


# HCM Signalized Intersection Capacity Analysis

## 14: Woodruff Road & I-385 SB Ramps

6/6/2011

|                                   |  |      |        |       |       |                      |      |      |      |       |      |       |
|-----------------------------------|--|------|--------|-------|-------|----------------------|------|------|------|-------|------|-------|
| Movement                          | EBL  | EBT  | EBR    | WBL   | WBT   | WBR                  | NBL  | NBT  | NBR  | SBL   | SBT  | SBR   |
| Lane Configurations               |  | ↑↑   |        | ↑     | ↑↑    |                      |      |      |      | ↑↑    |      | ↑     |
| Volume (vph)                      | 0  | 1105 | 212    | 91    | 1642  | 0                    | 0    | 0    | 0    | 1184  | 0    | 705   |
| Ideal Flow (vphpl)                | 1900   | 1900 | 1900   | 1900  | 1900  | 1900                 | 1900 | 1900 | 1900 | 1900  | 1900 | 1900  |
| Total Lost time (s)               |  | 6.6  |        | 6.6   | 6.6   |                      |      |      |      | 5.7   |      | 4.0   |
| Lane Util. Factor                 |  | 0.95 |        | 1.00  | 0.95  |                      |      |      |      | 0.97  |      | 1.00  |
| Frt                               |  | 0.98 |        | 1.00  | 1.00  |                      |      |      |      | 1.00  |      | 0.85  |
| Flt Protected                     |  | 1.00 |        | 0.95  | 1.00  |                      |      |      |      | 0.95  |      | 1.00  |
| Satd. Flow (prot)                 |  | 3355 |        | 1719  | 3438  |                      |      |      |      | 3335  |      | 1538  |
| Flt Permitted                     |  | 1.00 |        | 0.07  | 1.00  |                      |      |      |      | 0.95  |      | 1.00  |
| Satd. Flow (perm)                 |  | 3355 |        | 127   | 3438  |                      |      |      |      | 3335  |      | 1538  |
| Peak-hour factor, PHF             | 0.90   | 0.90 | 0.90   | 0.90  | 0.90  | 0.90                 | 0.90 | 0.90 | 0.90 | 0.90  | 0.90 | 0.90  |
| Adj. Flow (vph)                   | 0  | 1228 | 236    | 101   | 1824  | 0                    | 0    | 0    | 0    | 1316  | 0    | 783   |
| RTOR Reduction (vph)              | 0  | 13   | 0      | 0     | 0     | 0                    | 0    | 0    | 0    | 0     | 0    | 0     |
| Lane Group Flow (vph)             | 0  | 1451 | 0      | 101   | 1824  | 0                    | 0    | 0    | 0    | 1316  | 0    | 783   |
| Turn Type                         |  |      |        | pm+pt |       |                      |      |      |      | Prot  |      | Free  |
| Protected Phases                  |  | 2    |        | 1     | 6     |                      |      |      |      | 4     |      |       |
| Permitted Phases                  |  |      |        | 6     |       |                      |      |      |      |       |      | Free  |
| Actuated Green, G (s)             |  | 50.4 |        | 62.0  | 62.0  |                      |      |      |      | 45.7  |      | 120.0 |
| Effective Green, g (s)            |  | 50.4 |        | 62.0  | 62.0  |                      |      |      |      | 45.7  |      | 120.0 |
| Actuated g/C Ratio                |  | 0.42 |        | 0.52  | 0.52  |                      |      |      |      | 0.38  |      | 1.00  |
| Clearance Time (s)                |  | 6.6  |        | 6.6   | 6.6   |                      |      |      |      | 5.7   |      |       |
| Vehicle Extension (s)             |  | 4.3  |        | 4.3   | 4.3   |                      |      |      |      | 4.3   |      |       |
| Lane Grp Cap (vph)                |  | 1409 |        | 132   | 1776  |                      |      |      |      | 1270  |      | 1538  |
| v/s Ratio Prot                    |  | 0.43 |        | 0.03  | c0.53 |                      |      |      |      | c0.39 |      |       |
| v/s Ratio Perm                    |  |      |        | 0.36  |       |                      |      |      |      |       |      | 0.51  |
| v/c Ratio                         |  | 1.03 |        | 0.77  | 1.03  |                      |      |      |      | 1.04  |      | 0.51  |
| Uniform Delay, d1                 |  | 34.8 |        | 27.0  | 29.0  |                      |      |      |      | 37.1  |      | 0.0   |
| Progression Factor                |  | 0.56 |        | 2.13  | 0.76  |                      |      |      |      | 1.00  |      | 1.00  |
| Incremental Delay, d2             |  | 26.0 |        | 2.7   | 15.0  |                      |      |      |      | 35.1  |      | 1.2   |
| Delay (s)                         |  | 45.5 |        | 60.4  | 36.9  |                      |      |      |      | 72.2  |      | 1.2   |
| Level of Service                  |  | D    |        | E     | D     |                      |      |      |      | E     |      | A     |
| Approach Delay (s)                |  | 45.5 |        |       | 38.1  |                      |      | 0.0  |      |       | 45.7 |       |
| Approach LOS                      |  | D    |        |       | D     |                      |      | A    |      |       | D    |       |
| <b>Intersection Summary</b>       |  |      |        |       |       |                      |      |      |      |       |      |       |
| HCM Average Control Delay         |  |      | 43.0   |       |       | HCM Level of Service |      |      |      | D     |      |       |
| HCM Volume to Capacity ratio      |  |      | 1.03   |       |       |                      |      |      |      |       |      |       |
| Actuated Cycle Length (s)         |  |      | 120.0  |       |       | Sum of lost time (s) |      |      |      | 12.3  |      |       |
| Intersection Capacity Utilization |  |      | 171.4% |       |       | ICU Level of Service |      |      |      | H     |      |       |
| Analysis Period (min)             |  |      | 15     |       |       |                      |      |      |      |       |      |       |
| c Critical Lane Group             |  |      |        |       |       |                      |      |      |      |       |      |       |