

Table 1  
Signal Warrants Analyses  
Shiloh Interchange - Exit 443

| MUTCD 2000 Warrants         |      |                        |        |  |              |                                 |                      |                 |        |                      |              |        |                      |
|-----------------------------|------|------------------------|--------|--|--------------|---------------------------------|----------------------|-----------------|--------|----------------------|--------------|--------|----------------------|
| Intersection                | Year | 8- Hour Minimum Volume |        | 8- Hour Interruption of Continuous traffic |              | Combination of 8- hour Warrants |                      | 4- Hour Volumes |        | Peak Hour Volumes    |              |        |                      |
|                             |      | Warrant 1A             |        | Warrant 1B                                 |              | Warrant 1A & 1B                 |                      | Warrant 2       |        | Warrant 3B           |              |        |                      |
|                             |      | Warrant Met?           | Yes/No | # of hours satisfied                       | Warrant Met? | Yes/No                          | # of hours satisfied | Warrant Met?    | Yes/No | # of hours satisfied | Warrant Met? | Yes/No | # of hours satisfied |
| *Zoo Dr. and Shiloh Rd.     | 2003 | N                      |        | 3  | N            |                                 | 0                    | N               |        | 2                    | N            |        | 0                    |
|                             | 2008 | N                      |        | 5  | N            |                                 | 0                    | N               |        | 3                    | N            |        | 0                    |
|                             | 2023 | Y                      |        | 12   | N            |                                 | 6                    | Y               |        | 10                   | Y            |        | 1                    |
| Zoo Dr. and I-90 WB ramps   | 2003 | N                      |        | 1  | N            |                                 | 0                    | N               |        | 2                    | N            |        | 0                    |
|                             | 2008 | N                      |        | 3  | N            |                                 | 2                    | N               |        | 4                    | N            |        | 0                    |
|                             | 2023 | Y                      |        | 13   | Y            |                                 | 13                   | Y               |        | 14                   | Y            |        | 1                    |
| Zoo Dr. and I-90 EB ramps   | 2003 | N                      |        | 0  | N            |                                 | 0                    | N               |        | 0                    | N            |        | 0                    |
|                             | 2008 | N                      |        | 1  | N            |                                 | 0                    | N               |        | 0                    | N            |        | 0                    |
|                             | 2023 | Y                      |        | 13   | N            |                                 | 3                    | Y               |        | 8                    | Y            |        | 1                    |
| Zoo Dr. and S. Frontage Rd. | 2003 | N                      |        | 0  | N            |                                 | 0                    | N               |        | 0                    | N            |        | 0                    |
|                             | 2008 | N                      |        | 0  | N            |                                 | 0                    | N               |        | 0                    | N            |        | 0                    |
|                             | 2023 | N                      |        | 0  | N            |                                 | 0                    | N               |        | 0                    | N            |        | 0                    |

| MUTCD 2000 Warrants - Over 40 MPH |      |                        |        |                         |              |                        |                      |                 |        |                      |              |        |                      |
|-----------------------------------|------|------------------------|--------|-------------------------|--------------|------------------------|----------------------|-----------------|--------|----------------------|--------------|--------|----------------------|
| Intersection                      | Year | 8- Hour Minimum Volume |        | 8- Hour Interruption of |              | Combination of 8- hour |                      | 4- Hour Volumes |        | Peak Hour Volumes    |              |        |                      |
|                                   |      | Warrant 1A             |        | Warrant 1B              |              | Warrant 1A & 1B        |                      | Warrant 2       |        | Warrant 3B           |              |        |                      |
|                                   |      | Warrant Met?           | Yes/No | # of hours satisfied    | Warrant Met? | Yes/No                 | # of hours satisfied | Warrant Met?    | Yes/No | # of hours satisfied | Warrant Met? | Yes/No | # of hours satisfied |
| Zoo Dr. and Shiloh Rd.            | 2003 | Y                      |        | 9                       | N            |                        | 2                    | N               |        | 5                    | Y            |        | 1                    |
|                                   | 2008 | Y                      |        | 12                      | N            |                        | 4                    | Y               |        | 9                    | Y            |        | 1                    |
|                                   | 2023 | Y                      |        | 16                      | Y            |                        | 12                   | Y               |        | 14                   | Y            |        | 1                    |
| Zoo Dr. and I-90 WB ramps         | 2003 | Y                      |        | 8                       | N            |                        | 3                    | N               |        | 7                    | N            |        | 3                    |
|                                   | 2008 | Y                      |        | 10                      | Y            |                        | 8                    | Y               |        | 12                   | Y            |        | 1                    |
|                                   | 2023 | Y                      |        | 16                      | Y            |                        | 16                   | Y               |        | 16                   | Y            |        | 1                    |
| Zoo Dr. and I-90 EB ramps         | 2003 | N                      |        | 2                       | N            |                        | 0                    | N               |        | 1                    | N            |        | 0                    |
|                                   | 2008 | N                      |        | 4                       | N            |                        | 1                    | N               |        | 2                    | Y            |        | 4                    |
|                                   | 2023 | Y                      |        | 13                      | Y            |                        | 9                    | Y               |        | 13                   | Y            |        | 1                    |
| Zoo Dr. and S. Frontage Rd.       | 2003 | N                      |        | 0                       | N            |                        | 0                    | N               |        | 0                    | N            |        | 0                    |
|                                   | 2008 | N                      |        | 0                       | N            |                        | 0                    | N               |        | 0                    | N            |        | 0                    |
|                                   | 2023 | N                      |        | 5                       | N            |                        | 1                    | N               |        | 1                    | N            |        | 2                    |

Note: All Warrants were performed using SEH obtained ADT counts except as noted.  
\*Zoo Dr. and Shiloh Rd. - The Shiloh south leg ADT was obtained by factoring the Shiloh north leg ADT count.

**Table 2**  
**Signal Warrants Analyses**  
**South Billings Boulevard Interchange - Exit 447**

| MUTCD 2000 Warrants             |      |                        |                      |  |                      |                                 |                      |                     |                      |                     |                      |
|---------------------------------|------|------------------------|----------------------|--|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
| Intersection                    | Year | 8- Hour Minimum Volume |                      | 8- Hour Interruption of Continuous traffic |                      | Combination of 8- hour Warrants |                      | 4- Hour Volumes     |                      | Peak Hour Volumes   |                      |
|                                 |      | Warrant 1A             |                      | Warrant 1B                                 |                      | Warrant 1A & 1B                 |                      | Warrant 2           |                      | Warrant 3B          |                      |
|                                 |      | Warrant Met? Yes/No    | # of hours satisfied | Warrant Met? Yes/No                        | # of hours satisfied | Warrant Met? Yes/No             | # of hours satisfied | Warrant Met? Yes/No | # of hours satisfied | Warrant Met? Yes/No | # of hours satisfied |
| King Ave. and Southgate Dr.     | 2003 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                                 | 2008 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                                 | 2023 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
| S. Billings and S. Frontage Rd. | 2003 | N                      | 0                    | N  | 1                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                                 | 2008 | N                      | 0                    | N  | 2                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                                 | 2023 | N                      | 7                    | Y  | 15                   | Y                               | 10                   | Y                   | 15                   | Y                   | 1                    |



**Table 3**  
**Signal Warrants Analyses**  
**27th Street Interchange - Exit 450**

| MUTCD 2000 Warrants           |      |                        |                      |  |                      |                                 |                      |                     |                      |                     |                      |
|-------------------------------|------|------------------------|----------------------|--|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
| Intersection                  | Year | 8- Hour Minimum Volume |                      | 8- Hour Interruption of Continuous traffic |                      | Combination of 8- hour Warrants |                      | 4- Hour Volumes     |                      | Peak Hour Volumes   |                      |
|                               |      | Warrant 1A             |                      | Warrant 1B                                 |                      | Warrant 1A & 1B                 |                      | Warrant 2           |                      | Warrant 3B          |                      |
|                               |      | Warrant Met? Yes/No    | # of hours satisfied | Warrant Met? Yes/No                        | # of hours satisfied | Warrant Met? Yes/No             | # of hours satisfied | Warrant Met? Yes/No | # of hours satisfied | Warrant Met? Yes/No | # of hours satisfied |
| S. 27th St. and I-90 WB ramps | 2003 | N                      | 5                    | N  | 1                    | N                               | 4                    | N                   | 1                    | N                   | 0                    |
|                               | 2008 | N                      | 5                    | N  | 1                    | N                               | 5                    | N                   | 1                    | N                   | 0                    |
|                               | 2023 | Y                      | 8                    | N  | 2                    | Y                               | 8                    | N                   | 3                    | N                   | 0                    |
| S. 27th St. and I-90 EB ramps | 2003 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                               | 2008 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                               | 2023 | N                      | 1                    | N  | 0                    | N                               | 0                    | Y                   | 4                    | N                   | 0                    |
| *S. 27th St. and Garden Ave.  | 2003 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                               | 2008 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                               | 2023 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |

Note: All Warrants were performed using SEH obtained ADT counts except as noted.

\*S. 27th St. and Garden Ave. - 8 hour counts were used on the north and south legs of Garden Ave.

**Table 4**  
**Signal Warrants Analyses**  
**US 87 Lockwood Interchange - Exit 452**

| MUTCD 2000 Warrants - Over 40 MPH |      |                        |                      |  |                      |                                 |                      |                     |                      |                     |                      |
|-----------------------------------|------|------------------------|----------------------|--|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
| Intersection                      | Year | 8- Hour Minimum Volume |                      | 8- Hour Interruption of Continuous traffic |                      | Combination of 8- hour Warrants |                      | 4- Hour Volumes     |                      | Peak Hour           |                      |
|                                   |      | Warrant 1A             |                      | Warrant 1B                                 |                      | Warrant 1A & 1B                 |                      | Warrant 2           |                      | Warrant 3B          |                      |
|                                   |      | Warrant Met? Yes/No    | # of hours satisfied | Warrant Met? Yes/No                        | # of hours satisfied | Warrant Met? Yes/No             | # of hours satisfied | Warrant Met? Yes/No | # of hours satisfied | Warrant Met? Yes/No | # of hours satisfied |
| *US 87 and Coburn Rd.             | 2003 | N                      | 4                    | N  | 5                    | N                               | 6                    | N                   | 3                    | Y                   | 1                    |
|                                   | 2008 | N                      | 6                    | N  | 6                    | N                               | 6                    | Y                   | 7                    | Y                   | 1                    |
|                                   | 2023 | Y                      | 8                    | Y  | 8                    | Y                               | 8                    | Y                   | 8                    | Y                   | 1                    |

| MUTCD 2000 Warrants - Under 40 MPH |      |                        |                      |  |                      |                                 |                      |                     |                      |                     |                      |
|------------------------------------|------|------------------------|----------------------|--|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
| Intersection                       | Year | 8- Hour Minimum Volume |                      | 8- Hour Interruption of Continuous traffic |                      | Combination of 8- hour Warrants |                      | 4- Hour Volumes     |                      | Peak Hour           |                      |
|                                    |      | Warrant 1A             |                      | Warrant 1B                                 |                      | Warrant 1A & 1B                 |                      | Warrant 2           |                      | Warrant 3B          |                      |
|                                    |      | Warrant Met? Yes/No    | # of hours satisfied | Warrant Met? Yes/No                        | # of hours satisfied | Warrant Met? Yes/No             | # of hours satisfied | Warrant Met? Yes/No | # of hours satisfied | Warrant Met? Yes/No | # of hours satisfied |
| *US 87 and Coburn Rd.              | 2003 | N                      | 1                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                                    | 2008 | N                      | 2                    | N  | 0                    | N                               | 1                    | N                   | 1                    | N                   | 0                    |
|                                    | 2023 | N                      | 6                    | N  | 5                    | N                               | 6                    | Y                   | 7                    | Y                   | 1                    |

Note: All Warrants were performed using SEH obtained ADT counts except as noted.

\*US 87 and Coburn Rd. - 8-hour counts were used for the Coburn Rd. leg.



**Table 5**  
**Signal Warrants Analyses**  
**Johnson Lane Interchange - Exit 455**

| MUTCD 2000 Warrants              |      |                        |                      |  |                      |                                 |                      |                     |                      |                     |                      |
|----------------------------------|------|------------------------|----------------------|--|----------------------|---------------------------------|----------------------|---------------------|----------------------|---------------------|----------------------|
| Intersection                     | Year | 8- Hour Minimum Volume |                      | 8- Hour Interruption of Continuous traffic |                      | Combination of 8- hour Warrants |                      | 4- Hour Volumes     |                      | Peak Hour Volumes   |                      |
|                                  |      | Warrant 1A             |                      | Warrant 1B                                 |                      | Warrant 1A & 1B                 |                      | Warrant 2           |                      | Warrant 3B          |                      |
|                                  |      | Warrant Met? Yes/No    | # of hours satisfied | Warrant Met? Yes/No                        | # of hours satisfied | Warrant Met? Yes/No             | # of hours satisfied | Warrant Met? Yes/No | # of hours satisfied | Warrant Met? Yes/No | # of hours satisfied |
| Johnson Lane and N. Frontage Rd. | 2003 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                                  | 2008 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                                  | 2023 | Y                      | 8                    | N  | 3                    | N                               | 7                    | Y                   | 11                   | N                   | 0                    |
| Johnson Lane and I-90 WB ramps   | 2003 | N                      | 0                    | N  | 0                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                                  | 2008 | N                      | 2                    | N  | 2                    | N                               | 4                    | N                   | 1                    | N                   | 0                    |
|                                  | 2023 | Y                      | 12                   | Y  | 12                   | Y                               | 12                   | Y                   | 13                   | N                   | 0                    |
| *Johnson Lane and I-90 EB ramps  | 2003 | N                      | 6                    | N  | 1                    | N                               | 2                    | N                   | 2                    | Y                   | 1                    |
|                                  | 2008 | N                      | 6                    | N  | 2                    | N                               | 5                    | Y                   | 4                    | N                   | 0                    |
|                                  | 2023 | N                      | 7                    | Y  | 8                    | Y                               | 8                    | Y                   | 8                    | N                   | 0                    |
| Old Hardin Rd. and Becraft Lane  | 2003 | N                      | 0                    | N  | 1                    | N                               | 0                    | N                   | 0                    | N                   | 0                    |
|                                  | 2008 | N                      | 1                    | N  | 1                    | N                               | 2                    | N                   | 0                    | N                   | 0                    |
|                                  | 2023 | N                      | 4                    | N  | 2                    | N                               | 5                    | N                   | 3                    | N                   | 0                    |

Note: All Warrants were performed using SEH obtained ADT counts except as noted.  
 \*Johnson Lane and I-90 EB ramps - 8 hour counts were used on the I-90 EB off ramp leg.

**Table 6**  
**Peak Hour I-90 Ramp Merge / Diverge Capacity Analysis**  
**All I-90 Interchanges**

| Interchange     | I-90 Direction | Merge/<br>Diverge | AM Peak Hour |     | Noon Peak Hour |     | PM Peak Hour |     |
|-----------------|----------------|-------------------|--------------|-----|----------------|-----|--------------|-----|
|                 |                |                   | Density      | LOS | Density        | LOS | Density      | LOS |
| Shiloh          | Westbound      | Merge             | 5.3          | A   | 9.5            | A   | 18.6         | B   |
|                 |                | Diverge           | 4.6          | A   | 4.3            | A   | 10.4         | B   |
|                 | Eastbound      | Merge             | 16.2         | B   | 8.2            | A   | 10.8         | B   |
|                 |                | Diverge           | 11.1         | B   | 6.4            | A   | 6.0          | A   |
| S Billings Blvd | Westbound      | Merge             | 12.8         | B   | 12.1           | B   | 15.2         | B   |
|                 |                | Diverge           | 7.2          | A   | 7.0            | A   | 7.3          | A   |
|                 | Eastbound      | Merge             | 10.7         | B   | 11.1           | B   | 15.7         | B   |
|                 |                | Diverge           | 4.2          | A   | 7.0            | A   | 11.7         | B   |
| 27th Street     | Westbound      | Merge             | 11.4         | B   | 11.0           | B   | 13.7         | B   |
|                 |                | Diverge           | 9.5          | A   | 6.8            | A   | 9.5          | A   |
|                 | Eastbound      | Merge             | 9.6          | A   | 10.1           | B   | 15.8         | B   |
|                 |                | Diverge           | 7.6          | A   | 7.3            | A   | 12.1         | B   |
| US 87 Lockwood  | Westbound      | Merge             | 16.3         | B   | 13.0           | B   | 17.3         | B   |
|                 |                | Diverge           | 12.3         | B   | 7.9            | A   | 10.2         | B   |
|                 | Eastbound      | Merge             | 7.3          | A   | 8.4            | A   | 14.2         | B   |
|                 |                | Diverge           | 6.8          | A   | 7.7            | A   | 14.1         | B   |
| Johnson Ln      | Westbound      | Merge             | 17.1         | B   | 12.4           | B   | 17.7         | B   |
|                 |                | Diverge           | 7.0          | A   | 8.2            | A   | 13.7         | B   |
|                 | Eastbound      | Merge             | 9.6          | A   | 9.6            | A   | 14.1         | B   |
|                 |                | Diverge           | 7.4          | A   | 8.4            | A   | 12.3         | B   |

Note: Density is in units of passenger cars per mile per lane.



Table 7  
Peak Hour Intersection LOS  
Shiloh Interchange - Exit 443

| Intersection and Critical Movements              | 2003         |     |            |     |          |     | 2008           |     |            |     |          |     | 2023           |     |            |     |          |     |
|--|--------------|-----|------------|-----|----------|-----|----------------|-----|------------|-----|----------|-----|----------------|-----|------------|-----|----------|-----|
|  | AM Pk Hr     |     | Noon Pk Hr |     | PM Pk Hr |     | AM Pk Hr       |     | Noon Pk Hr |     | PM Pk Hr |     | AM Pk Hr       |     | Noon Pk Hr |     | PM Pk Hr |     |
|  | Delay        | LOS | Delay      | LOS | Delay    | LOS | Delay          | LOS | Delay      | LOS | Delay    | LOS | Delay          | LOS | Delay      | LOS | Delay    | LOS |
| Zoo Dr & Shiloh Rd                               | 7.5          | A   | 6.7        | A   | 8.2      | A   | 8.0            | A   | 7.0        | A   | 9.4      | A   | 22.3           | C   | 17.3       | B   | 36.1     | D   |
| <i>Eastbound Approach</i>                        |              |     |            |     |          |     |                |     |            |     |          |     | 20.8           | C   | 18.8       | B   | 56.8     | E   |
| Eastbound Left                                   |              |     |            |     |          |     |                |     |            |     |          |     | 21.3           | C   | 19.7       | B   | 93.7     | F   |
| Eastbound Through                                |              |     |            |     |          |     |                |     |            |     |          |     | 20.5           | C   | 18.2       | B   | 26.6     | C   |
| Eastbound Right                                  |              |     |            |     |          |     |                |     |            |     |          |     | 19.1           | B   | 16.3       | B   | 22.2     | C   |
| <i>Westbound Approach</i>                        | 12.5         | B   | 11.6       | B   | 14.5     | B   | 13.9           | B   | 12.5       | B   | 17.6     | C   | 6.6            | A   | 3.3        | A   | 13.0     | B   |
| Westbound Left                                   | 12.5         | B   | 11.6       | B   | 35.4     | E   | 13.9           | B   | 12.5       | B   | 54.0     | F   | 28.5           | C   | 9.1        | A   | 40.5     | D   |
| Westbound Through                                |              |     |            |     |          |     |                |     |            |     |          |     | 28.2           | C   | 9.5        | A   | 38.9     | D   |
| Westbound Right                                  | 0.0          | A   | 0.0        | A   | 12.1     | B   | 0.0            | A   | 0.0        | A   | 13.4     | B   | 0.5            | A   | 0.5        | A   | 0.9      | A   |
| <i>Northbound Approach</i>                       | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 38.3           | D   | 38.5       | D   | 52.3     | D   |
| Northbound Left                                  |              |     |            |     |          |     |                |     |            |     |          |     | 21.6           | C   | 25.3       | C   | 27.7     | C   |
| Northbound Through                               | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 45.4           | D   | 42.2       | D   | 61.4     | E   |
| Northbound Right                                 | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 26.2           | C   | 26.5       | C   | 29.4     | C   |
| <i>Southbound Approach</i>                       | 7.2          | A   | 5.5        | A   | 6.0      | A   | 7.4            | A   | 5.6        | A   | 6.1      | A   | 28.5           | C   | 19.6       | B   | 41.5     | D   |
| Southbound Left                                  | 8.6          | A   | 8.2        | A   | 8.7      | A   | 8.9            | A   | 8.3        | A   | 9.0      | A   | 37.4           | D   | 27.7       | C   | 69.2     | E   |
| Southbound Through                               | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 5.5            | A   | 10.9       | B   | 7.4      | A   |
| Southbound Right                                 | 0.0          | A   |            |     |          |     |                |     |            |     |          |     | 5.5            | A   | 10.4       | B   | 6.7      | A   |
| Zoo Dr & Gabel Dr / Pierce Pkwy                  | N/A          |     |            |     |          |     | SIGNAL CONTROL |     |            |     |          |     | SIGNAL CONTROL |     |            |     |          |     |
| <i>Eastbound Approach (Zoo)</i>                  |              |     |            |     |          |     | 13.6           | B   | 14.1       | B   | 20.1     | C   | 27.9           | C   | 28.7       | C   | 138.0    | F   |
| Eastbound Left                                   |              |     |            |     |          |     | 7.2            | A   | 6.9        | A   | 21.6     | C   | 16.4           | B   | 26.7       | C   | 307.2    | F   |
| Eastbound Through + Right                        |              |     |            |     |          |     | 4.5            | A   | 5.0        | A   | 14.0     | B   | 11.2           | B   | 14.0       | B   | 14.4     | B   |
| <i>Westbound Approach (Zoo)</i>                  |              |     |            |     |          |     | 7.9            | A   | 7.4        | A   | 23.8     | C   | 17.4           | B   | 29.2       | C   | 348.7    | F   |
| Westbound Left                                   |              |     |            |     |          |     | 12.1           | B   | 9.3        | A   | 24.3     | C   | 29.1           | C   | 26.0       | C   | 25.3     | C   |
| Westbound Through                                |              |     |            |     |          |     | 9.5            | A   | 7.9        | A   | 18.8     | B   | 15.0           | B   | 10.1       | B   | 25.0     | C   |
| Westbound Right                                  |              |     |            |     |          |     | 12.7           | B   | 9.7        | A   | 26.0     | C   | 45.4           | D   | 31.4       | C   | 29.9     | C   |
| <i>Northbound Approach (Pierce)</i>              |              |     |            |     |          |     | 11.3           | B   | 8.6        | A   | 22.4     | C   | 10.9           | B   | 21.4       | C   | 20.4     | C   |
| Northbound Left                                  |              |     |            |     |          |     | 20.9           | C   | 32.6       | C   | 15.9     | B   | 26.7           | C   | 30.0       | C   | 35.3     | D   |
| Northbound Through                               |              |     |            |     |          |     | 18.8           | B   | 26.3       | C   | 13.9     | B   | 21.2           | C   | 25.5       | C   | 24.8     | C   |
| Northbound Right                                 |              |     |            |     |          |     | 19.7           | B   | 27.2       | C   | 15.3     | B   | 29.3           | C   | 36.0       | D   | 37.7     | D   |
| <i>Southbound Approach (Gabel)</i>               |              |     |            |     |          |     | 22.1           | C   | 36.8       | D   | 16.7     | B   | 27.9           | C   | 27.9       | C   | 38.2     | D   |
| Southbound Left                                  |              |     |            |     |          |     | 22.6           | C   | 22.5       | C   | 14.1     | B   | 40.5           | D   | 34.4       | C   | 106.5    | F   |
| Southbound Through + Right                       |              |     |            |     |          |     | 22.4           | C   | 20.2       | C   | 12.5     | B   | 34.5           | C   | 34.6       | C   | 139.1    | F   |
|  |              |     |            |     |          |     | 22.8           | C   | 24.7       | C   | 15.8     | B   | 49.2           | D   | 34.1       | C   | 53.3     | D   |
| Zoo Dr & I-90 WB ramp                            | STOP CONTROL |     |            |     |          |     | STOP CONTROL   |     |            |     |          |     | SIGNAL CONTROL |     |            |     |          |     |
| <i>Westbound Approach</i>                        | 3.2          | A   | 1.7        | A   | 1.9      | A   | 3.7            | A   | 1.8        | A   | 2.3      | A   | 240.3          | F   | 92.4       | F   | 278.5    | F   |
| Westbound Left + Through                         | 12.5         | B   | 11.7       | B   | 13.6     | B   | 14.8           | B   | 13.1       | B   | 17.0     | C   | 100.8          | F   | 131.8      | F   | 216.0    | F   |
| Westbound Right                                  | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 247.2          | F   | 34.0       | C   | 44.6     | D   |
| <i>Northbound Approach</i>                       | 0.2          | A   | 0.2        | A   | 0.6      | A   | 0.2            | A   | 0.2        | A   | 0.7      | A   | 69.3           | E   | 31.7       | C   | 146.3    | F   |
| Northbound Left                                  | 8.2          | A   | 8.0        | A   | 8.5      | A   | 8.6            | A   | 8.2        | A   | 9.0      | A   | 269.2          | F   | 112.7      | F   | 373.9    | F   |
| Northbound Through                               | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 3.5            | A   | 8.1        | A   | 71.4     | E   |
| <i>Southbound Approach Through + Right</i>       | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 410.6          | F   | 154.7      | F   | 475.5    | F   |
| Zoo Dr & I-90 EB ramp                            | STOP CONTROL |     |            |     |          |     | STOP CONTROL   |     |            |     |          |     | SIGNAL CONTROL |     |            |     |          |     |
| <i>Eastbound Approach Left + Through + Right</i> | 9.3          | A   | 6.9        | A   | 7.1      | A   | 34.7           | D   | 8.4        | A   | 11.3     | B   | 220.7          | F   | 69.5       | E   | 172.4    | F   |
| <i>Northbound Approach</i>                       | 20.5         | C   | 14.4       | B   | 20.7     | C   | 97.3           | F   | 18.4       | C   | 36.9     | E   | 255.3          | F   | 105.9      | F   | 255.6    | F   |
| Northbound Through                               | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 268.0          | F   | 65.2       | E   | 151.4    | F   |
| Northbound Right                                 | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 27.1           | C   | 71.6       | E   | 178.6    | F   |
| <i>Southbound Approach</i>                       | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 398.3          | F   | 57.1       | E   | 115.4    | F   |
| Southbound Left                                  | 4.5          | A   | 4.4        | A   | 4.7      | A   | 5.4            | A   | 4.5        | A   | 4.9      | A   | 161.8          | F   | 36.7       | D   | 138.6    | F   |
| Southbound Through                               | 7.9          | A   | 7.7        | A   | 8.1      | A   | 8.3            | A   | 7.8        | A   | 8.4      | A   | 297.2          | F   | 76.4       | E   | 313.7    | F   |
|  | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 12.7           | B   | 8.2        | A   | 8.8      | A   |
| Zoo Dr & S Frontage Rd                           | STOP CONTROL |     |            |     |          |     | STOP CONTROL   |     |            |     |          |     | SIGNAL CONTROL |     |            |     |          |     |
| <i>Eastbound Approach (S Frontage)</i>           | 6.4          | A   | 3.9        | A   | 3.5      | A   | 6.9            | A   | 4.0        | A   | 3.7      | A   | 36.6           | D   | 22.9       | C   | 35.7     | D   |
| Eastbound Left                                   | 4.6          | A   | 3.9        | A   | 4.9      | A   | 4.6            | A   | 4.0        | A   | 5.0      | A   | 70.1           | E   | 23.9       | C   | 33.3     | C   |
| Eastbound Through                                | 7.7          | A   | 7.7        | A   | 8.0      | A   | 7.8            | A   | 7.8        | A   | 8.2      | A   | 104.1          | F   | 23.7       | C   | 45.3     | D   |
| Eastbound Right                                  | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 35.7           | D   | 24.8       | C   | 21.9     | C   |
| <i>Westbound Approach (S Frontage)</i>           | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 18.6           | B   | 19.6       | B   | 18.3     | B   |
| Westbound Left                                   | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 24.1           | C   | 30.4       | C   | 48.9     | D   |
| Westbound Through                                | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 24.5           | C   | 25.7       | C   | 21.3     | C   |
| Westbound Right                                  | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 27.5           | C   | 35.3       | D   | 52.6     | D   |
| <i>Northbound Approach (Future Zoo)</i>          | 0.0          | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 19.4           | B   | 27.0       | C   | 50.2     | D   |
| Northbound Left                                  |              |     |            |     |          |     |                |     |            |     |          |     | 34.2           | C   | 27.2       | C   | 45.1     | D   |
| Northbound Through + Right                       |              |     |            |     |          |     |                |     |            |     |          |     | 23.3           | C   | 21.6       | C   | 28.0     | C   |
| <i>Southbound Approach (Zoo)</i>                 | 11.7         | B   | 9.8        | A   | 9.8      | A   | 13.1           | B   | 10.2       | B   | 10.2     | B   | 35.5           | D   | 27.6       | C   | 47.6     | D   |
| Southbound Left                                  | 13.6         | B   | 10.9       | B   | 11.1     | B   | 16.0           | C   | 11.7       | B   | 11.9     | B   | 14.2           | B   | 14.4       | B   | 16.8     | B   |
| Southbound Through                               |              |     |            |     |          |     |                |     |            |     |          |     | 20.0           | B   | 18.8       | B   | 26.5     | C   |
| Southbound Right                                 | 8.7          | A   | 8.9        | A   | 9.3      | A   | 8.8            | A   | 9.0        | A   | 9.6      | A   | 15.0           | B   | 16.6       | B   | 19.2     | B   |
|  |              |     |            |     |          |     |                |     |            |     |          |     | 3.5            | A   | 4.4        | A   | 8.4      | A   |



Table 8  
Peak Hour Intersection LOS  
South Billings Boulevard Interchange - Exit 447

| Intersection and Critical Movements        | 2003     |     |            |     |          |     | 2008     |     |            |     |          |     | 2023     |     |            |     |          |     |
|--|----------|-----|------------|-----|----------|-----|----------|-----|------------|-----|----------|-----|----------|-----|------------|-----|----------|-----|
|  | AM Pk Hr |     | Noon Pk Hr |     | PM Pk Hr |     | AM Pk Hr |     | Noon Pk Hr |     | PM Pk Hr |     | AM Pk Hr |     | Noon Pk Hr |     | PM Pk Hr |     |
|  | Delay    | LOS | Delay      | LOS | Delay    | LOS | Delay    | LOS | Delay      | LOS | Delay    | LOS | Delay    | LOS | Delay      | LOS | Delay    | LOS |
| SIGNAL CONTROL                             |          |     |            |     |          |     |          |     |            |     |          |     |          |     |            |     |          |     |
| S Billings Blvd & King Ave                 | 18.8     | B   | 17.8       | B   | 18.7     | B   | 17.4     | B   | 17.9       | B   | 18.8     | B   | 23.1     | C   | 26.3       | C   | 42.0     | D   |
| Eastbound Approach                         | 36.7     | D   | 25.9       | C   | 37.1     | D   | 36.2     | D   | 26.3       | C   | 30.7     | C   | 32.7     | C   | 43.6       | D   | 55.8     | E   |
| Eastbound Left                             | 37.8     | D   | 24.1       | C   | 28.6     | C   | 45.9     | D   | 23.8       | C   | 29.2     | C   | 34.5     | C   | 44.4       | D   | 54.4     | D   |
| Eastbound Through                          | 44.0     | D   | 31.2       | C   | 58.2     | E   | 51.2     | D   | 32.1       | C   | 36.2     | D   | 36.1     | D   | 50.6       | D   | 60.4     | E   |
| Eastbound Right                            | 34.8     | C   | 23.0       | C   | 27.1     | C   | 29.7     | C   | 23.3       | C   | 27.8     | C   | 31.4     | C   | 37.5       | D   | 53.5     | D   |
| Westbound Approach                         | 29.5     | C   | 25.0       | C   | 24.9     | C   | 24.4     | C   | 27.6       | C   | 28.5     | C   | 38.4     | D   | 34.7       | C   | 89.1     | F   |
| Westbound Left                             | 26.8     | C   | 20.3       | C   | 25.3     | C   | 22.4     | C   | 21.7       | C   | 30.9     | C   | 38.8     | D   | 31.7       | C   | 111.9    | F   |
| Westbound Through + Right                  | 32.4     | C   | 29.6       | C   | 24.2     | C   | 26.5     | C   | 32.7       | C   | 25.1     | C   | 37.9     | D   | 37.4       | D   | 57.7     | E   |
| Northbound Approach                        | 8.5      | A   | 10.4       | B   | 9.7      | A   | 8.8      | A   | 10.7       | B   | 10.7     | B   | 15.3     | B   | 15.7       | B   | 18.6     | B   |
| Northbound Left                            | 5.2      | A   | 7.9        | A   | 7.5      | A   | 6.3      | A   | 8.2        | A   | 8.5      | A   | 9.8      | A   | 13.5       | B   | 17.3     | B   |
| Northbound Through + Right                 | 9.8      | A   | 11.6       | B   | 10.4     | B   | 9.6      | A   | 11.7       | B   | 11.3     | B   | 16.9     | B   | 16.5       | B   | 18.9     | B   |
| Southbound Approach                        | 9.8      | A   | 13.8       | B   | 12.4     | B   | 12.8     | B   | 13.2       | B   | 14.3     | B   | 15.9     | B   | 21.0       | C   | 29.2     | C   |
| Southbound Left                            | 8.1      | A   | 10.6       | B   | 8.0      | A   | 10.3     | B   | 10.2       | B   | 9.9      | A   | 15.1     | B   | 13.2       | B   | 17.6     | B   |
| Southbound Through + Right                 | 9.9      | A   | 14.3       | B   | 12.9     | B   | 12.9     | B   | 13.7       | B   | 14.8     | B   | 15.9     | B   | 22.2       | C   | 30.3     | C   |
| SIGNAL CONTROL                             |          |     |            |     |          |     |          |     |            |     |          |     |          |     |            |     |          |     |
| S Billings Blvd & I-90 WB ramp             | 10.5     | B   | 9.9        | A   | 10.6     | B   | 11.3     | B   | 10.6       | B   | 12.2     | B   | 17.5     | B   | 18.1       | B   | 24.3     | C   |
| Westbound Approach                         | 33.0     | C   | 32.1       | C   | 34.5     | C   | 28.9     | C   | 29.4       | C   | 30.2     | C   | 44.4     | D   | 53.0       | D   | 70.0     | E   |
| Westbound Left + Through                   | 24.6     | C   | 27.7       | C   | 27.1     | C   | 24.0     | C   | 28.2       | C   | 26.7     | C   | 31.3     | C   | 55.8       | E   | 57.4     | E   |
| Westbound Right                            | 35.0     | C   | 34.8       | C   | 37.7     | D   | 31.4     | C   | 30.8       | C   | 32.9     | C   | 53.2     | D   | 49.2       | D   | 81.9     | F   |
| Northbound Approach                        | 3.7      | A   | 3.8        | A   | 3.9      | A   | 4.2      | A   | 3.3        | A   | 5.2      | A   | 4.5      | A   | 7.1        | A   | 8.3      | A   |
| Northbound Left                            | 3.0      | A   | 2.9        | A   | 3.6      | A   | 3.9      | A   | 3.1        | A   | 8.2      | A   | 8.0      | A   | 10.6       | B   | 21.1     | C   |
| Northbound Through                         | 4.0      | A   | 4.1        | A   | 4.1      | A   | 4.4      | A   | 3.4        | A   | 3.6      | A   | 2.6      | A   | 5.4        | A   | 1.2      | A   |
| Southbound Approach                        | 8.7      | A   | 7.4        | A   | 9.4      | A   | 12.0     | B   | 10.3       | B   | 13.0     | B   | 21.1     | C   | 11.7       | B   | 22.4     | C   |
| Southbound Through                         | 8.9      | A   | 7.6        | A   | 10.0     | A   | 12.6     | B   | 10.9       | B   | 14.2     | B   | 21.2     | C   | 13.6       | B   | 26.3     | C   |
| Southbound Right                           | 8.5      | A   | 6.9        | A   | 8.3      | A   | 11.0     | B   | 8.9        | A   | 10.0     | A   | 20.8     | C   | 6.5        | A   | 11.4     | B   |
| SIGNAL CONTROL                             |          |     |            |     |          |     |          |     |            |     |          |     |          |     |            |     |          |     |
| S Billings Blvd & I-90 EB ramp             | 9.9      | A   | 10.9       | B   | 11.4     | B   | 10.3     | B   | 11.4       | B   | 13.8     | B   | 49.5     | D   | 41.0       | D   | 74.3     | E   |
| Eastbound Approach                         | 33.2     | C   | 30.9       | C   | 30.5     | C   | 28.0     | C   | 29.2       | C   | 31.2     | C   | 99.1     | F   | 154.2      | F   | 201.2    | F   |
| Eastbound Left + Through                   | 30.8     | C   | 31.1       | C   | 31.5     | C   | 24.8     | C   | 26.3       | C   | 28.4     | C   | 34.6     | C   | 63.7       | E   | 117.8    | F   |
| Eastbound Right                            | 35.4     | D   | 30.6       | C   | 29.3     | C   | 29.9     | C   | 31.7       | C   | 33.9     | C   | 131.0    | F   | 217.7      | F   | 267.4    | F   |
| Northbound Approach                        | 3.0      | A   | 3.6        | A   | 4.5      | A   | 5.9      | A   | 6.1        | A   | 7.6      | A   | 35.9     | D   | 8.0        | A   | 23.8     | C   |
| Northbound Through                         | 3.1      | A   | 3.7        | A   | 4.7      | A   | 6.1      | A   | 6.2        | A   | 7.4      | A   | 43.5     | D   | 9.5        | A   | 29.5     | C   |
| Northbound Right                           | 2.1      | A   | 2.8        | A   | 3.6      | A   | 5.4      | A   | 5.9        | A   | 8.3      | A   | 2.9      | A   | 1.5        | A   | 3.8      | A   |
| Southbound Approach                        | 3.8      | A   | 3.1        | A   | 5.1      | A   | 6.4      | A   | 5.8        | A   | 9.8      | A   | 43.9     | D   | 12.1       | B   | 56.8     | E   |
| Southbound Left                            | 4.0      | A   | 2.2        | A   | 3.5      | A   | 7.0      | A   | 4.5        | A   | 7.3      | A   | 143.3    | F   | 35.6       | D   | 104.8    | F   |
| Southbound Through                         | 3.7      | A   | 3.3        | A   | 5.6      | A   | 6.1      | A   | 6.1        | A   | 10.4     | B   | 8.1      | A   | 6.8        | A   | 45.5     | D   |
| STOP CONTROL                               |          |     |            |     |          |     |          |     |            |     |          |     |          |     |            |     |          |     |
| King Ave & Southgate                       | 5.1      | A   | 6.5        | A   | 5.9      | A   | 5.2      | A   | 6.7        | A   | 6.0      | A   | 5.7      | A   | 7.5        | A   | 7.0      | A   |
| Eastbound Approach                         | 0.5      | A   | 0.5        | A   | 0.7      | A   | 0.4      | A   | 0.4        | A   | 0.7      | A   | 0.5      | A   | 0.4        | A   | 0.7      | A   |
| Eastbound Left                             | 7.8      | A   | 7.4        | A   | 7.7      | A   | 7.9      | A   | 7.5        | A   | 7.7      | A   | 8.0      | A   | 7.5        | A   | 7.8      | A   |
| Eastbound Through + Right                  | 0.0      | A   | 0.0        | A   | 0.0      | A   | 0.0      | A   | 0.0        | A   | 0.0      | A   | 0.0      | A   | 0.0        | A   | 0.0      | A   |
| Westbound Approach                         | 4.0      | A   | 5.9        | A   | 3.8      | A   | 4.0      | A   | 6.0        | A   | 3.8      | A   | 4.2      | A   | 6.3        | A   | 4.0      | A   |
| Westbound Left                             | 7.8      | A   | 8.0        | A   | 7.9      | A   | 7.9      | A   | 8.1        | A   | 7.9      | A   | 8.2      | A   | 8.4        | A   | 8.2      | A   |
| Westbound Through + Right                  | 0.0      | A   | 0.0        | A   | 0.0      | A   | 0.0      | A   | 0.0        | A   | 0.0      | A   | 0.0      | A   | 0.0        | A   | 0.0      | A   |
| Northbound Approach                        | 9.5      | A   | 10.7       | B   | 10.7     | B   | 9.6      | A   | 11.0       | B   | 11.0     | B   | 10.2     | B   | 12.8       | B   | 12.5     | B   |
| Northbound Left                            | 18.0     | C   | 17.6       | C   | 16.1     | C   | 19.5     | C   | 19.2       | C   | 17.2     | C   | 26.7     | D   | 27.5       | D   | 22.9     | C   |
| Northbound Through + Right                 | 9.2      | A   | 9.9        | A   | 10.1     | B   | 9.3      | A   | 10.1       | B   | 10.3     | B   | 9.7      | A   | 10.9       | B   | 11.4     | B   |
| Southbound Approach Left + Through + Right | 30.2     | D   | 26.5       | D   | 28.9     | D   | 34.9     | D   | 30.2       | D   | 33.3     | D   | 62.4     | F   | 50.2       | F   | 61.3     | F   |
| STOP CONTROL                               |          |     |            |     |          |     |          |     |            |     |          |     |          |     |            |     |          |     |
| S Billings & S Frontage Rd                 | 2.0      | A   | 2.3        | A   | 2.3      | A   | 11.5     | B   | 11.5       | B   | 11.3     | B   | 111.3    | F   | 73.7       | E   | 134.1    | F   |
| Eastbound Approach                         |          |     |            |     |          |     | 24.2     | C   | 20.3       | C   | 23.6     | C   | 166.5    | F   | 67.1       | E   | 125.3    | F   |
| Eastbound Left                             |          |     |            |     |          |     | 22.9     | C   | 19.7       | B   | 22.5     | C   | 95.9     | F   | 42.4       | D   | 83.9     | F   |
| Eastbound Left + Through + Right           |          |     |            |     |          |     | 25.2     | C   | 20.7       | C   | 24.6     | C   | 221.5    | F   | 86.3       | F   | 157.4    | F   |
| Westbound Approach                         | 13.7     | B   | 11.9       | B   | 15.4     | C   | 31.0     | C   | 33.0       | C   | 32.4     | C   | 160.5    | F   | 382.5      | F   | 563.4    | F   |
| Westbound Left                             | 18.1     | C   | 18.2       | C   | 32.7     | D   | 28.9     | C   | 26.7       | C   | 27.4     | C   | 45.5     | D   | 47.4       | D   | 79.3     | E   |
| Westbound Through + Right                  |          |     |            |     |          |     | 31.6     | C   | 34.0       | C   | 33.4     | C   | 194.7    | F   | 432.7      | F   | 659.7    | F   |
| Westbound Right                            | 12.2     | B   | 10.9       | B   | 11.7     | B   |          |     |            |     |          |     |          |     |            |     |          | A   |
| Northbound Approach                        | 0.0      | A   | 0.0        | A   | 0.0      | A   | 10.2     | B   | 9.3        | A   | 9.1      | A   | 141.7    | F   | 71.4       | E   | 135.8    | F   |
| Northbound Left                            |          |     |            |     |          |     | 4.7      | A   | 6.2        | A   | 5.2      | A   | 19.2     | B   | 19.2       | B   | 151.5    | F   |
| Northbound Through + Right                 | 0.0      | A   | 0.0        | A   | 0.0      | A   | 10.4     | B   | 9.4        | A   | 9.2      | A   | 146.9    | F   | 74.5       | E   | 135.1    | F   |
| Southbound Approach                        | 2.2      | A   | 1.7        | A   | 1.9      | A   | 3.2      | A   | 5.9        | A   | 6.8      | A   | 37.8     | D   | 20.8       | C   | 82.0     | F   |
| Southbound Left                            | 8.7      | A   | 8.3        | A   | 8.8      | A   | 4.4      | A   | 5.5        | A   | 7.3      | A   | 204.9    | F   | 45.3       | D   | 153.0    | F   |
| Southbound Through                         | 0.0      | A   | 0.0        | A   | 0.0      | A   | 3.2      | A   | 6.7        | A   | 7.6      | A   | 5.3      | A   | 19.6       | B   | 81.5     | F   |
| Southbound Right                           |          |     |            |     |          |     | 2.6      | A   | 3.6        | A   | 2.1      | A   | 0.6      | A   | 6.3        | A   | 3.2      | A   |



**Table 9**  
**Peak Hour Intersection LOS**  
**27th Street Interchange - Exit 450**

| Intersection and Critical Movements                        | 2003                  |     |            |     |          |     | 2008                  |     |            |     |          |     | 2023                  |     |            |     |          |     |
|--|-----------------------|-----|------------|-----|----------|-----|-----------------------|-----|------------|-----|----------|-----|-----------------------|-----|------------|-----|----------|-----|
|  | AM Pk Hr              |     | Noon Pk Hr |     | PM Pk Hr |     | AM Pk Hr              |     | Noon Pk Hr |     | PM Pk Hr |     | AM Pk Hr              |     | Noon Pk Hr |     | PM Pk Hr |     |
|  | Delay                 | LOS | Delay      | LOS | Delay    | LOS | Delay                 | LOS | Delay      | LOS | Delay    | LOS | Delay                 | LOS | Delay      | LOS | Delay    | LOS |
| <b>27th St &amp; State Ave</b>                             | <b>SIGNAL CONTROL</b> |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     |
|  | 24.0                  | C   | 24.6       | C   | 27.1     | C   | 22.9                  | C   | 24.8       | C   | 25.8     | C   | 24.2                  | C   | 21.6       | C   | 24.4     | C   |
| <i>Eastbound Approach (State)</i>                          | 40.8                  | D   | 34.3       | C   | 40.5     | D   | 32.5                  | C   | 35.0       | C   | 38.4     | D   | 36.1                  | D   | 26.7       | C   | 32.3     | C   |
| Eastbound Left + Through                                   | 46.0                  | D   | 37.3       | D   | 44.2     | D   | 35.4                  | D   | 38.2       | D   | 41.3     | D   | 39.6                  | D   | 29.3       | C   | 35.2     | D   |
| Eastbound Right  | 26.6                  | C   | 27.2       | C   | 35.3     | D   | 24.7                  | C   | 27.4       | C   | 34.4     | C   | 26.9                  | C   | 20.3       | C   | 28.3     | C   |
| <i>Westbound Approach (State)</i>                          | 34.6                  | C   | 34.2       | C   | 34.2     | C   | 35.0                  | C   | 35.4       | D   | 38.6     | D   | 39.6                  | D   | 27.9       | C   | 35.4     | D   |
| Westbound Left + Through                                   | 34.8                  | C   | 34.5       | C   | 34.8     | C   | 35.2                  | D   | 35.7       | D   | 39.9     | D   | 39.8                  | D   | 28.3       | C   | 37.9     | D   |
| Westbound Right  | 34.3                  | C   | 33.5       | C   | 33.1     | C   | 34.6                  | C   | 34.6       | C   | 36.0     | D   | 39.2                  | D   | 27.0       | C   | 30.6     | C   |
| <i>Northbound Approach (27th)</i>                          | 17.8                  | B   | 19.3       | B   | 19.5     | B   | 19.0                  | B   | 19.1       | B   | 19.4     | B   | 18.0                  | B   | 15.8       | B   | 17.5     | B   |
| Northbound Left  | 40.1                  | D   | 38.8       | D   | 40.0     | D   | 39.8                  | D   | 39.6       | D   | 47.5     | D   | 40.5                  | D   | 33.4       | C   | 45.1     | D   |
| Northbound Through   | 12.7                  | B   | 14.6       | B   | 13.3     | B   | 14.3                  | B   | 14.6       | B   | 13.1     | B   | 12.9                  | B   | 11.7       | B   | 9.1      | A   |
| Northbound Right   | 10.4                  | B   | 12.4       | B   | 11.5     | B   | 11.6                  | B   | 12.7       | B   | 13.5     | B   | 10.4                  | B   | 6.4        | A   | 7.5      | A   |
| <i>Southbound Approach (27th)</i>                          | 18.1                  | B   | 20.2       | C   | 19.3     | B   | 19.5                  | B   | 20.5       | C   | 21.3     | C   | 23.4                  | C   | 23.3       | C   | 22.5     | C   |
| Southbound Left  | 40.8                  | D   | 43.5       | D   | 42.0     | D   | 40.6                  | D   | 44.9       | D   | 60.7     | E   | 59.8                  | E   | 71.9       | E   | 72.2     | E   |
| Southbound Through + Right                                 | 15.7                  | B   | 18.3       | B   | 16.9     | B   | 17.5                  | B   | 18.5       | B   | 19.5     | B   | 19.9                  | B   | 19.5       | B   | 20.3     | C   |
| <b>27th St &amp; I-90 WB ramp</b>                          | <b>STOP CONTROL</b>   |     |            |     |          |     | <b>STOP CONTROL</b>   |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     |
|  | 3.9                   | A   | 2.1        | A   | 2.1      | A   | 3.9                   | A   | 2.1        | A   | 2.1      | A   | 6.8                   | A   | 6.9        | A   | 6.5      | A   |
| <i>Eastbound Approach (27th) Thru + Right</i>              | 0.0                   | A   | 0.0        | A   | 0.0      | A   | 0.0                   | A   | 0.0        | A   | 0.0      | A   | 3.3                   | A   | 1.3        | A   | 1.2      | A   |
| <i>Westbound Approach (27th) Left + Thru</i>               | 0.6                   | A   | 0.6        | A   | 0.6      | A   | 0.6                   | A   | 0.6        | A   | 0.6      | A   | 2.9                   | A   | 5.0        | A   | 2.2      | A   |
| <i>Southbound Approach (I-90 ramp) Left + Thru + Right</i> | 12.7                  | B   | 11.0       | B   | 11.0     | B   | 12.9                  | B   | 11.1       | B   | 11.1     | B   | 16.2                  | B   | 27.5       | C   | 31.5     | C   |
| <b>27th St &amp; I-90 EB ramp</b>                          | <b>STOP CONTROL</b>   |     |            |     |          |     | <b>STOP CONTROL</b>   |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     |
|  | 15.9                  | C   | 9.8        | A   | 18.1     | C   | 17.9                  | C   | 10.6       | B   | 21.7     | C   | 11.8                  | B   | 11.6       | B   | 14.7     | B   |
| <i>Eastbound Approach (27th) Left + Thru</i>               | 5.1                   | A   | 4.9        | A   | 5.7      | A   | 5.1                   | A   | 4.9        | A   | 5.7      | A   | 4.0                   | A   | 12.0       | B   | 3.2      | A   |
| <i>Westbound Approach (27th) Thru + Right</i>              | 0.0                   | A   | 0.0        | A   | 0.0      | A   | 0.0                   | A   | 0.0        | A   | 0.0      | A   | 6.4                   | A   | 21.0       | C   | 4.6      | A   |
| <i>Northbound Approach (I-90 ramp) Left + Thru + Right</i> | 26.3                  | D   | 21.2       | C   | 44.7     | E   | 29.6                  | D   | 22.8       | C   | 54.2     | F   | 16.9                  | B   | 5.4        | A   | 34.1     | C   |
| <b>27th St &amp; Garden Ave</b>                            | <b>STOP CONTROL</b>   |     |            |     |          |     | <b>STOP CONTROL</b>   |     |            |     |          |     | <b>STOP CONTROL</b>   |     |            |     |          |     |
|  | 6.6                   | A   | 5.6        | A   | 4.8      | A   | 6.6                   | A   | 5.6        | A   | 4.8      | A   | 6.6                   | A   | 5.6        | A   | 4.8      | A   |
| <i>Eastbound Approach (27th) Left + Right</i>              | 10.4                  | B   | 10.0       | A   | 9.8      | A   | 10.5                  | B   | 10.0       | A   | 9.8      | A   | 10.5                  | B   | 10.1       | B   | 9.9      | A   |
| <i>Northbound Approach (Garden) Left + Thru</i>            | 7.0                   | A   | 6.8        | A   | 7.0      | A   | 7.0                   | A   | 6.8        | A   | 7.0      | A   | 7.0                   | A   | 6.9        | A   | 7.0      | A   |
| <i>Southbound Approach (Garden) Thru + Right</i>           | 0.0                   | A   | 0.0        | A   | 0.0      | A   | 0.0                   | A   | 0.0        | A   | 0.0      | A   | 0.0                   | A   | 0.0        | A   | 0.0      | A   |

**Table 10**  
**Peak Hour Intersection LOS**  
**US 87 Lockwood Interchange - Exit 452**

| Intersection and Critical Movements                          | 2003                  |     |            |     |          |     | 2008                  |     |            |     |          |     | 2023                  |     |            |     |          |     |
|--|-----------------------|-----|------------|-----|----------|-----|-----------------------|-----|------------|-----|----------|-----|-----------------------|-----|------------|-----|----------|-----|
|  | AM Pk Hr              |     | Noon Pk Hr |     | PM Pk Hr |     | AM Pk Hr              |     | Noon Pk Hr |     | PM Pk Hr |     | AM Pk Hr              |     | Noon Pk Hr |     | PM Pk Hr |     |
|  | Delay                 | LOS | Delay      | LOS | Delay    | LOS | Delay                 | LOS | Delay      | LOS | Delay    | LOS | Delay                 | LOS | Delay      | LOS | Delay    | LOS |
| <b>US 87 and N Frontage Rd.</b>                              | <b>SIGNAL CONTROL</b> |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     |
|  | 8.2                   | A   | 9.9        | A   | 19.7     | B   | 8.4                   | A   | 10.2       | B   | 16.2     | B   | 9.3                   | A   | 10.8       | B   | 22.9     | C   |
| <i>Eastbound Approach</i>                                    | 2.6                   | A   | 3.7        | A   | 13.3     | B   | 2.7                   | A   | 3.8        | A   | 10.6     | B   | 3.7                   | A   | 4.4        | A   | 12.3     | B   |
| Eastbound Left   | 3.9                   | A   | 4.2        | A   | 12.4     | B   | 4.3                   | A   | 4.4        | A   | 10.0     | A   | 7.9                   | A   | 5.2        | A   | 11.3     | B   |
| Eastbound Through + Right                                    | 2.0                   | A   | 3.6        | A   | 13.4     | B   | 2.0                   | A   | 3.7        | A   | 10.7     | B   | 2.0                   | A   | 4.1        | A   | 12.5     | B   |
| <i>Westbound Approach</i>                                    | 8.9                   | A   | 10.2       | B   | 22.5     | C   | 9.2                   | A   | 10.5       | B   | 21.4     | C   | 7.3                   | A   | 8.1        | A   | 28.2     | C   |
| Westbound Left   | 6.0                   | A   | 8.8        | A   | 16.9     | B   | 6.0                   | A   | 9.0        | A   | 15.4     | B   | 4.0                   | A   | 7.3        | A   | 19.7     | B   |
| Westbound Through + Right                                    | 9.0                   | A   | 10.4       | B   | 22.8     | C   | 9.3                   | A   | 10.6       | B   | 21.7     | C   | 7.4                   | A   | 8.1        | A   | 28.6     | C   |
| <i>Northbound Approach</i>                                   | 22.7                  | C   | 19.6       | B   | 13.2     | B   | 23.1                  | C   | 19.7       | B   | 14.1     | B   | 34.0                  | C   | 23.8       | C   | 15.1     | B   |
| Northbound Left  | 22.8                  | C   | 19.8       | B   | 13.3     | B   | 23.2                  | C   | 19.9       | B   | 14.3     | B   | 34.2                  | C   | 24.2       | C   | 15.6     | B   |
| Northbound Through + Right                                   | 22.6                  | C   | 19.4       | B   | 13.1     | B   | 23.0                  | C   | 19.5       | B   | 14.0     | B   | 33.9                  | C   | 23.4       | C   | 14.8     | B   |
| <i>Southbound Approach</i>                                   | 19.4                  | B   | 17.8       | B   | 26.3     | C   | 19.8                  | B   | 18.2       | B   | 18.8     | B   | 29.4                  | C   | 23.9       | C   | 32.1     | C   |
| Southbound Left + Through                                    | 24.5                  | C   | 22.3       | C   | 18.7     | B   | 25.1                  | C   | 23.0       | C   | 24.5     | C   | 38.1                  | D   | 32.8       | C   | 50.3     | D   |
| Southbound Right   | 18.3                  | B   | 15.5       | B   | 30.8     | C   | 18.6                  | B   | 15.8       | B   | 15.4     | B   | 27.5                  | C   | 19.5       | B   | 21.3     | C   |
| <b>US 87 and I-90 WB ramp</b>                                | <b>SIGNAL CONTROL</b> |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     |
|  | 16.0                  | B   | 11.8       | B   | 32.9     | C   | 16.1                  | B   | 12.4       | B   | 45.6     | D   | 20.9                  | C   | 11.7       | B   | 46.2     | D   |
| <i>Westbound Approach (I-90 ramp) Left + Through + Right</i> | 31.8                  | C   | 24.2       | C   | 19.8     | B   | 31.7                  | C   | 25.6       | C   | 20.1     | C   | 51.6                  | D   | 25.8       | C   | 25.9     | C   |
| <i>Northbound Approach</i>                                   | 4.7                   | A   | 3.1        | A   | 14.5     | B   | 5.0                   | A   | 3.5        | A   | 16.8     | B   | 5.9                   | A   | 3.3        | A   | 11.6     | B   |
| Northbound Left  | 7.9                   | A   | 6.7        | A   | 47.0     | D   | 9.0                   | A   | 7.7        | A   | 57.6     | E   | 13.9                  | B   | 9.7        | A   | 47.7     | D   |
| Northbound Through   | 3.7                   | A   | 2.3        | A   | 5.5      | A   | 3.7                   | A   | 2.4        | A   | 5.4      | A   | 3.4                   | A   | 1.7        | A   | 1.6      | A   |
| <i>Southbound Approach Through + Right</i>                   | 21.5                  | C   | 15.0       | B   | 46.9     | D   | 21.6                  | C   | 15.6       | B   | 68.5     | E   | 21.5                  | C   | 14.4       | B   | 72.1     | E   |
| <b>US 87 and I-90 EB ramp</b>                                | <b>SIGNAL CONTROL</b> |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     |
|  | 14.2                  | B   | 14.9       | B   | 29.8     | C   | 15.1                  | B   | 15.6       | B   | 34.7     | C   | 23.9                  | C   | 21.2       | C   | 121.4    | F   |
| <i>Eastbound Approach (I-90 ramp) Left + Through + Right</i> | 22.7                  | C   | 32.3       | C   | 68.1     | E   | 22.2                  | C   | 35.0       | C   | 84.8     | F   | 32.8                  | C   | 46.4       | D   | 376.5    | F   |
| <i>Northbound Approach Through + Right</i>                   | 16.6                  | B   | 13.2       | B   | 28.1     | C   | 18.9                  | B   | 13.4       | B   | 26.4     | C   | 26.3                  | C   | 19.9       | B   | 19.8     | B   |
| <i>Southbound Approach</i>                                   | 2.1                   | A   | 5.9        | A   | 4.1      | A   | 2.4                   | A   | 5.9        | A   | 3.9      | A   | 10.8                  | B   | 8.1        | A   | 10.1     | B   |
| Southbound Left  | 4.0                   | A   | 2.5        | A   | 6.0      | A   | 4.7                   | A   | 2.9        | A   | 5.9      | A   | 5.3                   | A   | 2.9        | A   | 8.2      | A   |
| Southbound Through   | 0.8                   | A   | 8.1        | A   | 2.5      | A   | 0.9                   | A   | 7.8        | A   | 2.2      | A   | 13.9                  | B   | 10.9       | B   | 11.7     | B   |
| <b>US 87 and Coburn Rd.</b>                                  | <b>STOP CONTROL</b>   |     |            |     |          |     | <b>STOP CONTROL</b>   |     |            |     |          |     | <b>SIGNAL CONTROL</b> |     |            |     |          |     |
|  | 1.6                   | A   | 1.1        | A   | 1.2      | A   | 1.9                   | A   | 1.3        | A   | 1.5      | A   | 8.8                   | A   | 4.4        | A   | 4.1      | A   |
| <i>Eastbound Approach Through + Right</i>                    | 0.0                   | A   | 0.0        | A   | 0.0      | A   | 0.0                   | A   | 0.0        | A   | 0.0      | A   | 5.8                   | A   | 1.0        | A   | 1.6      | A   |
| <i>Westbound Approach Left + Through</i>                     | 0.1                   | A   | 0.1        | A   | 0.1      | A   | 0.2                   | A   | 0.1        | A   | 0.1      | A   | 4.0                   | A   | 3.1        | A   | 3.3      | A   |
| <i>Northbound Approach Left + Right</i>                      | 15.3                  | C   | 14.2       | B   | 18.5     | C   | 16.9                  | C   | 15.4       | C   | 21.4     | C   | 38.8                  | D   | 28.7       | C   | 26.4     | C   |



**Table 11**  
**Peak Hour Intersection LOS**  
**Johnson Lane Interchange - Exit 455**

| Intersection and Critical Movements               | 2003           |     |            |     |          |     | 2008           |     |            |     |          |     | 2023           |     |            |     |          |     |
|---|----------------|-----|------------|-----|----------|-----|----------------|-----|------------|-----|----------|-----|----------------|-----|------------|-----|----------|-----|
|   | AM Pk Hr       |     | Noon Pk Hr |     | PM Pk Hr |     | AM Pk Hr       |     | Noon Pk Hr |     | PM Pk Hr |     | AM Pk Hr       |     | Noon Pk Hr |     | PM Pk Hr |     |
|   | Delay          | LOS | Delay      | LOS | Delay    | LOS | Delay          | LOS | Delay      | LOS | Delay    | LOS | Delay          | LOS | Delay      | LOS | Delay    | LOS |
| <b>Johnson Lane and N. Frontage Rd.</b>           | STOP CONTROL   |     |            |     |          |     | STOP CONTROL   |     |            |     |          |     | SIGNAL CONTROL |     |            |     |          |     |
|   | 7.2            | A   | 7.1        | A   | 7.8      | A   | 8.0            | A   | 7.4        | A   | 8.6      | A   | 64.1           | F   | 34.7       | D   | 51.8     | F   |
| <i>Westbound Approach</i> Left + Through + Right  | 15.2           | C   | 13.0       | B   | 12.8     | B   | 26.9           | D   | 20.4       | C   | 25.4     | D   | 265.9          | F   | 79.1       | F   | 76.1     | F   |
| <i>Eastbound Approach</i> Left + Through + Right  | 10.0           | A   | 9.6        | A   | 9.7      | A   | 11.5           | B   | 10.5       | B   | 10.9     | B   | 41.0           | E   | 27.8       | D   | 40.2     | E   |
| <i>Northbound Approach</i>                        | 6.5            | A   | 5.9        | A   | 5.3      | A   | 5.2            | A   | 4.8        | A   | 3.1      | A   | 35.3           | E   | 23.9       | C   | 42.9     | E   |
| Northbound Left                                   | 7.8            | A   | 7.6        | A   | 7.5      | A   | 8.0            | A   | 7.8        | A   | 7.7      | A   | 49.9           | E   | 33.2       | D   | 64.7     | F   |
| Northbound Through + Right                        | 0.0            | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 13.5           | B   | 12.2       | B   | 21.7     | C   |
| <i>Southbound Approach</i> Left + Through + Right | 0.0            | A   | 0.3        | A   | 0.7      | A   | 0.0            | A   | 0.1        | A   | 0.3      | A   | 39.5           | E   | 39.1       | E   | 89.2     | F   |
| <b>Johnson Lane and I-90 WB ramp</b>              | STOP CONTROL   |     |            |     |          |     | STOP CONTROL   |     |            |     |          |     | SIGNAL CONTROL |     |            |     |          |     |
|   | 58.6           | F   | 7.9        | A   | 10.1     | B   | 1164.9         | F   | 9.4        | A   | 18.8     | C   | 219.6          | F   | 59.7       | E   | 86.2     | F   |
| <i>Westbound Approach</i> Left + Through + Right  | 570.0          | F   | 23.4       | C   | 33.9     | D   | 999.9          | F   | 34.0       | D   | 78.1     | F   | 428.8          | F   | 122.1      | F   | 177.6    | F   |
| <i>Northbound Approach</i>                        | 7.7            | A   | 6.1        | A   | 7.0      | A   | 8.2            | A   | 5.8        | A   | 6.5      | A   | 227.3          | F   | 41.6       | D   | 50.8     | D   |
| Northbound Left                                   | 9.7            | A   | 8.1        | A   | 8.4      | A   | 11.0           | B   | 8.6        | A   | 9.0      | A   | 378.3          | F   | 79.5       | E   | 87.4     | F   |
| Northbound Through                                | 0.0            | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 1.8            | A   | 3.9        | A   | 7.6      | A   |
| <i>Southbound Approach</i> Through + Right        | 0.0            | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 56.5           | E   | 43.6       | D   | 67.3     | E   |
| <b>Johnson Lane and I-90 EB ramp</b>              | STOP CONTROL   |     |            |     |          |     | STOP CONTROL   |     |            |     |          |     | SIGNAL CONTROL |     |            |     |          |     |
|   | 1.8            | A   | 4.0        | A   | 6.9      | A   | 3.5            | A   | 5.9        | A   | 16.1     | C   | 147.8          | F   | 52.9       | D   | 145.6    | F   |
| <i>Eastbound Approach</i> Left + Through + Right  | 11.7           | B   | 12.2       | B   | 18.0     | C   | 18.9           | C   | 16.8       | C   | 43.0     | E   | 184.8          | F   | 73.3       | E   | 164.9    | F   |
| <i>Northbound Approach</i> Through + Right        | 0.0            | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 160.9          | F   | 49.6       | D   | 182.8    | F   |
| <i>Southbound Approach</i>                        | 0.6            | A   | 0.5        | A   | 1.3      | A   | 2.9            | A   | 2.1        | A   | 2.6      | A   | 57.3           | E   | 32.6       | C   | 87.6     | F   |
| Southbound Left                                   | 9.6            | A   | 8.4        | A   | 8.6      | A   | 10.2           | B   | 8.6        | A   | 9.0      | A   | 90.3           | F   | 58.6       | E   | 175.2    | F   |
| Southbound Through                                | 0.0            | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 1.9            | A   | 5.5        | A   | 8.8      | A   |
| <b>Johnson Lane and Old Hardin</b>                | SIGNAL CONTROL |     |            |     |          |     | SIGNAL CONTROL |     |            |     |          |     | SIGNAL CONTROL |     |            |     |          |     |
|   | 13.9           | B   | 9.3        | A   | 14.1     | B   | 28.8           | C   | 15.3       | B   | 23.6     | C   | 72.0           | E   | 21.5       | C   | 57.2     | E   |
| <i>Eastbound Approach</i>                         | 18.1           | B   | 15.7       | B   | 31.7     | C   | 34.0           | C   | 22.9       | C   | 42.1     | D   | 91.6           | F   | 31.3       | C   | 82.5     | F   |
| Eastbound Left                                    | 21.3           | C   | 17.1       | B   | 29.8     | C   | 48.5           | D   | 33.5       | C   | 80.6     | F   | 143.8          | F   | 43.2       | D   | 159.1    | F   |
| Eastbound Through + Right                         | 14.3           | B   | 14.3       | B   | 32.8     | C   | 16.4           | B   | 13.0       | B   | 18.7     | B   | 28.8           | C   | 20.4       | C   | 36.1     | D   |
| <i>Westbound Approach</i>                         | 15.9           | B   | 9.2        | A   | 9.0      | A   | 31.8           | C   | 22.0       | C   | 15.7     | B   | 79.0           | E   | 35.6       | D   | 93.8     | F   |
| Westbound Left + Through                          | 14.6           | B   | 13.2       | B   | 17.5     | B   | 43.0           | D   | 35.0       | C   | 28.7     | C   | 118.9          | F   | 52.4       | D   | 268.0    | F   |
| Westbound Right                                   | 16.1           | B   | 7.7        | A   | 5.4      | A   | 30.0           | C   | 17.1       | B   | 10.2     | B   | 72.5           | E   | 28.9       | C   | 16.3     | B   |
| <i>Northbound Approach</i>                        | 12.5           | B   | 11.8       | B   | 18.8     | B   | 34.3           | C   | 12.9       | B   | 31.2     | C   | 91.7           | F   | 21.5       | C   | 42.6     | D   |
| Northbound Left                                   | 10.7           | B   | 11.0       | B   | 17.0     | B   | 20.8           | C   | 12.1       | B   | 23.7     | C   | 33.3           | C   | 19.0       | B   | 33.8     | C   |
| Northbound Through + Right                        | 12.7           | B   | 11.9       | B   | 19.1     | B   | 35.6           | D   | 13.1       | B   | 32.4     | C   | 96.9           | F   | 21.9       | C   | 44.1     | D   |
| <i>Southbound Approach</i>                        | 3.1            | A   | 4.6        | A   | 6.5      | A   | 5.7            | A   | 6.8        | A   | 16.1     | B   | 3.5            | A   | 5.6        | A   | 30.1     | C   |
| Southbound Left                                   | 3.3            | A   | 5.0        | A   | 7.9      | A   | 5.9            | A   | 7.3        | A   | 20.6     | C   | 6.0            | A   | 6.9        | A   | 42.2     | D   |
| Southbound Through                                | 2.8            | A   | 3.9        | A   | 3.6      | A   | 5.2            | A   | 5.8        | A   | 6.9      | A   | 3.4            | A   | 5.2        | A   | 6.7      | A   |
| Southbound Right                                  | 3.0            | A   | 4.4        | A   | 3.8      | A   | 5.5            | A   | 6.6        | A   | 7.2      | A   | 1.1            | A   | 4.2        | A   | 7.3      | A   |
| <b>Old Hardin and Becraft Lane</b>                | STOP CONTROL   |     |            |     |          |     | STOP CONTROL   |     |            |     |          |     | STOP CONTROL   |     |            |     |          |     |
|   | 5.7            | A   | 2.3        | A   | 3.1      | A   | 6.7            | A   | 2.4        | A   | 4.2      | A   | 15.0           | B   | 3.1        | A   | 22.3     | C   |
| <i>Eastbound Approach</i> Through + Right         | 0.0            | A   | 0.0        | A   | 1.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   | 0.0            | A   | 0.0        | A   | 0.0      | A   |
| <i>Northbound Approach</i> Left + Right           | 0.2            | A   | 13.7       | B   | 24.1     | C   | 25.8           | D   | 14.3       | B   | 32.4     | D   | 55.9           | F   | 17.5       | C   | 168.4    | F   |
| <i>Westbound Approach</i> Left + Through          | 22.4           | C   | 0.3        | A   | 0.4      | A   | 0.2            | A   | 0.3        | A   | 0.4      | A   | 0.3            | A   | 0.4        | A   | 0.7      | A   |



**Table 12**  
**Three Year Accident History**  
**All Interchanges**

| Intersection or Roadway Segment                          | Number of Accidents |               | Day / Night   |                 |  | Type of Accident |         |                       |                       |                        |                        |            |             |     |      |                |       |        | Severity |  |
|--|---------------------|---------------|---------------|-----------------|--|------------------|---------|-----------------------|-----------------------|------------------------|------------------------|------------|-------------|-----|------|----------------|-------|--------|----------|--|
|  | Three Year Total    | Avg. Per Year | Day Accidents | Night Accidents | Night-to-Day Accident Ratio <sup>(1)</sup> | Rear End         | Head On | Left Turn (Opp. Dir.) | Left Turn (Same Dir.) | Side-swipe (Opp. Dir.) | Side-swipe (Same Dir.) | Right Turn | Right Angle | Ped | Bike | Single Vehicle | Other | Injury | Fatality |  |
| <b>Exit 443 - Shiloh Rd</b>                              |                     |               |               |                 | *  |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| I-90 MP 442.0 to 444.0, Non-Junction                     | 31                  | 10            | 23            | 8               | 0.35                                       | 4                |         |                       |                       |                        | 6                      |            |             | 1   |      | 20             |       | 10     | 1        |  |
| I-90 MP 442.0 to 444.0, Intersection/Interchange Related | 8                   | 3             | 4             | 4               | 1.00                                       | 2                |         |                       |                       | 2                      |                        |            | 1           | 1   |      | 1              | 1     | 1      | 1        |  |
| Intersection: Zoo Dr & S Frontage Rd                     | 4                   | 1             | 4             | 0               | 0.00                                       |                  |         |                       |                       |                        |                        |            | 4           |     |      |                |       | 3      | 1        |  |
| Zoo Dr: I-90 to Shiloh Rd                                | 2                   | 1             | 0             | 2               | 2.00                                       |                  |         |                       |                       |                        |                        |            |             |     |      | 2              |       |        |          |  |
| <b>Exit 447 - S. Billings Blvd</b>                       |                     |               |               |                 | <b>0.37</b>                                |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| I-90 MP 446.0 to 448.0, Non-Junction                     | 35                  | 12            | 23            | 12              | 0.52                                       | 4                |         |                       |                       | 4                      |                        |            |             | 1   |      | 23             | 3     | 12     | 2        |  |
| I-90 MP 446.0 to 448.0, Intersection/Interchange Related | 93                  | 31            | 68            | 25              | 0.37                                       | 59               | 1       | 1                     |                       | 3                      | 1                      | 13         |             |     |      | 15             |       | 32     |          |  |
| Intersection: S. Billings Blvd & King Ave                | 6                   | 2             | 4             | 2               | 0.50                                       | 3                | 1       |                       |                       |                        |                        |            | 1           |     |      | 1              |       | 1      |          |  |
| S. Billings Blvd: I-90 to King Ave                       | 0                   | 0             | 0             | 0               | 0.00                                       |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| Intersection: S. Billings Blvd & I-90 WB                 | 0                   | 0             | 0             | 0               | 0.00                                       |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| S. Billings Blvd: I-90 EB to I-90 WB                     | 1                   | 0             | 1             | 0               | 0.00                                       |                  |         |                       |                       |                        |                        |            | 1           |     |      |                |       |        |          |  |
| Intersection: S. Billings Blvd & I-90 EB                 | 0                   | 0             | 0             | 0               | 0.00                                       |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| <b>Exit 450 - 27th St</b>                                |                     |               |               |                 | <b>0.36</b>                                |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| I-90 MP 449.0 to 451.0, Non-Junction                     | 26                  | 9             | 14            | 12              | 0.86                                       | 6                |         |                       |                       |                        | 1                      |            |             |     |      | 16             | 3     | 8      | 1        |  |
| I-90 MP 449.0 to 451.0, Intersection/Interchange Related | 23                  | 8             | 16            | 7               | 0.44                                       | 5                |         |                       |                       |                        | 2                      |            | 6           |     |      | 10             |       | 5      |          |  |
| Intersection: 27th St & State Ave                        | 10                  | 3             | 7             | 3               | 0.43                                       | 4                |         |                       |                       |                        |                        |            | 3           |     |      | 3              |       | 3      |          |  |
| 27th St: I-90 WB to State Ave                            | 0                   | 0             | 0             | 0               | 0.00                                       |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| Intersection: 27th St & I-90 WB                          | 5                   | 2             | 4             | 1               | 0.25                                       | 4                |         |                       |                       |                        |                        |            |             |     |      | 1              |       | 2      |          |  |
| 27th St: I-90 EB to I-90 WB                              | 1                   | 0             | 0             | 1               | 1.00                                       |                  |         |                       |                       |                        |                        |            |             |     |      | 1              |       | 1      |          |  |
| Intersection: 27th St & I-90 WB                          | 5                   | 2             | 5             | 0               | 0.00                                       | 2                |         |                       |                       |                        |                        |            | 2           |     |      | 1              |       | 2      |          |  |
| <b>Exit 452 - US 87 Lockwood</b>                         |                     |               |               |                 | <b>0.20</b>                                |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| I-90 MP 449.0 to 451.0, Non-Junction                     | 60                  | 20            | 38            | 22              | 0.58                                       | 16               | 1       |                       |                       |                        | 1                      |            | 1           |     |      | 41             |       | 10     | 1        |  |
| I-90 MP 449.0 to 451.0, Intersection/Interchange Related | 42                  | 14            | 36            | 6               | 0.17                                       | 16               | 2       | 4                     | 1                     | 1                      | 2                      | 1          | 9           |     |      | 4              | 2     | 8      |          |  |
| Intersection: US 87 & N Frontage Rd                      | 60                  | 20            | 51            | 9               | 0.18                                       | 27               |         | 10                    | 1                     | 1                      | 4                      |            | 10          |     |      | 7              |       | 31     |          |  |
| US 87: I-90 WB to N Frontage Rd                          | 0                   | 0             | 0             | 0               | 0.00                                       |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| Intersection: US 87 & I-90 WB                            | 22                  | 7             | 17            | 3               | 0.18                                       | 14               |         |                       |                       |                        |                        |            | 5           |     |      | 3              |       | 4      |          |  |
| US 87: I-90 EB to I-90 WB                                | 0                   | 0             | 0             | 0               | 0.00                                       |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| Intersection: US 87 & I-90 EB                            | 22                  | 7             | 17            | 5               | 0.29                                       | 8                |         | 7                     |                       |                        | 1                      |            | 3           |     |      | 3              |       | 6      |          |  |
| US 87: Coburn Rd to I-90 EB                              | 0                   | 0             | 0             | 0               | 0.00                                       |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| Intersection: US 87 & Coburn Rd                          | 19                  | 6             | 16            | 3               | 0.19                                       | 6                | 1       | 2                     |                       | 3                      |                        |            | 5           |     |      | 2              |       | 7      |          |  |
| <b>Exit 455 - Johnson Ln.</b>                            |                     |               |               |                 | <b>0.30</b>                                |                  |         |                       |                       |                        |                        |            |             |     |      |                |       |        |          |  |
| I-90 MP 449.0 to 451.0, Non-Junction                     | 20                  | 7             | 12            | 8               | 0.67                                       | 2                |         |                       |                       |                        | 1                      |            |             |     |      | 17             |       | 4      |          |  |
| I-90 MP 449.0 to 451.0, Intersection/Interchange Related | 16                  | 5             | 15            | 1               | 0.07                                       | 5                |         |                       |                       |                        | 2                      |            | 5           |     |      | 3              | 1     | 2      |          |  |
| Intersection: Johnson Ln & I-90 WB                       | 11                  | 4             | 10            | 1               | 0.10                                       | 5                |         |                       | 1                     |                        |                        |            | 5           |     |      |                |       | 2      |          |  |
| Intersection: Johnson Ln & I-90 EB                       | 8                   | 3             | 2             | 6               | 3.00                                       | 5                |         |                       |                       |                        |                        |            | 2           |     |      | 1              |       | 3      |          |  |
| Intersection: Johnson Ln & Old Hardin Rd                 | 9                   | 3             | 6             | 3               | 0.50                                       | 2                | 1       |                       |                       | 1                      | 2                      |            |             |     |      | 2              | 1     | 2      |          |  |

<sup>(1)</sup> Calculated for the purpose of evaluating interchange lighting needs. Only accidents within the interchange area (ramps, terminals, and crossroads between terminals) were factored in this value.

\* Night-to-day accident ratio not calculated since sample size (# of interchange accidents) is too small