

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) | 113 | 432 | 79 | 130 | 345 | 207 | 24 | 56 | 220 | 103 | 45 | 54 |
| 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 | 1695 | 1695 | 1660 | 1613 | 1602 | 1561 | 1698 | 1698 | 1609 | 1609 | 1609 |
| Lanes | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| Lane Assignment | | | | | | | | | | | | |
| Capacity, veh/h | 520 | 979 | 167 | 0 | 1120 | 927 | 247 | 64 | 301 | 50 | 155 | 186 |
| Proportion Arriving On Green | 0.69 | 0.69 | 0.69 | 0.01 | 0.69 | 0.68 | 0.25 | 0.25 | 0.25 | 0.23 | 0.23 | 0.23 |
| Movement Delay, s/veh | 15.2 | 0.0 | 12.5 | 0.0 | 10.0 | 9.8 | 51.4 | 0.0 | 90.1 | 686.4 | 0.0 | 48.2 |
| Movement LOS | B | | B | | A | A | D | | F | F | | D |
| Approach Volume, veh/h | | 711 | | | 600 | | | 376 | | | 220 | |
| Approach Delay, s/veh | | 13.0 | | | 9.9 | | | 87.0 | | | 373.6 | |
| Approach LOS | | B | | | A | | | F | | | 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 | | | 109.10 | | 40.90 | | 109.10 | | 40.90 | | | |
| Change Period (Y+Rc), s | | | 7.00 | | 6.00 | | 7.00 | | 6.00 | | | |
| Max. Allowable Headway (MAH), s | | | 3.68 | | 4.63 | | 3.68 | | 4.63 | | | |
| Maximum Green Setting (Gmax), s | | | 85.10 | | 34.90 | | 102.10 | | 34.90 | | | |
| Max. Queue Clearance Time (g_c+I1), s | | | 27.38 | | 36.90 | | 15.90 | | 36.52 | | | |
| Green Extension Time (g_e), s | | | 4.44 | | 0.00 | | 4.44 | | 0.00 | | | |
| 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 | | 1.000 | | | |
| Left-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 5 | | 7 | | | | 3 | | | |
| Mvmt. Sat Flow, veh/h | | | 784.58 | | 889.48 | | | | 1073.27 | | | |
| Through Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 2 | | 4 | | 6 | | 8 | | | |
| Mvmt. Sat Flow, veh/h | | | 1410.96 | | 667.00 | | 1613.21 | | 260.29 | | | |
| Right-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 12 | | 14 | | 16 | | 18 | | | |
| Mvmt. Sat Flow, veh/h | | | 241.19 | | 800.40 | | 1361.84 | | 1221.78 | | | |
| 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 | 122.8 | 0.0 | 112.0 | 0.0 | 0.0 | 0.0 | 29.6 | | | |
| Group Sat. Flow (s), veh/h/ln | | 0.0 | 784.6 | 0.0 | 889.5 | 0.0 | 0.0 | 0.0 | 1073.3 | | | |
| Queue Serve Time (g_s), s | | 0.0 | 11.1 | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | 3.5 | | | |
| Cycle Queue Clear Time (g_c), s | | 0.0 | 25.0 | 0.0 | 34.9 | 0.0 | 0.0 | 0.0 | 12.6 | | | |

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|---------------------------------------|-------|-------|-------|-------|-------|--------|-------|--------|
| Perm LT Sat Flow Rate (s_l), veh/h/ln | 0.0 | 784.6 | 0.0 | 889.5 | 0.0 | 0.0 | 0.0 | 1073.3 |
| 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 | 104.1 | 0.0 | 34.9 | 0.0 | 0.0 | 0.0 | 36.9 |
| Perm LT Serve Time (g_u), s | 0.0 | 90.2 | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | 27.8 |
| Perm LT Que Serve Time (g_ps), s | 0.0 | 11.1 | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | 3.5 |
| 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 | 519.8 | 0.0 | 50.2 | 0.0 | 0.0 | 0.0 | 246.9 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.236 | 0.000 | 2.228 | 0.000 | 0.000 | 0.000 | 0.120 |
| Available Capacity (c_a), veh/h | 0.0 | 519.8 | 0.0 | 50.2 | 0.0 | 0.0 | 0.0 | 246.9 |
| 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 | 14.1 | 0.0 | 75.0 | 0.0 | 0.0 | 0.0 | 51.2 |
| Incremental Delay (d2), s/veh | 0.0 | 1.1 | 0.0 | 611.4 | 0.0 | 0.0 | 0.0 | 0.2 |
| 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 | 15.2 | 0.0 | 686.4 | 0.0 | 0.0 | 0.0 | 51.4 |
| First-Term Queue (Q1), veh/ln | 0.0 | 2.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.9 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.2 | 0.0 | 8.5 | 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 | 2.1 | 0.0 | 10.5 | 0.0 | 0.0 | 0.0 | 1.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.42 | 0.00 | 2.70 | 0.00 | 0.00 | 0.00 | 0.30 |
| 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 | 15.4 | 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 | 0.6 | 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 | 375.0 | 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 | 13.9 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 13.9 | 0.0 | 0.0 |
| Lane Group Capacity (c), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1119.6 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.335 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1119.6 | 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 | 9.1 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 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 | 10.0 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.7 | 0.0 | 0.0 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 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 | 5.0 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 |

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|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| 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 | 588.2 | 0.0 | 107.6 | 0.0 | 225.0 | 0.0 | 346.6 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 1652.2 | 0.0 | 1467.4 | 0.0 | 1361.8 | 0.0 | 1482.1 |
| Queue Serve Time (g_s), s | 0.0 | 25.4 | 0.0 | 9.1 | 0.0 | 9.5 | 0.0 | 34.5 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 25.4 | 0.0 | 9.1 | 0.0 | 9.5 | 0.0 | 34.5 |
| 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 | 0.146 | 0.000 | 0.545 | 0.000 | 1.000 | 0.000 | 0.824 |
| Lane Group Capacity (c), veh/h | 0.0 | 1146.6 | 0.0 | 341.4 | 0.0 | 927.0 | 0.0 | 364.6 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.513 | 0.000 | 0.315 | 0.000 | 0.243 | 0.000 | 0.951 |
| Available Capacity (c_a), veh/h | 0.0 | 1146.6 | 0.0 | 341.4 | 0.0 | 927.0 | 0.0 | 364.6 |
| 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 | 10.9 | 0.0 | 47.7 | 0.0 | 9.2 | 0.0 | 55.7 |
| Incremental Delay (d2), s/veh | 0.0 | 1.6 | 0.0 | 0.5 | 0.0 | 0.6 | 0.0 | 34.4 |
| 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 | 12.5 | 0.0 | 48.2 | 0.0 | 9.8 | 0.0 | 90.1 |
| First-Term Queue (Q1), veh/ln | 0.0 | 8.8 | 0.0 | 3.4 | 0.0 | 2.7 | 0.0 | 12.8 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 3.5 |
| 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 | 9.3 | 0.0 | 3.5 | 0.0 | 2.9 | 0.0 | 16.3 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.48 | 0.00 | 0.60 | 0.00 | 0.38 | 0.00 | 0.75 |
| 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 | 68.2 |
| HCM Level of Service | E |

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|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  |  | |  | |  |  | |
| Volume (vph) | 150 | 438 | 14 | 1 | 263 | 133 | 29 | 56 | 49 | 256 | 6 | 41 |
| 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 | 1599 | 1599 | 1599 | 1652 | 1652 | 1636 | 1639 | 1639 | 1639 | 1710 | 1711 | 1711 |
| Lanes | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
| Lane Assignment | | | | | | | | | | | | |
| Capacity, veh/h | 0 | 1673 | 129 | 25 | 988 | 752 | 97 | 214 | 154 | 309 | 38 | 471 |
| Proportion Arriving On Green | 0.00 | 0.60 | 0.60 | 0.51 | 0.51 | 0.52 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| Movement Delay, s/veh | 0.0 | 15.5 | 15.6 | 19.7 | 0.0 | 17.9 | 37.5 | 0.0 | 0.0 | 88.0 | 0.0 | 34.1 |
| Movement LOS | | B | B | B | | B | D | | | F | | C |
| Approach Volume, veh/h | | 555 | | | 499 | | | 193 | | | 362 | |
| Approach Delay, s/veh | | 15.6 | | | 19.1 | | | 37.5 | | | 76.0 | |
| Approach LOS | | B | | | B | | | D | | | E | |
| 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 | | | 94.10 | | 55.90 | | 94.10 | | 55.90 | | | |
| Change Period (Y+Rc), s | | | 4.50 | | 6.00 | | 4.50 | | 6.00 | | | |
| Max. Allowable Headway (MAH), s | | | 3.91 | | 4.60 | | 3.91 | | 4.60 | | | |
| Maximum Green Setting (Gmax), s | | | 89.60 | | 49.90 | | 89.60 | | 49.90 | | | |
| Max. Queue Clearance Time (g_c+I1), s | | | 15.65 | | 53.90 | | 19.41 | | 17.95 | | | |
| Green Extension Time (g_e), s | | | 3.77 | | 0.00 | | 3.77 | | 2.66 | | | |
| 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 | | 0.000 | | | |
| Left-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | | | 7 | | 1 | | 3 | | | |
| Mvmt. Sat Flow, veh/h | | | | | 1087.74 | | 10.08 | | 246.12 | | | |
| Through Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 2 | | 4 | | 6 | | 8 | | | |
| Mvmt. Sat Flow, veh/h | | | 2785.06 | | 109.54 | | 1636.14 | | 571.81 | | | |
| Right-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 12 | | 14 | | 16 | | 18 | | | |
| Mvmt. Sat Flow, veh/h | | | 215.59 | | 1360.93 | | 1251.55 | | 444.74 | | | |
| 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 | 281.3 | 0.0 | 326.7 | 0.0 | 193.2 | | | |
| Group Sat. Flow (s), veh/h/ln | | 0.0 | 0.0 | 0.0 | 1087.7 | 0.0 | 1646.2 | 0.0 | 1262.7 | | | |
| Queue Serve Time (g_s), s | | 0.0 | 0.0 | 0.0 | 36.0 | 0.0 | 0.0 | 0.0 | 7.7 | | | |
| Cycle Queue Clear Time (g_c), s | | 0.0 | 0.0 | 0.0 | 51.9 | 0.0 | 17.4 | 0.0 | 15.9 | | | |

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|---------------------------------------|-------|--------|-------|--------|-------|--------|-------|-------|
| Perm LT Sat Flow Rate (s_l), veh/h/ln | 0.0 | 0.0 | 0.0 | 1087.7 | 0.0 | 459.4 | 0.0 | 760.4 |
| 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 | 51.9 | 0.0 | 90.1 | 0.0 | 51.9 |
| Perm LT Serve Time (g_u), s | 0.0 | 0.0 | 0.0 | 36.0 | 0.0 | 76.5 | 0.0 | 46.2 |
| Perm LT Que Serve Time (g_ps), s | 0.0 | 0.0 | 0.0 | 36.0 | 0.0 | 0.0 | 0.0 | 7.7 |
| Time to First Blk (g_f), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 72.8 | 0.0 | 8.2 |
| Serve Time pre Blk (g_fs), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 17.4 | 0.0 | 8.2 |
| Proportion LT Inside Lane (P_L) | 0.000 | 0.000 | 0.000 | 1.000 | 0.000 | 0.006 | 0.000 | 0.195 |
| Lane Group Capacity (c), veh/h | 0.0 | 0.0 | 0.0 | 308.7 | 0.0 | 1013.0 | 0.0 | 465.6 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.000 | 0.000 | 0.911 | 0.000 | 0.323 | 0.000 | 0.415 |
| Available Capacity (c_a), veh/h | 0.0 | 0.0 | 0.0 | 308.7 | 0.0 | 1013.0 | 0.0 | 465.6 |
| Upstream Filter Factor (I) | 0.000 | 0.000 | 0.000 | 1.000 | 0.000 | 0.946 | 0.000 | 1.000 |
| Uniform Delay (d1), s/veh | 0.0 | 0.0 | 0.0 | 58.3 | 0.0 | 18.9 | 0.0 | 36.9 |
| Incremental Delay (d2), s/veh | 0.0 | 0.0 | 0.0 | 29.6 | 0.0 | 0.8 | 0.0 | 0.6 |
| 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 | 0.0 | 0.0 | 88.0 | 0.0 | 19.7 | 0.0 | 37.5 |
| First-Term Queue (Q1), veh/ln | 0.0 | 0.0 | 0.0 | 10.8 | 0.0 | 7.1 | 0.0 | 5.5 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.0 | 0.0 | 2.5 | 0.0 | 0.2 | 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 | 13.4 | 0.0 | 7.3 | 0.0 | 5.6 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.00 | 0.00 | 2.50 | 0.00 | 0.38 | 0.00 | 0.36 |
| 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 | T | | | | | | | |
| Lanes in Group | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Group Volume (v), veh/h | 0.0 | 295.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 1599.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 13.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 13.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane Group Capacity (c), veh/h | 0.0 | 960.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.307 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 960.7 | 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 | 14.7 | 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 | 15.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 5.1 | 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 | 5.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

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

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| | | | | | | | | |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| 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 | 260.0 | 0.0 | 80.5 | 0.0 | 172.7 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 1401.3 | 0.0 | 1470.5 | 0.0 | 1251.5 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 13.6 | 0.0 | 5.7 | 0.0 | 11.4 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 13.6 | 0.0 | 5.7 | 0.0 | 11.4 | 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 | 0.154 | 0.000 | 0.926 | 0.000 | 1.000 | 0.000 | 0.352 |
| Lane Group Capacity (c), veh/h | 0.0 | 841.7 | 0.0 | 508.8 | 0.0 | 751.8 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.309 | 0.000 | 0.158 | 0.000 | 0.230 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 841.7 | 0.0 | 508.8 | 0.0 | 751.8 | 0.0 | 0.0 |
| Upstream Filter Factor (I) | 0.000 | 1.000 | 0.000 | 1.000 | 0.000 | 0.946 | 0.000 | 0.000 |
| Uniform Delay (d1), s/veh | 0.0 | 14.7 | 0.0 | 33.9 | 0.0 | 17.3 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 1.0 | 0.0 | 0.1 | 0.0 | 0.7 | 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 | 15.6 | 0.0 | 34.1 | 0.0 | 17.9 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 4.5 | 0.0 | 2.1 | 0.0 | 3.5 | 0.0 | 0.0 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.1 | 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 | 4.7 | 0.0 | 2.1 | 0.0 | 3.6 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.41 | 0.00 | 0.04 | 0.00 | 0.19 | 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 | 32.9 |
| HCM Level of Service | C |

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) | 45 | 640 | 39 | 8 | 326 | 14 | 65 | 47 | 40 | 56 | 19 | 40 |
| 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 | 1667 | 1667 | 1667 | 1691 | 1691 | 1691 |
| Lanes | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Lane Assignment | | | | | | | | | | | | |
| Capacity, veh/h | 159 | 1611 | 130 | 67 | 1072 | 58 | 147 | 105 | 84 | 167 | 68 | 85 |
| Proportion Arriving On Green | 0.67 | 0.67 | 0.67 | 0.46 | 0.46 | 0.46 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| Movement Delay, s/veh | 5.8 | 0.0 | 6.1 | 9.9 | 0.0 | 0.0 | 27.6 | 0.0 | 0.0 | 26.0 | 0.0 | 0.0 |
| Movement LOS | A | | A | A | | | C | | | C | | |
| Approach Volume, veh/h | | 806 | | | 416 | | | 191 | | | 153 | |
| Approach Delay, s/veh | | 6.0 | | | 9.9 | | | 27.6 | | | 26.0 | |
| 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 | | | 54.00 | | 20.99 | | 54.00 | | 20.99 | | | |
| Change Period (Y+Rc), s | | | 4.50 | | 5.50 | | 4.50 | | 5.50 | | | |
| Max. Allowable Headway (MAH), s | | | 3.59 | | 4.48 | | 3.59 | | 4.48 | | | |
| Maximum Green Setting (Gmax), s | | | 49.50 | | 15.50 | | 49.50 | | 15.50 | | | |
| Max. Queue Clearance Time (g_c+I1), s | | | 10.96 | | 10.20 | | 13.55 | | 11.37 | | | |
| Green Extension Time (g_e), s | | | 3.74 | | 0.68 | | 3.73 | | 0.56 | | | |
| Probability of Phase Call (p_c) | | | 1.000 | | 0.999 | | 1.000 | | 0.999 | | | |
| Probability of Max Out (p_x) | | | 0.001 | | 0.693 | | 0.001 | | 1.000 | | | |
| Left-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 5 | | 7 | | 1 | | 3 | | | |
| Mvmt. Sat Flow, veh/h | | | 204.81 | | 508.67 | | 64.25 | | 436.96 | | | |
| Through Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 2 | | 4 | | 6 | | 8 | | | |
| Mvmt. Sat Flow, veh/h | | | 2291.54 | | 195.43 | | 1522.23 | | 359.95 | | | |
| Right-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 12 | | 14 | | 16 | | 18 | | | |
| Mvmt. Sat Flow, veh/h | | | 188.63 | | 363.34 | | 83.91 | | 361.21 | | | |
| 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 | 407.3 | 0.0 | 152.6 | 0.0 | 416.0 | 0.0 | 191.4 | | | |
| Group Sat. Flow (s), veh/h/ln | | 0.0 | 1353.2 | 0.0 | 1067.4 | 0.0 | 1670.4 | 0.0 | 1158.1 | | | |
| Queue Serve Time (g_s), s | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | | | |
| Cycle Queue Clear Time (g_c), s | | 0.0 | 7.9 | 0.0 | 8.2 | 0.0 | 11.5 | 0.0 | 9.4 | | | |

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 | 610.0 | 0.0 | 708.1 | 0.0 | 463.4 | 0.0 | 726.1 |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0.0 | 1666.7 | 0.0 | 1086.8 | 0.0 | 0.0 | 0.0 | 1319.9 |
| Perm LT Eff. Green (g_p), s | 0.0 | 51.5 | 0.0 | 17.5 | 0.0 | 51.5 | 0.0 | 17.5 |
| Perm LT Serve Time (g_u), s | 0.0 | 40.0 | 0.0 | 8.1 | 0.0 | 42.5 | 0.0 | 9.3 |
| Perm LT Que Serve Time (g_ps), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 |
| Time to First Blk (g_f), s | 0.0 | 11.1 | 0.0 | 2.2 | 0.0 | 30.2 | 0.0 | 3.1 |
| Serve Time pre Blk (g_fs), s | 0.0 | 7.9 | 0.0 | 2.2 | 0.0 | 11.5 | 0.0 | 3.1 |
| Proportion LT Inside Lane (P_L) | 0.000 | 0.151 | 0.000 | 0.477 | 0.000 | 0.038 | 0.000 | 0.377 |
| Lane Group Capacity (c), veh/h | 0.0 | 984.6 | 0.0 | 319.8 | 0.0 | 1197.0 | 0.0 | 336.2 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.414 | 0.000 | 0.477 | 0.000 | 0.347 | 0.000 | 0.569 |
| Available Capacity (c_a), veh/h | 0.0 | 984.6 | 0.0 | 320.0 | 0.0 | 1197.0 | 0.0 | 336.4 |
| Upstream Filter Factor (I) | 0.000 | 0.560 | 0.000 | 1.000 | 0.000 | 0.456 | 0.000 | 1.000 |
| Uniform Delay (d1), s/veh | 0.0 | 5.1 | 0.0 | 24.9 | 0.0 | 9.5 | 0.0 | 25.4 |
| Incremental Delay (d2), s/veh | 0.0 | 0.7 | 0.0 | 1.1 | 0.0 | 0.4 | 0.0 | 2.3 |
| 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 | 5.8 | 0.0 | 26.0 | 0.0 | 9.9 | 0.0 | 27.6 |
| First-Term Queue (Q1), veh/ln | 0.0 | 2.2 | 0.0 | 2.5 | 0.0 | 4.7 | 0.0 | 3.2 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 0.2 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.2 |
| 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 | 2.4 | 0.0 | 2.6 | 0.0 | 4.9 | 0.0 | 3.4 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.12 | 0.00 | 0.24 | 0.00 | 0.24 | 0.00 | 0.28 |
| 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 | 399.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 1331.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 9.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 9.0 | 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 | 0.142 | 0.000 | 0.340 | 0.000 | 0.050 | 0.000 | 0.312 |
| Lane Group Capacity (c), veh/h | 0.0 | 914.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.436 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 914.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Upstream Filter Factor (I) | 0.000 | 0.560 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Uniform Delay (d1), s/veh | 0.0 | 5.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 0.9 | 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 | 6.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 2.2 | 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 | 2.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.13 | 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 | 11.6 |
| 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) | 17 | 415 | 212 | 35 | 227 | 13 | 158 | 105 | 138 | 37 | 129 | 31 |
| 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 | 1680 | 1680 | 1680 | 1747 | 1747 | 1747 | 1680 | 1680 | 1680 | 1709 | 1709 | 1709 |
| Lanes | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Lane Assignment | | | | | | | | | | | | |
| Capacity, veh/h | 41 | 752 | 368 | 55 | 333 | 29 | 247 | 115 | 138 | 208 | 339 | 122 |
| Proportion Arriving On Green | 0.31 | 0.31 | 0.31 | 0.37 | 0.37 | 0.37 | 0.29 | 0.29 | 0.29 | 0.54 | 0.54 | 0.54 |
| Movement Delay, s/veh | 46.8 | 0.0 | 49.2 | 73.5 | 0.0 | 0.0 | 144.5 | 0.0 | 0.0 | 20.3 | 0.0 | 0.0 |
| Movement LOS | D | | D | E | | | F | | | C | | |
| Approach Volume, veh/h | | 808 | | | 382 | | | 588 | | | 281 | |
| Approach Delay, s/veh | | 47.9 | | | 73.5 | | | 144.5 | | | 20.3 | |
| Approach LOS | | D | | | E | | | 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 | | | 66.60 | | 83.40 | | 66.60 | | 83.40 | | | |
| Change Period (Y+Rc), s | | | 5.00 | | 5.00 | | 5.00 | | 5.00 | | | |
| Max. Allowable Headway (MAH), s | | | 3.69 | | 4.72 | | 3.69 | | 4.72 | | | |
| Maximum Green Setting (Gmax), s | | | 61.60 | | 78.40 | | 61.60 | | 78.40 | | | |
| Max. Queue Clearance Time (g_c+l1), s | | | 38.37 | | 19.48 | | 64.23 | | 82.40 | | | |
| Green Extension Time (g_e), s | | | 3.74 | | 5.34 | | 0.00 | | 0.00 | | | |
| Probability of Phase Call (p_c) | | | 1.000 | | 1.000 | | 1.000 | | 1.000 | | | |
| Probability of Max Out (p_x) | | | 0.021 | | 0.000 | | 1.000 | | 1.000 | | | |
| Left-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 5 | | 7 | | 1 | | 3 | | | |
| Mvmt. Sat Flow, veh/h | | | 68.69 | | 327.06 | | 112.49 | | 395.37 | | | |
| Through Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 2 | | 4 | | 6 | | 8 | | | |
| Mvmt. Sat Flow, veh/h | | | 1740.54 | | 636.44 | | 739.43 | | 215.30 | | | |
| Right-Turn Movement Data | | | | | | | | | | | | |
| Assigned Movement | | | 12 | | 14 | | 16 | | 18 | | | |
| Mvmt. Sat Flow, veh/h | | | 867.38 | | 226.78 | | 68.12 | | 257.90 | | | |
| 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 | 438.7 | 0.0 | 280.5 | 0.0 | 381.7 | 0.0 | 588.3 | | | |
| Group Sat. Flow (s), veh/h/ln | | 0.0 | 1453.5 | 0.0 | 1190.3 | 0.0 | 920.0 | 0.0 | 868.6 | | | |
| Queue Serve Time (g_s), s | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 25.9 | 0.0 | 62.9 | | | |
| Cycle Queue Clear Time (g_c), s | | 0.0 | 36.4 | 0.0 | 17.5 | 0.0 | 62.2 | 0.0 | 80.4 | | | |

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

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| | | | | | | | | |
|---------------------------------------|-------|--------|-------|--------|-------|-------|-------|-------|
| Perm LT Sat Flow Rate (s_l), veh/h/ln | 0.0 | 624.3 | 0.0 | 541.6 | 0.0 | 463.0 | 0.0 | 667.9 |
| Shared LT Sat Flow (s_sh), veh/h/ln | 0.0 | 1289.4 | 0.0 | 1286.4 | 0.0 | 0.0 | 0.0 | 799.3 |
| Perm LT Eff. Green (g_p), s | 0.0 | 63.6 | 0.0 | 80.4 | 0.0 | 63.6 | 0.0 | 80.4 |
| Perm LT Serve Time (g_u), s | 0.0 | 1.4 | 0.0 | 0.0 | 0.0 | 27.2 | 0.0 | 62.9 |
| Perm LT Que Serve Time (g_ps), s | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 25.9 | 0.0 | 62.9 |
| Time to First Blk (g_f), s | 0.0 | 25.8 | 0.0 | 5.3 | 0.0 | 14.1 | 0.0 | 0.0 |
| Serve Time pre Blk (g_fs), s | 0.0 | 25.8 | 0.0 | 5.3 | 0.0 | 14.1 | 0.0 | 0.0 |
| Proportion LT Inside Lane (P_L) | 0.000 | 0.047 | 0.000 | 0.275 | 0.000 | 0.122 | 0.000 | 0.455 |
| Lane Group Capacity (c), veh/h | 0.0 | 641.4 | 0.0 | 668.6 | 0.0 | 417.0 | 0.0 | 500.5 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.684 | 0.000 | 0.420 | 0.000 | 0.915 | 0.000 | 1.176 |
| Available Capacity (c_a), veh/h | 0.0 | 641.4 | 0.0 | 668.6 | 0.0 | 417.0 | 0.0 | 500.5 |
| Upstream Filter Factor (I) | 0.000 | 0.928 | 0.000 | 1.000 | 0.000 | 0.969 | 0.000 | 0.410 |
| Uniform Delay (d1), s/veh | 0.0 | 41.4 | 0.0 | 19.9 | 0.0 | 46.9 | 0.0 | 56.6 |
| Incremental Delay (d2), s/veh | 0.0 | 5.4 | 0.0 | 0.4 | 0.0 | 26.6 | 0.0 | 87.9 |
| 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 | 46.8 | 0.0 | 20.3 | 0.0 | 73.5 | 0.0 | 144.5 |
| First-Term Queue (Q1), veh/ln | 0.0 | 14.7 | 0.0 | 5.8 | 0.0 | 14.6 | 0.0 | 18.8 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 1.0 | 0.0 | 0.1 | 0.0 | 3.1 | 0.0 | 12.2 |
| 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 | 15.7 | 0.0 | 5.9 | 0.0 | 17.7 | 0.0 | 31.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.80 | 0.00 | 0.49 | 0.00 | 1.80 | 0.00 | 2.06 |
| 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 | 22.0 |
| 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 | 0.3 |
| 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

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| | | | | | | | | |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| 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 | 369.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Group Sat. Flow (s), veh/h/ln | 0.0 | 1223.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Queue Serve Time (g_s), s | 0.0 | 35.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cycle Queue Clear Time (g_c), s | 0.0 | 35.0 | 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 | 0.709 | 0.000 | 0.191 | 0.000 | 0.074 | 0.000 | 0.297 |
| Lane Group Capacity (c), veh/h | 0.0 | 518.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Volume-to-Capacity Ratio (X) | 0.000 | 0.712 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Available Capacity (c_a), veh/h | 0.0 | 518.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Upstream Filter Factor (I) | 0.000 | 0.928 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Uniform Delay (d1), s/veh | 0.0 | 41.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Incremental Delay (d2), s/veh | 0.0 | 7.5 | 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 | 49.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| First-Term Queue (Q1), veh/ln | 0.0 | 12.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Second-Term Queue (Q2), veh/ln | 0.0 | 1.1 | 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 | 13.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentile Storage Ratio (RQ%) | 0.00 | 0.69 | 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 | 76.5 |
| HCM Level of Service | E |

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 | 13 | 167 | 21 | 155 | 469 | 0 | 0 | 376 | 42 | |
| 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 | | | 0.98 | | |
| Flt Protected | | | | | 1.00 | | | 0.99 | | | 1.00 | | |
| Satd. Flow (prot) | | | | | 1861 | | | 2143 | | | 1556 | | |
| Flt Permitted | | | | | 1.00 | | | 0.65 | | | 1.00 | | |
| Satd. Flow (perm) | | | | | 1861 | | | 1417 | | | 1556 | | |
| 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 | 25 | 204 | 30 | 189 | 586 | 0 | 0 | 413 | 58 | |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 256 | 0 | 0 | 775 | 0 | 0 | 468 | 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) | | | | | 44.0 | | | 95.5 | | | 95.5 | | |
| Effective Green, g (s) | | | | | 45.0 | | | 96.5 | | | 96.5 | | |
| Actuated g/C Ratio | | | | | 0.30 | | | 0.64 | | | 0.64 | | |
| Clearance Time (s) | | | | | 5.0 | | | 5.5 | | | 5.5 | | |
| Vehicle Extension (s) | | | | | 3.0 | | | 3.0 | | | 3.0 | | |
| Lane Grp Cap (vph) | | | | | 558 | | | 912 | | | 1001 | | |
| v/s Ratio Prot | | | | | | | | | | | 0.30 | | |
| v/s Ratio Perm | | | | | 0.14 | | | c0.55 | | | | | |
| v/c Ratio | | | | | 0.46 | | | 0.85 | | | 0.47 | | |
| Uniform Delay, d1 | | | | | 42.6 | | | 21.0 | | | 13.6 | | |
| Progression Factor | | | | | 1.00 | | | 1.00 | | | 0.83 | | |
| Incremental Delay, d2 | | | | | 2.7 | | | 7.5 | | | 0.3 | | |
| Delay (s) | | | | | 45.3 | | | 28.5 | | | 11.5 | | |
| Level of Service | | | | | D | | | C | | | B | | |
| Approach Delay (s) | | 0.0 | | | 45.3 | | | 28.5 | | | 11.5 | | |
| Approach LOS | | A | | | D | | | C | | | B | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM Average Control Delay | | | 26.1 | | HCM Level of Service | | | | | | C | | |
| HCM Volume to Capacity ratio | | | 0.73 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 150.0 | | Sum of lost time (s) | | | | | | 8.5 | | |
| Intersection Capacity Utilization | | | 77.2% | | ICU Level of Service | | | | | | D | | |
| 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) | 104 | 504 | 14 | 8 | 244 | 45 | 10 | 69 | 36 | 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 | | 1.00 | | | 0.98 | | | 0.96 | | | | |
| Flt Protected | | 0.99 | | | 1.00 | | | 1.00 | | | | |
| Satd. Flow (prot) | | 2931 | | | 1671 | | | 1571 | | | | |
| Flt Permitted | | 0.76 | | | 0.97 | | | 1.00 | | | | |
| Satd. Flow (perm) | | 2238 | | | 1620 | | | 1571 | | | | |
| 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) | 170 | 560 | 21 | 13 | 294 | 63 | 13 | 101 | 45 | 0 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 750 | 0 | 0 | 367 | 0 | 0 | 159 | 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) | | 119.5 | | | 119.5 | | | 20.5 | | | | |
| Effective Green, g (s) | | 120.5 | | | 120.5 | | | 21.5 | | | | |
| Actuated g/C Ratio | | 0.80 | | | 0.80 | | | 0.14 | | | | |
| Clearance Time (s) | | 5.0 | | | 5.0 | | | 5.0 | | | | |
| Vehicle Extension (s) | | 3.0 | | | 3.0 | | | 3.0 | | | | |
| Lane Grp Cap (vph) | | 1798 | | | 1301 | | | 225 | | | | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.34 | | | 0.23 | | | 0.10 | | | | |
| v/c Ratio | | 0.42 | | | 0.28 | | | 0.71 | | | | |
| Uniform Delay, d1 | | 4.4 | | | 3.8 | | | 61.2 | | | | |
| Progression Factor | | 0.48 | | | 1.09 | | | 1.00 | | | | |
| Incremental Delay, d2 | | 0.5 | | | 0.5 | | | 9.7 | | | | |
| Delay (s) | | 2.6 | | | 4.6 | | | 70.9 | | | | |
| Level of Service | | A | | | A | | | E | | | | |
| Approach Delay (s) | | 2.6 | | | 4.6 | | | 70.9 | | | 0.0 | |
| Approach LOS | | A | | | A | | | E | | | A | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | | 11.6 | | | | | HCM Level of Service | | B | | |
| HCM Volume to Capacity ratio | | | 0.46 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 150.0 | | | | | Sum of lost time (s) | | 8.0 | | |
| Intersection Capacity Utilization | | | 54.2% | | | | | 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) | 400 | 32 | 220 | 560 | 87 | 438 | 263 |
| 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 | 0.99 | | 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 | | 0.38 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3372 | | 609 | 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) | 435 | 35 | 242 | 583 | 107 | 461 | 289 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 52 |
| Lane Group Flow (vph) | 470 | 0 | 242 | 583 | 107 | 461 | 237 |
| 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) | 26.3 | | 110.2 | 97.3 | 96.7 | 90.3 | 123.1 |
| Effective Green, g (s) | 28.8 | | 110.2 | 99.8 | 101.7 | 92.8 | 123.1 |
| Actuated g/C Ratio | 0.19 | | 0.73 | 0.67 | 0.68 | 0.62 | 0.82 |
| 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) | 647 | | 528 | 930 | 1188 | 1109 | 1130 |
| v/s Ratio Prot | c0.14 | | c0.04 | c0.42 | 0.01 | 0.26 | |
| v/s Ratio Perm | | | 0.30 | | 0.06 | | 0.17 |
| v/c Ratio | 0.73 | | 0.46 | 0.63 | 0.09 | 0.42 | 0.21 |
| Uniform Delay, d1 | 56.9 | | 8.7 | 14.4 | 8.3 | 14.7 | 2.9 |
| Progression Factor | 0.91 | | 1.00 | 1.00 | 1.12 | 1.10 | 1.27 |
| Incremental Delay, d2 | 3.8 | | 0.6 | 1.3 | 0.0 | 1.1 | 0.1 |
| Delay (s) | 55.3 | | 9.3 | 15.7 | 9.3 | 17.2 | 3.8 |
| Level of Service | E | | A | B | A | B | A |
| Approach Delay (s) | 55.3 | | | | | 11.7 | |
| Approach LOS | E | | | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 22.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.65 | | |
| Actuated Cycle Length (s) | 150.0 | Sum of lost time (s) | 15.0 |
| Intersection Capacity Utilization | 67.7% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group