

APPENDIX B

2008 Level of Service Analysis Worksheets

Queues

1: Dowling Road & Old Seward Hwy

1/14/2009



| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|-------|------|------|-------|------|------|
| Lane Group Flow (vph) | 62 | 627 | 226 | 268 | 303 | 125 | 659 | 408 | 435 | 886 | 78 |
| v/c Ratio | 0.19 | 0.78 | 0.99 | 0.56 | 0.50 | 1.09 | 0.62 | 0.64 | 1.72 | 0.80 | 0.15 |
| Control Delay | 17.2 | 33.7 | 82.2 | 30.9 | 7.2 | 148.5 | 26.5 | 14.7 | 365.7 | 31.5 | 6.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 17.2 | 33.7 | 82.2 | 30.9 | 7.2 | 148.5 | 26.5 | 14.7 | 365.7 | 31.5 | 6.2 |
| Queue Length 50th (ft) | 16 | 116 | ~67 | 96 | 6 | ~58 | 113 | 47 | ~134 | 163 | 0 |
| Queue Length 95th (ft) | 34 | 162 | #166 | 156 | 54 | #153 | 176 | 138 | #224 | #254 | 24 |
| Internal Link Dist (ft) | | 617 | | 1014 | | | 625 | | | 1256 | |
| Turn Bay Length (ft) | 170 | | 625 | | 585 | 200 | | 400 | 200 | | 200 |
| Base Capacity (vph) | 334 | 1248 | 229 | 667 | 735 | 115 | 1132 | 663 | 253 | 1176 | 561 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.19 | 0.50 | 0.99 | 0.40 | 0.41 | 1.09 | 0.58 | 0.62 | 1.72 | 0.75 | 0.14 |
























Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
1: Dowling Road & Old Seward Hwy

1/14/2009

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 57 | 460 | 117 | 208 | 247 | 279 | 115 | 606 | 375 | 400 | 815 | 72 |
| Ideal Flow (vphpl) | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 |
| Total Lost time (s) | 5.6 | 5.9 | | 5.6 | 5.9 | 5.9 | 5.7 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 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 | 0.97 | | 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) | 1688 | 3266 | | 1689 | 1779 | 1488 | 1690 | 3380 | 1487 | 3278 | 3380 | 1468 |
| Flt Permitted | 0.51 | 1.00 | | 0.24 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 898 | 3266 | | 433 | 1779 | 1488 | 1690 | 3380 | 1487 | 3278 | 3380 | 1468 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 62 | 500 | 127 | 226 | 268 | 303 | 125 | 659 | 408 | 435 | 886 | 78 |
| RTOR Reduction (vph) | 0 | 28 | 0 | 0 | 0 | 208 | 0 | 0 | 171 | 0 | 0 | 53 |
| Lane Group Flow (vph) | 62 | 599 | 0 | 226 | 268 | 95 | 125 | 659 | 237 | 435 | 886 | 25 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 4% | 4% | 4% | 4% | 4% | 4% | 4% | 4% | 4% | 4% | 4% | 4% |
| Turn Type | pm+pt | | | pm+pt | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 3 | 8 | | 7 | 4 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 8 | | | 4 | | 4 | | | 2 | | | 6 |
| Actuated Green, G (s) | 24.0 | 19.9 | | 26.6 | 21.2 | 21.2 | 5.3 | 24.5 | 24.5 | 6.0 | 25.5 | 25.5 |
| Effective Green, g (s) | 24.0 | 19.9 | | 26.6 | 21.2 | 21.2 | 5.3 | 24.5 | 24.5 | 6.0 | 25.5 | 25.5 |
| Actuated g/C Ratio | 0.30 | 0.25 | | 0.34 | 0.27 | 0.27 | 0.07 | 0.31 | 0.31 | 0.08 | 0.32 | 0.32 |
| Clearance Time (s) | 5.6 | 5.9 | | 5.6 | 5.9 | 5.9 | 5.7 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 1.5 | 2.0 | | 1.5 | 2.5 | 2.5 | 1.5 | 5.5 | 5.5 | 1.5 | 5.5 | 5.5 |
| Lane Grp Cap (vph) | 313 | 820 | | 231 | 476 | 398 | 113 | 1044 | 459 | 248 | 1087 | 472 |
| v/s Ratio Prot | 0.01 | 0.18 | | c0.07 | 0.15 | | 0.07 | 0.19 | | c0.13 | c0.26 | |
| v/s Ratio Perm | 0.05 | | | c0.26 | | 0.06 | | | 0.16 | | | 0.02 |
| v/c Ratio | 0.20 | 0.73 | | 0.98 | 0.56 | 0.24 | 1.11 | 0.63 | 0.52 | 1.75 | 0.82 | 0.05 |
| Uniform Delay, d1 | 20.1 | 27.2 | | 24.3 | 25.1 | 22.7 | 37.0 | 23.5 | 22.5 | 36.6 | 24.7 | 18.6 |
| 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 | 0.1 | 2.9 | | 52.3 | 1.2 | 0.2 | 116.1 | 1.9 | 2.3 | 355.4 | 5.6 | 0.1 |
| Delay (s) | 20.2 | 30.2 | | 76.6 | 26.3 | 23.0 | 153.1 | 25.4 | 24.8 | 392.1 | 30.3 | 18.7 |
| Level of Service | C | C | | E | C | C | F | C | C | F | C | B |
| Approach Delay (s) | | 29.3 | | | 39.3 | | | 38.6 | | | 142.1 | |
| Approach LOS | | C | | | D | | | D | | | F | |

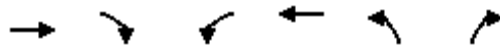
Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 72.7 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 0.85 | | |
| Actuated Cycle Length (s) | 79.3 | Sum of lost time (s) | 11.6 |
| Intersection Capacity Utilization | 79.1% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

2: Dowling Road & Austin Ave

1/14/2009



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations | → | | | ← | ↘ | ↙ |
| Volume (veh/h) | 605 | 85 | 25 | 409 | 42 | 29 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 2% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 658 | 92 | 27 | 445 | 46 | 32 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | 697 | | | | | |
| pX, platoon unblocked | | | | | 0.88 | |
| vC, conflicting volume | | | 750 | | 1203 | 704 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 750 | | 1163 | 704 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 97 | | 75 | 93 |
| cM capacity (veh/h) | | | 859 | | 184 | 437 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 750 | 472 | 77 | | | |
| Volume Left | 0 | 27 | 46 | | | |
| Volume Right | 92 | 0 | 32 | | | |
| cSH | 1700 | 859 | 241 | | | |
| Volume to Capacity | 0.44 | 0.03 | 0.32 | | | |
| Queue Length 95th (ft) | 0 | 2 | 27 | | | |
| Control Delay (s) | 0.0 | 0.9 | 26.8 | | | |
| Lane LOS | | A | D | | | |
| Approach Delay (s) | 0.0 | 0.9 | 26.8 | | | |
| Approach LOS | | | D | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.9 | | | |
| Intersection Capacity Utilization | | | 54.0% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

3: Potter Drive & Franklin

1/14/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 7 | 556 | 8 | 46 | 315 | 27 | 21 | 3 | 126 | 14 | 1 | 8 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 2% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 8 | 604 | 9 | 50 | 342 | 29 | 23 | 3 | 137 | 15 | 1 | 9 |
| 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 | 372 | | | 613 | | | 1090 | 1096 | 609 | 1220 | 1085 | 357 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 372 | | | 613 | | | 1090 | 1096 | 609 | 1220 | 1085 | 357 |
| 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 | | | 87 | 98 | 72 | 86 | 99 | 99 |
| cM capacity (veh/h) | 1187 | | | 966 | | | 181 | 201 | 495 | 107 | 204 | 687 |

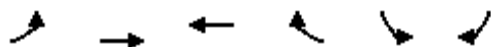
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 621 | 422 | 163 | 25 |
| Volume Left | 8 | 50 | 23 | 15 |
| Volume Right | 9 | 29 | 137 | 9 |
| cSH | 1187 | 966 | 389 | 156 |
| Volume to Capacity | 0.01 | 0.05 | 0.42 | 0.16 |
| Queue Length 95th (ft) | 0 | 3 | 40 | 11 |
| Control Delay (s) | 0.2 | 1.6 | 20.8 | 32.4 |
| Lane LOS | A | A | C | D |
| Approach Delay (s) | 0.2 | 1.6 | 20.8 | 32.4 |
| Approach LOS | | | C | D |

| Intersection Summary | | | |
|-----------------------------------|-------|-----|------------------------|
| Average Delay | | 4.0 | |
| Intersection Capacity Utilization | 64.9% | | ICU Level of Service C |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

4: Potter Drive & A St

1/14/2009



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|
| Lane Configurations | | ↖ | ↗ | | ↘ | |
| Volume (veh/h) | 48 | 551 | 445 | 28 | 171 | 74 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 2% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 52 | 599 | 484 | 30 | 186 | 80 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 616 | | | | |
| pX, platoon unblocked | | | | | 0.88 | |
| vC, conflicting volume | 514 | | | | 1202 | 499 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 514 | | | | 1162 | 499 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 95 | | | | 0 | 86 |
| cM capacity (veh/h) | 1051 | | | | 180 | 572 |
| Direction, Lane # | | | | | | |
| | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 651 | 514 | 266 | | | |
| Volume Left | 52 | 0 | 186 | | | |
| Volume Right | 0 | 30 | 80 | | | |
| cSH | 1051 | 1700 | 227 | | | |
| Volume to Capacity | 0.05 | 0.30 | 1.17 | | | |
| Queue Length 95th (ft) | 3 | 0 | 254 | | | |
| Control Delay (s) | 1.3 | 0.0 | 158.3 | | | |
| Lane LOS | A | | F | | | |
| Approach Delay (s) | 1.3 | 0.0 | 158.3 | | | |
| Approach LOS | | | F | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 30.0 | | | |
| Intersection Capacity Utilization | | | 82.7% | | ICU Level of Service | E |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

5: Potter Drive & B St

1/14/2009



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | → | | | ← | ↔ | ↔ |
| Volume (veh/h) | 547 | 23 | 8 | 511 | 35 | 52 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 2% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 595 | 25 | 9 | 555 | 38 | 57 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | 370 | | | | | |
| pX, platoon unblocked | | | 0.88 | | 0.88 | 0.88 |
| vC, conflicting volume | | | 620 | | 1180 | 607 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 495 | | 1135 | 481 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 99 | | 80 | 89 |
| cM capacity (veh/h) | | | 936 | | 194 | 513 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|------------------------|------|------|------|
| Volume Total | 620 | 564 | 95 |
| Volume Left | 0 | 9 | 38 |
| Volume Right | 25 | 0 | 57 |
| cSH | 1700 | 936 | 309 |
| Volume to Capacity | 0.36 | 0.01 | 0.31 |
| Queue Length 95th (ft) | 0 | 1 | 25 |
| Control Delay (s) | 0.0 | 0.3 | 21.7 |
| Lane LOS | | A | C |
| Approach Delay (s) | 0.0 | 0.3 | 21.7 |
| Approach LOS | | | C |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|---|
| Average Delay | | 1.7 | |
| Intersection Capacity Utilization | 46.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

Queues

6: Potter Drive & C St

1/14/2009



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 92 | 230 | 48 | 122 | 170 | 302 | 21 | 746 | 277 | 995 | 120 |
| v/c Ratio | 0.32 | 0.75 | 0.16 | 0.50 | 0.49 | 0.57 | 0.13 | 0.56 | 0.85 | 0.55 | 0.15 |
| Control Delay | 42.1 | 77.2 | 13.4 | 46.9 | 60.0 | 9.1 | 64.6 | 39.0 | 85.0 | 28.8 | 6.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 42.1 | 77.2 | 13.4 | 46.9 | 60.0 | 9.1 | 64.6 | 39.0 | 85.0 | 28.8 | 6.3 |
| Queue Length 50th (ft) | 57 | 185 | 0 | 77 | 128 | 0 | 16 | 248 | 223 | 323 | 6 |
| Queue Length 95th (ft) | 85 | 249 | 30 | 108 | 174 | 63 | 40 | 348 | #335 | 424 | 39 |
| Internal Link Dist (ft) | | 946 | | | 290 | | | 637 | | 553 | |
| Turn Bay Length (ft) | 200 | | 200 | 230 | | 230 | 183 | | 300 | | |
| Base Capacity (vph) | 295 | 407 | 376 | 285 | 488 | 622 | 170 | 1334 | 354 | 1842 | 838 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.31 | 0.57 | 0.13 | 0.43 | 0.35 | 0.49 | 0.12 | 0.56 | 0.78 | 0.54 | 0.14 |

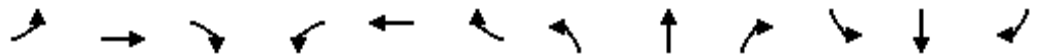
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

6: Potter Drive & C St

1/14/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|-------|------|-------|------|------|------|------|------|-------|-------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↕ | | ↖ | ↕ | ↗ |
| Volume (vph) | 85 | 212 | 44 | 112 | 156 | 278 | 19 | 583 | 103 | 255 | 915 | 110 |
| Ideal Flow (vphpl) | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 |
| Grade (%) | | 0% | | | 2% | | | 1% | | | 0% | |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| 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 |
| Frbp, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | 0.99 | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 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 | 0.98 | | 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) | 1623 | 1713 | 1429 | 1610 | 1696 | 1414 | 1619 | 3147 | | 1627 | 3255 | 1398 |
| Flt Permitted | 0.53 | 1.00 | 1.00 | 0.25 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 901 | 1713 | 1429 | 428 | 1696 | 1414 | 1619 | 3147 | | 1627 | 3255 | 1398 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 92 | 230 | 48 | 122 | 170 | 302 | 21 | 634 | 112 | 277 | 995 | 120 |
| RTOR Reduction (vph) | 0 | 0 | 39 | 0 | 0 | 241 | 0 | 8 | 0 | 0 | 0 | 50 |
| Lane Group Flow (vph) | 92 | 230 | 9 | 122 | 170 | 61 | 21 | 738 | 0 | 277 | 995 | 70 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% |
| Turn Type | pm+pt | | Perm | pm+pt | | Perm | Prot | | | Prot | | Perm |
| Protected Phases | 3 | 8 | | 7 | 4 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 8 | | 8 | 4 | | 4 | | | | | | 6 |
| Actuated Green, G (s) | 36.1 | 26.3 | 26.3 | 43.9 | 30.2 | 30.2 | 11.6 | 63.1 | | 32.3 | 83.8 | 83.8 |
| Effective Green, g (s) | 40.7 | 28.6 | 28.6 | 48.5 | 32.5 | 32.5 | 13.6 | 65.1 | | 34.3 | 85.8 | 85.8 |
| Actuated g/C Ratio | 0.25 | 0.18 | 0.18 | 0.30 | 0.20 | 0.20 | 0.08 | 0.41 | | 0.21 | 0.54 | 0.54 |
| Clearance Time (s) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 1.5 | 2.5 | 2.5 | 1.5 | 2.5 | 2.5 | 1.5 | 4.3 | | 1.5 | 4.3 | 4.3 |
| Lane Grp Cap (vph) | 284 | 306 | 255 | 248 | 345 | 287 | 138 | 1280 | | 349 | 1745 | 750 |
| v/s Ratio Prot | 0.02 | c0.13 | | c0.05 | 0.10 | | 0.01 | 0.23 | | c0.17 | c0.31 | |
| v/s Ratio Perm | 0.06 | | 0.01 | 0.10 | | 0.04 | | | | | | 0.05 |
| v/c Ratio | 0.32 | 0.75 | 0.03 | 0.49 | 0.49 | 0.21 | 0.15 | 0.58 | | 0.79 | 0.57 | 0.09 |
| Uniform Delay, d1 | 47.2 | 62.3 | 54.3 | 43.3 | 56.5 | 53.1 | 67.9 | 36.8 | | 59.5 | 24.8 | 18.1 |
| 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 | 0.2 | 9.5 | 0.0 | 0.6 | 0.8 | 0.3 | 0.2 | 1.9 | | 11.0 | 1.4 | 0.2 |
| Delay (s) | 47.5 | 71.8 | 54.3 | 43.9 | 57.3 | 53.4 | 68.0 | 38.7 | | 70.5 | 26.1 | 18.4 |
| Level of Service | D | E | D | D | E | D | E | D | | E | C | B |
| Approach Delay (s) | | 63.5 | | | 52.5 | | | 39.5 | | | 34.3 | |
| Approach LOS | | E | | | D | | | D | | | C | |

| Intersection Summary | | |
|-----------------------------------|-------|---------------------------|
| HCM Average Control Delay | 42.5 | HCM Level of Service D |
| HCM Volume to Capacity ratio | 0.68 | |
| Actuated Cycle Length (s) | 160.0 | Sum of lost time (s) 20.0 |
| Intersection Capacity Utilization | 68.4% | ICU Level of Service C |
| Analysis Period (min) | 15 | |

c Critical Lane Group

Queues

1: Dowling Road & Old Seward Hwy

1/14/2009



| Lane Group | EBL | EBT | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|-------|------|------|------|------|------|
| Lane Group Flow (vph) | 50 | 268 | 154 | 454 | 483 | 130 | 647 | 152 | 165 | 330 | 30 |
| v/c Ratio | 0.21 | 0.32 | 0.40 | 0.80 | 0.73 | 1.08 | 0.66 | 0.28 | 0.64 | 0.32 | 0.06 |
| Control Delay | 16.6 | 17.4 | 19.7 | 38.3 | 17.9 | 149.7 | 29.0 | 6.0 | 51.5 | 23.3 | 9.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 16.6 | 17.4 | 19.7 | 38.3 | 17.9 | 149.7 | 29.0 | 6.0 | 51.5 | 23.3 | 9.0 |
| Queue Length 50th (ft) | 12 | 32 | 40 | 180 | 75 | ~72 | 131 | 0 | 37 | 58 | 0 |
| Queue Length 95th (ft) | 29 | 57 | 73 | #306 | 177 | #167 | 184 | 35 | #78 | 90 | 16 |
| Internal Link Dist (ft) | | 617 | | 1014 | | | 625 | | | 1256 | |
| Turn Bay Length (ft) | 170 | | 625 | | 585 | 200 | | 400 | 200 | | 200 |
| Base Capacity (vph) | 243 | 1294 | 385 | 691 | 749 | 120 | 1172 | 615 | 263 | 1218 | 547 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.21 | 0.21 | 0.40 | 0.66 | 0.64 | 1.08 | 0.55 | 0.25 | 0.63 | 0.27 | 0.05 |
























Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
1: Dowling Road & Old Seward Hwy

1/14/2009

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  |  |  |  |  |  |  |  |
| Volume (vph) | 46 | 175 | 72 | 142 | 418 | 444 | 120 | 595 | 140 | 152 | 304 | 28 |
| Ideal Flow (vphpl) | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 |
| Total Lost time (s) | 5.6 | 5.9 | | 5.6 | 5.9 | 5.9 | 5.7 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Lane Util. Factor | 1.00 | 0.95 | | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 0.97 | 0.95 | 1.00 |
| Frbp, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 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 | 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) | 1689 | 3217 | | 1688 | 1779 | 1488 | 1690 | 3380 | 1487 | 3278 | 3380 | 1468 |
| Flt Permitted | 0.27 | 1.00 | | 0.52 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 488 | 3217 | | 923 | 1779 | 1488 | 1690 | 3380 | 1487 | 3278 | 3380 | 1468 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 50 | 190 | 78 | 154 | 454 | 483 | 130 | 647 | 152 | 165 | 330 | 30 |
| RTOR Reduction (vph) | 0 | 53 | 0 | 0 | 0 | 193 | 0 | 0 | 109 | 0 | 0 | 21 |
| Lane Group Flow (vph) | 50 | 215 | 0 | 154 | 454 | 290 | 130 | 647 | 43 | 165 | 330 | 9 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 4% | 4% | 4% | 4% | 4% | 4% | 4% | 4% | 4% | 4% | 4% | 4% |
| Turn Type | pm+pt | | | pm+pt | | Perm | Prot | | Perm | Prot | | Perm |
| Protected Phases | 3 | 8 | | 7 | 4 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 8 | | | 4 | | 4 | | | 2 | | | 6 |
| Actuated Green, G (s) | 24.6 | 21.8 | | 30.2 | 24.6 | 24.6 | 5.5 | 22.6 | 22.6 | 6.1 | 23.5 | 23.5 |
| Effective Green, g (s) | 24.6 | 21.8 | | 30.2 | 24.6 | 24.6 | 5.5 | 22.6 | 22.6 | 6.1 | 23.5 | 23.5 |
| Actuated g/C Ratio | 0.31 | 0.27 | | 0.38 | 0.31 | 0.31 | 0.07 | 0.28 | 0.28 | 0.08 | 0.30 | 0.30 |
| Clearance Time (s) | 5.6 | 5.9 | | 5.6 | 5.9 | 5.9 | 5.7 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 1.5 | 2.0 | | 1.5 | 2.5 | 2.5 | 1.5 | 5.5 | 5.5 | 1.5 | 5.5 | 5.5 |
| Lane Grp Cap (vph) | 193 | 881 | | 404 | 550 | 460 | 117 | 960 | 422 | 251 | 998 | 433 |
| v/s Ratio Prot | 0.01 | 0.07 | | c0.03 | c0.26 | | c0.08 | c0.19 | | 0.05 | 0.10 | |
| v/s Ratio Perm | 0.07 | | | 0.12 | | 0.19 | | | 0.03 | | | 0.01 |
| v/c Ratio | 0.26 | 0.24 | | 0.38 | 0.83 | 0.63 | 1.11 | 0.67 | 0.10 | 0.66 | 0.33 | 0.02 |
| Uniform Delay, d1 | 20.2 | 22.5 | | 16.9 | 25.5 | 23.6 | 37.0 | 25.2 | 21.0 | 35.7 | 21.9 | 19.9 |
| 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 | 0.3 | 0.1 | | 0.2 | 9.6 | 2.3 | 116.2 | 2.7 | 0.3 | 4.7 | 0.5 | 0.0 |
| Delay (s) | 20.5 | 22.5 | | 17.1 | 35.1 | 25.9 | 153.2 | 27.9 | 21.3 | 40.4 | 22.4 | 19.9 |
| Level of Service | C | C | | B | D | C | F | C | C | D | C | B |
| Approach Delay (s) | | 22.2 | | | 28.5 | | | 44.4 | | | 27.9 | |
| Approach LOS | | C | | | C | | | D | | | C | |

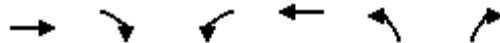
Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 32.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.78 | | |
| Actuated Cycle Length (s) | 79.6 | Sum of lost time (s) | 23.2 |
| Intersection Capacity Utilization | 68.5% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

2: Dowling Road & Austin Ave

1/14/2009



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | → | | | ← | ← | ↘ |
| Volume (veh/h) | 240 | 15 | 6 | 560 | 110 | 53 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 2% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 261 | 16 | 7 | 609 | 120 | 58 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | 697 | | | | | |
| pX, platoon unblocked | | | | | 0.76 | |
| vC, conflicting volume | | | 277 | | 891 | 269 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 277 | | 699 | 269 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 99 | | 61 | 93 |
| cM capacity (veh/h) | | | 1286 | | 307 | 770 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 |
|------------------------|------|------|------|
| Volume Total | 277 | 615 | 177 |
| Volume Left | 0 | 7 | 120 |
| Volume Right | 16 | 0 | 58 |
| cSH | 1700 | 1286 | 382 |
| Volume to Capacity | 0.16 | 0.01 | 0.46 |
| Queue Length 95th (ft) | 0 | 0 | 48 |
| Control Delay (s) | 0.0 | 0.1 | 22.3 |
| Lane LOS | | A | C |
| Approach Delay (s) | 0.0 | 0.1 | 22.3 |
| Approach LOS | | | C |

| Intersection Summary | | | |
|-----------------------------------|--|-------|------------------------|
| Average Delay | | 3.8 | |
| Intersection Capacity Utilization | | 51.4% | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis

3: Potter Drive & Franklin

1/14/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Volume (veh/h) | 2 | 159 | 24 | 97 | 541 | 32 | 11 | 0 | 88 | 8 | 1 | 8 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 2% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 2 | 173 | 26 | 105 | 588 | 35 | 12 | 0 | 96 | 9 | 1 | 9 |
| 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 | 623 | | | 199 | | | 1016 | 1024 | 186 | 1102 | 1020 | 605 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 623 | | | 199 | | | 1016 | 1024 | 186 | 1102 | 1020 | 605 |
| 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 % | 100 | | | 92 | | | 94 | 100 | 89 | 94 | 100 | 98 |
| cM capacity (veh/h) | 958 | | | 1373 | | | 199 | 217 | 856 | 158 | 218 | 497 |

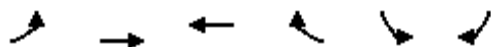
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|------------------------|------|------|------|------|
| Volume Total | 201 | 728 | 108 | 18 |
| Volume Left | 2 | 105 | 12 | 9 |
| Volume Right | 26 | 35 | 96 | 9 |
| cSH | 958 | 1373 | 627 | 238 |
| Volume to Capacity | 0.00 | 0.08 | 0.17 | 0.08 |
| Queue Length 95th (ft) | 0 | 5 | 12 | 5 |
| Control Delay (s) | 0.1 | 1.9 | 11.9 | 21.4 |
| Lane LOS | A | A | B | C |
| Approach Delay (s) | 0.1 | 1.9 | 11.9 | 21.4 |
| Approach LOS | | | B | C |

| Intersection Summary | | | |
|-----------------------------------|-------|-----|----------------------|
| Average Delay | | 3.0 | |
| Intersection Capacity Utilization | 63.3% | | ICU Level of Service |
| Analysis Period (min) | | 15 | B |

HCM Unsignalized Intersection Capacity Analysis

4: Potter Drive & A St

1/14/2009



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | ↖ | ↗ | | ↘ | |
| Volume (veh/h) | 107 | 146 | 447 | 85 | 36 | 86 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 2% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 116 | 159 | 486 | 92 | 39 | 93 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | | 616 | | | | |
| pX, platoon unblocked | | | | | 0.98 | |
| vC, conflicting volume | 578 | | | | 923 | 532 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 578 | | | | 911 | 532 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 88 | | | | 85 | 83 |
| cM capacity (veh/h) | 995 | | | | 263 | 547 |

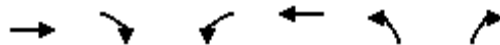
| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|------------------------|------|------|------|
| Volume Total | 275 | 578 | 133 |
| Volume Left | 116 | 0 | 39 |
| Volume Right | 0 | 92 | 93 |
| cSH | 995 | 1700 | 415 |
| Volume to Capacity | 0.12 | 0.34 | 0.32 |
| Queue Length 95th (ft) | 8 | 0 | 27 |
| Control Delay (s) | 4.5 | 0.0 | 17.7 |
| Lane LOS | A | | C |
| Approach Delay (s) | 4.5 | 0.0 | 17.7 |
| Approach LOS | | | C |

| Intersection Summary | | | |
|-----------------------------------|-------|-----|------------------------|
| Average Delay | | 3.6 | |
| Intersection Capacity Utilization | 60.9% | | ICU Level of Service B |
| Analysis Period (min) | 15 | | |

HCM Unsignalized Intersection Capacity Analysis

5: Potter Drive & B St

1/14/2009



| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | → | | | ← | ↔ | ↔ |
| Volume (veh/h) | 236 | 54 | 39 | 494 | 9 | 17 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 2% | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 257 | 59 | 42 | 537 | 10 | 18 |
| Pedestrians | | | | | | |
| Lane Width (ft) | | | | | | |
| Walking Speed (ft/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (ft) | 370 | | | | | |
| pX, platoon unblocked | | | 0.96 | | 0.96 | 0.96 |
| vC, conflicting volume | | | 315 | | 908 | 286 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 261 | | 880 | 230 |
| tC, single (s) | | | 4.1 | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | 3.5 | 3.3 |
| p0 queue free % | | | 97 | | 97 | 98 |
| cM capacity (veh/h) | | | 1246 | | 293 | 774 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 315 | 579 | 28 | | | |
| Volume Left | 0 | 42 | 10 | | | |
| Volume Right | 59 | 0 | 18 | | | |
| cSH | 1700 | 1246 | 494 | | | |
| Volume to Capacity | 0.19 | 0.03 | 0.06 | | | |
| Queue Length 95th (ft) | 0 | 2 | 4 | | | |
| Control Delay (s) | 0.0 | 1.0 | 12.7 | | | |
| Lane LOS | | A | B | | | |
| Approach Delay (s) | 0.0 | 1.0 | 12.7 | | | |
| Approach LOS | | | B | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.0 | | | |
| Intersection Capacity Utilization | | | 58.4% | ICU Level of Service | | B |
| Analysis Period (min) | | | 15 | | | |

Queues

6: Potter Drive & C St

1/14/2009



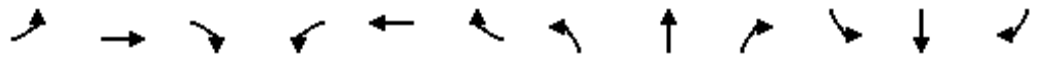
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | SBL | SBT | SBR |
|-------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Group Flow (vph) | 67 | 95 | 26 | 87 | 159 | 301 | 22 | 761 | 151 | 425 | 87 |
| v/c Ratio | 0.28 | 0.42 | 0.12 | 0.32 | 0.58 | 0.62 | 0.10 | 0.45 | 0.69 | 0.22 | 0.10 |
| Control Delay | 41.7 | 60.0 | 18.0 | 42.7 | 63.1 | 11.4 | 46.6 | 23.2 | 73.5 | 20.3 | 6.5 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 41.7 | 60.0 | 18.0 | 42.7 | 63.1 | 11.4 | 46.6 | 23.2 | 73.5 | 20.3 | 6.5 |
| Queue Length 50th (ft) | 39 | 64 | 0 | 51 | 111 | 0 | 16 | 172 | 106 | 52 | 0 |
| Queue Length 95th (ft) | 65 | 105 | 22 | 81 | 164 | 69 | 30 | 273 | 161 | 168 | 32 |
| Internal Link Dist (ft) | | 946 | | | 290 | | | 637 | | 553 | |
| Turn Bay Length (ft) | 200 | | 200 | 230 | | 230 | 183 | | 300 | | |
| Base Capacity (vph) | 252 | 465 | 407 | 277 | 460 | 604 | 233 | 1690 | 273 | 2021 | 904 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.27 | 0.20 | 0.06 | 0.31 | 0.35 | 0.50 | 0.09 | 0.45 | 0.55 | 0.21 | 0.10 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

6: Potter Drive & C St

1/14/2009



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|-------|-------|------|------|-------|------|-------|------|------|
| Lane Configurations | ↖ | ↑ | ↗ | ↖ | ↑ | ↗ | ↖ | ↕ | | ↖ | ↕ | ↗ |
| Volume (vph) | 62 | 87 | 24 | 80 | 146 | 277 | 20 | 636 | 64 | 139 | 391 | 80 |
| Ideal Flow (vphpl) | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 | 1850 |
| Grade (%) | | 0% | | | 2% | | | 1% | | | 0% | |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | 4.0 | 4.0 | 4.0 |
| 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 |
| Frbp, ped/bikes | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | | 1.00 | 1.00 | 0.96 |
| Flpb, ped/bikes | 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 | 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) | 1624 | 1713 | 1430 | 1607 | 1696 | 1416 | 1619 | 3183 | | 1627 | 3255 | 1402 |
| Flt Permitted | 0.51 | 1.00 | 1.00 | 0.53 | 1.00 | 1.00 | 0.95 | 1.00 | | 0.95 | 1.00 | 1.00 |
| Satd. Flow (perm) | 864 | 1713 | 1430 | 892 | 1696 | 1416 | 1619 | 3183 | | 1627 | 3255 | 1402 |
| Peak-hour factor, PHF | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 67 | 95 | 26 | 87 | 159 | 301 | 22 | 691 | 70 | 151 | 425 | 87 |
| RTOR Reduction (vph) | 0 | 0 | 22 | 0 | 0 | 252 | 0 | 5 | 0 | 0 | 0 | 40 |
| Lane Group Flow (vph) | 67 | 95 | 4 | 87 | 159 | 49 | 22 | 756 | 0 | 151 | 425 | 47 |
| Confl. Peds. (#/hr) | 5 | | 5 | 5 | | 5 | 5 | | 5 | 5 | | 5 |
| Heavy Vehicles (%) | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% | 8% |
| Turn Type | pm+pt | | Perm | pm+pt | | Perm | Prot | | | Prot | | Perm |
| Protected Phases | 3 | 8 | | 7 | 4 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 8 | | 8 | 4 | | 4 | | | | | | 6 |
| Actuated Green, G (s) | 24.9 | 17.6 | 17.6 | 30.5 | 20.4 | 20.4 | 13.3 | 67.3 | | 20.4 | 74.4 | 74.4 |
| Effective Green, g (s) | 29.5 | 19.9 | 19.9 | 35.1 | 22.7 | 22.7 | 15.3 | 69.3 | | 22.4 | 76.4 | 76.4 |
| Actuated g/C Ratio | 0.21 | 0.14 | 0.14 | 0.25 | 0.16 | 0.16 | 0.11 | 0.49 | | 0.16 | 0.55 | 0.55 |
| Clearance Time (s) | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.3 | 6.0 | 6.0 | | 6.0 | 6.0 | 6.0 |
| Vehicle Extension (s) | 1.5 | 2.5 | 2.5 | 1.5 | 2.5 | 2.5 | 1.5 | 4.3 | | 1.5 | 4.3 | 4.3 |
| Lane Grp Cap (vph) | 234 | 243 | 203 | 287 | 275 | 230 | 177 | 1576 | | 260 | 1776 | 765 |
| v/s Ratio Prot | 0.02 | 0.06 | | c0.03 | c0.09 | | 0.01 | c0.24 | | c0.09 | 0.13 | |
| v/s Ratio Perm | 0.04 | | 0.00 | 0.05 | | 0.03 | | | | | | 0.03 |
| v/c Ratio | 0.29 | 0.39 | 0.02 | 0.30 | 0.58 | 0.21 | 0.12 | 0.48 | | 0.58 | 0.24 | 0.06 |
| Uniform Delay, d1 | 45.6 | 54.5 | 51.6 | 41.7 | 54.2 | 50.9 | 56.3 | 23.4 | | 54.5 | 16.6 | 15.0 |
| 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 | 0.2 | 0.8 | 0.0 | 0.2 | 2.4 | 0.3 | 0.1 | 1.0 | | 2.1 | 0.3 | 0.2 |
| Delay (s) | 45.8 | 55.3 | 51.7 | 41.9 | 56.6 | 51.2 | 56.4 | 24.5 | | 56.6 | 16.9 | 15.1 |
| Level of Service | D | E | D | D | E | D | E | C | | E | B | B |
| Approach Delay (s) | | 51.4 | | | 51.3 | | | 25.4 | | | 25.7 | |
| Approach LOS | | D | | | D | | | C | | | C | |

| Intersection Summary | | |
|-----------------------------------|-------|---------------------------|
| HCM Average Control Delay | 34.2 | HCM Level of Service C |
| HCM Volume to Capacity ratio | 0.51 | |
| Actuated Cycle Length (s) | 140.0 | Sum of lost time (s) 16.0 |
| Intersection Capacity Utilization | 58.8% | ICU Level of Service B |
| Analysis Period (min) | 15 | |

c Critical Lane Group