     | 0    | 0    | 0    | 0    | 0    |
| Ped-Bike Adj(A_pbT)          | 1.00  |       | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Parking Bus, Adj             | 1.00  | 1.00  | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach        | No    |       |       | No   |      |       | No    |      |      | No   |      |      |
| Adj Sat Flow, veh/h/ln       | 1870  | 1870  | 1870  | 1870 | 1870 | 1870  | 1870  | 1870 | 1870 | 1870 | 1870 | 1870 |
| Adj Flow Rate, veh/h         | 145   | 464   | 116   | 174  | 424  | 209   | 124   | 1123 | 99   | 278  | 1591 | 180  |
| Peak Hour Factor             | 0.92  | 0.92  | 0.92  | 0.92 | 0.92 | 0.92  | 0.92  | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Percent Heavy Veh, %         | 2     | 2     | 2     | 2    | 2    | 2     | 2     | 2    | 2    | 2    | 2    | 2    |
| Cap, veh/h                   | 209   | 478   | 405   | 197  | 502  | 426   | 144   | 1189 | 530  | 338  | 1559 | 696  |
| Arrive On Green              | 0.07  | 0.26  | 0.26  | 0.08 | 0.27 | 0.27  | 0.08  | 0.33 | 0.33 | 0.38 | 0.88 | 0.88 |
| Sat Flow, veh/h              | 1781  | 1870  | 1585  | 1781 | 1870 | 1585  | 1781  | 3554 | 1585 | 1781 | 3554 | 1585 |
| Grp Volume(v), veh/h         | 145   | 464   | 116   | 174  | 424  | 209   | 124   | 1123 | 99   | 278  | 1591 | 180  |
| Grp Sat Flow(s), veh/h/ln    | 1781  | 1870  | 1585  | 1781 | 1870 | 1585  | 1781  | 1777 | 1585 | 1781 | 1777 | 1585 |
| Q Serve(g_s), s              | 10.5  | 44.2  | 10.6  | 12.9 | 38.6 | 12.9  | 12.4  | 55.3 | 6.2  | 25.4 | 79.0 | 3.2  |
| Cycle Q Clear(g_c), s        | 10.5  | 44.2  | 10.6  | 12.9 | 38.6 | 12.9  | 12.4  | 55.3 | 6.2  | 25.4 | 79.0 | 3.2  |
| Prop In Lane                 | 1.00  |       | 1.00  | 1.00 |      | 1.00  | 1.00  |      | 1.00 | 1.00 |      | 1.00 |
| Lane Grp Cap(c), veh/h       | 209   | 478   | 405   | 197  | 502  | 426   | 144   | 1189 | 530  | 338  | 1559 | 696  |
| V/C Ratio(X)                 | 0.69  | 0.97  | 0.29  | 0.88 | 0.84 | 0.49  | 0.86  | 0.94 | 0.19 | 0.82 | 1.02 | 0.26 |
| Avail Cap(c_a), veh/h        | 278   | 478   | 405   | 243  | 502  | 426   | 192   | 1189 | 530  | 338  | 1559 | 696  |
| HCM Platoon Ratio            | 1.00  | 1.00  | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 2.00 | 2.00 | 2.00 |
| Upstream Filter(I)           | 1.00  | 1.00  | 1.00  | 1.00 | 1.00 | 1.00  | 1.00  | 1.00 | 1.00 | 0.67 | 0.67 | 0.67 |
| Uniform Delay (d), s/veh     | 47.8  | 66.3  | 53.8  | 49.4 | 62.3 | 23.1  | 81.7  | 58.3 | 25.4 | 53.2 | 11.0 | 6.4  |
| Incr Delay (d2), s/veh       | 4.7   | 33.7  | 0.5   | 25.4 | 12.9 | 1.2   | 27.6  | 15.8 | 0.8  | 11.0 | 23.9 | 0.6  |
| Initial Q Delay(d3), s/veh   | 0.0   | 0.0   | 0.0   | 0.0  | 0.0  | 0.0   | 0.0   | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| %ile BackOfQ(50%), veh/ln    | 5.0   | 25.5  | 4.3   | 7.2  | 20.1 | 5.1   | 6.8   | 27.0 | 3.2  | 10.7 | 9.8  | 1.1  |
| Unsig. Movement Delay, s/veh |       |       |       |      |      |       |       |      |      |      |      |      |
| LnGrp Delay(d), s/veh        | 52.5  | 100.0 | 54.4  | 74.8 | 75.1 | 24.4  | 109.3 | 74.1 | 26.2 | 64.2 | 35.0 | 7.0  |
| LnGrp LOS                    | D     | F     | D     | E    | E    | C     | F     | E    | C    | E    | F    | A    |
| Approach Vol, veh/h          | 725   |       |       | 807  |      |       | 1346  |      |      | 2049 |      |      |
| Approach Delay, s/veh        | 83.2  |       |       | 61.9 |      |       | 73.8  |      |      | 36.5 |      |      |
| Approach LOS                 | F     |       |       | E    |      |       | E     |      |      | D    |      |      |
| Timer - Assigned Phs         | 1     | 2     | 3     | 4    | 5    | 6     | 7     | 8    |      |      |      |      |
| Phs Duration (G+Y+Rc), s     | 40.6  | 66.0  | 21.4  | 52.0 | 21.1 | 85.5  | 19.0  | 54.3 |      |      |      |      |
| Change Period (Y+Rc), s      | * 6.5 | 5.8   | * 6.3 | 6.0  | 6.6  | * 6.5 | * 6.3 | 6.0  |      |      |      |      |
| Max Green Setting (Gmax), s  | * 30  | 60.2  | * 20  | 46.0 | 19.4 | * 70  | * 20  | 46.0 |      |      |      |      |
| Max Q Clear Time (g_c+I1), s | 27.4  | 0.0   | 14.9  | 46.2 | 14.4 | 0.0   | 12.5  | 40.6 |      |      |      |      |
| Green Ext Time (p_c), s      | 0.3   | 0.0   | 0.2   | 0.0  | 0.2  | 0.0   | 0.2   | 1.7  |      |      |      |      |

Intersection Summary

HCM 6th Ctrl Delay 57.7  
HCM 6th LOS E

Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



| HCS Two-Way Stop-Control Report                                                |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |  |  |
|--------------------------------------------------------------------------------|----------------------------------------|-----------|----|------|-----------|------|----|----------------------------|--------------------------|------|------|----|------------|------|-----|----|--|--|--|
| General Information                                                            |                                        |           |    |      |           |      |    | Site Information           |                          |      |      |    |            |      |     |    |  |  |  |
| Analyst                                                                        | Diane Zimmerman                        |           |    |      |           |      |    | Intersection               | Hurstbourne at North Ent |      |      |    |            |      |     |    |  |  |  |
| Agency/Co.                                                                     | Diane B. Zimmerman Traffic Engineering |           |    |      |           |      |    | Jurisdiction               |                          |      |      |    |            |      |     |    |  |  |  |
| Date Performed                                                                 | 8/8/2022                               |           |    |      |           |      |    | East/West Street           | North Ent/Morning Pt     |      |      |    |            |      |     |    |  |  |  |
| Analysis Year                                                                  | 2025                                   |           |    |      |           |      |    | North/South Street         | Hurstbourne Parkway      |      |      |    |            |      |     |    |  |  |  |
| Time Analyzed                                                                  | AM Peak                                |           |    |      |           |      |    | Peak Hour Factor           | 0.94                     |      |      |    |            |      |     |    |  |  |  |
| Intersection Orientation                                                       | North-South                            |           |    |      |           |      |    | Analysis Time Period (hrs) | 0.25                     |      |      |    |            |      |     |    |  |  |  |
| Project Description                                                            | 4700 Hurstbourne                       |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |  |  |
| <b>Lanes</b>                                                                   |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |  |  |
| <p style="text-align: center; font-size: small;">Major Street: North-South</p> |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |  |  |
| <b>Vehicle Volumes and Adjustments</b>                                         |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Approach                                                                       | Eastbound                              |           |    |      | Westbound |      |    |                            | Northbound               |      |      |    | Southbound |      |     |    |  |  |  |
| Movement                                                                       | U                                      | L         | T  | R    | U         | L    | T  | R                          | U                        | L    | T    | R  | U          | L    | T   | R  |  |  |  |
| Priority                                                                       |                                        | 10        | 11 | 12   |           | 7    | 8  | 9                          | 1U                       | 1    | 2    | 3  | 4U         | 4    | 5   | 6  |  |  |  |
| Number of Lanes                                                                |                                        | 1         | 0  | 1    |           | 0    | 1  | 0                          | 0                        | 1    | 2    | 0  | 0          | 1    | 2   | 0  |  |  |  |
| Configuration                                                                  |                                        | L         |    | R    |           |      | LR |                            |                          | L    | T    | TR |            | L    | T   | TR |  |  |  |
| Volume (veh/h)                                                                 |                                        | 48        |    | 24   |           | 1    |    | 2                          | 0                        | 5    | 1083 | 5  | 0          | 3    | 641 | 9  |  |  |  |
| Percent Heavy Vehicles (%)                                                     |                                        | 0         |    | 0    |           | 0    |    | 0                          | 3                        | 0    |      |    | 0          | 0    |     |    |  |  |  |
| Proportion Time Blocked                                                        |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Percent Grade (%)                                                              |                                        | 0         |    |      |           | 0    |    |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Right Turn Channelized                                                         |                                        | No        |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Median Type   Storage                                                          |                                        | Left Only |    |      |           |      |    |                            |                          | 1    |      |    |            |      |     |    |  |  |  |
| <b>Critical and Follow-up Headways</b>                                         |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Base Critical Headway (sec)                                                    |                                        | 7.5       |    | 6.9  |           | 7.5  |    | 6.9                        |                          | 4.1  |      |    |            | 4.1  |     |    |  |  |  |
| Critical Headway (sec)                                                         |                                        | 7.50      |    | 6.90 |           | 7.50 |    | 6.90                       |                          | 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 |    | 3.30                       |                          | 2.20 |      |    |            | 2.20 |     |    |  |  |  |
| <b>Delay, Queue Length, and Level of Service</b>                               |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Flow Rate, v (veh/h)                                                           |                                        | 51        |    | 26   |           |      |    | 3                          |                          | 5    |      |    |            | 3    |     |    |  |  |  |
| Capacity, c (veh/h)                                                            |                                        | 252       |    | 656  |           |      |    | 292                        |                          | 913  |      |    |            | 611  |     |    |  |  |  |
| v/c Ratio                                                                      |                                        | 0.20      |    | 0.04 |           |      |    | 0.01                       |                          | 0.01 |      |    |            | 0.01 |     |    |  |  |  |
| 95% Queue Length, Q <sub>95</sub> (veh)                                        |                                        | 0.7       |    | 0.1  |           |      |    | 0.0                        |                          | 0.0  |      |    |            | 0.0  |     |    |  |  |  |
| Control Delay (s/veh)                                                          |                                        | 22.9      |    | 10.7 |           |      |    | 17.5                       |                          | 9.0  |      |    |            | 10.9 |     |    |  |  |  |
| Level of Service (LOS)                                                         |                                        | C         |    | B    |           |      |    | C                          |                          | A    |      |    |            | B    |     |    |  |  |  |
| Approach Delay (s/veh)                                                         |                                        | 18.8      |    |      |           | 17.5 |    |                            |                          | 0.0  |      |    |            | 0.1  |     |    |  |  |  |
| Approach LOS                                                                   |                                        | C         |    |      |           | C    |    |                            |                          | A    |      |    |            | A    |     |    |  |  |  |



| HCS Two-Way Stop-Control Report                  |                                        |           |    |      |           |      |      |                            |                          |      |      |    |            |      |     |    |  |  |  |
|--------------------------------------------------|----------------------------------------|-----------|----|------|-----------|------|------|----------------------------|--------------------------|------|------|----|------------|------|-----|----|--|--|--|
| General Information                              |                                        |           |    |      |           |      |      | Site Information           |                          |      |      |    |            |      |     |    |  |  |  |
| Analyst                                          | Diane Zimmerman                        |           |    |      |           |      |      | Intersection               | Hurstbourne at North Ent |      |      |    |            |      |     |    |  |  |  |
| Agency/Co.                                       | Diane B. Zimmerman Traffic Engineering |           |    |      |           |      |      | Jurisdiction               |                          |      |      |    |            |      |     |    |  |  |  |
| Date Performed                                   | 8/8/2022                               |           |    |      |           |      |      | East/West Street           | North Ent/Morning Pt     |      |      |    |            |      |     |    |  |  |  |
| Analysis Year                                    | 2035                                   |           |    |      |           |      |      | North/South Street         | Hurstbourne Parkway      |      |      |    |            |      |     |    |  |  |  |
| Time Analyzed                                    | AM Peak                                |           |    |      |           |      |      | Peak Hour Factor           | 0.94                     |      |      |    |            |      |     |    |  |  |  |
| Intersection Orientation                         | North-South                            |           |    |      |           |      |      | Analysis Time Period (hrs) | 0.25                     |      |      |    |            |      |     |    |  |  |  |
| Project Description                              | 4700 Hurstbourne                       |           |    |      |           |      |      |                            |                          |      |      |    |            |      |     |    |  |  |  |
| <b>Lanes</b>                                     |                                        |           |    |      |           |      |      |                            |                          |      |      |    |            |      |     |    |  |  |  |
| <p>Major Street: North-South</p>                 |                                        |           |    |      |           |      |      |                            |                          |      |      |    |            |      |     |    |  |  |  |
| <b>Vehicle Volumes and Adjustments</b>           |                                        |           |    |      |           |      |      |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Approach                                         | Eastbound                              |           |    |      | Westbound |      |      |                            | Northbound               |      |      |    | Southbound |      |     |    |  |  |  |
| Movement                                         | U                                      | L         | T  | R    | U         | L    | T    | R                          | U                        | L    | T    | R  | U          | L    | T   | R  |  |  |  |
| Priority                                         |                                        | 10        | 11 | 12   |           | 7    | 8    | 9                          | 1U                       | 1    | 2    | 3  | 4U         | 4    | 5   | 6  |  |  |  |
| Number of Lanes                                  |                                        | 1         | 0  | 1    |           | 0    | 1    | 0                          | 0                        | 1    | 2    | 0  | 0          | 1    | 2   | 0  |  |  |  |
| Configuration                                    |                                        | L         |    | R    |           |      | LR   |                            |                          | L    | T    | TR |            | L    | T   | TR |  |  |  |
| Volume (veh/h)                                   |                                        | 48        |    | 24   |           | 1    |      | 2                          | 0                        | 5    | 1138 | 5  | 0          | 3    | 674 | 9  |  |  |  |
| Percent Heavy Vehicles (%)                       |                                        | 0         |    | 0    |           | 0    |      | 0                          | 3                        | 0    |      |    | 0          | 0    |     |    |  |  |  |
| Proportion Time Blocked                          |                                        |           |    |      |           |      |      |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Percent Grade (%)                                |                                        | 0         |    |      |           | 0    |      |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Right Turn Channelized                           |                                        | No        |    |      |           |      |      |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Median Type   Storage                            |                                        | Left Only |    |      |           |      |      |                            |                          |      | 1    |    |            |      |     |    |  |  |  |
| <b>Critical and Follow-up Headways</b>           |                                        |           |    |      |           |      |      |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Base Critical Headway (sec)                      |                                        | 7.5       |    | 6.9  |           | 7.5  |      | 6.9                        |                          | 4.1  |      |    |            | 4.1  |     |    |  |  |  |
| Critical Headway (sec)                           |                                        | 7.50      |    | 6.90 |           | 7.50 |      | 6.90                       |                          | 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 |      | 3.30                       |                          | 2.20 |      |    |            | 2.20 |     |    |  |  |  |
| <b>Delay, Queue Length, and Level of Service</b> |                                        |           |    |      |           |      |      |                            |                          |      |      |    |            |      |     |    |  |  |  |
| Flow Rate, v (veh/h)                             |                                        | 51        |    | 26   |           |      | 3    |                            |                          | 5    |      |    |            | 3    |     |    |  |  |  |
| Capacity, c (veh/h)                              |                                        | 237       |    | 639  |           |      | 273  |                            |                          | 886  |      |    |            | 581  |     |    |  |  |  |
| v/c Ratio                                        |                                        | 0.22      |    | 0.04 |           |      | 0.01 |                            |                          | 0.01 |      |    |            | 0.01 |     |    |  |  |  |
| 95% Queue Length, Q <sub>95</sub> (veh)          |                                        | 0.8       |    | 0.1  |           |      | 0.0  |                            |                          | 0.0  |      |    |            | 0.0  |     |    |  |  |  |
| Control Delay (s/veh)                            |                                        | 24.3      |    | 10.9 |           |      | 18.3 |                            |                          | 9.1  |      |    |            | 11.2 |     |    |  |  |  |
| Level of Service (LOS)                           |                                        | C         |    | B    |           |      | C    |                            |                          | A    |      |    |            | B    |     |    |  |  |  |
| Approach Delay (s/veh)                           |                                        | 19.8      |    |      |           | 18.3 |      |                            |                          |      | 0.0  |    |            |      | 0.0 |    |  |  |  |
| Approach LOS                                     |                                        | C         |    |      |           | C    |      |                            |                          |      | A    |    |            |      | A   |    |  |  |  |



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

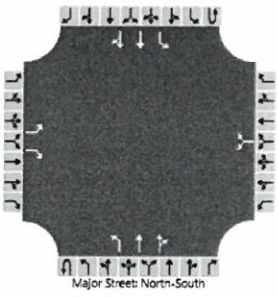
| HCS Two-Way Stop-Control Report                  |                                        |           |    |      |           |      |      |                            |            |      |     |                          |            |      |      |    |  |  |
|--------------------------------------------------|----------------------------------------|-----------|----|------|-----------|------|------|----------------------------|------------|------|-----|--------------------------|------------|------|------|----|--|--|
| General Information                              |                                        |           |    |      |           |      |      | Site Information           |            |      |     |                          |            |      |      |    |  |  |
| Analyst                                          | Diane Zimmerman                        |           |    |      |           |      |      | Intersection               |            |      |     | Hurstbourne at North Ent |            |      |      |    |  |  |
| Agency/Co.                                       | Diane B. Zimmerman Traffic Engineering |           |    |      |           |      |      | Jurisdiction               |            |      |     |                          |            |      |      |    |  |  |
| Date Performed                                   | 8/8/2022                               |           |    |      |           |      |      | East/West Street           |            |      |     | North Ent/Morning Pt     |            |      |      |    |  |  |
| Analysis Year                                    | 2025                                   |           |    |      |           |      |      | North/South Street         |            |      |     | Hurstbourne Parkway      |            |      |      |    |  |  |
| Time Analyzed                                    | PM Peak                                |           |    |      |           |      |      | Peak Hour Factor           |            |      |     | 0.98                     |            |      |      |    |  |  |
| Intersection Orientation                         | North-South                            |           |    |      |           |      |      | Analysis Time Period (hrs) |            |      |     | 0.25                     |            |      |      |    |  |  |
| Project Description                              | 4700 Hurstbourne                       |           |    |      |           |      |      |                            |            |      |     |                          |            |      |      |    |  |  |
| <b>Lanes</b>                                     |                                        |           |    |      |           |      |      |                            |            |      |     |                          |            |      |      |    |  |  |
|                                                  |                                        |           |    |      |           |      |      |                            |            |      |     |                          |            |      |      |    |  |  |
| <b>Vehicle Volumes and Adjustments</b>           |                                        |           |    |      |           |      |      |                            |            |      |     |                          |            |      |      |    |  |  |
| Approach                                         | Eastbound                              |           |    |      | Westbound |      |      |                            | Northbound |      |     |                          | Southbound |      |      |    |  |  |
| Movement                                         | U                                      | L         | T  | R    | U         | L    | T    | R                          | U          | L    | T   | R                        | U          | L    | T    | R  |  |  |
| Priority                                         |                                        | 10        | 11 | 12   |           | 7    | 8    | 9                          | 1U         | 1    | 2   | 3                        | 4U         | 4    | 5    | 6  |  |  |
| Number of Lanes                                  |                                        | 1         | 0  | 1    |           | 0    | 1    | 0                          |            | 1    | 2   | 0                        |            | 1    | 2    | 0  |  |  |
| Configuration                                    |                                        | L         |    | R    |           |      | LR   |                            |            | L    | T   | TR                       |            | L    | T    | TR |  |  |
| Volume (veh/h)                                   |                                        | 19        |    | 10   |           | 3    |      | 11                         | 0          | 16   | 894 | 5                        | 0          | 7    | 1197 | 33 |  |  |
| Percent Heavy Vehicles (%)                       |                                        | 0         |    | 0    |           | 0    |      | 0                          | 3          | 0    |     |                          | 0          | 0    |      |    |  |  |
| Proportion Time Blocked                          |                                        |           |    |      |           |      |      |                            |            |      |     |                          |            |      |      |    |  |  |
| Percent Grade (%)                                |                                        | 0         |    |      |           | 0    |      |                            |            |      |     |                          |            |      |      |    |  |  |
| Right Turn Channelized                           |                                        | No        |    |      |           |      |      |                            |            |      |     |                          |            |      |      |    |  |  |
| Median Type   Storage                            |                                        | Left Only |    |      |           |      |      |                            |            |      | 1   |                          |            |      |      |    |  |  |
| <b>Critical and Follow-up Headways</b>           |                                        |           |    |      |           |      |      |                            |            |      |     |                          |            |      |      |    |  |  |
| Base Critical Headway (sec)                      |                                        | 7.5       |    | 6.9  |           | 7.5  |      | 6.9                        |            | 4.1  |     |                          |            | 4.1  |      |    |  |  |
| Critical Headway (sec)                           |                                        | 7.50      |    | 6.90 |           | 7.50 |      | 6.90                       |            | 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 |      | 3.30                       |            | 2.20 |     |                          |            | 2.20 |      |    |  |  |
| <b>Delay, Queue Length, and Level of Service</b> |                                        |           |    |      |           |      |      |                            |            |      |     |                          |            |      |      |    |  |  |
| Flow Rate, v (veh/h)                             |                                        | 19        |    | 10   |           |      | 14   |                            |            | 16   |     |                          |            | 7    |      |    |  |  |
| Capacity, c (veh/h)                              |                                        | 141       |    | 431  |           |      | 386  |                            |            | 561  |     |                          |            | 752  |      |    |  |  |
| v/c Ratio                                        |                                        | 0.14      |    | 0.02 |           |      | 0.04 |                            |            | 0.03 |     |                          |            | 0.01 |      |    |  |  |
| 95% Queue Length, Q <sub>95</sub> (veh)          |                                        | 0.5       |    | 0.1  |           |      | 0.1  |                            |            | 0.1  |     |                          |            | 0.0  |      |    |  |  |
| Control Delay (s/veh)                            |                                        | 34.6      |    | 13.6 |           |      | 14.7 |                            |            | 11.6 |     |                          |            | 9.8  |      |    |  |  |
| Level of Service (LOS)                           |                                        | D         |    | B    |           |      | B    |                            |            | B    |     |                          |            | A    |      |    |  |  |
| Approach Delay (s/veh)                           |                                        | 27.3      |    |      |           | 14.7 |      |                            |            | 0.2  |     |                          |            | 0.1  |      |    |  |  |
| Approach LOS                                     |                                        | D         |    |      |           | B    |      |                            |            | A    |     |                          |            | A    |      |    |  |  |

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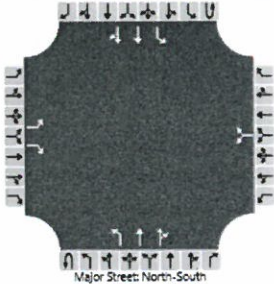
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| HCS Two-Way Stop-Control Report                                                                                                                               |                                        |      |    |      |           |      |    |                            |                          |      |     |    |            |      |      |      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------|----|------|-----------|------|----|----------------------------|--------------------------|------|-----|----|------------|------|------|------|
| General Information                                                                                                                                           |                                        |      |    |      |           |      |    | Site Information           |                          |      |     |    |            |      |      |      |
| Analyst                                                                                                                                                       | Diane Zimmerman                        |      |    |      |           |      |    | Intersection               | Hurstbourne at North Ent |      |     |    |            |      |      |      |
| Agency/Co.                                                                                                                                                    | Diane B. Zimmerman Traffic Engineering |      |    |      |           |      |    | Jurisdiction               |                          |      |     |    |            |      |      |      |
| Date Performed                                                                                                                                                | 8/8/2022                               |      |    |      |           |      |    | East/West Street           | North Ent/Morning Pt     |      |     |    |            |      |      |      |
| Analysis Year                                                                                                                                                 | 2035                                   |      |    |      |           |      |    | North/South Street         | Hurstbourne Parkway      |      |     |    |            |      |      |      |
| Time Analyzed                                                                                                                                                 | PM Peak                                |      |    |      |           |      |    | Peak Hour Factor           | 0.98                     |      |     |    |            |      |      |      |
| Intersection Orientation                                                                                                                                      | North-South                            |      |    |      |           |      |    | Analysis Time Period (hrs) | 0.25                     |      |     |    |            |      |      |      |
| Project Description                                                                                                                                           | 4700 Hurstbourne                       |      |    |      |           |      |    |                            |                          |      |     |    |            |      |      |      |
| <b>Lanes</b>                                                                                                                                                  |                                        |      |    |      |           |      |    |                            |                          |      |     |    |            |      |      |      |
|  <p style="font-size: small; margin-top: 5px;">Major Street: North-South</p> |                                        |      |    |      |           |      |    |                            |                          |      |     |    |            |      |      |      |
| <b>Vehicle Volumes and Adjustments</b>                                                                                                                        |                                        |      |    |      |           |      |    |                            |                          |      |     |    |            |      |      |      |
| Approach                                                                                                                                                      | Eastbound                              |      |    |      | Westbound |      |    |                            | Northbound               |      |     |    | Southbound |      |      |      |
| Movement                                                                                                                                                      | U                                      | L    | T  | R    | U         | L    | T  | R                          | U                        | L    | T   | R  | U          | L    | T    | R    |
| Priority                                                                                                                                                      |                                        | 10   | 11 | 12   |           | 7    | 8  | 9                          | 1U                       | 1    | 2   | 3  | 4U         | 4    | 5    | 6    |
| Number of Lanes                                                                                                                                               |                                        | 1    | 0  | 1    |           | 0    | 1  | 0                          | 0                        | 1    | 2   | 0  | 0          | 1    | 2    | 0    |
| Configuration                                                                                                                                                 |                                        | L    |    | R    |           |      | LR |                            |                          | L    | T   | TR |            | L    | T    | TR   |
| Volume (veh/h)                                                                                                                                                |                                        | 19   |    | 10   |           | 3    |    | 11                         | 0                        | 16   | 939 | 5  | 0          | 7    | 1258 | 33   |
| Percent Heavy Vehicles (%)                                                                                                                                    |                                        | 0    |    | 0    |           | 0    |    | 0                          | 3                        | 0    |     |    | 0          | 0    |      |      |
| Proportion Time Blocked                                                                                                                                       |                                        |      |    |      |           |      |    |                            |                          |      |     |    |            |      |      |      |
| Percent Grade (%)                                                                                                                                             | 0                                      |      |    |      | 0         |      |    |                            |                          |      |     |    |            |      |      |      |
| Right Turn Channelized                                                                                                                                        | No                                     |      |    |      |           |      |    |                            |                          |      |     |    |            |      |      |      |
| Median Type   Storage                                                                                                                                         | Left Only                              |      |    |      |           |      |    |                            | 1                        |      |     |    |            |      |      |      |
| <b>Critical and Follow-up Headways</b>                                                                                                                        |                                        |      |    |      |           |      |    |                            |                          |      |     |    |            |      |      |      |
| Base Critical Headway (sec)                                                                                                                                   |                                        | 7.5  |    | 6.9  |           | 7.5  |    | 6.9                        |                          | 4.1  |     |    |            | 4.1  |      |      |
| Critical Headway (sec)                                                                                                                                        |                                        | 7.50 |    | 6.90 |           | 7.50 |    | 6.90                       |                          | 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 |    | 3.30                       |                          | 2.20 |     |    |            | 2.20 |      |      |
| <b>Delay, Queue Length, and Level of Service</b>                                                                                                              |                                        |      |    |      |           |      |    |                            |                          |      |     |    |            |      |      |      |
| Flow Rate, v (veh/h)                                                                                                                                          |                                        | 19   |    | 10   |           |      |    | 14                         |                          |      |     |    | 16         |      |      | 7    |
| Capacity, c (veh/h)                                                                                                                                           |                                        | 129  |    | 411  |           |      |    | 366                        |                          |      |     |    | 531        |      |      | 723  |
| v/c Ratio                                                                                                                                                     |                                        | 0.15 |    | 0.02 |           |      |    | 0.04                       |                          |      |     |    | 0.03       |      |      | 0.01 |
| 95% Queue Length, Q <sub>95</sub> (veh)                                                                                                                       |                                        | 0.5  |    | 0.1  |           |      |    | 0.1                        |                          |      |     |    | 0.1        |      |      | 0.0  |
| Control Delay (s/veh)                                                                                                                                         |                                        | 37.7 |    | 14.0 |           |      |    | 15.2                       |                          |      |     |    | 12.0       |      |      | 10.0 |
| Level of Service (LOS)                                                                                                                                        |                                        | E    |    | B    |           |      |    | C                          |                          |      |     |    | B          |      |      | B    |
| Approach Delay (s/veh)                                                                                                                                        | 29.6                                   |      |    |      | 15.2      |      |    |                            | 0.2                      |      |     |    | 0.1        |      |      |      |
| Approach LOS                                                                                                                                                  | D                                      |      |    |      | C         |      |    |                            | A                        |      |     |    | A          |      |      |      |



| HCS Two-Way Stop-Control Report                                                                                                                                  |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |      |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------|----|------|-----------|------|----|----------------------------|--------------------------|------|------|----|------------|------|-----|------|--|--|--|
| General Information                                                                                                                                              |                                        |           |    |      |           |      |    | Site Information           |                          |      |      |    |            |      |     |      |  |  |  |
| Analyst                                                                                                                                                          | Diane Zimmerman                        |           |    |      |           |      |    | Intersection               | Hurstbourne at South Ent |      |      |    |            |      |     |      |  |  |  |
| Agency/Co.                                                                                                                                                       | Diane B. Zimmerman Traffic Engineering |           |    |      |           |      |    | Jurisdiction               |                          |      |      |    |            |      |     |      |  |  |  |
| Date Performed                                                                                                                                                   | 8/8/2022                               |           |    |      |           |      |    | East/West Street           | South Ent/4901 Hurst     |      |      |    |            |      |     |      |  |  |  |
| Analysis Year                                                                                                                                                    | 2025                                   |           |    |      |           |      |    | North/South Street         | Hurstbourne Parkway      |      |      |    |            |      |     |      |  |  |  |
| Time Analyzed                                                                                                                                                    | AM Peak                                |           |    |      |           |      |    | Peak Hour Factor           | 0.94                     |      |      |    |            |      |     |      |  |  |  |
| Intersection Orientation                                                                                                                                         | North-South                            |           |    |      |           |      |    | Analysis Time Period (hrs) | 0.25                     |      |      |    |            |      |     |      |  |  |  |
| Project Description                                                                                                                                              | 4700 Hurstbourne                       |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |      |  |  |  |
| Lanes                                                                                                                                                            |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |      |  |  |  |
|  <p style="font-size: small; text-align: center;">Major Street: North-South</p> |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |      |  |  |  |
| Vehicle Volumes and Adjustments                                                                                                                                  |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |      |  |  |  |
| Approach                                                                                                                                                         | Eastbound                              |           |    |      | Westbound |      |    |                            | Northbound               |      |      |    | Southbound |      |     |      |  |  |  |
| Movement                                                                                                                                                         | U                                      | L         | T  | R    | U         | L    | T  | R                          | U                        | L    | T    | R  | U          | L    | T   | R    |  |  |  |
| Priority                                                                                                                                                         |                                        | 10        | 11 | 12   |           | 7    | 8  | 9                          | 1U                       | 1    | 2    | 3  | 4U         | 4    | 5   | 6    |  |  |  |
| Number of Lanes                                                                                                                                                  |                                        | 1         | 0  | 1    |           | 0    | 1  | 0                          | 0                        | 1    | 2    | 0  | 0          | 1    | 2   | 0    |  |  |  |
| Configuration                                                                                                                                                    |                                        | L         |    | R    |           |      | LR |                            |                          | L    | T    | TR |            | L    | T   | TR   |  |  |  |
| Volume (veh/h)                                                                                                                                                   |                                        | 17        |    | 80   |           | 3    |    | 6                          | 0                        | 15   | 1070 | 3  | 0          | 2    | 666 | 3    |  |  |  |
| Percent Heavy Vehicles (%)                                                                                                                                       |                                        | 0         |    | 0    |           | 0    |    | 0                          | 3                        | 0    |      |    | 0          | 0    |     |      |  |  |  |
| Proportion Time Blocked                                                                                                                                          |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |      |  |  |  |
| Percent Grade (%)                                                                                                                                                |                                        | 0         |    |      |           | 0    |    |                            |                          |      |      |    |            |      |     |      |  |  |  |
| Right Turn Channelized                                                                                                                                           |                                        | No        |    |      |           |      |    |                            |                          |      |      |    |            |      |     |      |  |  |  |
| Median Type   Storage                                                                                                                                            |                                        | Left Only |    |      |           |      |    |                            |                          |      | 1    |    |            |      |     |      |  |  |  |
| Critical and Follow-up Headways                                                                                                                                  |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |      |  |  |  |
| Base Critical Headway (sec)                                                                                                                                      |                                        | 7.5       |    | 6.9  |           | 7.5  |    | 6.9                        |                          | 4.1  |      |    |            | 4.1  |     |      |  |  |  |
| Critical Headway (sec)                                                                                                                                           |                                        | 7.50      |    | 6.90 |           | 7.50 |    | 6.90                       |                          | 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 |    | 3.30                       |                          | 2.20 |      |    |            | 2.20 |     |      |  |  |  |
| Delay, Queue Length, and Level of Service                                                                                                                        |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |      |  |  |  |
| Flow Rate, v (veh/h)                                                                                                                                             |                                        | 18        |    | 85   |           |      |    | 10                         |                          |      |      |    | 16         |      |     | 2    |  |  |  |
| Capacity, c (veh/h)                                                                                                                                              |                                        | 241       |    | 646  |           |      |    | 284                        |                          |      |      |    | 897        |      |     | 619  |  |  |  |
| v/c Ratio                                                                                                                                                        |                                        | 0.07      |    | 0.13 |           |      |    | 0.03                       |                          |      |      |    | 0.02       |      |     | 0.00 |  |  |  |
| 95% Queue Length, Q <sub>95</sub> (veh)                                                                                                                          |                                        | 0.2       |    | 0.5  |           |      |    | 0.1                        |                          |      |      |    | 0.1        |      |     | 0.0  |  |  |  |
| Control Delay (s/veh)                                                                                                                                            |                                        | 21.1      |    | 11.4 |           |      |    | 18.1                       |                          |      |      |    | 9.1        |      |     | 10.8 |  |  |  |
| Level of Service (LOS)                                                                                                                                           |                                        | C         |    | B    |           |      |    | C                          |                          |      |      |    | A          |      |     | B    |  |  |  |
| Approach Delay (s/veh)                                                                                                                                           |                                        | 13.1      |    |      |           | 18.1 |    |                            |                          |      | 0.1  |    |            |      | 0.0 |      |  |  |  |
| Approach LOS                                                                                                                                                     |                                        | B         |    |      |           | C    |    |                            |                          |      | A    |    |            |      | A   |      |  |  |  |



| HCS Two-Way Stop-Control Report                  |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |
|--------------------------------------------------|----------------------------------------|-----------|----|------|-----------|------|----|----------------------------|--------------------------|------|------|----|------------|------|-----|----|--|
| General Information                              |                                        |           |    |      |           |      |    | Site Information           |                          |      |      |    |            |      |     |    |  |
| Analyst                                          | Diane Zimmerman                        |           |    |      |           |      |    | Intersection               | Hurstbourne at South Ent |      |      |    |            |      |     |    |  |
| Agency/Co.                                       | Diane B. Zimmerman Traffic Engineering |           |    |      |           |      |    | Jurisdiction               |                          |      |      |    |            |      |     |    |  |
| Date Performed                                   | 8/8/2022                               |           |    |      |           |      |    | East/West Street           | South Ent/4901 Hurst     |      |      |    |            |      |     |    |  |
| Analysis Year                                    | 2035                                   |           |    |      |           |      |    | North/South Street         | Hurstbourne Parkway      |      |      |    |            |      |     |    |  |
| Time Analyzed                                    | AM Peak                                |           |    |      |           |      |    | Peak Hour Factor           | 0.94                     |      |      |    |            |      |     |    |  |
| Intersection Orientation                         | North-South                            |           |    |      |           |      |    | Analysis Time Period (hrs) | 0.25                     |      |      |    |            |      |     |    |  |
| Project Description                              | 4700 Hurstbourne                       |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |
| <b>Lanes</b>                                     |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |
|                                                  |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |
| <b>Vehicle Volumes and Adjustments</b>           |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |
| Approach                                         | Eastbound                              |           |    |      | Westbound |      |    |                            | Northbound               |      |      |    | Southbound |      |     |    |  |
| Movement                                         | U                                      | L         | T  | R    | U         | L    | T  | R                          | U                        | L    | T    | R  | U          | L    | T   | R  |  |
| Priority                                         |                                        | 10        | 11 | 12   |           | 7    | 8  | 9                          | 1U                       | 1    | 2    | 3  | 4U         | 4    | 5   | 6  |  |
| Number of Lanes                                  |                                        | 1         | 0  | 1    |           | 0    | 1  | 0                          | 0                        | 1    | 2    | 0  | 0          | 1    | 2   | 0  |  |
| Configuration                                    |                                        | L         |    | R    |           |      | LR |                            |                          | L    | T    | TR |            | L    | T   | TR |  |
| Volume (veh/h)                                   |                                        | 17        |    | 80   |           | 3    |    | 6                          | 0                        | 15   | 1124 | 3  | 0          | 2    | 266 | 3  |  |
| Percent Heavy Vehicles (%)                       |                                        | 0         |    | 0    |           | 0    |    | 0                          | 3                        | 0    |      |    | 0          | 0    |     |    |  |
| Proportion Time Blocked                          |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |
| Percent Grade (%)                                |                                        | 0         |    |      |           | 0    |    |                            |                          |      |      |    |            |      |     |    |  |
| Right Turn Channelized                           |                                        | No        |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |
| Median Type   Storage                            |                                        | Left Only |    |      |           |      |    |                            |                          | 1    |      |    |            |      |     |    |  |
| <b>Critical and Follow-up Headways</b>           |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |
| Base Critical Headway (sec)                      |                                        | 7.5       |    | 6.9  |           | 7.5  |    | 6.9                        |                          | 4.1  |      |    |            | 4.1  |     |    |  |
| Critical Headway (sec)                           |                                        | 7.50      |    | 6.90 |           | 7.50 |    | 6.90                       |                          | 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 |    | 3.30                       |                          | 2.20 |      |    |            | 2.20 |     |    |  |
| <b>Delay, Queue Length, and Level of Service</b> |                                        |           |    |      |           |      |    |                            |                          |      |      |    |            |      |     |    |  |
| Flow Rate, v (veh/h)                             |                                        | 18        |    | 85   |           | 10   |    |                            |                          | 16   |      |    |            | 2    |     |    |  |
| Capacity, c (veh/h)                              |                                        | 334       |    | 885  |           | 282  |    |                            |                          | 1288 |      |    |            | 589  |     |    |  |
| v/c Ratio                                        |                                        | 0.05      |    | 0.10 |           | 0.03 |    |                            |                          | 0.01 |      |    |            | 0.00 |     |    |  |
| 95% Queue Length, Q <sub>95</sub> (veh)          |                                        | 0.2       |    | 0.3  |           | 0.1  |    |                            |                          | 0.0  |      |    |            | 0.0  |     |    |  |
| Control Delay (s/veh)                            |                                        | 16.4      |    | 9.5  |           | 18.2 |    |                            |                          | 7.8  |      |    |            | 11.1 |     |    |  |
| Level of Service (LOS)                           |                                        | C         |    | A    |           | C    |    |                            |                          | A    |      |    |            | B    |     |    |  |
| Approach Delay (s/veh)                           |                                        | 10.7      |    |      |           | 18.2 |    |                            |                          | 0.1  |      |    |            | 0.1  |     |    |  |
| Approach LOS                                     |                                        | B         |    |      |           | C    |    |                            |                          | A    |      |    |            | A    |     |    |  |



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

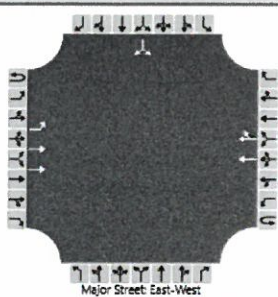
| HCS Two-Way Stop-Control Report                  |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
|--------------------------------------------------|----------------------------------------|-----------|----|------|-----------|------|----|----------------------------|----------------------------|------|-----|----|------------|------|------|------|--|--|--|
| General Information                              |                                        |           |    |      |           |      |    | Site Information           |                            |      |     |    |            |      |      |      |  |  |  |
| Analyst                                          | Diane Zimmerman                        |           |    |      |           |      |    | Intersection               | Hurstbourne at South Ent   |      |     |    |            |      |      |      |  |  |  |
| Agency/Co.                                       | Diane B. Zimmerman Traffic Engineering |           |    |      |           |      |    | Jurisdiction               |                            |      |     |    |            |      |      |      |  |  |  |
| Date Performed                                   | 8/8/2022                               |           |    |      |           |      |    | East/West Street           | South Ent/4901 Hurstbourne |      |     |    |            |      |      |      |  |  |  |
| Analysis Year                                    | 2025                                   |           |    |      |           |      |    | North/South Street         | Hurstbourne Parkway        |      |     |    |            |      |      |      |  |  |  |
| Time Analyzed                                    | PM Peak                                |           |    |      |           |      |    | Peak Hour Factor           | 0.98                       |      |     |    |            |      |      |      |  |  |  |
| Intersection Orientation                         | North-South                            |           |    |      |           |      |    | Analysis Time Period (hrs) | 0.25                       |      |     |    |            |      |      |      |  |  |  |
| Project Description                              | 4700 Hurstbourne                       |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| <b>Lanes</b>                                     |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| <p>Major Street: North-South</p>                 |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| <b>Vehicle Volumes and Adjustments</b>           |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Approach                                         | Eastbound                              |           |    |      | Westbound |      |    |                            | Northbound                 |      |     |    | Southbound |      |      |      |  |  |  |
| Movement                                         | U                                      | L         | T  | R    | U         | L    | T  | R                          | U                          | L    | T   | R  | U          | L    | T    | R    |  |  |  |
| Priority                                         |                                        | 10        | 11 | 12   |           | 7    | 8  | 9                          | 1U                         | 1    | 2   | 3  | 4U         | 4    | 5    | 6    |  |  |  |
| Number of Lanes                                  |                                        | 1         | 0  | 1    |           | 0    | 1  | 0                          | 0                          | 1    | 2   | 0  | 0          | 1    | 2    | 0    |  |  |  |
| Configuration                                    |                                        | L         |    | R    |           |      | LR |                            |                            | L    | T   | TR |            | L    | T    | TR   |  |  |  |
| Volume (veh/h)                                   |                                        | 7         |    | 31   |           | 3    |    | 5                          | 0                          | 55   | 904 | 4  | 0          | 6    | 1193 | 11   |  |  |  |
| Percent Heavy Vehicles (%)                       |                                        | 0         |    | 0    |           | 0    |    | 0                          | 3                          | 0    |     |    | 0          | 0    |      |      |  |  |  |
| Proportion Time Blocked                          |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Percent Grade (%)                                |                                        | 0         |    |      |           | 0    |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Right Turn Channelized                           |                                        | No        |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Median Type   Storage                            |                                        | Left Only |    |      |           |      |    |                            |                            |      | 1   |    |            |      |      |      |  |  |  |
| <b>Critical and Follow-up Headways</b>           |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Base Critical Headway (sec)                      |                                        | 7.5       |    | 6.9  |           | 7.5  |    | 6.9                        |                            | 4.1  |     |    |            | 4.1  |      |      |  |  |  |
| Critical Headway (sec)                           |                                        | 7.50      |    | 6.90 |           | 7.50 |    | 6.90                       |                            | 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 |    | 3.30                       |                            | 2.20 |     |    |            | 2.20 |      |      |  |  |  |
| <b>Delay, Queue Length, and Level of Service</b> |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Flow Rate, v (veh/h)                             |                                        | 7         |    | 32   |           |      |    | 8                          |                            |      |     |    | 56         |      |      | 6    |  |  |  |
| Capacity, c (veh/h)                              |                                        | 136       |    | 440  |           |      |    | 275                        |                            |      |     |    | 574        |      |      | 746  |  |  |  |
| v/c Ratio                                        |                                        | 0.05      |    | 0.07 |           |      |    | 0.03                       |                            |      |     |    | 0.10       |      |      | 0.01 |  |  |  |
| 95% Queue Length, Q <sub>95</sub> (veh)          |                                        | 0.2       |    | 0.2  |           |      |    | 0.1                        |                            |      |     |    | 0.3        |      |      | 0.0  |  |  |  |
| Control Delay (s/veh)                            |                                        | 33.0      |    | 13.8 |           |      |    | 18.5                       |                            |      |     |    | 11.9       |      |      | 9.9  |  |  |  |
| Level of Service (LOS)                           |                                        | D         |    | B    |           |      |    | C                          |                            |      |     |    | B          |      |      | A    |  |  |  |
| Approach Delay (s/veh)                           |                                        | 17.4      |    |      |           | 18.5 |    |                            |                            |      | 0.7 |    |            |      |      | 0.0  |  |  |  |
| Approach LOS                                     |                                        | C         |    |      |           | C    |    |                            |                            |      | A   |    |            |      |      | A    |  |  |  |

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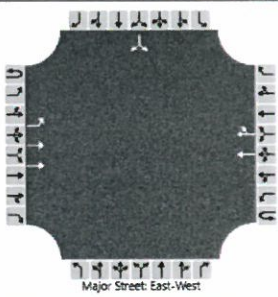
| HCS Two-Way Stop-Control Report                                                                                                                                |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |   |      |      |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------|-----|---|-----------|---|------|----------------------------|-----------------------|---|---|---|------------|---|------|------|------|
| General Information                                                                                                                                            |                                        |      |     |   |           |   |      | Site Information           |                       |   |   |   |            |   |      |      |      |
| Analyst                                                                                                                                                        | Diane Zimmerman                        |      |     |   |           |   |      | Intersection               | Bardstown at New Road |   |   |   |            |   |      |      |      |
| Agency/Co.                                                                                                                                                     | Diane B. Zimmerman Traffic Engineering |      |     |   |           |   |      | Jurisdiction               |                       |   |   |   |            |   |      |      |      |
| Date Performed                                                                                                                                                 | 8/8/2022                               |      |     |   |           |   |      | East/West Street           | Bardstown Rd          |   |   |   |            |   |      |      |      |
| Analysis Year                                                                                                                                                  | 2035                                   |      |     |   |           |   |      | North/South Street         | New Road              |   |   |   |            |   |      |      |      |
| Time Analyzed                                                                                                                                                  | AM Peak                                |      |     |   |           |   |      | Peak Hour Factor           | 0.92                  |   |   |   |            |   |      |      |      |
| Intersection Orientation                                                                                                                                       | East-West                              |      |     |   |           |   |      | Analysis Time Period (hrs) | 0.25                  |   |   |   |            |   |      |      |      |
| Project Description                                                                                                                                            | 4700 Hurstbourne                       |      |     |   |           |   |      |                            |                       |   |   |   |            |   |      |      |      |
| Lanes                                                                                                                                                          |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |   |      |      |      |
|  <p style="text-align: center; font-size: small;">Major Street: East-West</p> |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |   |      |      |      |
| Vehicle Volumes and Adjustments                                                                                                                                |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |   |      |      |      |
| Approach                                                                                                                                                       | Eastbound                              |      |     |   | Westbound |   |      |                            | Northbound            |   |   |   | Southbound |   |      |      |      |
| Movement                                                                                                                                                       | U                                      | L    | T   | R | U         | L | T    | R                          | U                     | L | T | R | U          | L | T    | R    |      |
| Priority                                                                                                                                                       | 1U                                     | 1    | 2   | 3 | 4U        | 4 | 5    | 6                          |                       |   | 7 | 8 | 9          |   | 10   | 11   | 12   |
| Number of Lanes                                                                                                                                                | 0                                      | 1    | 2   | 0 | 0         | 0 | 2    | 0                          |                       |   | 0 | 0 | 0          |   | 0    | 1    | 0    |
| Configuration                                                                                                                                                  |                                        | L    | T   |   |           |   | T    | TR                         |                       |   |   |   |            |   |      | LR   |      |
| Volume (veh/h)                                                                                                                                                 | 0                                      | 18   | 614 |   |           |   | 1429 | 0                          |                       |   |   |   |            |   | 0    |      | 90   |
| Percent Heavy Vehicles (%)                                                                                                                                     | 3                                      | 0    |     |   |           |   |      |                            |                       |   |   |   |            |   | 0    |      | 0    |
| Proportion Time Blocked                                                                                                                                        |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |   |      |      |      |
| Percent Grade (%)                                                                                                                                              |                                        |      |     |   |           |   |      |                            |                       |   |   |   | 0          |   |      |      |      |
| Right Turn Channelized                                                                                                                                         |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |   |      |      |      |
| Median Type   Storage                                                                                                                                          |                                        |      |     |   | Left Only |   |      |                            |                       |   |   |   | 1          |   |      |      |      |
| Critical and Follow-up Headways                                                                                                                                |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |   |      |      |      |
| Base Critical Headway (sec)                                                                                                                                    |                                        | 4.1  |     |   |           |   |      |                            |                       |   |   |   |            |   | 7.5  |      | 6.9  |
| Critical Headway (sec)                                                                                                                                         |                                        | 4.10 |     |   |           |   |      |                            |                       |   |   |   |            |   | 6.80 |      | 6.90 |
| Base Follow-Up Headway (sec)                                                                                                                                   |                                        | 2.2  |     |   |           |   |      |                            |                       |   |   |   |            |   | 3.5  |      | 3.3  |
| Follow-Up Headway (sec)                                                                                                                                        |                                        | 2.20 |     |   |           |   |      |                            |                       |   |   |   |            |   | 3.50 |      | 3.30 |
| Delay, Queue Length, and Level of Service                                                                                                                      |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |   |      |      |      |
| Flow Rate, v (veh/h)                                                                                                                                           |                                        | 20   |     |   |           |   |      |                            |                       |   |   |   |            |   |      | 98   |      |
| Capacity, c (veh/h)                                                                                                                                            |                                        | 432  |     |   |           |   |      |                            |                       |   |   |   |            |   |      | 344  |      |
| v/c Ratio                                                                                                                                                      |                                        | 0.05 |     |   |           |   |      |                            |                       |   |   |   |            |   |      | 0.28 |      |
| 95% Queue Length, Q <sub>95</sub> (veh)                                                                                                                        |                                        | 0.1  |     |   |           |   |      |                            |                       |   |   |   |            |   |      | 1.1  |      |
| Control Delay (s/veh)                                                                                                                                          |                                        | 13.7 |     |   |           |   |      |                            |                       |   |   |   |            |   |      | 19.6 |      |
| Level of Service (LOS)                                                                                                                                         |                                        | B    |     |   |           |   |      |                            |                       |   |   |   |            |   |      | C    |      |
| Approach Delay (s/veh)                                                                                                                                         | 0.4                                    |      |     |   |           |   |      |                            |                       |   |   |   | 19.6       |   |      |      |      |
| Approach LOS                                                                                                                                                   | A                                      |      |     |   |           |   |      |                            |                       |   |   |   | C          |   |      |      |      |

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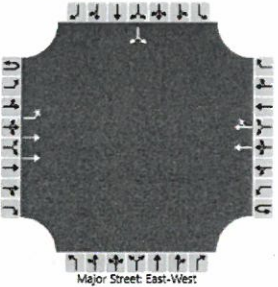
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| HCS Two-Way Stop-Control Report                                                   |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
|-----------------------------------------------------------------------------------|----------------------------------------|------|------|---|-----------|---|-----|----|----------------------------|-----------------------|---|---|------------|------|------|------|
| General Information                                                               |                                        |      |      |   |           |   |     |    | Site Information           |                       |   |   |            |      |      |      |
| Analyst                                                                           | Diane Zimmerman                        |      |      |   |           |   |     |    | Intersection               | Bardstown at New Road |   |   |            |      |      |      |
| Agency/Co.                                                                        | Diane B. Zimmerman Traffic Engineering |      |      |   |           |   |     |    | Jurisdiction               |                       |   |   |            |      |      |      |
| Date Performed                                                                    | 8/8/2022                               |      |      |   |           |   |     |    | East/West Street           | Bardstown Rd          |   |   |            |      |      |      |
| Analysis Year                                                                     | 2025                                   |      |      |   |           |   |     |    | North/South Street         | New Road              |   |   |            |      |      |      |
| Time Analyzed                                                                     | PM Peak                                |      |      |   |           |   |     |    | Peak Hour Factor           | 0.92                  |   |   |            |      |      |      |
| Intersection Orientation                                                          | East-West                              |      |      |   |           |   |     |    | Analysis Time Period (hrs) | 0.25                  |   |   |            |      |      |      |
| Project Description                                                               | 4700 Hurstbourne                       |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Lanes                                                                             |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
|  |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Vehicle Volumes and Adjustments                                                   |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Approach                                                                          | Eastbound                              |      |      |   | Westbound |   |     |    | Northbound                 |                       |   |   | Southbound |      |      |      |
| Movement                                                                          | U                                      | L    | T    | R | U         | L | T   | R  | U                          | L                     | T | R | U          | L    | T    | R    |
| Priority                                                                          | 1U                                     | 1    | 2    | 3 | 4U        | 4 | 5   | 6  |                            | 7                     | 8 | 9 |            | 10   | 11   | 12   |
| Number of Lanes                                                                   | 0                                      | 1    | 2    | 0 | 0         | 0 | 2   | 0  |                            | 0                     | 0 | 0 |            | 0    | 1    | 0    |
| Configuration                                                                     |                                        | L    | T    |   |           |   | T   | TR |                            |                       |   |   |            |      | LR   |      |
| Volume (veh/h)                                                                    | 0                                      | 61   | 1406 |   |           |   | 793 | 0  |                            |                       |   |   |            | 0    |      | 36   |
| Percent Heavy Vehicles (%)                                                        | 3                                      | 0    |      |   |           |   |     |    |                            |                       |   |   |            | 0    |      | 0    |
| Proportion Time Blocked                                                           |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Percent Grade (%)                                                                 | 0                                      |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Right Turn Channelized                                                            |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Median Type   Storage                                                             | Left Only                              |      |      |   |           |   |     |    | 1                          |                       |   |   |            |      |      |      |
| Critical and Follow-up Headways                                                   |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Base Critical Headway (sec)                                                       |                                        | 4.1  |      |   |           |   |     |    |                            |                       |   |   |            | 7.5  |      | 6.9  |
| Critical Headway (sec)                                                            |                                        | 4.10 |      |   |           |   |     |    |                            |                       |   |   |            | 6.80 |      | 6.90 |
| Base Follow-Up Headway (sec)                                                      |                                        | 2.2  |      |   |           |   |     |    |                            |                       |   |   |            | 3.5  |      | 3.3  |
| Follow-Up Headway (sec)                                                           |                                        | 2.20 |      |   |           |   |     |    |                            |                       |   |   |            | 3.50 |      | 3.30 |
| Delay, Queue Length, and Level of Service                                         |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Flow Rate, v (veh/h)                                                              |                                        | 66   |      |   |           |   |     |    |                            |                       |   |   |            |      | 39   |      |
| Capacity, c (veh/h)                                                               |                                        | 789  |      |   |           |   |     |    |                            |                       |   |   |            |      | 578  |      |
| v/c Ratio                                                                         |                                        | 0.08 |      |   |           |   |     |    |                            |                       |   |   |            |      | 0.07 |      |
| 95% Queue Length, Q <sub>95</sub> (veh)                                           |                                        | 0.3  |      |   |           |   |     |    |                            |                       |   |   |            |      | 0.2  |      |
| Control Delay (s/veh)                                                             |                                        | 10.0 |      |   |           |   |     |    |                            |                       |   |   |            |      | 11.7 |      |
| Level of Service (LOS)                                                            |                                        | A    |      |   |           |   |     |    |                            |                       |   |   |            |      | B    |      |
| Approach Delay (s/veh)                                                            | 0.4                                    |      |      |   |           |   |     |    |                            |                       |   |   | 11.7       |      |      |      |
| Approach LOS                                                                      | A                                      |      |      |   |           |   |     |    |                            |                       |   |   | B          |      |      |      |



| HCS Two-Way Stop-Control Report                                                   |                                        |      |     |   |           |   |      |    |                            |                       |   |   |            |      |      |      |
|-----------------------------------------------------------------------------------|----------------------------------------|------|-----|---|-----------|---|------|----|----------------------------|-----------------------|---|---|------------|------|------|------|
| General Information                                                               |                                        |      |     |   |           |   |      |    | Site Information           |                       |   |   |            |      |      |      |
| Analyst                                                                           | Diane Zimmerman                        |      |     |   |           |   |      |    | Intersection               | Bardstown at New Road |   |   |            |      |      |      |
| Agency/Co.                                                                        | Diane B. Zimmerman Traffic Engineering |      |     |   |           |   |      |    | Jurisdiction               |                       |   |   |            |      |      |      |
| Date Performed                                                                    | 8/8/2022                               |      |     |   |           |   |      |    | East/West Street           | Bardstown Rd          |   |   |            |      |      |      |
| Analysis Year                                                                     | 2025                                   |      |     |   |           |   |      |    | North/South Street         | New Road              |   |   |            |      |      |      |
| Time Analyzed                                                                     | AM Peak                                |      |     |   |           |   |      |    | Peak Hour Factor           | 0.92                  |   |   |            |      |      |      |
| Intersection Orientation                                                          | East-West                              |      |     |   |           |   |      |    | Analysis Time Period (hrs) | 0.25                  |   |   |            |      |      |      |
| Project Description                                                               | 4700 Hurstbourne                       |      |     |   |           |   |      |    |                            |                       |   |   |            |      |      |      |
| Lanes                                                                             |                                        |      |     |   |           |   |      |    |                            |                       |   |   |            |      |      |      |
|  |                                        |      |     |   |           |   |      |    |                            |                       |   |   |            |      |      |      |
| Vehicle Volumes and Adjustments                                                   |                                        |      |     |   |           |   |      |    |                            |                       |   |   |            |      |      |      |
| Approach                                                                          | Eastbound                              |      |     |   | Westbound |   |      |    | Northbound                 |                       |   |   | Southbound |      |      |      |
| Movement                                                                          | U                                      | L    | T   | R | U         | L | T    | R  | U                          | L                     | T | R | U          | L    | T    | R    |
| Priority                                                                          | 1U                                     | 1    | 2   | 3 | 4U        | 4 | 5    | 6  |                            | 7                     | 8 | 9 |            | 10   | 11   | 12   |
| Number of Lanes                                                                   | 0                                      | 1    | 2   | 0 | 0         | 0 | 2    | 0  |                            | 0                     | 0 | 0 |            | 0    | 1    | 0    |
| Configuration                                                                     |                                        | L    | T   |   |           |   | T    | TR |                            |                       |   |   |            |      | LR   |      |
| Volume (veh/h)                                                                    | 0                                      | 18   | 584 |   |           |   | 1359 | 0  |                            |                       |   |   |            | 0    |      | 90   |
| Percent Heavy Vehicles (%)                                                        | 3                                      | 0    |     |   |           |   |      |    |                            |                       |   |   |            | 0    |      | 0    |
| Proportion Time Blocked                                                           |                                        |      |     |   |           |   |      |    |                            |                       |   |   |            |      |      |      |
| Percent Grade (%)                                                                 | 0                                      |      |     |   |           |   |      |    |                            |                       |   |   |            |      |      |      |
| Right Turn Channelized                                                            |                                        |      |     |   |           |   |      |    |                            |                       |   |   |            |      |      |      |
| Median Type   Storage                                                             | Left Only                              |      |     |   |           |   |      |    | 1                          |                       |   |   |            |      |      |      |
| Critical and Follow-up Headways                                                   |                                        |      |     |   |           |   |      |    |                            |                       |   |   |            |      |      |      |
| Base Critical Headway (sec)                                                       |                                        | 4.1  |     |   |           |   |      |    |                            |                       |   |   |            | 7.5  |      | 6.9  |
| Critical Headway (sec)                                                            |                                        | 4.10 |     |   |           |   |      |    |                            |                       |   |   |            | 6.80 |      | 6.90 |
| Base Follow-Up Headway (sec)                                                      |                                        | 2.2  |     |   |           |   |      |    |                            |                       |   |   |            | 3.5  |      | 3.3  |
| Follow-Up Headway (sec)                                                           |                                        | 2.20 |     |   |           |   |      |    |                            |                       |   |   |            | 3.50 |      | 3.30 |
| Delay, Queue Length, and Level of Service                                         |                                        |      |     |   |           |   |      |    |                            |                       |   |   |            |      |      |      |
| Flow Rate, v (veh/h)                                                              |                                        | 20   |     |   |           |   |      |    |                            |                       |   |   |            |      | 98   |      |
| Capacity, c (veh/h)                                                               |                                        | 462  |     |   |           |   |      |    |                            |                       |   |   |            |      | 365  |      |
| v/c Ratio                                                                         |                                        | 0.04 |     |   |           |   |      |    |                            |                       |   |   |            |      | 0.27 |      |
| 95% Queue Length, Q <sub>95</sub> (veh)                                           |                                        | 0.1  |     |   |           |   |      |    |                            |                       |   |   |            |      | 1.1  |      |
| Control Delay (s/veh)                                                             |                                        | 13.1 |     |   |           |   |      |    |                            |                       |   |   |            |      | 18.5 |      |
| Level of Service (LOS)                                                            |                                        | B    |     |   |           |   |      |    |                            |                       |   |   |            |      | C    |      |
| Approach Delay (s/veh)                                                            | 0.4                                    |      |     |   |           |   |      |    | 18.5                       |                       |   |   |            |      |      |      |
| Approach LOS                                                                      | A                                      |      |     |   |           |   |      |    | C                          |                       |   |   |            |      |      |      |



| HCS Two-Way Stop-Control Report                  |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
|--------------------------------------------------|----------------------------------------|-----------|----|------|-----------|------|----|----------------------------|----------------------------|------|-----|----|------------|------|------|------|--|--|--|
| General Information                              |                                        |           |    |      |           |      |    | Site Information           |                            |      |     |    |            |      |      |      |  |  |  |
| Analyst                                          | Diane Zimmerman                        |           |    |      |           |      |    | Intersection               | Hurstbourne at South Ent   |      |     |    |            |      |      |      |  |  |  |
| Agency/Co.                                       | Diane B. Zimmerman Traffic Engineering |           |    |      |           |      |    | Jurisdiction               |                            |      |     |    |            |      |      |      |  |  |  |
| Date Performed                                   | 8/8/2022                               |           |    |      |           |      |    | East/West Street           | South Ent/4901 Hurstbourne |      |     |    |            |      |      |      |  |  |  |
| Analysis Year                                    | 2035                                   |           |    |      |           |      |    | North/South Street         | Hurstbourne Parkway        |      |     |    |            |      |      |      |  |  |  |
| Time Analyzed                                    | PM Peak                                |           |    |      |           |      |    | Peak Hour Factor           | 0.98                       |      |     |    |            |      |      |      |  |  |  |
| Intersection Orientation                         | North-South                            |           |    |      |           |      |    | Analysis Time Period (hrs) | 0.25                       |      |     |    |            |      |      |      |  |  |  |
| Project Description                              | 4700 Hurstbourne                       |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| <b>Lanes</b>                                     |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| <p>Major Street: North-South</p>                 |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| <b>Vehicle Volumes and Adjustments</b>           |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Approach                                         | Eastbound                              |           |    |      | Westbound |      |    |                            | Northbound                 |      |     |    | Southbound |      |      |      |  |  |  |
| Movement                                         | U                                      | L         | T  | R    | U         | L    | T  | R                          | U                          | L    | T   | R  | U          | L    | T    | R    |  |  |  |
| Priority                                         |                                        | 10        | 11 | 12   |           | 7    | 8  | 9                          | 1U                         | 1    | 2   | 3  | 4U         | 4    | 5    | 6    |  |  |  |
| Number of Lanes                                  |                                        | 1         | 0  | 1    |           | 0    | 1  | 0                          |                            | 1    | 2   | 0  |            | 1    | 2    | 0    |  |  |  |
| Configuration                                    |                                        | L         |    | R    |           |      | LR |                            |                            | L    | T   | TR |            | L    | T    | TR   |  |  |  |
| Volume (veh/h)                                   |                                        | 7         |    | 31   |           | 3    |    | 5                          | 0                          | 55   | 949 | 4  | 0          | 6    | 1253 | 11   |  |  |  |
| Percent Heavy Vehicles (%)                       |                                        | 0         |    | 0    |           | 0    |    | 0                          | 3                          | 0    |     |    | 0          | 0    |      |      |  |  |  |
| Proportion Time Blocked                          |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Percent Grade (%)                                |                                        | 0         |    |      |           | 0    |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Right Turn Channelized                           |                                        | No        |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Median Type   Storage                            |                                        | Left Only |    |      |           |      |    |                            |                            |      | 1   |    |            |      |      |      |  |  |  |
| <b>Critical and Follow-up Headways</b>           |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Base Critical Headway (sec)                      |                                        | 7.5       |    | 6.9  |           | 7.5  |    | 6.9                        |                            | 4.1  |     |    |            | 4.1  |      |      |  |  |  |
| Critical Headway (sec)                           |                                        | 7.50      |    | 6.90 |           | 7.50 |    | 6.90                       |                            | 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 |    | 3.30                       |                            | 2.20 |     |    |            | 2.20 |      |      |  |  |  |
| <b>Delay, Queue Length, and Level of Service</b> |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |      |  |  |  |
| Flow Rate, v (veh/h)                             |                                        | 7         |    | 32   |           |      |    | 8                          |                            |      |     |    | 56         |      |      | 6    |  |  |  |
| Capacity, c (veh/h)                              |                                        | 125       |    | 420  |           |      |    | 258                        |                            |      |     |    | 544        |      |      | 717  |  |  |  |
| v/c Ratio                                        |                                        | 0.06      |    | 0.08 |           |      |    | 0.03                       |                            |      |     |    | 0.10       |      |      | 0.01 |  |  |  |
| 95% Queue Length, Q <sub>95</sub> (veh)          |                                        | 0.2       |    | 0.2  |           |      |    | 0.1                        |                            |      |     |    | 0.3        |      |      | 0.0  |  |  |  |
| Control Delay (s/veh)                            |                                        | 35.6      |    | 14.3 |           |      |    | 19.4                       |                            |      |     |    | 12.4       |      |      | 10.1 |  |  |  |
| Level of Service (LOS)                           |                                        | E         |    | B    |           |      |    | C                          |                            |      |     |    | B          |      |      | B    |  |  |  |
| Approach Delay (s/veh)                           |                                        | 18.2      |    |      |           | 19.4 |    |                            |                            |      | 0.7 |    |            |      |      | 0.0  |  |  |  |
| Approach LOS                                     |                                        | C         |    |      |           | C    |    |                            |                            |      | A   |    |            |      |      | A    |  |  |  |



Apartments  
4700 Hurstbourne Parkway  
Traffic Impact Study

| HCS Two-Way Stop-Control Report                  |                                        |      |      |   |           |   |     |                            |                       |   |   |   |            |      |      |      |
|--------------------------------------------------|----------------------------------------|------|------|---|-----------|---|-----|----------------------------|-----------------------|---|---|---|------------|------|------|------|
| General Information                              |                                        |      |      |   |           |   |     | Site Information           |                       |   |   |   |            |      |      |      |
| Analyst                                          | Diane Zimmerman                        |      |      |   |           |   |     | Intersection               | Bardstown at New Road |   |   |   |            |      |      |      |
| Agency/Co.                                       | Diane B. Zimmerman Traffic Engineering |      |      |   |           |   |     | Jurisdiction               |                       |   |   |   |            |      |      |      |
| Date Performed                                   | 8/8/2022                               |      |      |   |           |   |     | East/West Street           | Bardstown Rd          |   |   |   |            |      |      |      |
| Analysis Year                                    | 2035                                   |      |      |   |           |   |     | North/South Street         | New Road              |   |   |   |            |      |      |      |
| Time Analyzed                                    | PM Peak                                |      |      |   |           |   |     | Peak Hour Factor           | 0.92                  |   |   |   |            |      |      |      |
| Intersection Orientation                         | East-West                              |      |      |   |           |   |     | Analysis Time Period (hrs) | 0.25                  |   |   |   |            |      |      |      |
| Project Description                              | 4700 Hurstbourne                       |      |      |   |           |   |     |                            |                       |   |   |   |            |      |      |      |
| <b>Lanes</b>                                     |                                        |      |      |   |           |   |     |                            |                       |   |   |   |            |      |      |      |
| <p>Major Street: East-West</p>                   |                                        |      |      |   |           |   |     |                            |                       |   |   |   |            |      |      |      |
| <b>Vehicle Volumes and Adjustments</b>           |                                        |      |      |   |           |   |     |                            |                       |   |   |   |            |      |      |      |
| Approach                                         | Eastbound                              |      |      |   | Westbound |   |     |                            | Northbound            |   |   |   | Southbound |      |      |      |
| Movement                                         | U                                      | L    | T    | R | U         | L | T   | R                          | U                     | L | T | R | U          | L    | T    | R    |
| Priority                                         | 1U                                     | 1    | 2    | 3 | 4U        | 4 | 5   | 6                          |                       | 7 | 8 | 9 |            | 10   | 11   | 12   |
| Number of Lanes                                  | 0                                      | 1    | 2    | 0 | 0         | 0 | 2   | 0                          |                       | 0 | 0 | 0 |            | 0    | 1    | 0    |
| Configuration                                    |                                        | L    | T    |   |           |   | T   | TR                         |                       |   |   |   |            |      | LR   |      |
| Volume (veh/h)                                   | 0                                      | 61   | 1478 |   |           |   | 833 | 0                          |                       |   |   |   |            | 0    |      | 36   |
| Percent Heavy Vehicles (%)                       | 3                                      | 0    |      |   |           |   |     |                            |                       |   |   |   |            | 0    |      | 0    |
| Proportion Time Blocked                          |                                        |      |      |   |           |   |     |                            |                       |   |   |   |            |      |      |      |
| Percent Grade (%)                                | 0                                      |      |      |   |           |   |     |                            |                       |   |   |   |            |      |      |      |
| Right Turn Channelized                           |                                        |      |      |   |           |   |     |                            |                       |   |   |   |            |      |      |      |
| Median Type   Storage                            | Left Only                              |      |      |   |           |   |     |                            | 1                     |   |   |   |            |      |      |      |
| <b>Critical and Follow-up Headways</b>           |                                        |      |      |   |           |   |     |                            |                       |   |   |   |            |      |      |      |
| Base Critical Headway (sec)                      |                                        | 4.1  |      |   |           |   |     |                            |                       |   |   |   |            | 7.5  |      | 6.9  |
| Critical Headway (sec)                           |                                        | 4.10 |      |   |           |   |     |                            |                       |   |   |   |            | 6.80 |      | 6.90 |
| Base Follow-Up Headway (sec)                     |                                        | 2.2  |      |   |           |   |     |                            |                       |   |   |   |            | 3.5  |      | 3.3  |
| Follow-Up Headway (sec)                          |                                        | 2.20 |      |   |           |   |     |                            |                       |   |   |   |            | 3.50 |      | 3.30 |
| <b>Delay, Queue Length, and Level of Service</b> |                                        |      |      |   |           |   |     |                            |                       |   |   |   |            |      |      |      |
| Flow Rate, v (veh/h)                             |                                        | 66   |      |   |           |   |     |                            |                       |   |   |   |            |      | 39   |      |
| Capacity, c (veh/h)                              |                                        | 760  |      |   |           |   |     |                            |                       |   |   |   |            |      | 560  |      |
| v/c Ratio                                        |                                        | 0.09 |      |   |           |   |     |                            |                       |   |   |   |            |      | 0.07 |      |
| 95% Queue Length, Q <sub>95</sub> (veh)          |                                        | 0.3  |      |   |           |   |     |                            |                       |   |   |   |            |      | 0.2  |      |
| Control Delay (s/veh)                            |                                        | 10.2 |      |   |           |   |     |                            |                       |   |   |   |            |      | 11.9 |      |
| Level of Service (LOS)                           |                                        | B    |      |   |           |   |     |                            |                       |   |   |   |            |      | B    |      |
| Approach Delay (s/veh)                           | 0.4                                    |      |      |   |           |   |     |                            | 11.9                  |   |   |   |            |      |      |      |
| Approach LOS                                     | A                                      |      |      |   |           |   |     |                            | B                     |   |   |   |            |      |      |      |

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HCS TWSC Version 2022  
Bard Ent PM 35.xtw

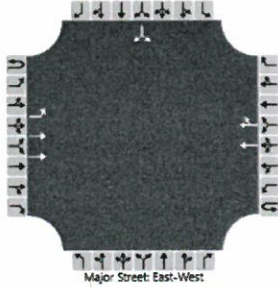
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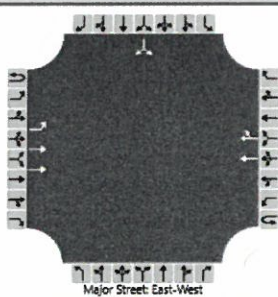


| HCS Two-Way Stop-Control Report                  |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |    |  |  |  |
|--------------------------------------------------|----------------------------------------|-----------|----|------|-----------|------|----|----------------------------|----------------------------|------|-----|----|------------|------|------|----|--|--|--|
| General Information                              |                                        |           |    |      |           |      |    | Site Information           |                            |      |     |    |            |      |      |    |  |  |  |
| Analyst                                          | Diane Zimmerman                        |           |    |      |           |      |    | Intersection               | Hurstbourne at South Ent   |      |     |    |            |      |      |    |  |  |  |
| Agency/Co.                                       | Diane B. Zimmerman Traffic Engineering |           |    |      |           |      |    | Jurisdiction               |                            |      |     |    |            |      |      |    |  |  |  |
| Date Performed                                   | 8/8/2022                               |           |    |      |           |      |    | East/West Street           | South Ent/4901 Hurstbourne |      |     |    |            |      |      |    |  |  |  |
| Analysis Year                                    | 2035                                   |           |    |      |           |      |    | North/South Street         | Hurstbourne Parkway        |      |     |    |            |      |      |    |  |  |  |
| Time Analyzed                                    | PM Peak                                |           |    |      |           |      |    | Peak Hour Factor           | 0.98                       |      |     |    |            |      |      |    |  |  |  |
| Intersection Orientation                         | North-South                            |           |    |      |           |      |    | Analysis Time Period (hrs) | 0.25                       |      |     |    |            |      |      |    |  |  |  |
| Project Description                              | 4700 Hurstbourne                       |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |    |  |  |  |
| <b>Lanes</b>                                     |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |    |  |  |  |
| <p>Major Street: North-South</p>                 |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |    |  |  |  |
| <b>Vehicle Volumes and Adjustments</b>           |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |    |  |  |  |
| Approach                                         | Eastbound                              |           |    |      | Westbound |      |    |                            | Northbound                 |      |     |    | Southbound |      |      |    |  |  |  |
| Movement                                         | U                                      | L         | T  | R    | U         | L    | T  | R                          | U                          | L    | T   | R  | U          | L    | T    | R  |  |  |  |
| Priority                                         |                                        | 10        | 11 | 12   |           | 7    | 8  | 9                          | 1U                         | 1    | 2   | 3  | 4U         | 4    | 5    | 6  |  |  |  |
| Number of Lanes                                  |                                        | 1         | 0  | 1    |           | 0    | 1  | 0                          | 0                          | 1    | 2   | 0  | 0          | 1    | 2    | 0  |  |  |  |
| Configuration                                    |                                        | L         |    | R    |           |      | LR |                            |                            | L    | T   | TR |            | L    | T    | TR |  |  |  |
| Volume (veh/h)                                   |                                        | 7         |    | 31   |           | 3    |    | 5                          | 0                          | 55   | 949 | 4  | 0          | 6    | 1253 | 11 |  |  |  |
| Percent Heavy Vehicles (%)                       |                                        | 0         |    | 0    |           | 0    |    | 0                          | 3                          | 0    |     |    | 0          | 0    |      |    |  |  |  |
| Proportion Time Blocked                          |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |    |  |  |  |
| Percent Grade (%)                                |                                        | 0         |    |      |           | 0    |    |                            |                            |      |     |    |            |      |      |    |  |  |  |
| Right Turn Channelized                           |                                        | No        |    |      |           |      |    |                            |                            |      |     |    |            |      |      |    |  |  |  |
| Median Type   Storage                            |                                        | Left Only |    |      |           |      |    |                            |                            |      | 1   |    |            |      |      |    |  |  |  |
| <b>Critical and Follow-up Headways</b>           |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |    |  |  |  |
| Base Critical Headway (sec)                      |                                        | 7.5       |    | 6.9  |           | 7.5  |    | 6.9                        |                            | 4.1  |     |    |            | 4.1  |      |    |  |  |  |
| Critical Headway (sec)                           |                                        | 7.50      |    | 6.90 |           | 7.50 |    | 6.90                       |                            | 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 |    | 3.30                       |                            | 2.20 |     |    |            | 2.20 |      |    |  |  |  |
| <b>Delay, Queue Length, and Level of Service</b> |                                        |           |    |      |           |      |    |                            |                            |      |     |    |            |      |      |    |  |  |  |
| Flow Rate, v (veh/h)                             |                                        | 7         |    | 32   |           | 8    |    |                            |                            | 56   |     |    |            | 6    |      |    |  |  |  |
| Capacity, c (veh/h)                              |                                        | 125       |    | 420  |           | 258  |    |                            |                            | 544  |     |    |            | 717  |      |    |  |  |  |
| v/c Ratio                                        |                                        | 0.06      |    | 0.08 |           | 0.03 |    |                            |                            | 0.10 |     |    |            | 0.01 |      |    |  |  |  |
| 95% Queue Length, Q <sub>95</sub> (veh)          |                                        | 0.2       |    | 0.2  |           | 0.1  |    |                            |                            | 0.3  |     |    |            | 0.0  |      |    |  |  |  |
| Control Delay (s/veh)                            |                                        | 35.6      |    | 14.3 |           | 19.4 |    |                            |                            | 12.4 |     |    |            | 10.1 |      |    |  |  |  |
| Level of Service (LOS)                           |                                        | E         |    | B    |           | C    |    |                            |                            | B    |     |    |            | B    |      |    |  |  |  |
| Approach Delay (s/veh)                           |                                        | 18.2      |    |      |           | 19.4 |    |                            |                            |      | 0.7 |    |            |      | 0.0  |    |  |  |  |
| Approach LOS                                     |                                        | C         |    |      |           | C    |    |                            |                            |      | A   |    |            |      | A    |    |  |  |  |



| HCS Two-Way Stop-Control Report                                                   |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
|-----------------------------------------------------------------------------------|----------------------------------------|------|-----|---|-----------|---|------|----------------------------|-----------------------|---|---|---|------------|------|------|------|
| General Information                                                               |                                        |      |     |   |           |   |      | Site Information           |                       |   |   |   |            |      |      |      |
| Analyst                                                                           | Diane Zimmerman                        |      |     |   |           |   |      | Intersection               | Bardstown at New Road |   |   |   |            |      |      |      |
| Agency/Co.                                                                        | Diane B. Zimmerman Traffic Engineering |      |     |   |           |   |      | Jurisdiction               |                       |   |   |   |            |      |      |      |
| Date Performed                                                                    | 8/8/2022                               |      |     |   |           |   |      | East/West Street           | Bardstown Rd          |   |   |   |            |      |      |      |
| Analysis Year                                                                     | 2025                                   |      |     |   |           |   |      | North/South Street         | New Road              |   |   |   |            |      |      |      |
| Time Analyzed                                                                     | AM Peak                                |      |     |   |           |   |      | Peak Hour Factor           | 0.92                  |   |   |   |            |      |      |      |
| Intersection Orientation                                                          | East-West                              |      |     |   |           |   |      | Analysis Time Period (hrs) | 0.25                  |   |   |   |            |      |      |      |
| Project Description                                                               | 4700 Hurstbourne                       |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Lanes                                                                             |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
|  |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Vehicle Volumes and Adjustments                                                   |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Approach                                                                          | Eastbound                              |      |     |   | Westbound |   |      |                            | Northbound            |   |   |   | Southbound |      |      |      |
| Movement                                                                          | U                                      | L    | T   | R | U         | L | T    | R                          | U                     | L | T | R | U          | L    | T    | R    |
| Priority                                                                          | 1U                                     | 1    | 2   | 3 | 4U        | 4 | 5    | 6                          |                       | 7 | 8 | 9 |            | 10   | 11   | 12   |
| Number of Lanes                                                                   | 0                                      | 1    | 2   | 0 | 0         | 0 | 2    | 0                          |                       | 0 | 0 | 0 |            | 0    | 1    | 0    |
| Configuration                                                                     |                                        | L    | T   |   |           |   | T    | TR                         |                       |   |   |   |            |      | LR   |      |
| Volume (veh/h)                                                                    | 0                                      | 18   | 584 |   |           |   | 1359 | 0                          |                       |   |   |   |            | 0    |      | 90   |
| Percent Heavy Vehicles (%)                                                        | 3                                      | 0    |     |   |           |   |      |                            |                       |   |   |   |            | 0    |      | 0    |
| Proportion Time Blocked                                                           |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Percent Grade (%)                                                                 | 0                                      |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Right Turn Channelized                                                            |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Median Type   Storage                                                             | Left Only                              |      |     |   |           |   |      |                            | 1                     |   |   |   |            |      |      |      |
| Critical and Follow-up Headways                                                   |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Base Critical Headway (sec)                                                       |                                        | 4.1  |     |   |           |   |      |                            |                       |   |   |   |            | 7.5  |      | 6.9  |
| Critical Headway (sec)                                                            |                                        | 4.10 |     |   |           |   |      |                            |                       |   |   |   |            | 6.80 |      | 6.90 |
| Base Follow-Up Headway (sec)                                                      |                                        | 2.2  |     |   |           |   |      |                            |                       |   |   |   |            | 3.5  |      | 3.3  |
| Follow-Up Headway (sec)                                                           |                                        | 2.20 |     |   |           |   |      |                            |                       |   |   |   |            | 3.50 |      | 3.30 |
| Delay, Queue Length, and Level of Service                                         |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Flow Rate, v (veh/h)                                                              |                                        | 20   |     |   |           |   |      |                            |                       |   |   |   |            |      | 98   |      |
| Capacity, c (veh/h)                                                               |                                        | 462  |     |   |           |   |      |                            |                       |   |   |   |            |      | 365  |      |
| v/c Ratio                                                                         |                                        | 0.04 |     |   |           |   |      |                            |                       |   |   |   |            |      | 0.27 |      |
| 95% Queue Length, Q <sub>95</sub> (veh)                                           |                                        | 0.1  |     |   |           |   |      |                            |                       |   |   |   |            |      | 1.1  |      |
| Control Delay (s/veh)                                                             |                                        | 13.1 |     |   |           |   |      |                            |                       |   |   |   |            |      | 18.5 |      |
| Level of Service (LOS)                                                            |                                        | B    |     |   |           |   |      |                            |                       |   |   |   |            |      | C    |      |
| Approach Delay (s/veh)                                                            | 0.4                                    |      |     |   |           |   |      |                            | 18.5                  |   |   |   |            |      |      |      |
| Approach LOS                                                                      | A                                      |      |     |   |           |   |      |                            | C                     |   |   |   |            |      |      |      |



| HCS Two-Way Stop-Control Report                                                                                                                                |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------|-----|---|-----------|---|------|----------------------------|-----------------------|---|---|---|------------|------|------|------|
| General Information                                                                                                                                            |                                        |      |     |   |           |   |      | Site Information           |                       |   |   |   |            |      |      |      |
| Analyst                                                                                                                                                        | Diane Zimmerman                        |      |     |   |           |   |      | Intersection               | Bardstown at New Road |   |   |   |            |      |      |      |
| Agency/Co.                                                                                                                                                     | Diane B. Zimmerman Traffic Engineering |      |     |   |           |   |      | Jurisdiction               |                       |   |   |   |            |      |      |      |
| Date Performed                                                                                                                                                 | 8/8/2022                               |      |     |   |           |   |      | East/West Street           | Bardstown Rd          |   |   |   |            |      |      |      |
| Analysis Year                                                                                                                                                  | 2035                                   |      |     |   |           |   |      | North/South Street         | New Road              |   |   |   |            |      |      |      |
| Time Analyzed                                                                                                                                                  | AM Peak                                |      |     |   |           |   |      | Peak Hour Factor           | 0.92                  |   |   |   |            |      |      |      |
| Intersection Orientation                                                                                                                                       | East-West                              |      |     |   |           |   |      | Analysis Time Period (hrs) | 0.25                  |   |   |   |            |      |      |      |
| Project Description                                                                                                                                            | 4700 Hurstbourne                       |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| <b>Lanes</b>                                                                                                                                                   |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
|  <p style="text-align: center; font-size: small;">Major Street: East-West</p> |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| <b>Vehicle Volumes and Adjustments</b>                                                                                                                         |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Approach                                                                                                                                                       | Eastbound                              |      |     |   | Westbound |   |      |                            | Northbound            |   |   |   | Southbound |      |      |      |
| Movement                                                                                                                                                       | U                                      | L    | T   | R | U         | L | T    | R                          | U                     | L | T | R | U          | L    | T    | R    |
| Priority                                                                                                                                                       | 1U                                     | 1    | 2   | 3 | 4U        | 4 | 5    | 6                          |                       | 7 | 8 | 9 |            | 10   | 11   | 12   |
| Number of Lanes                                                                                                                                                | 0                                      | 1    | 2   | 0 | 0         | 0 | 2    | 0                          |                       | 0 | 0 | 0 |            | 0    | 1    | 0    |
| Configuration                                                                                                                                                  |                                        | L    | T   |   |           |   | T    | TR                         |                       |   |   |   |            |      | LR   |      |
| Volume (veh/h)                                                                                                                                                 | 0                                      | 18   | 614 |   |           |   | 1429 | 0                          |                       |   |   |   |            | 0    |      | 90   |
| Percent Heavy Vehicles (%)                                                                                                                                     | 3                                      | 0    |     |   |           |   |      |                            |                       |   |   |   |            | 0    |      | 0    |
| Proportion Time Blocked                                                                                                                                        |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Percent Grade (%)                                                                                                                                              |                                        |      |     |   |           |   |      |                            |                       |   |   |   | 0          |      |      |      |
| Right Turn Channelized                                                                                                                                         |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Median Type   Storage                                                                                                                                          |                                        |      |     |   | Left Only |   |      |                            |                       |   |   |   | 1          |      |      |      |
| <b>Critical and Follow-up Headways</b>                                                                                                                         |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Base Critical Headway (sec)                                                                                                                                    |                                        | 4.1  |     |   |           |   |      |                            |                       |   |   |   |            | 7.5  |      | 6.9  |
| Critical Headway (sec)                                                                                                                                         |                                        | 4.10 |     |   |           |   |      |                            |                       |   |   |   |            | 6.80 |      | 6.90 |
| Base Follow-Up Headway (sec)                                                                                                                                   |                                        | 2.2  |     |   |           |   |      |                            |                       |   |   |   |            | 3.5  |      | 3.3  |
| Follow-Up Headway (sec)                                                                                                                                        |                                        | 2.20 |     |   |           |   |      |                            |                       |   |   |   |            | 3.50 |      | 3.30 |
| <b>Delay, Queue Length, and Level of Service</b>                                                                                                               |                                        |      |     |   |           |   |      |                            |                       |   |   |   |            |      |      |      |
| Flow Rate, v (veh/h)                                                                                                                                           |                                        | 20   |     |   |           |   |      |                            |                       |   |   |   |            |      | 98   |      |
| Capacity, c (veh/h)                                                                                                                                            |                                        | 432  |     |   |           |   |      |                            |                       |   |   |   |            |      | 344  |      |
| v/c Ratio                                                                                                                                                      |                                        | 0.05 |     |   |           |   |      |                            |                       |   |   |   |            |      | 0.28 |      |
| 95% Queue Length, Q <sub>95</sub> (veh)                                                                                                                        |                                        | 0.1  |     |   |           |   |      |                            |                       |   |   |   |            |      | 1.1  |      |
| Control Delay (s/veh)                                                                                                                                          |                                        | 13.7 |     |   |           |   |      |                            |                       |   |   |   |            |      | 19.6 |      |
| Level of Service (LOS)                                                                                                                                         |                                        | B    |     |   |           |   |      |                            |                       |   |   |   |            |      | C    |      |
| Approach Delay (s/veh)                                                                                                                                         | 0.4                                    |      |     |   |           |   |      |                            |                       |   |   |   | 19.6       |      |      |      |
| Approach LOS                                                                                                                                                   | A                                      |      |     |   |           |   |      |                            |                       |   |   |   | C          |      |      |      |



| HCS Two-Way Stop-Control Report                  |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
|--------------------------------------------------|----------------------------------------|------|------|---|-----------|---|-----|----|----------------------------|-----------------------|---|---|------------|------|------|------|
| General Information                              |                                        |      |      |   |           |   |     |    | Site Information           |                       |   |   |            |      |      |      |
| Analyst                                          | Diane Zimmerman                        |      |      |   |           |   |     |    | Intersection               | Bardstown at New Road |   |   |            |      |      |      |
| Agency/Co.                                       | Diane B. Zimmerman Traffic Engineering |      |      |   |           |   |     |    | Jurisdiction               |                       |   |   |            |      |      |      |
| Date Performed                                   | 8/8/2022                               |      |      |   |           |   |     |    | East/West Street           | Bardstown Rd          |   |   |            |      |      |      |
| Analysis Year                                    | 2025                                   |      |      |   |           |   |     |    | North/South Street         | New Road              |   |   |            |      |      |      |
| Time Analyzed                                    | PM Peak                                |      |      |   |           |   |     |    | Peak Hour Factor           | 0.92                  |   |   |            |      |      |      |
| Intersection Orientation                         | East-West                              |      |      |   |           |   |     |    | Analysis Time Period (hrs) | 0.25                  |   |   |            |      |      |      |
| Project Description                              | 4700 Hurstbourne                       |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| <b>Lanes</b>                                     |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| <p>Major Street: East-West</p>                   |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| <b>Vehicle Volumes and Adjustments</b>           |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Approach                                         | Eastbound                              |      |      |   | Westbound |   |     |    | Northbound                 |                       |   |   | Southbound |      |      |      |
| Movement                                         | U                                      | L    | T    | R | U         | L | T   | R  | U                          | L                     | T | R | U          | L    | T    | R    |
| Priority                                         | 1U                                     | 1    | 2    | 3 | 4U        | 4 | 5   | 6  |                            | 7                     | 8 | 9 |            | 10   | 11   | 12   |
| Number of Lanes                                  | 0                                      | 1    | 2    | 0 | 0         | 0 | 2   | 0  |                            | 0                     | 0 | 0 |            | 0    | 1    | 0    |
| Configuration                                    |                                        | L    | T    |   |           |   | T   | TR |                            |                       |   |   |            |      | LR   |      |
| Volume (veh/h)                                   | 0                                      | 61   | 1406 |   |           |   | 793 | 0  |                            |                       |   |   |            | 0    |      | 36   |
| Percent Heavy Vehicles (%)                       | 3                                      | 0    |      |   |           |   |     |    |                            |                       |   |   |            | 0    |      | 0    |
| Proportion Time Blocked                          |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Percent Grade (%)                                | 0                                      |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Right Turn Channelized                           |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Median Type   Storage                            | Left Only   1                          |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| <b>Critical and Follow-up Headways</b>           |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Base Critical Headway (sec)                      |                                        | 4.1  |      |   |           |   |     |    |                            |                       |   |   |            | 7.5  |      | 6.9  |
| Critical Headway (sec)                           |                                        | 4.10 |      |   |           |   |     |    |                            |                       |   |   |            | 6.80 |      | 6.90 |
| Base Follow-Up Headway (sec)                     |                                        | 2.2  |      |   |           |   |     |    |                            |                       |   |   |            | 3.5  |      | 3.3  |
| Follow-Up Headway (sec)                          |                                        | 2.20 |      |   |           |   |     |    |                            |                       |   |   |            | 3.50 |      | 3.30 |
| <b>Delay, Queue Length, and Level of Service</b> |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Flow Rate, v (veh/h)                             |                                        | 66   |      |   |           |   |     |    |                            |                       |   |   |            |      | 39   |      |
| Capacity, c (veh/h)                              |                                        | 789  |      |   |           |   |     |    |                            |                       |   |   |            |      | 578  |      |
| v/c Ratio                                        |                                        | 0.08 |      |   |           |   |     |    |                            |                       |   |   |            |      | 0.07 |      |
| 95% Queue Length, Q <sub>95</sub> (veh)          |                                        | 0.3  |      |   |           |   |     |    |                            |                       |   |   |            |      | 0.2  |      |
| Control Delay (s/veh)                            |                                        | 10.0 |      |   |           |   |     |    |                            |                       |   |   |            |      | 11.7 |      |
| Level of Service (LOS)                           |                                        | A    |      |   |           |   |     |    |                            |                       |   |   |            |      | B    |      |
| Approach Delay (s/veh)                           | 0.4                                    |      |      |   |           |   |     |    |                            |                       |   |   | 11.7       |      |      |      |
| Approach LOS                                     | A                                      |      |      |   |           |   |     |    |                            |                       |   |   | B          |      |      |      |

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| HCS Two-Way Stop-Control Report                  |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
|--------------------------------------------------|----------------------------------------|------|------|---|-----------|---|-----|----|----------------------------|-----------------------|---|---|------------|------|------|------|
| General Information                              |                                        |      |      |   |           |   |     |    | Site Information           |                       |   |   |            |      |      |      |
| Analyst                                          | Diane Zimmerman                        |      |      |   |           |   |     |    | Intersection               | Bardstown at New Road |   |   |            |      |      |      |
| Agency/Co.                                       | Diane B. Zimmerman Traffic Engineering |      |      |   |           |   |     |    | Jurisdiction               |                       |   |   |            |      |      |      |
| Date Performed                                   | 8/8/2022                               |      |      |   |           |   |     |    | East/West Street           | Bardstown Rd          |   |   |            |      |      |      |
| Analysis Year                                    | 2035                                   |      |      |   |           |   |     |    | North/South Street         | New Road              |   |   |            |      |      |      |
| Time Analyzed                                    | PM Peak                                |      |      |   |           |   |     |    | Peak Hour Factor           | 0.92                  |   |   |            |      |      |      |
| Intersection Orientation                         | East-West                              |      |      |   |           |   |     |    | Analysis Time Period (hrs) | 0.25                  |   |   |            |      |      |      |
| Project Description                              | 4700 Hurstbourne                       |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| <b>Lanes</b>                                     |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| <p>Major Street: East-West</p>                   |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| <b>Vehicle Volumes and Adjustments</b>           |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Approach                                         | Eastbound                              |      |      |   | Westbound |   |     |    | Northbound                 |                       |   |   | Southbound |      |      |      |
| Movement                                         | U                                      | L    | T    | R | U         | L | T   | R  | U                          | L                     | T | R | U          | L    | T    | R    |
| Priority                                         | 1U                                     | 1    | 2    | 3 | 4U        | 4 | 5   | 6  |                            | 7                     | 8 | 9 |            | 10   | 11   | 12   |
| Number of Lanes                                  | 0                                      | 1    | 2    | 0 | 0         | 0 | 2   | 0  |                            | 0                     | 0 | 0 |            | 0    | 1    | 0    |
| Configuration                                    |                                        | L    | T    |   |           |   | T   | TR |                            |                       |   |   |            |      | LR   |      |
| Volume (veh/h)                                   | 0                                      | 61   | 1478 |   |           |   | 833 | 0  |                            |                       |   |   |            | 0    |      | 36   |
| Percent Heavy Vehicles (%)                       | 3                                      | 0    |      |   |           |   |     |    |                            |                       |   |   |            | 0    |      | 0    |
| Proportion Time Blocked                          |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Percent Grade (%)                                | 0                                      |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Right Turn Channelized                           |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Median Type   Storage                            | Left Only                              |      |      |   |           |   |     |    | 1                          |                       |   |   |            |      |      |      |
| <b>Critical and Follow-up Headways</b>           |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Base Critical Headway (sec)                      |                                        | 4.1  |      |   |           |   |     |    |                            |                       |   |   |            | 7.5  |      | 6.9  |
| Critical Headway (sec)                           |                                        | 4.10 |      |   |           |   |     |    |                            |                       |   |   |            | 6.80 |      | 6.90 |
| Base Follow-Up Headway (sec)                     |                                        | 2.2  |      |   |           |   |     |    |                            |                       |   |   |            | 3.5  |      | 3.3  |
| Follow-Up Headway (sec)                          |                                        | 2.20 |      |   |           |   |     |    |                            |                       |   |   |            | 3.50 |      | 3.30 |
| <b>Delay, Queue Length, and Level of Service</b> |                                        |      |      |   |           |   |     |    |                            |                       |   |   |            |      |      |      |
| Flow Rate, v (veh/h)                             |                                        | 66   |      |   |           |   |     |    |                            |                       |   |   |            |      | 39   |      |
| Capacity, c (veh/h)                              |                                        | 760  |      |   |           |   |     |    |                            |                       |   |   |            |      | 560  |      |
| v/c Ratio                                        |                                        | 0.09 |      |   |           |   |     |    |                            |                       |   |   |            |      | 0.07 |      |
| 95% Queue Length, Q <sub>95</sub> (veh)          |                                        | 0.3  |      |   |           |   |     |    |                            |                       |   |   |            |      | 0.2  |      |
| Control Delay (s/veh)                            |                                        | 10.2 |      |   |           |   |     |    |                            |                       |   |   |            |      | 11.9 |      |
| Level of Service (LOS)                           |                                        | B    |      |   |           |   |     |    |                            |                       |   |   |            |      | B    |      |
| Approach Delay (s/veh)                           | 0.4                                    |      |      |   |           |   |     |    |                            |                       |   |   | 11.9       |      |      |      |
| Approach LOS                                     | A                                      |      |      |   |           |   |     |    |                            |                       |   |   | B          |      |      |      |

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