

Appendix D – Synchro Output Data Sheets

HCM Signalized Intersection Capacity Analysis

1: Ironwood Dr & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|-------|-------|------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 400 | 454 | 51 | 50 | 215 | 216 | 120 | 521 | 46 | 167 | 500 | 120 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.9 | 4.9 | | 4.9 | 4.9 | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 |
| Lane Util. Factor | 0.91 | 0.91 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.92 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1610 | 3319 | | 1770 | 3273 | | 1770 | 3493 | | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1610 | 3319 | | 1770 | 3273 | | 1770 | 3493 | | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 471 | 534 | 60 | 59 | 253 | 254 | 141 | 566 | 54 | 196 | 543 | 141 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 136 | 0 | 0 | 5 | 0 | 0 | 0 | 90 |
| Lane Group Flow (vph) | 349 | 716 | 0 | 59 | 371 | 0 | 141 | 615 | 0 | 196 | 543 | 51 |
| Turn Type | Split | | | Split | | | Prot | | | Prot | | Perm |
| Protected Phases | 8 | 8 | | 7 | 7 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | | | | | | | 2 |
| Actuated Green, G (s) | 32.3 | 32.3 | | 20.5 | 20.5 | | 13.9 | 42.9 | | 20.3 | 49.3 | 49.3 |
| Effective Green, g (s) | 33.4 | 33.4 | | 21.6 | 21.6 | | 15.4 | 44.4 | | 21.8 | 50.8 | 50.8 |
| Actuated g/C Ratio | 0.24 | 0.24 | | 0.15 | 0.15 | | 0.11 | 0.32 | | 0.16 | 0.36 | 0.36 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 384 | 792 | | 273 | 505 | | 195 | 1108 | | 276 | 1284 | 574 |
| v/s Ratio Prot | c0.22 | 0.22 | | 0.03 | c0.11 | | 0.08 | c0.18 | | c0.11 | 0.15 | |
| v/s Ratio Perm | | | | | | | | | | | | 0.03 |
| v/c Ratio | 0.91 | 0.90 | | 0.22 | 0.73 | | 0.72 | 0.56 | | 0.71 | 0.42 | 0.09 |
| Uniform Delay, d1 | 51.8 | 51.7 | | 51.8 | 56.5 | | 60.2 | 39.6 | | 56.1 | 33.6 | 29.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.18 | 0.48 | 0.27 |
| Incremental Delay, d2 | 24.6 | 13.7 | | 0.4 | 5.5 | | 12.4 | 2.0 | | 8.2 | 1.0 | 0.3 |
| Delay (s) | 76.4 | 65.4 | | 52.2 | 61.9 | | 72.7 | 41.6 | | 74.5 | 17.1 | 8.1 |
| Level of Service | E | E | | D | E | | E | D | | E | B | A |
| Approach Delay (s) | | 69.0 | | | 60.9 | | | 47.4 | | | 28.5 | |
| Approach LOS | | E | | | E | | | D | | | C | |

Intersection Summary

| | | | |
|---------------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 51.7 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.71 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 18.8 |
| Intersection Capacity Utilization | 70.9% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN ERROR IS OK | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

2: I-90 EB & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|-------|------|------|------|------|-------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 405 | 4 | 134 | 0 | 0 | 0 | 0 | 1028 | 109 | 179 | 653 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.3 | 5.3 | 4.0 | | | | | 5.3 | 5.3 | 5.3 | 5.3 | |
| Lane Util. Factor | 0.95 | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 | 0.95 | |
| Frt | 1.00 | 1.00 | 0.85 | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 0.95 | 1.00 | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1681 | 1687 | 1583 | | | | | 3539 | 1583 | 1770 | 3539 | |
| Flt Permitted | 0.95 | 0.95 | 1.00 | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1681 | 1687 | 1583 | | | | | 3539 | 1583 | 1770 | 3539 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 476 | 5 | 158 | 0 | 0 | 0 | 0 | 1117 | 128 | 211 | 710 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 243 | 238 | 158 | 0 | 0 | 0 | 0 | 1117 | 93 | 211 | 710 | 0 |
| Turn Type | Split | | Free | | | | | Perm | | Prot | | |
| Protected Phases | 4 | 4 | | | | | | 6 | | 5 | 2 | |
| Permitted Phases | | | Free | | | | | | 6 | | | |
| Actuated Green, G (s) | 25.8 | 25.8 | 140.0 | | | | | 74.3 | 74.3 | 21.9 | 102.2 | |
| Effective Green, g (s) | 26.5 | 26.5 | 140.0 | | | | | 75.0 | 75.0 | 22.6 | 102.9 | |
| Actuated g/C Ratio | 0.19 | 0.19 | 1.00 | | | | | 0.54 | 0.54 | 0.16 | 0.74 | |
| Clearance Time (s) | 6.0 | 6.0 | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 318 | 319 | 1583 | | | | | 1896 | 848 | 286 | 2601 | |
| v/s Ratio Prot | c0.14 | 0.14 | | | | | | c0.32 | | c0.12 | 0.20 | |
| v/s Ratio Perm | | | 0.10 | | | | | | 0.06 | | | |
| v/c Ratio | 0.76 | 0.75 | 0.10 | | | | | 0.59 | 0.11 | 0.74 | 0.27 | |
| Uniform Delay, d1 | 53.8 | 53.6 | 0.0 | | | | | 22.0 | 16.0 | 55.9 | 6.1 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | | | 1.08 | 1.42 | 0.46 | 2.36 | |
| Incremental Delay, d2 | 10.4 | 9.1 | 0.1 | | | | | 0.9 | 0.2 | 8.4 | 0.2 | |
| Delay (s) | 64.2 | 62.7 | 0.1 | | | | | 24.7 | 22.9 | 34.2 | 14.7 | |
| Level of Service | E | E | A | | | | | C | C | C | B | |
| Approach Delay (s) | | 47.8 | | | 0.0 | | | 24.5 | | | 19.2 | |
| Approach LOS | | D | | | A | | | C | | | B | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 28.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.65 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 15.9 |
| Intersection Capacity Utilization | 65.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, CORRECT MIN SPLIT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

3: I-90 WB & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|------|-------|------|--------|-------|-------|------|------|-------|------|
| Lane Configurations | | | | | ↕ | ↗ | ↘ | ↕↕ | | | ↕↕ | ↗ |
| Volume (vph) | 0 | 0 | 0 | 62 | 6 | 214 | 211 | 1222 | 0 | 0 | 770 | 587 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | | | | 5.3 | 5.3 | 5.3 | 6.0 | | | 5.3 | 5.3 |
| Lane Util. Factor | | | | | 1.00 | 1.00 | 1.00 | 0.95 | | | 0.95 | 1.00 |
| Fr _t | | | | | 1.00 | 0.85 | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Fl _t Protected | | | | | 0.96 | 1.00 | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 1781 | 1583 | 1770 | 3539 | | | 3539 | 1583 |
| Fl _t Permitted | | | | | 0.96 | 1.00 | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 1781 | 1583 | 1770 | 3539 | | | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 0 | 0 | 0 | 73 | 7 | 252 | 248 | 1328 | 0 | 0 | 837 | 691 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 0 | 0 | 0 | 0 | 360 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 80 | 175 | 248 | 1328 | 0 | 0 | 837 | 331 |
| Turn Type | | | | Split | | custom | | Prot | | | | Perm |
| Protected Phases | | | | 4 | 4 | 4 | 1 3 | 6 3 | | | 2 | |
| Permitted Phases | | | | | | 4 | | | | | | 2 |
| Actuated Green, G (s) | | | | | 20.2 | 20.2 | 38.1 | 107.8 | | | 59.7 | 59.7 |
| Effective Green, g (s) | | | | | 20.9 | 20.9 | 39.5 | 103.8 | | | 60.4 | 60.4 |
| Actuated g/C Ratio | | | | | 0.15 | 0.15 | 0.28 | 0.74 | | | 0.43 | 0.43 |
| Clearance Time (s) | | | | | 6.0 | 6.0 | | | | | 6.0 | 6.0 |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | | | | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | | | | 266 | 236 | 499 | 2624 | | | 1527 | 683 |
| v/s Ratio Prot | | | | | 0.04 | c0.11 | c0.14 | c0.38 | | | c0.24 | |
| v/s Ratio Perm | | | | | | | | | | | | 0.21 |
| v/c Ratio | | | | | 0.30 | 0.74 | 0.50 | 0.51 | | | 0.55 | 0.48 |
| Uniform Delay, d ₁ | | | | | 53.0 | 57.0 | 42.0 | 7.5 | | | 29.6 | 28.6 |
| Progression Factor | | | | | 1.00 | 1.00 | 1.22 | 1.90 | | | 0.62 | 1.19 |
| Incremental Delay, d ₂ | | | | | 0.6 | 11.9 | 0.7 | 0.1 | | | 1.1 | 1.8 |
| Delay (s) | | | | | 53.7 | 68.9 | 51.8 | 14.4 | | | 19.4 | 35.8 |
| Level of Service | | | | | D | E | D | B | | | B | D |
| Approach Delay (s) | | 0.0 | | | 65.2 | | | 20.3 | | | 26.9 | |
| Approach LOS | | A | | | E | | | C | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 27.5 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.56 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 15.9 |
| Intersection Capacity Utilization | 65.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

Description: CHECKED, MIN SPLIT REVISED

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Appleway Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|------|------|-------|------|------|-------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↔ | | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ |
| Volume (vph) | 127 | 280 | 153 | 240 | 272 | 177 | 137 | 1070 | 229 | 137 | 964 | 121 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.9 | 4.9 | | 4.9 | 4.9 | | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | |
| Lane Util. Factor | 1.00 | 0.95 | | 0.91 | 0.91 | | 1.00 | 0.91 | 1.00 | 1.00 | 0.91 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 3351 | | 1610 | 3192 | | 1770 | 5085 | 1583 | 1770 | 4994 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 3351 | | 1610 | 3192 | | 1770 | 5085 | 1583 | 1770 | 4994 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 149 | 329 | 180 | 282 | 320 | 208 | 161 | 1163 | 269 | 161 | 1048 | 142 |
| RTOR Reduction (vph) | 0 | 52 | 0 | 0 | 56 | 0 | 0 | 0 | 159 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 149 | 457 | 0 | 254 | 500 | 0 | 161 | 1163 | 110 | 161 | 1178 | 0 |
| Turn Type | Split | | | Split | | | Prot | | Perm | Prot | | |
| Protected Phases | 8 | 8 | | 7 | 7 | | 6 | 1 | | 2 | 5 | |
| Permitted Phases | | | | | | | | | 1 | | | |
| Actuated Green, G (s) | 20.9 | 20.9 | | 25.3 | 25.3 | | 15.2 | 52.8 | 52.8 | 17.0 | 54.6 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 26.4 | 26.4 | | 15.8 | 53.4 | 53.4 | 17.6 | 55.2 | |
| Actuated g/C Ratio | 0.16 | 0.16 | | 0.19 | 0.19 | | 0.11 | 0.38 | 0.38 | 0.13 | 0.39 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 278 | 527 | | 304 | 602 | | 200 | 1940 | 604 | 223 | 1969 | |
| v/s Ratio Prot | 0.08 | c0.14 | | c0.16 | 0.16 | | c0.09 | 0.23 | | c0.09 | c0.24 | |
| v/s Ratio Perm | | | | | | | | | 0.07 | | | |
| v/c Ratio | 0.54 | 0.87 | | 0.84 | 0.83 | | 0.80 | 0.60 | 0.18 | 0.72 | 0.60 | |
| Uniform Delay, d1 | 54.3 | 57.6 | | 54.7 | 54.6 | | 60.6 | 34.7 | 28.8 | 58.8 | 33.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.10 | 0.61 | 0.67 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.0 | 14.0 | | 17.7 | 9.5 | | 18.3 | 1.2 | 0.6 | 10.9 | 1.4 | |
| Delay (s) | 56.3 | 71.5 | | 72.4 | 64.1 | | 84.8 | 22.5 | 19.7 | 69.8 | 35.0 | |
| Level of Service | E | E | | E | E | | F | C | B | E | C | |
| Approach Delay (s) | | 68.1 | | | 66.7 | | | 28.3 | | | 39.1 | |
| Approach LOS | | E | | | E | | | C | | | D | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 44.6 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.77 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 26.0 |
| Intersection Capacity Utilization | 72.2% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

Description: CHECKED, MIN SPLIT REVISED

c Critical Lane Group

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

HCM Signalized Intersection Capacity Analysis

7: Neider Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|-------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | ↗ | ↖ | ↗ | ↗ |
| Volume (vph) | 41 | 74 | 56 | 170 | 103 | 254 | 63 | 1129 | 205 | 219 | 1048 | 14 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 4.2 | 4.1 | 4.1 | 4.2 | 4.1 | 4.1 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.94 | | 1.00 | 0.89 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3310 | | 1770 | 3161 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3310 | | 1770 | 3161 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 48 | 87 | 66 | 200 | 121 | 299 | 74 | 1227 | 241 | 258 | 1139 | 16 |
| RTOR Reduction (vph) | 0 | 61 | 0 | 0 | 246 | 0 | 0 | 0 | 80 | 0 | 0 | 7 |
| Lane Group Flow (vph) | 48 | 92 | 0 | 200 | 174 | 0 | 74 | 1227 | 161 | 258 | 1139 | 9 |
| Turn Type | Prot | | | Prot | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 8 | 3 | | 4 | 7 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | | | | 6 | | | 2 |
| Actuated Green, G (s) | 8.5 | 9.7 | | 24.4 | 25.6 | | 11.1 | 78.9 | 78.9 | 23.0 | 90.8 | 90.8 |
| Effective Green, g (s) | 11.5 | 12.7 | | 27.4 | 28.6 | | 12.9 | 80.8 | 80.8 | 24.8 | 92.7 | 92.7 |
| Actuated g/C Ratio | 0.07 | 0.08 | | 0.17 | 0.18 | | 0.08 | 0.50 | 0.50 | 0.16 | 0.58 | 0.58 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 127 | 263 | | 303 | 565 | | 143 | 1787 | 799 | 274 | 2050 | 917 |
| v/s Ratio Prot | c0.03 | 0.03 | | c0.11 | 0.06 | | 0.04 | c0.35 | | c0.15 | 0.32 | |
| v/s Ratio Perm | | | | | | | | | 0.10 | | | 0.01 |
| v/c Ratio | 0.38 | 0.35 | | 0.66 | 0.31 | | 0.52 | 0.69 | 0.20 | 0.94 | 0.56 | 0.01 |
| Uniform Delay, d1 | 70.8 | 69.7 | | 61.9 | 57.1 | | 70.6 | 30.0 | 21.8 | 66.9 | 20.9 | 14.2 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.73 | 0.76 | 1.09 |
| Incremental Delay, d2 | 1.9 | 0.8 | | 5.3 | 0.3 | | 3.1 | 2.2 | 0.6 | 38.0 | 1.0 | 0.0 |
| Delay (s) | 72.7 | 70.6 | | 67.3 | 57.4 | | 73.7 | 32.2 | 22.4 | 86.8 | 16.8 | 15.6 |
| Level of Service | E | E | | E | E | | E | C | C | F | B | B |
| Approach Delay (s) | | 71.1 | | | 60.6 | | | 32.6 | | | 29.6 | |
| Approach LOS | | E | | | E | | | C | | | C | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 38.1 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.69 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 14.3 |
| Intersection Capacity Utilization | 72.1% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

8: Bosanko Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|-------|-------|------|-------|-------|-------|------|-------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 50 | 10 | 136 | 47 | 41 | 1 | 99 | 1279 | 46 | 51 | 1098 | 44 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.0 | 3.0 | 6.0 | 3.0 | 3.0 | | 4.2 | 4.3 | 4.3 | 3.8 | 4.1 | 4.1 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Flt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1857 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 1857 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 59 | 12 | 160 | 55 | 48 | 1 | 116 | 1390 | 54 | 60 | 1193 | 52 |
| RTOR Reduction (vph) | 0 | 0 | 147 | 0 | 1 | 0 | 0 | 0 | 12 | 0 | 0 | 16 |
| Lane Group Flow (vph) | 59 | 12 | 13 | 55 | 48 | 0 | 116 | 1390 | 42 | 60 | 1193 | 36 |
| Turn Type | Prot | | Perm | Prot | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 8 | 3 | | 4 | 7 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | 3 | | | | | | 6 | | | 2 |
| Actuated Green, G (s) | 9.4 | 13.3 | 13.3 | 5.6 | 9.5 | | 15.8 | 108.0 | 108.0 | 9.1 | 101.3 | 101.3 |
| Effective Green, g (s) | 12.4 | 16.3 | 13.3 | 8.6 | 12.5 | | 17.6 | 109.7 | 109.7 | 11.3 | 103.2 | 103.2 |
| Actuated g/C Ratio | 0.08 | 0.10 | 0.08 | 0.05 | 0.08 | | 0.11 | 0.69 | 0.69 | 0.07 | 0.64 | 0.64 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 137 | 190 | 132 | 95 | 145 | | 195 | 2426 | 1085 | 125 | 2283 | 1021 |
| v/s Ratio Prot | c0.03 | 0.01 | | c0.03 | c0.03 | | c0.07 | c0.39 | | 0.03 | 0.34 | |
| v/s Ratio Perm | | | 0.01 | | | | | | 0.03 | | | 0.02 |
| v/c Ratio | 0.43 | 0.06 | 0.10 | 0.58 | 0.33 | | 0.59 | 0.57 | 0.04 | 0.48 | 0.52 | 0.04 |
| Uniform Delay, d1 | 70.4 | 64.9 | 67.8 | 73.9 | 69.8 | | 67.8 | 13.0 | 8.1 | 71.5 | 15.2 | 10.3 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.99 | 0.99 | | 1.41 | 0.28 | 0.13 | 1.21 | 0.32 | 0.17 |
| Incremental Delay, d2 | 2.2 | 0.1 | 0.3 | 8.3 | 1.3 | | 3.7 | 0.8 | 0.1 | 2.3 | 0.7 | 0.1 |
| Delay (s) | 72.6 | 65.1 | 68.2 | 81.5 | 70.8 | | 99.4 | 4.4 | 1.1 | 89.0 | 5.6 | 1.8 |
| Level of Service | E | E | E | F | E | | F | A | A | F | A | A |
| Approach Delay (s) | | 69.1 | | | 76.5 | | | 11.4 | | | 9.3 | |
| Approach LOS | | E | | | E | | | B | | | A | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 16.8 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.54 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 10.2 |
| Intersection Capacity Utilization | 59.2% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

9: Sunset Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | ↗ | | | ↗ | | ↕ | ↗ | | ↕ | ↗ |
| Volume (veh/h) | 0 | 0 | 74 | 0 | 0 | 93 | 0 | 1291 | 39 | 0 | 1119 | 86 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 87 | 0 | 0 | 109 | 0 | 1403 | 46 | 0 | 1216 | 101 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | 637 | | | 713 | |
| pX, platoon unblocked | 0.88 | 0.88 | 0.78 | 0.88 | 0.88 | 0.79 | 0.78 | | | 0.79 | | |
| vC, conflicting volume | 2027 | 2665 | 608 | 2098 | 2721 | 702 | 1317 | | | 1449 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 829 | 1552 | 0 | 909 | 1614 | 91 | 837 | | | 1037 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 90 | 100 | 100 | 85 | 100 | | | 100 | | |
| cM capacity (veh/h) | 198 | 99 | 844 | 182 | 91 | 749 | 617 | | | 526 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|------------------------|------|------|------|------|------|------|------|------|
| Volume Total | 87 | 109 | 702 | 702 | 46 | 608 | 608 | 101 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 87 | 109 | 0 | 0 | 46 | 0 | 0 | 101 |
| cSH | 844 | 749 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.10 | 0.15 | 0.41 | 0.41 | 0.03 | 0.36 | 0.36 | 0.06 |
| Queue Length 95th (ft) | 9 | 13 | 0 | 0 | 0 | 0 | 0 | 0 |
| Control Delay (s) | 9.8 | 10.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | B | | | | | | |
| Approach Delay (s) | 9.8 | 10.6 | 0.0 | | | 0.0 | | |
| Approach LOS | A | B | | | | | | |

| Intersection Summary | | |
|-----------------------------------|-------|----------------------|
| Average Delay | | 0.7 |
| Intersection Capacity Utilization | 48.1% | ICU Level of Service |
| Analysis Period (min) | | 15 |
| | | A |

HCM Signalized Intersection Capacity Analysis

10: Kathleen Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|-------|------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 194 | 334 | 124 | 122 | 267 | 179 | 140 | 1173 | 71 | 158 | 959 | 152 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 3.5 | | 3.1 | 3.1 | | 4.2 | 4.0 | 4.0 | 4.2 | 4.0 | 4.0 |
| Lane Util. Factor | 0.91 | 0.91 | | 0.91 | 0.91 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1610 | 3251 | | 1610 | 3187 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1610 | 3251 | | 1610 | 3187 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 228 | 393 | 146 | 144 | 314 | 211 | 165 | 1275 | 84 | 186 | 1042 | 179 |
| RTOR Reduction (vph) | 0 | 20 | 0 | 0 | 56 | 0 | 0 | 0 | 29 | 0 | 0 | 81 |
| Lane Group Flow (vph) | 205 | 542 | 0 | 130 | 483 | 0 | 165 | 1275 | 55 | 186 | 1042 | 98 |
| Turn Type | Split | | | Split | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 3 | 3 | | 4 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | | | | 6 | | | 2 |
| Actuated Green, G (s) | 25.0 | 25.0 | | 20.0 | 20.0 | | 20.0 | 69.5 | 69.5 | 21.5 | 71.0 | 71.0 |
| Effective Green, g (s) | 27.5 | 27.5 | | 22.9 | 22.9 | | 21.8 | 71.5 | 71.5 | 23.3 | 73.0 | 73.0 |
| Actuated g/C Ratio | 0.17 | 0.17 | | 0.14 | 0.14 | | 0.14 | 0.45 | 0.45 | 0.15 | 0.46 | 0.46 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 277 | 559 | | 230 | 456 | | 241 | 1581 | 707 | 258 | 1615 | 722 |
| v/s Ratio Prot | 0.13 | c0.17 | | 0.08 | c0.15 | | 0.09 | c0.36 | | c0.11 | 0.29 | |
| v/s Ratio Perm | | | | | | | | | 0.03 | | | 0.06 |
| v/c Ratio | 0.74 | 0.97 | | 0.57 | 1.06 | | 0.68 | 0.81 | 0.08 | 0.72 | 0.65 | 0.14 |
| Uniform Delay, d1 | 62.9 | 65.8 | | 63.9 | 68.6 | | 65.8 | 38.3 | 25.4 | 65.2 | 33.5 | 25.2 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.66 | 0.46 | 0.07 | 0.93 | 0.35 | 0.25 |
| Incremental Delay, d2 | 10.8 | 30.3 | | 3.8 | 58.9 | | 13.0 | 4.0 | 0.2 | 7.9 | 1.6 | 0.3 |
| Delay (s) | 73.6 | 96.1 | | 67.7 | 127.5 | | 56.6 | 21.6 | 2.0 | 68.7 | 13.2 | 6.7 |
| Level of Service | E | F | | E | F | | E | C | A | E | B | A |
| Approach Delay (s) | | 90.1 | | | 115.9 | | | 24.3 | | | 19.8 | |
| Approach LOS | | F | | | F | | | C | | | B | |

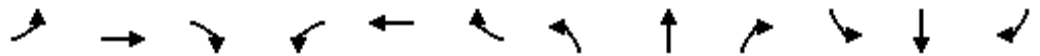
Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 48.4 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.86 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 14.8 |
| Intersection Capacity Utilization | 78.3% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| Description: CHECKED | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

11: Dalton Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|-------|------|------|-------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 50 | 103 | 65 | 55 | 98 | 86 | 81 | 1406 | 59 | 84 | 1149 | 42 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.2 | 3.2 | 6.0 | 3.2 | 3.2 | | 4.9 | 4.4 | 4.4 | 5.0 | 4.4 | 4.4 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.93 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1732 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 1732 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 59 | 121 | 76 | 65 | 115 | 101 | 95 | 1528 | 69 | 99 | 1249 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 43 | 0 | 19 | 0 | 0 | 0 | 21 | 0 | 0 | 14 |
| Lane Group Flow (vph) | 59 | 121 | 33 | 65 | 197 | 0 | 95 | 1528 | 48 | 99 | 1249 | 35 |
| Turn Type | Split | | Perm | Split | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 7 | | 8 | 8 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | 7 | | | | | | 6 | | | 2 |
| Actuated Green, G (s) | 16.9 | 16.9 | 16.9 | 17.1 | 17.1 | | 13.3 | 83.0 | 83.0 | 19.0 | 88.7 | 88.7 |
| Effective Green, g (s) | 19.7 | 19.7 | 16.9 | 19.9 | 19.9 | | 14.4 | 84.6 | 84.6 | 20.0 | 90.3 | 90.3 |
| Actuated g/C Ratio | 0.12 | 0.12 | 0.11 | 0.12 | 0.12 | | 0.09 | 0.53 | 0.53 | 0.12 | 0.56 | 0.56 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 5.0 | 5.0 | 5.0 | 3.0 | 3.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 218 | 229 | 167 | 220 | 215 | | 159 | 1871 | 837 | 221 | 1997 | 893 |
| v/s Ratio Prot | 0.03 | c0.06 | | 0.04 | c0.11 | | 0.05 | c0.43 | | 0.06 | c0.35 | |
| v/s Ratio Perm | | | 0.02 | | | | | | 0.03 | | | 0.02 |
| v/c Ratio | 0.27 | 0.53 | 0.20 | 0.30 | 0.92 | | 0.60 | 0.82 | 0.06 | 0.45 | 0.63 | 0.04 |
| Uniform Delay, d1 | 63.6 | 65.8 | 65.4 | 63.7 | 69.2 | | 70.0 | 31.3 | 18.3 | 64.9 | 23.5 | 15.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.02 | 0.82 | 0.27 | 0.69 | 0.47 | 0.62 |
| Incremental Delay, d2 | 1.4 | 4.1 | 1.2 | 0.8 | 38.5 | | 3.2 | 2.2 | 0.1 | 5.1 | 1.2 | 0.1 |
| Delay (s) | 65.0 | 69.9 | 66.6 | 64.4 | 107.7 | | 74.3 | 27.8 | 5.1 | 49.6 | 12.3 | 9.7 |
| Level of Service | E | E | E | E | F | | E | C | A | D | B | A |
| Approach Delay (s) | | 67.8 | | | 97.7 | | | 29.5 | | | 14.8 | |
| Approach LOS | | E | | | F | | | C | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 31.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.75 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 10.8 |
| Intersection Capacity Utilization | 72.6% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

Description: CHECKED, MIN SPLIT REVISED

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

12: Hanley Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|-------|------|------|-------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 134 | 183 | 60 | 119 | 161 | 158 | 72 | 1357 | 113 | 102 | 1096 | 84 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 3.5 | | 3.1 | 3.1 | 3.1 | 4.2 | 4.0 | 4.0 | 4.2 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 0.95 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1793 | | 1681 | 1764 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1793 | | 1681 | 1764 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 158 | 215 | 71 | 140 | 189 | 186 | 85 | 1475 | 133 | 120 | 1191 | 99 |
| RTOR Reduction (vph) | 0 | 7 | 0 | 0 | 0 | 160 | 0 | 0 | 29 | 0 | 0 | 28 |
| Lane Group Flow (vph) | 158 | 279 | 0 | 126 | 203 | 26 | 85 | 1475 | 104 | 120 | 1191 | 71 |
| Turn Type | Split | | | Split | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 3 | 3 | | 4 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | 4 | | | 6 | | | 2 |
| Actuated Green, G (s) | 24.7 | 24.7 | | 19.3 | 19.3 | 19.3 | 8.0 | 76.1 | 76.1 | 15.9 | 84.0 | 84.0 |
| Effective Green, g (s) | 27.2 | 27.2 | | 22.2 | 22.2 | 22.2 | 9.8 | 78.1 | 78.1 | 17.7 | 86.0 | 86.0 |
| Actuated g/C Ratio | 0.17 | 0.17 | | 0.14 | 0.14 | 0.14 | 0.06 | 0.49 | 0.49 | 0.11 | 0.54 | 0.54 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 301 | 305 | | 233 | 245 | 220 | 108 | 1727 | 773 | 196 | 1902 | 851 |
| v/s Ratio Prot | 0.09 | c0.16 | | 0.07 | c0.12 | | 0.05 | c0.42 | | 0.07 | c0.34 | |
| v/s Ratio Perm | | | | | | 0.02 | | | 0.07 | | | 0.04 |
| v/c Ratio | 0.52 | 0.91 | | 0.54 | 0.83 | 0.12 | 0.79 | 0.85 | 0.13 | 0.61 | 0.63 | 0.08 |
| Uniform Delay, d1 | 60.5 | 65.2 | | 64.2 | 67.0 | 60.3 | 74.1 | 35.9 | 22.4 | 67.9 | 25.8 | 17.9 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.62 | 0.32 | 0.26 | 1.38 | 0.41 | 0.15 |
| Incremental Delay, d2 | 1.7 | 30.0 | | 2.6 | 20.1 | 0.2 | 27.4 | 3.3 | 0.2 | 4.4 | 1.2 | 0.1 |
| Delay (s) | 62.2 | 95.3 | | 66.7 | 87.1 | 60.6 | 73.5 | 15.0 | 6.0 | 98.2 | 11.7 | 2.8 |
| Level of Service | E | F | | E | F | E | E | B | A | F | B | A |
| Approach Delay (s) | | 83.5 | | | 72.5 | | | 17.2 | | | 18.4 | |
| Approach LOS | | F | | | E | | | B | | | B | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 31.9 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.84 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 14.6 |
| Intersection Capacity Utilization | 78.4% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

13: Canfield Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|-------|------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 45 | 71 | 57 | 126 | 59 | 224 | 68 | 1436 | 145 | 189 | 1099 | 48 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | | 3.6 | 3.6 | | 5.0 | 4.4 | 4.4 | 4.9 | 4.4 | 4.4 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.93 | | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1739 | | 1770 | 1641 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1739 | | 1770 | 1641 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 53 | 84 | 67 | 148 | 69 | 264 | 80 | 1561 | 171 | 222 | 1195 | 56 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 82 | 0 | 0 | 0 | 42 | 0 | 0 | 14 |
| Lane Group Flow (vph) | 53 | 132 | 0 | 148 | 251 | 0 | 80 | 1561 | 129 | 222 | 1195 | 42 |
| Turn Type | Split | | | Split | | | Prot | | | Perm | | |
| Protected Phases | 8 | 8 | | 7 | 7 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | | | | 6 | | | 2 |
| Actuated Green, G (s) | 17.3 | 17.3 | | 28.0 | 28.0 | | 10.0 | 70.4 | 70.4 | 20.3 | 80.7 | 80.7 |
| Effective Green, g (s) | 19.3 | 19.3 | | 30.4 | 30.4 | | 11.0 | 72.0 | 72.0 | 21.4 | 82.3 | 82.3 |
| Actuated g/C Ratio | 0.12 | 0.12 | | 0.19 | 0.19 | | 0.07 | 0.45 | 0.45 | 0.13 | 0.51 | 0.51 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 214 | 210 | | 336 | 312 | | 122 | 1593 | 712 | 237 | 1820 | 814 |
| v/s Ratio Prot | 0.03 | c0.08 | | 0.08 | c0.15 | | 0.05 | c0.44 | | c0.13 | 0.34 | |
| v/s Ratio Perm | | | | | | | | | 0.08 | | | 0.03 |
| v/c Ratio | 0.25 | 0.63 | | 0.44 | 0.81 | | 0.66 | 0.98 | 0.18 | 0.94 | 0.66 | 0.05 |
| Uniform Delay, d1 | 63.8 | 66.9 | | 57.3 | 62.0 | | 72.7 | 43.3 | 26.4 | 68.6 | 28.5 | 19.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.71 | 0.48 | 0.43 | 0.76 | 1.34 | 1.36 |
| Incremental Delay, d2 | 0.6 | 5.7 | | 0.9 | 14.0 | | 15.1 | 13.2 | 0.3 | 36.6 | 1.6 | 0.1 |
| Delay (s) | 64.4 | 72.7 | | 58.2 | 75.9 | | 66.9 | 34.2 | 11.6 | 88.6 | 39.8 | 26.4 |
| Level of Service | E | E | | E | E | | E | C | B | F | D | C |
| Approach Delay (s) | | 70.5 | | | 70.5 | | | 33.5 | | | 46.7 | |
| Approach LOS | | E | | | E | | | C | | | D | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 44.8 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.89 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 16.9 |
| Intersection Capacity Utilization | 85.7% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

Description: CHECKED, MIN SPLIT REVISED

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

14: Wilbur Ave & US 95

1/20/2009



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | ↶ | ↷ | ↶ | ↕↗ | ↕↗ | ↶ |
| Volume (veh/h) | 46 | 166 | 103 | 1602 | 1170 | 81 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.92 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 54 | 195 | 121 | 1741 | 1272 | 95 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 2385 | 636 | 1367 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 2385 | 636 | 1367 | | | |
| tC, single (s) | 6.8 | 6.9 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 0 | 54 | 76 | | | |
| cM capacity (veh/h) | 22 | 421 | 498 | | | |

| Direction, Lane # | EB 1 | EB 2 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|------------------------|--------|------|------|------|------|------|------|------|
| Volume Total | 54 | 195 | 121 | 871 | 871 | 636 | 636 | 95 |
| Volume Left | 54 | 0 | 121 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 0 | 195 | 0 | 0 | 0 | 0 | 0 | 95 |
| cSH | 22 | 421 | 498 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 2.51 | 0.46 | 0.24 | 0.51 | 0.51 | 0.37 | 0.37 | 0.06 |
| Queue Length 95th (ft) | 175 | 60 | 24 | 0 | 0 | 0 | 0 | 0 |
| Control Delay (s) | 1065.3 | 20.8 | 14.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | C | B | | | | | |
| Approach Delay (s) | 247.4 | | 0.9 | | | 0.0 | | |
| Approach LOS | F | | | | | | | |

| Intersection Summary | | | |
|-----------------------------------|-------|------|------------------------|
| Average Delay | | 18.2 | |
| Intersection Capacity Utilization | 54.3% | | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

15: Aqua Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↕ | ↗ | ↗ | ↕ | ↗ |
| Volume (veh/h) | 1 | 5 | 48 | 44 | 5 | 24 | 44 | 1542 | 62 | 73 | 1159 | 4 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 1 | 6 | 56 | 52 | 6 | 28 | 52 | 1676 | 73 | 86 | 1260 | 5 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | 999 | |
| pX, platoon unblocked | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | | 0.82 | | | | | |
| vC, conflicting volume | 2404 | 3284 | 630 | 2641 | 3216 | 838 | 1264 | | | 1749 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 2271 | 3348 | 100 | 2560 | 3264 | 838 | 876 | | | 1749 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 0 | 0 | 93 | 0 | 0 | 91 | 92 | | | 76 | | |
| cM capacity (veh/h) | 0 | 4 | 765 | 0 | 5 | 309 | 626 | | | 355 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| Volume Total | 64 | 86 | 52 | 838 | 838 | 73 | 86 | 630 | 630 | 5 |
| Volume Left | 1 | 52 | 52 | 0 | 0 | 0 | 86 | 0 | 0 | 0 |
| Volume Right | 56 | 28 | 0 | 0 | 0 | 73 | 0 | 0 | 0 | 5 |
| cSH | 0 | 0 | 626 | 1700 | 1700 | 1700 | 355 | 1700 | 1700 | 1700 |
| Volume to Capacity | Err | Err | 0.08 | 0.49 | 0.49 | 0.04 | 0.24 | 0.37 | 0.37 | 0.00 |
| Queue Length 95th (ft) | Err | Err | 7 | 0 | 0 | 0 | 23 | 0 | 0 | 0 |
| Control Delay (s) | Err | Err | 11.3 | 0.0 | 0.0 | 0.0 | 18.4 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | F | B | | | | C | | | |
| Approach Delay (s) | Err | Err | 0.3 | | | | 1.2 | | | |
| Approach LOS | F | F | | | | | | | | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|---|
| Average Delay | | Err | |
| Intersection Capacity Utilization | 67.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

HCM Signalized Intersection Capacity Analysis

16: Prairie Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|------|-------|------|------|-------|------|-------|------|------|
| Lane Configurations | ↖ | ↖↗ | | ↖ | ↖↗ | | ↖ | ↖↗ | ↖ | ↖ | ↖↗ | ↖ |
| Volume (vph) | 242 | 361 | 252 | 177 | 414 | 132 | 159 | 1194 | 214 | 144 | 807 | 232 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 2.8 | 3.3 | | 2.8 | 3.3 | | 4.4 | 4.2 | 4.2 | 4.4 | 4.2 | 4.2 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.94 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3321 | | 1770 | 3411 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3321 | | 1770 | 3411 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 285 | 425 | 296 | 208 | 487 | 155 | 187 | 1298 | 252 | 169 | 877 | 273 |
| RTOR Reduction (vph) | 0 | 76 | 0 | 0 | 19 | 0 | 0 | 0 | 75 | 0 | 0 | 119 |
| Lane Group Flow (vph) | 285 | 645 | 0 | 208 | 623 | 0 | 187 | 1298 | 177 | 169 | 877 | 154 |
| Turn Type | Prot | | | Prot | | | Prot | | Perm | Prot | | Perm |
| Protected Phases | 8 | 3 | | 4 | 7 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | | | | 6 | | | 2 |
| Actuated Green, G (s) | 24.0 | 25.2 | | 24.8 | 26.0 | | 21.0 | 70.2 | 70.2 | 15.8 | 65.0 | 65.0 |
| Effective Green, g (s) | 27.2 | 27.9 | | 28.0 | 28.7 | | 22.6 | 72.0 | 72.0 | 17.4 | 66.8 | 66.8 |
| Actuated g/C Ratio | 0.17 | 0.17 | | 0.18 | 0.18 | | 0.14 | 0.45 | 0.45 | 0.11 | 0.42 | 0.42 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 5.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 301 | 579 | | 310 | 612 | | 250 | 1593 | 712 | 192 | 1478 | 661 |
| v/s Ratio Prot | c0.16 | c0.19 | | 0.12 | 0.18 | | 0.11 | c0.37 | | c0.10 | 0.25 | |
| v/s Ratio Perm | | | | | | | | | 0.11 | | | 0.10 |
| v/c Ratio | 0.95 | 1.11 | | 0.67 | 1.02 | | 0.75 | 0.81 | 0.25 | 0.88 | 0.59 | 0.23 |
| Uniform Delay, d1 | 65.7 | 66.1 | | 61.7 | 65.6 | | 66.0 | 38.2 | 27.3 | 70.3 | 36.1 | 30.1 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.65 | 0.44 | 0.19 | 0.98 | 0.61 | 0.65 |
| Incremental Delay, d2 | 37.5 | 72.8 | | 7.3 | 41.0 | | 9.0 | 2.2 | 0.4 | 31.3 | 1.6 | 0.7 |
| Delay (s) | 103.2 | 138.8 | | 69.0 | 106.7 | | 51.8 | 19.0 | 5.5 | 99.9 | 23.5 | 20.2 |
| Level of Service | F | F | | E | F | | D | B | A | F | C | C |
| Approach Delay (s) | | 128.7 | | | 97.4 | | | 20.6 | | | 32.6 | |
| Approach LOS | | F | | | F | | | C | | | C | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 59.3 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 0.90 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 14.7 |
| Intersection Capacity Utilization | 83.9% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

17: honeysuckle Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|-------|------|------|------|-------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 11 | 66 | 64 | 116 | 105 | 202 | 65 | 1366 | 159 | 89 | 1003 | 42 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.3 | 2.9 | | 2.8 | 2.8 | 2.8 | 3.8 | 3.7 | 3.7 | 3.8 | 3.9 | 3.9 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.93 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1726 | | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1726 | | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 13 | 78 | 75 | 136 | 124 | 238 | 76 | 1485 | 187 | 105 | 1090 | 49 |
| RTOR Reduction (vph) | 0 | 22 | 0 | 0 | 0 | 183 | 0 | 0 | 45 | 0 | 0 | 15 |
| Lane Group Flow (vph) | 13 | 131 | 0 | 136 | 124 | 55 | 76 | 1485 | 143 | 105 | 1090 | 34 |
| Turn Type | Prot | | | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 3 | 8 | | 7 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | 4 | | | 6 | | | 2 |
| Actuated Green, G (s) | 2.8 | 19.9 | | 16.6 | 33.7 | 33.7 | 10.1 | 86.5 | 86.5 | 13.0 | 89.4 | 89.4 |
| Effective Green, g (s) | 5.5 | 23.0 | | 19.8 | 36.9 | 36.9 | 12.3 | 88.8 | 88.8 | 15.2 | 91.5 | 91.5 |
| Actuated g/C Ratio | 0.03 | 0.14 | | 0.12 | 0.23 | 0.23 | 0.08 | 0.55 | 0.55 | 0.10 | 0.57 | 0.57 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 61 | 248 | | 219 | 430 | 365 | 136 | 1964 | 879 | 168 | 2024 | 905 |
| v/s Ratio Prot | 0.01 | c0.08 | | c0.08 | 0.07 | | 0.04 | c0.42 | | c0.06 | c0.31 | |
| v/s Ratio Perm | | | | | | 0.03 | | | 0.09 | | | 0.02 |
| v/c Ratio | 0.21 | 0.53 | | 0.62 | 0.29 | 0.15 | 0.56 | 0.76 | 0.16 | 0.62 | 0.54 | 0.04 |
| Uniform Delay, d1 | 75.1 | 63.5 | | 66.5 | 50.7 | 49.1 | 71.2 | 27.3 | 17.4 | 69.7 | 21.2 | 15.0 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.30 | 0.53 | 0.16 | 1.16 | 0.44 | 0.18 |
| Incremental Delay, d2 | 0.6 | 0.9 | | 3.9 | 0.1 | 0.1 | 1.5 | 1.4 | 0.2 | 4.1 | 0.8 | 0.1 |
| Delay (s) | 75.8 | 64.4 | | 70.4 | 50.9 | 49.1 | 94.0 | 16.0 | 3.0 | 84.9 | 10.2 | 2.8 |
| Level of Service | E | E | | E | D | D | F | B | A | F | B | A |
| Approach Delay (s) | | 65.3 | | | 55.4 | | | 18.0 | | | 16.2 | |
| Approach LOS | | E | | | E | | | B | | | B | |























Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 24.6 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.70 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 17.1 |
| Intersection Capacity Utilization | 69.8% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

18: Orchard Ave & US 95

1/20/2009

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  |  | |  |  |  |  |  |  |  |  |
| Volume (veh/h) | 40 | 2 | 66 | 38 | 35 | 30 | 70 | 1464 | 45 | 49 | 1030 | 40 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 47 | 2 | 78 | 45 | 41 | 35 | 82 | 1591 | 53 | 58 | 1120 | 47 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | 7 | | | 6 | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 2216 | 3044 | 560 | 2432 | 3038 | 796 | 1167 | | | 1644 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 2216 | 3044 | 560 | 2432 | 3038 | 796 | 1167 | | | 1644 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 0 | 74 | 84 | 0 | 0 | 89 | 86 | | | 85 | | |
| cM capacity (veh/h) | 0 | 9 | 472 | 9 | 9 | 330 | 595 | | | 389 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 | | |
| Volume Total | 127 | 121 | 82 | 796 | 796 | 53 | 58 | 560 | 560 | 47 | | |
| Volume Left | 47 | 45 | 82 | 0 | 0 | 0 | 58 | 0 | 0 | 0 | | |
| Volume Right | 78 | 35 | 0 | 0 | 0 | 53 | 0 | 0 | 0 | 47 | | |
| cSH | 0 | 13 | 595 | 1700 | 1700 | 1700 | 389 | 1700 | 1700 | 1700 | | |
| Volume to Capacity | 2230.72 | 9.61 | 0.14 | 0.47 | 0.47 | 0.03 | 0.15 | 0.33 | 0.33 | 0.03 | | |
| Queue Length 95th (ft) | Err | Err | 12 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | | |
| Control Delay (s) | Err | Err | 12.0 | 0.0 | 0.0 | 0.0 | 15.8 | 0.0 | 0.0 | 0.0 | | |
| Lane LOS | F | F | B | | | | C | | | | | |
| Approach Delay (s) | Err | Err | 0.6 | | | | 0.7 | | | | | |
| Approach LOS | F | F | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 776.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 64.4% | | ICU Level of Service | | | | C | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

19: Hayden Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|-------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 157 | 207 | 96 | 180 | 159 | 196 | 105 | 1149 | 280 | 105 | 843 | 60 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.9 | 3.2 | | 3.8 | 3.2 | 3.2 | 4.0 | 4.1 | 4.1 | 3.7 | 3.9 | 3.9 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1774 | | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1774 | | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 185 | 244 | 113 | 212 | 187 | 231 | 124 | 1249 | 329 | 124 | 916 | 71 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 0 | 171 | 0 | 0 | 154 | 0 | 0 | 39 |
| Lane Group Flow (vph) | 185 | 346 | 0 | 212 | 187 | 60 | 124 | 1249 | 175 | 124 | 916 | 32 |
| Turn Type | Prot | | | Prot | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 8 | 3 | | 4 | 7 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | 7 | | | 6 | | | 2 |
| Actuated Green, G (s) | 25.9 | 26.0 | | 20.3 | 20.4 | 20.4 | 20.0 | 75.2 | 75.2 | 14.5 | 69.7 | 69.7 |
| Effective Green, g (s) | 28.0 | 28.8 | | 22.5 | 23.2 | 23.2 | 22.0 | 77.1 | 77.1 | 16.8 | 71.8 | 71.8 |
| Actuated g/C Ratio | 0.18 | 0.18 | | 0.14 | 0.14 | 0.14 | 0.14 | 0.48 | 0.48 | 0.11 | 0.45 | 0.45 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 310 | 319 | | 249 | 270 | 230 | 243 | 1705 | 763 | 186 | 1588 | 710 |
| v/s Ratio Prot | 0.10 | c0.20 | | c0.12 | 0.10 | | 0.07 | c0.35 | | c0.07 | 0.26 | |
| v/s Ratio Perm | | | | | | 0.04 | | | 0.11 | | | 0.02 |
| v/c Ratio | 0.60 | 1.09 | | 0.85 | 0.69 | 0.26 | 0.51 | 0.73 | 0.23 | 0.67 | 0.58 | 0.04 |
| Uniform Delay, d1 | 60.8 | 65.6 | | 67.1 | 65.0 | 60.8 | 64.0 | 33.2 | 24.1 | 68.9 | 32.8 | 24.8 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 0.73 | 0.54 | 0.47 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 3.1 | 75.2 | | 23.3 | 7.5 | 0.6 | 5.8 | 2.2 | 0.5 | 8.7 | 1.5 | 0.1 |
| Delay (s) | 63.9 | 140.8 | | 90.5 | 72.5 | 61.4 | 52.4 | 20.2 | 12.0 | 77.6 | 34.3 | 24.9 |
| Level of Service | E | F | | F | E | E | D | C | B | E | C | C |
| Approach Delay (s) | | 114.6 | | | 74.5 | | | 21.0 | | | 38.6 | |
| Approach LOS | | F | | | E | | | C | | | D | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 47.1 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.81 | | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) | 14.8 |
| Intersection Capacity Utilization | 77.7% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

20: Dakota Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↑↑ | ↗ | ↗ | ↑↑ | ↗ |
| Volume (veh/h) | 64 | 6 | 1 | 85 | 1 | 1 | 12 | 1446 | 44 | 87 | 922 | 22 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 75 | 7 | 1 | 100 | 1 | 1 | 14 | 1572 | 52 | 102 | 1002 | 26 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | 1289 | | | | |
| pX, platoon unblocked | 0.72 | 0.72 | | 0.72 | 0.72 | 0.72 | | | | | 0.72 | |
| vC, conflicting volume | 2023 | 2859 | 501 | 2310 | 2833 | 786 | 1028 | | | | 1624 | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1633 | 2802 | 501 | 2036 | 2766 | 0 | 1028 | | | | 1075 | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | | 4.2 | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | | 2.2 | |
| p0 queue free % | 0 | 28 | 100 | 0 | 89 | 100 | 98 | | | | 78 | |
| cM capacity (veh/h) | 36 | 10 | 515 | 8 | 10 | 775 | 671 | | | | 457 | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|------------------------|--------|-------|------|------|------|------|------|------|------|------|
| Volume Total | 84 | 102 | 14 | 786 | 786 | 52 | 102 | 501 | 501 | 26 |
| Volume Left | 75 | 100 | 14 | 0 | 0 | 0 | 102 | 0 | 0 | 0 |
| Volume Right | 1 | 1 | 0 | 0 | 0 | 52 | 0 | 0 | 0 | 26 |
| cSH | 29 | 8 | 671 | 1700 | 1700 | 1700 | 457 | 1700 | 1700 | 1700 |
| Volume to Capacity | 2.83 | 12.25 | 0.02 | 0.46 | 0.46 | 0.03 | 0.22 | 0.29 | 0.29 | 0.02 |
| Queue Length 95th (ft) | 248 | Err | 2 | 0 | 0 | 0 | 21 | 0 | 0 | 0 |
| Control Delay (s) | 1110.6 | Err | 10.5 | 0.0 | 0.0 | 0.0 | 15.2 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | F | B | | | | C | | | |
| Approach Delay (s) | 1110.6 | Err | 0.1 | | | | 1.4 | | | |
| Approach LOS | F | F | | | | | | | | |

Intersection Summary

| | | | |
|-----------------------------------|-------|-------|----------------------|
| Average Delay | | 378.4 | |
| Intersection Capacity Utilization | 59.7% | | ICU Level of Service |
| Analysis Period (min) | 15 | | B |

HCM Unsignalized Intersection Capacity Analysis

21: Miles Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↕ | ↗ | ↗ | ↕ | ↗ |
| Volume (veh/h) | 4 | 6 | 55 | 93 | 0 | 49 | 27 | 1432 | 52 | 35 | 883 | 2 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 5 | 7 | 65 | 109 | 0 | 58 | 32 | 1557 | 61 | 41 | 960 | 2 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1942 | 2723 | 480 | 2251 | 2665 | 778 | 962 | | | 1618 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1942 | 2723 | 480 | 2251 | 2665 | 778 | 962 | | | 1618 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 84 | 59 | 88 | 0 | 100 | 83 | 96 | | | 90 | | |
| cM capacity (veh/h) | 29 | 17 | 532 | 12 | 19 | 339 | 711 | | | 394 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| Volume Total | 76 | 167 | 32 | 778 | 778 | 61 | 41 | 480 | 480 | 2 |
| Volume Left | 5 | 109 | 32 | 0 | 0 | 0 | 41 | 0 | 0 | 0 |
| Volume Right | 65 | 58 | 0 | 0 | 0 | 61 | 0 | 0 | 0 | 2 |
| cSH | 111 | 18 | 711 | 1700 | 1700 | 1700 | 394 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.69 | 9.12 | 0.04 | 0.46 | 0.46 | 0.04 | 0.10 | 0.28 | 0.28 | 0.00 |
| Queue Length 95th (ft) | 91 | Err | 4 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| Control Delay (s) | 90.2 | Err | 10.3 | 0.0 | 0.0 | 0.0 | 15.2 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | F | B | | | | C | | | |
| Approach Delay (s) | 90.2 | Err | 0.2 | | | | 0.6 | | | |
| Approach LOS | F | F | | | | | | | | |

Intersection Summary

| | |
|-----------------------------------|-------|
| Average Delay | 579.5 |
| Intersection Capacity Utilization | 61.1% |
| ICU Level of Service | B |
| Analysis Period (min) | 15 |

HCM Unsignalized Intersection Capacity Analysis

22: Lacey Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↑↑ | ↗ | ↗ | ↑↑ | ↗ |
| Volume (veh/h) | 0 | 0 | 6 | 56 | 0 | 0 | 47 | 1396 | 42 | 50 | 858 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 7 | 66 | 0 | 0 | 55 | 1517 | 49 | 59 | 933 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1920 | 2728 | 466 | 2219 | 2678 | 759 | 933 | | | 1567 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1920 | 2728 | 466 | 2219 | 2678 | 759 | 933 | | | 1567 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 99 | 0 | 100 | 100 | 92 | | | 86 | | |
| cM capacity (veh/h) | 34 | 16 | 543 | 20 | 17 | 349 | 730 | | | 413 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| Volume Total | 7 | 66 | 55 | 759 | 759 | 49 | 59 | 466 | 466 | 0 |
| Volume Left | 0 | 66 | 55 | 0 | 0 | 0 | 59 | 0 | 0 | 0 |
| Volume Right | 7 | 0 | 0 | 0 | 0 | 49 | 0 | 0 | 0 | 0 |
| cSH | 543 | 20 | 730 | 1700 | 1700 | 1700 | 413 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.01 | 3.31 | 0.08 | 0.45 | 0.45 | 0.03 | 0.14 | 0.27 | 0.27 | 0.00 |
| Queue Length 95th (ft) | 1 | Err | 6 | 0 | 0 | 0 | 12 | 0 | 0 | 0 |
| Control Delay (s) | 11.7 | Err | 10.3 | 0.0 | 0.0 | 0.0 | 15.2 | 0.0 | 0.0 | 0.0 |
| Lane LOS | B | F | B | | | | C | | | |
| Approach Delay (s) | 11.7 | Err | 0.4 | | | | 0.9 | | | |
| Approach LOS | B | F | | | | | | | | |

| Intersection Summary | | |
|-----------------------------------|-------|----------------------|
| Average Delay | | 245.8 |
| Intersection Capacity Utilization | 58.0% | ICU Level of Service |
| Analysis Period (min) | | 15 |
| | | B |

HCM Unsignalized Intersection Capacity Analysis

23: Wyoming Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↕ | ↗ | ↗ | ↕ | ↗ |
| Volume (veh/h) | 52 | 5 | 97 | 63 | 0 | 16 | 117 | 1157 | 122 | 11 | 748 | 75 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 61 | 6 | 114 | 74 | 0 | 19 | 138 | 1258 | 144 | 13 | 813 | 88 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1762 | 2515 | 407 | 2082 | 2460 | 629 | 901 | | | 1401 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1762 | 2515 | 407 | 2082 | 2460 | 629 | 901 | | | 1401 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 0 | 73 | 81 | 0 | 100 | 96 | 82 | | | 97 | | |
| cM capacity (veh/h) | 43 | 22 | 594 | 17 | 24 | 425 | 750 | | | 478 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|------------------------|-------|------|------|------|------|------|------|------|------|------|
| Volume Total | 181 | 93 | 138 | 629 | 629 | 144 | 13 | 407 | 407 | 88 |
| Volume Left | 61 | 74 | 138 | 0 | 0 | 0 | 13 | 0 | 0 | 0 |
| Volume Right | 114 | 19 | 0 | 0 | 0 | 144 | 0 | 0 | 0 | 88 |
| cSH | 96 | 21 | 750 | 1700 | 1700 | 1700 | 478 | 1700 | 1700 | 1700 |
| Volume to Capacity | 1.88 | 4.50 | 0.18 | 0.37 | 0.37 | 0.08 | 0.03 | 0.24 | 0.24 | 0.05 |
| Queue Length 95th (ft) | 377 | Err | 17 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Control Delay (s) | 506.0 | Err | 10.9 | 0.0 | 0.0 | 0.0 | 12.7 | 0.0 | 0.0 | 0.0 |
| Lane LOS | F | F | B | | | | B | | | |
| Approach Delay (s) | 506.0 | Err | 1.0 | | | | 0.2 | | | |
| Approach LOS | F | F | | | | | | | | |

| Intersection Summary | | |
|-----------------------------------|-------|----------------------|
| Average Delay | | 375.0 |
| Intersection Capacity Utilization | 54.7% | ICU Level of Service |
| Analysis Period (min) | | 15 |
| | | A |

HCM Unsignalized Intersection Capacity Analysis

24: Lancaster Rd & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | | | ↖ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (veh/h) | 0 | 48 | 83 | 75 | 5 | 0 | 68 | 1018 | 139 | 0 | 676 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 56 | 98 | 88 | 6 | 0 | 80 | 1107 | 164 | 0 | 735 | 7 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | 2 | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 2004 | 2165 | 735 | 2127 | 2008 | 1107 | 742 | | | 1270 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 2004 | 2165 | 735 | 2127 | 2008 | 1107 | 742 | | | 1270 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 0 | 77 | 0 | 89 | 100 | 91 | | | 100 | | |
| cM capacity (veh/h) | 38 | 43 | 420 | 0 | 54 | 256 | 865 | | | 544 | | |

| Direction, Lane # | EB 1 | EB 2 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|------------------------|-------|-------|------|------|------|------|------|------|------|
| Volume Total | 0 | 154 | 94 | 80 | 1107 | 164 | 0 | 735 | 7 |
| Volume Left | 0 | 0 | 88 | 80 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 0 | 98 | 0 | 0 | 0 | 164 | 0 | 0 | 7 |
| cSH | 1700 | 99 | 0 | 865 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.00 | 1.55 | Err | 0.09 | 0.65 | 0.10 | 0.00 | 0.43 | 0.00 |
| Queue Length 95th (ft) | 0 | 294 | Err | 8 | 0 | 0 | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 367.8 | Err | 9.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | F | F | A | | | | | |
| Approach Delay (s) | 367.8 | | Err | 0.6 | | | 0.0 | | |
| Approach LOS | F | | F | | | | | | |

| Intersection Summary | | |
|-----------------------------------|-------|----------------------|
| Average Delay | | Err |
| Intersection Capacity Utilization | 78.5% | ICU Level of Service |
| Analysis Period (min) | 15 | D |

HCM Unsignalized Intersection Capacity Analysis

25: Boekel Rd & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↖ | ↗ | ↖ | ↖ | ↗ |
| Volume (veh/h) | 0 | 12 | 95 | 0 | 39 | 0 | 159 | 859 | 0 | 0 | 587 | 1 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 14 | 112 | 0 | 46 | 0 | 187 | 934 | 0 | 0 | 638 | 1 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1969 | 1946 | 638 | 2065 | 1947 | 934 | 639 | | | 934 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1969 | 1946 | 638 | 2065 | 1947 | 934 | 639 | | | 934 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 73 | 77 | 100 | 11 | 100 | 80 | | | 100 | | |
| cM capacity (veh/h) | 10 | 52 | 477 | 21 | 52 | 322 | 945 | | | 729 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|------------------------|------|-------|------|------|------|------|------|------|
| Volume Total | 126 | 46 | 187 | 934 | 0 | 0 | 638 | 1 |
| Volume Left | 0 | 0 | 187 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 112 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| cSH | 249 | 52 | 945 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.51 | 0.89 | 0.20 | 0.55 | 0.00 | 0.00 | 0.38 | 0.00 |
| Queue Length 95th (ft) | 66 | 95 | 18 | 0 | 0 | 0 | 0 | 0 |
| Control Delay (s) | 33.5 | 217.0 | 9.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | D | F | A | | | | | |
| Approach Delay (s) | 33.5 | 217.0 | 1.6 | | | 0.0 | | |
| Approach LOS | D | F | | | | | | |

| Intersection Summary | | |
|-----------------------------------|-------|------------------------|
| Average Delay | | 8.3 |
| Intersection Capacity Utilization | 65.0% | ICU Level of Service C |
| Analysis Period (min) | | 15 |

HCM Signalized Intersection Capacity Analysis

26: SH 53 & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|------|------|-------|-------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↗ | | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ |
| Volume (vph) | 144 | 715 | 0 | 29 | 508 | 40 | 0 | 22 | 89 | 51 | 16 | 80 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.3 | 3.3 | | 4.1 | 4.1 | | | 5.3 | 4.0 | 4.8 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Flt | 1.00 | 1.00 | | 1.00 | 0.99 | | | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | | 1770 | 1842 | | | 1863 | 1583 | 1752 | 1845 | 1568 |
| Flt Permitted | 0.19 | 1.00 | | 0.11 | 1.00 | | | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 354 | 1863 | | 205 | 1842 | | | 1863 | 1583 | 1752 | 1845 | 1568 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 169 | 841 | 0 | 34 | 598 | 47 | 0 | 24 | 105 | 60 | 17 | 94 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 169 | 841 | 0 | 34 | 642 | 0 | 0 | 24 | 105 | 60 | 17 | 94 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 3% | 3% | 3% |
| Turn Type | Perm | | Prot | Perm | | | Prot | | Free | Prot | | Free |
| Protected Phases | | 8 | 8 | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | | | | Free | | | Free |
| Actuated Green, G (s) | 34.6 | 34.6 | | 34.5 | 34.5 | | | 21.5 | 80.0 | 5.1 | 32.3 | 80.0 |
| Effective Green, g (s) | 37.1 | 37.1 | | 36.3 | 36.3 | | | 23.4 | 80.0 | 6.1 | 35.6 | 80.0 |
| Actuated g/C Ratio | 0.46 | 0.46 | | 0.45 | 0.45 | | | 0.29 | 1.00 | 0.08 | 0.44 | 1.00 |
| Clearance Time (s) | 5.8 | 5.8 | | 5.9 | 5.9 | | | 7.2 | | 5.8 | 7.3 | |
| Vehicle Extension (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | | 5.0 | | 2.0 | 5.0 | |
| Lane Grp Cap (vph) | 164 | 864 | | 93 | 836 | | | 545 | 1583 | 134 | 821 | 1568 |
| v/s Ratio Prot | | 0.45 | | | 0.35 | | | 0.01 | | c0.03 | 0.01 | |
| v/s Ratio Perm | c0.48 | | | 0.17 | | | | | c0.07 | | | 0.06 |
| v/c Ratio | 1.03 | 0.97 | | 0.37 | 0.77 | | | 0.04 | 0.07 | 0.45 | 0.02 | 0.06 |
| Uniform Delay, d1 | 21.4 | 21.0 | | 14.3 | 18.3 | | | 20.3 | 0.0 | 35.3 | 12.4 | 0.0 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 78.5 | 24.2 | | 3.3 | 4.5 | | | 0.2 | 0.1 | 0.9 | 0.0 | 0.1 |
| Delay (s) | 100.0 | 45.1 | | 17.6 | 22.9 | | | 20.4 | 0.1 | 36.2 | 12.5 | 0.1 |
| Level of Service | F | D | | B | C | | | C | A | D | B | A |
| Approach Delay (s) | | 54.3 | | | 22.6 | | | 3.9 | | | 14.0 | |
| Approach LOS | | D | | | C | | | A | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 36.8 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.60 | | |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) | 8.1 |
| Intersection Capacity Utilization | 61.4% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

Description: CHECKED, MIN DID NOT REVISE

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

41: Appleyway Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|-------|------|------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 126 | 513 | 103 | 108 | 385 | 159 | 126 | 473 | 151 | 185 | 449 | 138 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Fr _t | 1.00 | 0.97 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.96 | |
| Fl _t Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 3451 | | 1770 | 3384 | | 1770 | 3410 | | 1770 | 3415 | |
| Fl _t Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 3451 | | 1770 | 3384 | | 1770 | 3410 | | 1770 | 3415 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 148 | 604 | 121 | 127 | 453 | 187 | 148 | 556 | 178 | 218 | 528 | 162 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 48 | 0 | 0 | 40 | 0 | 0 | 34 | 0 |
| Lane Group Flow (vph) | 148 | 707 | 0 | 127 | 592 | 0 | 148 | 694 | 0 | 218 | 656 | 0 |
| Turn Type | Prot | | | Prot | | | Prot | | | Prot | | |
| Protected Phases | 1 | 6 | | 5 | 2 | | 7 | 4 | | 3 | 8 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | 7.9 | 18.1 | | 7.7 | 17.9 | | 10.0 | 18.9 | | 11.7 | 20.6 | |
| Effective Green, g (s) | 7.9 | 18.1 | | 7.7 | 17.9 | | 10.0 | 18.9 | | 11.7 | 20.6 | |
| Actuated g/C Ratio | 0.11 | 0.25 | | 0.11 | 0.24 | | 0.14 | 0.26 | | 0.16 | 0.28 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | |
| Lane Grp Cap (vph) | 191 | 853 | | 186 | 828 | | 242 | 880 | | 283 | 961 | |
| v/s Ratio Prot | c0.08 | c0.20 | | 0.07 | 0.17 | | 0.08 | c0.20 | | c0.12 | 0.19 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.77 | 0.83 | | 0.68 | 0.71 | | 0.61 | 0.79 | | 0.77 | 0.68 | |
| Uniform Delay, d ₁ | 31.8 | 26.1 | | 31.6 | 25.3 | | 29.8 | 25.3 | | 29.5 | 23.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d ₂ | 16.2 | 6.4 | | 8.0 | 2.5 | | 3.2 | 4.4 | | 11.2 | 1.6 | |
| Delay (s) | 48.0 | 32.5 | | 39.5 | 27.8 | | 33.0 | 29.7 | | 40.6 | 25.0 | |
| Level of Service | D | C | | D | C | | C | C | | D | C | |
| Approach Delay (s) | | 35.1 | | | 29.7 | | | 30.2 | | | 28.8 | |
| Approach LOS | | D | | | C | | | C | | | C | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 31.0 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.74 | | |
| Actuated Cycle Length (s) | 73.2 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 65.6% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

43: Neider Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|-------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 74 | 310 | 73 | 90 | 260 | 95 | 124 | 573 | 126 | 124 | 560 | 60 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.97 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 3397 | | 1770 | 3444 | | 1770 | 3488 | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 3397 | | 1770 | 3444 | | 1770 | 3488 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 87 | 365 | 86 | 106 | 306 | 112 | 146 | 674 | 148 | 146 | 659 | 71 |
| RTOR Reduction (vph) | 0 | 0 | 63 | 0 | 37 | 0 | 0 | 26 | 0 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 87 | 365 | 23 | 106 | 381 | 0 | 146 | 796 | 0 | 146 | 718 | 0 |
| Turn Type | Prot | | Perm | Prot | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | | | | | | | |
| Actuated Green, G (s) | 5.4 | 18.6 | 18.6 | 7.1 | 20.3 | | 7.9 | 20.1 | | 7.1 | 19.3 | |
| Effective Green, g (s) | 5.4 | 18.6 | 18.6 | 7.1 | 20.3 | | 7.9 | 20.1 | | 7.1 | 19.3 | |
| Actuated g/C Ratio | 0.08 | 0.27 | 0.27 | 0.10 | 0.29 | | 0.11 | 0.29 | | 0.10 | 0.28 | |
| Clearance Time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | | 1.5 | 1.5 | | 1.5 | 1.5 | |
| Lane Grp Cap (vph) | 137 | 497 | 422 | 180 | 989 | | 201 | 993 | | 180 | 966 | |
| v/s Ratio Prot | 0.05 | c0.20 | | c0.06 | 0.11 | | c0.08 | c0.23 | | 0.08 | 0.21 | |
| v/s Ratio Perm | | | 0.01 | | | | | | | | | |
| v/c Ratio | 0.64 | 0.73 | 0.05 | 0.59 | 0.39 | | 0.73 | 0.80 | | 0.81 | 0.74 | |
| Uniform Delay, d1 | 31.2 | 23.3 | 19.0 | 29.9 | 19.7 | | 29.9 | 23.0 | | 30.6 | 22.9 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 6.9 | 4.8 | 0.0 | 3.2 | 0.1 | | 10.5 | 4.5 | | 22.4 | 2.7 | |
| Delay (s) | 38.1 | 28.1 | 19.0 | 33.1 | 19.8 | | 40.4 | 27.4 | | 53.0 | 25.7 | |
| Level of Service | D | C | B | C | B | | D | C | | D | C | |
| Approach Delay (s) | | 28.3 | | | 22.5 | | | 29.4 | | | 30.2 | |
| Approach LOS | | C | | | C | | | C | | | C | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 28.2 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.70 | | |
| Actuated Cycle Length (s) | 69.7 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 62.9% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

45: Kathleen Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|------|------|------|-------|------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 70 | 331 | 110 | 68 | 212 | 74 | 207 | 611 | 68 | 103 | 595 | 90 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1793 | | 1770 | 1790 | | 1770 | 3486 | | 1770 | 3469 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1793 | | 1770 | 1790 | | 1770 | 3486 | | 1770 | 3469 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 82 | 389 | 129 | 80 | 249 | 87 | 244 | 719 | 80 | 121 | 700 | 106 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 20 | 0 | 0 | 13 | 0 | 0 | 18 | 0 |
| Lane Group Flow (vph) | 82 | 499 | 0 | 80 | 316 | 0 | 244 | 786 | 0 | 121 | 788 | 0 |
| Turn Type | Prot | | | Prot | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | 5.4 | 16.3 | | 5.4 | 16.3 | | 7.0 | 18.7 | | 5.4 | 17.1 | |
| Effective Green, g (s) | 5.4 | 16.3 | | 5.4 | 16.3 | | 7.0 | 18.7 | | 5.4 | 17.1 | |
| Actuated g/C Ratio | 0.09 | 0.26 | | 0.09 | 0.26 | | 0.11 | 0.30 | | 0.09 | 0.27 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 153 | 467 | | 153 | 466 | | 198 | 1041 | | 153 | 948 | |
| v/s Ratio Prot | c0.05 | c0.28 | | 0.05 | 0.18 | | c0.14 | 0.23 | | 0.07 | c0.23 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.54 | 1.07 | | 0.52 | 0.68 | | 1.23 | 0.76 | | 0.79 | 0.83 | |
| Uniform Delay, d1 | 27.4 | 23.2 | | 27.4 | 20.8 | | 27.8 | 19.9 | | 28.0 | 21.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 3.6 | 61.0 | | 3.2 | 3.9 | | 140.4 | 5.1 | | 23.7 | 8.4 | |
| Delay (s) | 31.0 | 84.1 | | 30.6 | 24.7 | | 168.2 | 25.0 | | 51.7 | 29.8 | |
| Level of Service | C | F | | C | C | | F | C | | D | C | |
| Approach Delay (s) | | 76.9 | | | 25.8 | | | 58.5 | | | 32.7 | |
| Approach LOS | | E | | | C | | | E | | | C | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 49.6 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.94 | | |
| Actuated Cycle Length (s) | 62.6 | Sum of lost time (s) | 16.8 |
| Intersection Capacity Utilization | 74.7% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

46: Dalton Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|-------|------|------|------|-------|--------|-------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↑ | ↗ | ↖ | ↗ | |
| Volume (vph) | 38 | 161 | 46 | 53 | 113 | 79 | 69 | 623 | 124 | 78 | 613 | 46 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1801 | | 1770 | 1748 | | 1770 | 1863 | 1583 | 1770 | 3502 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1801 | | 1770 | 1748 | | 1770 | 1863 | 1583 | 1770 | 3502 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 45 | 189 | 54 | 62 | 133 | 93 | 81 | 733 | 146 | 92 | 721 | 54 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 37 | 0 | 0 | 0 | 83 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 45 | 228 | 0 | 62 | 189 | 0 | 81 | 733 | 63 | 92 | 769 | 0 |
| Turn Type | Prot | | | Prot | | | Prot | | custom | | Prot | |
| Protected Phases | 3 | 8 | | 7 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | | | | 2 | | | |
| Actuated Green, G (s) | 3.8 | 11.9 | | 3.6 | 11.7 | | 3.6 | 25.5 | 27.1 | 5.2 | 27.1 | |
| Effective Green, g (s) | 3.8 | 11.9 | | 3.6 | 11.7 | | 3.6 | 25.5 | 27.1 | 5.2 | 27.1 | |
| Actuated g/C Ratio | 0.06 | 0.19 | | 0.06 | 0.19 | | 0.06 | 0.40 | 0.43 | 0.08 | 0.43 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.5 | 1.5 | | 1.5 | 1.5 | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | |
| Lane Grp Cap (vph) | 107 | 340 | | 101 | 325 | | 101 | 754 | 681 | 146 | 1506 | |
| v/s Ratio Prot | 0.03 | c0.13 | | c0.04 | 0.11 | | 0.05 | c0.39 | | c0.05 | 0.22 | |
| v/s Ratio Perm | | | | | | | | | 0.04 | | | |
| v/c Ratio | 0.42 | 0.67 | | 0.61 | 0.58 | | 0.80 | 0.97 | 0.09 | 0.63 | 0.51 | |
| Uniform Delay, d1 | 28.5 | 23.7 | | 29.0 | 23.4 | | 29.3 | 18.4 | 10.7 | 28.0 | 13.1 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.0 | 3.8 | | 7.5 | 1.7 | | 33.6 | 25.8 | 0.0 | 6.4 | 0.1 | |
| Delay (s) | 29.5 | 27.6 | | 36.6 | 25.1 | | 62.9 | 44.2 | 10.7 | 34.3 | 13.2 | |
| Level of Service | C | C | | D | C | | E | D | B | C | B | |
| Approach Delay (s) | | 27.9 | | | 27.6 | | | 40.7 | | | 15.5 | |
| Approach LOS | | C | | | C | | | D | | | B | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 28.5 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.76 | | |
| Actuated Cycle Length (s) | 63.0 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 69.7% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

47: Hanley Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|-------|------|-------|------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 81 | 135 | 134 | 82 | 145 | 59 | 145 | 601 | 36 | 41 | 508 | 78 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1782 | | 1770 | 1847 | | 1770 | 1825 | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 1782 | | 1770 | 1847 | | 1770 | 1825 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 95 | 159 | 158 | 96 | 171 | 69 | 171 | 707 | 42 | 48 | 598 | 92 |
| RTOR Reduction (vph) | 0 | 0 | 129 | 0 | 25 | 0 | 0 | 3 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 95 | 159 | 29 | 96 | 215 | 0 | 171 | 746 | 0 | 48 | 682 | 0 |
| Turn Type | Prot | | Perm | Prot | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | | | | | | | |
| Actuated Green, G (s) | 5.3 | 10.8 | 10.8 | 5.3 | 10.8 | | 7.1 | 23.6 | | 2.5 | 19.0 | |
| Effective Green, g (s) | 5.3 | 10.8 | 10.8 | 5.3 | 10.8 | | 7.1 | 23.6 | | 2.5 | 19.0 | |
| Actuated g/C Ratio | 0.09 | 0.18 | 0.18 | 0.09 | 0.18 | | 0.12 | 0.40 | | 0.04 | 0.32 | |
| Clearance Time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | | 1.5 | 1.5 | | 1.5 | 1.5 | |
| Lane Grp Cap (vph) | 159 | 341 | 290 | 159 | 326 | | 213 | 739 | | 75 | 588 | |
| v/s Ratio Prot | 0.05 | 0.09 | | c0.05 | c0.12 | | c0.10 | 0.40 | | 0.03 | c0.37 | |
| v/s Ratio Perm | | | 0.02 | | | | | | | | | |
| v/c Ratio | 0.60 | 0.47 | 0.10 | 0.60 | 0.66 | | 0.80 | 1.01 | | 0.64 | 1.16 | |
| Uniform Delay, d1 | 25.8 | 21.5 | 20.1 | 25.8 | 22.4 | | 25.3 | 17.7 | | 27.8 | 20.0 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 4.0 | 0.4 | 0.1 | 4.4 | 3.6 | | 18.3 | 35.5 | | 13.1 | 89.7 | |
| Delay (s) | 29.8 | 21.9 | 20.1 | 30.2 | 26.0 | | 43.5 | 53.2 | | 40.9 | 109.7 | |
| Level of Service | C | C | C | C | C | | D | D | | D | F | |
| Approach Delay (s) | | 23.0 | | | 27.2 | | | 51.4 | | | 105.2 | |
| Approach LOS | | C | | | C | | | D | | | F | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 59.7 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 0.90 | | |
| Actuated Cycle Length (s) | 59.0 | Sum of lost time (s) | 16.8 |
| Intersection Capacity Utilization | 70.7% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

48: Canfield Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 66 | 62 | 118 | 11 | 49 | 8 | 111 | 563 | 61 | 62 | 456 | 90 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.90 | | 1.00 | 0.98 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1680 | | 1770 | 1825 | | 1770 | 1835 | | 1770 | 1817 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1680 | | 1770 | 1825 | | 1770 | 1835 | | 1770 | 1817 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 78 | 73 | 139 | 13 | 58 | 9 | 131 | 662 | 72 | 73 | 536 | 106 |
| RTOR Reduction (vph) | 0 | 108 | 0 | 0 | 7 | 0 | 0 | 5 | 0 | 0 | 10 | 0 |
| Lane Group Flow (vph) | 78 | 104 | 0 | 13 | 60 | 0 | 131 | 729 | 0 | 73 | 632 | 0 |
| Turn Type | Prot | | | Prot | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | 3.9 | 12.7 | | 1.2 | 10.0 | | 5.6 | 22.3 | | 3.9 | 20.6 | |
| Effective Green, g (s) | 3.9 | 12.7 | | 1.2 | 10.0 | | 5.6 | 22.3 | | 3.9 | 20.6 | |
| Actuated g/C Ratio | 0.07 | 0.22 | | 0.02 | 0.18 | | 0.10 | 0.39 | | 0.07 | 0.36 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 121 | 375 | | 37 | 321 | | 174 | 719 | | 121 | 658 | |
| v/s Ratio Prot | c0.04 | c0.06 | | 0.01 | 0.03 | | c0.07 | c0.40 | | 0.04 | 0.35 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.64 | 0.28 | | 0.35 | 0.19 | | 0.75 | 1.01 | | 0.60 | 0.96 | |
| Uniform Delay, d1 | 25.8 | 18.3 | | 27.5 | 20.0 | | 25.0 | 17.3 | | 25.7 | 17.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 11.2 | 0.4 | | 5.7 | 0.3 | | 16.7 | 37.1 | | 8.2 | 26.7 | |
| Delay (s) | 37.0 | 18.7 | | 33.2 | 20.3 | | 41.7 | 54.4 | | 34.0 | 44.5 | |
| Level of Service | D | B | | C | C | | D | D | | C | D | |
| Approach Delay (s) | | 23.6 | | | 22.4 | | | 52.5 | | | 43.4 | |
| Approach LOS | | C | | | C | | | D | | | D | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 43.6 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.73 | | |
| Actuated Cycle Length (s) | 56.9 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 60.2% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

49: Aqua Ave & Government Way

1/20/2009



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 64 | 49 | 87 | 581 | 544 | 38 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 75 | 58 | 102 | 684 | 640 | 45 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | 1013 | |
| pX, platoon unblocked | 0.77 | 0.77 | 0.77 | | | |
| vC, conflicting volume | 1551 | 662 | 685 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 1566 | 406 | 435 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 9 | 88 | 88 | | | |
| cM capacity (veh/h) | 83 | 494 | 861 | | | |

| Direction, Lane # | EB 1 | EB 2 | NB 1 | SB 1 |
|------------------------|-------|------|------|------|
| Volume Total | 75 | 58 | 786 | 685 |
| Volume Left | 75 | 0 | 102 | 0 |
| Volume Right | 0 | 58 | 0 | 45 |
| cSH | 83 | 494 | 861 | 1700 |
| Volume to Capacity | 0.91 | 0.12 | 0.12 | 0.40 |
| Queue Length 95th (ft) | 122 | 10 | 10 | 0 |
| Control Delay (s) | 164.1 | 13.3 | 3.0 | 0.0 |
| Lane LOS | F | B | A | |
| Approach Delay (s) | 98.7 | | 3.0 | 0.0 |
| Approach LOS | F | | | |

| Intersection Summary | | | |
|-----------------------------------|--|-------|----------------------|
| Average Delay | | 9.6 | |
| Intersection Capacity Utilization | | 79.9% | ICU Level of Service |
| Analysis Period (min) | | 15 | D |

HCM Signalized Intersection Capacity Analysis

50: Prairie Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↕ | | ↖ | ↗ | | ↖ | ↑ | ↗ |
| Volume (vph) | 95 | 243 | 111 | 77 | 241 | 74 | 159 | 368 | 118 | 134 | 394 | 72 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 5.5 | 5.5 | | 5.5 | 5.5 | 5.5 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 3415 | | 1770 | 1795 | | 1770 | 1863 | 1583 |
| Flt Permitted | 0.40 | 1.00 | 1.00 | 0.44 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 743 | 1863 | 1583 | 826 | 3415 | | 1770 | 1795 | | 1770 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 112 | 286 | 131 | 91 | 284 | 87 | 187 | 433 | 139 | 158 | 464 | 85 |
| RTOR Reduction (vph) | 0 | 0 | 72 | 0 | 26 | 0 | 0 | 8 | 0 | 0 | 0 | 42 |
| Lane Group Flow (vph) | 112 | 286 | 59 | 91 | 345 | 0 | 187 | 564 | 0 | 158 | 464 | 43 |
| Turn Type | pm+pt | | Perm | pm+pt | | | Prot | | | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | | | | | | 6 |
| Actuated Green, G (s) | 31.7 | 22.0 | 22.0 | 26.5 | 19.4 | | 14.8 | 26.6 | | 13.6 | 25.4 | 25.4 |
| Effective Green, g (s) | 31.7 | 22.0 | 22.0 | 26.5 | 19.4 | | 14.8 | 26.6 | | 13.6 | 25.4 | 25.4 |
| Actuated g/C Ratio | 0.34 | 0.24 | 0.24 | 0.29 | 0.21 | | 0.16 | 0.29 | | 0.15 | 0.28 | 0.28 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 5.5 | 5.5 | | 5.5 | 5.5 | 5.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 363 | 444 | 377 | 310 | 718 | | 284 | 517 | | 261 | 513 | 436 |
| v/s Ratio Prot | c0.03 | c0.15 | | 0.02 | 0.10 | | c0.11 | c0.31 | | 0.09 | 0.25 | |
| v/s Ratio Perm | 0.07 | | 0.04 | 0.06 | | | | | | | | 0.03 |
| v/c Ratio | 0.31 | 0.64 | 0.16 | 0.29 | 0.48 | | 0.66 | 1.09 | | 0.61 | 0.90 | 0.10 |
| Uniform Delay, d1 | 21.4 | 31.6 | 27.8 | 24.9 | 32.0 | | 36.4 | 32.8 | | 36.8 | 32.3 | 24.9 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.5 | 3.2 | 0.2 | 0.5 | 0.5 | | 5.4 | 66.7 | | 3.9 | 19.3 | 0.1 |
| Delay (s) | 21.9 | 34.8 | 28.0 | 25.4 | 32.5 | | 41.8 | 99.5 | | 40.8 | 51.5 | 25.0 |
| Level of Service | C | C | C | C | C | | D | F | | D | D | C |
| Approach Delay (s) | | 30.4 | | | 31.1 | | | 85.3 | | | 46.0 | |
| Approach LOS | | C | | | C | | | F | | | D | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 52.0 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.75 | | |
| Actuated Cycle Length (s) | 92.3 | Sum of lost time (s) | 17.5 |
| Intersection Capacity Utilization | 70.2% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER HAYDEN EXISTING FILE | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

51: Honeysuckle Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|-------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 55 | 87 | 122 | 61 | 82 | 56 | 120 | 390 | 126 | 141 | 376 | 108 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1699 | | 1770 | 1749 | | 1770 | 1863 | 1583 | 1770 | 1800 | |
| Flt Permitted | 0.65 | 1.00 | | 0.45 | 1.00 | | 0.30 | 1.00 | 1.00 | 0.40 | 1.00 | |
| Satd. Flow (perm) | 1219 | 1699 | | 837 | 1749 | | 553 | 1863 | 1583 | 736 | 1800 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 65 | 102 | 144 | 72 | 96 | 66 | 141 | 459 | 148 | 166 | 442 | 127 |
| RTOR Reduction (vph) | 0 | 97 | 0 | 0 | 48 | 0 | 0 | 0 | 78 | 0 | 13 | 0 |
| Lane Group Flow (vph) | 65 | 149 | 0 | 72 | 114 | 0 | 141 | 459 | 70 | 166 | 556 | 0 |
| Turn Type | Perm | | Perm | | pm+pt | | Perm | | pm+pt | | | |
| Protected Phases | 8 | | 4 | | 1 | | 6 | | 5 | | 2 | |
| Permitted Phases | 8 | | 4 | | 6 | | 6 | | 2 | | | |
| Actuated Green, G (s) | 8.9 | 8.9 | 8.9 | 8.9 | 29.3 | 24.0 | 24.0 | 24.0 | 29.3 | 24.0 | | |
| Effective Green, g (s) | 8.9 | 8.9 | 8.9 | 8.9 | 29.3 | 24.0 | 24.0 | 24.0 | 29.3 | 24.0 | | |
| Actuated g/C Ratio | 0.18 | 0.18 | 0.18 | 0.18 | 0.58 | 0.47 | 0.47 | 0.47 | 0.58 | 0.47 | | |
| Clearance Time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | |
| Vehicle Extension (s) | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | | |
| Lane Grp Cap (vph) | 214 | 298 | 147 | 306 | 446 | 880 | 748 | 532 | 850 | | | |
| v/s Ratio Prot | c0.09 | | 0.07 | | c0.03 | | 0.25 | | 0.03 | | c0.31 | |
| v/s Ratio Perm | 0.05 | | 0.09 | | 0.15 | | 0.04 | | 0.15 | | | |
| v/c Ratio | 0.30 | 0.50 | 0.49 | 0.37 | 0.32 | 0.52 | 0.09 | 0.31 | 0.65 | | | |
| Uniform Delay, d1 | 18.3 | 18.9 | 18.9 | 18.5 | 5.7 | 9.4 | 7.4 | 5.3 | 10.2 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.3 | 0.5 | 0.9 | 0.3 | 0.1 | 2.2 | 0.2 | 0.1 | 3.9 | | | |
| Delay (s) | 18.5 | 19.4 | 19.8 | 18.8 | 5.9 | 11.6 | 7.6 | 5.4 | 14.1 | | | |
| Level of Service | B | B | B | B | A | B | A | A | B | | | |
| Approach Delay (s) | 19.2 | | 19.1 | | 9.7 | | 12.2 | | | | | |
| Approach LOS | B | | B | | A | | B | | | | | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 13.2 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.57 | | |
| Actuated Cycle Length (s) | 50.8 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 64.9% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER FIELD VERIFICATIN | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

52: Orchard Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | ↗ | ↘ | | ↗ | ↘ | |
| Volume (veh/h) | 36 | 23 | 37 | 61 | 4 | 0 | 27 | 397 | 43 | 20 | 468 | 67 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 42 | 27 | 44 | 72 | 5 | 0 | 32 | 467 | 51 | 24 | 551 | 79 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1170 | 1218 | 590 | 1211 | 1232 | 492 | 629 | | | 518 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1170 | 1218 | 590 | 1211 | 1232 | 492 | 629 | | | 518 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 73 | 84 | 91 | 41 | 97 | 100 | 97 | | | 98 | | |
| cM capacity (veh/h) | 159 | 171 | 508 | 123 | 167 | 577 | 953 | | | 1048 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 |
|------------------------|------|------|------|------|------|------|
| Volume Total | 113 | 76 | 32 | 518 | 24 | 629 |
| Volume Left | 42 | 72 | 32 | 0 | 24 | 0 |
| Volume Right | 44 | 0 | 0 | 51 | 0 | 79 |
| cSH | 221 | 125 | 953 | 1700 | 1048 | 1700 |
| Volume to Capacity | 0.51 | 0.61 | 0.03 | 0.30 | 0.02 | 0.37 |
| Queue Length 95th (ft) | 66 | 78 | 3 | 0 | 2 | 0 |
| Control Delay (s) | 37.1 | 71.5 | 8.9 | 0.0 | 8.5 | 0.0 |
| Lane LOS | E | F | A | | A | |
| Approach Delay (s) | 37.1 | 71.5 | 0.5 | | 0.3 | |
| Approach LOS | E | F | | | | |

Intersection Summary

| | |
|-----------------------------------|-------|
| Average Delay | 7.3 |
| Intersection Capacity Utilization | 43.1% |
| ICU Level of Service | A |
| Analysis Period (min) | 15 |

HCM Signalized Intersection Capacity Analysis

53: Hayden Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 191 | 171 | 196 | 76 | 161 | 236 | 162 | 240 | 105 | 272 | 240 | 176 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.91 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1696 | | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 |
| Flt Permitted | 0.29 | 1.00 | 1.00 | 0.60 | 1.00 | | 0.48 | 1.00 | 1.00 | 0.48 | 1.00 | 1.00 |
| Satd. Flow (perm) | 537 | 1863 | 1583 | 1109 | 1696 | | 897 | 1863 | 1583 | 897 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 225 | 201 | 231 | 89 | 189 | 278 | 191 | 282 | 124 | 320 | 282 | 207 |
| RTOR Reduction (vph) | 0 | 0 | 142 | 0 | 73 | 0 | 0 | 0 | 63 | 0 | 0 | 105 |
| Lane Group Flow (vph) | 225 | 201 | 89 | 89 | 394 | 0 | 191 | 282 | 61 | 320 | 282 | 102 |
| Turn Type | Perm | | Perm | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | 8 | 4 | | | 6 | | 6 | 2 | | 2 |
| Actuated Green, G (s) | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | | 34.0 | 27.0 | 27.0 | 34.0 | 27.0 | 27.0 |
| Effective Green, g (s) | 29.0 | 29.0 | 29.0 | 29.0 | 29.0 | | 34.0 | 27.0 | 27.0 | 34.0 | 27.0 | 27.0 |
| Actuated g/C Ratio | 0.38 | 0.38 | 0.38 | 0.38 | 0.38 | | 0.45 | 0.36 | 0.36 | 0.45 | 0.36 | 0.36 |
| Clearance Time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| Vehicle Extension (s) | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| Lane Grp Cap (vph) | 206 | 715 | 607 | 425 | 651 | | 484 | 665 | 565 | 484 | 665 | 565 |
| v/s Ratio Prot | | 0.11 | | | 0.23 | | 0.04 | 0.15 | | c0.06 | 0.15 | |
| v/s Ratio Perm | c0.42 | | 0.06 | 0.08 | | | 0.14 | | 0.04 | c0.24 | | 0.06 |
| v/c Ratio | 1.09 | 0.28 | 0.15 | 0.21 | 0.60 | | 0.39 | 0.42 | 0.11 | 0.66 | 0.42 | 0.18 |
| Uniform Delay, d1 | 23.3 | 16.1 | 15.2 | 15.6 | 18.7 | | 13.0 | 18.4 | 16.2 | 15.2 | 18.4 | 16.7 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 89.5 | 0.1 | 0.0 | 0.1 | 1.1 | | 0.2 | 2.0 | 0.4 | 2.6 | 2.0 | 0.7 |
| Delay (s) | 112.8 | 16.2 | 15.3 | 15.7 | 19.8 | | 13.2 | 20.4 | 16.6 | 17.8 | 20.4 | 17.4 |
| Level of Service | F | B | B | B | B | | B | C | B | B | C | B |
| Approach Delay (s) | | 48.9 | | | 19.1 | | | 17.3 | | | 18.6 | |
| Approach LOS | | D | | | B | | | B | | | B | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 26.0 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.86 | | |
| Actuated Cycle Length (s) | 75.6 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 75.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER FIELD VERIFICATION | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

54: Dakota Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | ↗ | ↘ | | ↗ | ↘ | |
| Volume (veh/h) | 42 | 35 | 46 | 15 | 6 | 16 | 56 | 353 | 65 | 2 | 347 | 24 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 49 | 41 | 54 | 18 | 7 | 19 | 66 | 415 | 76 | 2 | 408 | 28 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | TWLTL | | | TWLTL | | |
| Median storage veh | | | | | | | 2 | | | 2 | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 996 | 1051 | 422 | 1073 | 1026 | 454 | 436 | | | 492 | | |
| vC1, stage 1 conf vol | 427 | 427 | | 585 | 585 | | | | | | | |
| vC2, stage 2 conf vol | 569 | 624 | | 488 | 441 | | | | | | | |
| vCu, unblocked vol | 996 | 1051 | 422 | 1073 | 1026 | 454 | 436 | | | 492 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | 6.1 | 5.5 | | 6.1 | 5.5 | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 87 | 89 | 91 | 95 | 98 | 97 | 94 | | | 100 | | |
| cM capacity (veh/h) | 395 | 392 | 631 | 335 | 389 | 606 | 1123 | | | 1072 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 |
|------------------------|------|------|------|------|------|------|
| Volume Total | 145 | 44 | 66 | 492 | 2 | 436 |
| Volume Left | 49 | 18 | 66 | 0 | 2 | 0 |
| Volume Right | 54 | 19 | 0 | 76 | 0 | 28 |
| cSH | 458 | 427 | 1123 | 1700 | 1072 | 1700 |
| Volume to Capacity | 0.32 | 0.10 | 0.06 | 0.29 | 0.00 | 0.26 |
| Queue Length 95th (ft) | 33 | 8 | 5 | 0 | 0 | 0 |
| Control Delay (s) | 16.4 | 14.4 | 8.4 | 0.0 | 8.4 | 0.0 |
| Lane LOS | C | B | A | | A | |
| Approach Delay (s) | 16.4 | 14.4 | 1.0 | | 0.0 | |
| Approach LOS | C | B | | | | |

Intersection Summary

| | |
|-----------------------------------|-------|
| Average Delay | 3.0 |
| Intersection Capacity Utilization | 44.4% |
| ICU Level of Service | A |
| Analysis Period (min) | 15 |

HCM Unsignalized Intersection Capacity Analysis

55: Miles Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↘ | | ↗ | ↘ | |
| Volume (veh/h) | 32 | 44 | 19 | 39 | 46 | 55 | 14 | 284 | 49 | 119 | 251 | 40 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 38 | 52 | 22 | 46 | 54 | 65 | 16 | 334 | 58 | 140 | 295 | 47 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | TWLTL | | | | None | |
| Median storage veh | | | | | | | 2 | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1058 | 1024 | 319 | 1019 | 1018 | 363 | 342 | | | 392 | | |
| vC1, stage 1 conf vol | 599 | 599 | | 396 | 396 | | | | | | | |
| vC2, stage 2 conf vol | 459 | 425 | | 624 | 622 | | | | | | | |
| vCu, unblocked vol | 1058 | 1024 | 319 | 1019 | 1018 | 363 | 342 | | | 392 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | 6.1 | 5.5 | | 6.1 | 5.5 | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 87 | 85 | 97 | 85 | 85 | 91 | 99 | | | 88 | | |
| cM capacity (veh/h) | 287 | 350 | 722 | 315 | 367 | 682 | 1217 | | | 1167 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 |
|------------------------|------|------|------|------|------|------|
| Volume Total | 112 | 165 | 16 | 392 | 140 | 342 |
| Volume Left | 38 | 46 | 16 | 0 | 140 | 0 |
| Volume Right | 22 | 65 | 0 | 58 | 0 | 47 |
| cSH | 360 | 424 | 1217 | 1700 | 1167 | 1700 |
| Volume to Capacity | 0.31 | 0.39 | 0.01 | 0.23 | 0.12 | 0.20 |
| Queue Length 95th (ft) | 32 | 45 | 1 | 0 | 10 | 0 |
| Control Delay (s) | 19.4 | 18.8 | 8.0 | 0.0 | 8.5 | 0.0 |
| Lane LOS | C | C | A | | A | |
| Approach Delay (s) | 19.4 | 18.8 | 0.3 | | 2.5 | |
| Approach LOS | C | C | | | | |

Intersection Summary

| | |
|-----------------------------------|-------|
| Average Delay | 5.6 |
| Intersection Capacity Utilization | 44.3% |
| ICU Level of Service | A |
| Analysis Period (min) | 15 |

HCM Unsignalized Intersection Capacity Analysis

56: Lacey Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 17 | 41 | 34 | 36 | 36 | 43 | 0 | 264 | 36 | 2 | 243 | 20 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 20 | 48 | 40 | 42 | 42 | 51 | 0 | 311 | 42 | 2 | 286 | 24 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 706 | 655 | 298 | 698 | 646 | 332 | 309 | | | 353 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 706 | 655 | 298 | 698 | 646 | 332 | 309 | | | 353 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 93 | 87 | 95 | 86 | 89 | 93 | 100 | | | 100 | | |
| cM capacity (veh/h) | 298 | 385 | 742 | 303 | 390 | 710 | 1251 | | | 1206 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 108 | 135 | 353 | 312 | | | | | | | | |
| Volume Left | 20 | 42 | 0 | 2 | | | | | | | | |
| Volume Right | 40 | 51 | 42 | 24 | | | | | | | | |
| cSH | 439 | 423 | 1251 | 1206 | | | | | | | | |
| Volume to Capacity | 0.25 | 0.32 | 0.00 | 0.00 | | | | | | | | |
| Queue Length 95th (ft) | 24 | 34 | 0 | 0 | | | | | | | | |
| Control Delay (s) | 15.9 | 17.5 | 0.0 | 0.1 | | | | | | | | |
| Lane LOS | C | C | | A | | | | | | | | |
| Approach Delay (s) | 15.9 | 17.5 | 0.0 | 0.1 | | | | | | | | |
| Approach LOS | C | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 4.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 33.7% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

57: Wyoming Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 91 | 43 | 6 | 20 | 35 | 3 | 0 | 256 | 20 | 0 | 196 | 2 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 107 | 51 | 7 | 24 | 41 | 4 | 0 | 301 | 24 | 0 | 231 | 2 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 569 | 556 | 232 | 577 | 546 | 313 | 233 | | | 325 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 569 | 556 | 232 | 577 | 546 | 313 | 233 | | | 325 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 73 | 88 | 99 | 94 | 91 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 400 | 439 | 807 | 386 | 445 | 727 | 1335 | | | 1235 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 165 | 68 | 325 | 233 | | | | | | | | |
| Volume Left | 107 | 24 | 0 | 0 | | | | | | | | |
| Volume Right | 7 | 4 | 24 | 2 | | | | | | | | |
| cSH | 421 | 431 | 1335 | 1235 | | | | | | | | |
| Volume to Capacity | 0.39 | 0.16 | 0.00 | 0.00 | | | | | | | | |
| Queue Length 95th (ft) | 46 | 14 | 0 | 0 | | | | | | | | |
| Control Delay (s) | 18.9 | 14.9 | 0.0 | 0.0 | | | | | | | | |
| Lane LOS | C | B | | | | | | | | | | |
| Approach Delay (s) | 18.9 | 14.9 | 0.0 | 0.0 | | | | | | | | |
| Approach LOS | C | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 5.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 35.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

58: Lancaster Rd & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 93 | 94 | 0 | 85 | 77 | 1 | 3 | 56 | 75 | 0 | 57 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 109 | 111 | 0 | 100 | 91 | 1 | 4 | 66 | 88 | 0 | 67 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 231 | 228 | 67 | 239 | 184 | 110 | 67 | | | 154 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 231 | 228 | 67 | 239 | 184 | 110 | 67 | | | 154 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 83 | 83 | 100 | 84 | 87 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 651 | 670 | 996 | 623 | 708 | 943 | 1534 | | | 1426 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 220 | 192 | 158 | 67 | | | | | | | | |
| Volume Left | 109 | 100 | 4 | 0 | | | | | | | | |
| Volume Right | 0 | 1 | 88 | 0 | | | | | | | | |
| cSH | 661 | 662 | 1534 | 1426 | | | | | | | | |
| Volume to Capacity | 0.33 | 0.29 | 0.00 | 0.00 | | | | | | | | |
| Queue Length 95th (ft) | 36 | 30 | 0 | 0 | | | | | | | | |
| Control Delay (s) | 13.1 | 12.6 | 0.2 | 0.0 | | | | | | | | |
| Lane LOS | B | B | A | | | | | | | | | |
| Approach Delay (s) | 13.1 | 12.6 | 0.2 | 0.0 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 8.4 | | | | | | | | | |
| Intersection Capacity Utilization | | | 29.1% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

59: Boekel Rd & Government Way

1/20/2009



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 0 | 0 | 0 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 0 | 0 | 0 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 100 | 100 | | | |
| cM capacity (veh/h) | 1023 | 1085 | 1623 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 0 | 0 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1700 | | | |
| Volume to Capacity | 0.00 | 0.00 | 0.00 | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 0.0% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

77: Ironwood & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 238 | 144 | 119 | 58 | 233 | 425 | 180 | 980 | 35 | 187 | 717 | 53 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.5 | 5.9 | 5.9 | 5.6 | 6.0 | 6.0 | 6.5 | 6.5 | | 6.4 | 6.4 | 6.4 |
| Lane Util. Factor | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.86 | 0.86 | | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 1522 | 4777 | | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 1522 | 4777 | | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 280 | 169 | 140 | 68 | 274 | 500 | 212 | 1153 | 41 | 220 | 844 | 62 |
| RTOR Reduction (vph) | 0 | 0 | 113 | 0 | 0 | 434 | 0 | 3 | 0 | 0 | 0 | 42 |
| Lane Group Flow (vph) | 280 | 169 | 27 | 68 | 274 | 66 | 191 | 1212 | 0 | 220 | 844 | 20 |
| Turn Type | Prot | | Perm | Prot | | Perm | Split | | | Split | | Perm |
| Protected Phases | 3 | 8 | | 7 | 4 | | 1 | 1 | | 2 | 2 | |
| Permitted Phases | | | 8 | | | 4 | | | | | | 2 |
| Actuated Green, G (s) | 13.1 | 21.4 | 21.4 | 6.3 | 14.6 | 14.6 | 29.6 | 29.6 | | 28.3 | 28.3 | 28.3 |
| Effective Green, g (s) | 13.1 | 21.4 | 21.4 | 6.3 | 14.6 | 14.6 | 29.6 | 29.6 | | 28.3 | 28.3 | 28.3 |
| Actuated g/C Ratio | 0.12 | 0.19 | 0.19 | 0.06 | 0.13 | 0.13 | 0.27 | 0.27 | | 0.26 | 0.26 | 0.26 |
| Clearance Time (s) | 5.5 | 5.9 | 5.9 | 5.6 | 6.0 | 6.0 | 6.5 | 6.5 | | 6.4 | 6.4 | 6.4 |
| Vehicle Extension (s) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 409 | 362 | 308 | 101 | 470 | 210 | 410 | 1285 | | 455 | 910 | 407 |
| v/s Ratio Prot | c0.08 | 0.09 | | 0.04 | c0.08 | | 0.13 | c0.25 | | 0.12 | c0.24 | |
| v/s Ratio Perm | | | 0.02 | | | 0.04 | | | | | | 0.01 |
| v/c Ratio | 0.68 | 0.47 | 0.09 | 0.67 | 0.58 | 0.32 | 0.47 | 0.94 | | 0.48 | 0.93 | 0.05 |
| Uniform Delay, d1 | 46.5 | 39.2 | 36.3 | 50.8 | 44.8 | 43.2 | 33.6 | 39.4 | | 34.7 | 39.8 | 30.7 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.08 | 1.04 | 1.39 |
| Incremental Delay, d2 | 3.8 | 0.3 | 0.0 | 13.0 | 1.2 | 0.3 | 0.3 | 13.6 | | 3.4 | 15.8 | 0.2 |
| Delay (s) | 50.2 | 39.6 | 36.4 | 63.9 | 46.0 | 43.5 | 33.9 | 52.9 | | 40.8 | 57.4 | 43.0 |
| Level of Service | D | D | D | E | D | D | C | D | | D | E | D |
| Approach Delay (s) | | 43.9 | | | 46.0 | | | 50.4 | | | 53.4 | |
| Approach LOS | | D | | | D | | | D | | | D | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 49.3 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.84 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 24.4 |
| Intersection Capacity Utilization | 72.4% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, WALK TIME IS REDUCED TO 4..5 FROM 5 TO MEET THE MINIMUM | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

78: EB Ramp & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | ↖ | ↔ | ↗ | | | | | ↑↑↑ | | ↖↗ | ↑↑ | |
| Volume (vph) | 427 | 11 | 303 | 0 | 0 | 0 | 0 | 1471 | 172 | 185 | 654 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.8 | 6.8 | 6.8 | | | | | 5.8 | | 7.0 | 6.4 | |
| Lane Util. Factor | 0.95 | 0.91 | 0.95 | | | | | 0.91 | | 0.97 | 0.95 | |
| Frt | 1.00 | 0.96 | 0.85 | | | | | 0.98 | | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 0.97 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1681 | 1571 | 1504 | | | | | 5006 | | 3433 | 3539 | |
| Flt Permitted | 0.95 | 0.97 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1681 | 1571 | 1504 | | | | | 5006 | | 3433 | 3539 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 502 | 13 | 356 | 0 | 0 | 0 | 0 | 1731 | 202 | 218 | 769 | 0 |
| RTOR Reduction (vph) | 0 | 13 | 196 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 301 | 283 | 78 | 0 | 0 | 0 | 0 | 1922 | 0 | 218 | 769 | 0 |
| Turn Type | Split | | Perm | | | | | | | Prot | | |
| Protected Phases | 8 | 8 | | | | | | 6 | | 5 | 2 | |
| Permitted Phases | | | 8 | | | | | | | | | |
| Actuated Green, G (s) | 21.9 | 21.9 | 21.9 | | | | | 57.2 | | 11.3 | 74.9 | |
| Effective Green, g (s) | 21.9 | 21.9 | 21.9 | | | | | 57.2 | | 11.3 | 74.9 | |
| Actuated g/C Ratio | 0.20 | 0.20 | 0.20 | | | | | 0.52 | | 0.10 | 0.68 | |
| Clearance Time (s) | 6.8 | 6.8 | 6.8 | | | | | 5.8 | | 7.0 | 6.4 | |
| Vehicle Extension (s) | 2.0 | 2.0 | 2.0 | | | | | 2.0 | | 2.0 | 2.0 | |
| Lane Grp Cap (vph) | 335 | 313 | 299 | | | | | 2603 | | 353 | 2410 | |
| v/s Ratio Prot | 0.18 | c0.18 | | | | | | c0.38 | | c0.06 | 0.22 | |
| v/s Ratio Perm | | | 0.05 | | | | | | | | | |
| v/c Ratio | 0.90 | 0.90 | 0.26 | | | | | 0.74 | | 0.62 | 0.32 | |
| Uniform Delay, d1 | 43.0 | 43.0 | 37.2 | | | | | 20.6 | | 47.3 | 7.2 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | | | 1.25 | | 1.00 | 1.17 | |
| Incremental Delay, d2 | 24.7 | 27.3 | 0.2 | | | | | 1.0 | | 1.9 | 0.3 | |
| Delay (s) | 67.7 | 70.4 | 37.4 | | | | | 26.7 | | 49.4 | 8.7 | |
| Level of Service | E | E | D | | | | | C | | D | A | |
| Approach Delay (s) | | 59.1 | | | 0.0 | | | 26.7 | | | 17.7 | |
| Approach LOS | | E | | | A | | | C | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 31.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.76 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 19.6 |
| Intersection Capacity Utilization | 69.1% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

79: WB Ramp & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|------|-------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | ↖ | ↗ | | ↖↗ | ↕ | | | ↕↗ | |
| Volume (vph) | 0 | 0 | 0 | 128 | 0 | 237 | 522 | 1376 | 0 | 0 | 711 | 436 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | | | 5.7 | 5.7 | | 6.1 | 5.7 | | | 5.6 | |
| Lane Util. Factor | | | | 1.00 | 1.00 | | 0.97 | 0.95 | | | 0.91 | |
| Fr _t | | | | 1.00 | 0.85 | | 1.00 | 1.00 | | | 0.94 | |
| Fl _t Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1770 | 1583 | | 3433 | 3539 | | | 4795 | |
| Fl _t Permitted | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1770 | 1583 | | 3433 | 3539 | | | 4795 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 0 | 0 | 0 | 151 | 0 | 279 | 614 | 1619 | 0 | 0 | 836 | 513 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 52 | 0 | 0 | 0 | 0 | 0 | 93 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 151 | 227 | 0 | 614 | 1619 | 0 | 0 | 1256 | 0 |
| Turn Type | | | | Split | | | Prot | | | | | |
| Protected Phases | | | | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 15.9 | 15.9 | | 23.7 | 82.7 | | | 53.0 | |
| Effective Green, g (s) | | | | 15.9 | 15.9 | | 23.7 | 82.7 | | | 53.0 | |
| Actuated g/C Ratio | | | | 0.14 | 0.14 | | 0.22 | 0.75 | | | 0.48 | |
| Clearance Time (s) | | | | 5.7 | 5.7 | | 6.1 | 5.7 | | | 5.6 | |
| Vehicle Extension (s) | | | | 2.0 | 2.0 | | 2.0 | 2.0 | | | 2.0 | |
| Lane Grp Cap (vph) | | | | 256 | 229 | | 740 | 2661 | | | 2310 | |
| v/s Ratio Prot | | | | 0.09 | c0.14 | | c0.18 | c0.46 | | | 0.26 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.59 | 0.99 | | 0.83 | 0.61 | | | 0.54 | |
| Uniform Delay, d ₁ | | | | 44.0 | 47.0 | | 41.2 | 6.2 | | | 20.0 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.29 | 0.57 | | | 0.87 | |
| Incremental Delay, d ₂ | | | | 2.2 | 56.5 | | 4.7 | 0.6 | | | 0.8 | |
| Delay (s) | | | | 46.2 | 103.5 | | 57.9 | 4.2 | | | 18.3 | |
| Level of Service | | | | D | F | | E | A | | | B | |
| Approach Delay (s) | | 0.0 | | | 83.4 | | | 19.0 | | | 18.3 | |
| Approach LOS | | A | | | F | | | B | | | B | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 25.6 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.70 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 11.8 |
| Intersection Capacity Utilization | 69.1% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

80: Appleyway Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|-------|------|------|-------|-------|------|------|------|------|------|
| Lane Configurations | ↶ | ↷ | | ↶ | ↷ | ↷ | ↶ | ↷ | ↷ | ↷ | ↷ | ↷ |
| Volume (vph) | 0 | 74 | 74 | 282 | 70 | 140 | 104 | 1196 | 313 | 102 | 791 | 38 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.9 | | 6.7 | 6.7 | 6.7 | 5.3 | 5.9 | 5.9 | 6.5 | 5.8 | |
| Lane Util. Factor | | 0.95 | | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | |
| Frt | | 0.92 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3274 | | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 3515 | |
| Flt Permitted | | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 3274 | | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 3515 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 0 | 87 | 87 | 332 | 82 | 165 | 122 | 1407 | 368 | 120 | 931 | 45 |
| RTOR Reduction (vph) | 0 | 81 | 0 | 0 | 0 | 142 | 0 | 0 | 104 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 93 | 0 | 332 | 82 | 23 | 122 | 1407 | 264 | 120 | 973 | 0 |
| Turn Type | Split | | Split | | Perm | | Prot | | Perm | | Prot | |
| Protected Phases | 3 | 3 | 4 | | 4 | | 1 | 6 | 5 | | 2 | |
| Permitted Phases | | | | | 4 | | | | 6 | | | |
| Actuated Green, G (s) | 7.2 | | 15.4 | 15.4 | 15.4 | 12.4 | 53.2 | 53.2 | 8.2 | 50.3 | | |
| Effective Green, g (s) | 7.2 | | 15.4 | 15.4 | 15.4 | 12.4 | 53.2 | 53.2 | 8.2 | 50.3 | | |
| Actuated g/C Ratio | 0.07 | | 0.14 | 0.14 | 0.14 | 0.11 | 0.48 | 0.48 | 0.07 | 0.46 | | |
| Clearance Time (s) | 6.9 | | 6.7 | 6.7 | 6.7 | 5.3 | 5.9 | 5.9 | 6.5 | 5.8 | | |
| Vehicle Extension (s) | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | | |
| Lane Grp Cap (vph) | 214 | | 481 | 261 | 222 | 200 | 1712 | 766 | 256 | 1607 | | |
| v/s Ratio Prot | c0.03 | | c0.10 | 0.04 | | c0.07 | c0.40 | | 0.03 | 0.28 | | |
| v/s Ratio Perm | | | | | 0.01 | | | 0.17 | | | | |
| v/c Ratio | 0.43 | | 0.69 | 0.31 | 0.10 | 0.61 | 0.82 | 0.34 | 0.47 | 0.61 | | |
| Uniform Delay, d1 | 49.4 | | 45.0 | 42.5 | 41.3 | 46.5 | 24.3 | 17.6 | 48.8 | 22.4 | | |
| Progression Factor | 1.00 | | 1.00 | 1.00 | 1.00 | 1.24 | 0.72 | 0.56 | 1.00 | 1.00 | | |
| Incremental Delay, d2 | 0.5 | | 3.4 | 0.3 | 0.1 | 2.8 | 3.4 | 0.9 | 0.5 | 1.7 | | |
| Delay (s) | 50.0 | | 48.5 | 42.8 | 41.4 | 60.5 | 21.0 | 10.7 | 49.3 | 24.1 | | |
| Level of Service | D | | D | D | D | E | C | B | D | C | | |
| Approach Delay (s) | 50.0 | | 45.6 | | 21.5 | | 26.9 | | | | | |
| Approach LOS | D | | D | | C | | C | | | | | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 28.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.76 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 24.8 |
| Intersection Capacity Utilization | 71.4% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT IS NOT REVISED | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

81: Kathleen Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|-------|------|-------|-------|--------|------|------|--------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 77 | 358 | 183 | 231 | 440 | 142 | 269 | 799 | 268 | 128 | 517 | 89 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3360 | | 1770 | 3410 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3360 | | 1770 | 3410 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 91 | 421 | 215 | 272 | 518 | 167 | 316 | 940 | 315 | 151 | 608 | 105 |
| RTOR Reduction (vph) | 0 | 90 | 0 | 0 | 41 | 0 | 0 | 0 | 223 | 0 | 0 | 73 |
| Lane Group Flow (vph) | 91 | 546 | 0 | 272 | 644 | 0 | 316 | 940 | 92 | 151 | 608 | 32 |
| Turn Type | Prot | | | Prot | | | Prot | | custom | Prot | | custom |
| Protected Phases | 3 | 8 | | 7 | 4 | | 1 | 6 | | 5 | | 2 |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 5.5 | 17.1 | | 7.3 | 18.9 | | 7.9 | 21.2 | 20.4 | 7.1 | 20.4 | 21.2 |
| Effective Green, g (s) | 5.5 | 17.1 | | 7.3 | 18.9 | | 7.9 | 21.2 | 20.4 | 7.1 | 20.4 | 21.2 |
| Actuated g/C Ratio | 0.08 | 0.25 | | 0.11 | 0.27 | | 0.11 | 0.31 | 0.29 | 0.10 | 0.29 | 0.31 |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| Vehicle Extension (s) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lane Grp Cap (vph) | 140 | 827 | | 186 | 927 | | 201 | 1080 | 465 | 181 | 1039 | 483 |
| v/s Ratio Prot | 0.05 | 0.16 | | c0.15 | c0.19 | | c0.18 | c0.27 | | 0.09 | 0.17 | |
| v/s Ratio Perm | | | | | | | | | 0.06 | | | 0.02 |
| v/c Ratio | 0.65 | 0.66 | | 1.46 | 0.69 | | 1.57 | 0.87 | 0.20 | 0.83 | 0.59 | 0.07 |
| Uniform Delay, d1 | 31.1 | 23.6 | | 31.1 | 22.7 | | 30.8 | 22.8 | 18.4 | 30.6 | 20.9 | 17.1 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 8.0 | 1.5 | | 235.1 | 1.8 | | 280.1 | 7.6 | 0.1 | 25.8 | 0.5 | 0.0 |
| Delay (s) | 39.0 | 25.1 | | 266.2 | 24.5 | | 310.9 | 30.4 | 18.5 | 56.4 | 21.5 | 17.2 |
| Level of Service | D | C | | F | C | | F | C | B | E | C | B |
| Approach Delay (s) | | 26.9 | | | 93.2 | | | 84.5 | | | 27.1 | |
| Approach LOS | | C | | | F | | | F | | | C | |

Intersection Summary

| | | | |
|--|-------|----------------------|-----|
| HCM Average Control Delay | 64.3 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 0.89 | | |
| Actuated Cycle Length (s) | 69.5 | Sum of lost time (s) | 8.4 |
| Intersection Capacity Utilization | 71.7% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

82: Dalton Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|------|-------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 29 | 61 | 96 | 68 | 78 | 44 | 132 | 809 | 77 | 29 | 570 | 33 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Fr _t | 1.00 | 0.91 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Fl _t Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 3215 | | 1770 | 1863 | 1583 | 1770 | 3493 | | 1770 | 3510 | |
| Fl _t Permitted | 0.70 | 1.00 | | 0.64 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1299 | 3215 | | 1183 | 1863 | 1583 | 1770 | 3493 | | 1770 | 3510 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 34 | 72 | 113 | 80 | 92 | 52 | 155 | 952 | 91 | 34 | 671 | 39 |
| RTOR Reduction (vph) | 0 | 98 | 0 | 0 | 0 | 45 | 0 | 7 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 34 | 87 | 0 | 80 | 92 | 7 | 155 | 1036 | 0 | 34 | 705 | 0 |
| Turn Type | Perm | | | Perm | | | Perm | Prot | | Prot | | |
| Protected Phases | 4 | | | 8 | | | 5 | 2 | | 1 | | 6 |
| Permitted Phases | 4 | | | 8 | | | 8 | | | | | |
| Actuated Green, G (s) | 6.6 | 6.6 | | 6.6 | 6.6 | 6.6 | 7.0 | 29.7 | | 1.3 | 24.0 | |
| Effective Green, g (s) | 6.6 | 6.6 | | 6.6 | 6.6 | 6.6 | 7.0 | 29.7 | | 1.3 | 24.0 | |
| Actuated g/C Ratio | 0.13 | 0.13 | | 0.13 | 0.13 | 0.13 | 0.14 | 0.59 | | 0.03 | 0.48 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.5 | 1.5 | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | | 1.5 | 1.5 | |
| Lane Grp Cap (vph) | 171 | 423 | | 156 | 245 | 208 | 247 | 2067 | | 46 | 1678 | |
| v/s Ratio Prot | | 0.03 | | | 0.05 | | c0.09 | c0.30 | | 0.02 | 0.20 | |
| v/s Ratio Perm | 0.03 | | | c0.07 | | 0.00 | | | | | | |
| v/c Ratio | 0.20 | 0.21 | | 0.51 | 0.38 | 0.03 | 0.63 | 0.50 | | 0.74 | 0.42 | |
| Uniform Delay, d ₁ | 19.4 | 19.5 | | 20.3 | 19.9 | 19.0 | 20.4 | 6.0 | | 24.3 | 8.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d ₂ | 0.2 | 0.1 | | 1.2 | 0.4 | 0.0 | 3.6 | 0.9 | | 41.1 | 0.8 | |
| Delay (s) | 19.7 | 19.5 | | 21.5 | 20.3 | 19.0 | 23.9 | 6.8 | | 65.3 | 9.3 | |
| Level of Service | B | B | | C | C | B | C | A | | E | A | |
| Approach Delay (s) | | 19.6 | | | 20.4 | | | 9.0 | | | 11.9 | |
| Approach LOS | | B | | | C | | | A | | | B | |

Intersection Summary

| | | | |
|--|-------|----------------------|-----|
| HCM Average Control Delay | 12.0 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.50 | | |
| Actuated Cycle Length (s) | 50.2 | Sum of lost time (s) | 8.4 |
| Intersection Capacity Utilization | 56.3% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

83: Hanley Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 69 | 111 | 85 | 203 | 154 | 26 | 115 | 553 | 214 | 27 | 344 | 79 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 3391 | 1770 | 1770 | 3440 | 1900 |
| Flt Permitted | 0.64 | 1.00 | 1.00 | 0.67 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1198 | 1863 | 1583 | 1254 | 1863 | 1583 | 1770 | 3391 | 1770 | 1770 | 3440 | 1900 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 81 | 131 | 100 | 239 | 181 | 31 | 135 | 651 | 252 | 32 | 405 | 93 |
| RTOR Reduction (vph) | 0 | 0 | 72 | 0 | 0 | 22 | 0 | 59 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 81 | 131 | 28 | 239 | 181 | 9 | 135 | 844 | 0 | 32 | 466 | 0 |
| Turn Type | Perm | | Perm | Perm | | Perm | Prot | | | Prot | | |
| Protected Phases | | 2 | | | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | | | | | | |
| Actuated Green, G (s) | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 5.4 | 18.3 | | 2.2 | 15.1 | |
| Effective Green, g (s) | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 5.4 | 18.3 | | 2.2 | 15.1 | |
| Actuated g/C Ratio | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.11 | 0.38 | | 0.05 | 0.32 | |
| Clearance Time (s) | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | | 4.6 | 4.6 | |
| Vehicle Extension (s) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | | 2.0 | 2.0 | |
| Lane Grp Cap (vph) | 338 | 526 | 447 | 354 | 526 | 447 | 200 | 1298 | | 81 | 1087 | |
| v/s Ratio Prot | | 0.07 | | | 0.10 | | c0.08 | c0.25 | | 0.02 | 0.14 | |
| v/s Ratio Perm | 0.07 | | 0.02 | c0.19 | | 0.01 | | | | | | |
| v/c Ratio | 0.24 | 0.25 | 0.06 | 0.68 | 0.34 | 0.02 | 0.68 | 0.65 | | 0.40 | 0.43 | |
| Uniform Delay, d1 | 13.2 | 13.2 | 12.5 | 15.2 | 13.6 | 12.4 | 20.4 | 12.1 | | 22.2 | 12.9 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.1 | 0.1 | 0.0 | 4.0 | 0.1 | 0.0 | 6.9 | 0.9 | | 1.2 | 0.1 | |
| Delay (s) | 13.3 | 13.3 | 12.6 | 19.2 | 13.8 | 12.4 | 27.2 | 13.0 | | 23.3 | 13.0 | |
| Level of Service | B | B | B | B | B | B | C | B | | C | B | |
| Approach Delay (s) | | 13.1 | | | 16.5 | | | 14.9 | | | 13.7 | |
| Approach LOS | | B | | | B | | | B | | | B | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 14.7 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.70 | | |
| Actuated Cycle Length (s) | 47.8 | Sum of lost time (s) | 13.8 |
| Intersection Capacity Utilization | 60.4% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis
 84: Prairie Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↗ | |
| Volume (vph) | 19 | 471 | 123 | 79 | 507 | 42 | 268 | 327 | 69 | 65 | 268 | 33 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 3429 | | 1770 | 3499 | | 1770 | 3447 | | 1770 | 3481 | |
| Flt Permitted | 0.29 | 1.00 | | 0.17 | 1.00 | | 0.43 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 544 | 3429 | | 309 | 3499 | | 809 | 3447 | | 902 | 3481 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 22 | 554 | 145 | 93 | 596 | 49 | 315 | 385 | 81 | 76 | 315 | 39 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 6 | 0 | 0 | 14 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 22 | 674 | 0 | 93 | 639 | 0 | 315 | 452 | 0 | 76 | 345 | 0 |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 23.3 | 20.8 | | 29.9 | 24.1 | | 42.4 | 32.6 | | 33.3 | 27.7 | |
| Effective Green, g (s) | 23.3 | 20.8 | | 29.9 | 24.1 | | 42.4 | 32.6 | | 33.3 | 27.7 | |
| Actuated g/C Ratio | 0.29 | 0.25 | | 0.37 | 0.30 | | 0.52 | 0.40 | | 0.41 | 0.34 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.5 | 1.5 | | 1.5 | 1.5 | | 1.5 | 1.5 | | 1.5 | 1.5 | |
| Lane Grp Cap (vph) | 193 | 874 | | 217 | 1033 | | 544 | 1377 | | 428 | 1182 | |
| v/s Ratio Prot | 0.00 | c0.20 | | c0.03 | 0.18 | | c0.07 | 0.13 | | 0.01 | 0.10 | |
| v/s Ratio Perm | 0.03 | | | 0.13 | | | c0.23 | | | 0.06 | | |
| v/c Ratio | 0.11 | 0.77 | | 0.43 | 0.62 | | 0.58 | 0.33 | | 0.18 | 0.29 | |
| Uniform Delay, d1 | 21.3 | 28.2 | | 18.8 | 24.8 | | 11.8 | 16.9 | | 14.9 | 19.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.1 | 3.9 | | 0.5 | 0.8 | | 0.9 | 0.6 | | 0.1 | 0.6 | |
| Delay (s) | 21.4 | 32.1 | | 19.3 | 25.6 | | 12.7 | 17.6 | | 15.0 | 20.4 | |
| Level of Service | C | C | | B | C | | B | B | | B | C | |
| Approach Delay (s) | | 31.7 | | | 24.8 | | | 15.6 | | | 19.4 | |
| Approach LOS | | C | | | C | | | B | | | B | |

| Intersection Summary | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 23.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.66 | | |
| Actuated Cycle Length (s) | 81.6 | Sum of lost time (s) | 16.8 |
| Intersection Capacity Utilization | 60.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

85: Honeysuckle Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 51 | 68 | 51 | 33 | 70 | 10 | 61 | 311 | 16 | 39 | 282 | 80 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 60 | 80 | 60 | 39 | 82 | 12 | 72 | 366 | 19 | 46 | 332 | 94 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1042 | 999 | 379 | 1089 | 1036 | 375 | 426 | | | 385 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1042 | 999 | 379 | 1089 | 1036 | 375 | 426 | | | 385 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 54 | 63 | 91 | 67 | 60 | 98 | 94 | | | 96 | | |
| cM capacity (veh/h) | 131 | 219 | 668 | 117 | 208 | 671 | 1133 | | | 1174 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 200 | 133 | 456 | 472 |
| Volume Left | 60 | 39 | 72 | 46 |
| Volume Right | 60 | 12 | 19 | 94 |
| cSH | 219 | 178 | 1133 | 1174 |
| Volume to Capacity | 0.91 | 0.75 | 0.06 | 0.04 |
| Queue Length 95th (ft) | 189 | 119 | 5 | 3 |
| Control Delay (s) | 86.2 | 68.2 | 1.9 | 1.2 |
| Lane LOS | F | F | A | A |
| Approach Delay (s) | 86.2 | 68.2 | 1.9 | 1.2 |
| Approach LOS | F | F | | |

| Intersection Summary | | | |
|-----------------------------------|-------|------|------------------------|
| Average Delay | | 22.0 | |
| Intersection Capacity Utilization | 51.7% | | ICU Level of Service A |
| Analysis Period (min) | 15 | | |

HCM Unsignalized Intersection Capacity Analysis

86: Orchard Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 77 | 68 | 86 | 0 | 35 | 0 | 155 | 215 | 2 | 13 | 315 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 91 | 80 | 101 | 0 | 41 | 0 | 182 | 253 | 2 | 15 | 371 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1041 | 1021 | 371 | 1161 | 1020 | 254 | 371 | | | 255 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1041 | 1021 | 371 | 1161 | 1020 | 254 | 371 | | | 255 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 41 | 60 | 85 | 100 | 79 | 100 | 85 | | | 99 | | |
| cM capacity (veh/h) | 154 | 198 | 675 | 89 | 198 | 785 | 1188 | | | 1310 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|-------|------|------|------|
| Volume Total | 272 | 41 | 438 | 386 |
| Volume Left | 91 | 0 | 182 | 15 |
| Volume Right | 101 | 0 | 2 | 0 |
| cSH | 238 | 198 | 1188 | 1310 |
| Volume to Capacity | 1.14 | 0.21 | 0.15 | 0.01 |
| Queue Length 95th (ft) | 311 | 19 | 14 | 1 |
| Control Delay (s) | 146.7 | 27.9 | 4.5 | 0.4 |
| Lane LOS | F | D | A | A |
| Approach Delay (s) | 146.7 | 27.9 | 4.5 | 0.4 |
| Approach LOS | F | D | | |

| Intersection Summary | | | |
|-----------------------------------|-------|------|------------------------|
| Average Delay | | 38.0 | |
| Intersection Capacity Utilization | 67.1% | | ICU Level of Service C |
| Analysis Period (min) | 15 | | |

HCM Unsignalized Intersection Capacity Analysis

87: Hayden Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 52 | 295 | 104 | 80 | 231 | 6 | 88 | 127 | 77 | 28 | 144 | 59 |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 61 | 347 | 122 | 94 | 272 | 7 | 104 | 149 | 91 | 33 | 169 | 69 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|-----------------------|-------|------|-------|-------|
| Volume Total (vph) | 531 | 373 | 344 | 272 |
| Volume Left (vph) | 61 | 94 | 104 | 33 |
| Volume Right (vph) | 122 | 7 | 91 | 69 |
| Hadj (s) | -0.08 | 0.07 | -0.06 | -0.10 |
| Departure Headway (s) | 7.9 | 8.2 | 8.3 | 8.6 |
| Degree Utilization, x | 1.16 | 0.85 | 0.79 | 0.65 |
| Capacity (veh/h) | 448 | 417 | 413 | 391 |
| Control Delay (s) | 122.1 | 42.9 | 35.8 | 26.0 |
| Approach Delay (s) | 122.1 | 42.9 | 35.8 | 26.0 |
| Approach LOS | F | E | E | D |

| Intersection Summary | | | |
|-----------------------------------|-------|------|------------------------|
| Delay | | 65.9 | |
| HCM Level of Service | | F | |
| Intersection Capacity Utilization | 70.2% | | ICU Level of Service C |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

88: Dakota Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 0 | 38 | 54 | 0 | 13 | 0 | 20 | 144 | 21 | 0 | 177 | 1 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 45 | 64 | 0 | 15 | 0 | 24 | 169 | 25 | 0 | 208 | 1 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 445 | 450 | 209 | 524 | 438 | 182 | 209 | | | 194 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 445 | 450 | 209 | 524 | 438 | 182 | 209 | | | 194 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 91 | 92 | 100 | 97 | 100 | 98 | | | 100 | | |
| cM capacity (veh/h) | 504 | 496 | 831 | 394 | 503 | 861 | 1361 | | | 1379 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 108 | 15 | 218 | 209 |
| Volume Left | 0 | 0 | 24 | 0 |
| Volume Right | 64 | 0 | 25 | 1 |
| cSH | 650 | 503 | 1361 | 1379 |
| Volume to Capacity | 0.17 | 0.03 | 0.02 | 0.00 |
| Queue Length 95th (ft) | 15 | 2 | 1 | 0 |
| Control Delay (s) | 11.6 | 12.4 | 1.0 | 0.0 |
| Lane LOS | B | B | A | |
| Approach Delay (s) | 11.6 | 12.4 | 1.0 | 0.0 |
| Approach LOS | B | B | | |

| Intersection Summary | | | |
|-----------------------------------|-------|-----|------------------------|
| Average Delay | | 3.0 | |
| Intersection Capacity Utilization | 34.6% | | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis
 89: Miles Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 0 | 50 | 80 | 0 | 7 | 0 | 20 | 123 | 1 | 0 | 98 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 59 | 94 | 0 | 8 | 0 | 24 | 145 | 1 | 0 | 115 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 312 | 308 | 115 | 431 | 308 | 145 | 115 | | | 146 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 312 | 308 | 115 | 431 | 308 | 145 | 115 | | | 146 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 90 | 90 | 100 | 99 | 100 | 98 | | | 100 | | |
| cM capacity (veh/h) | 626 | 596 | 937 | 439 | 597 | 902 | 1474 | | | 1436 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 153 | 8 | 169 | 115 |
| Volume Left | 0 | 0 | 24 | 0 |
| Volume Right | 94 | 0 | 1 | 0 |
| cSH | 768 | 597 | 1474 | 1436 |
| Volume to Capacity | 0.20 | 0.01 | 0.02 | 0.00 |
| Queue Length 95th (ft) | 18 | 1 | 1 | 0 |
| Control Delay (s) | 10.8 | 11.1 | 1.2 | 0.0 |
| Lane LOS | B | B | A | |
| Approach Delay (s) | 10.8 | 11.1 | 1.2 | 0.0 |
| Approach LOS | B | B | | |

| Intersection Summary | | | |
|-----------------------------------|-------|-----|------------------------|
| Average Delay | | 4.4 | |
| Intersection Capacity Utilization | 28.5% | | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis
 90: Lacey Ave & Ramsey Rd

1/20/2009



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 0 | 0 | 117 | 6 | 0 | 98 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 138 | 7 | 0 | 115 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 256 | 141 | | | 145 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 256 | 141 | | | 145 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 732 | 907 | | | 1438 | |

| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|
| Volume Total | 0 | 145 | 115 |
| Volume Left | 0 | 0 | 0 |
| Volume Right | 0 | 7 | 0 |
| cSH | 1700 | 1700 | 1438 |
| Volume to Capacity | 0.00 | 0.09 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 |
| Approach LOS | A | | |

| Intersection Summary | | | |
|-----------------------------------|------|----------------------|-----|
| Average Delay | | | 0.0 |
| Intersection Capacity Utilization | 9.9% | ICU Level of Service | A |
| Analysis Period (min) | | | 15 |

HCM Unsignalized Intersection Capacity Analysis

91: Wyoming Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 9 | 54 | 22 | 60 | 75 | 0 | 32 | 6 | 79 | 36 | 16 | 0 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 11 | 64 | 26 | 71 | 88 | 0 | 38 | 7 | 93 | 42 | 19 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 88 | | | 89 | | | 336 | 327 | 76 | 424 | 340 | 88 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 88 | | | 89 | | | 336 | 327 | 76 | 424 | 340 | 88 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 99 | | | 95 | | | 93 | 99 | 91 | 91 | 97 | 100 |
| cM capacity (veh/h) | 1507 | | | 1506 | | | 577 | 560 | 985 | 465 | 550 | 970 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 100 | 159 | 138 | 61 |
| Volume Left | 11 | 71 | 38 | 42 |
| Volume Right | 26 | 0 | 93 | 0 |
| cSH | 1507 | 1506 | 799 | 488 |
| Volume to Capacity | 0.01 | 0.05 | 0.17 | 0.13 |
| Queue Length 95th (ft) | 1 | 4 | 15 | 11 |
| Control Delay (s) | 0.8 | 3.5 | 10.4 | 13.4 |
| Lane LOS | A | A | B | B |
| Approach Delay (s) | 0.8 | 3.5 | 10.4 | 13.4 |
| Approach LOS | | | B | B |

| Intersection Summary | | | |
|-----------------------------------|--|-------|----------------------|
| Average Delay | | 6.3 | |
| Intersection Capacity Utilization | | 27.4% | ICU Level of Service |
| Analysis Period (min) | | 15 | A |

HCM Signalized Intersection Capacity Analysis

1: Ironwood Dr & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|-------|-------|------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 400 | 454 | 51 | 61 | 219 | 216 | 120 | 521 | 46 | 167 | 489 | 116 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.9 | 4.9 | | 4.9 | 4.9 | | 4.5 | 4.5 | | 4.5 | 4.5 | 4.5 |
| Lane Util. Factor | 0.91 | 0.91 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.99 | | 1.00 | 0.93 | | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1610 | 3319 | | 1770 | 3276 | | 1770 | 3493 | | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1610 | 3319 | | 1770 | 3276 | | 1770 | 3493 | | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 471 | 534 | 60 | 72 | 258 | 254 | 141 | 566 | 54 | 196 | 532 | 136 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 132 | 0 | 0 | 5 | 0 | 0 | 0 | 87 |
| Lane Group Flow (vph) | 349 | 716 | 0 | 72 | 380 | 0 | 141 | 615 | 0 | 196 | 532 | 49 |
| Turn Type | Split | | | Split | | | Prot | | | Prot | | Perm |
| Protected Phases | 8 | 8 | | 7 | 7 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | | | | | | | 2 |
| Actuated Green, G (s) | 32.3 | 32.3 | | 20.8 | 20.8 | | 13.8 | 42.6 | | 20.3 | 49.1 | 49.1 |
| Effective Green, g (s) | 33.4 | 33.4 | | 21.9 | 21.9 | | 15.3 | 44.1 | | 21.8 | 50.6 | 50.6 |
| Actuated g/C Ratio | 0.24 | 0.24 | | 0.16 | 0.16 | | 0.11 | 0.32 | | 0.16 | 0.36 | 0.36 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 4.0 | | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 384 | 792 | | 277 | 512 | | 193 | 1100 | | 276 | 1279 | 572 |
| v/s Ratio Prot | c0.22 | 0.22 | | 0.04 | c0.12 | | 0.08 | c0.18 | | c0.11 | 0.15 | |
| v/s Ratio Perm | | | | | | | | | | | | 0.03 |
| v/c Ratio | 0.91 | 0.90 | | 0.26 | 0.74 | | 0.73 | 0.56 | | 0.71 | 0.42 | 0.09 |
| Uniform Delay, d1 | 51.8 | 51.7 | | 51.9 | 56.3 | | 60.4 | 39.9 | | 56.1 | 33.6 | 29.5 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.15 | 0.49 | 0.28 |
| Incremental Delay, d2 | 24.6 | 13.7 | | 0.5 | 5.7 | | 13.3 | 2.1 | | 8.2 | 1.0 | 0.3 |
| Delay (s) | 76.4 | 65.4 | | 52.4 | 62.1 | | 73.6 | 41.9 | | 72.9 | 17.4 | 8.5 |
| Level of Service | E | E | | D | E | | E | D | | E | B | A |
| Approach Delay (s) | | 69.0 | | | 60.9 | | | 47.8 | | | 28.6 | |
| Approach LOS | | E | | | E | | | D | | | C | |

Intersection Summary

| | | | |
|---------------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 52.0 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.72 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 18.8 |
| Intersection Capacity Utilization | 71.0% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN ERROR IS OK | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

2: I-90 EB & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|-------|------|------|------|------|-------|------|-------|-------|------|
| Lane Configurations | ↖ | ↖ | ↖ | | | | | ↑↑ | ↖ | ↖ | ↑↑ | |
| Volume (vph) | 405 | 4 | 134 | 0 | 0 | 0 | 0 | 1028 | 109 | 179 | 638 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.3 | 5.3 | 4.0 | | | | | 5.3 | 5.3 | 5.3 | 5.3 | |
| Lane Util. Factor | 0.95 | 0.95 | 1.00 | | | | | 0.95 | 1.00 | 1.00 | 0.95 | |
| Frt | 1.00 | 1.00 | 0.85 | | | | | 1.00 | 0.85 | 1.00 | 1.00 | |
| Flt Protected | 0.95 | 0.95 | 1.00 | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1681 | 1687 | 1583 | | | | | 3539 | 1583 | 1770 | 3539 | |
| Flt Permitted | 0.95 | 0.95 | 1.00 | | | | | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1681 | 1687 | 1583 | | | | | 3539 | 1583 | 1770 | 3539 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 476 | 5 | 158 | 0 | 0 | 0 | 0 | 1117 | 128 | 211 | 693 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 243 | 238 | 158 | 0 | 0 | 0 | 0 | 1117 | 93 | 211 | 693 | 0 |
| Turn Type | Split | | Free | | | | | Perm | | Prot | | |
| Protected Phases | 4 | 4 | | | | | | 6 | | 5 | 2 | |
| Permitted Phases | | | Free | | | | | | 6 | | | |
| Actuated Green, G (s) | 25.8 | 25.8 | 140.0 | | | | | 74.3 | 74.3 | 21.9 | 102.2 | |
| Effective Green, g (s) | 26.5 | 26.5 | 140.0 | | | | | 75.0 | 75.0 | 22.6 | 102.9 | |
| Actuated g/C Ratio | 0.19 | 0.19 | 1.00 | | | | | 0.54 | 0.54 | 0.16 | 0.74 | |
| Clearance Time (s) | 6.0 | 6.0 | | | | | | 6.0 | 6.0 | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | | | | | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 318 | 319 | 1583 | | | | | 1896 | 848 | 286 | 2601 | |
| v/s Ratio Prot | c0.14 | 0.14 | | | | | | c0.32 | | c0.12 | 0.20 | |
| v/s Ratio Perm | | | 0.10 | | | | | | 0.06 | | | |
| v/c Ratio | 0.76 | 0.75 | 0.10 | | | | | 0.59 | 0.11 | 0.74 | 0.27 | |
| Uniform Delay, d1 | 53.8 | 53.6 | 0.0 | | | | | 22.0 | 16.0 | 55.9 | 6.1 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | | | 1.08 | 1.41 | 0.46 | 2.33 | |
| Incremental Delay, d2 | 10.4 | 9.1 | 0.1 | | | | | 0.9 | 0.2 | 8.4 | 0.2 | |
| Delay (s) | 64.2 | 62.7 | 0.1 | | | | | 24.7 | 22.8 | 34.3 | 14.5 | |
| Level of Service | E | E | A | | | | | C | C | C | B | |
| Approach Delay (s) | | 47.8 | | | 0.0 | | | 24.5 | | | 19.1 | |
| Approach LOS | | D | | | A | | | C | | | B | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 28.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.65 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 15.9 |
| Intersection Capacity Utilization | 65.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, CORRECT MIN SPLIT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

3: I-90 WB & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|------|-------|------|--------|-------|-------|------|------|-------|------|
| Lane Configurations | | | | | ↕ | ↗ | ↘ | ↑↑ | | | ↑↑ | ↗ |
| Volume (vph) | 0 | 0 | 0 | 62 | 6 | 214 | 211 | 1222 | 0 | 0 | 755 | 587 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | | | | 5.3 | 5.3 | 5.3 | 6.0 | | | 5.3 | 5.3 |
| Lane Util. Factor | | | | | 1.00 | 1.00 | 1.00 | 0.95 | | | 0.95 | 1.00 |
| Fr _t | | | | | 1.00 | 0.85 | 1.00 | 1.00 | | | 1.00 | 0.85 |
| Fl _t Protected | | | | | 0.96 | 1.00 | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (prot) | | | | | 1781 | 1583 | 1770 | 3539 | | | 3539 | 1583 |
| Fl _t Permitted | | | | | 0.96 | 1.00 | 0.95 | 1.00 | | | 1.00 | 1.00 |
| Satd. Flow (perm) | | | | | 1781 | 1583 | 1770 | 3539 | | | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 0 | 0 | 0 | 73 | 7 | 252 | 248 | 1328 | 0 | 0 | 821 | 691 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 77 | 0 | 0 | 0 | 0 | 0 | 360 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 0 | 80 | 175 | 248 | 1328 | 0 | 0 | 821 | 331 |
| Turn Type | | | | Split | | custom | | Prot | | | | Perm |
| Protected Phases | | | | 4 | 4 | 4 | 1 3 | 6 3 | | | 2 | |
| Permitted Phases | | | | | | 4 | | | | | | 2 |
| Actuated Green, G (s) | | | | | 20.2 | 20.2 | 38.1 | 107.8 | | | 59.7 | 59.7 |
| Effective Green, g (s) | | | | | 20.9 | 20.9 | 39.5 | 103.8 | | | 60.4 | 60.4 |
| Actuated g/C Ratio | | | | | 0.15 | 0.15 | 0.28 | 0.74 | | | 0.43 | 0.43 |
| Clearance Time (s) | | | | | 6.0 | 6.0 | | | | | 6.0 | 6.0 |
| Vehicle Extension (s) | | | | | 3.0 | 3.0 | | | | | 4.0 | 4.0 |
| Lane Grp Cap (vph) | | | | | 266 | 236 | 499 | 2624 | | | 1527 | 683 |
| v/s Ratio Prot | | | | | 0.04 | c0.11 | c0.14 | c0.38 | | | c0.23 | |
| v/s Ratio Perm | | | | | | | | | | | | 0.21 |
| v/c Ratio | | | | | 0.30 | 0.74 | 0.50 | 0.51 | | | 0.54 | 0.48 |
| Uniform Delay, d ₁ | | | | | 53.0 | 57.0 | 42.0 | 7.5 | | | 29.5 | 28.6 |
| Progression Factor | | | | | 1.00 | 1.00 | 1.22 | 1.90 | | | 0.62 | 1.21 |
| Incremental Delay, d ₂ | | | | | 0.6 | 11.9 | 0.7 | 0.1 | | | 1.0 | 1.9 |
| Delay (s) | | | | | 53.7 | 68.9 | 51.9 | 14.3 | | | 19.2 | 36.6 |
| Level of Service | | | | | D | E | D | B | | | B | D |
| Approach Delay (s) | | 0.0 | | | 65.2 | | | 20.2 | | | 27.2 | |
| Approach LOS | | A | | | E | | | C | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 27.7 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.55 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 15.9 |
| Intersection Capacity Utilization | 65.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

Description: CHECKED, MIN SPLIT REVISED

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Appleway Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|-------|------|-------|------|------|------|-------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↔ | | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ |
| Volume (vph) | 127 | 280 | 153 | 231 | 272 | 184 | 137 | 1070 | 229 | 123 | 958 | 121 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.9 | 4.9 | | 4.9 | 4.9 | | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | |
| Lane Util. Factor | 1.00 | 0.95 | | 0.91 | 0.91 | | 1.00 | 0.91 | 1.00 | 1.00 | 0.91 | |
| Frt | 1.00 | 0.95 | | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 3351 | | 1610 | 3187 | | 1770 | 5085 | 1583 | 1770 | 4994 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 3351 | | 1610 | 3187 | | 1770 | 5085 | 1583 | 1770 | 4994 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 149 | 329 | 180 | 272 | 320 | 216 | 161 | 1163 | 269 | 145 | 1041 | 142 |
| RTOR Reduction (vph) | 0 | 52 | 0 | 0 | 61 | 0 | 0 | 0 | 159 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 149 | 457 | 0 | 245 | 502 | 0 | 161 | 1163 | 110 | 145 | 1171 | 0 |
| Turn Type | Split | | | Split | | | Prot | | Perm | Prot | | |
| Protected Phases | 8 | 8 | | 7 | 7 | | 6 | 1 | | 2 | 5 | |
| Permitted Phases | | | | | | | | | 1 | | | |
| Actuated Green, G (s) | 20.9 | 20.9 | | 25.3 | 25.3 | | 15.2 | 52.8 | 52.8 | 17.0 | 54.6 | |
| Effective Green, g (s) | 22.0 | 22.0 | | 26.4 | 26.4 | | 15.8 | 53.4 | 53.4 | 17.6 | 55.2 | |
| Actuated g/C Ratio | 0.16 | 0.16 | | 0.19 | 0.19 | | 0.11 | 0.38 | 0.38 | 0.13 | 0.39 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | |
| Lane Grp Cap (vph) | 278 | 527 | | 304 | 601 | | 200 | 1940 | 604 | 223 | 1969 | |
| v/s Ratio Prot | 0.08 | c0.14 | | 0.15 | c0.16 | | c0.09 | 0.23 | | 0.08 | c0.23 | |
| v/s Ratio Perm | | | | | | | | | 0.07 | | | |
| v/c Ratio | 0.54 | 0.87 | | 0.81 | 0.84 | | 0.80 | 0.60 | 0.18 | 0.65 | 0.59 | |
| Uniform Delay, d1 | 54.3 | 57.6 | | 54.3 | 54.7 | | 60.6 | 34.7 | 28.8 | 58.3 | 33.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.10 | 0.61 | 0.67 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.0 | 14.0 | | 14.4 | 9.8 | | 18.3 | 1.2 | 0.6 | 6.6 | 1.3 | |
| Delay (s) | 56.3 | 71.5 | | 68.7 | 64.5 | | 84.9 | 22.5 | 19.8 | 64.9 | 34.9 | |
| Level of Service | E | E | | E | E | | F | C | B | E | C | |
| Approach Delay (s) | | 68.1 | | | 65.8 | | | 28.3 | | | 38.2 | |
| Approach LOS | | E | | | E | | | C | | | D | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 44.2 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.73 | | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) | 20.6 |
| Intersection Capacity Utilization | 72.0% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

Intersection has too many lanes per leg.

HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

Intersection has too many lanes per leg.
























HCM All-Way analysis is limited to two lanes per leg.

Channelized right turn lanes are not counted.

HCM Signalized Intersection Capacity Analysis

7: Neider Ave & US 95

1/20/2009

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 46 | 74 | 56 | 191 | 103 | 290 | 67 | 1131 | 212 | 226 | 1013 | 14 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | 6.0 | 4.2 | 4.1 | 4.1 | 4.2 | 4.1 | 4.1 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3310 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3310 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 54 | 87 | 66 | 225 | 121 | 341 | 79 | 1229 | 249 | 266 | 1101 | 16 |
| RTOR Reduction (vph) | 0 | 59 | 0 | 0 | 0 | 171 | 0 | 0 | 129 | 0 | 0 | 8 |
| Lane Group Flow (vph) | 54 | 94 | 0 | 225 | 121 | 170 | 79 | 1229 | 120 | 266 | 1101 | 8 |
| Turn Type | Prot | | | Prot | | custom | Prot | | Perm | Prot | | Perm |
| Protected Phases | 8 | 3 | | 4 | 7 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | 7 1 5 | | | 6 | | | 2 |
| Actuated Green, G (s) | 7.9 | 9.8 | | 18.7 | 20.6 | 57.3 | 6.0 | 42.8 | 42.8 | 24.7 | 61.5 | 61.5 |
| Effective Green, g (s) | 10.9 | 12.8 | | 21.7 | 23.6 | 57.3 | 7.8 | 44.7 | 44.7 | 26.5 | 63.4 | 63.4 |
| Actuated g/C Ratio | 0.09 | 0.11 | | 0.18 | 0.20 | 0.48 | 0.06 | 0.37 | 0.37 | 0.22 | 0.53 | 0.53 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 161 | 353 | | 320 | 696 | 756 | 115 | 1318 | 590 | 391 | 1870 | 836 |
| v/s Ratio Prot | 0.03 | 0.03 | | c0.13 | 0.03 | | 0.04 | c0.35 | | c0.15 | 0.31 | |
| v/s Ratio Perm | | | | | | c0.11 | | | 0.08 | | | 0.01 |
| v/c Ratio | 0.34 | 0.27 | | 0.70 | 0.17 | 0.22 | 0.69 | 0.93 | 0.20 | 0.68 | 0.59 | 0.01 |
| Uniform Delay, d1 | 51.2 | 49.3 | | 46.1 | 40.1 | 18.3 | 54.9 | 36.2 | 25.6 | 42.9 | 19.4 | 13.4 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.52 | 0.99 | 0.61 |
| Incremental Delay, d2 | 1.2 | 0.4 | | 6.8 | 0.1 | 0.2 | 28.6 | 13.2 | 0.8 | 7.4 | 1.1 | 0.0 |
| Delay (s) | 52.4 | 49.7 | | 53.0 | 40.2 | 18.5 | 83.5 | 49.4 | 26.3 | 29.8 | 20.3 | 8.2 |
| Level of Service | D | D | | D | D | B | F | D | C | C | C | A |
| Approach Delay (s) | | 50.4 | | | 33.6 | | | 47.4 | | | 22.0 | |
| Approach LOS | | D | | | C | | | D | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 35.9 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.72 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 11.3 |
| Intersection Capacity Utilization | 72.1% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |





















Description: CHECKED, MIN SPLIT REVISED

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

8: Bosanko Ave & US 95

1/20/2009

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | |  | | |  |  |  |  |  |  |  |
| Volume (veh/h) | 0 | 0 | 142 | 0 | 0 | 5 | 99 | 1322 | 46 | 63 | 1111 | 81 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 167 | 0 | 0 | 6 | 116 | 1437 | 54 | 74 | 1208 | 95 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 2313 | 3080 | 604 | 2589 | 3121 | 718 | 1303 | | | 1491 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 2313 | 3080 | 604 | 2589 | 3121 | 718 | 1303 | | | 1491 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 62 | 100 | 100 | 98 | 78 | | | 83 | | |
| cM capacity (veh/h) | 15 | 8 | 442 | 6 | 7 | 371 | 527 | | | 446 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 | | |
| Volume Total | 167 | 6 | 116 | 718 | 718 | 54 | 74 | 604 | 604 | 95 | | |
| Volume Left | 0 | 0 | 116 | 0 | 0 | 0 | 74 | 0 | 0 | 0 | | |
| Volume Right | 167 | 6 | 0 | 0 | 0 | 54 | 0 | 0 | 0 | 95 | | |
| cSH | 442 | 371 | 527 | 1700 | 1700 | 1700 | 446 | 1700 | 1700 | 1700 | | |
| Volume to Capacity | 0.38 | 0.02 | 0.22 | 0.42 | 0.42 | 0.03 | 0.17 | 0.36 | 0.36 | 0.06 | | |
| Queue Length 95th (ft) | 43 | 1 | 21 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | | |
| Control Delay (s) | 18.0 | 14.9 | 13.8 | 0.0 | 0.0 | 0.0 | 14.7 | 0.0 | 0.0 | 0.0 | | |
| Lane LOS | C | B | B | | | | B | | | | | |
| Approach Delay (s) | 18.0 | 14.9 | 1.0 | | | | 0.8 | | | | | |
| Approach LOS | C | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.8 | | | | | | | | | |
| Intersection Capacity Utilization | | | 46.7% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

9: Sunset Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | ↗ | | | ↗ | | ↕ | ↗ | | ↕ | ↗ |
| Volume (veh/h) | 0 | 0 | 74 | 0 | 0 | 97 | 0 | 1292 | 31 | 0 | 1181 | 86 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 87 | 0 | 0 | 114 | 0 | 1404 | 36 | 0 | 1284 | 101 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | 713 | |
| pX, platoon unblocked | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | | 0.73 | | | | | |
| vC, conflicting volume | 2100 | 2725 | 642 | 2133 | 2789 | 702 | 1385 | | | 1441 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1773 | 2625 | 0 | 1819 | 2713 | 702 | 799 | | | 1441 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 89 | 100 | 100 | 70 | 100 | | | 100 | | |
| cM capacity (veh/h) | 27 | 17 | 796 | 32 | 15 | 380 | 601 | | | 467 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|------------------------|------|------|------|------|------|------|------|------|
| Volume Total | 87 | 114 | 702 | 702 | 36 | 642 | 642 | 101 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 87 | 114 | 0 | 0 | 36 | 0 | 0 | 101 |
| cSH | 796 | 380 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.11 | 0.30 | 0.41 | 0.41 | 0.02 | 0.38 | 0.38 | 0.06 |
| Queue Length 95th (ft) | 9 | 31 | 0 | 0 | 0 | 0 | 0 | 0 |
| Control Delay (s) | 10.1 | 18.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | B | C | | | | | | |
| Approach Delay (s) | 10.1 | 18.5 | 0.0 | | | 0.0 | | |
| Approach LOS | B | C | | | | | | |

Intersection Summary

| | |
|-----------------------------------|-------|
| Average Delay | 1.0 |
| Intersection Capacity Utilization | 48.4% |
| ICU Level of Service | A |
| Analysis Period (min) | 15 |

HCM Signalized Intersection Capacity Analysis

10: Kathleen Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|--------|-------|------|--------|------|-------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 214 | 339 | 136 | 159 | 267 | 176 | 144 | 1179 | 66 | 158 | 972 | 152 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 3.5 | 6.0 | 3.1 | 3.1 | 6.0 | 4.2 | 4.0 | 4.0 | 4.2 | 4.0 | 4.0 |
| Lane Util. Factor | 0.91 | 0.91 | 1.00 | 0.91 | 0.91 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1610 | 3375 | 1583 | 1610 | 3378 | 1583 | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1610 | 3375 | 1583 | 1610 | 3378 | 1583 | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 252 | 399 | 160 | 187 | 314 | 207 | 169 | 1282 | 78 | 186 | 1057 | 179 |
| RTOR Reduction (vph) | 0 | 0 | 37 | 0 | 0 | 77 | 0 | 0 | 38 | 0 | 0 | 104 |
| Lane Group Flow (vph) | 212 | 439 | 123 | 163 | 338 | 130 | 169 | 1282 | 40 | 186 | 1057 | 75 |
| Turn Type | Split | | custom | Split | | custom | Prot | | Perm | Prot | | Perm |
| Protected Phases | 3 | 3 | | 4 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | 3 1 5 | | | 4 1 5 | | | 6 | | | 2 |
| Actuated Green, G (s) | 21.9 | 21.9 | 59.2 | 13.8 | 13.8 | 51.1 | 19.0 | 48.0 | 48.0 | 12.3 | 41.3 | 41.3 |
| Effective Green, g (s) | 24.4 | 24.4 | 59.2 | 16.7 | 16.7 | 51.1 | 20.8 | 50.0 | 50.0 | 14.1 | 43.3 | 43.3 |
| Actuated g/C Ratio | 0.20 | 0.20 | 0.49 | 0.14 | 0.14 | 0.43 | 0.17 | 0.42 | 0.42 | 0.12 | 0.36 | 0.36 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 4.0 | 4.0 | | 4.0 | 4.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 327 | 686 | 781 | 224 | 470 | 674 | 307 | 1475 | 660 | 403 | 1277 | 571 |
| v/s Ratio Prot | c0.13 | 0.13 | | c0.10 | 0.10 | | 0.10 | c0.36 | | 0.05 | c0.30 | |
| v/s Ratio Perm | | | 0.08 | | | 0.08 | | | 0.03 | | | 0.05 |
| v/c Ratio | 0.65 | 0.64 | 0.16 | 0.73 | 0.72 | 0.19 | 0.55 | 0.87 | 0.06 | 0.46 | 0.83 | 0.13 |
| Uniform Delay, d1 | 43.9 | 43.8 | 16.7 | 49.5 | 49.4 | 21.6 | 45.3 | 32.0 | 20.9 | 49.4 | 35.0 | 25.7 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.51 | 0.32 | 0.03 | 1.00 | 0.36 | 0.16 |
| Incremental Delay, d2 | 4.9 | 2.2 | 0.1 | 11.9 | 5.6 | 0.2 | 4.9 | 5.2 | 0.1 | 3.0 | 5.1 | 0.4 |
| Delay (s) | 48.7 | 46.0 | 16.8 | 61.4 | 55.0 | 21.7 | 28.1 | 15.5 | 0.8 | 52.4 | 17.6 | 4.5 |
| Level of Service | D | D | B | E | D | C | C | B | A | D | B | A |
| Approach Delay (s) | | 41.0 | | | 46.7 | | | 16.1 | | | 20.5 | |
| Approach LOS | | D | | | D | | | B | | | C | |

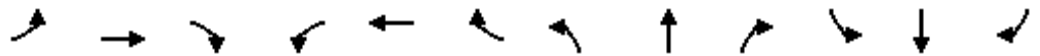
Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 26.9 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.80 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 14.6 |
| Intersection Capacity Utilization | 69.0% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

11: Dalton Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|--------|-------|-------|--------|-------|-------|------|------|-------|------|
| Lane Configurations | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ |
| Volume (vph) | 50 | 103 | 65 | 55 | 98 | 86 | 72 | 1436 | 61 | 65 | 1162 | 42 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.2 | 3.2 | 6.0 | 3.2 | 3.2 | 6.0 | 4.9 | 4.4 | 4.4 | 5.0 | 4.4 | 4.4 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 59 | 121 | 76 | 65 | 115 | 101 | 85 | 1561 | 72 | 76 | 1263 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 47 | 0 | 0 | 77 | 0 | 0 | 27 | 0 | 0 | 19 |
| Lane Group Flow (vph) | 59 | 121 | 29 | 65 | 115 | 24 | 85 | 1561 | 45 | 76 | 1263 | 30 |
| Turn Type | Split | | custom | Split | | custom | Prot | | Perm | Prot | | Perm |
| Protected Phases | 7 | 7 | | 8 | 8 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | 7 1 5 | | | 8 1 5 | | | 6 | | | 2 |
| Actuated Green, G (s) | 14.8 | 14.8 | 32.8 | 5.0 | 5.0 | 29.0 | 11.0 | 58.2 | 58.2 | 18.0 | 65.2 | 65.2 |
| Effective Green, g (s) | 17.6 | 17.6 | 32.8 | 7.8 | 7.8 | 29.0 | 12.1 | 59.8 | 59.8 | 19.0 | 66.8 | 66.8 |
| Actuated g/C Ratio | 0.15 | 0.15 | 0.27 | 0.06 | 0.06 | 0.24 | 0.10 | 0.50 | 0.50 | 0.16 | 0.56 | 0.56 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 5.0 | 5.0 | | 3.0 | 3.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 260 | 273 | 433 | 115 | 121 | 383 | 178 | 1764 | 789 | 280 | 1970 | 881 |
| v/s Ratio Prot | 0.03 | c0.06 | | 0.04 | c0.06 | | c0.05 | c0.44 | | 0.04 | c0.36 | |
| v/s Ratio Perm | | | 0.02 | | | 0.02 | | | 0.03 | | | 0.02 |
| v/c Ratio | 0.23 | 0.44 | 0.07 | 0.57 | 0.95 | 0.06 | 0.48 | 0.88 | 0.06 | 0.27 | 0.64 | 0.03 |
| Uniform Delay, d1 | 45.2 | 46.7 | 32.3 | 54.5 | 55.9 | 35.0 | 51.0 | 27.0 | 15.5 | 44.4 | 18.3 | 12.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.08 | 0.50 | 0.19 | 1.05 | 0.32 | 0.16 |
| Incremental Delay, d2 | 0.9 | 2.4 | 0.1 | 6.2 | 66.2 | 0.1 | 1.3 | 4.5 | 0.1 | 1.6 | 1.1 | 0.0 |
| Delay (s) | 46.1 | 49.1 | 32.4 | 60.7 | 122.1 | 35.1 | 56.1 | 18.1 | 3.0 | 48.0 | 7.0 | 2.0 |
| Level of Service | D | D | C | E | F | D | E | B | A | D | A | A |
| Approach Delay (s) | | 43.5 | | | 76.6 | | | 19.3 | | | 9.1 | |
| Approach LOS | | D | | | E | | | B | | | A | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 21.5 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.74 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 15.7 |
| Intersection Capacity Utilization | 64.7% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

Description: CHECKED, MIN SPLIT REVISED

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

12: Hanley Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|-------|--------|------|-------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 200 | 183 | 60 | 185 | 203 | 198 | 69 | 1393 | 110 | 152 | 1024 | 66 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 3.5 | 6.0 | 3.1 | 3.1 | 3.1 | 4.2 | 4.0 | 4.0 | 4.2 | 4.0 | 4.0 |
| Lane Util. Factor | 0.91 | 0.91 | 1.00 | 0.91 | 0.91 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 0.99 | 1.00 | 0.95 | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1610 | 3341 | 1583 | 1610 | 3352 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 0.99 | 1.00 | 0.95 | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1610 | 3341 | 1583 | 1610 | 3352 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 235 | 215 | 71 | 218 | 239 | 233 | 81 | 1514 | 129 | 179 | 1113 | 78 |
| RTOR Reduction (vph) | 0 | 0 | 61 | 0 | 0 | 72 | 0 | 0 | 33 | 0 | 0 | 32 |
| Lane Group Flow (vph) | 146 | 304 | 10 | 148 | 309 | 161 | 81 | 1514 | 96 | 179 | 1113 | 46 |
| Turn Type | Split | | Perm | Split | | custom | Prot | | Perm | Prot | | Perm |
| Protected Phases | 3 | 3 | | 4 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | 3 | | | 4 1 5 | | | 6 | | | 2 |
| Actuated Green, G (s) | 17.1 | 17.1 | 17.1 | 16.7 | 16.7 | 53.0 | 17.3 | 49.2 | 49.2 | 13.0 | 44.9 | 44.9 |
| Effective Green, g (s) | 19.6 | 19.6 | 17.1 | 19.6 | 19.6 | 58.8 | 19.1 | 51.2 | 51.2 | 14.8 | 46.9 | 46.9 |
| Actuated g/C Ratio | 0.16 | 0.16 | 0.14 | 0.16 | 0.16 | 0.49 | 0.16 | 0.43 | 0.43 | 0.12 | 0.39 | 0.39 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 263 | 546 | 226 | 263 | 547 | 776 | 282 | 1510 | 675 | 218 | 1383 | 619 |
| v/s Ratio Prot | 0.09 | c0.09 | | 0.09 | c0.09 | | 0.05 | c0.43 | | 0.10 | c0.31 | |
| v/s Ratio Perm | | | 0.01 | | | 0.10 | | | 0.06 | | | 0.03 |
| v/c Ratio | 0.56 | 0.56 | 0.04 | 0.56 | 0.56 | 0.21 | 0.29 | 1.00 | 0.14 | 0.82 | 0.80 | 0.07 |
| Uniform Delay, d1 | 46.2 | 46.2 | 44.4 | 46.3 | 46.3 | 17.4 | 44.5 | 34.4 | 21.0 | 51.3 | 32.5 | 22.9 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.01 | 0.29 | 0.09 | 1.03 | 1.05 | 1.89 |
| Incremental Delay, d2 | 2.5 | 1.2 | 0.1 | 2.7 | 1.3 | 0.1 | 1.4 | 17.7 | 0.2 | 18.9 | 4.4 | 0.2 |
| Delay (s) | 48.7 | 47.4 | 44.5 | 49.0 | 47.6 | 17.5 | 46.1 | 27.7 | 2.1 | 71.7 | 38.5 | 43.6 |
| Level of Service | D | D | D | D | D | B | D | C | A | E | D | D |
| Approach Delay (s) | | 47.4 | | | 37.7 | | | 26.6 | | | 43.1 | |
| Approach LOS | | D | | | D | | | C | | | D | |





















Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 36.2 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.80 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 10.6 |
| Intersection Capacity Utilization | 75.0% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

13: Canfield Ave & US 95

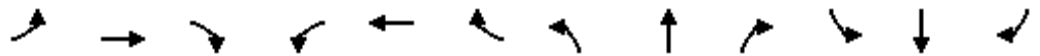
1/20/2009

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | |  | | |  |  |  |  |  |  |  |
| Volume (veh/h) | 0 | 0 | 107 | 0 | 0 | 220 | 99 | 1530 | 162 | 186 | 1135 | 48 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 126 | 0 | 0 | 259 | 116 | 1663 | 191 | 219 | 1234 | 56 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | 1220 | | | | |
| pX, platoon unblocked | 0.61 | 0.61 | | 0.61 | 0.61 | 0.61 | | | | | 0.61 | |
| vC, conflicting volume | 2995 | 3758 | 617 | 3076 | 3624 | 832 | 1290 | | | | 1854 | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 2991 | 4236 | 617 | 3125 | 4018 | 0 | 1290 | | | | 1130 | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | | 4.1 | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | | 2.2 | |
| p0 queue free % | 100 | 100 | 71 | 100 | 100 | 61 | 78 | | | | 42 | |
| cM capacity (veh/h) | 1 | 0 | 433 | 1 | 1 | 665 | 533 | | | | 376 | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 | | |
| Volume Total | 126 | 259 | 116 | 832 | 832 | 191 | 219 | 617 | 617 | 56 | | |
| Volume Left | 0 | 0 | 116 | 0 | 0 | 0 | 219 | 0 | 0 | 0 | | |
| Volume Right | 126 | 259 | 0 | 0 | 0 | 191 | 0 | 0 | 0 | 56 | | |
| cSH | 433 | 665 | 533 | 1700 | 1700 | 1700 | 376 | 1700 | 1700 | 1700 | | |
| Volume to Capacity | 0.29 | 0.39 | 0.22 | 0.49 | 0.49 | 0.11 | 0.58 | 0.36 | 0.36 | 0.03 | | |
| Queue Length 95th (ft) | 30 | 46 | 21 | 0 | 0 | 0 | 88 | 0 | 0 | 0 | | |
| Control Delay (s) | 16.7 | 13.8 | 13.6 | 0.0 | 0.0 | 0.0 | 27.0 | 0.0 | 0.0 | 0.0 | | |
| Lane LOS | C | B | B | | | | D | | | | | |
| Approach Delay (s) | 16.7 | 13.8 | 0.8 | | | | 3.9 | | | | | |
| Approach LOS | C | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.4 | | | | | | | | | |
| Intersection Capacity Utilization | | | 62.6% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

14: Wilbur Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|--------|-------|------|--------|------|-------|------|------|-------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑↑ | ↗ | ↖ | ↑↑ | ↗ |
| Volume (vph) | 46 | 5 | 166 | 72 | 15 | 56 | 99 | 1597 | 54 | 49 | 1131 | 70 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 54 | 6 | 195 | 85 | 18 | 66 | 116 | 1736 | 64 | 58 | 1229 | 82 |
| RTOR Reduction (vph) | 0 | 0 | 128 | 0 | 0 | 45 | 0 | 0 | 10 | 0 | 0 | 21 |
| Lane Group Flow (vph) | 54 | 6 | 67 | 85 | 18 | 21 | 116 | 1736 | 54 | 58 | 1229 | 61 |
| Turn Type | Split | | custom | Split | | custom | Prot | | Perm | Prot | | Perm |
| Protected Phases | 4 | 4 | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 1 5 | | | 8 1 5 | | | 2 | | | 6 |
| Actuated Green, G (s) | 9.0 | 9.0 | 35.3 | 11.1 | 11.1 | 37.4 | 11.0 | 68.6 | 68.6 | 9.3 | 64.9 | 64.9 |
| Effective Green, g (s) | 9.0 | 9.0 | 35.3 | 11.1 | 11.1 | 37.4 | 11.0 | 68.6 | 68.6 | 9.3 | 64.9 | 64.9 |
| Actuated g/C Ratio | 0.08 | 0.08 | 0.29 | 0.09 | 0.09 | 0.31 | 0.09 | 0.57 | 0.57 | 0.08 | 0.54 | 0.54 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 4.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 133 | 140 | 466 | 164 | 172 | 493 | 162 | 2023 | 905 | 137 | 1914 | 856 |
| v/s Ratio Prot | c0.03 | 0.00 | | c0.05 | 0.01 | | 0.07 | c0.49 | | 0.03 | c0.35 | |
| v/s Ratio Perm | | | 0.04 | | | 0.01 | | | 0.03 | | | 0.04 |
| v/c Ratio | 0.41 | 0.04 | 0.14 | 0.52 | 0.10 | 0.04 | 0.72 | 0.86 | 0.06 | 0.42 | 0.64 | 0.07 |
| Uniform Delay, d1 | 52.9 | 51.5 | 31.2 | 51.9 | 49.9 | 28.8 | 53.0 | 21.6 | 11.4 | 52.8 | 19.4 | 13.2 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.63 | 0.23 | 0.11 | 0.64 | 1.05 | 0.76 |
| Incremental Delay, d2 | 2.0 | 0.1 | 0.1 | 2.8 | 0.3 | 0.0 | 9.6 | 3.4 | 0.1 | 1.7 | 1.3 | 0.1 |
| Delay (s) | 55.0 | 51.6 | 31.4 | 54.7 | 50.2 | 28.8 | 42.8 | 8.5 | 1.3 | 35.5 | 21.7 | 10.2 |
| Level of Service | D | D | C | D | D | C | D | A | A | D | C | B |
| Approach Delay (s) | | 36.8 | | | 44.1 | | | 10.3 | | | 21.6 | |
| Approach LOS | | D | | | D | | | B | | | C | |





















Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 17.8 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.78 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 24.0 |
| Intersection Capacity Utilization | 71.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

15: Aqua Ave & US 95

1/20/2009

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | |  | | |  |  |  |  |  |  |  |
| Volume (veh/h) | 0 | 0 | 53 | 0 | 0 | 9 | 44 | 1593 | 62 | 29 | 1197 | 4 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 62 | 0 | 0 | 11 | 52 | 1732 | 73 | 34 | 1301 | 5 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | | None |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | 999 |
| pX, platoon unblocked | 0.78 | 0.78 | 0.78 | 0.78 | 0.78 | | 0.78 | | | | | |
| vC, conflicting volume | 2349 | 3277 | 651 | 2616 | 3209 | 866 | 1306 | | | 1804 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 2171 | 3353 | 6 | 2511 | 3266 | 866 | 841 | | | 1804 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 93 | 100 | 100 | 96 | 92 | | | 90 | | |
| cM capacity (veh/h) | 17 | 5 | 844 | 9 | 6 | 297 | 620 | | | 337 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 | | |
| Volume Total | 62 | 11 | 52 | 866 | 866 | 73 | 34 | 651 | 651 | 5 | | |
| Volume Left | 0 | 0 | 52 | 0 | 0 | 0 | 34 | 0 | 0 | 0 | | |
| Volume Right | 62 | 11 | 0 | 0 | 0 | 73 | 0 | 0 | 0 | 5 | | |
| cSH | 844 | 297 | 620 | 1700 | 1700 | 1700 | 337 | 1700 | 1700 | 1700 | | |
| Volume to Capacity | 0.07 | 0.04 | 0.08 | 0.51 | 0.51 | 0.04 | 0.10 | 0.38 | 0.38 | 0.00 | | |
| Queue Length 95th (ft) | 6 | 3 | 7 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | | |
| Control Delay (s) | 9.6 | 17.6 | 11.3 | 0.0 | 0.0 | 0.0 | 16.9 | 0.0 | 0.0 | 0.0 | | |
| Lane LOS | A | C | B | | | | C | | | | | |
| Approach Delay (s) | 9.6 | 17.6 | 0.3 | | | | 0.4 | | | | | |
| Approach LOS | A | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 0.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 54.0% | | | ICU Level of Service | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

16: Prairie Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|---------|-------|-------|---------|------|-------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 242 | 362 | 252 | 177 | 414 | 100 | 163 | 1226 | 213 | 143 | 801 | 232 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 2.8 | 3.3 | 6.0 | 2.8 | 3.3 | 6.0 | 4.4 | 4.2 | 4.2 | 4.4 | 4.2 | 4.2 |
| Lane Util. Factor | 1.00 | *0.92 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3427 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3427 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 | 3433 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 285 | 426 | 296 | 208 | 487 | 118 | 192 | 1333 | 251 | 168 | 871 | 273 |
| RTOR Reduction (vph) | 0 | 0 | 95 | 0 | 0 | 19 | 0 | 0 | 97 | 0 | 0 | 156 |
| Lane Group Flow (vph) | 285 | 426 | 201 | 208 | 487 | 99 | 192 | 1333 | 154 | 168 | 871 | 117 |
| Turn Type | Prot | | custom | Prot | | custom | Prot | | Perm | Prot | | Perm |
| Protected Phases | 8 | 3 | | 4 | 7 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | 3 8 1 5 | | | 7 3 1 5 | | | 6 | | | 2 |
| Actuated Green, G (s) | 22.6 | 18.5 | 57.0 | 21.1 | 17.0 | 75.9 | 20.0 | 48.0 | 48.0 | 8.4 | 36.4 | 36.4 |
| Effective Green, g (s) | 25.8 | 21.2 | 57.0 | 24.3 | 19.7 | 75.9 | 21.6 | 49.8 | 49.8 | 10.0 | 38.2 | 38.2 |
| Actuated g/C Ratio | 0.22 | 0.18 | 0.48 | 0.20 | 0.16 | 0.63 | 0.18 | 0.42 | 0.42 | 0.08 | 0.32 | 0.32 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 5.0 | 5.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 381 | 605 | 752 | 358 | 581 | 1001 | 319 | 1469 | 657 | 286 | 1127 | 504 |
| v/s Ratio Prot | c0.16 | 0.12 | | c0.12 | c0.14 | | 0.11 | c0.38 | | 0.05 | c0.25 | |
| v/s Ratio Perm | | | 0.13 | | | 0.06 | | | 0.10 | | | 0.07 |
| v/c Ratio | 0.75 | 0.70 | 0.27 | 0.58 | 0.84 | 0.10 | 0.60 | 0.91 | 0.24 | 0.59 | 0.77 | 0.23 |
| Uniform Delay, d1 | 44.1 | 46.5 | 18.9 | 43.2 | 48.6 | 8.6 | 45.2 | 32.9 | 22.8 | 53.0 | 37.0 | 30.1 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.52 | 0.37 | 0.19 | 0.85 | 0.77 | 0.97 |
| Incremental Delay, d2 | 7.8 | 3.7 | 0.2 | 3.7 | 11.3 | 0.1 | 4.8 | 6.1 | 0.5 | 7.7 | 4.6 | 1.0 |
| Delay (s) | 51.9 | 50.2 | 19.1 | 46.9 | 59.9 | 8.7 | 28.5 | 18.3 | 4.8 | 52.6 | 33.1 | 30.2 |
| Level of Service | D | D | B | D | E | A | C | B | A | D | C | C |
| Approach Delay (s) | | 41.5 | | | 49.2 | | | 17.5 | | | 35.0 | |
| Approach LOS | | D | | | D | | | B | | | C | |

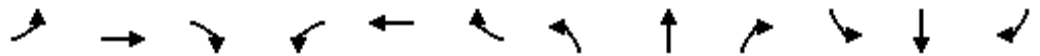
Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 32.3 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.84 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 11.7 |
| Intersection Capacity Utilization | 76.7% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

106: Centa Dr & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | ↗ | | | ↗ | | ↕↗ | | | ↕↗ | ↗ |
| Volume (veh/h) | 0 | 0 | 4 | 0 | 0 | 5 | 0 | 1578 | 5 | 0 | 1150 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 5 | 0 | 0 | 6 | 0 | 1715 | 6 | 0 | 1250 | 7 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | 1319 | | | | |
| pX, platoon unblocked | 0.63 | 0.63 | | 0.63 | 0.63 | 0.63 | | | | | 0.63 | |
| vC, conflicting volume | 2113 | 2971 | 625 | 2348 | 2975 | 861 | 1257 | | | | 1721 | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1598 | 2954 | 625 | 1969 | 2961 | 0 | 1257 | | | | 978 | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | | 4.1 | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | | 2.2 | |
| p0 queue free % | 100 | 100 | 99 | 100 | 100 | 99 | 100 | | | | 100 | |
| cM capacity (veh/h) | 45 | 9 | 428 | 23 | 9 | 686 | 549 | | | | 444 | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 | SB 3 |
|------------------------|------|------|------|------|------|------|------|
| Volume Total | 5 | 6 | 1143 | 578 | 625 | 625 | 7 |
| Volume Left | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 5 | 6 | 0 | 6 | 0 | 0 | 7 |
| cSH | 428 | 686 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.01 | 0.01 | 0.67 | 0.34 | 0.37 | 0.37 | 0.00 |
| Queue Length 95th (ft) | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| Control Delay (s) | 13.5 | 10.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | B | B | | | | | |
| Approach Delay (s) | 13.5 | 10.3 | 0.0 | | 0.0 | | |
| Approach LOS | B | B | | | | | |

| Intersection Summary | | |
|-----------------------------------|-------|----------------------|
| Average Delay | | 0.0 |
| Intersection Capacity Utilization | 53.8% | ICU Level of Service |
| Analysis Period (min) | | 15 |
| | | A |

HCM Signalized Intersection Capacity Analysis

17: honeysuckle Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|--------|-------|------|--------|------|-------|------|-------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖↗ | ↑↑ | ↗ | ↖ | ↑↑ | ↗ |
| Volume (vph) | 11 | 66 | 64 | 147 | 105 | 204 | 65 | 1366 | 159 | 87 | 965 | 42 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.3 | 2.9 | 6.0 | 2.8 | 2.8 | 2.8 | 3.8 | 3.7 | 3.7 | 3.8 | 3.9 | 3.9 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.97 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 3433 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 3433 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 13 | 78 | 75 | 173 | 124 | 240 | 76 | 1485 | 187 | 102 | 1049 | 49 |
| RTOR Reduction (vph) | 0 | 0 | 56 | 0 | 0 | 64 | 0 | 0 | 51 | 0 | 0 | 19 |
| Lane Group Flow (vph) | 13 | 78 | 19 | 173 | 124 | 176 | 76 | 1485 | 136 | 102 | 1049 | 30 |
| Turn Type | Prot | | custom | Prot | | custom | Prot | | Perm | Prot | | Perm |
| Protected Phases | 3 | 8 | | 7 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | 8 1 5 | | | 4 1 5 | | | 6 | | | 2 |
| Actuated Green, G (s) | 2.0 | 13.0 | 31.1 | 16.1 | 27.1 | 45.2 | 7.1 | 61.9 | 61.9 | 5.0 | 59.8 | 59.8 |
| Effective Green, g (s) | 4.7 | 16.1 | 31.1 | 19.3 | 30.3 | 51.6 | 9.3 | 64.2 | 64.2 | 7.2 | 61.9 | 61.9 |
| Actuated g/C Ratio | 0.04 | 0.13 | 0.26 | 0.16 | 0.25 | 0.43 | 0.08 | 0.54 | 0.54 | 0.06 | 0.52 | 0.52 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 2.0 | 2.0 | | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 69 | 250 | 410 | 285 | 470 | 681 | 266 | 1893 | 847 | 106 | 1826 | 817 |
| v/s Ratio Prot | 0.01 | c0.04 | | c0.10 | 0.07 | | 0.02 | c0.42 | | c0.06 | 0.30 | |
| v/s Ratio Perm | | | 0.01 | | | 0.11 | | | 0.09 | | | 0.02 |
| v/c Ratio | 0.19 | 0.31 | 0.05 | 0.61 | 0.26 | 0.26 | 0.29 | 0.78 | 0.16 | 0.96 | 0.57 | 0.04 |
| Uniform Delay, d1 | 55.8 | 46.9 | 33.3 | 46.8 | 35.9 | 21.9 | 52.2 | 22.4 | 14.2 | 56.3 | 20.0 | 14.3 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.34 | 0.28 | 0.23 | 0.97 | 0.89 | 0.94 |
| Incremental Delay, d2 | 0.5 | 0.3 | 0.0 | 2.5 | 0.1 | 0.1 | 0.1 | 1.9 | 0.2 | 62.7 | 1.0 | 0.1 |
| Delay (s) | 56.3 | 47.2 | 33.4 | 49.3 | 36.0 | 22.0 | 70.0 | 8.1 | 3.5 | 117.3 | 18.7 | 13.5 |
| Level of Service | E | D | C | D | D | C | E | A | A | F | B | B |
| Approach Delay (s) | | 41.7 | | | 34.0 | | | 10.3 | | | 26.9 | |
| Approach LOS | | D | | | C | | | B | | | C | |





















Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 20.7 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.69 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 13.2 |
| Intersection Capacity Utilization | 67.4% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

18: Orchard Ave & US 95

1/20/2009

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | |  | | |  |  |  |  |  |  |  |
| Volume (veh/h) | 0 | 0 | 76 | 0 | 0 | 63 | 72 | 1464 | 45 | 45 | 1018 | 40 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 89 | 0 | 0 | 74 | 85 | 1591 | 53 | 53 | 1107 | 47 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 2252 | 3026 | 553 | 2509 | 3020 | 796 | 1154 | | | 1644 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 2252 | 3026 | 553 | 2509 | 3020 | 796 | 1154 | | | 1644 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 81 | 100 | 100 | 78 | 86 | | | 86 | | |
| cM capacity (veh/h) | 14 | 10 | 476 | 9 | 10 | 330 | 601 | | | 389 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 | | |
| Volume Total | 89 | 74 | 85 | 796 | 796 | 53 | 53 | 553 | 553 | 47 | | |
| Volume Left | 0 | 0 | 85 | 0 | 0 | 0 | 53 | 0 | 0 | 0 | | |
| Volume Right | 89 | 74 | 0 | 0 | 0 | 53 | 0 | 0 | 0 | 47 | | |
| cSH | 476 | 330 | 601 | 1700 | 1700 | 1700 | 389 | 1700 | 1700 | 1700 | | |
| Volume to Capacity | 0.19 | 0.22 | 0.14 | 0.47 | 0.47 | 0.03 | 0.14 | 0.33 | 0.33 | 0.03 | | |
| Queue Length 95th (ft) | 17 | 21 | 12 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | | |
| Control Delay (s) | 14.3 | 19.0 | 12.0 | 0.0 | 0.0 | 0.0 | 15.7 | 0.0 | 0.0 | 0.0 | | |
| Lane LOS | B | C | B | | | | C | | | | | |
| Approach Delay (s) | 14.3 | 19.0 | 0.6 | | | | 0.7 | | | | | |
| Approach LOS | B | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 51.0% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

19: Hayden Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|-------|------|---------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 210 | 209 | 87 | 238 | 162 | 193 | 143 | 1104 | 280 | 78 | 778 | 60 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.9 | 3.2 | 6.0 | 3.8 | 3.2 | 3.2 | 4.0 | 4.1 | 4.1 | 3.7 | 3.9 | 3.9 |
| Lane Util. Factor | 0.91 | 0.91 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1610 | 3347 | 1583 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 0.99 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1610 | 3347 | 1583 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 247 | 246 | 102 | 280 | 191 | 227 | 168 | 1200 | 329 | 92 | 846 | 71 |
| RTOR Reduction (vph) | 0 | 0 | 87 | 0 | 0 | 7 | 0 | 0 | 188 | 0 | 0 | 49 |
| Lane Group Flow (vph) | 161 | 332 | 15 | 280 | 191 | 220 | 168 | 1200 | 141 | 92 | 846 | 22 |
| Turn Type | Split | | Perm | Split | | custom | Prot | | Perm | Prot | | Perm |
| Protected Phases | 3 | 3 | | 7 | 7 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | 3 | | | 7 1 5 3 | | | 6 | | | 2 |
| Actuated Green, G (s) | 17.2 | 17.2 | 17.2 | 21.6 | 21.6 | 73.1 | 22.3 | 49.5 | 49.5 | 7.7 | 34.9 | 34.9 |
| Effective Green, g (s) | 19.3 | 20.0 | 17.2 | 23.8 | 24.4 | 75.9 | 24.3 | 51.4 | 51.4 | 10.0 | 37.0 | 37.0 |
| Actuated g/C Ratio | 0.16 | 0.17 | 0.14 | 0.20 | 0.20 | 0.63 | 0.20 | 0.43 | 0.43 | 0.08 | 0.31 | 0.31 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 4.0 | 4.0 | 3.0 | 4.0 | 4.0 |
| Lane Grp Cap (vph) | 259 | 558 | 227 | 351 | 379 | 1001 | 358 | 1516 | 678 | 148 | 1091 | 488 |
| v/s Ratio Prot | c0.10 | 0.10 | | c0.16 | 0.10 | | 0.09 | c0.34 | | c0.05 | 0.24 | |
| v/s Ratio Perm | | | 0.01 | | | 0.14 | | | 0.09 | | | 0.01 |
| v/c Ratio | 0.62 | 0.59 | 0.06 | 0.80 | 0.50 | 0.22 | 0.47 | 0.79 | 0.21 | 0.62 | 0.78 | 0.04 |
| Uniform Delay, d1 | 46.9 | 46.3 | 44.4 | 45.8 | 42.4 | 9.4 | 42.2 | 29.7 | 21.5 | 53.2 | 37.7 | 29.1 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.13 | 0.47 | 0.44 | 1.13 | 0.72 | 0.82 |
| Incremental Delay, d2 | 4.6 | 1.7 | 0.1 | 11.9 | 1.1 | 0.1 | 3.4 | 3.4 | 0.5 | 7.1 | 4.9 | 0.2 |
| Delay (s) | 51.5 | 48.0 | 44.6 | 57.7 | 43.5 | 9.5 | 51.0 | 17.2 | 10.0 | 67.0 | 32.0 | 23.9 |
| Level of Service | D | D | D | E | D | A | D | B | A | E | C | C |
| Approach Delay (s) | | 48.3 | | | 38.1 | | | 19.2 | | | 34.6 | |
| Approach LOS | | D | | | D | | | B | | | C | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 30.7 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.75 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 15.5 |
| Intersection Capacity Utilization | 69.4% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

20: Dakota Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | ↗ | | | ↗ | ↗ | ↕ | ↗ | ↗ | ↕ | ↗ |
| Volume (veh/h) | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 1459 | 44 | 92 | 915 | 22 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 0 | 0 | 2 | 5 | 1586 | 52 | 108 | 995 | 26 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | 1289 | | | | |
| pX, platoon unblocked | 0.71 | 0.71 | | 0.71 | 0.71 | 0.71 | | | | 0.71 | | |
| vC, conflicting volume | 2016 | 2858 | 497 | 2309 | 2832 | 793 | 1020 | | | 1638 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1604 | 2799 | 497 | 2020 | 2762 | 0 | 1020 | | | 1068 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 100 | 100 | 100 | 100 | 99 | | | 76 | | |
| cM capacity (veh/h) | 40 | 10 | 518 | 20 | 10 | 765 | 676 | | | 453 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| Volume Total | 0 | 2 | 5 | 793 | 793 | 52 | 108 | 497 | 497 | 26 |
| Volume Left | 0 | 0 | 5 | 0 | 0 | 0 | 108 | 0 | 0 | 0 |
| Volume Right | 0 | 2 | 0 | 0 | 0 | 52 | 0 | 0 | 0 | 26 |
| cSH | 1700 | 765 | 676 | 1700 | 1700 | 1700 | 453 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.00 | 0.00 | 0.01 | 0.47 | 0.47 | 0.03 | 0.24 | 0.29 | 0.29 | 0.02 |
| Queue Length 95th (ft) | 0 | 0 | 1 | 0 | 0 | 0 | 23 | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 9.7 | 10.4 | 0.0 | 0.0 | 0.0 | 15.4 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | A | B | | | | C | | | |
| Approach Delay (s) | 0.0 | 9.7 | 0.0 | | | | 1.5 | | | |
| Approach LOS | A | A | | | | | | | | |

| Intersection Summary | |
|-----------------------------------|-------|
| Average Delay | 0.6 |
| Intersection Capacity Utilization | 52.1% |
| ICU Level of Service | A |
| Analysis Period (min) | 15 |

HCM Signalized Intersection Capacity Analysis

21: Miles Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|-------|-------|--------|-------|------|-------|------|------|-------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↑↑ | ↗ | ↖ | ↑↑ | ↗ |
| Volume (vph) | 53 | 8 | 60 | 142 | 5 | 51 | 28 | 1383 | 50 | 35 | 827 | 2 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1752 | 3505 | 1568 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | 1752 | 3505 | 1568 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 62 | 9 | 71 | 167 | 6 | 60 | 33 | 1503 | 59 | 41 | 899 | 2 |
| RTOR Reduction (vph) | 0 | 0 | 55 | 0 | 0 | 39 | 0 | 0 | 21 | 0 | 0 | 1 |
| Lane Group Flow (vph) | 62 | 9 | 16 | 167 | 6 | 21 | 33 | 1503 | 38 | 41 | 899 | 1 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 3% | 3% | 3% |
| Turn Type | Prot | custom | | Prot | custom | | Prot | Perm | | Prot | Perm | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 1 5 | | | 8 1 5 | | | 2 | | | 6 |
| Actuated Green, G (s) | 7.2 | 11.8 | 27.4 | 15.8 | 20.4 | 36.0 | 4.8 | 63.6 | 63.6 | 4.8 | 63.6 | 63.6 |
| Effective Green, g (s) | 7.2 | 11.8 | 27.4 | 15.8 | 20.4 | 36.0 | 4.8 | 63.6 | 63.6 | 4.8 | 63.6 | 63.6 |
| Actuated g/C Ratio | 0.06 | 0.10 | 0.23 | 0.13 | 0.17 | 0.30 | 0.04 | 0.53 | 0.53 | 0.04 | 0.53 | 0.53 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 106 | 183 | 361 | 233 | 317 | 475 | 71 | 1876 | 839 | 70 | 1858 | 831 |
| v/s Ratio Prot | c0.04 | c0.00 | | c0.09 | 0.00 | | 0.02 | c0.42 | | 0.02 | c0.26 | |
| v/s Ratio Perm | | | 0.01 | | | 0.01 | | | 0.02 | | | 0.00 |
| v/c Ratio | 0.58 | 0.05 | 0.04 | 0.72 | 0.02 | 0.04 | 0.46 | 0.80 | 0.05 | 0.59 | 0.48 | 0.00 |
| Uniform Delay, d1 | 54.9 | 49.0 | 36.1 | 50.0 | 41.5 | 29.8 | 56.3 | 23.0 | 13.6 | 56.6 | 17.8 | 13.3 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.30 | 0.29 | 0.01 | 0.63 | 0.38 | 0.54 |
| Incremental Delay, d2 | 8.0 | 0.5 | 0.1 | 10.0 | 0.1 | 0.0 | 3.5 | 2.7 | 0.1 | 11.1 | 0.8 | 0.0 |
| Delay (s) | 62.9 | 49.5 | 36.1 | 60.0 | 41.6 | 29.8 | 76.9 | 9.5 | 0.2 | 46.9 | 7.7 | 7.2 |
| Level of Service | E | D | D | E | D | C | E | A | A | D | A | A |
| Approach Delay (s) | | 48.7 | | | 51.8 | | | 10.5 | | | 9.4 | |
| Approach LOS | | D | | | D | | | B | | | A | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 15.3 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.73 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 24.0 |
| Intersection Capacity Utilization | 62.8% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

22: Lacey Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | ↗ | | | ↗ | ↗ | ↕ | ↗ | ↗ | ↕ | ↗ |
| Volume (veh/h) | 0 | 0 | 6 | 0 | 0 | 0 | 47 | 1398 | 42 | 50 | 858 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 7 | 0 | 0 | 0 | 55 | 1520 | 49 | 59 | 933 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | 1313 | |
| pX, platoon unblocked | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | | 0.86 | | | | | |
| vC, conflicting volume | 1921 | 2730 | 466 | 2221 | 2680 | 760 | 933 | | | 1569 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1751 | 2687 | 68 | 2099 | 2630 | 760 | 608 | | | 1569 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 6.9 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 99 | 100 | 100 | 100 | 93 | | | 86 | | |
| cM capacity (veh/h) | 40 | 15 | 848 | 22 | 16 | 349 | 835 | | | 412 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | NB 4 | SB 1 | SB 2 | SB 3 | SB 4 |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| Volume Total | 7 | 0 | 55 | 760 | 760 | 49 | 59 | 466 | 466 | 0 |
| Volume Left | 0 | 0 | 55 | 0 | 0 | 0 | 59 | 0 | 0 | 0 |
| Volume Right | 7 | 0 | 0 | 0 | 0 | 49 | 0 | 0 | 0 | 0 |
| cSH | 848 | 1700 | 835 | 1700 | 1700 | 1700 | 412 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.01 | 0.00 | 0.07 | 0.45 | 0.45 | 0.03 | 0.14 | 0.27 | 0.27 | 0.00 |
| Queue Length 95th (ft) | 1 | 0 | 5 | 0 | 0 | 0 | 12 | 0 | 0 | 0 |
| Control Delay (s) | 9.3 | 0.0 | 9.6 | 0.0 | 0.0 | 0.0 | 15.2 | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | A | A | | | | C | | | |
| Approach Delay (s) | 9.3 | 0.0 | 0.3 | | | | 0.9 | | | |
| Approach LOS | A | A | | | | | | | | |

Intersection Summary

| | |
|-----------------------------------|-------|
| Average Delay | 0.6 |
| Intersection Capacity Utilization | 44.9% |
| ICU Level of Service | A |
| Analysis Period (min) | 15 |

HCM Signalized Intersection Capacity Analysis

23: Wyoming Ave & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|--------|-------|------|--------|------|-------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 52 | 5 | 97 | 63 | 5 | 16 | 117 | 1159 | 122 | 0 | 748 | 75 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | | 3505 | 1568 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 3539 | 1583 | | 3505 | 1568 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 61 | 6 | 114 | 74 | 6 | 19 | 138 | 1260 | 144 | 0 | 813 | 88 |
| RTOR Reduction (vph) | 0 | 0 | 77 | 0 | 0 | 13 | 0 | 0 | 55 | 0 | 0 | 38 |
| Lane Group Flow (vph) | 61 | 6 | 37 | 74 | 6 | 6 | 138 | 1260 | 89 | 0 | 813 | 50 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 3% | 3% | 3% |
| Turn Type | Split | | custom | Split | | custom | Prot | | Perm | Prot | | Perm |
| Protected Phases | 4 | 4 | | 8 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 1 5 | | | 8 1 5 | | | 2 | | | 6 |
| Actuated Green, G (s) | 9.5 | 9.5 | 38.8 | 9.1 | 9.1 | 38.4 | 17.4 | 71.5 | 71.5 | | 60.0 | 60.0 |
| Effective Green, g (s) | 9.5 | 9.5 | 38.8 | 9.1 | 9.1 | 38.4 | 17.4 | 71.5 | 71.5 | | 60.0 | 60.0 |
| Actuated g/C Ratio | 0.08 | 0.08 | 0.32 | 0.08 | 0.08 | 0.32 | 0.14 | 0.60 | 0.60 | | 0.50 | 0.50 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 140 | 147 | 512 | 134 | 141 | 507 | 257 | 2109 | 943 | | 1753 | 784 |
| v/s Ratio Prot | c0.03 | 0.00 | | c0.04 | 0.00 | | 0.08 | c0.36 | | | c0.23 | |
| v/s Ratio Perm | | | 0.02 | | | 0.00 | | | 0.06 | | | 0.03 |
| v/c Ratio | 0.44 | 0.04 | 0.07 | 0.55 | 0.04 | 0.01 | 0.54 | 0.60 | 0.09 | | 0.46 | 0.06 |
| Uniform Delay, d1 | 52.7 | 51.0 | 28.1 | 53.5 | 51.4 | 27.9 | 47.6 | 15.2 | 10.4 | | 19.5 | 15.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.63 | 0.49 | 0.33 | | 0.59 | 0.20 |
| Incremental Delay, d2 | 2.2 | 0.1 | 0.1 | 4.9 | 0.1 | 0.0 | 1.5 | 0.8 | 0.1 | | 0.7 | 0.1 |
| Delay (s) | 54.9 | 51.2 | 28.2 | 58.3 | 51.5 | 27.9 | 31.4 | 8.3 | 3.5 | | 12.2 | 3.2 |
| Level of Service | D | D | C | E | D | C | C | A | A | | B | A |
| Approach Delay (s) | | 37.9 | | | 52.1 | | | 9.9 | | | 11.3 | |
| Approach LOS | | D | | | D | | | A | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 13.8 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.59 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 24.0 |
| Intersection Capacity Utilization | 61.4% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

24: Lancaster Rd & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|--------|-------|-------|--------|-------|------|-------|------|------|-------|------|
| Lane Configurations | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ | ↖ | ↗ | ↘ |
| Volume (vph) | 5 | 48 | 83 | 75 | 5 | 37 | 68 | 1020 | 139 | 12 | 666 | 6 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1752 | 1845 | 1568 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1752 | 1845 | 1568 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 6 | 56 | 98 | 88 | 6 | 44 | 80 | 1109 | 164 | 14 | 724 | 7 |
| RTOR Reduction (vph) | 0 | 0 | 75 | 0 | 0 | 29 | 0 | 0 | 35 | 0 | 0 | 2 |
| Lane Group Flow (vph) | 6 | 56 | 23 | 88 | 6 | 15 | 80 | 1109 | 129 | 14 | 724 | 5 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 3% | 3% | 3% |
| Turn Type | Prot | custom | | Prot | custom | | Prot | Perm | | Prot | Perm | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 1 5 | | | 8 1 5 | | | 2 | | | 6 |
| Actuated Green, G (s) | 1.2 | 5.0 | 28.1 | 12.7 | 16.5 | 39.6 | 12.0 | 73.2 | 73.2 | 5.1 | 66.3 | 66.3 |
| Effective Green, g (s) | 1.2 | 5.0 | 28.1 | 12.7 | 16.5 | 39.6 | 12.0 | 73.2 | 73.2 | 5.1 | 66.3 | 66.3 |
| Actuated g/C Ratio | 0.01 | 0.04 | 0.23 | 0.11 | 0.14 | 0.33 | 0.10 | 0.61 | 0.61 | 0.04 | 0.55 | 0.55 |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 18 | 78 | 371 | 187 | 256 | 522 | 177 | 1136 | 966 | 74 | 1019 | 866 |
| v/s Ratio Prot | 0.00 | c0.03 | | c0.05 | 0.00 | | 0.05 | c0.60 | | 0.01 | c0.39 | |
| v/s Ratio Perm | | | 0.01 | | | 0.01 | | | 0.08 | | | 0.00 |
| v/c Ratio | 0.33 | 0.72 | 0.06 | 0.47 | 0.02 | 0.03 | 0.45 | 0.98 | 0.13 | 0.19 | 0.71 | 0.01 |
| Uniform Delay, d1 | 59.0 | 56.8 | 35.7 | 50.5 | 44.8 | 27.2 | 50.9 | 22.6 | 9.9 | 55.5 | 19.8 | 12.1 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.70 | 0.66 | 0.33 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 10.6 | 26.9 | 0.1 | 1.9 | 0.0 | 0.0 | 1.5 | 19.4 | 0.2 | 1.2 | 4.2 | 0.0 |
| Delay (s) | 69.6 | 83.7 | 35.8 | 52.4 | 44.8 | 27.2 | 37.2 | 34.3 | 3.6 | 56.7 | 24.0 | 12.1 |
| Level of Service | E | F | D | D | D | C | D | C | A | E | C | B |
| Approach Delay (s) | | 53.8 | | | 44.0 | | | 30.7 | | | 24.5 | |
| Approach LOS | | D | | | D | | | C | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 31.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.91 | | |
| Actuated Cycle Length (s) | 120.0 | Sum of lost time (s) | 24.0 |
| Intersection Capacity Utilization | 77.3% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

25: Boekel Rd & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | ↗ | | | ↗ | ↗ | ↑ | ↗ | ↗ | ↑ | ↗ |
| Volume (veh/h) | 0 | 0 | 107 | 0 | 0 | 0 | 198 | 859 | 0 | 0 | 577 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 126 | 0 | 0 | 0 | 233 | 934 | 0 | 0 | 627 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 2027 | 2027 | 627 | 2153 | 2027 | 934 | 627 | | | 934 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 2027 | 2027 | 627 | 2153 | 2027 | 934 | 627 | | | 934 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 100 | 74 | 100 | 100 | 100 | 76 | | | 100 | | |
| cM capacity (veh/h) | 35 | 44 | 483 | 21 | 44 | 322 | 955 | | | 729 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | NB 3 | SB 1 | SB 2 | SB 3 |
|------------------------|------|------|------|------|------|------|------|------|
| Volume Total | 126 | 0 | 233 | 934 | 0 | 0 | 627 | 0 |
| Volume Left | 0 | 0 | 233 | 0 | 0 | 0 | 0 | 0 |
| Volume Right | 126 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| cSH | 483 | 1700 | 955 | 1700 | 1700 | 1700 | 1700 | 1700 |
| Volume to Capacity | 0.26 | 0.00 | 0.24 | 0.55 | 0.00 | 0.00 | 0.37 | 0.00 |
| Queue Length 95th (ft) | 26 | 0 | 24 | 0 | 0 | 0 | 0 | 0 |
| Control Delay (s) | 15.0 | 0.0 | 10.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Lane LOS | C | A | A | | | | | |
| Approach Delay (s) | 15.0 | 0.0 | 2.0 | | | 0.0 | | |
| Approach LOS | C | A | | | | | | |

| Intersection Summary | | |
|-----------------------------------|-------|----------------------|
| Average Delay | | 2.2 |
| Intersection Capacity Utilization | 55.2% | ICU Level of Service |
| Analysis Period (min) | | 15 |
| | | B |

HCM Signalized Intersection Capacity Analysis

26: SH 53 & US 95

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 51 | 16 | 80 | 7 | 22 | 89 | 144 | 715 | 3 | 39 | 498 | 40 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.3 | 3.3 | 3.3 | 4.1 | 4.1 | | 4.0 | 5.3 | 4.0 | 4.8 | 4.0 | 4.0 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.88 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1639 | | 1770 | 1863 | 1583 | 1752 | 1845 | 1568 |
| Flt Permitted | 0.59 | 1.00 | 1.00 | 0.75 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1108 | 1863 | 1583 | 1388 | 1639 | | 1770 | 1863 | 1583 | 1752 | 1845 | 1568 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.92 | 0.85 | 0.85 | 0.92 | 0.85 |
| Adj. Flow (vph) | 60 | 19 | 94 | 8 | 26 | 105 | 169 | 777 | 4 | 46 | 541 | 47 |
| RTOR Reduction (vph) | 0 | 0 | 80 | 0 | 91 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 60 | 19 | 14 | 8 | 40 | 0 | 169 | 777 | 4 | 46 | 541 | 47 |
| Heavy Vehicles (%) | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 2% | 3% | 3% | 3% |
| Turn Type | Perm | | Prot | Perm | | | Prot | | Free | Prot | | Free |
| Protected Phases | | 8 | 8 | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | | 4 | | | | | Free | | | Free |
| Actuated Green, G (s) | 9.0 | 9.0 | 9.0 | 8.9 | 8.9 | | 12.0 | 47.6 | 80.0 | 4.6 | 40.4 | 80.0 |
| Effective Green, g (s) | 11.5 | 11.5 | 11.5 | 10.7 | 10.7 | | 13.5 | 49.5 | 80.0 | 5.6 | 43.7 | 80.0 |
| Actuated g/C Ratio | 0.14 | 0.14 | 0.14 | 0.13 | 0.13 | | 0.17 | 0.62 | 1.00 | 0.07 | 0.55 | 1.00 |
| Clearance Time (s) | 5.8 | 5.8 | 5.8 | 5.9 | 5.9 | | 5.5 | 7.2 | | 5.8 | 7.3 | |
| Vehicle Extension (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 2.0 | 5.0 | | 2.0 | 5.0 | |
| Lane Grp Cap (vph) | 159 | 268 | 228 | 186 | 219 | | 299 | 1153 | 1583 | 123 | 1008 | 1568 |
| v/s Ratio Prot | | 0.01 | 0.01 | | 0.02 | | c0.10 | c0.42 | | 0.03 | 0.29 | |
| v/s Ratio Perm | c0.05 | | | 0.01 | | | | | 0.00 | | | 0.03 |
| v/c Ratio | 0.38 | 0.07 | 0.06 | 0.04 | 0.18 | | 0.57 | 0.67 | 0.00 | 0.37 | 0.54 | 0.03 |
| Uniform Delay, d1 | 31.0 | 29.6 | 29.6 | 30.2 | 30.8 | | 30.6 | 10.0 | 0.0 | 35.5 | 11.7 | 0.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.0 | 0.2 | 0.1 | 0.1 | 0.6 | | 1.5 | 3.2 | 0.0 | 0.7 | 2.0 | 0.0 |
| Delay (s) | 33.1 | 29.8 | 29.7 | 30.3 | 31.3 | | 32.0 | 13.1 | 0.0 | 36.2 | 13.7 | 0.0 |
| Level of Service | C | C | C | C | C | | C | B | A | D | B | A |
| Approach Delay (s) | | 30.9 | | | 31.3 | | | 16.4 | | | 14.3 | |
| Approach LOS | | C | | | C | | | B | | | B | |

Intersection Summary

| | | | |
|--|-------|----------------------|-----|
| HCM Average Control Delay | 18.1 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.58 | | |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) | 7.3 |
| Intersection Capacity Utilization | 63.0% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN DID NOT REVISE | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

41: Appleyway Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 124 | 508 | 101 | 108 | 385 | 159 | 131 | 468 | 151 | 190 | 466 | 136 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.97 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 3451 | | 1770 | 3384 | | 1770 | 3410 | | 1770 | 3419 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 3451 | | 1770 | 3384 | | 1770 | 3410 | | 1770 | 3419 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 146 | 598 | 119 | 127 | 453 | 187 | 154 | 551 | 178 | 224 | 548 | 160 |
| RTOR Reduction (vph) | 0 | 18 | 0 | 0 | 49 | 0 | 0 | 40 | 0 | 0 | 32 | 0 |
| Lane Group Flow (vph) | 146 | 699 | 0 | 127 | 591 | 0 | 154 | 689 | 0 | 224 | 676 | 0 |
| Turn Type | Prot | | | Prot | | | Prot | | | Prot | | |
| Protected Phases | 1 | 6 | | 5 | 2 | | 7 | 4 | | 3 | 8 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | 7.9 | 17.8 | | 7.7 | 17.6 | | 10.3 | 19.0 | | 12.0 | 20.7 | |
| Effective Green, g (s) | 7.9 | 17.8 | | 7.7 | 17.6 | | 10.3 | 19.0 | | 12.0 | 20.7 | |
| Actuated g/C Ratio | 0.11 | 0.24 | | 0.11 | 0.24 | | 0.14 | 0.26 | | 0.16 | 0.28 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | |
| Lane Grp Cap (vph) | 191 | 838 | | 186 | 813 | | 249 | 884 | | 290 | 966 | |
| v/s Ratio Prot | c0.08 | c0.20 | | 0.07 | 0.17 | | 0.09 | c0.20 | | c0.13 | 0.20 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.76 | 0.83 | | 0.68 | 0.73 | | 0.62 | 0.78 | | 0.77 | 0.70 | |
| Uniform Delay, d1 | 31.8 | 26.3 | | 31.6 | 25.6 | | 29.7 | 25.2 | | 29.3 | 23.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 15.0 | 6.9 | | 8.0 | 2.8 | | 3.2 | 4.0 | | 11.0 | 1.9 | |
| Delay (s) | 46.8 | 33.2 | | 39.6 | 28.4 | | 32.8 | 29.2 | | 40.4 | 25.4 | |
| Level of Service | D | C | | D | C | | C | C | | D | C | |
| Approach Delay (s) | | 35.5 | | | 30.3 | | | 29.8 | | | 29.0 | |
| Approach LOS | | D | | | C | | | C | | | C | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 31.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.74 | | |
| Actuated Cycle Length (s) | 73.3 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 65.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

43: Neider Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|-------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 80 | 309 | 86 | 82 | 283 | 80 | 145 | 545 | 126 | 125 | 576 | 77 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.97 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 3422 | | 1770 | 3440 | | 1770 | 3476 | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 3422 | | 1770 | 3440 | | 1770 | 3476 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 94 | 364 | 101 | 96 | 333 | 94 | 171 | 641 | 148 | 147 | 678 | 91 |
| RTOR Reduction (vph) | 0 | 0 | 74 | 0 | 27 | 0 | 0 | 27 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 94 | 364 | 27 | 96 | 400 | 0 | 171 | 762 | 0 | 147 | 755 | 0 |
| Turn Type | Prot | | Perm | Prot | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | | | | | | | |
| Actuated Green, G (s) | 5.2 | 17.6 | 17.6 | 5.2 | 17.6 | | 8.1 | 20.0 | | 7.3 | 19.2 | |
| Effective Green, g (s) | 5.2 | 17.6 | 17.6 | 5.2 | 17.6 | | 8.1 | 20.0 | | 7.3 | 19.2 | |
| Actuated g/C Ratio | 0.08 | 0.26 | 0.26 | 0.08 | 0.26 | | 0.12 | 0.30 | | 0.11 | 0.29 | |
| Clearance Time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | | 1.5 | 1.5 | | 1.5 | 1.5 | |
| Lane Grp Cap (vph) | 138 | 490 | 416 | 138 | 900 | | 214 | 1028 | | 193 | 998 | |
| v/s Ratio Prot | 0.05 | c0.20 | | c0.05 | 0.12 | | c0.10 | c0.22 | | 0.08 | 0.22 | |
| v/s Ratio Perm | | | 0.02 | | | | | | | | | |
| v/c Ratio | 0.68 | 0.74 | 0.06 | 0.70 | 0.44 | | 0.80 | 0.74 | | 0.76 | 0.76 | |
| Uniform Delay, d1 | 30.0 | 22.6 | 18.5 | 30.1 | 20.6 | | 28.6 | 21.1 | | 29.0 | 21.7 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 10.5 | 5.3 | 0.0 | 11.6 | 0.1 | | 17.4 | 2.5 | | 14.7 | 2.9 | |
| Delay (s) | 40.5 | 27.9 | 18.5 | 41.7 | 20.7 | | 46.0 | 23.7 | | 43.6 | 24.7 | |
| Level of Service | D | C | B | D | C | | D | C | | D | C | |
| Approach Delay (s) | | 28.3 | | | 24.6 | | | 27.6 | | | 27.7 | |
| Approach LOS | | C | | | C | | | C | | | C | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 27.2 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.70 | | |
| Actuated Cycle Length (s) | 66.9 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 62.5% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

45: Kathleen Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|------|------|------|-------|------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 73 | 331 | 110 | 68 | 212 | 74 | 244 | 568 | 68 | 103 | 582 | 90 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1793 | | 1770 | 1790 | | 1770 | 3482 | | 1770 | 3468 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1793 | | 1770 | 1790 | | 1770 | 3482 | | 1770 | 3468 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 86 | 389 | 129 | 80 | 249 | 87 | 287 | 668 | 80 | 121 | 685 | 106 |
| RTOR Reduction (vph) | 0 | 19 | 0 | 0 | 20 | 0 | 0 | 13 | 0 | 0 | 19 | 0 |
| Lane Group Flow (vph) | 86 | 499 | 0 | 80 | 316 | 0 | 287 | 735 | 0 | 121 | 772 | 0 |
| Turn Type | Prot | | | Prot | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | 5.4 | 16.3 | | 5.4 | 16.3 | | 7.0 | 18.7 | | 5.4 | 17.1 | |
| Effective Green, g (s) | 5.4 | 16.3 | | 5.4 | 16.3 | | 7.0 | 18.7 | | 5.4 | 17.1 | |
| Actuated g/C Ratio | 0.09 | 0.26 | | 0.09 | 0.26 | | 0.11 | 0.30 | | 0.09 | 0.27 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 153 | 467 | | 153 | 466 | | 198 | 1040 | | 153 | 947 | |
| v/s Ratio Prot | c0.05 | c0.28 | | 0.05 | 0.18 | | c0.16 | 0.21 | | 0.07 | c0.22 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.56 | 1.07 | | 0.52 | 0.68 | | 1.45 | 0.71 | | 0.79 | 0.82 | |
| Uniform Delay, d1 | 27.5 | 23.2 | | 27.4 | 20.8 | | 27.8 | 19.5 | | 28.0 | 21.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 4.7 | 61.0 | | 3.2 | 3.9 | | 228.3 | 4.0 | | 23.7 | 7.7 | |
| Delay (s) | 32.1 | 84.1 | | 30.6 | 24.7 | | 256.1 | 23.6 | | 51.7 | 29.0 | |
| Level of Service | C | F | | C | C | | F | C | | D | C | |
| Approach Delay (s) | | 76.7 | | | 25.8 | | | 88.0 | | | 32.0 | |
| Approach LOS | | E | | | C | | | F | | | C | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 59.8 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 0.97 | | |
| Actuated Cycle Length (s) | 62.6 | Sum of lost time (s) | 16.8 |
| Intersection Capacity Utilization | 76.4% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

46: Dalton Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|-------|------|------|------|-------|--------|-------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | | ↖ | ↑ | ↗ | ↖ | ↗ | |
| Volume (vph) | 38 | 159 | 31 | 53 | 113 | 79 | 69 | 585 | 122 | 82 | 615 | 46 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | |
| Frt | 1.00 | 0.98 | | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1818 | | 1770 | 1748 | | 1770 | 1863 | 1583 | 1770 | 3502 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1818 | | 1770 | 1748 | | 1770 | 1863 | 1583 | 1770 | 3502 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 45 | 187 | 36 | 62 | 133 | 93 | 81 | 688 | 144 | 96 | 724 | 54 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 38 | 0 | 0 | 0 | 81 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 45 | 212 | 0 | 62 | 188 | 0 | 81 | 688 | 63 | 96 | 772 | 0 |
| Turn Type | Prot | | | Prot | | | Prot | | custom | | Prot | |
| Protected Phases | 3 | 8 | | 7 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | | | | 2 | | | |
| Actuated Green, G (s) | 3.8 | 11.4 | | 3.6 | 11.2 | | 3.6 | 25.6 | 27.3 | 5.3 | 27.3 | |
| Effective Green, g (s) | 3.8 | 11.4 | | 3.6 | 11.2 | | 3.6 | 25.6 | 27.3 | 5.3 | 27.3 | |
| Actuated g/C Ratio | 0.06 | 0.18 | | 0.06 | 0.18 | | 0.06 | 0.41 | 0.44 | 0.08 | 0.44 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.5 | 1.5 | | 1.5 | 1.5 | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | |
| Lane Grp Cap (vph) | 107 | 331 | | 102 | 312 | | 102 | 761 | 689 | 150 | 1525 | |
| v/s Ratio Prot | 0.03 | c0.12 | | c0.04 | 0.11 | | 0.05 | c0.37 | | c0.05 | 0.22 | |
| v/s Ratio Perm | | | | | | | | | 0.04 | | | |
| v/c Ratio | 0.42 | 0.64 | | 0.61 | 0.60 | | 0.79 | 0.90 | 0.09 | 0.64 | 0.51 | |
| Uniform Delay, d1 | 28.4 | 23.8 | | 28.9 | 23.7 | | 29.2 | 17.4 | 10.4 | 27.8 | 12.8 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.0 | 3.2 | | 6.8 | 2.3 | | 31.5 | 13.8 | 0.0 | 6.8 | 0.1 | |
| Delay (s) | 29.4 | 26.9 | | 35.7 | 26.0 | | 60.7 | 31.2 | 10.4 | 34.6 | 12.9 | |
| Level of Service | C | C | | D | C | | E | C | B | C | B | |
| Approach Delay (s) | | 27.3 | | | 28.1 | | | 30.6 | | | 15.3 | |
| Approach LOS | | C | | | C | | | C | | | B | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 24.2 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.72 | | |
| Actuated Cycle Length (s) | 62.7 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 67.2% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

47: Hanley Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|-------|------|-------|-------|------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 89 | 130 | 134 | 82 | 143 | 61 | 143 | 562 | 39 | 43 | 514 | 70 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1779 | | 1770 | 1845 | | 1770 | 1829 | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1863 | 1583 | 1770 | 1779 | | 1770 | 1845 | | 1770 | 1829 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 105 | 153 | 158 | 96 | 168 | 72 | 168 | 661 | 46 | 51 | 605 | 82 |
| RTOR Reduction (vph) | 0 | 0 | 129 | 0 | 27 | 0 | 0 | 3 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 105 | 153 | 29 | 96 | 213 | 0 | 168 | 704 | 0 | 51 | 680 | 0 |
| Turn Type | Prot | | Perm | Prot | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | 4 | | | | | | | | | |
| Actuated Green, G (s) | 5.3 | 10.8 | 10.8 | 5.3 | 10.8 | | 7.1 | 21.5 | | 3.9 | 18.3 | |
| Effective Green, g (s) | 5.3 | 10.8 | 10.8 | 5.3 | 10.8 | | 7.1 | 21.5 | | 3.9 | 18.3 | |
| Actuated g/C Ratio | 0.09 | 0.19 | 0.19 | 0.09 | 0.19 | | 0.12 | 0.37 | | 0.07 | 0.31 | |
| Clearance Time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | | 1.5 | 1.5 | | 1.5 | 1.5 | |
| Lane Grp Cap (vph) | 161 | 345 | 293 | 161 | 330 | | 216 | 680 | | 118 | 574 | |
| v/s Ratio Prot | c0.06 | 0.08 | | 0.05 | c0.12 | | c0.09 | c0.38 | | 0.03 | c0.37 | |
| v/s Ratio Perm | | | 0.02 | | | | | | | | | |
| v/c Ratio | 0.65 | 0.44 | 0.10 | 0.60 | 0.65 | | 0.78 | 1.04 | | 0.43 | 1.18 | |
| Uniform Delay, d1 | 25.6 | 21.1 | 19.7 | 25.5 | 22.0 | | 24.8 | 18.4 | | 26.1 | 20.0 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 7.0 | 0.3 | 0.1 | 3.9 | 3.2 | | 14.7 | 43.9 | | 0.9 | 99.9 | |
| Delay (s) | 32.6 | 21.4 | 19.8 | 29.4 | 25.2 | | 39.6 | 62.3 | | 27.1 | 119.9 | |
| Level of Service | C | C | B | C | C | | D | E | | C | F | |
| Approach Delay (s) | | 23.6 | | | 26.4 | | | 57.9 | | | 113.5 | |
| Approach LOS | | C | | | C | | | E | | | F | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 64.8 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 1.00 | | |
| Actuated Cycle Length (s) | 58.3 | Sum of lost time (s) | 21.0 |
| Intersection Capacity Utilization | 70.3% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

48: Canfield Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 35 | 56 | 134 | 11 | 48 | 8 | 116 | 525 | 64 | 65 | 438 | 64 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.89 | | 1.00 | 0.98 | | 1.00 | 0.98 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1666 | | 1770 | 1824 | | 1770 | 1833 | | 1770 | 1827 | |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1770 | 1666 | | 1770 | 1824 | | 1770 | 1833 | | 1770 | 1827 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 41 | 66 | 158 | 13 | 56 | 9 | 136 | 618 | 75 | 76 | 515 | 75 |
| RTOR Reduction (vph) | 0 | 128 | 0 | 0 | 7 | 0 | 0 | 5 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 41 | 96 | 0 | 13 | 58 | 0 | 136 | 688 | 0 | 76 | 583 | 0 |
| Turn Type | Prot | | | Prot | | | Prot | | | Prot | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | 2.4 | 10.4 | | 1.1 | 9.1 | | 5.6 | 22.1 | | 4.0 | 20.5 | |
| Effective Green, g (s) | 2.4 | 10.4 | | 1.1 | 9.1 | | 5.6 | 22.1 | | 4.0 | 20.5 | |
| Actuated g/C Ratio | 0.04 | 0.19 | | 0.02 | 0.17 | | 0.10 | 0.41 | | 0.07 | 0.38 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 78 | 319 | | 36 | 305 | | 182 | 745 | | 130 | 688 | |
| v/s Ratio Prot | c0.02 | c0.06 | | 0.01 | 0.03 | | c0.08 | c0.38 | | 0.04 | 0.32 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.53 | 0.30 | | 0.36 | 0.19 | | 0.75 | 0.92 | | 0.58 | 0.85 | |
| Uniform Delay, d1 | 25.4 | 18.9 | | 26.3 | 19.5 | | 23.7 | 15.3 | | 24.4 | 15.5 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 6.3 | 0.5 | | 6.1 | 0.3 | | 15.4 | 18.8 | | 6.6 | 12.3 | |
| Delay (s) | 31.7 | 19.4 | | 32.4 | 19.8 | | 39.1 | 34.1 | | 30.9 | 27.9 | |
| Level of Service | C | B | | C | B | | D | C | | C | C | |
| Approach Delay (s) | 21.3 | | | 21.9 | | | 34.9 | | | 28.2 | | |
| Approach LOS | C | | | C | | | C | | | C | | |

Intersection Summary

| | | | |
|--|-------|----------------------|-----|
| HCM Average Control Delay | 30.0 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.63 | | |
| Actuated Cycle Length (s) | 54.4 | Sum of lost time (s) | 8.4 |
| Intersection Capacity Utilization | 59.0% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

49: Aqua Ave & Government Way

1/20/2009



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 0 | 0 | 0 | 64 | 38 | 0 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 75 | 45 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | 1013 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 120 | 45 | 45 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 120 | 45 | 45 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 100 | 100 | | | |
| cM capacity (veh/h) | 876 | 1025 | 1563 | | | |
| Direction, Lane # | EB 1 | EB 2 | NB 1 | SB 1 | | |
| Volume Total | 0 | 0 | 75 | 45 | | |
| Volume Left | 0 | 0 | 0 | 0 | | |
| Volume Right | 0 | 0 | 0 | 0 | | |
| cSH | 1700 | 1700 | 1563 | 1700 | | |
| Volume to Capacity | 0.00 | 0.00 | 0.00 | 0.03 | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | 0 | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | | |
| Lane LOS | A | A | | | | |
| Approach Delay (s) | 0.0 | | 0.0 | 0.0 | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 6.7% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

50: Prairie Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 95 | 243 | 111 | 77 | 241 | 74 | 127 | 368 | 118 | 134 | 400 | 73 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 5.5 | 5.5 | | 5.5 | 5.5 | 5.5 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 3415 | | 1770 | 1795 | | 1770 | 1863 | 1583 |
| Flt Permitted | 0.40 | 1.00 | 1.00 | 0.45 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 743 | 1863 | 1583 | 842 | 3415 | | 1770 | 1795 | | 1770 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 112 | 286 | 131 | 91 | 284 | 87 | 149 | 433 | 139 | 158 | 471 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 71 | 0 | 26 | 0 | 0 | 8 | 0 | 0 | 0 | 41 |
| Lane Group Flow (vph) | 112 | 286 | 60 | 91 | 345 | 0 | 149 | 564 | 0 | 158 | 471 | 45 |
| Turn Type | pm+pt | | Perm | pm+pt | | | Prot | | | Prot | | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | | | | | | 6 |
| Actuated Green, G (s) | 31.5 | 21.8 | 21.8 | 26.1 | 19.1 | | 13.1 | 25.5 | | 13.5 | 25.9 | 25.9 |
| Effective Green, g (s) | 31.5 | 21.8 | 21.8 | 26.1 | 19.1 | | 13.1 | 25.5 | | 13.5 | 25.9 | 25.9 |
| Actuated g/C Ratio | 0.35 | 0.24 | 0.24 | 0.29 | 0.21 | | 0.14 | 0.28 | | 0.15 | 0.29 | 0.29 |
| Clearance Time (s) | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 | | 5.5 | 5.5 | | 5.5 | 5.5 | 5.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 367 | 447 | 380 | 314 | 718 | | 255 | 504 | | 263 | 531 | 452 |
| v/s Ratio Prot | c0.03 | c0.15 | | 0.02 | 0.10 | | 0.08 | c0.31 | | c0.09 | 0.25 | |
| v/s Ratio Perm | 0.07 | | 0.04 | 0.06 | | | | | | | | 0.03 |
| v/c Ratio | 0.31 | 0.64 | 0.16 | 0.29 | 0.48 | | 0.58 | 1.12 | | 0.60 | 0.89 | 0.10 |
| Uniform Delay, d1 | 20.9 | 31.0 | 27.2 | 24.4 | 31.5 | | 36.3 | 32.6 | | 36.1 | 31.0 | 23.9 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 0.5 | 3.0 | 0.2 | 0.5 | 0.5 | | 3.4 | 77.0 | | 3.8 | 16.3 | 0.1 |
| Delay (s) | 21.3 | 34.0 | 27.4 | 24.9 | 32.0 | | 39.7 | 109.7 | | 40.0 | 47.3 | 24.0 |
| Level of Service | C | C | C | C | C | | D | F | | D | D | C |
| Approach Delay (s) | | 29.7 | | | 30.6 | | | 95.2 | | | 42.9 | |
| Approach LOS | | C | | | C | | | F | | | D | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 53.2 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.79 | | |
| Actuated Cycle Length (s) | 90.8 | Sum of lost time (s) | 23.0 |
| Intersection Capacity Utilization | 70.2% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER HAYDEN EXISTING FILE | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

51: Honeysuckle Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|-------|------|-------|------|------|------|-------|------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 55 | 85 | 122 | 62 | 81 | 56 | 120 | 390 | 126 | 143 | 382 | 142 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.94 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 1698 | | 1770 | 1748 | | 1770 | 1863 | 1583 | 1770 | 1787 | |
| Flt Permitted | 0.66 | 1.00 | | 0.45 | 1.00 | | 0.26 | 1.00 | 1.00 | 0.40 | 1.00 | |
| Satd. Flow (perm) | 1220 | 1698 | | 847 | 1748 | | 479 | 1863 | 1583 | 738 | 1787 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 65 | 100 | 144 | 73 | 95 | 66 | 141 | 459 | 148 | 168 | 449 | 167 |
| RTOR Reduction (vph) | 0 | 100 | 0 | 0 | 48 | 0 | 0 | 0 | 78 | 0 | 17 | 0 |
| Lane Group Flow (vph) | 65 | 144 | 0 | 73 | 113 | 0 | 141 | 459 | 70 | 168 | 599 | 0 |
| Turn Type | Perm | | Perm | | pm+pt | | Perm | | pm+pt | | | |
| Protected Phases | 8 | | 4 | | 1 | | 6 | | 5 | | 2 | |
| Permitted Phases | 8 | | 4 | | 6 | | 6 | | 2 | | | |
| Actuated Green, G (s) | 8.8 | 8.8 | 8.8 | 8.8 | 29.3 | 24.0 | 24.0 | 24.0 | 29.3 | 24.0 | | |
| Effective Green, g (s) | 8.8 | 8.8 | 8.8 | 8.8 | 29.3 | 24.0 | 24.0 | 24.0 | 29.3 | 24.0 | | |
| Actuated g/C Ratio | 0.17 | 0.17 | 0.17 | 0.17 | 0.58 | 0.47 | 0.47 | 0.47 | 0.58 | 0.47 | | |
| Clearance Time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | |
| Vehicle Extension (s) | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | | |
| Lane Grp Cap (vph) | 212 | 295 | 147 | 303 | 412 | 882 | 749 | 534 | 846 | | | |
| v/s Ratio Prot | 0.08 | | 0.06 | | c0.04 | | 0.25 | | 0.03 | | c0.34 | |
| v/s Ratio Perm | 0.05 | | c0.09 | | 0.16 | | 0.04 | | 0.15 | | | |
| v/c Ratio | 0.31 | 0.49 | 0.50 | 0.37 | 0.34 | 0.52 | 0.09 | 0.31 | 0.71 | | | |
| Uniform Delay, d1 | 18.3 | 18.9 | 18.9 | 18.5 | 6.0 | 9.3 | 7.4 | 5.3 | 10.6 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | |
| Incremental Delay, d2 | 0.3 | 0.5 | 1.0 | 0.3 | 0.2 | 2.2 | 0.2 | 0.1 | 5.0 | | | |
| Delay (s) | 18.6 | 19.4 | 19.9 | 18.8 | 6.2 | 11.5 | 7.6 | 5.4 | 15.6 | | | |
| Level of Service | B | B | B | B | A | B | A | A | B | | | |
| Approach Delay (s) | 19.2 | | 19.1 | | 9.7 | | 13.4 | | | | | |
| Approach LOS | B | | B | | A | | B | | | | | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 13.6 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.61 | | |
| Actuated Cycle Length (s) | 50.7 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 67.2% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

Description: CHECKED AS PER FIELD VERIFICATIN

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

52: Orchard Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↘ | | ↗ | ↘ | |
| Volume (veh/h) | 35 | 23 | 33 | 62 | 3 | 0 | 25 | 397 | 43 | 20 | 511 | 31 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 41 | 27 | 39 | 73 | 4 | 0 | 29 | 467 | 51 | 24 | 601 | 36 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1194 | 1243 | 619 | 1252 | 1236 | 492 | 638 | | | 518 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1194 | 1243 | 619 | 1252 | 1236 | 492 | 638 | | | 518 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 73 | 84 | 92 | 37 | 98 | 100 | 97 | | | 98 | | |
| cM capacity (veh/h) | 154 | 165 | 488 | 115 | 167 | 577 | 946 | | | 1048 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 |
|------------------------|------|------|------|------|------|------|
| Volume Total | 107 | 76 | 29 | 518 | 24 | 638 |
| Volume Left | 41 | 73 | 29 | 0 | 24 | 0 |
| Volume Right | 39 | 0 | 0 | 51 | 0 | 36 |
| cSH | 210 | 117 | 946 | 1700 | 1048 | 1700 |
| Volume to Capacity | 0.51 | 0.65 | 0.03 | 0.30 | 0.02 | 0.38 |
| Queue Length 95th (ft) | 65 | 85 | 2 | 0 | 2 | 0 |
| Control Delay (s) | 38.8 | 80.8 | 8.9 | 0.0 | 8.5 | 0.0 |
| Lane LOS | E | F | A | | A | |
| Approach Delay (s) | 38.8 | 80.8 | 0.5 | | 0.3 | |
| Approach LOS | E | F | | | | |

| Intersection Summary | | |
|-----------------------------------|-------|----------------------|
| Average Delay | | 7.8 |
| Intersection Capacity Utilization | 43.1% | ICU Level of Service |
| Analysis Period (min) | | 15 |
| | | A |

HCM Signalized Intersection Capacity Analysis

53: Hayden Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|-------|------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 192 | 144 | 197 | 76 | 161 | 10 | 162 | 240 | 105 | 5 | 247 | 234 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1846 | | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 |
| Flt Permitted | 0.55 | 1.00 | 1.00 | 0.61 | 1.00 | | 0.47 | 1.00 | 1.00 | 0.59 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1022 | 1863 | 1583 | 1135 | 1846 | | 868 | 1863 | 1583 | 1093 | 1863 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 226 | 169 | 232 | 89 | 189 | 12 | 191 | 282 | 124 | 6 | 291 | 275 |
| RTOR Reduction (vph) | 0 | 0 | 175 | 0 | 4 | 0 | 0 | 0 | 44 | 0 | 0 | 113 |
| Lane Group Flow (vph) | 226 | 169 | 57 | 89 | 197 | 0 | 191 | 282 | 80 | 6 | 291 | 162 |
| Turn Type | Perm | | Perm | Perm | | | pm+pt | | Perm | pm+pt | | Perm |
| Protected Phases | | 8 | | | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | 8 | | 8 | 4 | | 6 | | 6 | 2 | | 2 | |
| Actuated Green, G (s) | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | | 42.1 | 36.7 | 36.7 | 32.0 | 30.8 | 30.8 |
| Effective Green, g (s) | 16.4 | 16.4 | 16.4 | 16.4 | 16.4 | | 42.1 | 36.7 | 36.7 | 32.0 | 30.8 | 30.8 |
| Actuated g/C Ratio | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | | 0.63 | 0.55 | 0.55 | 0.48 | 0.46 | 0.46 |
| Clearance Time (s) | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| Vehicle Extension (s) | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 | 1.2 |
| Lane Grp Cap (vph) | 251 | 457 | 388 | 278 | 453 | | 642 | 1022 | 868 | 535 | 858 | 729 |
| v/s Ratio Prot | | 0.09 | | | 0.11 | | c0.03 | 0.15 | | 0.00 | c0.16 | |
| v/s Ratio Perm | c0.22 | | 0.04 | 0.08 | | | 0.16 | | 0.05 | 0.01 | | 0.10 |
| v/c Ratio | 0.90 | 0.37 | 0.15 | 0.32 | 0.44 | | 0.30 | 0.28 | 0.09 | 0.01 | 0.34 | 0.22 |
| Uniform Delay, d1 | 24.5 | 21.0 | 19.8 | 20.7 | 21.3 | | 5.6 | 8.0 | 7.2 | 9.1 | 11.5 | 10.8 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 31.3 | 0.2 | 0.1 | 0.2 | 0.2 | | 0.1 | 0.7 | 0.2 | 0.0 | 1.1 | 0.7 |
| Delay (s) | 55.8 | 21.1 | 19.8 | 20.9 | 21.6 | | 5.7 | 8.7 | 7.4 | 9.1 | 12.6 | 11.5 |
| Level of Service | E | C | B | C | C | | A | A | A | A | B | B |
| Approach Delay (s) | | 33.1 | | | 21.4 | | | 7.5 | | | 12.1 | |
| Approach LOS | | C | | | C | | | A | | | B | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 18.4 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.51 | | |
| Actuated Cycle Length (s) | 66.9 | Sum of lost time (s) | 12.6 |
| Intersection Capacity Utilization | 55.7% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER FIELD VERIFICATION | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

54: Dakota Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | ↗ | ↘ | | ↗ | ↘ | |
| Volume (veh/h) | 42 | 35 | 45 | 20 | 0 | 16 | 0 | 353 | 65 | 2 | 378 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 49 | 41 | 53 | 24 | 0 | 19 | 0 | 415 | 76 | 2 | 445 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | TWLTL | | | TWLTL | | |
| Median storage (veh) | | | | | | | 2 | | | 2 | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 884 | 941 | 445 | 976 | 903 | 454 | 445 | | | 492 | | |
| vC1, stage 1 conf vol | 449 | 449 | | 454 | 454 | | | | | | | |
| vC2, stage 2 conf vol | 434 | 492 | | 523 | 449 | | | | | | | |
| vCu, unblocked vol | 884 | 941 | 445 | 976 | 903 | 454 | 445 | | | 492 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | 6.1 | 5.5 | | 6.1 | 5.5 | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 89 | 91 | 91 | 94 | 100 | 97 | 100 | | | 100 | | |
| cM capacity (veh/h) | 463 | 448 | 613 | 391 | 461 | 606 | 1115 | | | 1072 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 |
|------------------------|------|------|------|------|------|------|
| Volume Total | 144 | 42 | 0 | 492 | 2 | 445 |
| Volume Left | 49 | 24 | 0 | 0 | 2 | 0 |
| Volume Right | 53 | 19 | 0 | 76 | 0 | 0 |
| cSH | 504 | 464 | 1700 | 1700 | 1072 | 1700 |
| Volume to Capacity | 0.28 | 0.09 | 0.00 | 0.29 | 0.00 | 0.26 |
| Queue Length 95th (ft) | 29 | 7 | 0 | 0 | 0 | 0 |
| Control Delay (s) | 15.0 | 13.5 | 0.0 | 0.0 | 8.4 | 0.0 |
| Lane LOS | B | B | | | A | |
| Approach Delay (s) | 15.0 | 13.5 | 0.0 | | 0.0 | |
| Approach LOS | B | B | | | | |

Intersection Summary

| | |
|-----------------------------------|-------|
| Average Delay | 2.4 |
| Intersection Capacity Utilization | 36.7% |
| ICU Level of Service | A |
| Analysis Period (min) | 15 |

HCM Unsignalized Intersection Capacity Analysis

55: Miles Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | ↗ | ↘ | | ↗ | ↘ | |
| Volume (veh/h) | 32 | 44 | 19 | 39 | 47 | 54 | 35 | 283 | 49 | 119 | 278 | 69 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 38 | 52 | 22 | 46 | 55 | 64 | 41 | 333 | 58 | 140 | 327 | 81 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | TWLTL | | | | None | |
| Median storage veh | | | | | | | 2 | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1154 | 1121 | 368 | 1099 | 1132 | 362 | 408 | | | 391 | | |
| vC1, stage 1 conf vol | 648 | 648 | | 444 | 444 | | | | | | | |
| vC2, stage 2 conf vol | 506 | 473 | | 655 | 688 | | | | | | | |
| vCu, unblocked vol | 1154 | 1121 | 368 | 1099 | 1132 | 362 | 408 | | | 391 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | 6.1 | 5.5 | | 6.1 | 5.5 | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 85 | 84 | 97 | 83 | 83 | 91 | 96 | | | 88 | | |
| cM capacity (veh/h) | 254 | 320 | 678 | 277 | 321 | 683 | 1151 | | | 1168 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | NB 2 | SB 1 | SB 2 |
|------------------------|------|------|------|------|------|------|
| Volume Total | 112 | 165 | 41 | 391 | 140 | 408 |
| Volume Left | 38 | 46 | 41 | 0 | 140 | 0 |
| Volume Right | 22 | 64 | 0 | 58 | 0 | 81 |
| cSH | 326 | 382 | 1151 | 1700 | 1168 | 1700 |
| Volume to Capacity | 0.34 | 0.43 | 0.04 | 0.23 | 0.12 | 0.24 |
| Queue Length 95th (ft) | 37 | 53 | 3 | 0 | 10 | 0 |
| Control Delay (s) | 21.7 | 21.4 | 8.2 | 0.0 | 8.5 | 0.0 |
| Lane LOS | C | C | A | | A | |
| Approach Delay (s) | 21.7 | 21.4 | 0.8 | | 2.2 | |
| Approach LOS | C | C | | | | |

| Intersection Summary | | |
|-----------------------------------|-------|----------------------|
| Average Delay | | 5.9 |
| Intersection Capacity Utilization | 44.3% | ICU Level of Service |
| Analysis Period (min) | | 15 |
| | | A |

HCM Unsignalized Intersection Capacity Analysis

56: Lacey Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (veh/h) | 17 | 41 | 34 | 72 | 0 | 43 | 0 | 262 | 36 | 2 | 263 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 20 | 48 | 40 | 85 | 0 | 51 | 0 | 308 | 42 | 2 | 309 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 694 | 665 | 309 | 708 | 644 | 329 | 309 | | | 351 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 694 | 665 | 309 | 708 | 644 | 329 | 309 | | | 351 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 94 | 87 | 95 | 72 | 100 | 93 | 100 | | | 100 | | |
| cM capacity (veh/h) | 331 | 380 | 731 | 298 | 391 | 712 | 1251 | | | 1208 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 108 | 135 | 351 | 312 |
| Volume Left | 20 | 85 | 0 | 2 |
| Volume Right | 40 | 51 | 42 | 0 |
| cSH | 447 | 381 | 1251 | 1208 |
| Volume to Capacity | 0.24 | 0.36 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 23 | 39 | 0 | 0 |
| Control Delay (s) | 15.6 | 19.6 | 0.0 | 0.1 |
| Lane LOS | C | C | | A |
| Approach Delay (s) | 15.6 | 19.6 | 0.0 | 0.1 |
| Approach LOS | C | C | | |

| Intersection Summary | | | |
|-----------------------------------|-------|-----|------------------------|
| Average Delay | | 4.8 | |
| Intersection Capacity Utilization | 35.9% | | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

57: Wyoming Ave & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | ■ | ↕ | ■ | ■ | ■ | ■ | ■ | ↕ | ■ | ■ | ■ | ■ |
| Volume (veh/h) | 91 | 39 | 0 | 20 | 35 | 3 | 0 | 254 | 20 | 4 | 202 | 2 |
| Sign Control | | Stop | | | Stop | | | Free | | | | Free |
| Grade | | 0% | | | 0% | | | 0% | | | | 0% |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 107 | 46 | 0 | 24 | 41 | 4 | 0 | 299 | 24 | 5 | 238 | 2 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | | None |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 583 | 571 | 239 | 582 | 560 | 311 | 240 | | | 322 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 583 | 571 | 239 | 582 | 560 | 311 | 240 | | | 322 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 73 | 89 | 100 | 94 | 91 | 100 | 100 | | | 100 | | |
| cM capacity (veh/h) | 390 | 429 | 800 | 389 | 435 | 730 | 1327 | | | 1237 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 153 | 68 | 322 | 245 |
| Volume Left | 107 | 24 | 0 | 5 |
| Volume Right | 0 | 4 | 24 | 2 |
| cSH | 401 | 427 | 1327 | 1237 |
| Volume to Capacity | 0.38 | 0.16 | 0.00 | 0.00 |
| Queue Length 95th (ft) | 44 | 14 | 0 | 0 |
| Control Delay (s) | 19.4 | 15.0 | 0.0 | 0.2 |
| Lane LOS | C | C | | A |
| Approach Delay (s) | 19.4 | 15.0 | 0.0 | 0.2 |
| Approach LOS | C | C | | |

| Intersection Summary | | | |
|-----------------------------------|-------|-----|------------------------|
| Average Delay | | 5.1 | |
| Intersection Capacity Utilization | 34.7% | | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

58: Lancaster Rd & Government Way

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Volume (veh/h) | 93 | 94 | 12 | 85 | 78 | 0 | 39 | 18 | 75 | 0 | 55 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 109 | 111 | 14 | 100 | 92 | 0 | 46 | 21 | 88 | 0 | 65 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 268 | 266 | 65 | 291 | 222 | 65 | 65 | | | 109 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 268 | 266 | 65 | 291 | 222 | 65 | 65 | | | 109 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 82 | 82 | 99 | 82 | 86 | 100 | 97 | | | 100 | | |
| cM capacity (veh/h) | 598 | 621 | 999 | 550 | 657 | 999 | 1537 | | | 1481 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 234 | 192 | 155 | 65 | | | | | | | | |
| Volume Left | 109 | 100 | 46 | 0 | | | | | | | | |
| Volume Right | 14 | 0 | 88 | 0 | | | | | | | | |
| cSH | 624 | 596 | 1537 | 1481 | | | | | | | | |
| Volume to Capacity | 0.38 | 0.32 | 0.03 | 0.00 | | | | | | | | |
| Queue Length 95th (ft) | 44 | 35 | 2 | 0 | | | | | | | | |
| Control Delay (s) | 14.2 | 13.9 | 2.4 | 0.0 | | | | | | | | |
| Lane LOS | B | B | A | | | | | | | | | |
| Approach Delay (s) | 14.2 | 13.9 | 2.4 | 0.0 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 9.8 | | | | | | | | | |
| Intersection Capacity Utilization | | | 34.0% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

59: Boekel Rd & Government Way

1/20/2009



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|------|------|------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 0 | 0 | 0 | 0 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 0 | 0 | 0 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 0 | 0 | 0 | | | |
| tC, single (s) | 6.4 | 6.2 | 4.1 | | | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | 2.2 | | | |
| p0 queue free % | 100 | 100 | 100 | | | |
| cM capacity (veh/h) | 1023 | 1085 | 1623 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 0 | 0 | | | |
| Volume Left | 0 | 0 | 0 | | | |
| Volume Right | 0 | 0 | 0 | | | |
| cSH | 1700 | 1700 | 1700 | | | |
| Volume to Capacity | 0.00 | 0.00 | 0.00 | | | |
| Queue Length 95th (ft) | 0 | 0 | 0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Lane LOS | A | | | | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.0 | | | |
| Intersection Capacity Utilization | | | 0.0% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Signalized Intersection Capacity Analysis

77: Ironwood & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|-------|------|-------|-------|------|-------|-------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 238 | 144 | 119 | 58 | 233 | 425 | 180 | 980 | 35 | 187 | 717 | 53 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.5 | 5.9 | 5.9 | 5.6 | 6.0 | 6.0 | 6.5 | 6.5 | | 6.4 | 6.4 | 6.4 |
| Lane Util. Factor | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.86 | 0.86 | | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 1522 | 4777 | | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 1522 | 4777 | | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 280 | 169 | 140 | 68 | 274 | 500 | 212 | 1153 | 41 | 220 | 844 | 62 |
| RTOR Reduction (vph) | 0 | 0 | 113 | 0 | 0 | 434 | 0 | 3 | 0 | 0 | 0 | 42 |
| Lane Group Flow (vph) | 280 | 169 | 27 | 68 | 274 | 66 | 191 | 1212 | 0 | 220 | 844 | 20 |
| Turn Type | Prot | | Perm | Prot | | Perm | Split | | | Split | | Perm |
| Protected Phases | 3 | 8 | | 7 | 4 | | 1 | 1 | | 2 | | 2 |
| Permitted Phases | | | 8 | | | 4 | | | | | | 2 |
| Actuated Green, G (s) | 13.1 | 21.4 | 21.4 | 6.3 | 14.6 | 14.6 | 29.6 | 29.6 | | 28.3 | 28.3 | 28.3 |
| Effective Green, g (s) | 13.1 | 21.4 | 21.4 | 6.3 | 14.6 | 14.6 | 29.6 | 29.6 | | 28.3 | 28.3 | 28.3 |
| Actuated g/C Ratio | 0.12 | 0.19 | 0.19 | 0.06 | 0.13 | 0.13 | 0.27 | 0.27 | | 0.26 | 0.26 | 0.26 |
| Clearance Time (s) | 5.5 | 5.9 | 5.9 | 5.6 | 6.0 | 6.0 | 6.5 | 6.5 | | 6.4 | 6.4 | 6.4 |
| Vehicle Extension (s) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 409 | 362 | 308 | 101 | 470 | 210 | 410 | 1285 | | 455 | 910 | 407 |
| v/s Ratio Prot | c0.08 | 0.09 | | 0.04 | c0.08 | | 0.13 | c0.25 | | 0.12 | c0.24 | |
| v/s Ratio Perm | | | 0.02 | | | 0.04 | | | | | | 0.01 |
| v/c Ratio | 0.68 | 0.47 | 0.09 | 0.67 | 0.58 | 0.32 | 0.47 | 0.94 | | 0.48 | 0.93 | 0.05 |
| Uniform Delay, d1 | 46.5 | 39.2 | 36.3 | 50.8 | 44.8 | 43.2 | 33.6 | 39.4 | | 34.7 | 39.8 | 30.7 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.08 | 1.04 | 1.39 |
| Incremental Delay, d2 | 3.8 | 0.3 | 0.0 | 13.0 | 1.2 | 0.3 | 0.3 | 13.6 | | 3.4 | 15.8 | 0.2 |
| Delay (s) | 50.2 | 39.6 | 36.4 | 63.9 | 46.0 | 43.5 | 33.9 | 52.9 | | 40.8 | 57.4 | 43.0 |
| Level of Service | D | D | D | E | D | D | C | D | | D | E | D |
| Approach Delay (s) | | 43.9 | | | 46.0 | | | 50.4 | | | 53.4 | |
| Approach LOS | | D | | | D | | | D | | | D | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 49.3 | HCM Level of Service | D |
| HCM Volume to Capacity ratio | 0.84 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 24.4 |
| Intersection Capacity Utilization | 72.4% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, WALK TIME IS REDUCED TO 4..5 FROM 5 TO MEET THE MINIMUM | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

78: EB Ramp & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|-------|------|------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 427 | 11 | 303 | 0 | 0 | 0 | 0 | 1471 | 172 | 185 | 654 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.8 | 6.8 | 6.8 | | | | | 5.8 | | 7.0 | 6.4 | |
| Lane Util. Factor | 0.95 | 0.91 | 0.95 | | | | | 0.91 | | 0.97 | 0.95 | |
| Fr _t | 1.00 | 0.96 | 0.85 | | | | | 0.98 | | 1.00 | 1.00 | |
| Fl _t Protected | 0.95 | 0.97 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1681 | 1571 | 1504 | | | | | 5006 | | 3433 | 3539 | |
| Fl _t Permitted | 0.95 | 0.97 | 1.00 | | | | | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1681 | 1571 | 1504 | | | | | 5006 | | 3433 | 3539 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 502 | 13 | 356 | 0 | 0 | 0 | 0 | 1731 | 202 | 218 | 769 | 0 |
| RTOR Reduction (vph) | 0 | 13 | 196 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 301 | 283 | 78 | 0 | 0 | 0 | 0 | 1922 | 0 | 218 | 769 | 0 |
| Turn Type | Split | | Perm | | | | | Prot | | | | |
| Protected Phases | 8 | 8 | | | | | | 6 | | 5 | 2 | |
| Permitted Phases | | | 8 | | | | | | | | | |
| Actuated Green, G (s) | 21.9 | 21.9 | 21.9 | | | | | 57.2 | | 11.3 | 74.9 | |
| Effective Green, g (s) | 21.9 | 21.9 | 21.9 | | | | | 57.2 | | 11.3 | 74.9 | |
| Actuated g/C Ratio | 0.20 | 0.20 | 0.20 | | | | | 0.52 | | 0.10 | 0.68 | |
| Clearance Time (s) | 6.8 | 6.8 | 6.8 | | | | | 5.8 | | 7.0 | 6.4 | |
| Vehicle Extension (s) | 2.0 | 2.0 | 2.0 | | | | | 2.0 | | 2.0 | 2.0 | |
| Lane Grp Cap (vph) | 335 | 313 | 299 | | | | | 2603 | | 353 | 2410 | |
| v/s Ratio Prot | 0.18 | c0.18 | | | | | | c0.38 | | c0.06 | 0.22 | |
| v/s Ratio Perm | | | 0.05 | | | | | | | | | |
| v/c Ratio | 0.90 | 0.90 | 0.26 | | | | | 0.74 | | 0.62 | 0.32 | |
| Uniform Delay, d ₁ | 43.0 | 43.0 | 37.2 | | | | | 20.6 | | 47.3 | 7.2 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | | | | 1.25 | | 1.00 | 1.17 | |
| Incremental Delay, d ₂ | 24.7 | 27.3 | 0.2 | | | | | 1.0 | | 1.9 | 0.3 | |
| Delay (s) | 67.7 | 70.4 | 37.4 | | | | | 26.7 | | 49.4 | 8.7 | |
| Level of Service | E | E | D | | | | | C | | D | A | |
| Approach Delay (s) | | 59.1 | | | 0.0 | | | 26.7 | | | 17.7 | |
| Approach LOS | | E | | | A | | | C | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 31.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.76 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 19.6 |
| Intersection Capacity Utilization | 69.1% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

79: WB Ramp & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|------|-------|-------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | ↖ | ↗ | | ↖ | ↗ | | | ↖ | ↗ |
| Volume (vph) | 0 | 0 | 0 | 128 | 12 | 237 | 522 | 1376 | 0 | 0 | 711 | 436 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | | | 5.7 | 5.7 | | 6.1 | 5.7 | | | 5.6 | |
| Lane Util. Factor | | | | 1.00 | 1.00 | | 0.97 | 0.95 | | | 0.91 | |
| Fr _t | | | | 1.00 | 0.86 | | 1.00 | 1.00 | | | 0.94 | |
| Fl _t Protected | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | | | 1770 | 1597 | | 3433 | 3539 | | | 4795 | |
| Fl _t Permitted | | | | 0.95 | 1.00 | | 0.95 | 1.00 | | | 1.00 | |
| Satd. Flow (perm) | | | | 1770 | 1597 | | 3433 | 3539 | | | 4795 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 0 | 0 | 0 | 151 | 14 | 279 | 614 | 1619 | 0 | 0 | 836 | 513 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 52 | 0 | 0 | 0 | 0 | 0 | 93 | 0 |
| Lane Group Flow (vph) | 0 | 0 | 0 | 151 | 241 | 0 | 614 | 1619 | 0 | 0 | 1256 | 0 |
| Turn Type | | | | Split | | | Prot | | | | | |
| Protected Phases | | | | 4 | 4 | | 1 | 6 | | | 2 | |
| Permitted Phases | | | | | | | | | | | | |
| Actuated Green, G (s) | | | | 15.9 | 15.9 | | 23.7 | 82.7 | | | 53.0 | |
| Effective Green, g (s) | | | | 15.9 | 15.9 | | 23.7 | 82.7 | | | 53.0 | |
| Actuated g/C Ratio | | | | 0.14 | 0.14 | | 0.22 | 0.75 | | | 0.48 | |
| Clearance Time (s) | | | | 5.7 | 5.7 | | 6.1 | 5.7 | | | 5.6 | |
| Vehicle Extension (s) | | | | 2.0 | 2.0 | | 2.0 | 2.0 | | | 2.0 | |
| Lane Grp Cap (vph) | | | | 256 | 231 | | 740 | 2661 | | | 2310 | |
| v/s Ratio Prot | | | | 0.09 | c0.15 | | c0.18 | c0.46 | | | 0.26 | |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | | | | 0.59 | 1.04 | | 0.83 | 0.61 | | | 0.54 | |
| Uniform Delay, d ₁ | | | | 44.0 | 47.0 | | 41.2 | 6.2 | | | 20.0 | |
| Progression Factor | | | | 1.00 | 1.00 | | 1.29 | 0.57 | | | 0.87 | |
| Incremental Delay, d ₂ | | | | 2.2 | 70.8 | | 4.7 | 0.6 | | | 0.8 | |
| Delay (s) | | | | 46.2 | 117.8 | | 57.9 | 4.2 | | | 18.3 | |
| Level of Service | | | | D | F | | E | A | | | B | |
| Approach Delay (s) | | 0.0 | | | 93.5 | | | 19.0 | | | 18.3 | |
| Approach LOS | | A | | | F | | | B | | | B | |

Intersection Summary

| | | | |
|---|-------|----------------------|------|
| HCM Average Control Delay | 27.0 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.71 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 11.8 |
| Intersection Capacity Utilization | 69.1% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT REVISED | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

80: Appleyway Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | ↖ | ↗ | | ↖ | ↗ | ↗ | ↖ | ↗ | ↗ | ↖ | ↗ | ↖ |
| Volume (vph) | 0 | 74 | 74 | 282 | 70 | 140 | 104 | 1196 | 313 | 102 | 791 | 38 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.9 | | 6.7 | 6.7 | 6.7 | 5.3 | 5.9 | 5.9 | 6.5 | 5.8 | |
| Lane Util. Factor | | 0.95 | | 0.97 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | |
| Frt | | 0.92 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 3274 | | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 3515 | |
| Flt Permitted | | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | |
| Satd. Flow (perm) | | 3274 | | 3433 | 1863 | 1583 | 1770 | 3539 | 1583 | 3433 | 3515 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 0 | 87 | 87 | 332 | 82 | 165 | 122 | 1407 | 368 | 120 | 931 | 45 |
| RTOR Reduction (vph) | 0 | 81 | 0 | 0 | 0 | 142 | 0 | 0 | 104 | 0 | 3 | 0 |
| Lane Group Flow (vph) | 0 | 93 | 0 | 332 | 82 | 23 | 122 | 1407 | 264 | 120 | 973 | 0 |
| Turn Type | Split | | | Split | | Perm | Prot | | Perm | Prot | | |
| Protected Phases | 3 | 3 | | 4 | 4 | | 1 | 6 | | 5 | 2 | |
| Permitted Phases | | | | | | 4 | | | 6 | | | |
| Actuated Green, G (s) | | 7.2 | | 15.4 | 15.4 | 15.4 | 12.4 | 53.2 | 53.2 | 8.2 | 50.3 | |
| Effective Green, g (s) | | 7.2 | | 15.4 | 15.4 | 15.4 | 12.4 | 53.2 | 53.2 | 8.2 | 50.3 | |
| Actuated g/C Ratio | | 0.07 | | 0.14 | 0.14 | 0.14 | 0.11 | 0.48 | 0.48 | 0.07 | 0.46 | |
| Clearance Time (s) | | 6.9 | | 6.7 | 6.7 | 6.7 | 5.3 | 5.9 | 5.9 | 6.5 | 5.8 | |
| Vehicle Extension (s) | | 2.0 | | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | |
| Lane Grp Cap (vph) | | 214 | | 481 | 261 | 222 | 200 | 1712 | 766 | 256 | 1607 | |
| v/s Ratio Prot | | c0.03 | | c0.10 | 0.04 | | c0.07 | c0.40 | | 0.03 | 0.28 | |
| v/s Ratio Perm | | | | | | 0.01 | | | 0.17 | | | |
| v/c Ratio | | 0.43 | | 0.69 | 0.31 | 0.10 | 0.61 | 0.82 | 0.34 | 0.47 | 0.61 | |
| Uniform Delay, d1 | | 49.4 | | 45.0 | 42.5 | 41.3 | 46.5 | 24.3 | 17.6 | 48.8 | 22.4 | |
| Progression Factor | | 1.00 | | 1.00 | 1.00 | 1.00 | 1.24 | 0.72 | 0.56 | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 0.5 | | 3.4 | 0.3 | 0.1 | 2.8 | 3.4 | 0.9 | 0.5 | 1.7 | |
| Delay (s) | | 50.0 | | 48.5 | 42.8 | 41.4 | 60.4 | 21.0 | 10.7 | 49.3 | 24.1 | |
| Level of Service | | D | | D | D | D | E | C | B | D | C | |
| Approach Delay (s) | | 50.0 | | | 45.6 | | | 21.5 | | | 26.9 | |
| Approach LOS | | D | | | D | | | C | | | C | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 28.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.76 | | |
| Actuated Cycle Length (s) | 110.0 | Sum of lost time (s) | 24.8 |
| Intersection Capacity Utilization | 71.4% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED, MIN SPLIT IS NOT REVISED | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

81: Kathleen Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|-------|------|-------|-------|--------|------|------|--------|
| Lane Configurations | ↶ | ↷ | | ↶ | ↷ | | ↶ | ↷ | ↷ | ↶ | ↷ | ↷ |
| Volume (vph) | 77 | 358 | 183 | 231 | 440 | 159 | 269 | 799 | 268 | 128 | 517 | 89 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.96 | | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 3360 | | 1770 | 3398 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Flt Permitted | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 3360 | | 1770 | 3398 | | 1770 | 3539 | 1583 | 1770 | 3539 | 1583 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 91 | 421 | 215 | 272 | 518 | 187 | 316 | 940 | 315 | 151 | 608 | 105 |
| RTOR Reduction (vph) | 0 | 89 | 0 | 0 | 49 | 0 | 0 | 0 | 223 | 0 | 0 | 73 |
| Lane Group Flow (vph) | 91 | 547 | 0 | 272 | 656 | 0 | 316 | 940 | 92 | 151 | 608 | 32 |
| Turn Type | Prot | | | Prot | | | Prot | | custom | Prot | | custom |
| Protected Phases | 3 | 8 | | 7 | 4 | | 1 | 6 | | 5 | | 2 |
| Permitted Phases | | | | | | | | | 2 | | | 6 |
| Actuated Green, G (s) | 5.5 | 17.4 | | 7.3 | 19.2 | | 7.9 | 21.2 | 20.4 | 7.1 | 20.4 | 21.2 |
| Effective Green, g (s) | 5.5 | 17.4 | | 7.3 | 19.2 | | 7.9 | 21.2 | 20.4 | 7.1 | 20.4 | 21.2 |
| Actuated g/C Ratio | 0.08 | 0.25 | | 0.10 | 0.28 | | 0.11 | 0.30 | 0.29 | 0.10 | 0.29 | 0.30 |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 |
| Vehicle Extension (s) | 1.0 | 1.0 | | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lane Grp Cap (vph) | 139 | 838 | | 185 | 935 | | 200 | 1075 | 463 | 180 | 1034 | 481 |
| v/s Ratio Prot | 0.05 | 0.16 | | c0.15 | c0.19 | | c0.18 | c0.27 | | 0.09 | 0.17 | |
| v/s Ratio Perm | | | | | | | | | 0.06 | | | 0.02 |
| v/c Ratio | 0.65 | 0.65 | | 1.47 | 0.70 | | 1.58 | 0.87 | 0.20 | 0.84 | 0.59 | 0.07 |
| Uniform Delay, d1 | 31.2 | 23.5 | | 31.2 | 22.7 | | 31.0 | 23.0 | 18.6 | 30.8 | 21.1 | 17.3 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 8.2 | 1.4 | | 238.6 | 2.0 | | 283.6 | 7.8 | 0.1 | 26.5 | 0.6 | 0.0 |
| Delay (s) | 39.4 | 24.9 | | 269.9 | 24.7 | | 314.5 | 30.9 | 18.6 | 57.3 | 21.7 | 17.3 |
| Level of Service | D | C | | F | C | | F | C | B | E | C | B |
| Approach Delay (s) | | 26.7 | | | 92.9 | | | 85.5 | | | 27.4 | |
| Approach LOS | | C | | | F | | | F | | | C | |

Intersection Summary

| | | | |
|--|-------|----------------------|-----|
| HCM Average Control Delay | 64.8 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 0.90 | | |
| Actuated Cycle Length (s) | 69.8 | Sum of lost time (s) | 8.4 |
| Intersection Capacity Utilization | 71.7% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

82: Dalton Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|-------|------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | ↗ | ↗↘ | | ↗ | ↖ | ↗ | ↗ | ↗↘ | | ↗ | ↗↘ | |
| Volume (vph) | 29 | 61 | 96 | 68 | 69 | 44 | 141 | 817 | 77 | 29 | 570 | 33 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frt | 1.00 | 0.91 | | 1.00 | 1.00 | 0.85 | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 3215 | | 1770 | 1863 | 1583 | 1770 | 3493 | | 1770 | 3510 | |
| Flt Permitted | 0.70 | 1.00 | | 0.64 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (perm) | 1312 | 3215 | | 1183 | 1863 | 1583 | 1770 | 3493 | | 1770 | 3510 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 34 | 72 | 113 | 80 | 81 | 52 | 166 | 961 | 91 | 34 | 671 | 39 |
| RTOR Reduction (vph) | 0 | 98 | 0 | 0 | 0 | 45 | 0 | 7 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 34 | 87 | 0 | 80 | 81 | 7 | 166 | 1045 | 0 | 34 | 705 | 0 |
| Turn Type | Perm | | Perm | | Perm | Prot | Prot | | Prot | | | |
| Protected Phases | 4 | | 8 | | 8 | 5 | 2 | 1 | | 6 | | |
| Permitted Phases | 4 | | 8 | | 8 | | | | | | | |
| Actuated Green, G (s) | 6.5 | 6.5 | 6.5 | | 6.5 | 6.5 | 7.0 | 29.4 | 1.3 | | 23.7 | |
| Effective Green, g (s) | 6.5 | 6.5 | 6.5 | | 6.5 | 6.5 | 7.0 | 29.4 | 1.3 | | 23.7 | |
| Actuated g/C Ratio | 0.13 | 0.13 | 0.13 | | 0.13 | 0.13 | 0.14 | 0.59 | 0.03 | | 0.48 | |
| Clearance Time (s) | 4.2 | 4.2 | 4.2 | | 4.2 | 4.2 | 4.2 | 4.2 | 4.2 | | 4.2 | |
| Vehicle Extension (s) | 1.5 | 1.5 | 1.5 | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | | 1.5 | |
| Lane Grp Cap (vph) | 171 | 420 | 154 | | 243 | 207 | 249 | 2062 | 46 | | 1670 | |
| v/s Ratio Prot | 0.03 | | | | 0.04 | | c0.09 | c0.30 | 0.02 | | 0.20 | |
| v/s Ratio Perm | 0.03 | | c0.07 | | 0.00 | | | | | | | |
| v/c Ratio | 0.20 | 0.21 | 0.52 | | 0.33 | 0.03 | 0.67 | 0.51 | 0.74 | | 0.42 | |
| Uniform Delay, d1 | 19.3 | 19.3 | 20.2 | | 19.7 | 18.9 | 20.3 | 6.0 | 24.1 | | 8.6 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | 0.2 | 0.1 | 1.2 | | 0.3 | 0.0 | 5.1 | 0.9 | 41.1 | | 0.8 | |
| Delay (s) | 19.5 | 19.4 | 21.4 | | 20.0 | 18.9 | 25.4 | 6.9 | 65.1 | | 9.3 | |
| Level of Service | B | B | C | | B | B | C | A | E | | A | |
| Approach Delay (s) | 19.5 | | | | 20.3 | | | 9.4 | | | 11.9 | |
| Approach LOS | B | | | | C | | | A | | | B | |

Intersection Summary

| | | | |
|--|-------|----------------------|-----|
| HCM Average Control Delay | 12.1 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.51 | | |
| Actuated Cycle Length (s) | 49.8 | Sum of lost time (s) | 8.4 |
| Intersection Capacity Utilization | 56.5% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

83: Hanley Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|------|------|-------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 69 | 111 | 85 | 203 | 147 | 26 | 118 | 558 | 214 | 27 | 344 | 83 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 0.96 | 1.00 | 1.00 | 0.97 | 1.00 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 1863 | 1583 | 1770 | 1863 | 1583 | 1770 | 3392 | 1770 | 1770 | 3436 | 1900 |
| Flt Permitted | 0.65 | 1.00 | 1.00 | 0.67 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1207 | 1863 | 1583 | 1254 | 1863 | 1583 | 1770 | 3392 | 1770 | 1770 | 3436 | 1900 |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 81 | 131 | 100 | 239 | 173 | 31 | 139 | 656 | 252 | 32 | 405 | 98 |
| RTOR Reduction (vph) | 0 | 0 | 72 | 0 | 0 | 22 | 0 | 58 | 0 | 0 | 34 | 0 |
| Lane Group Flow (vph) | 81 | 131 | 28 | 239 | 173 | 9 | 139 | 850 | 0 | 32 | 469 | 0 |
| Turn Type | Perm | | Perm | Perm | | Perm | Prot | | | Prot | | |
| Protected Phases | | 2 | | | 6 | | 3 | 8 | | 7 | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | | | | | | |
| Actuated Green, G (s) | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 5.4 | 18.4 | | 2.2 | 15.2 | |
| Effective Green, g (s) | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 13.5 | 5.4 | 18.4 | | 2.2 | 15.2 | |
| Actuated g/C Ratio | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 | 0.11 | 0.38 | | 0.05 | 0.32 | |
| Clearance Time (s) | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | 4.6 | | 4.6 | 4.6 | |
| Vehicle Extension (s) | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | | 2.0 | 2.0 | |
| Lane Grp Cap (vph) | 340 | 525 | 446 | 353 | 525 | 446 | 200 | 1303 | | 81 | 1090 | |
| v/s Ratio Prot | | 0.07 | | | 0.09 | | c0.08 | c0.25 | | 0.02 | 0.14 | |
| v/s Ratio Perm | 0.07 | | 0.02 | c0.19 | | 0.01 | | | | | | |
| v/c Ratio | 0.24 | 0.25 | 0.06 | 0.68 | 0.33 | 0.02 | 0.70 | 0.65 | | 0.40 | 0.43 | |
| Uniform Delay, d1 | 13.2 | 13.3 | 12.6 | 15.3 | 13.6 | 12.4 | 20.5 | 12.1 | | 22.2 | 12.9 | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 0.1 | 0.1 | 0.0 | 4.0 | 0.1 | 0.0 | 8.2 | 0.9 | | 1.2 | 0.1 | |
| Delay (s) | 13.4 | 13.4 | 12.6 | 19.3 | 13.8 | 12.4 | 28.6 | 13.0 | | 23.4 | 13.0 | |
| Level of Service | B | B | B | B | B | B | C | B | | C | B | |
| Approach Delay (s) | | 13.1 | | | 16.6 | | | 15.1 | | | 13.6 | |
| Approach LOS | | B | | | B | | | B | | | B | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 14.8 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.71 | | |
| Actuated Cycle Length (s) | 47.9 | Sum of lost time (s) | 13.8 |
| Intersection Capacity Utilization | 60.5% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

84: Prairie Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|-------|------|-------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | ↖ | ↕ | | ↖ | ↕ | | ↖ | ↕ | | ↖ | ↕ | |
| Volume (vph) | 19 | 471 | 123 | 83 | 502 | 42 | 273 | 327 | 69 | 65 | 268 | 33 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Fr _t | 1.00 | 0.97 | | 1.00 | 0.99 | | 1.00 | 0.97 | | 1.00 | 0.98 | |
| Fl _t Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1770 | 3429 | | 1770 | 3499 | | 1770 | 3447 | | 1770 | 3481 | |
| Fl _t Permitted | 0.30 | 1.00 | | 0.17 | 1.00 | | 0.43 | 1.00 | | 0.48 | 1.00 | |
| Satd. Flow (perm) | 555 | 3429 | | 308 | 3499 | | 808 | 3447 | | 902 | 3481 | |
| Peak-hour factor, PHF | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Adj. Flow (vph) | 22 | 554 | 145 | 98 | 591 | 49 | 321 | 385 | 81 | 76 | 315 | 39 |
| RTOR Reduction (vph) | 0 | 25 | 0 | 0 | 6 | 0 | 0 | 14 | 0 | 0 | 9 | 0 |
| Lane Group Flow (vph) | 22 | 674 | 0 | 98 | 634 | 0 | 321 | 452 | 0 | 76 | 345 | 0 |
| Turn Type | pm+pt | | | pm+pt | | | pm+pt | | | pm+pt | | |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 23.3 | 20.8 | | 30.1 | 24.2 | | 42.4 | 32.6 | | 33.2 | 27.6 | |
| Effective Green, g (s) | 23.3 | 20.8 | | 30.1 | 24.2 | | 42.4 | 32.6 | | 33.2 | 27.6 | |
| Actuated g/C Ratio | 0.29 | 0.25 | | 0.37 | 0.30 | | 0.52 | 0.40 | | 0.41 | 0.34 | |
| Clearance Time (s) | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | | 4.2 | 4.2 | |
| Vehicle Extension (s) | 1.5 | 1.5 | | 1.5 | 1.5 | | 1.5 | 1.5 | | 1.5 | 1.5 | |
| Lane Grp Cap (vph) | 195 | 873 | | 219 | 1036 | | 544 | 1375 | | 426 | 1176 | |
| v/s Ratio Prot | 0.00 | c0.20 | | c0.03 | 0.18 | | c0.08 | 0.13 | | 0.01 | 0.10 | |
| v/s Ratio Perm | 0.03 | | | 0.13 | | | c0.23 | | | 0.06 | | |
| v/c Ratio | 0.11 | 0.77 | | 0.45 | 0.61 | | 0.59 | 0.33 | | 0.18 | 0.29 | |
| Uniform Delay, d ₁ | 21.3 | 28.2 | | 18.8 | 24.7 | | 11.9 | 17.0 | | 15.0 | 19.9 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d ₂ | 0.1 | 3.9 | | 0.5 | 0.8 | | 1.1 | 0.6 | | 0.1 | 0.6 | |
| Delay (s) | 21.4 | 32.1 | | 19.3 | 25.5 | | 13.0 | 17.6 | | 15.1 | 20.5 | |
| Level of Service | C | C | | B | C | | B | B | | B | C | |
| Approach Delay (s) | | 31.8 | | | 24.7 | | | 15.8 | | | 19.6 | |
| Approach LOS | | C | | | C | | | B | | | B | |

Intersection Summary

| | | | |
|--|-------|----------------------|------|
| HCM Average Control Delay | 23.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.67 | | |
| Actuated Cycle Length (s) | 81.7 | Sum of lost time (s) | 16.8 |
| Intersection Capacity Utilization | 60.4% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| Description: CHECKED AS PER CDA SYNCHRO OUTPUT | | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

85: Honeysuckle Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 51 | 68 | 51 | 33 | 70 | 10 | 61 | 311 | 16 | 39 | 282 | 80 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 60 | 80 | 60 | 39 | 82 | 12 | 72 | 366 | 19 | 46 | 332 | 94 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1042 | 999 | 379 | 1089 | 1036 | 375 | 426 | | | 385 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1042 | 999 | 379 | 1089 | 1036 | 375 | 426 | | | 385 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 54 | 63 | 91 | 67 | 60 | 98 | 94 | | | 96 | | |
| cM capacity (veh/h) | 131 | 219 | 668 | 117 | 208 | 671 | 1133 | | | 1174 | | |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 200 | 133 | 456 | 472 |
| Volume Left | 60 | 39 | 72 | 46 |
| Volume Right | 60 | 12 | 19 | 94 |
| cSH | 219 | 178 | 1133 | 1174 |
| Volume to Capacity | 0.91 | 0.75 | 0.06 | 0.04 |
| Queue Length 95th (ft) | 189 | 119 | 5 | 3 |
| Control Delay (s) | 86.2 | 68.2 | 1.9 | 1.2 |
| Lane LOS | F | F | A | A |
| Approach Delay (s) | 86.2 | 68.2 | 1.9 | 1.2 |
| Approach LOS | F | F | | |

| Intersection Summary | | | |
|-----------------------------------|-------|------|------------------------|
| Average Delay | | 22.0 | |
| Intersection Capacity Utilization | 51.7% | | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

86: Orchard Ave & Ramsey Rd

1/20/2009

| | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|
| Movement | | | | | | | | | | | | |
| Lane Configurations | | | | | | | | | | | | |
| Volume (veh/h) | 117 | 28 | 86 | 0 | 2 | 0 | 155 | 215 | 2 | 11 | 315 | 33 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 138 | 33 | 101 | 0 | 2 | 0 | 182 | 253 | 2 | 13 | 371 | 39 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1036 | 1036 | 390 | 1152 | 1054 | 254 | 409 | | | 255 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1036 | 1036 | 390 | 1152 | 1054 | 254 | 409 | | | 255 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 24 | 83 | 85 | 100 | 99 | 100 | 84 | | | 99 | | |
| cM capacity (veh/h) | 181 | 193 | 658 | 112 | 188 | 785 | 1149 | | | 1310 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 272 | 2 | 438 | 422 | | | | | | | | |
| Volume Left | 138 | 0 | 182 | 13 | | | | | | | | |
| Volume Right | 101 | 0 | 2 | 39 | | | | | | | | |
| cSH | 251 | 188 | 1149 | 1310 | | | | | | | | |
| Volume to Capacity | 1.08 | 0.01 | 0.16 | 0.01 | | | | | | | | |
| Queue Length 95th (ft) | 288 | 1 | 14 | 1 | | | | | | | | |
| Control Delay (s) | 124.2 | 24.4 | 4.6 | 0.3 | | | | | | | | |
| Lane LOS | F | C | A | A | | | | | | | | |
| Approach Delay (s) | 124.2 | 24.4 | 4.6 | 0.3 | | | | | | | | |
| Approach LOS | F | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 31.7 | | | | | | | | | |
| Intersection Capacity Utilization | | | 69.1% | | ICU Level of Service | | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

87: Hayden Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Volume (vph) | 45 | 304 | 102 | 113 | 231 | 6 | 88 | 147 | 97 | 28 | 144 | 59 |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 53 | 358 | 120 | 133 | 272 | 7 | 104 | 173 | 114 | 33 | 169 | 69 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|-----------------------|-------|------|-------|-------|
| Volume Total (vph) | 531 | 412 | 391 | 272 |
| Volume Left (vph) | 53 | 133 | 104 | 33 |
| Volume Right (vph) | 120 | 7 | 114 | 69 |
| Hadj (s) | -0.08 | 0.09 | -0.09 | -0.10 |
| Departure Headway (s) | 8.8 | 8.8 | 8.7 | 9.3 |
| Degree Utilization, x | 1.29 | 1.00 | 0.95 | 0.71 |
| Capacity (veh/h) | 419 | 412 | 407 | 374 |
| Control Delay (s) | 174.9 | 75.7 | 61.7 | 31.8 |
| Approach Delay (s) | 174.9 | 75.7 | 61.7 | 31.8 |
| Approach LOS | F | F | F | D |

| Intersection Summary | | | |
|-----------------------------------|-------|------|------------------------|
| Delay | | 97.6 | |
| HCM Level of Service | | F | |
| Intersection Capacity Utilization | 84.4% | | ICU Level of Service E |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

88: Dakota Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 23 | 15 | 54 | 0 | 12 | 0 | 20 | 177 | 0 | 0 | 177 | 2 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 27 | 18 | 64 | 0 | 14 | 0 | 24 | 208 | 0 | 0 | 208 | 2 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 472 | 465 | 209 | 537 | 466 | 208 | 211 | | | 208 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 472 | 465 | 209 | 537 | 466 | 208 | 211 | | | 208 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 94 | 96 | 92 | 100 | 97 | 100 | 98 | | | 100 | | |
| cM capacity (veh/h) | 485 | 486 | 831 | 403 | 486 | 832 | 1360 | | | 1363 | | |

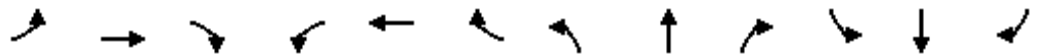
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 108 | 14 | 232 | 211 |
| Volume Left | 27 | 0 | 24 | 0 |
| Volume Right | 64 | 0 | 0 | 2 |
| cSH | 642 | 486 | 1360 | 1363 |
| Volume to Capacity | 0.17 | 0.03 | 0.02 | 0.00 |
| Queue Length 95th (ft) | 15 | 2 | 1 | 0 |
| Control Delay (s) | 11.7 | 12.6 | 0.9 | 0.0 |
| Lane LOS | B | B | A | |
| Approach Delay (s) | 11.7 | 12.6 | 0.9 | 0.0 |
| Approach LOS | B | B | | |

| Intersection Summary | | | |
|-----------------------------------|-------|-----|------------------------|
| Average Delay | | 2.9 | |
| Intersection Capacity Utilization | 41.9% | | ICU Level of Service A |
| Analysis Period (min) | 15 | | |

HCM Unsignalized Intersection Capacity Analysis

89: Miles Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|-------------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 0 | 50 | 80 | 0 | 7 | 0 | 20 | 123 | 57 | 0 | 98 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 59 | 94 | 0 | 8 | 0 | 24 | 145 | 67 | 0 | 115 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 345 | 374 | 115 | 464 | 341 | 178 | 115 | | | 212 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 345 | 374 | 115 | 464 | 341 | 178 | 115 | | | 212 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 100 | 89 | 90 | 100 | 99 | 100 | 98 | | | 100 | | |
| cM capacity (veh/h) | 596 | 548 | 937 | 415 | 572 | 865 | 1474 | | | 1359 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 153 | 8 | 235 | 115 | | | | | | | | |
| Volume Left | 0 | 0 | 24 | 0 | | | | | | | | |
| Volume Right | 94 | 0 | 67 | 0 | | | | | | | | |
| cSH | 736 | 572 | 1474 | 1359 | | | | | | | | |
| Volume to Capacity | 0.21 | 0.01 | 0.02 | 0.00 | | | | | | | | |
| Queue Length 95th (ft) | 19 | 1 | 1 | 0 | | | | | | | | |
| Control Delay (s) | 11.2 | 11.4 | 0.9 | 0.0 | | | | | | | | |
| Lane LOS | B | B | A | | | | | | | | | |
| Approach Delay (s) | 11.2 | 11.4 | 0.9 | 0.0 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 31.9% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 90: Lacey Ave & Ramsey Rd

1/20/2009



| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | | | | | |
| Volume (veh/h) | 0 | 0 | 117 | 6 | 0 | 98 |
| Sign Control | Stop | | Free | | | Free |
| Grade | 0% | | 0% | | | 0% |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 0 | 138 | 7 | 0 | 115 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | None | | | None |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 256 | 141 | | | 145 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 256 | 141 | | | 145 | |
| tC, single (s) | 6.4 | 6.2 | | | 4.1 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 3.5 | 3.3 | | | 2.2 | |
| p0 queue free % | 100 | 100 | | | 100 | |
| cM capacity (veh/h) | 732 | 907 | | | 1438 | |

| Direction, Lane # | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|
| Volume Total | 0 | 145 | 115 |
| Volume Left | 0 | 0 | 0 |
| Volume Right | 0 | 7 | 0 |
| cSH | 1700 | 1700 | 1438 |
| Volume to Capacity | 0.00 | 0.09 | 0.00 |
| Queue Length 95th (ft) | 0 | 0 | 0 |
| Control Delay (s) | 0.0 | 0.0 | 0.0 |
| Lane LOS | A | | |
| Approach Delay (s) | 0.0 | 0.0 | 0.0 |
| Approach LOS | A | | |

| Intersection Summary | | | |
|-----------------------------------|--|------|------------------------|
| Average Delay | | 0.0 | |
| Intersection Capacity Utilization | | 9.9% | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

91: Wyoming Ave & Ramsey Rd

1/20/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 9 | 54 | 22 | 60 | 75 | 0 | 32 | 6 | 79 | 36 | 16 | 0 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 11 | 64 | 26 | 71 | 88 | 0 | 38 | 7 | 93 | 42 | 19 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (ft) | | | | | | | | | | | | |
| Walking Speed (ft/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (ft) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 88 | | | 89 | | | 336 | 327 | 76 | 424 | 340 | 88 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 88 | | | 89 | | | 336 | 327 | 76 | 424 | 340 | 88 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 |
| p0 queue free % | 99 | | | 95 | | | 93 | 99 | 91 | 91 | 97 | 100 |
| cM capacity (veh/h) | 1507 | | | 1506 | | | 577 | 560 | 985 | 465 | 550 | 970 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 100 | 159 | 138 | 61 |
| Volume Left | 11 | 71 | 38 | 42 |
| Volume Right | 26 | 0 | 93 | 0 |
| cSH | 1507 | 1506 | 799 | 488 |
| Volume to Capacity | 0.01 | 0.05 | 0.17 | 0.13 |
| Queue Length 95th (ft) | 1 | 4 | 15 | 11 |
| Control Delay (s) | 0.8 | 3.5 | 10.4 | 13.4 |
| Lane LOS | A | A | B | B |
| Approach Delay (s) | 0.8 | 3.5 | 10.4 | 13.4 |
| Approach LOS | | | B | B |

| Intersection Summary | | | |
|-----------------------------------|--|-------|----------------------|
| Average Delay | | 6.3 | |
| Intersection Capacity Utilization | | 27.4% | ICU Level of Service |
| Analysis Period (min) | | 15 | A |