

HCM 2010 Signalized Intersection Capacity Analysis
 8: Dreher Ave/School Drive & Main Street

3/27/2015

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  |  |  | |  |  | |
| Volume (vph) | 57 | 399 | 64 | 256 | 559 | 107 | 42 | 32 | 158 | 116 | 32 | 60 |
| Movement Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| Initial Queue, veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj. Factor (A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking, Bus Adj. Factors | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Sat. Flow Rate, veh/h/ln | 1456 | 1697 | 1697 | 1660 | 1613 | 1602 | 1561 | 1701 | 1701 | 1609 | 1609 | 1609 |
| Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| Lane Assignment | | | | | | | | | | | | |
| Capacity, veh/h | 397 | 1039 | 156 | 0 | 1162 | 962 | 222 | 47 | 278 | 102 | 104 | 194 |
| Proportion Arriving On Green | 0.72 | 0.72 | 0.72 | 0.01 | 0.72 | 0.71 | 0.22 | 0.22 | 0.22 | 0.21 | 0.21 | 0.21 |
| Movement Delay, s/veh | 17.6 | 0.0 | 9.9 | 0.0 | 11.1 | 7.3 | 56.0 | 0.0 | 63.0 | 236.4 | 0.0 | 51.4 |
| Movement LOS | B | | A | | B | A | E | | E | F | | D |
| Approach Volume, veh/h | | 595 | | | 724 | | | 292 | | | 226 | |
| Approach Delay, s/veh | | 10.7 | | | 10.5 | | | 61.8 | | | 154.6 | |
| Approach LOS | | B | | | B | | | E | | | F | |
| Timer: | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | |
| Assigned Phase | | | 2 | | 4 | | 6 | | 8 | | | |
| Case No | | | 6.3 | | 6.0 | | 3.0 | | 6.0 | | | |
| Phase Duration (G+Y+Rc), s | | | 113.00 | | 37.00 | | 113.00 | | 37.00 | | | |
| Change Period (Y+Rc), s | | | 7.00 | | 6.00 | | 7.00 | | 6.00 | | | |
| Max. Allowable Headway (MAH), s | | | 3.60 | | 4.66 | | 3.60 | | 4.66 | | | |
| Maximum Green Setting (Gmax), s | | | 82.80 | | 31.00 | | 106.00 | | 31.00 | | | |
| Max. Queue Clearance Time (g_c+I1), s | | | 34.69 | | 33.00 | | 27.38 | | 24.68 | | | |
| Green Extension Time (g_e), s | | | 4.36 | | 0.00 | | 4.36 | | 1.32 | | | |
| Probability of Phase Call (p_c) | | | 1.000 | | 1.000 | | 1.000 | | 1.000 | | | |
| Probability of Max Out (p_x) | | | 0.000 | | 1.000 | | 0.000 | | 0.596 | | | |
| Left-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 5 | | 7 | | | | 3 | | | |
| Mvmt. Sat Flow, veh/h | | | 633.06 | | 980.57 | | | | 1080.70 | | | |
| Through Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 2 | | 4 | | 6 | | 8 | | | |
| Mvmt. Sat Flow, veh/h | | | 1442.67 | | 501.78 | | 1613.21 | | 214.23 | | | |
| Right-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 12 | | 14 | | 16 | | 18 | | | |
| Mvmt. Sat Flow, veh/h | | | 216.31 | | 940.84 | | 1361.84 | | 1263.84 | | | |
| Left Lane Group Data | | | | | | | | | | | | |
| Assigned Movement | | 0 | 5 | 0 | 7 | 0 | 0 | 0 | 3 | | | |
| Lane Assignment | | | L | | L | | | | L | | | |
| Lanes in Group | | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | | | |
| Group Volume (v), veh/h | | 0.0 | 62.0 | 0.0 | 126.1 | 0.0 | 0.0 | 0.0 | 51.9 | | | |
| Group Sat. Flow (s), veh/h/ln | | 0.0 | 633.1 | 0.0 | 980.6 | 0.0 | 0.0 | 0.0 | 1080.7 | | | |
| Queue Serve Time (g_s), s | | 0.0 | 7.3 | 0.0 | 8.3 | 0.0 | 0.0 | 0.0 | 6.3 | | | |
| Cycle Queue Clear Time (g_c), s | | 0.0 | 32.7 | 0.0 | 31.0 | 0.0 | 0.0 | 0.0 | 15.2 | | | |

HCM 2010 Signalized Intersection Capacity Analysis

8: Dreher Ave/School Drive & Main Street

3/27/2015

| | | | | | | | | |
|---------------------------------------|-------|-------|-------|-------|-------|--------|-------|--------|
| Perm LT Sat Flow Rate (s_l), veh/h/ln | 0.0 | 633.1 | 0.0 | 980.6 | 0.0 | 0.0 | 0.0 | 1080.7 |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Perm LT Eff. Green (g_p), s | 0.0 | 108.0 | 0.0 | 31.0 | 0.0 | 0.0 | 0.0 | 33.0 |
| Perm LT Serve Time (g_u), s | 0.0 | 82.6 | 0.0 | 8.3 | 0.0 | 0.0 | 0.0 | 24.1 |
| Perm LT Que Serve Time (g_ps), s | 0.0 | 7.3 | 0.0 | 8.3 | 0.0 | 0.0 | 0.0 | 6.3 |
| Time to First Blk (g_f), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Serve Time pre Blk (g_fs), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Proportion LT Inside Lane (P_L) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| Lane Group Capacity (c), veh/h | 0.0 | 396.7 | 0.0 | 102.4 | 0.0 | 0.0 | 0.0 | 221.9 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.156 | 0.000 | 1.231 | 0.000 | 0.000 | 0.000 | 0.234 |
| Available Capacity (c_a), veh/h | 0.0 | 396.7 | 0.0 | 102.4 | 0.0 | 0.0 | 0.0 | 221.9 |
| Upstream Filter Factor (I) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| Uniform Delay (d1), s/veh | 0.0 | 16.8 | 0.0 | 72.8 | 0.0 | 0.0 | 0.0 | 55.5 |
| Incremental Delay (d2), s/veh | 0.0 | 0.8 | 0.0 | 163.6 | 0.0 | 0.0 | 0.0 | 0.5 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 17.6 | 0.0 | 236.4 | 0.0 | 0.0 | 0.0 | 56.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 1.1 | 0.0 | 4.0 | 0.0 | 0.0 | 0.0 | 1.7 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.1 | 0.0 | 4.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 0.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 1.2 | 0.0 | 8.6 | 0.0 | 0.0 | 0.0 | 1.8 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.23 | 0.00 | 2.22 | 0.00 | 0.00 | 0.00 | 0.56 |
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Middle Lane Group Data | | | | | | | | |
| Assigned Movement | 0 | 2 | 0 | 4 | 0 | 6 | 0 | 8 |
| Lane Assignment | T | | | | | | | |
| Lanes in Group | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| Group Volume (v), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 607.6 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1613.2 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 25.4 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 25.4 | 0.0 | 0.0 |
| Lane Group Capacity (c), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1161.5 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.523 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1161.5 | 0.0 | 0.0 |
| Upstream Filter Factor (I) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.000 | 0.000 | 0.000 |
| Uniform Delay (d1), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 9.4 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.7 | 0.0 | 0.0 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 11.1 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.3 | 0.0 | 0.0 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 8.9 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.26 | 0.00 | 0.00 |

HCM 2010 Signalized Intersection Capacity Analysis
 8: Dreher Ave/School Drive & Main Street

3/27/2015

| | | | | | | | | |
|---------------------------------------|-------|--------|-------|--------|-------|--------|-------|--------|
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Right Lane Group Data | | | | | | | | |
| Assigned Movement | 0 | 12 | 0 | 14 | 0 | 16 | 0 | 18 |
| Lane Assignment | | T+R | | T+R | | R | | T+R |
| Lanes in Group | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Group Volume (v), veh/h | 0.0 | 533.5 | 0.0 | 100.0 | 0.0 | 116.3 | 0.0 | 240.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 1659.0 | 0.0 | 1442.6 | 0.0 | 1361.8 | 0.0 | 1478.1 |
| Queue Serve Time (g_s), s | 0.0 | 19.9 | 0.0 | 8.9 | 0.0 | 4.1 | 0.0 | 22.7 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 19.9 | 0.0 | 8.9 | 0.0 | 4.1 | 0.0 | 22.7 |
| Prot RT Sat Flow Rate (s_R), veh/h/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Prot RT Eff. Green (g_R), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Proportion RT Outside Lane (P_R) | 0.000 | 0.130 | 0.000 | 0.652 | 0.000 | 1.000 | 0.000 | 0.855 |
| Lane Group Capacity (c), veh/h | 0.0 | 1194.5 | 0.0 | 298.1 | 0.0 | 962.4 | 0.0 | 325.2 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.447 | 0.000 | 0.335 | 0.000 | 0.121 | 0.000 | 0.738 |
| Available Capacity (c_a), veh/h | 0.0 | 1194.5 | 0.0 | 298.1 | 0.0 | 962.4 | 0.0 | 325.2 |
| Upstream Filter Factor (I) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Uniform Delay (d1), s/veh | 0.0 | 8.7 | 0.0 | 50.7 | 0.0 | 7.1 | 0.0 | 54.5 |
| Incremental Delay (d2), s/veh | 0.0 | 1.2 | 0.0 | 0.7 | 0.0 | 0.3 | 0.0 | 8.6 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 9.9 | 0.0 | 51.4 | 0.0 | 7.3 | 0.0 | 63.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 6.7 | 0.0 | 3.3 | 0.0 | 1.2 | 0.0 | 8.4 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.4 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.8 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 7.1 | 0.0 | 3.3 | 0.0 | 1.2 | 0.0 | 9.2 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.37 | 0.00 | 0.58 | 0.00 | 0.16 | 0.00 | 0.42 |
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Intersection Summary | | | | | | | | |
| HCM Average Control Delay | 36.4 | | | | | | | |
| HCM Level of Service | D | | | | | | | |

HCM 2010 Signalized Intersection Capacity Analysis
 9: 9th St & Main Street

3/27/2015

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---------------------------------------|------|------|---------|------|---------|------|---------|------|--------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 177 | 383 | 7 | 2 | 405 | 161 | 43 | 74 | 63 | 301 | 8 | 35 |
| Movement Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| Initial Queue, veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj. Factor (A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking, Bus Adj. Factors | 1.00 | 1.00 | 0.90 | 1.00 | 1.00 | 0.90 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Sat. Flow Rate, veh/h/ln | 1591 | 1591 | 1591 | 1652 | 1652 | 1636 | 1638 | 1638 | 1638 | 1710 | 1703 | 1703 |
| Lanes | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
| Lane Assignment | | | | | | | | | | | | |
| Capacity, veh/h | 0 | 1556 | 69 | 26 | 887 | 678 | 121 | 239 | 168 | 312 | 67 | 530 |
| Proportion Arriving On Green | 0.00 | 0.54 | 0.54 | 0.43 | 0.43 | 0.44 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 | 0.41 |
| Movement Delay, s/veh | 0.0 | 19.6 | 19.7 | 31.9 | 0.0 | 25.1 | 33.3 | 0.0 | 0.0 | 125.8 | 0.0 | 28.0 |
| Movement LOS | | B | B | C | | C | C | | | F | | C |
| Approach Volume, veh/h | | 471 | | | 713 | | | 259 | | | 402 | |
| Approach Delay, s/veh | | 19.6 | | | 29.9 | | | 33.3 | | | 108.4 | |
| Approach LOS | | B | | | C | | | C | | | F | |
| Timer: | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | |
| Assigned Phase | | | 2 | | 4 | | 6 | | 8 | | | |
| Case No | | | 4.0 | | 6.0 | | 7.3 | | 8.0 | | | |
| Phase Duration (G+Y+Rc), s | | | 85.20 | | 64.80 | | 85.20 | | 64.80 | | | |
| Change Period (Y+Rc), s | | | 4.50 | | 6.00 | | 4.50 | | 6.00 | | | |
| Max. Allowable Headway (MAH), s | | | 3.81 | | 4.69 | | 3.81 | | 4.69 | | | |
| Maximum Green Setting (Gmax), s | | | 80.70 | | 58.80 | | 80.70 | | 58.80 | | | |
| Max. Queue Clearance Time (g_c+I1), s | | | 14.83 | | 62.80 | | 36.54 | | 24.07 | | | |
| Green Extension Time (g_e), s | | | 4.16 | | 0.00 | | 4.14 | | 3.45 | | | |
| Probability of Phase Call (p_c) | | | 1.000 | | 1.000 | | 1.000 | | 1.000 | | | |
| Probability of Max Out (p_x) | | | 0.000 | | 1.000 | | 0.000 | | 0.001 | | | |
| Left-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | | | 7 | | 1 | | 3 | | | |
| Mvmt. Sat Flow, veh/h | | | | | 1024.44 | | 13.03 | | 265.29 | | | |
| Through Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 2 | | 4 | | 6 | | 8 | | | |
| Mvmt. Sat Flow, veh/h | | | 2873.77 | | 164.36 | | 1628.69 | | 549.28 | | | |
| Right-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 12 | | 14 | | 16 | | 18 | | | |
| Mvmt. Sat Flow, veh/h | | | 127.26 | | 1307.42 | | 1251.55 | | 415.67 | | | |
| Left Lane Group Data | | | | | | | | | | | | |
| Assigned Movement | | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 3 | | | |
| Lane Assignment | | | | | L | | L+T | | L+T+R | | | |
| Lanes in Group | | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | | | |
| Group Volume (v), veh/h | | 0.0 | 0.0 | 0.0 | 330.8 | 0.0 | 504.0 | 0.0 | 259.0 | | | |
| Group Sat. Flow (s), veh/h/ln | | 0.0 | 0.0 | 0.0 | 1024.4 | 0.0 | 1641.7 | 0.0 | 1230.2 | | | |
| Queue Serve Time (g_s), s | | 0.0 | 0.0 | 0.0 | 38.7 | 0.0 | 0.0 | 0.0 | 14.8 | | | |
| Cycle Queue Clear Time (g_c), s | | 0.0 | 0.0 | 0.0 | 60.8 | 0.0 | 34.5 | 0.0 | 22.1 | | | |

HCM 2010 Signalized Intersection Capacity Analysis

9: 9th St & Main Street

3/27/2015

| | | | | | | | | |
|---------------------------------------|-------|--------|-------|--------|-------|-------|-------|-------|
| Perm LT Sat Flow Rate (s_l), veh/h/ln | 0.0 | 0.0 | 0.0 | 1024.4 | 0.0 | 472.0 | 0.0 | 764.7 |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Perm LT Eff. Green (g_p), s | 0.0 | 0.0 | 0.0 | 60.8 | 0.0 | 81.2 | 0.0 | 60.8 |
| Perm LT Serve Time (g_u), s | 0.0 | 0.0 | 0.0 | 38.7 | 0.0 | 68.4 | 0.0 | 56.2 |
| Perm LT Que Serve Time (g_ps), s | 0.0 | 0.0 | 0.0 | 38.7 | 0.0 | 0.0 | 0.0 | 14.8 |
| Time to First Blk (g_f), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 59.1 | 0.0 | 7.3 |
| Serve Time pre Blk (g_fs), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 34.5 | 0.0 | 7.3 |
| Proportion LT Inside Lane (P_L) | 0.000 | 0.000 | 0.000 | 1.000 | 0.000 | 0.008 | 0.000 | 0.216 |
| Lane Group Capacity (c), veh/h | 0.0 | 0.0 | 0.0 | 312.5 | 0.0 | 912.9 | 0.0 | 527.8 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.000 | 0.000 | 1.058 | 0.000 | 0.552 | 0.000 | 0.491 |
| Available Capacity (c_a), veh/h | 0.0 | 0.0 | 0.0 | 312.5 | 0.0 | 912.9 | 0.0 | 527.8 |
| Upstream Filter Factor (I) | 0.000 | 0.000 | 0.000 | 1.000 | 0.000 | 0.935 | 0.000 | 1.000 |
| Uniform Delay (d1), s/veh | 0.0 | 0.0 | 0.0 | 58.6 | 0.0 | 29.6 | 0.0 | 32.6 |
| Incremental Delay (d2), s/veh | 0.0 | 0.0 | 0.0 | 67.2 | 0.0 | 2.2 | 0.0 | 0.7 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 125.8 | 0.0 | 31.9 | 0.0 | 33.3 |
| First-Term Queue (Q1), veh/ln | 0.0 | 0.0 | 0.0 | 12.0 | 0.0 | 14.5 | 0.0 | 7.1 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.0 | 0.0 | 5.8 | 0.0 | 0.6 | 0.0 | 0.1 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 0.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 0.0 | 0.0 | 17.9 | 0.0 | 15.0 | 0.0 | 7.2 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.00 | 0.00 | 3.34 | 0.00 | 0.79 | 0.00 | 0.46 |
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Middle Lane Group Data | | | | | | | | |
| Assigned Movement | 0 | 2 | 0 | 4 | 0 | 6 | 0 | 8 |
| Lane Assignment | T | | | | | | | |
| Lanes in Group | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Group Volume (v), veh/h | 0.0 | 249.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 1591.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 12.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 12.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane Group Capacity (c), veh/h | 0.0 | 861.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.289 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 861.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Upstream Filter Factor (I) | 0.000 | 1.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Uniform Delay (d1), s/veh | 0.0 | 18.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 0.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 19.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 4.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 5.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

HCM 2010 Signalized Intersection Capacity Analysis
 9: 9th St & Main Street

3/27/2015

| | | | | | | | | |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Right Lane Group Data

| | | | | | | | | |
|---------------------------------------|-------|--------|-------|--------|-------|--------|-------|-------|
| Assigned Movement | 0 | 12 | 0 | 14 | 0 | 16 | 0 | 18 |
| Lane Assignment | | T+R | | T+R | | R | | |
| Lanes in Group | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| Group Volume (v), veh/h | 0.0 | 221.5 | 0.0 | 71.6 | 0.0 | 209.1 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 1409.7 | 0.0 | 1471.8 | 0.0 | 1251.5 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 12.8 | 0.0 | 4.6 | 0.0 | 16.3 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 12.8 | 0.0 | 4.6 | 0.0 | 16.3 | 0.0 | 0.0 |
| Prot RT Sat Flow Rate (s_R), veh/h/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Prot RT Eff. Green (g_R), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Proportion RT Outside Lane (P_R) | 0.000 | 0.090 | 0.000 | 0.888 | 0.000 | 1.000 | 0.000 | 0.338 |
| Lane Group Capacity (c), veh/h | 0.0 | 763.1 | 0.0 | 596.6 | 0.0 | 677.5 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.290 | 0.000 | 0.120 | 0.000 | 0.309 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 763.1 | 0.0 | 596.6 | 0.0 | 677.5 | 0.0 | 0.0 |
| Upstream Filter Factor (I) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 0.935 | 0.000 | 0.000 |
| Uniform Delay (d1), s/veh | 0.0 | 18.7 | 0.0 | 27.9 | 0.0 | 24.0 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 1.0 | 0.0 | 0.1 | 0.0 | 1.1 | 0.0 | 0.0 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 19.7 | 0.0 | 28.0 | 0.0 | 25.1 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 4.3 | 0.0 | 1.6 | 0.0 | 5.2 | 0.0 | 0.0 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 4.5 | 0.0 | 1.6 | 0.0 | 5.4 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.40 | 0.00 | 0.03 | 0.00 | 0.28 | 0.00 | 0.00 |
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Intersection Summary

| | |
|---------------------------|------|
| HCM Average Control Delay | 44.9 |
| HCM Level of Service | D |

HCM 2010 Signalized Intersection Capacity Analysis
 10: 8th St & Main Street/Main Street

3/27/2015

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 44 | 539 | 22 | 6 | 351 | 8 | 65 | 76 | 35 | 43 | 19 | 68 |
| Movement Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| Initial Queue, veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj. Factor (A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking, Bus Adj. Factors | 1.00 | 1.00 | 0.90 | 1.00 | 1.00 | 0.90 | 1.00 | 1.00 | 0.90 | 1.00 | 1.00 | 1.00 |
| Adj. Sat. Flow Rate, veh/h/ln | 1667 | 1667 | 1667 | 1762 | 1762 | 1762 | 1673 | 1673 | 1673 | 1690 | 1690 | 1690 |
| Lanes | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Lane Assignment | | | | | | | | | | | | |
| Capacity, veh/h | 177 | 1551 | 84 | 61 | 1096 | 31 | 140 | 154 | 72 | 135 | 77 | 156 |
| Proportion Arriving On Green | 0.54 | 0.54 | 0.54 | 0.59 | 0.59 | 0.59 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Movement Delay, s/veh | 7.9 | 0.0 | 8.3 | 7.8 | 0.0 | 0.0 | 27.4 | 0.0 | 0.0 | 24.6 | 0.0 | 0.0 |
| Movement LOS | A | | A | A | | | C | | | C | | |
| Approach Volume, veh/h | | 672 | | | 432 | | | 221 | | | 172 | |
| Approach Delay, s/veh | | 8.1 | | | 7.8 | | | 27.4 | | | 24.6 | |
| Approach LOS | | A | | | A | | | C | | | C | |
| Timer: | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | |
| Assigned Phase | | | 2 | | 4 | | 6 | | 8 | | | |
| Case No | | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | | |
| Phase Duration (G+Y+Rc), s | | | 52.50 | | 22.50 | | 52.50 | | 22.50 | | | |
| Change Period (Y+Rc), s | | | 4.50 | | 5.50 | | 4.50 | | 5.50 | | | |
| Max. Allowable Headway (MAH), s | | | 3.57 | | 4.47 | | 3.57 | | 4.47 | | | |
| Maximum Green Setting (Gmax), s | | | 48.00 | | 17.00 | | 48.00 | | 17.00 | | | |
| Max. Queue Clearance Time (g_c+l1), s | | | 11.60 | | 10.01 | | 11.63 | | 12.97 | | | |
| Green Extension Time (g_e), s | | | 3.24 | | 0.96 | | 3.24 | | 0.65 | | | |
| Probability of Phase Call (p_c) | | | 1.000 | | 1.000 | | 1.000 | | 1.000 | | | |
| Probability of Max Out (p_x) | | | 0.000 | | 0.354 | | 0.000 | | 1.000 | | | |
| Left-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 5 | | 7 | | 1 | | 3 | | | |
| Mvmt. Sat Flow, veh/h | | | 233.91 | | 388.68 | | 47.43 | | 390.75 | | | |
| Through Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 2 | | 4 | | 6 | | 8 | | | |
| Mvmt. Sat Flow, veh/h | | | 2272.11 | | 194.47 | | 1613.22 | | 520.50 | | | |
| Right-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 12 | | 14 | | 16 | | 18 | | | |
| Mvmt. Sat Flow, veh/h | | | 126.11 | | 614.65 | | 47.20 | | 282.63 | | | |
| Left Lane Group Data | | | | | | | | | | | | |
| Assigned Movement | | 0 | 5 | 0 | 7 | 0 | 1 | 0 | 3 | | | |
| Lane Assignment | | | L+T | | L+T+R | | L+T+R | | L+T+R | | | |
| Lanes in Group | | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | | | |
| Group Volume (v), veh/h | | 0.0 | 332.2 | 0.0 | 172.1 | 0.0 | 432.1 | 0.0 | 220.7 | | | |
| Group Sat. Flow (s), veh/h/ln | | 0.0 | 1289.2 | 0.0 | 1197.8 | 0.0 | 1707.8 | 0.0 | 1193.9 | | | |
| Queue Serve Time (g_s), s | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 | | | |
| Cycle Queue Clear Time (g_c), s | | 0.0 | 8.2 | 0.0 | 8.0 | 0.0 | 9.6 | 0.0 | 11.0 | | | |

HCM 2010 Signalized Intersection Capacity Analysis
 10: 8th St & Main Street/Main Street

3/27/2015

| | | | | | | | | |
|---------------------------------------|-------|--------|-------|--------|-------|--------|-------|--------|
| Perm LT Sat Flow Rate (s_l), veh/h/ln | 0.0 | 603.3 | 0.0 | 694.7 | 0.0 | 510.6 | 0.0 | 717.0 |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0.0 | 1666.8 | 0.0 | 1194.7 | 0.0 | 0.0 | 0.0 | 1330.3 |
| Perm LT Eff. Green (g_p), s | 0.0 | 50.0 | 0.0 | 19.0 | 0.0 | 50.0 | 0.0 | 19.0 |
| Perm LT Serve Time (g_u), s | 0.0 | 40.4 | 0.0 | 8.0 | 0.0 | 40.4 | 0.0 | 11.0 |
| Perm LT Que Serve Time (g_ps), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 |
| Time to First Blk (g_f), s | 0.0 | 9.0 | 0.0 | 4.1 | 0.0 | 31.5 | 0.0 | 3.6 |
| Serve Time pre Blk (g_fs), s | 0.0 | 8.2 | 0.0 | 4.1 | 0.0 | 9.6 | 0.0 | 3.6 |
| Proportion LT Inside Lane (P_L) | 0.000 | 0.181 | 0.000 | 0.324 | 0.000 | 0.028 | 0.000 | 0.327 |
| Lane Group Capacity (c), veh/h | 0.0 | 916.3 | 0.0 | 367.0 | 0.0 | 1188.0 | 0.0 | 366.1 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.363 | 0.000 | 0.469 | 0.000 | 0.364 | 0.000 | 0.603 |
| Available Capacity (c_a), veh/h | 0.0 | 916.3 | 0.0 | 367.0 | 0.0 | 1188.0 | 0.0 | 366.2 |
| Upstream Filter Factor (I) | 0.000 | 0.259 | 0.000 | 1.000 | 0.000 | 0.852 | 0.000 | 1.000 |
| Uniform Delay (d1), s/veh | 0.0 | 7.6 | 0.0 | 23.7 | 0.0 | 7.0 | 0.0 | 24.6 |
| Incremental Delay (d2), s/veh | 0.0 | 0.3 | 0.0 | 0.9 | 0.0 | 0.7 | 0.0 | 2.8 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 7.9 | 0.0 | 24.6 | 0.0 | 7.8 | 0.0 | 27.4 |
| First-Term Queue (Q1), veh/ln | 0.0 | 2.7 | 0.0 | 2.6 | 0.0 | 3.2 | 0.0 | 3.7 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.3 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 2.8 | 0.0 | 2.7 | 0.0 | 3.5 | 0.0 | 3.9 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.14 | 0.00 | 0.25 | 0.00 | 0.18 | 0.00 | 0.33 |
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Middle Lane Group Data | | | | | | | | |
| Assigned Movement | 0 | 2 | 0 | 4 | 0 | 6 | 0 | 8 |
| Lane Assignment | | | | | | | | |
| Lanes in Group | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Group Volume (v), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane Group Capacity (c), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Upstream Filter Factor (I) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Uniform Delay (d1), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

HCM 2010 Signalized Intersection Capacity Analysis
 10: 8th St & Main Street/Main Street

3/27/2015

| | | | | | | | | |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Right Lane Group Data

| | | | | | | | | |
|---------------------------------------|-------|--------|-------|-------|-------|-------|-------|-------|
| Assigned Movement | 0 | 12 | 0 | 14 | 0 | 16 | 0 | 18 |
| Lane Assignment | T+R | | | | | | | |
| Lanes in Group | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Group Volume (v), veh/h | 0.0 | 339.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 1342.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 9.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 9.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Prot RT Sat Flow Rate (s_R), veh/h/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Prot RT Eff. Green (g_R), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Proportion RT Outside Lane (P_R) | 0.000 | 0.094 | 0.000 | 0.513 | 0.000 | 0.028 | 0.000 | 0.237 |
| Lane Group Capacity (c), veh/h | 0.0 | 895.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.379 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 895.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Upstream Filter Factor (I) | 0.000 | 0.259 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Uniform Delay (d1), s/veh | 0.0 | 7.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 8.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 2.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 3.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Intersection Summary

| | |
|---------------------------|------|
| HCM Average Control Delay | 12.7 |
| HCM Level of Service | B |

HCM 2010 Signalized Intersection Capacity Analysis
 11: Seventh St/7th St & Main Street /Main Street

3/27/2015

| |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Volume (vph) | 23 | 411 | 30 | 4 | 250 | 22 | 107 | 136 | 113 | 31 | 26 | 28 |
| Movement Number | 5 | 2 | 12 | 1 | 6 | 16 | 3 | 8 | 18 | 7 | 4 | 14 |
| Initial Queue, veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj. Factor (A_pbT) | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking, Bus Adj. Factors | 1.00 | 1.00 | 0.90 | 1.00 | 1.00 | 0.90 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.90 |
| Adj. Sat. Flow Rate, veh/h/ln | 1673 | 1673 | 1673 | 1746 | 1746 | 1746 | 1682 | 1682 | 1682 | 1715 | 1715 | 1715 |
| Lanes | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Lane Assignment | | | | | | | | | | | | |
| Capacity, veh/h | 74 | 1287 | 91 | 28 | 746 | 104 | 201 | 184 | 136 | 221 | 77 | 134 |
| Proportion Arriving On Green | 0.41 | 0.41 | 0.41 | 0.43 | 0.43 | 0.43 | 0.28 | 0.28 | 0.28 | 0.45 | 0.45 | 0.45 |
| Movement Delay, s/veh | 29.1 | 0.0 | 29.4 | 29.4 | 0.0 | 0.0 | 80.7 | 0.0 | 0.0 | 25.8 | 0.0 | 0.0 |
| Movement LOS | C | | C | C | | | F | | | C | | |
| Approach Volume, veh/h | | 585 | | | 391 | | | 513 | | | 143 | |
| Approach Delay, s/veh | | 29.2 | | | 29.4 | | | 80.7 | | | 25.8 | |
| Approach LOS | | C | | | C | | | F | | | C | |
| Timer: | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | |
| Assigned Phase | | | 2 | | 4 | | 6 | | 8 | | | |
| Case No | | | 8.0 | | 8.0 | | 8.0 | | 8.0 | | | |
| Phase Duration (G+Y+Rc), s | | | 78.80 | | 71.20 | | 78.80 | | 71.20 | | | |
| Change Period (Y+Rc), s | | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | | |
| Max. Allowable Headway (MAH), s | | | 3.53 | | 4.55 | | 3.53 | | 4.55 | | | |
| Maximum Green Setting (Gmax), s | | | 73.80 | | 66.20 | | 73.80 | | 66.20 | | | |
| Max. Queue Clearance Time (g_c+l1), s | | | 21.34 | | 14.63 | | 26.18 | | 70.20 | | | |
| Green Extension Time (g_e), s | | | 2.71 | | 3.45 | | 2.71 | | 0.00 | | | |
| Probability of Phase Call (p_c) | | | 1.000 | | 1.000 | | 1.000 | | 1.000 | | | |
| Probability of Max Out (p_x) | | | 0.000 | | 0.000 | | 0.000 | | 1.000 | | | |
| Left-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 5 | | 7 | | 1 | | 3 | | | |
| Mvmt. Sat Flow, veh/h | | | 134.30 | | 393.93 | | 23.06 | | 380.42 | | | |
| Through Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 2 | | 4 | | 6 | | 8 | | | |
| Mvmt. Sat Flow, veh/h | | | 2506.94 | | 184.41 | | 1460.64 | | 396.23 | | | |
| Right-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 12 | | 14 | | 16 | | 18 | | | |
| Mvmt. Sat Flow, veh/h | | | 179.81 | | 294.46 | | 206.78 | | 300.05 | | | |
| Left Lane Group Data | | | | | | | | | | | | |
| Assigned Movement | | 0 | 5 | 0 | 7 | 0 | 1 | 0 | 3 | | | |
| Lane Assignment | | | L+T | | L+T+R | | L+T+R | | L+T+R | | | |
| Lanes in Group | | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | | | |
| Group Volume (v), veh/h | | 0.0 | 309.7 | 0.0 | 143.1 | 0.0 | 391.0 | 0.0 | 513.3 | | | |
| Group Sat. Flow (s), veh/h/ln | | 0.0 | 1482.7 | 0.0 | 872.8 | 0.0 | 1690.5 | 0.0 | 1076.7 | | | |
| Queue Serve Time (g_s), s | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 55.6 | | | |
| Cycle Queue Clear Time (g_c), s | | 0.0 | 19.3 | 0.0 | 12.6 | 0.0 | 24.2 | 0.0 | 68.2 | | | |

HCM 2010 Signalized Intersection Capacity Analysis
 11: Seventh St/7th St & Main Street /Main Street

3/27/2015

| | | | | | | | | |
|---------------------------------------|-------|--------|-------|-------|-------|-------|-------|--------|
| Perm LT Sat Flow Rate (s_l), veh/h/ln | 0.0 | 620.4 | 0.0 | 570.6 | 0.0 | 542.7 | 0.0 | 730.6 |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0.0 | 1496.1 | 0.0 | 939.2 | 0.0 | 0.0 | 0.0 | 1196.9 |
| Perm LT Eff. Green (g_p), s | 0.0 | 75.8 | 0.0 | 68.2 | 0.0 | 75.8 | 0.0 | 68.2 |
| Perm LT Serve Time (g_u), s | 0.0 | 51.6 | 0.0 | 0.0 | 0.0 | 56.5 | 0.0 | 55.6 |
| Perm LT Que Serve Time (g_ps), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 55.6 |
| Time to First Blk (g_f), s | 0.0 | 19.5 | 0.0 | 2.4 | 0.0 | 50.8 | 0.0 | 1.1 |
| Serve Time pre Blk (g_fs), s | 0.0 | 19.3 | 0.0 | 2.4 | 0.0 | 24.2 | 0.0 | 1.1 |
| Proportion LT Inside Lane (P_L) | 0.000 | 0.091 | 0.000 | 0.451 | 0.000 | 0.014 | 0.000 | 0.353 |
| Lane Group Capacity (c), veh/h | 0.0 | 775.4 | 0.0 | 431.7 | 0.0 | 878.6 | 0.0 | 522.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.399 | 0.000 | 0.331 | 0.000 | 0.445 | 0.000 | 0.983 |
| Available Capacity (c_a), veh/h | 0.0 | 775.4 | 0.0 | 431.7 | 0.0 | 878.6 | 0.0 | 522.0 |
| Upstream Filter Factor (I) | 0.000 | 0.952 | 0.000 | 1.000 | 0.000 | 0.961 | 0.000 | 0.584 |
| Uniform Delay (d1), s/veh | 0.0 | 27.6 | 0.0 | 25.4 | 0.0 | 27.8 | 0.0 | 54.7 |
| Incremental Delay (d2), s/veh | 0.0 | 1.5 | 0.0 | 0.4 | 0.0 | 1.6 | 0.0 | 25.9 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 29.1 | 0.0 | 25.8 | 0.0 | 29.4 | 0.0 | 80.7 |
| First-Term Queue (Q1), veh/ln | 0.0 | 8.2 | 0.0 | 3.3 | 0.0 | 10.4 | 0.0 | 19.7 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.3 | 0.0 | 0.1 | 0.0 | 0.4 | 0.0 | 3.8 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 8.5 | 0.0 | 3.4 | 0.0 | 10.7 | 0.0 | 23.5 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.44 | 0.00 | 0.28 | 0.00 | 1.09 | 0.00 | 1.56 |
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Middle Lane Group Data | | | | | | | | |
| Assigned Movement | 0 | 2 | 0 | 4 | 0 | 6 | 0 | 8 |
| Lane Assignment | | | | | | | | |
| Lanes in Group | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Group Volume (v), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane Group Capacity (c), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Upstream Filter Factor (I) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Uniform Delay (d1), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

HCM 2010 Signalized Intersection Capacity Analysis
 11: Seventh St/7th St & Main Street /Main Street

3/27/2015

| | | | | | | | | |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Right Lane Group Data

| | | | | | | | | |
|---------------------------------------|-------|--------|-------|-------|-------|-------|-------|-------|
| Assigned Movement | 0 | 12 | 0 | 14 | 0 | 16 | 0 | 18 |
| Lane Assignment | T+R | | | | | | | |
| Lanes in Group | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Group Volume (v), veh/h | 0.0 | 275.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 1338.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 19.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 19.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Prot RT Sat Flow Rate (s_R), veh/h/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Prot RT Eff. Green (g_R), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Proportion RT Outside Lane (P_R) | 0.000 | 0.134 | 0.000 | 0.337 | 0.000 | 0.122 | 0.000 | 0.279 |
| Lane Group Capacity (c), veh/h | 0.0 | 676.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.408 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 676.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Upstream Filter Factor (I) | 0.000 | 0.952 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Uniform Delay (d1), s/veh | 0.0 | 27.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 1.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Delay (d3), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Control Delay (d), s/veh | 0.0 | 29.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 7.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Third-Term Queue (Q3), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile bk-of-que factor (f_B%) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| Percentile Back of Queue (Q%), veh/ln | 0.0 | 7.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.39 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Initial Queue (Qb), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Final (Residual) Queue (Qe), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Delay (ds), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Queue (Qs), veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Saturated Capacity (cs), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Initial Queue Clear Time (tc), h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Intersection Summary

| | |
|---------------------------|------|
| HCM Average Control Delay | 45.1 |
| HCM Level of Service | D |

HCM Signalized Intersection Capacity Analysis

12: Seventh St & Ann St

3/27/2015

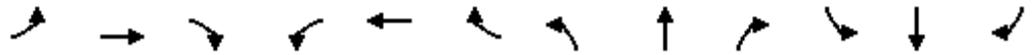


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|-----------------------------------|------|------|-------|------|----------------------|------|-------|------|------|------|------|------|--|
| Lane Configurations | | | | | ↔ | | | ↔ | | | ↔ | | |
| Volume (vph) | 0 | 0 | 0 | 44 | 230 | 33 | 148 | 340 | 0 | 0 | 168 | 64 | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | |
| Lane Width | 12 | 12 | 12 | 16 | 16 | 16 | 16 | 16 | 16 | 10 | 10 | 10 | |
| Grade (%) | | 0% | | | 2% | | | -5% | | | 0% | | |
| Total Lost time (s) | | | | | 4.0 | | | 4.5 | | | 4.5 | | |
| Lane Util. Factor | | | | | 1.00 | | | 1.00 | | | 1.00 | | |
| Frt | | | | | 0.98 | | | 1.00 | | | 0.96 | | |
| Flt Protected | | | | | 0.99 | | | 0.99 | | | 1.00 | | |
| Satd. Flow (prot) | | | | | 1849 | | | 2138 | | | 1516 | | |
| Flt Permitted | | | | | 0.99 | | | 0.72 | | | 1.00 | | |
| Satd. Flow (perm) | | | | | 1849 | | | 1555 | | | 1516 | | |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.52 | 0.82 | 0.69 | 0.82 | 0.80 | 0.92 | 0.92 | 0.91 | 0.73 | |
| Adj. Flow (vph) | 0 | 0 | 0 | 85 | 280 | 48 | 180 | 425 | 0 | 0 | 185 | 88 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 410 | 0 | 0 | 605 | 0 | 0 | 260 | 0 | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 1% | 0% | 1% | 2% | 0% | 0% | 1% | 0% | |
| Parking (#/hr) | | | | 0 | 0 | 0 | | | | | 0 | 0 | |
| Turn Type | | | | Perm | NA | | pm+pt | NA | | | NA | | |
| Protected Phases | | | | | 6 | | 3 | 8 | | | 4 | | |
| Permitted Phases | | | | 6 | | | 8 | | | | | | |
| Actuated Green, G (s) | | | | | 62.3 | | | 77.2 | | | 77.2 | | |
| Effective Green, g (s) | | | | | 63.3 | | | 78.2 | | | 78.2 | | |
| Actuated g/C Ratio | | | | | 0.42 | | | 0.52 | | | 0.52 | | |
| Clearance Time (s) | | | | | 5.0 | | | 5.5 | | | 5.5 | | |
| Vehicle Extension (s) | | | | | 3.0 | | | 3.0 | | | 3.0 | | |
| Lane Grp Cap (vph) | | | | | 780 | | | 811 | | | 790 | | |
| v/s Ratio Prot | | | | | | | | | | | 0.17 | | |
| v/s Ratio Perm | | | | | 0.22 | | | 0.39 | | | | | |
| v/c Ratio | | | | | 0.53 | | | 0.75 | | | 0.33 | | |
| Uniform Delay, d1 | | | | | 32.2 | | | 28.1 | | | 20.7 | | |
| Progression Factor | | | | | 1.00 | | | 1.00 | | | 0.93 | | |
| Incremental Delay, d2 | | | | | 2.5 | | | 3.8 | | | 0.2 | | |
| Delay (s) | | | | | 34.7 | | | 31.9 | | | 19.6 | | |
| Level of Service | | | | | C | | | C | | | B | | |
| Approach Delay (s) | | 0.0 | | | 34.7 | | | 31.9 | | | 19.6 | | |
| Approach LOS | | A | | | C | | | C | | | B | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 30.2 | | HCM Level of Service | | | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.65 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 150.0 | | Sum of lost time (s) | | | | | | 8.5 | | |
| Intersection Capacity Utilization | | | 66.2% | | ICU Level of Service | | | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

13: 6th St & Main Street

3/27/2015



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|-------|------|-------|------|----------------------|------|------|------|------|------|
| Lane Configurations | | ↕↕ | | | ↕↕ | | | ↕↕ | | | | |
| Volume (vph) | 27 | 548 | 19 | 15 | 245 | 34 | 44 | 65 | 61 | 0 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 11 | 11 | 11 | 16 | 16 | 16 | 11 | 11 | 11 | 12 | 12 | 12 |
| Grade (%) | | -1% | | | 2% | | | -1% | | | 0% | |
| Total Lost time (s) | | 4.0 | | | 4.0 | | | 4.0 | | | | |
| Lane Util. Factor | | 0.95 | | | 1.00 | | | 1.00 | | | | |
| Frt | | 0.99 | | | 0.98 | | | 0.95 | | | | |
| Flt Protected | | 1.00 | | | 1.00 | | | 0.99 | | | | |
| Satd. Flow (prot) | | 2944 | | | 1677 | | | 1554 | | | | |
| Flt Permitted | | 0.90 | | | 0.93 | | | 0.99 | | | | |
| Satd. Flow (perm) | | 2655 | | | 1571 | | | 1554 | | | | |
| Peak-hour factor, PHF | 0.61 | 0.90 | 0.68 | 0.63 | 0.83 | 0.71 | 0.79 | 0.68 | 0.80 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 44 | 609 | 28 | 24 | 295 | 48 | 56 | 96 | 76 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 680 | 0 | 0 | 365 | 0 | 0 | 228 | 0 | 0 | 0 | 0 |
| Heavy Vehicles (%) | 0% | 1% | 0% | 0% | 1% | 0% | 0% | 2% | 0% | 0% | 0% | 0% |
| Parking (#/hr) | | 0 | 0 | 0 | 0 | 0 | | | | | | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | | | |
| Protected Phases | | 2 | | | 6 | | | 4 | | | | |
| Permitted Phases | 2 | | | 6 | | | 4 | | | | | |
| Actuated Green, G (s) | | 112.1 | | | 112.1 | | | 27.9 | | | | |
| Effective Green, g (s) | | 113.1 | | | 113.1 | | | 28.9 | | | | |
| Actuated g/C Ratio | | 0.75 | | | 0.75 | | | 0.19 | | | | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 2002 | | | 1185 | | | 299 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.26 | | | 0.23 | | | 0.15 | | | | |
| v/c Ratio | | 0.34 | | | 0.31 | | | 0.76 | | | | |
| Uniform Delay, d1 | | 6.1 | | | 5.9 | | | 57.3 | | | | |
| Progression Factor | | 0.62 | | | 0.90 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.4 | | | 0.6 | | | 10.9 | | | | |
| Delay (s) | | 4.2 | | | 6.0 | | | 68.2 | | | | |
| Level of Service | | A | | | A | | | E | | | | |
| Approach Delay (s) | | 4.2 | | | 6.0 | | | 68.2 | | | 0.0 | |
| Approach LOS | | A | | | A | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 16.1 | | | | HCM Level of Service | | | B | | |
| HCM Volume to Capacity ratio | | | 0.43 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 150.0 | | | | Sum of lost time (s) | | | 8.0 | | |
| Intersection Capacity Utilization | | | 47.8% | | | | ICU Level of Service | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

14: Ann St & Broad St/5th St & Main Street

3/27/2015



| Movement | EBT | EBR | NBL2 | NBR | SBL | SBT | SBR2 |
|------------------------|-------|------|--------|--------|-------|------|--------|
| Lane Configurations | ↑↑ | | ↵ | ↵ | ↵ | ↑ | ↵ |
| Volume (vph) | 534 | 84 | 267 | 601 | 78 | 639 | 348 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Width | 11 | 11 | 10 | 11 | 10 | 10 | 11 |
| Grade (%) | -5% | | | | | 2% | |
| Total Lost time (s) | 4.5 | | 6.5 | 4.0 | 4.0 | 4.0 | 6.5 |
| Lane Util. Factor | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.98 | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 1.00 | | 0.95 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3372 | | 1509 | 1398 | 1752 | 1793 | 1377 |
| Flt Permitted | 1.00 | | 0.19 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3372 | | 304 | 1398 | 1752 | 1792 | 1377 |
| Peak-hour factor, PHF | 0.92 | 0.91 | 0.91 | 0.96 | 0.81 | 0.95 | 0.91 |
| Adj. Flow (vph) | 580 | 92 | 293 | 626 | 96 | 673 | 382 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 87 |
| Lane Group Flow (vph) | 672 | 0 | 293 | 626 | 96 | 673 | 295 |
| Heavy Vehicles (%) | 0% | 0% | 1% | 1% | 3% | 2% | 1% |
| Turn Type | NA | | custom | custom | pm+pt | NA | custom |
| Protected Phases | 8 | | 1 | 6 | 5 | 2 | |
| Permitted Phases | | | 6 | | 2 | | 2 8 |
| Actuated Green, G (s) | 32.2 | | 104.3 | 92.5 | 82.5 | 77.2 | 115.9 |
| Effective Green, g (s) | 34.7 | | 104.3 | 95.0 | 87.5 | 79.7 | 115.9 |
| Actuated g/C Ratio | 0.23 | | 0.70 | 0.63 | 0.58 | 0.53 | 0.77 |
| Clearance Time (s) | 7.0 | | 6.5 | 6.5 | 6.5 | 6.5 | |
| Vehicle Extension (s) | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 780 | | 377 | 885 | 1022 | 953 | 1064 |
| v/s Ratio Prot | c0.20 | | c0.11 | 0.45 | 0.00 | 0.38 | |
| v/s Ratio Perm | | | c0.43 | | 0.05 | | 0.21 |
| v/c Ratio | 0.86 | | 0.78 | 0.71 | 0.09 | 0.71 | 0.28 |
| Uniform Delay, d1 | 55.3 | | 20.7 | 18.3 | 13.8 | 26.4 | 4.9 |
| Progression Factor | 1.05 | | 1.00 | 1.00 | 0.94 | 1.00 | 1.53 |
| Incremental Delay, d2 | 9.3 | | 9.7 | 2.6 | 0.0 | 3.8 | 0.1 |
| Delay (s) | 67.3 | | 30.3 | 20.9 | 12.9 | 30.2 | 7.7 |
| Level of Service | E | | C | C | B | C | A |
| Approach Delay (s) | 67.3 | | | | | 21.3 | |
| Approach LOS | E | | | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 33.4 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.78 | | |
| Actuated Cycle Length (s) | 150.0 | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | 83.6% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

c Critical Lane Group