



APPENDIX C

Future Do-Nothing Scenario Synchro and SimTraffic Reports



**Future Do-Nothing Scenario:
2028 Synchro Reports**

HCM Unsignalized Intersection Capacity Analysis

1: Golding St & Whitewood Ave

09/07/2023

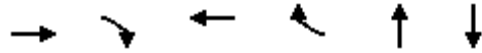


| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | → | | | ← | ↘ | ↙ |
| Traffic Volume (veh/h) | 362 | 16 | 16 | 249 | 16 | 30 |
| Future Volume (Veh/h) | 362 | 16 | 16 | 249 | 16 | 30 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Hourly flow rate (vph) | 416 | 18 | 18 | 286 | 18 | 34 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | 336 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 434 | | 747 | 425 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 434 | | 747 | 425 |
| tC, single (s) | | | 4.2 | | 6.4 | 6.3 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.3 | | 3.5 | 3.4 |
| p0 queue free % | | | 98 | | 95 | 95 |
| cM capacity (veh/h) | | | 1099 | | 377 | 619 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 434 | 304 | 52 | | | |
| Volume Left | 0 | 18 | 18 | | | |
| Volume Right | 18 | 0 | 34 | | | |
| cSH | 1700 | 1099 | 506 | | | |
| Volume to Capacity | 0.26 | 0.02 | 0.10 | | | |
| Queue Length 95th (m) | 0.0 | 0.4 | 2.6 | | | |
| Control Delay (s) | 0.0 | 0.6 | 12.9 | | | |
| Lane LOS | | A | B | | | |
| Approach Delay (s) | 0.0 | 0.6 | 12.9 | | | |
| Approach LOS | | | B | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.1 | | | |
| Intersection Capacity Utilization | | | 36.2% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

Queues

2: Edith St/Parking Entrance & Whitewood Ave

09/07/2023



| Lane Group | EBT | EBR | WBT | WBR | NBT | SBT |
|------------------------|-------|------|-------|------|-------|------|
| Lane Group Flow (vph) | 367 | 15 | 238 | 64 | 80 | 68 |
| v/c Ratio | 0.35 | 0.01 | 0.23 | 0.06 | 0.22 | 0.22 |
| Control Delay | 7.7 | 0.0 | 6.7 | 2.2 | 12.0 | 14.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 7.7 | 0.0 | 6.7 | 2.2 | 12.0 | 14.0 |
| Queue Length 50th (m) | 16.8 | 0.0 | 9.8 | 0.0 | 3.2 | 3.4 |
| Queue Length 95th (m) | 30.8 | 0.0 | 19.0 | 3.2 | 10.4 | 10.1 |
| Internal Link Dist (m) | 312.0 | | 313.1 | | 280.6 | 74.2 |
| Turn Bay Length (m) | | 45.0 | | 45.0 | | |
| Base Capacity (vph) | 1057 | 1065 | 1060 | 1126 | 597 | 526 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.35 | 0.01 | 0.22 | 0.06 | 0.13 | 0.13 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: Edith St/Parking Entrance & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↕ | ↗ | | ↕ | ↗ | | ↕ | | | ↕ | |
| Traffic Volume (vph) | 15 | 301 | 13 | 9 | 196 | 55 | 25 | 23 | 21 | 38 | 13 | 8 |
| Future Volume (vph) | 15 | 301 | 13 | 9 | 196 | 55 | 25 | 23 | 21 | 38 | 13 | 8 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.2 | | | 6.2 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 0.97 | |
| Satd. Flow (prot) | | 1557 | 1512 | | 1561 | 1601 | | 1664 | | | 1649 | |
| Flt Permitted | | 0.98 | 1.00 | | 0.98 | 1.00 | | 0.85 | | | 0.76 | |
| Satd. Flow (perm) | | 1533 | 1512 | | 1536 | 1601 | | 1444 | | | 1288 | |
| Peak-hour factor, PHF | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Adj. Flow (vph) | 17 | 350 | 15 | 10 | 228 | 64 | 29 | 27 | 24 | 44 | 15 | 9 |
| RTOR Reduction (vph) | 0 | 0 | 6 | 0 | 0 | 26 | 0 | 21 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 367 | 9 | 0 | 238 | 38 | 0 | 59 | 0 | 0 | 60 | 0 |
| Heavy Vehicles (%) | 7% | 11% | 8% | 0% | 11% | 2% | 16% | 0% | 10% | 14% | 8% | 0% |
| Parking (#/hr) | | 0 | | | 0 | | | | | | | |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 8 | | | 4 | | |
| Actuated Green, G (s) | | 26.2 | 26.2 | | 26.2 | 26.2 | | 5.9 | | | 5.9 | |
| Effective Green, g (s) | | 26.2 | 26.2 | | 26.2 | 26.2 | | 5.9 | | | 5.9 | |
| Actuated g/C Ratio | | 0.59 | 0.59 | | 0.59 | 0.59 | | 0.13 | | | 0.13 | |
| Clearance Time (s) | | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.2 | | | 6.2 | |
| Vehicle Extension (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 2.5 | | | 2.5 | |
| Lane Grp Cap (vph) | | 902 | 890 | | 904 | 942 | | 191 | | | 170 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.24 | 0.01 | | 0.15 | 0.02 | | 0.04 | | | c0.05 | |
| v/c Ratio | | 0.41 | 0.01 | | 0.26 | 0.04 | | 0.31 | | | 0.35 | |
| Uniform Delay, d1 | | 4.9 | 3.8 | | 4.5 | 3.9 | | 17.5 | | | 17.6 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.6 | 0.0 | | 0.3 | 0.0 | | 0.7 | | | 0.9 | |
| Delay (s) | | 5.6 | 3.8 | | 4.8 | 3.9 | | 18.1 | | | 18.5 | |
| Level of Service | | A | A | | A | A | | B | | | B | |
| Approach Delay (s) | | 5.5 | | | 4.6 | | | 18.1 | | | 18.5 | |
| Approach LOS | | A | | | A | | | B | | | B | |

| Intersection Summary | | |
|-----------------------------------|-------|---------------------------|
| HCM 2000 Control Delay | 7.4 | HCM 2000 Level of Service |
| HCM 2000 Volume to Capacity ratio | 0.40 | A |
| Actuated Cycle Length (s) | 44.5 | Sum of lost time (s) |
| Intersection Capacity Utilization | 57.2% | 12.4 |
| Analysis Period (min) | 15 | ICU Level of Service |
| | | B |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: John ST & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 15 | 288 | 4 | 4 | 256 | 8 | 4 | 0 | 5 | 11 | 4 | 15 |
| Future Volume (Veh/h) | 15 | 288 | 4 | 4 | 256 | 8 | 4 | 0 | 5 | 11 | 4 | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 17 | 327 | 5 | 5 | 291 | 9 | 5 | 0 | 6 | 12 | 5 | 17 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | 337 | | | 245 | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 300 | | | 332 | | | 688 | 674 | 330 | 675 | 672 | 296 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 300 | | | 332 | | | 688 | 674 | 330 | 675 | 672 | 296 |
| tC, single (s) | 4.2 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.2 | 6.5 | 6.3 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.3 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.6 | 4.0 | 3.4 |
| p0 queue free % | 99 | | | 100 | | | 99 | 100 | 99 | 97 | 99 | 98 |
| cM capacity (veh/h) | 1233 | | | 1239 | | | 346 | 372 | 717 | 349 | 373 | 716 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 349 | 305 | 11 | 34 | | | | | | | | |
| Volume Left | 17 | 5 | 5 | 12 | | | | | | | | |
| Volume Right | 5 | 9 | 6 | 17 | | | | | | | | |
| cSH | 1233 | 1239 | 482 | 476 | | | | | | | | |
| Volume to Capacity | 0.01 | 0.00 | 0.02 | 0.07 | | | | | | | | |
| Queue Length 95th (m) | 0.3 | 0.1 | 0.5 | 1.7 | | | | | | | | |
| Control Delay (s) | 0.5 | 0.2 | 12.6 | 13.1 | | | | | | | | |
| Lane LOS | A | A | B | B | | | | | | | | |
| Approach Delay (s) | 0.5 | 0.2 | 12.6 | 13.1 | | | | | | | | |
| Approach LOS | | | B | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 34.0% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

4: Mary St & Whitewood Ave

09/07/2023

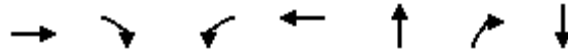


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Traffic Volume (veh/h) | 23 | 274 | 8 | 4 | 273 | 8 | 2 | 3 | 2 | 8 | 4 | 10 |
| Future Volume (Veh/h) | 23 | 274 | 8 | 4 | 273 | 8 | 2 | 3 | 2 | 8 | 4 | 10 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Hourly flow rate (vph) | 29 | 342 | 10 | 5 | 341 | 10 | 2 | 4 | 2 | 10 | 5 | 12 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | 126 | | | | | | | |
| pX, platoon unblocked | 0.93 | | | | | | 0.93 | 0.93 | | 0.93 | 0.93 | 0.93 |
| vC, conflicting volume | 351 | | | 352 | | | 776 | 766 | 347 | 765 | 766 | 346 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 262 | | | 352 | | | 720 | 709 | 347 | 708 | 709 | 257 |
| tC, single (s) | 4.3 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 7.2 | 6.3 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.4 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.7 | 3.4 |
| p0 queue free % | 97 | | | 100 | | | 99 | 99 | 100 | 97 | 98 | 98 |
| cM capacity (veh/h) | 1128 | | | 1218 | | | 304 | 326 | 701 | 316 | 254 | 708 |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 381 | 356 | 8 | 27 | | | | | | | | |
| Volume Left | 29 | 5 | 2 | 10 | | | | | | | | |
| Volume Right | 10 | 10 | 2 | 12 | | | | | | | | |
| cSH | 1128 | 1218 | 368 | 395 | | | | | | | | |
| Volume to Capacity | 0.03 | 0.00 | 0.02 | 0.07 | | | | | | | | |
| Queue Length 95th (m) | 0.6 | 0.1 | 0.5 | 1.7 | | | | | | | | |
| Control Delay (s) | 0.9 | 0.2 | 15.0 | 14.8 | | | | | | | | |
| Lane LOS | A | A | B | B | | | | | | | | |
| Approach Delay (s) | 0.9 | 0.2 | 15.0 | 14.8 | | | | | | | | |
| Approach LOS | | | B | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 38.6% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

Queues

5: Paget St #1 & Whitewood Ave

09/07/2023



| Lane Group | EBT | EBR | WBL | WBT | NBT | NBR | SBT |
|------------------------|-------|------|------|-------|------|------|-------|
| Lane Group Flow (vph) | 284 | 38 | 132 | 286 | 87 | 195 | 64 |
| v/c Ratio | 0.33 | 0.05 | 0.37 | 0.32 | 0.21 | 0.33 | 0.16 |
| Control Delay | 11.1 | 3.1 | 13.7 | 10.6 | 22.4 | 5.1 | 20.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 11.1 | 3.1 | 13.7 | 10.6 | 22.4 | 5.1 | 20.2 |
| Queue Length 50th (m) | 21.8 | 0.0 | 9.8 | 20.0 | 9.7 | 0.0 | 6.4 |
| Queue Length 95th (m) | 35.4 | 3.6 | 25.2 | 41.5 | 20.0 | 12.6 | 14.9 |
| Internal Link Dist (m) | 101.5 | | | 191.0 | 51.6 | | 138.0 |
| Turn Bay Length (m) | | 40.0 | | | | | |
| Base Capacity (vph) | 848 | 820 | 358 | 882 | 408 | 598 | 388 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.33 | 0.05 | 0.37 | 0.32 | 0.21 | 0.33 | 0.16 |
| Intersection Summary | | | | | | | |

HCM Signalized Intersection Capacity Analysis

5: Paget St #1 & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|-----------------------------------|------|------|-------|-------|------|------|------|-------|------|------|------|---------------------------|------|
| Lane Configurations | | ↖ | ↗ | ↖ | ↗ | | | ↖ | ↗ | | ↕ | | |
| Traffic Volume (vph) | 9 | 241 | 33 | 116 | 238 | 14 | 39 | 38 | 172 | 30 | 21 | 5 | |
| Future Volume (vph) | 9 | 241 | 33 | 116 | 238 | 14 | 39 | 38 | 172 | 30 | 21 | 5 | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | |
| Total Lost time (s) | | 5.5 | 5.5 | 5.5 | 5.5 | | | 5.5 | 5.5 | | 5.5 | | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | |
| Frt | | 1.00 | 0.85 | 1.00 | 0.99 | | | 1.00 | 0.85 | | 0.99 | | |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.98 | 1.00 | | 0.97 | | |
| Satd. Flow (prot) | | 1541 | 1445 | 1074 | 1580 | | | 1539 | 1512 | | 1450 | | |
| Flt Permitted | | 0.99 | 1.00 | 0.57 | 1.00 | | | 0.85 | 1.00 | | 0.84 | | |
| Satd. Flow (perm) | | 1525 | 1445 | 645 | 1580 | | | 1336 | 1512 | | 1255 | | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | |
| Adj. Flow (vph) | 10 | 274 | 38 | 132 | 270 | 16 | 44 | 43 | 195 | 34 | 24 | 6 | |
| RTOR Reduction (vph) | 0 | 0 | 17 | 0 | 3 | 0 | 0 | 0 | 135 | 0 | 4 | 0 | |
| Lane Group Flow (vph) | 0 | 284 | 21 | 132 | 283 | 0 | 0 | 87 | 60 | 0 | 60 | 0 | |
| Heavy Vehicles (%) | 12% | 12% | 13% | 70% | 9% | 0% | 13% | 6% | 8% | 17% | 10% | 20% | |
| Parking (#/hr) | | 0 | | | 0 | | | 0 | | | 0 | | |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | Perm | Perm | NA | | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | 8 | 4 | | | |
| Actuated Green, G (s) | | 44.5 | 44.5 | 44.5 | 44.5 | | | 24.5 | 24.5 | | 24.5 | | |
| Effective Green, g (s) | | 44.5 | 44.5 | 44.5 | 44.5 | | | 24.5 | 24.5 | | 24.5 | | |
| Actuated g/C Ratio | | 0.56 | 0.56 | 0.56 | 0.56 | | | 0.31 | 0.31 | | 0.31 | | |
| Clearance Time (s) | | 5.5 | 5.5 | 5.5 | 5.5 | | | 5.5 | 5.5 | | 5.5 | | |
| Lane Grp Cap (vph) | | 848 | 803 | 358 | 878 | | | 409 | 463 | | 384 | | |
| v/s Ratio Prot | | | | | 0.18 | | | | | | | | |
| v/s Ratio Perm | | 0.19 | 0.01 | c0.20 | | | | c0.07 | 0.04 | | 0.05 | | |
| v/c Ratio | | 0.33 | 0.03 | 0.37 | 0.32 | | | 0.21 | 0.13 | | 0.16 | | |
| Uniform Delay, d1 | | 9.7 | 8.0 | 9.9 | 9.6 | | | 20.6 | 20.0 | | 20.2 | | |
| Progression Factor | | 1.00 | 1.00 | 1.02 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | |
| Incremental Delay, d2 | | 1.1 | 0.1 | 2.7 | 0.9 | | | 1.2 | 0.6 | | 0.9 | | |
| Delay (s) | | 10.7 | 8.1 | 12.8 | 10.5 | | | 21.8 | 20.6 | | 21.1 | | |
| Level of Service | | B | A | B | B | | | C | C | | C | | |
| Approach Delay (s) | | 10.4 | | | 11.2 | | | 21.0 | | | 21.1 | | |
| Approach LOS | | B | | | B | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 14.1 | | | | | | | | | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | | | 0.31 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 80.0 | | | | | | | | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 70.4% | | | | | | | | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

Queues

6: Armstrong St & Whitewood Ave

09/07/2023



| Lane Group | EBL | EBT | WBT | NBT | NBR | SBT | SBR |
|------------------------|------|-------|-------|-------|------|-------|------|
| Lane Group Flow (vph) | 337 | 87 | 83 | 48 | 3 | 85 | 331 |
| v/c Ratio | 0.49 | 0.09 | 0.09 | 0.12 | 0.01 | 0.18 | 0.50 |
| Control Delay | 10.1 | 4.8 | 6.9 | 22.5 | 0.0 | 23.2 | 5.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.1 | 4.8 | 6.9 | 22.5 | 0.0 | 23.2 | 5.8 |
| Queue Length 50th (m) | 18.1 | 2.7 | 4.4 | 5.4 | 0.0 | 9.8 | 0.0 |
| Queue Length 95th (m) | 34.4 | 8.7 | 9.9 | 13.0 | 0.0 | 20.1 | 17.1 |
| Internal Link Dist (m) | | 191.0 | 154.1 | 180.0 | | 119.0 | |
| Turn Bay Length (m) | | | | | 15.0 | | 20.0 |
| Base Capacity (vph) | 694 | 939 | 943 | 403 | 482 | 461 | 659 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.49 | 0.09 | 0.09 | 0.12 | 0.01 | 0.18 | 0.50 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

6: Armstrong St & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|------|------|------|------|------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 300 | 55 | 22 | 2 | 62 | 10 | 10 | 33 | 3 | 3 | 73 | 295 |
| Future Volume (vph) | 300 | 55 | 22 | 2 | 62 | 10 | 10 | 33 | 3 | 3 | 73 | 295 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.5 | 5.5 | | | 5.6 | | | 5.6 | 5.6 | | 5.5 | 5.5 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | | 0.98 | | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | 1.00 | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1615 | 1597 | | | 1622 | | | 1512 | 1633 | | 1647 | 1498 |
| Flt Permitted | 0.70 | 1.00 | | | 1.00 | | | 0.94 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (perm) | 1195 | 1597 | | | 1619 | | | 1442 | 1633 | | 1639 | 1498 |
| Peak-hour factor, PHF | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Adj. Flow (vph) | 337 | 62 | 25 | 2 | 70 | 11 | 11 | 37 | 3 | 3 | 82 | 331 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 0 | 0 | 238 |
| Lane Group Flow (vph) | 337 | 77 | 0 | 0 | 78 | 0 | 0 | 48 | 1 | 0 | 85 | 93 |
| Heavy Vehicles (%) | 13% | 3% | 5% | 50% | 4% | 0% | 10% | 14% | 0% | 0% | 5% | 9% |
| Parking (#/hr) | | 0 | | | 0 | | | 0 | | | 0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | Perm | Perm | NA | Perm |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | 8 | 4 | | 4 |
| Actuated Green, G (s) | 46.5 | 46.5 | | | 46.4 | | | 22.4 | 22.4 | | 22.5 | 22.5 |
| Effective Green, g (s) | 46.5 | 46.5 | | | 46.4 | | | 22.4 | 22.4 | | 22.5 | 22.5 |
| Actuated g/C Ratio | 0.58 | 0.58 | | | 0.58 | | | 0.28 | 0.28 | | 0.28 | 0.28 |
| Clearance Time (s) | 5.5 | 5.5 | | | 5.6 | | | 5.6 | 5.6 | | 5.5 | 5.5 |
| Lane Grp Cap (vph) | 694 | 928 | | | 939 | | | 403 | 457 | | 460 | 421 |
| v/s Ratio Prot | | 0.05 | | | | | | | | | | |
| v/s Ratio Perm | c0.28 | | | | 0.05 | | | 0.03 | 0.00 | | 0.05 | c0.06 |
| v/c Ratio | 0.49 | 0.08 | | | 0.08 | | | 0.12 | 0.00 | | 0.18 | 0.22 |
| Uniform Delay, d1 | 9.8 | 7.4 | | | 7.4 | | | 21.5 | 20.7 | | 21.8 | 22.0 |
| Progression Factor | 0.75 | 0.82 | | | 1.00 | | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | 2.3 | 0.2 | | | 0.2 | | | 0.6 | 0.0 | | 0.9 | 1.2 |
| Delay (s) | 9.7 | 6.2 | | | 7.6 | | | 22.1 | 20.8 | | 22.7 | 23.2 |
| Level of Service | A | A | | | A | | | C | C | | C | C |
| Approach Delay (s) | | 9.0 | | | 7.6 | | | 22.0 | | | 23.1 | |
| Approach LOS | | A | | | A | | | C | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 15.6 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.40 | | |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) | 11.2 |
| Intersection Capacity Utilization | 62.2% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

7: Broadwood Ave & Golding St

09/07/2023



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↶ | ↷ | | ↘ | |
| Traffic Volume (veh/h) | 3 | 1 | 2 | 16 | 33 | 0 |
| Future Volume (Veh/h) | 3 | 1 | 2 | 16 | 33 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 |
| Hourly flow rate (vph) | 4 | 1 | 3 | 23 | 46 | 0 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 26 | | | | 24 | 14 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 26 | | | | 24 | 14 |
| tC, single (s) | 4.1 | | | | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.6 | 3.3 |
| p0 queue free % | 100 | | | | 95 | 100 |
| cM capacity (veh/h) | 1601 | | | | 963 | 1071 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 5 | 26 | 46 | | | |
| Volume Left | 4 | 0 | 46 | | | |
| Volume Right | 0 | 23 | 0 | | | |
| cSH | 1601 | 1700 | 963 | | | |
| Volume to Capacity | 0.00 | 0.02 | 0.05 | | | |
| Queue Length 95th (m) | 0.1 | 0.0 | 1.1 | | | |
| Control Delay (s) | 5.8 | 0.0 | 8.9 | | | |
| Lane LOS | A | | A | | | |
| Approach Delay (s) | 5.8 | 0.0 | 8.9 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 5.7 | | | |
| Intersection Capacity Utilization | | 13.3% | | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

8: Broadwood Ave & Edith St

09/07/2023



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↗ | ↖ | | ↘ | ↙ |
| Traffic Volume (veh/h) | 6 | 32 | 22 | 39 | 24 | 2 |
| Future Volume (Veh/h) | 6 | 32 | 22 | 39 | 24 | 2 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Hourly flow rate (vph) | 8 | 44 | 30 | 53 | 33 | 3 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 83 | | | | 116 | 56 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 83 | | | | 116 | 56 |
| tC, single (s) | 4.4 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.5 | | | | 3.5 | 3.3 |
| p0 queue free % | 99 | | | | 96 | 100 |
| cM capacity (veh/h) | 1335 | | | | 879 | 1016 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 52 | 83 | 36 | | | |
| Volume Left | 8 | 0 | 33 | | | |
| Volume Right | 0 | 53 | 3 | | | |
| cSH | 1335 | 1700 | 889 | | | |
| Volume to Capacity | 0.01 | 0.05 | 0.04 | | | |
| Queue Length 95th (m) | 0.1 | 0.0 | 1.0 | | | |
| Control Delay (s) | 1.2 | 0.0 | 9.2 | | | |
| Lane LOS | A | | A | | | |
| Approach Delay (s) | 1.2 | 0.0 | 9.2 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 2.3 | | | |
| Intersection Capacity Utilization | | 16.8% | | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

9: Lakeshore Rd N #1 & Broadwood Ave

09/07/2023



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 13 | 4 | 46 | 7 | 2 | 3 | 68 | 302 | 4 | 0 | 187 | 9 |
| Future Volume (Veh/h) | 13 | 4 | 46 | 7 | 2 | 3 | 68 | 302 | 4 | 0 | 187 | 9 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Hourly flow rate (vph) | 15 | 5 | 53 | 8 | 2 | 3 | 78 | 347 | 5 | 0 | 215 | 10 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 730 | 728 | 220 | 781 | 730 | 350 | 225 | | | 352 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 730 | 728 | 220 | 781 | 730 | 350 | 225 | | | 352 | | |
| tC, single (s) | 7.2 | 6.5 | 6.2 | 7.2 | 6.5 | 6.5 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.6 | 4.0 | 3.3 | 3.6 | 4.0 | 3.6 | 2.2 | | | 2.2 | | |
| p0 queue free % | 95 | 98 | 93 | 97 | 99 | 100 | 94 | | | 100 | | |
| cM capacity (veh/h) | 313 | 332 | 812 | 262 | 331 | 627 | 1338 | | | 1218 | | |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 73 | 13 | 430 | 225 | | | | | | | | |
| Volume Left | 15 | 8 | 78 | 0 | | | | | | | | |
| Volume Right | 53 | 3 | 5 | 10 | | | | | | | | |
| cSH | 569 | 315 | 1338 | 1218 | | | | | | | | |
| Volume to Capacity | 0.13 | 0.04 | 0.06 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 3.3 | 1.0 | 1.4 | 0.0 | | | | | | | | |
| Control Delay (s) | 12.3 | 16.9 | 1.9 | 0.0 | | | | | | | | |
| Lane LOS | B | C | A | | | | | | | | | |
| Approach Delay (s) | 12.3 | 16.9 | 1.9 | 0.0 | | | | | | | | |
| Approach LOS | B | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 2.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 44.1% | ICU Level of Service | A | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

10: Lakeshore Rd N #1 & Farah Ave

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 8 | 12 | 15 | 41 | 15 | 15 | 6 | 232 | 83 | 34 | 133 | 6 |
| Future Volume (Veh/h) | 8 | 12 | 15 | 41 | 15 | 15 | 6 | 232 | 83 | 34 | 133 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Hourly flow rate (vph) | 9 | 13 | 17 | 46 | 17 | 17 | 7 | 261 | 93 | 38 | 149 | 7 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | 157 | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 576 | 596 | 152 | 574 | 554 | 308 | 156 | | | 354 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 576 | 596 | 152 | 574 | 554 | 308 | 156 | | | 354 | | |
| tC, single (s) | 7.1 | 6.5 | 6.5 | 7.2 | 6.6 | 6.2 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.6 | 3.6 | 4.1 | 3.3 | 2.2 | | | 2.3 | | |
| p0 queue free % | 98 | 97 | 98 | 88 | 96 | 98 | 100 | | | 97 | | |
| cM capacity (veh/h) | 397 | 404 | 816 | 391 | 418 | 737 | 1436 | | | 1167 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 39 | 80 | 361 | 194 | | | | | | | | |
| Volume Left | 9 | 46 | 7 | 38 | | | | | | | | |
| Volume Right | 17 | 17 | 93 | 7 | | | | | | | | |
| cSH | 515 | 441 | 1436 | 1167 | | | | | | | | |
| Volume to Capacity | 0.08 | 0.18 | 0.00 | 0.03 | | | | | | | | |
| Queue Length 95th (m) | 1.9 | 5.0 | 0.1 | 0.8 | | | | | | | | |
| Control Delay (s) | 12.6 | 15.0 | 0.2 | 1.8 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 12.6 | 15.0 | 0.2 | 1.8 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.1 | | | | | | | | | |
| Intersection Capacity Utilization | | | 42.8% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 11: Armstrong St & Church St

09/07/2023




















| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 5 | 321 | 377 | 90 |
| Future Volume (Veh/h) | 0 | 0 | 5 | 321 | 377 | 90 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Hourly flow rate (vph) | 0 | 0 | 6 | 373 | 438 | 105 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | 143 | 233 | |
| pX, platoon unblocked | 0.89 | 0.84 | 0.84 | | | |
| vC, conflicting volume | 876 | 490 | 543 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 566 | 301 | 363 | | | |
| 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 | 99 | | | |
| cM capacity (veh/h) | 431 | 626 | 1016 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 379 | 543 | | | |
| Volume Left | 0 | 6 | 0 | | | |
| Volume Right | 0 | 0 | 105 | | | |
| cSH | 1700 | 1016 | 1700 | | | |
| Volume to Capacity | 0.00 | 0.01 | 0.32 | | | |
| Queue Length 95th (m) | 0.0 | 0.1 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.2 | 0.0 | | | |
| Lane LOS | A | A | | | | |
| Approach Delay (s) | 0.0 | 0.2 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.1 | | | |
| Intersection Capacity Utilization | | | 28.6% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

12: Armstrong St & Sharpe St

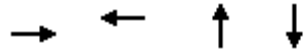
09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Traffic Volume (veh/h) | 14 | 2 | 5 | 1 | 0 | 40 | 0 | 330 | 4 | 65 | 454 | 0 |
| Future Volume (Veh/h) | 14 | 2 | 5 | 1 | 0 | 40 | 0 | 330 | 4 | 65 | 454 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Hourly flow rate (vph) | 16 | 2 | 6 | 1 | 0 | 47 | 0 | 384 | 5 | 76 | 528 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| | | | | | | | | None | | | | None |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| | | | | | | | | 192 | | | | 184 |
| pX, platoon unblocked | 0.94 | 0.94 | 0.95 | 0.94 | 0.94 | 0.92 | 0.95 | | | 0.92 | | |
| vC, conflicting volume | 1114 | 1069 | 264 | 810 | 1066 | 386 | 528 | | | 389 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 900 | 853 | 127 | 577 | 850 | 288 | 404 | | | 290 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.1 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.4 | 2.2 | | | 2.2 | | |
| p0 queue free % | 92 | 99 | 99 | 100 | 100 | 93 | 100 | | | 93 | | |
| cM capacity (veh/h) | 196 | 263 | 863 | 357 | 264 | 635 | 1110 | | | 1145 | | |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 24 | 48 | 389 | 252 | 352 | | | | | | | |
| Volume Left | 16 | 1 | 0 | 76 | 0 | | | | | | | |
| Volume Right | 6 | 47 | 5 | 0 | 0 | | | | | | | |
| cSH | 250 | 625 | 1700 | 1145 | 1700 | | | | | | | |
| Volume to Capacity | 0.10 | 0.08 | 0.23 | 0.07 | 0.21 | | | | | | | |
| Queue Length 95th (m) | 2.4 | 1.9 | 0.0 | 1.6 | 0.0 | | | | | | | |
| Control Delay (s) | 21.0 | 11.2 | 0.0 | 3.0 | 0.0 | | | | | | | |
| Lane LOS | C | B | | A | | | | | | | | |
| Approach Delay (s) | 21.0 | 11.2 | 0.0 | 1.2 | | | | | | | | |
| Approach LOS | C | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.7 | | | | | | | | | |
| Intersection Capacity Utilization | | | 49.9% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

Queues

13: Armstrong St & Beavis Terr/Elm Ave

09/07/2023



















| Lane Group | EBT | WBT | NBT | SBT |
|------------------------|-------|-------|-------|-------|
| Lane Group Flow (vph) | 31 | 128 | 439 | 445 |
| v/c Ratio | 0.04 | 0.22 | 0.55 | 0.54 |
| Control Delay | 4.2 | 8.2 | 15.9 | 16.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 4.2 | 8.2 | 15.9 | 16.6 |
| Queue Length 50th (m) | 0.2 | 4.5 | 14.0 | 15.0 |
| Queue Length 95th (m) | 3.2 | 12.9 | 22.8 | 23.8 |
| Internal Link Dist (m) | 111.3 | 124.3 | 159.9 | 149.4 |
| Turn Bay Length (m) | | | | |
| Base Capacity (vph) | 894 | 660 | 1398 | 1453 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.03 | 0.19 | 0.31 | 0.31 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Armstrong St & Beavis Terr/Elm Ave

















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| |  |  |  |  |  |  |  |  |  |  |  |  | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|----------------------|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | |
| Lane Configurations | |  | | |  | | |  | | |  | | | |
| Traffic Volume (vph) | 2 | 3 | 23 | 98 | 2 | 11 | 8 | 337 | 37 | 5 | 381 | 1 | | |
| Future Volume (vph) | 2 | 3 | 23 | 98 | 2 | 11 | 8 | 337 | 37 | 5 | 381 | 1 | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | |
| Total Lost time (s) | | 6.2 | | | 6.2 | | | 5.9 | | | 5.9 | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | | | |
| Frt | | 0.89 | | | 0.99 | | | 0.99 | | | 1.00 | | | |
| Flt Protected | | 1.00 | | | 0.96 | | | 1.00 | | | 1.00 | | | |
| Satd. Flow (prot) | | 1698 | | | 1613 | | | 3185 | | | 3320 | | | |
| Flt Permitted | | 0.99 | | | 0.74 | | | 0.94 | | | 0.94 | | | |
| Satd. Flow (perm) | | 1680 | | | 1247 | | | 2992 | | | 3139 | | | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | | |
| Adj. Flow (vph) | 2 | 3 | 26 | 113 | 2 | 13 | 9 | 387 | 43 | 6 | 438 | 1 | | |
| RTOR Reduction (vph) | 0 | 14 | 0 | 0 | 7 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | | |
| Lane Group Flow (vph) | 0 | 17 | 0 | 0 | 121 | 0 | 0 | 421 | 0 | 0 | 445 | 0 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 13% | 0% | 10% | 13% | 13% | 11% | 0% | 10% | 0% | | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | | | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | | | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | | | |
| Actuated Green, G (s) | | 20.0 | | | 20.0 | | | 11.3 | | | 11.3 | | | |
| Effective Green, g (s) | | 20.0 | | | 20.0 | | | 11.3 | | | 11.3 | | | |
| Actuated g/C Ratio | | 0.46 | | | 0.46 | | | 0.26 | | | 0.26 | | | |
| Clearance Time (s) | | 6.2 | | | 6.2 | | | 5.9 | | | 5.9 | | | |
| Vehicle Extension (s) | | 5.0 | | | 5.0 | | | 2.5 | | | 2.5 | | | |
| Lane Grp Cap (vph) | | 774 | | | 574 | | | 779 | | | 817 | | | |
| v/s Ratio Prot | | | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.01 | | | 0.10 | | | 0.14 | | | 0.14 | | | |
| v/c Ratio | | 0.02 | | | 0.21 | | | 0.54 | | | 0.54 | | | |
| Uniform Delay, d1 | | 6.4 | | | 7.0 | | | 13.8 | | | 13.8 | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Incremental Delay, d2 | | 0.0 | | | 0.4 | | | 0.6 | | | 0.6 | | | |
| Delay (s) | | 6.4 | | | 7.4 | | | 14.4 | | | 14.4 | | | |
| Level of Service | | A | | | A | | | B | | | B | | | |
| Approach Delay (s) | | 6.4 | | | 7.4 | | | 14.4 | | | 14.4 | | | |
| Approach LOS | | A | | | A | | | B | | | B | | | |
| Intersection Summary | | | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 13.3 | | | | | | | | | HCM 2000 Level of Service | B | |
| HCM 2000 Volume to Capacity ratio | | | 0.33 | | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 43.4 | | | | | | | | 12.1 | | | |
| Intersection Capacity Utilization | | | 43.0% | | | | | | | | | | ICU Level of Service | A |
| Analysis Period (min) | | | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | | |

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis
 15: Georgina Ave & Main St

















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| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 4 | 238 | 7 | 8 | 126 | 3 | 12 | 7 | 43 | 1 | 0 | 4 |
| Future Volume (Veh/h) | 4 | 238 | 7 | 8 | 126 | 3 | 12 | 7 | 43 | 1 | 0 | 4 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| Hourly flow rate (vph) | 5 | 290 | 9 | 10 | 154 | 4 | 15 | 9 | 52 | 1 | 0 | 5 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 158 | | | 299 | | | 486 | 482 | 294 | 537 | 485 | 156 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 158 | | | 299 | | | 486 | 482 | 294 | 537 | 485 | 156 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.4 | 6.7 | 6.2 | 7.1 | 6.5 | 7.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.8 | 4.1 | 3.3 | 3.5 | 4.0 | 4.2 |
| p0 queue free % | 100 | | | 99 | | | 97 | 98 | 93 | 100 | 100 | 99 |
| cM capacity (veh/h) | 1434 | | | 1274 | | | 436 | 460 | 738 | 416 | 479 | 686 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 304 | 168 | 76 | 6 | | | | | | | | |
| Volume Left | 5 | 10 | 15 | 1 | | | | | | | | |
| Volume Right | 9 | 4 | 52 | 5 | | | | | | | | |
| cSH | 1434 | 1274 | 611 | 619 | | | | | | | | |
| Volume to Capacity | 0.00 | 0.01 | 0.12 | 0.01 | | | | | | | | |
| Queue Length 95th (m) | 0.1 | 0.2 | 3.2 | 0.2 | | | | | | | | |
| Control Delay (s) | 0.2 | 0.5 | 11.7 | 10.9 | | | | | | | | |
| Lane LOS | A | A | B | B | | | | | | | | |
| Approach Delay (s) | 0.2 | 0.5 | 11.7 | 10.9 | | | | | | | | |
| Approach LOS | | | B | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 2.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 25.7% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis
 17: Ferguson Ave #2 & Broadway St

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 6 | 0 | 1 | 5 | 2 | 23 | 1 | 299 | 0 | 20 | 148 | 10 |
| Future Volume (Veh/h) | 6 | 0 | 1 | 5 | 2 | 23 | 1 | 299 | 0 | 20 | 148 | 10 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Hourly flow rate (vph) | 7 | 0 | 1 | 6 | 2 | 27 | 1 | 348 | 0 | 23 | 172 | 12 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 602 | 574 | 178 | 575 | 580 | 348 | 184 | | | 348 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 602 | 574 | 178 | 575 | 580 | 348 | 184 | | | 348 | | |
| 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 % | 98 | 100 | 100 | 99 | 100 | 96 | 100 | | | 98 | | |
| cM capacity (veh/h) | 391 | 423 | 870 | 425 | 420 | 700 | 1403 | | | 1194 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 8 | 35 | 349 | 207 | | | | | | | | |
| Volume Left | 7 | 6 | 1 | 23 | | | | | | | | |
| Volume Right | 1 | 27 | 0 | 12 | | | | | | | | |
| cSH | 420 | 609 | 1403 | 1194 | | | | | | | | |
| Volume to Capacity | 0.02 | 0.06 | 0.00 | 0.02 | | | | | | | | |
| Queue Length 95th (m) | 0.4 | 1.4 | 0.0 | 0.4 | | | | | | | | |
| Control Delay (s) | 13.7 | 11.3 | 0.0 | 1.1 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 13.7 | 11.3 | 0.0 | 1.1 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 33.9% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 18: Ferguson Ave #2/Lakeshore Rd #2 & Browning St

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Traffic Volume (vph) | 9 | 2 | 0 | 5 | 0 | 1 | 0 | 313 | 1 | 3 | 190 | 5 |
| Future Volume (vph) | 9 | 2 | 0 | 5 | 0 | 1 | 0 | 313 | 1 | 3 | 190 | 5 |
| 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 | 2 | 0 | 6 | 0 | 1 | 0 | 368 | 1 | 4 | 224 | 6 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total (vph) | 13 | 7 | 369 | 234 | | | | | | | | |
| Volume Left (vph) | 11 | 6 | 0 | 4 | | | | | | | | |
| Volume Right (vph) | 0 | 1 | 1 | 6 | | | | | | | | |
| Hadj (s) | 0.47 | 0.38 | 0.07 | 0.09 | | | | | | | | |
| Departure Headway (s) | 5.7 | 5.6 | 4.3 | 4.4 | | | | | | | | |
| Degree Utilization, x | 0.02 | 0.01 | 0.44 | 0.29 | | | | | | | | |
| Capacity (veh/h) | 563 | 568 | 830 | 793 | | | | | | | | |
| Control Delay (s) | 8.8 | 8.7 | 10.5 | 9.2 | | | | | | | | |
| Approach Delay (s) | 8.8 | 8.7 | 10.5 | 9.2 | | | | | | | | |
| Approach LOS | A | A | B | A | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 10.0 | | | | | | | | | |
| Level of Service | | | A | | | | | | | | | |
| Intersection Capacity Utilization | | | 26.5% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1: Golding St & Whitewood Ave

09/07/2023

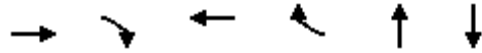


| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | → | ↘ | ↙ | ← | ↘ | ↙ |
| Traffic Volume (veh/h) | 360 | 30 | 16 | 396 | 15 | 28 |
| Future Volume (Veh/h) | 360 | 30 | 16 | 396 | 15 | 28 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 396 | 33 | 18 | 435 | 16 | 31 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | 336 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 429 | | | 412 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 429 | | | 412 |
| tC, single (s) | | | 4.1 | | | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | | | 3.3 |
| p0 queue free % | | | 98 | | | 95 |
| cM capacity (veh/h) | | | 1141 | | | 644 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 429 | 453 | 47 | | | |
| Volume Left | 0 | 18 | 16 | | | |
| Volume Right | 33 | 0 | 31 | | | |
| cSH | 1700 | 1141 | 467 | | | |
| Volume to Capacity | 0.25 | 0.02 | 0.10 | | | |
| Queue Length 95th (m) | 0.0 | 0.4 | 2.5 | | | |
| Control Delay (s) | 0.0 | 0.5 | 13.6 | | | |
| Lane LOS | | | A | | | B |
| Approach Delay (s) | 0.0 | 0.5 | 13.6 | | | |
| Approach LOS | | | B | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.9 | | | |
| Intersection Capacity Utilization | | | 43.8% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

Queues

2: Edith St/Parking Entrance & Whitewood Ave

09/07/2023



| Lane Group | EBT | EBR | WBT | WBR | NBT | SBT |
|------------------------|-------|------|-------|------|-------|------|
| Lane Group Flow (vph) | 348 | 42 | 317 | 119 | 91 | 180 |
| v/c Ratio | 0.37 | 0.05 | 0.35 | 0.12 | 0.23 | 0.45 |
| Control Delay | 9.3 | 1.6 | 9.2 | 2.4 | 12.8 | 15.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 9.3 | 1.6 | 9.2 | 2.4 | 12.8 | 15.0 |
| Queue Length 50th (m) | 15.3 | 0.0 | 13.7 | 0.0 | 4.4 | 8.7 |
| Queue Length 95th (m) | 32.5 | 2.0 | 29.9 | 5.3 | 11.6 | 19.7 |
| Internal Link Dist (m) | 312.0 | | 313.1 | | 280.6 | 74.2 |
| Turn Bay Length (m) | | 45.0 | | 45.0 | | |
| Base Capacity (vph) | 964 | 946 | 917 | 985 | 606 | 608 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.36 | 0.04 | 0.35 | 0.12 | 0.15 | 0.30 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: Edith St/Parking Entrance & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↕ | ↗ | | ↕ | ↗ | | ↕ | | | ↕ | |
| Traffic Volume (vph) | 11 | 285 | 36 | 22 | 247 | 101 | 40 | 24 | 14 | 71 | 42 | 40 |
| Future Volume (vph) | 11 | 285 | 36 | 22 | 247 | 101 | 40 | 24 | 14 | 71 | 42 | 40 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.2 | | | 6.2 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.97 | | | 0.98 | |
| Satd. Flow (prot) | | 1693 | 1585 | | 1654 | 1617 | | 1828 | | | 1797 | |
| Flt Permitted | | 0.98 | 1.00 | | 0.95 | 1.00 | | 0.81 | | | 0.81 | |
| Satd. Flow (perm) | | 1668 | 1585 | | 1586 | 1617 | | 1512 | | | 1482 | |
| 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) | 13 | 335 | 42 | 26 | 291 | 119 | 47 | 28 | 16 | 84 | 49 | 47 |
| RTOR Reduction (vph) | 0 | 0 | 20 | 0 | 0 | 57 | 0 | 13 | 0 | 0 | 31 | 0 |
| Lane Group Flow (vph) | 0 | 348 | 22 | 0 | 317 | 62 | 0 | 78 | 0 | 0 | 149 | 0 |
| Heavy Vehicles (%) | 0% | 2% | 3% | 5% | 4% | 1% | 0% | 0% | 0% | 0% | 0% | 3% |
| Parking (#/hr) | | 0 | | | 0 | | | | | | | |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | | 4 |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 8 | | | 4 | | |
| Actuated Green, G (s) | | 23.3 | 23.3 | | 23.3 | 23.3 | | 8.7 | | | 8.7 | |
| Effective Green, g (s) | | 23.3 | 23.3 | | 23.3 | 23.3 | | 8.7 | | | 8.7 | |
| Actuated g/C Ratio | | 0.52 | 0.52 | | 0.52 | 0.52 | | 0.20 | | | 0.20 | |
| Clearance Time (s) | | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.2 | | | 6.2 | |
| Vehicle Extension (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 2.5 | | | 2.5 | |
| Lane Grp Cap (vph) | | 875 | 831 | | 832 | 848 | | 296 | | | 290 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.21 | 0.01 | | 0.20 | 0.04 | | 0.05 | | | c0.10 | |
| v/c Ratio | | 0.40 | 0.03 | | 0.38 | 0.07 | | 0.26 | | | 0.51 | |
| Uniform Delay, d1 | | 6.3 | 5.1 | | 6.3 | 5.2 | | 15.1 | | | 16.0 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.6 | 0.0 | | 0.6 | 0.1 | | 0.3 | | | 1.1 | |
| Delay (s) | | 7.0 | 5.1 | | 6.9 | 5.3 | | 15.5 | | | 17.1 | |
| Level of Service | | A | A | | A | A | | B | | | B | |
| Approach Delay (s) | | 6.8 | | | 6.4 | | | 15.5 | | | 17.1 | |
| Approach LOS | | A | | | A | | | B | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 9.1 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.43 | | |
| Actuated Cycle Length (s) | 44.4 | Sum of lost time (s) | 12.4 |
| Intersection Capacity Utilization | 57.4% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: John ST & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 14 | 387 | 7 | 5 | 324 | 12 | 4 | 0 | 9 | 11 | 3 | 8 |
| Future Volume (Veh/h) | 14 | 387 | 7 | 5 | 324 | 12 | 4 | 0 | 9 | 11 | 3 | 8 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Hourly flow rate (vph) | 17 | 461 | 8 | 6 | 386 | 14 | 5 | 0 | 11 | 13 | 4 | 10 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | 337 | | | 245 | | | | | | | |
| pX, platoon unblocked | 0.97 | | | | | | 0.97 | 0.97 | | 0.97 | 0.97 | 0.97 |
| vC, conflicting volume | 400 | | | 469 | | | 916 | 911 | 465 | 915 | 908 | 393 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 372 | | | 469 | | | 901 | 896 | 465 | 900 | 893 | 364 |
| 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 | | | 99 | | | 98 | 100 | 98 | 95 | 99 | 99 |
| cM capacity (veh/h) | 1168 | | | 1103 | | | 244 | 269 | 602 | 247 | 270 | 668 |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 486 | 406 | 16 | 27 | | | | | | | | |
| Volume Left | 17 | 6 | 5 | 13 | | | | | | | | |
| Volume Right | 8 | 14 | 11 | 10 | | | | | | | | |
| cSH | 1168 | 1103 | 413 | 327 | | | | | | | | |
| Volume to Capacity | 0.01 | 0.01 | 0.04 | 0.08 | | | | | | | | |
| Queue Length 95th (m) | 0.3 | 0.1 | 0.9 | 2.0 | | | | | | | | |
| Control Delay (s) | 0.4 | 0.2 | 14.1 | 17.0 | | | | | | | | |
| Lane LOS | A | A | B | C | | | | | | | | |
| Approach Delay (s) | 0.4 | 0.2 | 14.1 | 17.0 | | | | | | | | |
| Approach LOS | | | B | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 38.8% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

4: Mary St & Whitewood Ave

09/07/2023

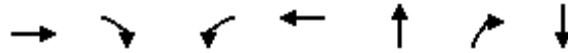


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|-----------------------------------|-------|------|------|------|----------------------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | | |
| Traffic Volume (veh/h) | 22 | 375 | 9 | 7 | 333 | 6 | 1 | 4 | 5 | 8 | 2 | 12 | |
| Future Volume (Veh/h) | 22 | 375 | 9 | 7 | 333 | 6 | 1 | 4 | 5 | 8 | 2 | 12 | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | |
| Hourly flow rate (vph) | 25 | 421 | 10 | 8 | 374 | 7 | 1 | 4 | 6 | 9 | 2 | 13 | |
| Pedestrians | | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | |
| Median type | None | | | | None | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | |
| Upstream signal (m) | | | | | 126 | | | | | | | | |
| pX, platoon unblocked | 0.93 | | | | | 0.93 | | 0.93 | | | 0.93 | 0.93 | 0.93 |
| vC, conflicting volume | 381 | 431 | | | | 884 | | 873 | 426 | 878 | 874 | 378 | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | |
| vCu, unblocked vol | 298 | 431 | | | | 838 | | 826 | 426 | 831 | 828 | 294 | |
| tC, single (s) | 4.1 | 4.1 | | | | 7.1 | | 6.5 | 6.2 | 7.1 | 6.5 | 6.3 | |
| tC, 2 stage (s) | | | | | | | | | | | | | |
| tF (s) | 2.2 | 2.2 | | | | 3.5 | | 4.0 | 3.3 | 3.5 | 4.0 | 3.4 | |
| p0 queue free % | 98 | 99 | | | | 100 | | 99 | 99 | 97 | 99 | 98 | |
| cM capacity (veh/h) | 1160 | 1139 | | | | 256 | | 280 | 633 | 260 | 279 | 679 | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | | |
| Volume Total | 456 | 389 | 11 | 24 | | | | | | | | | |
| Volume Left | 25 | 8 | 1 | 9 | | | | | | | | | |
| Volume Right | 10 | 7 | 6 | 13 | | | | | | | | | |
| cSH | 1160 | 1139 | 397 | 394 | | | | | | | | | |
| Volume to Capacity | 0.02 | 0.01 | 0.03 | 0.06 | | | | | | | | | |
| Queue Length 95th (m) | 0.5 | 0.2 | 0.6 | 1.5 | | | | | | | | | |
| Control Delay (s) | 0.7 | 0.2 | 14.3 | 14.7 | | | | | | | | | |
| Lane LOS | A | A | B | B | | | | | | | | | |
| Approach Delay (s) | 0.7 | 0.2 | 14.3 | 14.7 | | | | | | | | | |
| Approach LOS | | | B | B | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | |
| Average Delay | 1.0 | | | | | | | | | | | | |
| Intersection Capacity Utilization | 41.7% | | | | ICU Level of Service | | | | A | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | | |

Queues

5: Paget St #1 & Whitewood Ave

09/07/2023



| Lane Group | EBT | EBR | WBL | WBT | NBT | NBR | SBT |
|------------------------|-------|------|------|-------|------|------|-------|
| Lane Group Flow (vph) | 352 | 56 | 221 | 280 | 85 | 243 | 70 |
| v/c Ratio | 0.37 | 0.06 | 0.42 | 0.30 | 0.22 | 0.37 | 0.16 |
| Control Delay | 11.4 | 2.7 | 13.2 | 10.2 | 22.7 | 4.9 | 17.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 11.4 | 2.7 | 13.2 | 10.2 | 22.7 | 4.9 | 17.1 |
| Queue Length 50th (m) | 27.7 | 0.0 | 17.4 | 20.2 | 9.6 | 0.0 | 5.7 |
| Queue Length 95th (m) | 44.7 | 4.5 | 39.2 | 42.4 | 20.3 | 14.9 | 14.7 |
| Internal Link Dist (m) | 101.5 | | | 191.0 | 51.6 | | 138.0 |
| Turn Bay Length (m) | | 40.0 | | | | | |
| Base Capacity (vph) | 939 | 933 | 531 | 930 | 379 | 658 | 448 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.37 | 0.06 | 0.42 | 0.30 | 0.22 | 0.37 | 0.16 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Paget St #1 & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↕ | ↗ | ↖ | ↗ | ↖ | | ↕ | ↗ | | ↕ | ↖ |
| Traffic Volume (vph) | 5 | 316 | 51 | 201 | 242 | 13 | 67 | 10 | 221 | 28 | 19 | 16 |
| Future Volume (vph) | 5 | 316 | 51 | 201 | 242 | 13 | 67 | 10 | 221 | 28 | 19 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 5.5 | 5.5 | 5.5 | 5.5 | | | 5.5 | 5.5 | | 5.5 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | 1.00 | 0.99 | | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.96 | 1.00 | | 0.98 | |
| Satd. Flow (prot) | | 1694 | 1633 | 1772 | 1668 | | | 1629 | 1601 | | 1604 | |
| Flt Permitted | | 1.00 | 1.00 | 0.51 | 1.00 | | | 0.73 | 1.00 | | 0.87 | |
| Satd. Flow (perm) | | 1689 | 1633 | 954 | 1668 | | | 1239 | 1601 | | 1424 | |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 5 | 347 | 56 | 221 | 266 | 14 | 74 | 11 | 243 | 31 | 21 | 18 |
| RTOR Reduction (vph) | 0 | 0 | 25 | 0 | 2 | 0 | 0 | 0 | 169 | 0 | 12 | 0 |
| Lane Group Flow (vph) | 0 | 352 | 31 | 221 | 278 | 0 | 0 | 85 | 74 | 0 | 58 | 0 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 3% | 3% | 0% | 2% | 0% | 2% | 0% | 0% | 7% |
| Parking (#/hr) | | 0 | | | 0 | | | 0 | | | 0 | |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | | 44.5 | 44.5 | 44.5 | 44.5 | | | 24.5 | 24.5 | | 24.5 | |
| Effective Green, g (s) | | 44.5 | 44.5 | 44.5 | 44.5 | | | 24.5 | 24.5 | | 24.5 | |
| Actuated g/C Ratio | | 0.56 | 0.56 | 0.56 | 0.56 | | | 0.31 | 0.31 | | 0.31 | |
| Clearance Time (s) | | 5.5 | 5.5 | 5.5 | 5.5 | | | 5.5 | 5.5 | | 5.5 | |
| Lane Grp Cap (vph) | | 939 | 908 | 530 | 927 | | | 379 | 490 | | 436 | |
| v/s Ratio Prot | | | | | 0.17 | | | | | | | |
| v/s Ratio Perm | | 0.21 | 0.02 | c0.23 | | | | c0.07 | 0.05 | | 0.04 | |
| v/c Ratio | | 0.37 | 0.03 | 0.42 | 0.30 | | | 0.22 | 0.15 | | 0.13 | |
| Uniform Delay, d1 | | 10.0 | 8.0 | 10.3 | 9.5 | | | 20.7 | 20.2 | | 20.1 | |
| Progression Factor | | 1.00 | 1.00 | 1.01 | 0.99 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | 0.1 | 2.2 | 0.7 | | | 1.4 | 0.7 | | 0.6 | |
| Delay (s) | | 11.1 | 8.1 | 12.6 | 10.1 | | | 22.0 | 20.8 | | 20.7 | |
| Level of Service | | B | A | B | B | | | C | C | | C | |
| Approach Delay (s) | | 10.7 | | | 11.2 | | | 21.2 | | | 20.7 | |
| Approach LOS | | B | | | B | | | C | | | C | |

| Intersection Summary | | |
|-----------------------------------|-------|---------------------------|
| HCM 2000 Control Delay | 14.0 | HCM 2000 Level of Service |
| HCM 2000 Volume to Capacity ratio | 0.35 | B |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) |
| Intersection Capacity Utilization | 70.4% | 11.0 |
| Analysis Period (min) | 15 | ICU Level of Service |
| c Critical Lane Group | | C |

Queues

6: Armstrong St & Whitewood Ave

09/07/2023



| Lane Group | EBL | EBT | WBT | NBT | NBR | SBT | SBR |
|------------------------|------|-------|-------|-------|------|-------|------|
| Lane Group Flow (vph) | 528 | 77 | 103 | 143 | 2 | 115 | 392 |
| v/c Ratio | 0.67 | 0.08 | 0.10 | 0.34 | 0.00 | 0.26 | 0.56 |
| Control Delay | 12.7 | 3.6 | 6.0 | 26.8 | 0.0 | 25.3 | 6.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 12.7 | 3.6 | 6.0 | 26.8 | 0.0 | 25.3 | 6.2 |
| Queue Length 50th (m) | 26.8 | 1.4 | 5.0 | 17.6 | 0.0 | 13.8 | 0.0 |
| Queue Length 95th (m) | 47.3 | 6.6 | 10.5 | 32.0 | 0.0 | 26.2 | 17.9 |
| Internal Link Dist (m) | | 191.0 | 154.1 | 180.0 | | 119.0 | |
| Turn Bay Length (m) | | | | | 15.0 | | 20.0 |
| Base Capacity (vph) | 785 | 951 | 1014 | 415 | 454 | 434 | 702 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.67 | 0.08 | 0.10 | 0.34 | 0.00 | 0.26 | 0.56 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

6: Armstrong St & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 465 | 40 | 28 | 1 | 74 | 16 | 24 | 102 | 2 | 14 | 87 | 345 |
| Future Volume (vph) | 465 | 40 | 28 | 1 | 74 | 16 | 24 | 102 | 2 | 14 | 87 | 345 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.5 | 5.5 | | | 5.6 | | | 5.6 | 5.6 | | 5.5 | 5.5 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | 1.00 | 0.94 | | | 0.98 | | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | 1807 | 1566 | | | 1687 | | | 1685 | 1633 | | 1717 | 1570 |
| Flt Permitted | 0.69 | 1.00 | | | 1.00 | | | 0.93 | 1.00 | | 0.95 | 1.00 |
| Satd. Flow (perm) | 1313 | 1566 | | | 1687 | | | 1584 | 1633 | | 1646 | 1570 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 528 | 45 | 32 | 1 | 84 | 18 | 27 | 116 | 2 | 16 | 99 | 392 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 289 |
| Lane Group Flow (vph) | 528 | 64 | 0 | 0 | 96 | 0 | 0 | 143 | 1 | 0 | 115 | 103 |
| Heavy Vehicles (%) | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 0% | 4% |
| Parking (#/hr) | | 0 | | | 0 | | | 0 | | | 0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | Perm | Perm | NA | Perm |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | 8 | 4 | | 4 |
| Actuated Green, G (s) | 47.9 | 47.9 | | | 47.8 | | | 21.0 | 21.0 | | 21.1 | 21.1 |
| Effective Green, g (s) | 47.9 | 47.9 | | | 47.8 | | | 21.0 | 21.0 | | 21.1 | 21.1 |
| Actuated g/C Ratio | 0.60 | 0.60 | | | 0.60 | | | 0.26 | 0.26 | | 0.26 | 0.26 |
| Clearance Time (s) | 5.5 | 5.5 | | | 5.6 | | | 5.6 | 5.6 | | 5.5 | 5.5 |
| Lane Grp Cap (vph) | 786 | 937 | | | 1007 | | | 415 | 428 | | 434 | 414 |
| v/s Ratio Prot | | 0.04 | | | | | | | | | | |
| v/s Ratio Perm | c0.40 | | | | 0.06 | | | c0.09 | 0.00 | | 0.07 | 0.07 |
| v/c Ratio | 0.67 | 0.07 | | | 0.10 | | | 0.34 | 0.00 | | 0.26 | 0.25 |
| Uniform Delay, d1 | 10.8 | 6.7 | | | 6.9 | | | 23.9 | 21.8 | | 23.3 | 23.2 |
| Progression Factor | 0.72 | 0.76 | | | 1.00 | | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | 4.3 | 0.1 | | | 0.2 | | | 2.3 | 0.0 | | 1.5 | 1.4 |
| Delay (s) | 12.0 | 5.2 | | | 7.1 | | | 26.2 | 21.8 | | 24.8 | 24.7 |
| Level of Service | B | A | | | A | | | C | C | | C | C |
| Approach Delay (s) | | 11.2 | | | 7.1 | | | 26.1 | | | 24.7 | |
| Approach LOS | | B | | | A | | | C | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 17.5 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.57 | | |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) | 11.2 |
| Intersection Capacity Utilization | 69.6% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Unsignalized Intersection Capacity Analysis

7: Broadwood Ave & Golding St

09/07/2023



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | ↔ | ↔ | | ↔ | |
| Traffic Volume (veh/h) | 0 | 0 | 4 | 41 | 2 | 34 |
| Future Volume (Veh/h) | 0 | 0 | 4 | 41 | 2 | 34 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Hourly flow rate (vph) | 0 | 0 | 5 | 51 | 2 | 42 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 56 | | | | 30 | 30 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 56 | | | | 30 | 30 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 100 | 96 |
| cM capacity (veh/h) | 1562 | | | | 989 | 1050 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 0 | 56 | 44 | | | |
| Volume Left | 0 | 0 | 2 | | | |
| Volume Right | 0 | 51 | 42 | | | |
| cSH | 1700 | 1700 | 1047 | | | |
| Volume to Capacity | 0.00 | 0.03 | 0.04 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 1.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 8.6 | | | |
| Lane LOS | | | A | | | |
| Approach Delay (s) | 0.0 | 0.0 | 8.6 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 3.8 | | | |
| Intersection Capacity Utilization | | | 13.3% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

8: Broadwood Ave & Edith St

09/07/2023



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | ↶ | ↷ | | ↷ | |
| Traffic Volume (veh/h) | 8 | 47 | 41 | 25 | 71 | 5 |
| Future Volume (Veh/h) | 8 | 47 | 41 | 25 | 71 | 5 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| Hourly flow rate (vph) | 11 | 63 | 55 | 33 | 95 | 7 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 88 | | | 156 | 72 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 88 | | | 156 | 72 | |
| tC, single (s) | 4.1 | | | 6.4 | 6.4 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | 3.5 | 3.5 | |
| p0 queue free % | 99 | | | 89 | 99 | |
| cM capacity (veh/h) | 1520 | | | 829 | 943 | |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 74 | 88 | 102 | | | |
| Volume Left | 11 | 0 | 95 | | | |
| Volume Right | 0 | 33 | 7 | | | |
| cSH | 1520 | 1700 | 836 | | | |
| Volume to Capacity | 0.01 | 0.05 | 0.12 | | | |
| Queue Length 95th (m) | 0.2 | 0.0 | 3.2 | | | |
| Control Delay (s) | 1.1 | 0.0 | 9.9 | | | |
| Lane LOS | A | | A | | | |
| Approach Delay (s) | 1.1 | 0.0 | 9.9 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.1 | | | |
| Intersection Capacity Utilization | | | 20.2% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

9: Lakeshore Rd N #1 & Broadwood Ave

















09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 20 | 4 | 98 | 2 | 0 | 7 | 50 | 288 | 2 | 2 | 332 | 18 |
| Future Volume (Veh/h) | 20 | 4 | 98 | 2 | 0 | 7 | 50 | 288 | 2 | 2 | 332 | 18 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 22 | 4 | 109 | 2 | 0 | 8 | 56 | 320 | 2 | 2 | 369 | 20 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 824 | 817 | 379 | 927 | 826 | 321 | 389 | | | 322 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 824 | 817 | 379 | 927 | 826 | 321 | 389 | | | 322 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 8.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 4.4 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 92 | 99 | 84 | 99 | 100 | 99 | 95 | | | 100 | | |
| cM capacity (veh/h) | 280 | 298 | 672 | 136 | 294 | 724 | 1170 | | | 1249 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 135 | 10 | 378 | 391 | | | | | | | | |
| Volume Left | 22 | 2 | 56 | 2 | | | | | | | | |
| Volume Right | 109 | 8 | 2 | 20 | | | | | | | | |
| cSH | 531 | 388 | 1170 | 1249 | | | | | | | | |
| Volume to Capacity | 0.25 | 0.03 | 0.05 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 7.6 | 0.6 | 1.1 | 0.0 | | | | | | | | |
| Control Delay (s) | 14.1 | 14.5 | 1.6 | 0.1 | | | | | | | | |
| Lane LOS | B | B | A | A | | | | | | | | |
| Approach Delay (s) | 14.1 | 14.5 | 1.6 | 0.1 | | | | | | | | |
| Approach LOS | B | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 2.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 55.8% | | ICU Level of Service | | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 10: Lakeshore Rd N #1 & Farah Ave

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 3 | 23 | 23 | 62 | 32 | 18 | 9 | 258 | 47 | 28 | 265 | 9 |
| Future Volume (Veh/h) | 3 | 23 | 23 | 62 | 32 | 18 | 9 | 258 | 47 | 28 | 265 | 9 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Hourly flow rate (vph) | 3 | 25 | 25 | 67 | 34 | 19 | 10 | 277 | 51 | 30 | 285 | 10 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | 157 |
| pX, platoon unblocked | 0.97 | 0.97 | 0.97 | 0.97 | 0.97 | | 0.97 | | | | | |
| vC, conflicting volume | 708 | 698 | 290 | 710 | 678 | 302 | 295 | | | 328 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 685 | 674 | 254 | 686 | 653 | 302 | 259 | | | 328 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.3 | | |
| p0 queue free % | 99 | 93 | 97 | 79 | 91 | 97 | 99 | | | 97 | | |
| cM capacity (veh/h) | 313 | 356 | 767 | 316 | 366 | 742 | 1279 | | | 1199 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 53 | 120 | 338 | 325 | | | | | | | | |
| Volume Left | 3 | 67 | 10 | 30 | | | | | | | | |
| Volume Right | 25 | 19 | 51 | 10 | | | | | | | | |
| cSH | 471 | 363 | 1279 | 1199 | | | | | | | | |
| Volume to Capacity | 0.11 | 0.33 | 0.01 | 0.03 | | | | | | | | |
| Queue Length 95th (m) | 2.9 | 10.8 | 0.2 | 0.6 | | | | | | | | |
| Control Delay (s) | 13.6 | 19.8 | 0.3 | 1.0 | | | | | | | | |
| Lane LOS | B | C | A | A | | | | | | | | |
| Approach Delay (s) | 13.6 | 19.8 | 0.3 | 1.0 | | | | | | | | |
| Approach LOS | B | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 4.2 | | | | | | | | | |
| Intersection Capacity Utilization | | | 47.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 11: Armstrong St & Church St

09/07/2023



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 5 | 574 | 453 | 50 |
| Future Volume (Veh/h) | 0 | 0 | 5 | 574 | 453 | 50 |
| 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 | 6 | 675 | 533 | 59 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | 143 | 233 | |
| pX, platoon unblocked | 0.90 | 0.81 | 0.81 | | | |
| vC, conflicting volume | 1250 | 562 | 592 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 752 | 341 | 377 | | | |
| 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 | 99 | | | |
| cM capacity (veh/h) | 342 | 571 | 964 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 681 | 592 | | | |
| Volume Left | 0 | 6 | 0 | | | |
| Volume Right | 0 | 0 | 59 | | | |
| cSH | 1700 | 964 | 1700 | | | |
| Volume to Capacity | 0.00 | 0.01 | 0.35 | | | |
| Queue Length 95th (m) | 0.0 | 0.1 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.2 | 0.0 | | | |
| Lane LOS | A | A | | | | |
| Approach Delay (s) | 0.0 | 0.2 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.1 | | | |
| Intersection Capacity Utilization | | | 37.5% | ICU Level of Service | A | |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

12: Armstrong St & Sharpe St

09/07/2023

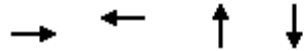


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|------|----------------------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 36 | 0 | 10 | 0 | 0 | 93 | 0 | 544 | 14 | 37 | 477 | 0 |
| Future Volume (Veh/h) | 36 | 0 | 10 | 0 | 0 | 93 | 0 | 544 | 14 | 37 | 477 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 41 | 0 | 11 | 0 | 0 | 106 | 0 | 618 | 16 | 42 | 542 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | 0.87 | 0.87 | 0.93 | 0.87 | 0.87 | 0.84 | 0.93 | | | 0.84 | | |
| vC, conflicting volume | 1358 | 1260 | 271 | 992 | 1252 | 626 | 542 | | | 634 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1040 | 928 | 67 | 621 | 918 | 459 | 358 | | | 469 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 | 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 % | 66 | 100 | 99 | 100 | 100 | 77 | 100 | | | 95 | | |
| cM capacity (veh/h) | 122 | 225 | 920 | 313 | 228 | 459 | 1127 | | | 909 | | |
| Direction, Lane # | | | | | | | | | | | | |
| Volume Total | 52 | 106 | 634 | 223 | 361 | | | | | | | |
| Volume Left | 41 | 0 | 0 | 42 | 0 | | | | | | | |
| Volume Right | 11 | 106 | 16 | 0 | 0 | | | | | | | |
| cSH | 149 | 459 | 1700 | 909 | 1700 | | | | | | | |
| Volume to Capacity | 0.35 | 0.23 | 0.37 | 0.05 | 0.21 | | | | | | | |
| Queue Length 95th (m) | 10.9 | 6.7 | 0.0 | 1.1 | 0.0 | | | | | | | |
| Control Delay (s) | 41.6 | 15.2 | 0.0 | 2.1 | 0.0 | | | | | | | |
| Lane LOS | E | C | | A | | | | | | | | |
| Approach Delay (s) | 41.6 | 15.2 | 0.0 | 0.8 | | | | | | | | |
| Approach LOS | E | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.1 | | | | | | | | | |
| Intersection Capacity Utilization | | | 57.3% | | | ICU Level of Service | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

Queues

13: Armstrong St & Beavis Terr/Elm Ave

















09/07/2023



| Lane Group | EBT | WBT | NBT | SBT |
|-----------------------------|-------|-------|-------|-------|
| Lane Group Flow (vph) | 32 | 84 | 783 | 516 |
| v/c Ratio | 0.04 | 0.14 | 0.72 | 0.48 |
| Control Delay | 6.0 | 8.8 | 17.2 | 14.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 6.0 | 8.8 | 17.2 | 14.1 |
| Queue Length 50th (m) | 0.3 | 3.0 | 28.1 | 17.7 |
| Queue Length 95th (m) | 4.3 | 10.7 | 41.1 | 26.8 |
| Internal Link Dist (m) | 111.3 | 124.3 | 159.9 | 149.4 |
| Turn Bay Length (m) | | | | |
| Base Capacity (vph) | 753 | 632 | 1494 | 1492 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.04 | 0.13 | 0.52 | 0.35 |
| Intersection Summary | | | | |

HCM Signalized Intersection Capacity Analysis
 13: Armstrong St & Beavis Terr/Elm Ave

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  | | |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|----------------------|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | |
| Lane Configurations | |  | | |  | | |  | | |  | | | |
| Traffic Volume (vph) | 1 | 5 | 22 | 53 | 1 | 20 | 31 | 556 | 102 | 14 | 439 | 1 | | |
| Future Volume (vph) | 1 | 5 | 22 | 53 | 1 | 20 | 31 | 556 | 102 | 14 | 439 | 1 | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | |
| Total Lost time (s) | | 6.2 | | | 6.2 | | | 5.9 | | | 5.9 | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | | | |
| Frt | | 0.89 | | | 0.96 | | | 0.98 | | | 1.00 | | | |
| Flt Protected | | 1.00 | | | 0.97 | | | 1.00 | | | 1.00 | | | |
| Satd. Flow (prot) | | 1716 | | | 1714 | | | 3517 | | | 3541 | | | |
| Flt Permitted | | 0.99 | | | 0.81 | | | 0.91 | | | 0.92 | | | |
| Satd. Flow (perm) | | 1709 | | | 1431 | | | 3201 | | | 3246 | | | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | | |
| Adj. Flow (vph) | 1 | 6 | 25 | 60 | 1 | 23 | 35 | 632 | 116 | 16 | 499 | 1 | | |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 13 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | | |
| Lane Group Flow (vph) | 0 | 17 | 0 | 0 | 71 | 0 | 0 | 754 | 0 | 0 | 516 | 0 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 4% | 0% | 5% | 0% | 1% | 3% | 0% | 3% | 0% | | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | | | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | | | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | | | |
| Actuated Green, G (s) | | 20.1 | | | 20.1 | | | 16.1 | | | 16.1 | | | |
| Effective Green, g (s) | | 20.1 | | | 20.1 | | | 16.1 | | | 16.1 | | | |
| Actuated g/C Ratio | | 0.42 | | | 0.42 | | | 0.33 | | | 0.33 | | | |
| Clearance Time (s) | | 6.2 | | | 6.2 | | | 5.9 | | | 5.9 | | | |
| Vehicle Extension (s) | | 5.0 | | | 5.0 | | | 2.5 | | | 2.5 | | | |
| Lane Grp Cap (vph) | | 711 | | | 595 | | | 1067 | | | 1082 | | | |
| v/s Ratio Prot | | | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.01 | | | 0.05 | | | 0.24 | | | 0.16 | | | |
| v/c Ratio | | 0.02 | | | 0.12 | | | 0.71 | | | 0.48 | | | |
| Uniform Delay, d1 | | 8.3 | | | 8.7 | | | 14.0 | | | 12.8 | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Incremental Delay, d2 | | 0.0 | | | 0.2 | | | 2.0 | | | 0.2 | | | |
| Delay (s) | | 8.3 | | | 8.8 | | | 16.0 | | | 13.0 | | | |
| Level of Service | | A | | | A | | | B | | | B | | | |
| Approach Delay (s) | | 8.3 | | | 8.8 | | | 16.0 | | | 13.0 | | | |
| Approach LOS | | A | | | A | | | B | | | B | | | |
| Intersection Summary | | | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 14.3 | | | | | | | | | HCM 2000 Level of Service | B | |
| HCM 2000 Volume to Capacity ratio | | | 0.38 | | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 48.3 | | | | | | | | 12.1 | | | |
| Intersection Capacity Utilization | | | 63.8% | | | | | | | | | | ICU Level of Service | B |
| Analysis Period (min) | | | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | | |

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis

15: Georgina Ave & Main St

09/07/2023



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 4 | 192 | 7 | 32 | 280 | 7 | 12 | 3 | 30 | 4 | 4 | 5 |
| Future Volume (Veh/h) | 4 | 192 | 7 | 32 | 280 | 7 | 12 | 3 | 30 | 4 | 4 | 5 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Hourly flow rate (vph) | 4 | 216 | 8 | 36 | 315 | 8 | 13 | 3 | 34 | 4 | 4 | 6 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 323 | | | 224 | | | 627 | 623 | 220 | 654 | 623 | 319 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 323 | | | 224 | | | 627 | 623 | 220 | 654 | 623 | 319 |
| 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 | | | 97 | | | 97 | 99 | 96 | 99 | 99 | 99 |
| cM capacity (veh/h) | 1248 | | | 1357 | | | 384 | 393 | 815 | 356 | 393 | 726 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 228 | 359 | 50 | 14 | | | | | | | | |
| Volume Left | 4 | 36 | 13 | 4 | | | | | | | | |
| Volume Right | 8 | 8 | 34 | 6 | | | | | | | | |
| cSH | 1248 | 1357 | 601 | 472 | | | | | | | | |
| Volume to Capacity | 0.00 | 0.03 | 0.08 | 0.03 | | | | | | | | |
| Queue Length 95th (m) | 0.1 | 0.6 | 2.1 | 0.7 | | | | | | | | |
| Control Delay (s) | 0.2 | 1.0 | 11.5 | 12.9 | | | | | | | | |
| Lane LOS | A | A | B | B | | | | | | | | |
| Approach Delay (s) | 0.2 | 1.0 | 11.5 | 12.9 | | | | | | | | |
| Approach LOS | | | B | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.8 | | | | | | | | | |
| Intersection Capacity Utilization | | | 41.0% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis
 17: Ferguson Ave #2 & Broadway St

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 5 | 4 | 0 | 19 | 3 | 32 | 1 | 248 | 26 | 27 | 307 | 27 |
| Future Volume (Veh/h) | 5 | 4 | 0 | 19 | 3 | 32 | 1 | 248 | 26 | 27 | 307 | 27 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 5 | 4 | 0 | 20 | 3 | 34 | 1 | 261 | 27 | 28 | 323 | 28 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 705 | 683 | 337 | 672 | 684 | 274 | 351 | | | 288 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 705 | 683 | 337 | 672 | 684 | 274 | 351 | | | 288 | | |
| 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 % | 98 | 99 | 100 | 94 | 99 | 96 | 100 | | | 98 | | |
| cM capacity (veh/h) | 330 | 366 | 710 | 363 | 365 | 769 | 1219 | | | 1286 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 9 | 57 | 289 | 379 | | | | | | | | |
| Volume Left | 5 | 20 | 1 | 28 | | | | | | | | |
| Volume Right | 0 | 34 | 27 | 28 | | | | | | | | |
| cSH | 345 | 530 | 1219 | 1286 | | | | | | | | |
| Volume to Capacity | 0.03 | 0.11 | 0.00 | 0.02 | | | | | | | | |
| Queue Length 95th (m) | 0.6 | 2.7 | 0.0 | 0.5 | | | | | | | | |
| Control Delay (s) | 15.7 | 12.6 | 0.0 | 0.8 | | | | | | | | |
| Lane LOS | C | B | A | A | | | | | | | | |
| Approach Delay (s) | 15.7 | 12.6 | 0.0 | 0.8 | | | | | | | | |
| Approach LOS | C | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 47.4% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 18: Ferguson Ave #2/Lakeshore Rd #2 & Browning St

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|-------|-------|----------------------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Traffic Volume (vph) | 2 | 0 | 2 | 7 | 3 | 5 | 4 | 289 | 4 | 5 | 344 | 8 |
| Future Volume (vph) | 2 | 0 | 2 | 7 | 3 | 5 | 4 | 289 | 4 | 5 | 344 | 8 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 2 | 0 | 2 | 8 | 3 | 5 | 4 | 318 | 4 | 5 | 378 | 9 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total (vph) | 4 | 16 | 326 | 392 | | | | | | | | |
| Volume Left (vph) | 2 | 8 | 4 | 5 | | | | | | | | |
| Volume Right (vph) | 2 | 5 | 4 | 9 | | | | | | | | |
| Hadj (s) | -0.20 | -0.09 | 0.04 | 0.01 | | | | | | | | |
| Departure Headway (s) | 5.3 | 5.4 | 4.4 | 4.3 | | | | | | | | |
| Degree Utilization, x | 0.01 | 0.02 | 0.40 | 0.47 | | | | | | | | |
| Capacity (veh/h) | 589 | 584 | 803 | 820 | | | | | | | | |
| Control Delay (s) | 8.3 | 8.5 | 10.3 | 11.0 | | | | | | | | |
| Approach Delay (s) | 8.3 | 8.5 | 10.3 | 11.0 | | | | | | | | |
| Approach LOS | A | A | B | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Delay | | | 10.6 | | | | | | | | | |
| Level of Service | | | B | | | | | | | | | |
| Intersection Capacity Utilization | | | 31.5% | ICU Level of Service | A | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

1: Golding St & Whitewood Ave

09/07/2023

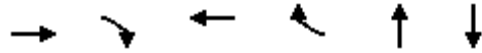


| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | → | | | ← | ↙ | ↘ |
| Traffic Volume (veh/h) | 486 | 16 | 16 | 335 | 16 | 30 |
| Future Volume (Veh/h) | 486 | 16 | 16 | 335 | 16 | 30 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Hourly flow rate (vph) | 559 | 18 | 18 | 385 | 18 | 34 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | 336 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 577 | | | 568 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 577 | | | 568 |
| tC, single (s) | | | 4.2 | | | 6.3 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.3 | | | 3.4 |
| p0 queue free % | | | 98 | | | 93 |
| cM capacity (veh/h) | | | 972 | | | 513 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 577 | 403 | 52 | | | |
| Volume Left | 0 | 18 | 18 | | | |
| Volume Right | 18 | 0 | 34 | | | |
| cSH | 1700 | 972 | 392 | | | |
| Volume to Capacity | 0.34 | 0.02 | 0.13 | | | |
| Queue Length 95th (m) | 0.0 | 0.4 | 3.5 | | | |
| Control Delay (s) | 0.0 | 0.6 | 15.6 | | | |
| Lane LOS | A | | C | | | |
| Approach Delay (s) | 0.0 | 0.6 | 15.6 | | | |
| Approach LOS | A | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 1.0 | | | |
| Intersection Capacity Utilization | | | 40.6% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

Queues

2: Edith St/Parking Entrance & Whitewood Ave

09/07/2023



| Lane Group | EBT | EBR | WBT | WBR | NBT | SBT |
|------------------------|-------|------|-------|------|-------|------|
| Lane Group Flow (vph) | 488 | 15 | 317 | 64 | 80 | 68 |
| v/c Ratio | 0.45 | 0.01 | 0.29 | 0.06 | 0.23 | 0.23 |
| Control Delay | 8.1 | 0.0 | 6.5 | 2.1 | 13.8 | 16.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 8.1 | 0.0 | 6.5 | 2.1 | 13.8 | 16.1 |
| Queue Length 50th (m) | 24.8 | 0.0 | 13.9 | 0.0 | 3.4 | 3.6 |
| Queue Length 95th (m) | 43.7 | 0.0 | 25.0 | 3.3 | 11.7 | 11.5 |
| Internal Link Dist (m) | 312.0 | | 313.1 | | 280.6 | 74.2 |
| Turn Bay Length (m) | | 45.0 | | 45.0 | | |
| Base Capacity (vph) | 1123 | 1122 | 1124 | 1187 | 570 | 500 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.43 | 0.01 | 0.28 | 0.05 | 0.14 | 0.14 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: Edith St/Parking Entrance & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↕ | ↗ | | ↕ | ↗ | | ↕ | | | ↕ | |
| Traffic Volume (vph) | 15 | 405 | 13 | 9 | 264 | 55 | 25 | 23 | 21 | 38 | 13 | 8 |
| Future Volume (vph) | 15 | 405 | 13 | 9 | 264 | 55 | 25 | 23 | 21 | 38 | 13 | 8 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.2 | | | 6.2 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.96 | | | 0.98 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.98 | | | 0.97 | |
| Satd. Flow (prot) | | 1557 | 1512 | | 1560 | 1601 | | 1664 | | | 1649 | |
| Flt Permitted | | 0.98 | 1.00 | | 0.98 | 1.00 | | 0.85 | | | 0.76 | |
| Satd. Flow (perm) | | 1536 | 1512 | | 1537 | 1601 | | 1444 | | | 1288 | |
| Peak-hour factor, PHF | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Adj. Flow (vph) | 17 | 471 | 15 | 10 | 307 | 64 | 29 | 27 | 24 | 44 | 15 | 9 |
| RTOR Reduction (vph) | 0 | 0 | 6 | 0 | 0 | 25 | 0 | 21 | 0 | 0 | 8 | 0 |
| Lane Group Flow (vph) | 0 | 488 | 9 | 0 | 317 | 39 | 0 | 59 | 0 | 0 | 60 | 0 |
| Heavy Vehicles (%) | 7% | 11% | 8% | 0% | 11% | 2% | 16% | 0% | 10% | 14% | 8% | 0% |
| Parking (#/hr) | | 0 | | | 0 | | | | | | | |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 8 | | | 4 | | |
| Actuated Green, G (s) | | 28.9 | 28.9 | | 28.9 | 28.9 | | 5.7 | | | 5.7 | |
| Effective Green, g (s) | | 28.9 | 28.9 | | 28.9 | 28.9 | | 5.7 | | | 5.7 | |
| Actuated g/C Ratio | | 0.61 | 0.61 | | 0.61 | 0.61 | | 0.12 | | | 0.12 | |
| Clearance Time (s) | | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.2 | | | 6.2 | |
| Vehicle Extension (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 2.5 | | | 2.5 | |
| Lane Grp Cap (vph) | | 944 | 929 | | 945 | 984 | | 175 | | | 156 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.32 | 0.01 | | 0.21 | 0.02 | | 0.04 | | | c0.05 | |
| v/c Ratio | | 0.52 | 0.01 | | 0.34 | 0.04 | | 0.34 | | | 0.39 | |
| Uniform Delay, d1 | | 5.1 | 3.5 | | 4.4 | 3.6 | | 18.9 | | | 19.0 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.0 | 0.0 | | 0.4 | 0.0 | | 0.8 | | | 1.2 | |
| Delay (s) | | 6.1 | 3.5 | | 4.8 | 3.6 | | 19.8 | | | 20.2 | |
| Level of Service | | A | A | | A | A | | B | | | C | |
| Approach Delay (s) | | 6.0 | | | 4.6 | | | 19.8 | | | 20.2 | |
| Approach LOS | | A | | | A | | | B | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 7.5 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.49 | | |
| Actuated Cycle Length (s) | 47.0 | Sum of lost time (s) | 12.4 |
| Intersection Capacity Utilization | 62.6% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: John ST & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 15 | 387 | 4 | 4 | 344 | 8 | 4 | 0 | 5 | 11 | 4 | 15 |
| Future Volume (Veh/h) | 15 | 387 | 4 | 4 | 344 | 8 | 4 | 0 | 5 | 11 | 4 | 15 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 17 | 440 | 5 | 5 | 391 | 9 | 5 | 0 | 6 | 12 | 5 | 17 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | 337 | | | 245 | | | | | | | |
| pX, platoon unblocked | 0.98 | | | | | | 0.98 | 0.98 | | 0.98 | 0.98 | 0.98 |
| vC, conflicting volume | 400 | | | 445 | | | 902 | 886 | 442 | 888 | 884 | 396 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 382 | | | 445 | | | 891 | 876 | 442 | 878 | 874 | 377 |
| tC, single (s) | 4.2 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.2 | 6.5 | 6.3 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.3 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.6 | 4.0 | 3.4 |
| p0 queue free % | 98 | | | 100 | | | 98 | 100 | 99 | 95 | 98 | 97 |
| cM capacity (veh/h) | 1131 | | | 1126 | | | 247 | 279 | 619 | 250 | 280 | 633 |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 462 | 405 | 11 | 34 | | | | | | | | |
| Volume Left | 17 | 5 | 5 | 12 | | | | | | | | |
| Volume Right | 5 | 9 | 6 | 17 | | | | | | | | |
| cSH | 1131 | 1126 | 367 | 366 | | | | | | | | |
| Volume to Capacity | 0.02 | 0.00 | 0.03 | 0.09 | | | | | | | | |
| Queue Length 95th (m) | 0.3 | 0.1 | 0.7 | 2.3 | | | | | | | | |
| Control Delay (s) | 0.5 | 0.1 | 15.1 | 15.8 | | | | | | | | |
| Lane LOS | A | A | C | C | | | | | | | | |
| Approach Delay (s) | 0.5 | 0.1 | 15.1 | 15.8 | | | | | | | | |
| Approach LOS | | | C | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.1 | | | | | | | | | |
| Intersection Capacity Utilization | | | 39.8% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

4: Mary St & Whitewood Ave

09/07/2023

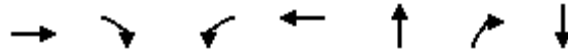


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | |
|-----------------------------------|-------|------|------|------|----------------------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | | | |
| Traffic Volume (veh/h) | 23 | 369 | 8 | 4 | 368 | 8 | 2 | 3 | 2 | 8 | 4 | 10 | | |
| Future Volume (Veh/h) | 23 | 369 | 8 | 4 | 368 | 8 | 2 | 3 | 2 | 8 | 4 | 10 | | |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | | | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | | | |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | | |
| Hourly flow rate (vph) | 29 | 461 | 10 | 5 | 460 | 10 | 2 | 4 | 2 | 10 | 5 | 12 | | |
| Pedestrians | | | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | | | |
| Median type | None | | | | None | | | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | | | |
| Upstream signal (m) | 126 | | | | | | | | | | | | | |
| pX, platoon unblocked | 0.90 | | | | | | 0.90 | 0.90 | | | | 0.90 | 0.90 | 0.90 |
| vC, conflicting volume | 470 | 471 | | | | 1014 | | 1004 | 466 | 1003 | 1004 | 465 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | | | |
| vCu, unblocked vol | 353 | 471 | | | | 958 | 948 | 466 | 947 | 948 | 347 | | | |
| tC, single (s) | 4.3 | 4.1 | | | | 7.1 | 6.5 | 6.2 | 7.1 | 7.2 | 6.3 | | | |
| tC, 2 stage (s) | | | | | | | | | | | | | | |
| tF (s) | 2.4 | 2.2 | | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.7 | 3.4 | | | |
| p0 queue free % | 97 | 100 | | | | 99 | 98 | 100 | 95 | 97 | 98 | | | |
| cM capacity (veh/h) | 1008 | 1101 | | | | 200 | 228 | 601 | 209 | 172 | 609 | | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | | | |
| Volume Total | 500 | 475 | 8 | 27 | | | | | | | | | | |
| Volume Left | 29 | 5 | 2 | 10 | | | | | | | | | | |
| Volume Right | 10 | 10 | 2 | 12 | | | | | | | | | | |
| cSH | 1008 | 1101 | 260 | 280 | | | | | | | | | | |
| Volume to Capacity | 0.03 | 0.00 | 0.03 | 0.10 | | | | | | | | | | |
| Queue Length 95th (m) | 0.7 | 0.1 | 0.7 | 2.4 | | | | | | | | | | |
| Control Delay (s) | 0.8 | 0.1 | 19.3 | 19.2 | | | | | | | | | | |
| Lane LOS | A | A | C | C | | | | | | | | | | |
| Approach Delay (s) | 0.8 | 0.1 | 19.3 | 19.2 | | | | | | | | | | |
| Approach LOS | | | C | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | | | |
| Average Delay | 1.1 | | | | | | | | | | | | | |
| Intersection Capacity Utilization | 44.5% | | | | ICU Level of Service | A | | | | | | | | |
| Analysis Period (min) | 15 | | | | | | | | | | | | | |

Queues

5: Paget St #1 & Whitewood Ave

09/07/2023



| Lane Group | EBT | EBR | WBL | WBT | NBT | NBR | SBT |
|------------------------|-------|------|------|-------|------|------|-------|
| Lane Group Flow (vph) | 378 | 38 | 178 | 380 | 87 | 263 | 64 |
| v/c Ratio | 0.40 | 0.04 | 0.51 | 0.39 | 0.26 | 0.46 | 0.20 |
| Control Delay | 9.6 | 2.4 | 15.1 | 9.2 | 26.7 | 6.3 | 24.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 9.6 | 2.4 | 15.1 | 9.2 | 26.7 | 6.3 | 24.0 |
| Queue Length 50th (m) | 26.5 | 0.0 | 12.2 | 23.8 | 10.6 | 0.0 | 7.0 |
| Queue Length 95th (m) | 41.9 | 3.0 | 37.8 | 50.2 | 21.8 | 15.7 | 16.3 |
| Internal Link Dist (m) | 101.5 | | | 191.0 | 51.6 | | 138.0 |
| Turn Bay Length (m) | | 40.0 | | | | | |
| Base Capacity (vph) | 935 | 899 | 350 | 970 | 330 | 575 | 314 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.40 | 0.04 | 0.51 | 0.39 | 0.26 | 0.46 | 0.20 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Paget St #1 & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | |
|-----------------------------------|------|------|-------|-------|------|------|------|-------|------|------|------|---------------------------|------|
| Lane Configurations | | ↕ | ↗ | ↖ | ↗ | ↖ | | ↕ | ↗ | | ↕ | | |
| Traffic Volume (vph) | 9 | 324 | 33 | 157 | 320 | 14 | 39 | 38 | 231 | 30 | 21 | 5 | |
| Future Volume (vph) | 9 | 324 | 33 | 157 | 320 | 14 | 39 | 38 | 231 | 30 | 21 | 5 | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | |
| Total Lost time (s) | | 5.5 | 5.5 | 5.5 | 5.5 | | | 5.5 | 5.5 | | 5.5 | | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | | |
| Frt | | 1.00 | 0.85 | 1.00 | 0.99 | | | 1.00 | 0.85 | | 0.99 | | |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.98 | 1.00 | | 0.97 | | |
| Satd. Flow (prot) | | 1542 | 1445 | 1074 | 1582 | | | 1539 | 1512 | | 1450 | | |
| Flt Permitted | | 0.99 | 1.00 | 0.51 | 1.00 | | | 0.84 | 1.00 | | 0.83 | | |
| Satd. Flow (perm) | | 1527 | 1445 | 573 | 1582 | | | 1321 | 1512 | | 1239 | | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | |
| Adj. Flow (vph) | 10 | 368 | 38 | 178 | 364 | 16 | 44 | 43 | 262 | 34 | 24 | 6 | |
| RTOR Reduction (vph) | 0 | 0 | 15 | 0 | 2 | 0 | 0 | 0 | 197 | 0 | 5 | 0 | |
| Lane Group Flow (vph) | 0 | 378 | 23 | 178 | 378 | 0 | 0 | 87 | 66 | 0 | 60 | 0 | |
| Heavy Vehicles (%) | 12% | 12% | 13% | 70% | 9% | 0% | 13% | 6% | 8% | 17% | 10% | 20% | |
| Parking (#/hr) | | 0 | | | 0 | | | 0 | | | 0 | | |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | Perm | Perm | NA | | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | 8 | 4 | | | |
| Actuated Green, G (s) | | 49.0 | 49.0 | 49.0 | 49.0 | | | 20.0 | 20.0 | | 20.0 | | |
| Effective Green, g (s) | | 49.0 | 49.0 | 49.0 | 49.0 | | | 20.0 | 20.0 | | 20.0 | | |
| Actuated g/C Ratio | | 0.61 | 0.61 | 0.61 | 0.61 | | | 0.25 | 0.25 | | 0.25 | | |
| Clearance Time (s) | | 5.5 | 5.5 | 5.5 | 5.5 | | | 5.5 | 5.5 | | 5.5 | | |
| Lane Grp Cap (vph) | | 935 | 885 | 350 | 968 | | | 330 | 378 | | 309 | | |
| v/s Ratio Prot | | | | | 0.24 | | | | | | | | |
| v/s Ratio Perm | | 0.25 | 0.02 | c0.31 | | | | c0.07 | 0.04 | | 0.05 | | |
| v/c Ratio | | 0.40 | 0.03 | 0.51 | 0.39 | | | 0.26 | 0.17 | | 0.19 | | |
| Uniform Delay, d1 | | 8.0 | 6.1 | 8.7 | 7.9 | | | 24.1 | 23.5 | | 23.6 | | |
| Progression Factor | | 1.00 | 1.00 | 1.06 | 1.02 | | | 1.00 | 1.00 | | 1.00 | | |
| Incremental Delay, d2 | | 1.3 | 0.1 | 4.6 | 1.0 | | | 1.9 | 1.0 | | 1.4 | | |
| Delay (s) | | 9.3 | 6.2 | 13.8 | 9.1 | | | 26.0 | 24.5 | | 25.0 | | |
| Level of Service | | A | A | B | A | | | C | C | | C | | |
| Approach Delay (s) | | 9.0 | | | 10.6 | | | 24.9 | | | 25.0 | | |
| Approach LOS | | A | | | B | | | C | | | C | | |
| Intersection Summary | | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 14.4 | | | | | | | | | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | | | 0.44 | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 80.0 | | | | | | | | | Sum of lost time (s) | 11.0 |
| Intersection Capacity Utilization | | | 70.4% | | | | | | | | | ICU Level of Service | C |
| Analysis Period (min) | | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | |

Queues

6: Armstrong St & Whitewood Ave

09/07/2023



| Lane Group | EBL | EBT | WBT | NBT | NBR | SBT | SBR |
|------------------------|------|-------|-------|-------|------|-------|------|
| Lane Group Flow (vph) | 453 | 107 | 107 | 60 | 3 | 114 | 446 |
| v/c Ratio | 0.67 | 0.11 | 0.11 | 0.15 | 0.01 | 0.25 | 0.60 |
| Control Delay | 14.2 | 5.2 | 7.1 | 22.9 | 0.0 | 24.0 | 6.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 14.2 | 5.2 | 7.1 | 22.9 | 0.0 | 24.0 | 6.4 |
| Queue Length 50th (m) | 27.8 | 4.1 | 6.0 | 6.8 | 0.0 | 13.3 | 0.0 |
| Queue Length 95th (m) | 48.1 | 10.9 | 12.2 | 15.4 | 0.0 | 25.6 | 19.4 |
| Internal Link Dist (m) | | 191.0 | 154.1 | 180.0 | | 119.0 | |
| Turn Bay Length (m) | | | | | 15.0 | | 20.0 |
| Base Capacity (vph) | 680 | 948 | 949 | 406 | 482 | 461 | 741 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.67 | 0.11 | 0.11 | 0.15 | 0.01 | 0.25 | 0.60 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

6: Armstrong St & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|------|------|------|------|------|------|------|------|-------|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 403 | 73 | 22 | 2 | 84 | 10 | 10 | 44 | 3 | 3 | 99 | 397 |
| Future Volume (vph) | 403 | 73 | 22 | 2 | 84 | 10 | 10 | 44 | 3 | 3 | 99 | 397 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.5 | 5.5 | | | 5.6 | | | 5.6 | 5.6 | | 5.5 | 5.5 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | 1.00 | 0.96 | | | 0.99 | | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | 1.00 | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1615 | 1612 | | | 1631 | | | 1513 | 1633 | | 1647 | 1498 |
| Flt Permitted | 0.69 | 1.00 | | | 1.00 | | | 0.95 | 1.00 | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1170 | 1612 | | | 1629 | | | 1449 | 1633 | | 1641 | 1498 |
| Peak-hour factor, PHF | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Adj. Flow (vph) | 453 | 82 | 25 | 2 | 94 | 11 | 11 | 49 | 3 | 3 | 111 | 446 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 0 | 0 | 321 |
| Lane Group Flow (vph) | 453 | 97 | 0 | 0 | 102 | 0 | 0 | 60 | 1 | 0 | 114 | 125 |
| Heavy Vehicles (%) | 13% | 3% | 5% | 50% | 4% | 0% | 10% | 14% | 0% | 0% | 5% | 9% |
| Parking (#/hr) | | 0 | | | 0 | | | 0 | | | 0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | Perm | Perm | NA | Perm |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | 8 | 4 | | 4 |
| Actuated Green, G (s) | 46.5 | 46.5 | | | 46.4 | | | 22.4 | 22.4 | | 22.5 | 22.5 |
| Effective Green, g (s) | 46.5 | 46.5 | | | 46.4 | | | 22.4 | 22.4 | | 22.5 | 22.5 |
| Actuated g/C Ratio | 0.58 | 0.58 | | | 0.58 | | | 0.28 | 0.28 | | 0.28 | 0.28 |
| Clearance Time (s) | 5.5 | 5.5 | | | 5.6 | | | 5.6 | 5.6 | | 5.5 | 5.5 |
| Lane Grp Cap (vph) | 680 | 936 | | | 944 | | | 405 | 457 | | 461 | 421 |
| v/s Ratio Prot | | 0.06 | | | | | | | | | | |
| v/s Ratio Perm | c0.39 | | | | 0.06 | | | 0.04 | 0.00 | | 0.07 | c0.08 |
| v/c Ratio | 0.67 | 0.10 | | | 0.11 | | | 0.15 | 0.00 | | 0.25 | 0.30 |
| Uniform Delay, d1 | 11.4 | 7.5 | | | 7.5 | | | 21.6 | 20.7 | | 22.2 | 22.6 |
| Progression Factor | 0.77 | 0.83 | | | 1.00 | | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | 4.7 | 0.2 | | | 0.2 | | | 0.8 | 0.0 | | 1.3 | 1.8 |
| Delay (s) | 13.5 | 6.4 | | | 7.8 | | | 22.4 | 20.8 | | 23.5 | 24.4 |
| Level of Service | B | A | | | A | | | C | C | | C | C |
| Approach Delay (s) | | 12.2 | | | 7.8 | | | 22.3 | | | 24.2 | |
| Approach LOS | | B | | | A | | | C | | | C | |

| Intersection Summary | | |
|-----------------------------------|-------|---------------------------|
| HCM 2000 Control Delay | 17.5 | HCM 2000 Level of Service |
| HCM 2000 Volume to Capacity ratio | 0.55 | B |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) |
| Intersection Capacity Utilization | 68.5% | 11.2 |
| Analysis Period (min) | 15 | ICU Level of Service |
| c Critical Lane Group | | C |

HCM Unsignalized Intersection Capacity Analysis

7: Broadwood Ave & Golding St

09/07/2023

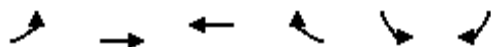


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 3 | 1 | 2 | 16 | 33 | 0 |
| Future Volume (Veh/h) | 3 | 1 | 2 | 16 | 33 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 |
| Hourly flow rate (vph) | 4 | 1 | 3 | 23 | 46 | 0 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 26 | | | | 24 | 14 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 26 | | | | 24 | 14 |
| tC, single (s) | 4.1 | | | | 6.5 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.6 | 3.3 |
| p0 queue free % | 100 | | | | 95 | 100 |
| cM capacity (veh/h) | 1601 | | | | 963 | 1071 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 5 | 26 | 46 | | | |
| Volume Left | 4 | 0 | 46 | | | |
| Volume Right | 0 | 23 | 0 | | | |
| cSH | 1601 | 1700 | 963 | | | |
| Volume to Capacity | 0.00 | 0.02 | 0.05 | | | |
| Queue Length 95th (m) | 0.1 | 0.0 | 1.1 | | | |
| Control Delay (s) | 5.8 | 0.0 | 8.9 | | | |
| Lane LOS | A | | A | | | |
| Approach Delay (s) | 5.8 | 0.0 | 8.9 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 5.7 | | | |
| Intersection Capacity Utilization | | 13.3% | | ICU Level of Service | | A |
| Analysis Period (min) | | 15 | | | | |

HCM Unsignalized Intersection Capacity Analysis

8: Broadwood Ave & Edith St

09/07/2023



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↗ | ↖ | | ↘ | |
| Traffic Volume (veh/h) | 6 | 32 | 22 | 39 | 24 | 2 |
| Future Volume (Veh/h) | 6 | 32 | 22 | 39 | 24 | 2 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 | 0.73 |
| Hourly flow rate (vph) | 8 | 44 | 30 | 53 | 33 | 3 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 83 | | | | 116 | 56 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 83 | | | | 116 | 56 |
| tC, single (s) | 4.4 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.5 | | | | 3.5 | 3.3 |
| p0 queue free % | 99 | | | | 96 | 100 |
| cM capacity (veh/h) | 1335 | | | | 879 | 1016 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 52 | 83 | 36 | | | |
| Volume Left | 8 | 0 | 33 | | | |
| Volume Right | 0 | 53 | 3 | | | |
| cSH | 1335 | 1700 | 889 | | | |
| Volume to Capacity | 0.01 | 0.05 | 0.04 | | | |
| Queue Length 95th (m) | 0.1 | 0.0 | 1.0 | | | |
| Control Delay (s) | 1.2 | 0.0 | 9.2 | | | |
| Lane LOS | A | | A | | | |
| Approach Delay (s) | 1.2 | 0.0 | 9.2 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 2.3 | | | |
| Intersection Capacity Utilization | | 16.8% | | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

9: Lakeshore Rd N #1 & Broadwood Ave

09/07/2023



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 13 | 4 | 46 | 7 | 2 | 3 | 68 | 406 | 4 | 0 | 252 | 9 |
| Future Volume (Veh/h) | 13 | 4 | 46 | 7 | 2 | 3 | 68 | 406 | 4 | 0 | 252 | 9 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Hourly flow rate (vph) | 15 | 5 | 53 | 8 | 2 | 3 | 78 | 467 | 5 | 0 | 290 | 10 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 924 | 923 | 295 | 976 | 926 | 470 | 300 | | | 472 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 924 | 923 | 295 | 976 | 926 | 470 | 300 | | | 472 | | |
| tC, single (s) | 7.2 | 6.5 | 6.2 | 7.2 | 6.5 | 6.5 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.6 | 4.0 | 3.3 | 3.6 | 4.0 | 3.6 | 2.2 | | | 2.2 | | |
| p0 queue free % | 93 | 98 | 93 | 96 | 99 | 99 | 94 | | | 100 | | |
| cM capacity (veh/h) | 229 | 255 | 737 | 190 | 254 | 533 | 1255 | | | 1100 | | |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 73 | 13 | 550 | 300 | | | | | | | | |
| Volume Left | 15 | 8 | 78 | 0 | | | | | | | | |
| Volume Right | 53 | 3 | 5 | 10 | | | | | | | | |
| cSH | 465 | 234 | 1255 | 1100 | | | | | | | | |
| Volume to Capacity | 0.16 | 0.06 | 0.06 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 4.2 | 1.3 | 1.5 | 0.0 | | | | | | | | |
| Control Delay (s) | 14.2 | 21.3 | 1.7 | 0.0 | | | | | | | | |
| Lane LOS | B | C | A | | | | | | | | | |
| Approach Delay (s) | 14.2 | 21.3 | 1.7 | 0.0 | | | | | | | | |
| Approach LOS | B | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 2.4 | | | | | | | | | |
| Intersection Capacity Utilization | | | 53.0% | ICU Level of Service | A | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

10: Lakeshore Rd N #1 & Farah Ave

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 8 | 12 | 15 | 41 | 15 | 15 | 6 | 313 | 83 | 34 | 179 | 6 |
| Future Volume (Veh/h) | 8 | 12 | 15 | 41 | 15 | 15 | 6 | 313 | 83 | 34 | 179 | 6 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Hourly flow rate (vph) | 9 | 13 | 17 | 46 | 17 | 17 | 7 | 352 | 93 | 38 | 201 | 7 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | 157 | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 718 | 740 | 204 | 716 | 696 | 398 | 208 | | | 445 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 718 | 740 | 204 | 716 | 696 | 398 | 208 | | | 445 | | |
| tC, single (s) | 7.1 | 6.5 | 6.5 | 7.2 | 6.6 | 6.2 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.6 | 3.6 | 4.1 | 3.3 | 2.2 | | | 2.3 | | |
| p0 queue free % | 97 | 96 | 98 | 85 | 95 | 97 | 99 | | | 96 | | |
| cM capacity (veh/h) | 315 | 333 | 761 | 310 | 345 | 656 | 1375 | | | 1079 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 39 | 80 | 452 | 246 | | | | | | | | |
| Volume Left | 9 | 46 | 7 | 38 | | | | | | | | |
| Volume Right | 17 | 17 | 93 | 7 | | | | | | | | |
| cSH | 434 | 358 | 1375 | 1079 | | | | | | | | |
| Volume to Capacity | 0.09 | 0.22 | 0.01 | 0.04 | | | | | | | | |
| Queue Length 95th (m) | 2.2 | 6.4 | 0.1 | 0.8 | | | | | | | | |
| Control Delay (s) | 14.1 | 17.9 | 0.2 | 1.6 | | | | | | | | |
| Lane LOS | B | C | A | A | | | | | | | | |
| Approach Delay (s) | 14.1 | 17.9 | 0.2 | 1.6 | | | | | | | | |
| Approach LOS | B | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 3.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 46.1% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

11: Armstrong St & Church St


















09/07/2023



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 5 | 431 | 507 | 90 |
| Future Volume (Veh/h) | 0 | 0 | 5 | 431 | 507 | 90 |
| Sign Control | Stop | | | Free | Free | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Hourly flow rate (vph) | 0 | 0 | 6 | 501 | 590 | 105 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | 143 | 233 | |
| pX, platoon unblocked | 0.83 | 0.76 | 0.76 | | | |
| vC, conflicting volume | 1156 | 642 | 695 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 677 | 367 | 436 | | | |
| 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 | 99 | | | |
| cM capacity (veh/h) | 348 | 517 | 858 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 507 | 695 | | | |
| Volume Left | 0 | 6 | 0 | | | |
| Volume Right | 0 | 0 | 105 | | | |
| cSH | 1700 | 858 | 1700 | | | |
| Volume to Capacity | 0.00 | 0.01 | 0.41 | | | |
| Queue Length 95th (m) | 0.0 | 0.2 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.2 | 0.0 | | | |
| Lane LOS | A | A | | | | |
| Approach Delay (s) | 0.0 | 0.2 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | 0.1 | | | | | |
| Intersection Capacity Utilization | 35.5% | | | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 12: Armstrong St & Sharpe St

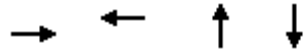
09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Traffic Volume (veh/h) | 14 | 2 | 5 | 1 | 0 | 40 | 0 | 443 | 4 | 65 | 611 | 0 |
| Future Volume (Veh/h) | 14 | 2 | 5 | 1 | 0 | 40 | 0 | 443 | 4 | 65 | 611 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Hourly flow rate (vph) | 16 | 2 | 6 | 1 | 0 | 47 | 0 | 515 | 5 | 76 | 710 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| | | | | | | | | None | | | | None |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| | | | | | | | | 192 | | | | 184 |
| pX, platoon unblocked | 0.91 | 0.91 | 0.89 | 0.91 | 0.91 | 0.85 | 0.89 | | | 0.85 | | |
| vC, conflicting volume | 1426 | 1382 | 355 | 1032 | 1380 | 518 | 710 | | | 520 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 964 | 915 | 27 | 530 | 913 | 351 | 426 | | | 353 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.1 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.4 | 2.2 | | | 2.2 | | |
| p0 queue free % | 90 | 99 | 99 | 100 | 100 | 91 | 100 | | | 92 | | |
| cM capacity (veh/h) | 166 | 231 | 933 | 369 | 232 | 537 | 1018 | | | 1009 | | |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 24 | 48 | 520 | 313 | 473 | | | | | | | |
| Volume Left | 16 | 1 | 0 | 76 | 0 | | | | | | | |
| Volume Right | 6 | 47 | 5 | 0 | 0 | | | | | | | |
| cSH | 216 | 532 | 1700 | 1009 | 1700 | | | | | | | |
| Volume to Capacity | 0.11 | 0.09 | 0.31 | 0.08 | 0.28 | | | | | | | |
| Queue Length 95th (m) | 2.8 | 2.2 | 0.0 | 1.9 | 0.0 | | | | | | | |
| Control Delay (s) | 23.8 | 12.4 | 0.0 | 2.7 | 0.0 | | | | | | | |
| Lane LOS | C | B | | A | | | | | | | | |
| Approach Delay (s) | 23.8 | 12.4 | 0.0 | 1.1 | | | | | | | | |
| Approach LOS | C | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 60.2% | | ICU Level of Service | | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

Queues

13: Armstrong St & Beavis Terr/Elm Ave

09/07/2023



















| Lane Group | EBT | WBT | NBT | SBT |
|------------------------|-------|-------|-------|-------|
| Lane Group Flow (vph) | 31 | 128 | 574 | 597 |
| v/c Ratio | 0.04 | 0.23 | 0.64 | 0.65 |
| Control Delay | 5.1 | 9.7 | 17.0 | 17.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 5.1 | 9.7 | 17.0 | 17.4 |
| Queue Length 50th (m) | 0.3 | 5.1 | 19.8 | 21.4 |
| Queue Length 95th (m) | 3.7 | 15.2 | 30.1 | 31.8 |
| Internal Link Dist (m) | 111.3 | 124.3 | 159.9 | 149.4 |
| Turn Bay Length (m) | | | | |
| Base Capacity (vph) | 854 | 628 | 1337 | 1387 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.04 | 0.20 | 0.43 | 0.43 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Armstrong St & Beavis Terr/Elm Ave

















09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (vph) | 2 | 3 | 23 | 98 | 2 | 11 | 8 | 454 | 37 | 5 | 513 | 1 |
| Future Volume (vph) | 2 | 3 | 23 | 98 | 2 | 11 | 8 | 454 | 37 | 5 | 513 | 1 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.2 | | | 6.2 | | | 5.9 | | | 5.9 | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | |
| Frt | | 0.89 | | | 0.99 | | | 0.99 | | | 1.00 | |
| Flt Protected | | 1.00 | | | 0.96 | | | 1.00 | | | 1.00 | |
| Satd. Flow (prot) | | 1698 | | | 1613 | | | 3196 | | | 3319 | |
| Flt Permitted | | 0.99 | | | 0.74 | | | 0.94 | | | 0.95 | |
| Satd. Flow (perm) | | 1680 | | | 1242 | | | 3006 | | | 3143 | |
| Peak-hour factor, PHF | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 | 0.87 |
| Adj. Flow (vph) | 2 | 3 | 26 | 113 | 2 | 13 | 9 | 522 | 43 | 6 | 590 | 1 |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 7 | 0 | 0 | 12 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 16 | 0 | 0 | 121 | 0 | 0 | 562 | 0 | 0 | 597 | 0 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 13% | 0% | 10% | 13% | 13% | 11% | 0% | 10% | 0% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Actuated Green, G (s) | | 20.1 | | | 20.1 | | | 13.5 | | | 13.5 | |
| Effective Green, g (s) | | 20.1 | | | 20.1 | | | 13.5 | | | 13.5 | |
| Actuated g/C Ratio | | 0.44 | | | 0.44 | | | 0.30 | | | 0.30 | |
| Clearance Time (s) | | 6.2 | | | 6.2 | | | 5.9 | | | 5.9 | |
| Vehicle Extension (s) | | 5.0 | | | 5.0 | | | 2.5 | | | 2.5 | |
| Lane Grp Cap (vph) | | 738 | | | 546 | | | 887 | | | 928 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.01 | | | c0.10 | | | 0.19 | | | c0.19 | |
| v/c Ratio | | 0.02 | | | 0.22 | | | 0.63 | | | 0.64 | |
| Uniform Delay, d1 | | 7.2 | | | 7.9 | | | 14.0 | | | 14.0 | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 0.0 | | | 0.4 | | | 1.3 | | | 1.4 | |
| Delay (s) | | 7.3 | | | 8.4 | | | 15.3 | | | 15.4 | |
| Level of Service | | A | | | A | | | B | | | B | |
| Approach Delay (s) | | 7.3 | | | 8.4 | | | 15.3 | | | 15.4 | |
| Approach LOS | | A | | | A | | | B | | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 14.5 | | | | | HCM 2000 Level of Service | | | B | |
| HCM 2000 Volume to Capacity ratio | | | 0.39 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 45.7 | | | | | Sum of lost time (s) | | 12.1 | | |
| Intersection Capacity Utilization | | | 46.2% | | | | | ICU Level of Service | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis
 15: Georgina Ave & Main St

















09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 4 | 320 | 7 | 8 | 170 | 3 | 12 | 7 | 43 | 1 | 0 | 4 |
| Future Volume (Veh/h) | 4 | 320 | 7 | 8 | 170 | 3 | 12 | 7 | 43 | 1 | 0 | 4 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |
| Hourly flow rate (vph) | 5 | 390 | 9 | 10 | 207 | 4 | 15 | 9 | 52 | 1 | 0 | 5 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 211 | | | 399 | | | 638 | 636 | 394 | 690 | 638 | 209 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 211 | | | 399 | | | 638 | 636 | 394 | 690 | 638 | 209 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.4 | 6.7 | 6.2 | 7.1 | 6.5 | 7.2 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.8 | 4.1 | 3.3 | 3.5 | 4.0 | 4.2 |
| p0 queue free % | 100 | | | 99 | | | 96 | 98 | 92 | 100 | 100 | 99 |
| cM capacity (veh/h) | 1372 | | | 1171 | | | 342 | 375 | 648 | 324 | 392 | 636 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 404 | 221 | 76 | 6 | | | | | | | | |
| Volume Left | 5 | 10 | 15 | 1 | | | | | | | | |
| Volume Right | 9 | 4 | 52 | 5 | | | | | | | | |
| cSH | 1372 | 1171 | 513 | 548 | | | | | | | | |
| Volume to Capacity | 0.00 | 0.01 | 0.15 | 0.01 | | | | | | | | |
| Queue Length 95th (m) | 0.1 | 0.2 | 3.9 | 0.3 | | | | | | | | |
| Control Delay (s) | 0.1 | 0.4 | 13.2 | 11.6 | | | | | | | | |
| Lane LOS | A | A | B | B | | | | | | | | |
| Approach Delay (s) | 0.1 | 0.4 | 13.2 | 11.6 | | | | | | | | |
| Approach LOS | | | B | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.7 | | | | | | | | | |
| Intersection Capacity Utilization | | | 30.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis
 17: Ferguson Ave #2 & Broadway St

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 6 | 0 | 1 | 5 | 2 | 23 | 1 | 402 | 0 | 20 | 200 | 10 |
| Future Volume (Veh/h) | 6 | 0 | 1 | 5 | 2 | 23 | 1 | 402 | 0 | 20 | 200 | 10 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Hourly flow rate (vph) | 7 | 0 | 1 | 6 | 2 | 27 | 1 | 467 | 0 | 23 | 233 | 12 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 782 | 754 | 239 | 755 | 760 | 467 | 245 | | | 467 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 782 | 754 | 239 | 755 | 760 | 467 | 245 | | | 467 | | |
| 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 % | 98 | 100 | 100 | 98 | 99 | 95 | 100 | | | 98 | | |
| cM capacity (veh/h) | 294 | 333 | 805 | 322 | 330 | 600 | 1333 | | | 1079 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 8 | 35 | 468 | 268 | | | | | | | | |
| Volume Left | 7 | 6 | 1 | 23 | | | | | | | | |
| Volume Right | 1 | 27 | 0 | 12 | | | | | | | | |
| cSH | 319 | 502 | 1333 | 1079 | | | | | | | | |
| Volume to Capacity | 0.03 | 0.07 | 0.00 | 0.02 | | | | | | | | |
| Queue Length 95th (m) | 0.6 | 1.7 | 0.0 | 0.5 | | | | | | | | |
| Control Delay (s) | 16.6 | 12.7 | 0.0 | 0.9 | | | | | | | | |
| Lane LOS | C | B | A | A | | | | | | | | |
| Approach Delay (s) | 16.6 | 12.7 | 0.0 | 0.9 | | | | | | | | |
| Approach LOS | C | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.1 | | | | | | | | | |
| Intersection Capacity Utilization | | | 36.8% | | ICU Level of Service | | | | | A | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 18: Ferguson Ave #2/Lakeshore Rd #2 & Browning St

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↔ | | | ↔ | | | ↔ | | | ↔ | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Traffic Volume (vph) | 9 | 2 | 0 | 5 | 0 | 1 | 0 | 421 | 1 | 3 | 256 | 5 |
| Future Volume (vph) | 9 | 2 | 0 | 5 | 0 | 1 | 0 | 421 | 1 | 3 | 256 | 5 |
| 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 | 2 | 0 | 6 | 0 | 1 | 0 | 495 | 1 | 4 | 301 | 6 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|-----------------------|------|------|------|------|
| Volume Total (vph) | 13 | 7 | 496 | 311 |
| Volume Left (vph) | 11 | 6 | 0 | 4 |
| Volume Right (vph) | 0 | 1 | 1 | 6 |
| Hadj (s) | 0.47 | 0.38 | 0.07 | 0.09 |
| Departure Headway (s) | 6.2 | 6.1 | 4.4 | 4.6 |
| Degree Utilization, x | 0.02 | 0.01 | 0.60 | 0.39 |
| Capacity (veh/h) | 510 | 512 | 815 | 770 |
| Control Delay (s) | 9.3 | 9.2 | 13.7 | 10.5 |
| Approach Delay (s) | 9.3 | 9.2 | 13.7 | 10.5 |
| Approach LOS | A | A | B | B |

| Intersection Summary | | | |
|-----------------------------------|-------|------|------------------------|
| Delay | | 12.4 | |
| Level of Service | | B | |
| Intersection Capacity Utilization | 32.2% | | ICU Level of Service A |
| Analysis Period (min) | | 15 | |

HCM Unsignalized Intersection Capacity Analysis
 1: Golding St & Whitewood Ave

09/07/2023

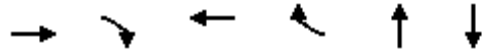


| Movement | EBT | EBR | WBL | WBT | NBL | NBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | → | | | ← | ↘ | ↙ |
| Traffic Volume (veh/h) | 485 | 30 | 16 | 532 | 15 | 28 |
| Future Volume (Veh/h) | 485 | 30 | 16 | 532 | 15 | 28 |
| Sign Control | Free | | | Free | Stop | |
| Grade | 0% | | | 0% | 0% | |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 533 | 33 | 18 | 585 | 16 | 31 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | None | | | None | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | 336 | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | | | 566 | 1170 | 550 | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | | | 566 | 1170 | 550 | |
| tC, single (s) | | | 4.1 | 6.5 | 6.2 | |
| tC, 2 stage (s) | | | | | | |
| tF (s) | | | 2.2 | 3.6 | 3.3 | |
| p0 queue free % | | | 98 | 92 | 94 | |
| cM capacity (veh/h) | | | 1016 | 204 | 539 | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | | | |
| Volume Total | 566 | 603 | 47 | | | |
| Volume Left | 0 | 18 | 16 | | | |
| Volume Right | 33 | 0 | 31 | | | |
| cSH | 1700 | 1016 | 346 | | | |
| Volume to Capacity | 0.33 | 0.02 | 0.14 | | | |
| Queue Length 95th (m) | 0.0 | 0.4 | 3.5 | | | |
| Control Delay (s) | 0.0 | 0.5 | 17.0 | | | |
| Lane LOS | | | A | C | | |
| Approach Delay (s) | 0.0 | 0.5 | 17.0 | | | |
| Approach LOS | | | C | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 0.9 | | | |
| Intersection Capacity Utilization | | | 50.9% | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

Queues

2: Edith St/Parking Entrance & Whitewood Ave

09/07/2023



| Lane Group | EBT | EBR | WBT | WBR | NBT | SBT |
|------------------------|-------|------|-------|------|-------|------|
| Lane Group Flow (vph) | 465 | 42 | 417 | 119 | 91 | 180 |
| v/c Ratio | 0.49 | 0.04 | 0.46 | 0.12 | 0.23 | 0.45 |
| Control Delay | 10.7 | 1.6 | 10.5 | 2.4 | 12.9 | 15.1 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.7 | 1.6 | 10.5 | 2.4 | 12.9 | 15.1 |
| Queue Length 50th (m) | 22.3 | 0.0 | 19.6 | 0.0 | 4.4 | 8.7 |
| Queue Length 95th (m) | 46.3 | 2.0 | 41.6 | 5.3 | 11.6 | 19.7 |
| Internal Link Dist (m) | 312.0 | | 313.1 | | 280.6 | 74.2 |
| Turn Bay Length (m) | | 45.0 | | 45.0 | | |
| Base Capacity (vph) | 964 | 944 | 917 | 983 | 604 | 607 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.48 | 0.04 | 0.45 | 0.12 | 0.15 | 0.30 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

2: Edith St/Parking Entrance & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|-------|------|
| Lane Configurations | | ↕ | ↗ | | ↕ | ↗ | | ↕↗ | | | ↕↗ | |
| Traffic Volume (vph) | 11 | 384 | 36 | 22 | 332 | 101 | 40 | 24 | 14 | 71 | 42 | 40 |
| Future Volume (vph) | 11 | 384 | 36 | 22 | 332 | 101 | 40 | 24 | 14 | 71 | 42 | 40 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.2 | | | 6.2 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Frt | | 1.00 | 0.85 | | 1.00 | 0.85 | | 0.98 | | | 0.96 | |
| Flt Protected | | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.97 | | | 0.98 | |
| Satd. Flow (prot) | | 1694 | 1585 | | 1656 | 1617 | | 1828 | | | 1797 | |
| Flt Permitted | | 0.98 | 1.00 | | 0.96 | 1.00 | | 0.81 | | | 0.81 | |
| Satd. Flow (perm) | | 1670 | 1585 | | 1590 | 1617 | | 1512 | | | 1482 | |
| 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) | 13 | 452 | 42 | 26 | 391 | 119 | 47 | 28 | 16 | 84 | 49 | 47 |
| RTOR Reduction (vph) | 0 | 0 | 20 | 0 | 0 | 56 | 0 | 13 | 0 | 0 | 31 | 0 |
| Lane Group Flow (vph) | 0 | 465 | 22 | 0 | 417 | 63 | 0 | 78 | 0 | 0 | 149 | 0 |
| Heavy Vehicles (%) | 0% | 2% | 3% | 5% | 4% | 1% | 0% | 0% | 0% | 0% | 0% | 3% |
| Parking (#/hr) | | 0 | | | 0 | | | | | | | |
| Turn Type | Perm | NA | Perm | Perm | NA | Perm | Perm | NA | | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | | 4 |
| Permitted Phases | 2 | | 2 | 6 | | 6 | 8 | | | 4 | | |
| Actuated Green, G (s) | | 23.4 | 23.4 | | 23.4 | 23.4 | | 8.7 | | | 8.7 | |
| Effective Green, g (s) | | 23.4 | 23.4 | | 23.4 | 23.4 | | 8.7 | | | 8.7 | |
| Actuated g/C Ratio | | 0.53 | 0.53 | | 0.53 | 0.53 | | 0.20 | | | 0.20 | |
| Clearance Time (s) | | 6.2 | 6.2 | | 6.2 | 6.2 | | 6.2 | | | 6.2 | |
| Vehicle Extension (s) | | 5.0 | 5.0 | | 5.0 | 5.0 | | 2.5 | | | 2.5 | |
| Lane Grp Cap (vph) | | 878 | 833 | | 836 | 850 | | 295 | | | 289 | |
| v/s Ratio Prot | | | | | | | | | | | | |
| v/s Ratio Perm | | c0.28 | 0.01 | | 0.26 | 0.04 | | 0.05 | | | c0.10 | |
| v/c Ratio | | 0.53 | 0.03 | | 0.50 | 0.07 | | 0.26 | | | 0.51 | |
| Uniform Delay, d1 | | 6.9 | 5.1 | | 6.8 | 5.2 | | 15.2 | | | 16.0 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | | | 1.00 | |
| Incremental Delay, d2 | | 1.1 | 0.0 | | 1.0 | 0.1 | | 0.4 | | | 1.2 | |
| Delay (s) | | 8.0 | 5.1 | | 7.8 | 5.3 | | 15.5 | | | 17.2 | |
| Level of Service | | A | A | | A | A | | B | | | B | |
| Approach Delay (s) | | 7.8 | | | 7.2 | | | 15.5 | | | 17.2 | |
| Approach LOS | | A | | | A | | | B | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|---------------------------|------|
| HCM 2000 Control Delay | 9.4 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.53 | | |
| Actuated Cycle Length (s) | 44.5 | Sum of lost time (s) | 12.4 |
| Intersection Capacity Utilization | 61.3% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

3: John ST & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 14 | 521 | 7 | 5 | 436 | 12 | 4 | 0 | 9 | 11 | 3 | 8 |
| Future Volume (Veh/h) | 14 | 521 | 7 | 5 | 436 | 12 | 4 | 0 | 9 | 11 | 3 | 8 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 | 0.84 |
| Hourly flow rate (vph) | 17 | 620 | 8 | 6 | 519 | 14 | 5 | 0 | 11 | 13 | 4 | 10 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | 337 | | | 245 | | | | | | | |
| pX, platoon unblocked | 0.94 | | | 0.95 | | | 0.96 | 0.96 | 0.95 | 0.96 | 0.96 | 0.94 |
| vC, conflicting volume | 533 | | | 628 | | | 1208 | 1203 | 624 | 1207 | 1200 | 526 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 468 | | | 585 | | | 1086 | 1080 | 581 | 1085 | 1077 | 461 |
| 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 % | 98 | | | 99 | | | 97 | 100 | 98 | 93 | 98 | 98 |
| cM capacity (veh/h) | 1035 | | | 953 | | | 179 | 206 | 493 | 181 | 207 | 567 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 645 | 539 | 16 | 27 | | | | | | | | |
| Volume Left | 17 | 6 | 5 | 13 | | | | | | | | |
| Volume Right | 8 | 14 | 11 | 10 | | | | | | | | |
| cSH | 1035 | 953 | 318 | 248 | | | | | | | | |
| Volume to Capacity | 0.02 | 0.01 | 0.05 | 0.11 | | | | | | | | |
| Queue Length 95th (m) | 0.4 | 0.1 | 1.2 | 2.7 | | | | | | | | |
| Control Delay (s) | 0.4 | 0.2 | 16.9 | 21.3 | | | | | | | | |
| Lane LOS | A | A | C | C | | | | | | | | |
| Approach Delay (s) | 0.4 | 0.2 | 16.9 | 21.3 | | | | | | | | |
| Approach LOS | | | C | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 46.4% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

4: Mary St & Whitewood Ave

09/07/2023

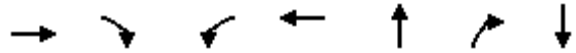


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|----------------------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 22 | 504 | 9 | 7 | 448 | 6 | 1 | 4 | 5 | 8 | 2 | 12 |
| Future Volume (Veh/h) | 22 | 504 | 9 | 7 | 448 | 6 | 1 | 4 | 5 | 8 | 2 | 12 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Hourly flow rate (vph) | 25 | 566 | 10 | 8 | 503 | 7 | 1 | 4 | 6 | 9 | 2 | 13 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | None | | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | 126 | | | | | | | | | | | |
| pX, platoon unblocked | 0.90 | | | | | | 0.90 | 0.90 | | 0.90 | 0.90 | 0.90 |
| vC, conflicting volume | 510 | | | 576 | | | 1158 | 1147 | 571 | 1152 | 1148 | 506 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 404 | | | 576 | | | 1121 | 1109 | 571 | 1114 | 1111 | 400 |
| tC, single (s) | 4.1 | | | 4.1 | | | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.3 |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 2.2 | | | 2.2 | | | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.4 |
| p0 queue free % | 98 | | | 99 | | | 99 | 98 | 99 | 94 | 99 | 98 |
| cM capacity (veh/h) | 1029 | | | 1007 | | | 158 | 185 | 524 | 160 | 184 | 573 |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 601 | 518 | 11 | 24 | | | | | | | | |
| Volume Left | 25 | 8 | 1 | 9 | | | | | | | | |
| Volume Right | 10 | 7 | 6 | 13 | | | | | | | | |
| cSH | 1029 | 1007 | 279 | 268 | | | | | | | | |
| Volume to Capacity | 0.02 | 0.01 | 0.04 | 0.09 | | | | | | | | |
| Queue Length 95th (m) | 0.6 | 0.2 | 0.9 | 2.2 | | | | | | | | |
| Control Delay (s) | 0.7 | 0.2 | 18.4 | 19.8 | | | | | | | | |
| Lane LOS | A | A | C | C | | | | | | | | |
| Approach Delay (s) | 0.7 | 0.2 | 18.4 | 19.8 | | | | | | | | |
| Approach LOS | | | C | C | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.0 | | | | | | | | | |
| Intersection Capacity Utilization | | | 49.5% | ICU Level of Service | A | | | | | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

Queues

5: Paget St #1 & Whitewood Ave

09/07/2023



| Lane Group | EBT | EBR | WBL | WBT | NBT | NBR | SBT |
|------------------------|-------|------|------|-------|------|------|-------|
| Lane Group Flow (vph) | 472 | 56 | 298 | 372 | 85 | 327 | 70 |
| v/c Ratio | 0.46 | 0.05 | 0.60 | 0.36 | 0.28 | 0.51 | 0.19 |
| Control Delay | 10.1 | 2.0 | 15.4 | 8.7 | 27.3 | 6.2 | 20.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 10.1 | 2.0 | 15.4 | 8.7 | 27.3 | 6.2 | 20.3 |
| Queue Length 50th (m) | 34.6 | 0.0 | 22.9 | 23.9 | 10.5 | 0.0 | 6.2 |
| Queue Length 95th (m) | 54.6 | 3.8 | 56.3 | 50.2 | 22.2 | 18.5 | 16.1 |
| Internal Link Dist (m) | 101.5 | | | 191.0 | 51.6 | | 138.0 |
| Turn Bay Length (m) | | 40.0 | | | | | |
| Base Capacity (vph) | 1035 | 1021 | 499 | 1024 | 303 | 645 | 365 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.46 | 0.05 | 0.60 | 0.36 | 0.28 | 0.51 | 0.19 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

5: Paget St #1 & Whitewood Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|------|------|------|-------|------|------|------|------|
| Lane Configurations | | ↖ | ↗ | ↖ | ↗ | | | ↖ | ↗ | | ↕ | |
| Traffic Volume (vph) | 5 | 425 | 51 | 271 | 326 | 13 | 67 | 10 | 298 | 28 | 19 | 16 |
| Future Volume (vph) | 5 | 425 | 51 | 271 | 326 | 13 | 67 | 10 | 298 | 28 | 19 | 16 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 5.5 | 5.5 | 5.5 | 5.5 | | | 5.5 | 5.5 | | 5.5 | |
| Lane Util. Factor | | 1.00 | 1.00 | 1.00 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Frt | | 1.00 | 0.85 | 1.00 | 0.99 | | | 1.00 | 0.85 | | 0.97 | |
| Flt Protected | | 1.00 | 1.00 | 0.95 | 1.00 | | | 0.96 | 1.00 | | 0.98 | |
| Satd. Flow (prot) | | 1695 | 1633 | 1772 | 1671 | | | 1629 | 1601 | | 1604 | |
| Flt Permitted | | 1.00 | 1.00 | 0.44 | 1.00 | | | 0.71 | 1.00 | | 0.86 | |
| Satd. Flow (perm) | | 1690 | 1633 | 816 | 1671 | | | 1214 | 1601 | | 1409 | |
| Peak-hour factor, PHF | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Adj. Flow (vph) | 5 | 467 | 56 | 298 | 358 | 14 | 74 | 11 | 327 | 31 | 21 | 18 |
| RTOR Reduction (vph) | 0 | 0 | 22 | 0 | 2 | 0 | 0 | 0 | 245 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 0 | 472 | 34 | 298 | 370 | 0 | 0 | 85 | 82 | 0 | 57 | 0 |
| Heavy Vehicles (%) | 0% | 2% | 0% | 3% | 3% | 0% | 2% | 0% | 2% | 0% | 0% | 7% |
| Parking (#/hr) | | 0 | | | 0 | | | 0 | | | 0 | |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | Perm | Perm | NA | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | 8 | 4 | | |
| Actuated Green, G (s) | | 49.0 | 49.0 | 49.0 | 49.0 | | | 20.0 | 20.0 | | 20.0 | |
| Effective Green, g (s) | | 49.0 | 49.0 | 49.0 | 49.0 | | | 20.0 | 20.0 | | 20.0 | |
| Actuated g/C Ratio | | 0.61 | 0.61 | 0.61 | 0.61 | | | 0.25 | 0.25 | | 0.25 | |
| Clearance Time (s) | | 5.5 | 5.5 | 5.5 | 5.5 | | | 5.5 | 5.5 | | 5.5 | |
| Lane Grp Cap (vph) | | 1035 | 1000 | 499 | 1023 | | | 303 | 400 | | 352 | |
| v/s Ratio Prot | | | | | 0.22 | | | | | | | |
| v/s Ratio Perm | | 0.28 | 0.02 | c0.37 | | | | c0.07 | 0.05 | | 0.04 | |
| v/c Ratio | | 0.46 | 0.03 | 0.60 | 0.36 | | | 0.28 | 0.20 | | 0.16 | |
| Uniform Delay, d1 | | 8.3 | 6.1 | 9.5 | 7.7 | | | 24.2 | 23.7 | | 23.4 | |
| Progression Factor | | 1.00 | 1.00 | 1.05 | 1.00 | | | 1.00 | 1.00 | | 1.00 | |
| Incremental Delay, d2 | | 1.4 | 0.1 | 4.4 | 0.8 | | | 2.3 | 1.2 | | 1.0 | |
| Delay (s) | | 9.8 | 6.2 | 14.3 | 8.6 | | | 26.5 | 24.9 | | 24.4 | |
| Level of Service | | A | A | B | A | | | C | C | | C | |
| Approach Delay (s) | | 9.4 | | | 11.1 | | | 25.2 | | | 24.4 | |
| Approach LOS | | A | | | B | | | C | | | C | |

| Intersection Summary | | |
|-----------------------------------|-------|---------------------------|
| HCM 2000 Control Delay | 14.6 | HCM 2000 Level of Service |
| HCM 2000 Volume to Capacity ratio | 0.50 | B |
| Actuated Cycle Length (s) | 80.0 | Sum of lost time (s) |
| Intersection Capacity Utilization | 73.1% | 11.0 |
| Analysis Period (min) | 15 | ICU Level of Service |
| | | D |
| c Critical Lane Group | | |

Queues

6: Armstrong St & Whitewood Ave

09/07/2023






















| Lane Group | EBL | EBT | WBT | NBT | NBR | SBT | SBR |
|------------------------|--------|-------|-------|-------|------|-------|------|
| Lane Group Flow (vph) | 711 | 93 | 133 | 183 | 2 | 148 | 527 |
| v/c Ratio | 0.93 | 0.10 | 0.13 | 0.44 | 0.00 | 0.34 | 0.66 |
| Control Delay | 31.4 | 4.1 | 6.5 | 28.5 | 0.0 | 26.5 | 6.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 31.4 | 4.1 | 6.5 | 28.5 | 0.0 | 26.5 | 6.9 |
| Queue Length 50th (m) | 90.6 | 2.6 | 6.9 | 23.1 | 0.0 | 18.2 | 0.0 |
| Queue Length 95th (m) | #163.4 | 7.7 | 13.4 | 40.0 | 0.0 | 32.6 | 19.8 |
| Internal Link Dist (m) | | 191.0 | 154.1 | 180.0 | | 119.0 | |
| Turn Bay Length (m) | | | | | 15.0 | | 20.0 |
| Base Capacity (vph) | 765 | 957 | 1020 | 419 | 454 | 436 | 802 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.93 | 0.10 | 0.13 | 0.44 | 0.00 | 0.34 | 0.66 |

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Armstrong St & Whitewood Ave

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | | |  | | |  |  | |  |  |
| Traffic Volume (vph) | 626 | 54 | 28 | 1 | 100 | 16 | 24 | 137 | 2 | 14 | 116 | 464 |
| Future Volume (vph) | 626 | 54 | 28 | 1 | 100 | 16 | 24 | 137 | 2 | 14 | 116 | 464 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 5.5 | 5.5 | | | 5.6 | | | 5.6 | 5.6 | | 5.5 | 5.5 |
| Lane Util. Factor | 1.00 | 1.00 | | | 1.00 | | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Frt | 1.00 | 0.95 | | | 0.98 | | | 1.00 | 0.85 | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | | 1.00 | | | 0.99 | 1.00 | | 0.99 | 1.00 |
| Satd. Flow (prot) | 1807 | 1578 | | | 1697 | | | 1688 | 1633 | | 1720 | 1570 |
| Flt Permitted | 0.67 | 1.00 | | | 1.00 | | | 0.94 | 1.00 | | 0.96 | 1.00 |
| Satd. Flow (perm) | 1278 | 1578 | | | 1696 | | | 1598 | 1633 | | 1656 | 1570 |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Adj. Flow (vph) | 711 | 61 | 32 | 1 | 114 | 18 | 27 | 156 | 2 | 16 | 132 | 527 |
| RTOR Reduction (vph) | 0 | 13 | 0 | 0 | 7 | 0 | 0 | 0 | 1 | 0 | 0 | 388 |
| Lane Group Flow (vph) | 711 | 80 | 0 | 0 | 126 | 0 | 0 | 183 | 1 | 0 | 148 | 139 |
| Heavy Vehicles (%) | 1% | 6% | 0% | 0% | 0% | 0% | 0% | 2% | 0% | 0% | 0% | 4% |
| Parking (#/hr) | | 0 | | | 0 | | | 0 | | | 0 | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | Perm | Perm | NA | Perm |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | 8 | 4 | | 4 |
| Actuated Green, G (s) | 47.9 | 47.9 | | | 47.8 | | | 21.0 | 21.0 | | 21.1 | 21.1 |
| Effective Green, g (s) | 47.9 | 47.9 | | | 47.8 | | | 21.0 | 21.0 | | 21.1 | 21.1 |
| Actuated g/C Ratio | 0.60 | 0.60 | | | 0.60 | | | 0.26 | 0.26 | | 0.26 | 0.26 |
| Clearance Time (s) | 5.5 | 5.5 | | | 5.6 | | | 5.6 | 5.6 | | 5.5 | 5.5 |
| Lane Grp Cap (vph) | 765 | 944 | | | 1013 | | | 419 | 428 | | 436 | 414 |
| v/s Ratio Prot | | 0.05 | | | | | | | | | | |
| v/s Ratio Perm | c0.56 | | | | 0.07 | | | c0.11 | 0.00 | | 0.09 | 0.09 |
| v/c Ratio | 0.93 | 0.08 | | | 0.12 | | | 0.44 | 0.00 | | 0.34 | 0.34 |
| Uniform Delay, d1 | 14.5 | 6.8 | | | 7.0 | | | 24.6 | 21.8 | | 23.8 | 23.8 |
| Progression Factor | 0.74 | 0.80 | | | 1.00 | | | 1.00 | 1.00 | | 1.00 | 1.00 |
| Incremental Delay, d2 | 17.8 | 0.2 | | | 0.3 | | | 3.3 | 0.0 | | 2.1 | 2.2 |
| Delay (s) | 28.6 | 5.6 | | | 7.3 | | | 27.9 | 21.8 | | 25.9 | 26.0 |
| Level of Service | C | A | | | A | | | C | C | | C | C |
| Approach Delay (s) | | 26.0 | | | 7.3 | | | 27.8 | | | 26.0 | |
| Approach LOS | | C | | | A | | | C | | | C | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 24.8 | | | | | | | | | HCM 2000 Level of Service C |
| HCM 2000 Volume to Capacity ratio | | | 0.78 | | | | | | | | | |
| Actuated Cycle Length (s) | | | 80.0 | | | | | | | | 11.2 | |
| Intersection Capacity Utilization | | | 78.5% | | | | | | | | | ICU Level of Service D |
| Analysis Period (min) | | | 15 | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis

7: Broadwood Ave & Golding St

09/07/2023



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↔ | ↔ | | ↔ | |
| Traffic Volume (veh/h) | 0 | 0 | 4 | 41 | 2 | 34 |
| Future Volume (Veh/h) | 0 | 0 | 4 | 41 | 2 | 34 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Hourly flow rate (vph) | 0 | 0 | 5 | 51 | 2 | 42 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 56 | | | | 30 | 30 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 56 | | | | 30 | 30 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 100 | 96 |
| cM capacity (veh/h) | 1562 | | | | 989 | 1050 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 0 | 56 | 44 | | | |
| Volume Left | 0 | 0 | 2 | | | |
| Volume Right | 0 | 51 | 42 | | | |
| cSH | 1700 | 1700 | 1047 | | | |
| Volume to Capacity | 0.00 | 0.03 | 0.04 | | | |
| Queue Length 95th (m) | 0.0 | 0.0 | 1.0 | | | |
| Control Delay (s) | 0.0 | 0.0 | 8.6 | | | |
| Lane LOS | | | A | | | |
| Approach Delay (s) | 0.0 | 0.0 | 8.6 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 3.8 | | | |
| Intersection Capacity Utilization | | 13.3% | | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

HCM Unsignalized Intersection Capacity Analysis

8: Broadwood Ave & Edith St

















09/07/2023



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|-----------------------------------|------|-------|------|----------------------|------|------|
| Lane Configurations | | ↗ | ↖ | | ↘ | |
| Traffic Volume (veh/h) | 8 | 47 | 41 | 25 | 71 | 5 |
| Future Volume (Veh/h) | 8 | 47 | 41 | 25 | 71 | 5 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 | 0.75 |
| Hourly flow rate (vph) | 11 | 63 | 55 | 33 | 95 | 7 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 88 | | | | 156 | 72 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 88 | | | | 156 | 72 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.4 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.5 |
| p0 queue free % | 99 | | | | 89 | 99 |
| cM capacity (veh/h) | 1520 | | | | 829 | 943 |
| Direction, Lane # | EB 1 | WB 1 | SB 1 | | | |
| Volume Total | 74 | 88 | 102 | | | |
| Volume Left | 11 | 0 | 95 | | | |
| Volume Right | 0 | 33 | 7 | | | |
| cSH | 1520 | 1700 | 836 | | | |
| Volume to Capacity | 0.01 | 0.05 | 0.12 | | | |
| Queue Length 95th (m) | 0.2 | 0.0 | 3.2 | | | |
| Control Delay (s) | 1.1 | 0.0 | 9.9 | | | |
| Lane LOS | A | | A | | | |
| Approach Delay (s) | 1.1 | 0.0 | 9.9 | | | |
| Approach LOS | | | A | | | |
| Intersection Summary | | | | | | |
| Average Delay | | | 4.1 | | | |
| Intersection Capacity Utilization | | 20.2% | | ICU Level of Service | | A |
| Analysis Period (min) | | | 15 | | | |

















HCM Unsignalized Intersection Capacity Analysis
 9: Lakeshore Rd N #1 & Broadwood Ave

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 20 | 4 | 98 | 2 | 0 | 7 | 50 | 387 | 2 | 2 | 446 | 18 |
| Future Volume (Veh/h) | 20 | 4 | 98 | 2 | 0 | 7 | 50 | 387 | 2 | 2 | 446 | 18 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Hourly flow rate (vph) | 22 | 4 | 109 | 2 | 0 | 8 | 56 | 430 | 2 | 2 | 496 | 20 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 1061 | 1054 | 506 | 1164 | 1063 | 431 | 516 | | | 432 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1061 | 1054 | 506 | 1164 | 1063 | 431 | 516 | | | 432 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 8.1 | 6.5 | 6.2 | 4.1 | | | 4.1 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 4.4 | 4.0 | 3.3 | 2.2 | | | 2.2 | | |
| p0 queue free % | 89 | 98 | 81 | 98 | 100 | 99 | 95 | | | 100 | | |
| cM capacity (veh/h) | 192 | 215 | 570 | 85 | 213 | 629 | 1050 | | | 1138 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 135 | 10 | 488 | 518 | | | | | | | | |
| Volume Left | 22 | 2 | 56 | 2 | | | | | | | | |
| Volume Right | 109 | 8 | 2 | 20 | | | | | | | | |
| cSH | 417 | 277 | 1050 | 1138 | | | | | | | | |
| Volume to Capacity | 0.32 | 0.04 | 0.05 | 0.00 | | | | | | | | |
| Queue Length 95th (m) | 10.5 | 0.9 | 1.3 | 0.0 | | | | | | | | |
| Control Delay (s) | 17.7 | 18.5 | 1.5 | 0.1 | | | | | | | | |
| Lane LOS | C | C | A | A | | | | | | | | |
| Approach Delay (s) | 17.7 | 18.5 | 1.5 | 0.1 | | | | | | | | |
| Approach LOS | C | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 2.9 | | | | | | | | | |
| Intersection Capacity Utilization | | | 67.0% | | ICU Level of Service | | | | | C | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 10: Lakeshore Rd N #1 & Farah Ave

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 3 | 23 | 23 | 62 | 32 | 18 | 9 | 347 | 47 | 28 | 357 | 9 |
| Future Volume (Veh/h) | 3 | 23 | 23 | 62 | 32 | 18 | 9 | 347 | 47 | 28 | 357 | 9 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Hourly flow rate (vph) | 3 | 25 | 25 | 67 | 34 | 19 | 10 | 373 | 51 | 30 | 384 | 10 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | 157 | |
| pX, platoon unblocked | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | | 0.95 | | | | | |
| vC, conflicting volume | 904 | 893 | 389 | 905 | 872 | 398 | 394 | | | 424 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 870 | 859 | 327 | 872 | 837 | 398 | 332 | | | 424 | | |
| tC, single (s) | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | | | 4.2 | | |
| tC, 2 stage (s) | | | | | | | | | | | | |
| tF (s) | 3.5 | 4.0 | 3.3 | 3.5 | 4.0 | 3.3 | 2.2 | | | 2.3 | | |
| p0 queue free % | 99 | 91 | 96 | 70 | 88 | 97 | 99 | | | 97 | | |
| cM capacity (veh/h) | 222 | 271 | 681 | 226 | 278 | 656 | 1173 | | | 1104 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 53 | 120 | 434 | 424 | | | | | | | | |
| Volume Left | 3 | 67 | 10 | 30 | | | | | | | | |
| Volume Right | 25 | 19 | 51 | 10 | | | | | | | | |
| cSH | 372 | 268 | 1173 | 1104 | | | | | | | | |
| Volume to Capacity | 0.14 | 0.45 | 0.01 | 0.03 | | | | | | | | |
| Queue Length 95th (m) | 3.7 | 16.6 | 0.2 | 0.6 | | | | | | | | |
| Control Delay (s) | 16.3 | 28.9 | 0.3 | 0.9 | | | | | | | | |
| Lane LOS | C | D | A | A | | | | | | | | |
| Approach Delay (s) | 16.3 | 28.9 | 0.3 | 0.9 | | | | | | | | |
| Approach LOS | C | D | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 4.7 | | | | | | | | | |
| Intersection Capacity Utilization | | | 53.1% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 11: Armstrong St & Church St


















09/07/2023



| Movement | EBL | EBR | NBL | NBT | SBT | SBR |
|-----------------------------------|-------------|-------------|-------------|----------------------|------|------|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 0 | 5 | 772 | 610 | 50 |
| Future Volume (Veh/h) | 0 | 0 | 5 | 772 | 610 | 50 |
| 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 | 6 | 908 | 718 | 59 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | | | None | None | |
| Median storage (veh) | | | | | | |
| Upstream signal (m) | | | | 143 | 233 | |
| pX, platoon unblocked | 0.81 | 0.72 | 0.72 | | | |
| vC, conflicting volume | 1668 | 748 | 777 | | | |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 925 | 454 | 495 | | | |
| 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 | 99 | | | |
| cM capacity (veh/h) | 241 | 439 | 776 | | | |
| Direction, Lane # | EB 1 | NB 1 | SB 1 | | | |
| Volume Total | 0 | 914 | 777 | | | |
| Volume Left | 0 | 6 | 0 | | | |
| Volume Right | 0 | 0 | 59 | | | |
| cSH | 1700 | 776 | 1700 | | | |
| Volume to Capacity | 0.00 | 0.01 | 0.46 | | | |
| Queue Length 95th (m) | 0.0 | 0.2 | 0.0 | | | |
| Control Delay (s) | 0.0 | 0.2 | 0.0 | | | |
| Lane LOS | A | A | | | | |
| Approach Delay (s) | 0.0 | 0.2 | 0.0 | | | |
| Approach LOS | A | | | | | |
| Intersection Summary | | | | | | |
| Average Delay | 0.1 | | | | | |
| Intersection Capacity Utilization | 47.9% | | | ICU Level of Service | A | |
| Analysis Period (min) | 15 | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 12: Armstrong St & Sharpe St

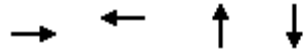
09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  |  |
| Traffic Volume (veh/h) | 36 | 0 | 10 | 0 | 0 | 93 | 0 | 732 | 14 | 37 | 642 | 0 |
| Future Volume (Veh/h) | 36 | 0 | 10 | 0 | 0 | 93 | 0 | 732 | 14 | 37 | 642 | 0 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 |
| Hourly flow rate (vph) | 41 | 0 | 11 | 0 | 0 | 106 | 0 | 832 | 16 | 42 | 730 | 0 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | | | | | |
| | | | | | | | | None | | | | None |
| Median storage veh | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| | | | | | | | | 192 | | | | 184 |
| pX, platoon unblocked | 0.77 | 0.77 | 0.87 | 0.77 | 0.77 | 0.71 | 0.87 | | | 0.71 | | |
| vC, conflicting volume | 1760 | 1662 | 365 | 1300 | 1654 | 840 | 730 | | | 848 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 1220 | 1093 | 0 | 622 | 1082 | 565 | 400 | | | 576 | | |
| tC, single (s) | 7.5 | 6.5 | 6.9 | 7.5 | 6.5 | 7.0 | 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 % | 40 | 100 | 99 | 100 | 100 | 68 | 100 | | | 94 | | |
| cM capacity (veh/h) | 69 | 156 | 953 | 272 | 158 | 329 | 1021 | | | 696 | | |
| Direction, Lane # | | | | | | | | | | | | |
| | EB 1 | WB 1 | NB 1 | SB 1 | SB 2 | | | | | | | |
| Volume Total | 52 | 106 | 848 | 285 | 487 | | | | | | | |
| Volume Left | 41 | 0 | 0 | 42 | 0 | | | | | | | |
| Volume Right | 11 | 106 | 16 | 0 | 0 | | | | | | | |
| cSH | 86 | 329 | 1700 | 696 | 1700 | | | | | | | |
| Volume to Capacity | 0.61 | 0.32 | 0.50 | 0.06 | 0.29 | | | | | | | |
| Queue Length 95th (m) | 21.2 | 10.3 | 0.0 | 1.5 | 0.0 | | | | | | | |
| Control Delay (s) | 97.8 | 21.1 | 0.0 | 2.2 | 0.0 | | | | | | | |
| Lane LOS | F | C | | A | | | | | | | | |
| Approach Delay (s) | 97.8 | 21.1 | 0.0 | 0.8 | | | | | | | | |
| Approach LOS | F | C | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 4.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 61.3% | | ICU Level of Service | | | | | B | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

Queues

13: Armstrong St & Beavis Terr/Elm Ave

09/07/2023



| Lane Group | EBT | WBT | NBT | SBT |
|------------------------|-------|-------|-------|-------|
| Lane Group Flow (vph) | 32 | 84 | 1001 | 687 |
| v/c Ratio | 0.05 | 0.15 | 0.82 | 0.56 |
| Control Delay | 6.3 | 9.7 | 20.3 | 14.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 6.3 | 9.7 | 20.3 | 14.6 |
| Queue Length 50th (m) | 0.4 | 3.7 | 40.5 | 25.2 |
| Queue Length 95th (m) | 4.3 | 10.7 | 57.8 | 36.8 |
| Internal Link Dist (m) | 111.3 | 124.3 | 159.9 | 149.4 |
| Turn Bay Length (m) | | | | |
| Base Capacity (vph) | 706 | 590 | 1401 | 1399 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.05 | 0.14 | 0.71 | 0.49 |

Intersection Summary

HCM Signalized Intersection Capacity Analysis

13: Armstrong St & Beavis Terr/Elm Ave

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | | |
|-----------------------------------|------|------|-------|------|------|------|------|------|------|------|------|---------------------------|----------------------|---|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | | | |
| Traffic Volume (vph) | 1 | 5 | 22 | 53 | 1 | 20 | 31 | 748 | 102 | 14 | 590 | 1 | | |
| Future Volume (vph) | 1 | 5 | 22 | 53 | 1 | 20 | 31 | 748 | 102 | 14 | 590 | 1 | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | |
| Total Lost time (s) | | 6.2 | | | 6.2 | | | 5.9 | | | 5.9 | | | |
| Lane Util. Factor | | 1.00 | | | 1.00 | | | 0.95 | | | 0.95 | | | |
| Frt | | 0.89 | | | 0.96 | | | 0.98 | | | 1.00 | | | |
| Flt Protected | | 1.00 | | | 0.97 | | | 1.00 | | | 1.00 | | | |
| Satd. Flow (prot) | | 1716 | | | 1714 | | | 3538 | | | 3541 | | | |
| Flt Permitted | | 0.99 | | | 0.80 | | | 0.91 | | | 0.92 | | | |
| Satd. Flow (perm) | | 1709 | | | 1425 | | | 3216 | | | 3251 | | | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | | |
| Adj. Flow (vph) | 1 | 6 | 25 | 60 | 1 | 23 | 35 | 850 | 116 | 16 | 670 | 1 | | |
| RTOR Reduction (vph) | 0 | 15 | 0 | 0 | 14 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | | |
| Lane Group Flow (vph) | 0 | 17 | 0 | 0 | 70 | 0 | 0 | 982 | 0 | 0 | 687 | 0 | | |
| Heavy Vehicles (%) | 0% | 0% | 0% | 4% | 0% | 5% | 0% | 1% | 3% | 0% | 3% | 0% | | |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | Perm | NA | | | |
| Protected Phases | | 2 | | | 6 | | | 8 | | | 4 | | | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | | | |
| Actuated Green, G (s) | | 20.1 | | | 20.1 | | | 19.3 | | | 19.3 | | | |
| Effective Green, g (s) | | 20.1 | | | 20.1 | | | 19.3 | | | 19.3 | | | |
| Actuated g/C Ratio | | 0.39 | | | 0.39 | | | 0.37 | | | 0.37 | | | |
| Clearance Time (s) | | 6.2 | | | 6.2 | | | 5.9 | | | 5.9 | | | |
| Vehicle Extension (s) | | 5.0 | | | 5.0 | | | 2.5 | | | 2.5 | | | |
| Lane Grp Cap (vph) | | 667 | | | 556 | | | 1205 | | | 1218 | | | |
| v/s Ratio Prot | | | | | | | | | | | | | | |
| v/s Ratio Perm | | 0.01 | | | 0.05 | | | 0.31 | | | 0.21 | | | |
| v/c Ratio | | 0.03 | | | 0.13 | | | 0.81 | | | 0.56 | | | |
| Uniform Delay, d1 | | 9.7 | | | 10.1 | | | 14.5 | | | 12.8 | | | |
| Progression Factor | | 1.00 | | | 1.00 | | | 1.00 | | | 1.00 | | | |
| Incremental Delay, d2 | | 0.0 | | | 0.2 | | | 4.2 | | | 0.5 | | | |
| Delay (s) | | 9.7 | | | 10.3 | | | 18.7 | | | 13.3 | | | |
| Level of Service | | A | | | B | | | B | | | B | | | |
| Approach Delay (s) | | 9.7 | | | 10.3 | | | 18.7 | | | 13.3 | | | |
| Approach LOS | | A | | | B | | | B | | | B | | | |
| Intersection Summary | | | | | | | | | | | | | | |
| HCM 2000 Control Delay | | | 16.1 | | | | | | | | | HCM 2000 Level of Service | B | |
| HCM 2000 Volume to Capacity ratio | | | 0.46 | | | | | | | | | | | |
| Actuated Cycle Length (s) | | | 51.5 | | | | | | | | 12.1 | | | |
| Intersection Capacity Utilization | | | 73.2% | | | | | | | | | | ICU Level of Service | D |
| Analysis Period (min) | | | 15 | | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | | | |

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis
 15: Georgina Ave & Main St

09/07/2023



















| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|------|-------|------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Traffic Volume (veh/h) | 4 | 258 | 7 | 32 | 376 | 7 | 12 | 3 | 30 | 4 | 4 | 5 |
| Future Volume (Veh/h) | 4 | 258 | 7 | 32 | 376 | 7 | 12 | 3 | 30 | 4 | 4 | 5 |
| Sign Control | | Free | | | Free | | | Stop | | | Stop | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 | 0.89 |
| Hourly flow rate (vph) | 4 | 290 | 8 | 36 | 422 | 8 | 13 | 3 | 34 | 4 | 4 | 6 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | None | | | None | | | | | | | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 430 | | | 298 | | | 808 | 804 | 294 | 836 | 804 | 426 |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 430 | | | 298 | | | 808 | 804 | 294 | 836 | 804 | 426 |
| 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 | | | 97 | | | 95 | 99 | 95 | 99 | 99 | 99 |
| cM capacity (veh/h) | 1140 | | | 1275 | | | 289 | 309 | 741 | 267 | 309 | 633 |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 302 | 466 | 50 | 14 | | | | | | | | |
| Volume Left | 4 | 36 | 13 | 4 | | | | | | | | |
| Volume Right | 8 | 8 | 34 | 6 | | | | | | | | |
| cSH | 1140 | 1275 | 497 | 374 | | | | | | | | |
| Volume to Capacity | 0.00 | 0.03 | 0.10 | 0.04 | | | | | | | | |
| Queue Length 95th (m) | 0.1 | 0.7 | 2.5 | 0.9 | | | | | | | | |
| Control Delay (s) | 0.1 | 0.9 | 13.1 | 15.0 | | | | | | | | |
| Lane LOS | A | A | B | B | | | | | | | | |
| Approach Delay (s) | 0.1 | 0.9 | 13.1 | 15.0 | | | | | | | | |
| Approach LOS | | | B | B | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.6 | | | | | | | | | |
| Intersection Capacity Utilization | | | 49.0% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

Intersection Sign configuration not allowed in HCM analysis.

HCM Unsignalized Intersection Capacity Analysis
 17: Ferguson Ave #2 & Broadway St

09/07/2023

| |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | |  | | |  | | |  | | |  | |
| Traffic Volume (veh/h) | 5 | 4 | 0 | 19 | 3 | 32 | 1 | 333 | 26 | 27 | 414 | 27 |
| Future Volume (Veh/h) | 5 | 4 | 0 | 19 | 3 | 32 | 1 | 333 | 26 | 27 | 414 | 27 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |
| Grade | | 0% | | | 0% | | | 0% | | | 0% | |
| Peak Hour Factor | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 | 0.95 |
| Hourly flow rate (vph) | 5 | 4 | 0 | 20 | 3 | 34 | 1 | 351 | 27 | 28 | 436 | 28 |
| Pedestrians | | | | | | | | | | | | |
| Lane Width (m) | | | | | | | | | | | | |
| Walking Speed (m/s) | | | | | | | | | | | | |
| Percent Blockage | | | | | | | | | | | | |
| Right turn flare (veh) | | | | | | | | | | | | |
| Median type | | | | | | | | None | | | None | |
| Median storage (veh) | | | | | | | | | | | | |
| Upstream signal (m) | | | | | | | | | | | | |
| pX, platoon unblocked | | | | | | | | | | | | |
| vC, conflicting volume | 908 | 886 | 450 | 874 | 886 | 364 | 464 | | | 378 | | |
| vC1, stage 1 conf vol | | | | | | | | | | | | |
| vC2, stage 2 conf vol | | | | | | | | | | | | |
| vCu, unblocked vol | 908 | 886 | 450 | 874 | 886 | 364 | 464 | | | 378 | | |
| 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 % | 98 | 99 | 100 | 92 | 99 | 95 | 100 | | | 98 | | |
| cM capacity (veh/h) | 239 | 279 | 613 | 264 | 279 | 685 | 1108 | | | 1192 | | |
| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 | | | | | | | | |
| Volume Total | 9 | 57 | 379 | 492 | | | | | | | | |
| Volume Left | 5 | 20 | 1 | 28 | | | | | | | | |
| Volume Right | 0 | 34 | 27 | 28 | | | | | | | | |
| cSH | 255 | 419 | 1108 | 1192 | | | | | | | | |
| Volume to Capacity | 0.04 | 0.14 | 0.00 | 0.02 | | | | | | | | |
| Queue Length 95th (m) | 0.8 | 3.6 | 0.0 | 0.5 | | | | | | | | |
| Control Delay (s) | 19.6 | 14.9 | 0.0 | 0.7 | | | | | | | | |
| Lane LOS | C | B | A | A | | | | | | | | |
| Approach Delay (s) | 19.6 | 14.9 | 0.0 | 0.7 | | | | | | | | |
| Approach LOS | C | B | | | | | | | | | | |
| Intersection Summary | | | | | | | | | | | | |
| Average Delay | | | 1.5 | | | | | | | | | |
| Intersection Capacity Utilization | | | 54.2% | | ICU Level of Service | | | | A | | | |
| Analysis Period (min) | | | 15 | | | | | | | | | |

HCM Unsignalized Intersection Capacity Analysis
 18: Ferguson Ave #2/Lakeshore Rd #2 & Browning St

09/07/2023



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | | ↕ | | | ↕ | |
| Sign Control | | Stop | | | Stop | | | Stop | | | Stop | |
| Traffic Volume (vph) | 2 | 0 | 2 | 7 | 3 | 5 | 4 | 388 | 4 | 5 | 463 | 8 |
| Future Volume (vph) | 2 | 0 | 2 | 7 | 3 | 5 | 4 | 388 | 4 | 5 | 463 | 8 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Hourly flow rate (vph) | 2 | 0 | 2 | 8 | 3 | 5 | 4 | 426 | 4 | 5 | 509 | 9 |

| Direction, Lane # | EB 1 | WB 1 | NB 1 | SB 1 |
|-----------------------|-------|-------|------|------|
| Volume Total (vph) | 4 | 16 | 434 | 523 |
| Volume Left (vph) | 2 | 8 | 4 | 5 |
| Volume Right (vph) | 2 | 5 | 4 | 9 |
| Hadj (s) | -0.20 | -0.09 | 0.05 | 0.01 |
| Departure Headway (s) | 5.8 | 5.9 | 4.5 | 4.4 |
| Degree Utilization, x | 0.01 | 0.03 | 0.55 | 0.64 |
| Capacity (veh/h) | 531 | 531 | 777 | 800 |
| Control Delay (s) | 8.8 | 9.0 | 12.9 | 15.1 |
| Approach Delay (s) | 8.8 | 9.0 | 12.9 | 15.1 |
| Approach LOS | A | A | B | C |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|---|
| Delay | | 14.0 | |
| Level of Service | | B | |
| Intersection Capacity Utilization | 37.9% | ICU Level of Service | A |
| Analysis Period (min) | | 15 | |



**Future Do-Nothing Scenario:
2028 SimTraffic Reports**

Arterial Level of Service: EB Whitewood Ave

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|-----------|----------------|
| Golding St | 1 | 0.5 | 14.1 | 0.2 | 50 |
| Edith St | 2 | 5.4 | 27.5 | 0.3 | 44 |
| John ST | 3 | 2.3 | 24.7 | 0.3 | 49 |
| Mary St | 4 | 0.8 | 9.6 | 0.1 | 45 |
| Paget St #1 | 5 | 9.7 | 18.5 | 0.1 | 24 |
| Armstrong St | 6 | 5.5 | 17.0 | 0.2 | 45 |
| Total | | 24.3 | 111.5 | 1.3 | 43 |

Arterial Level of Service: WB Whitewood Ave

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|------------------|------|---------------|-----------------|-----------|----------------|
| Armstrong St | 6 | 7.4 | 20.1 | 0.2 | 32 |
| Paget St #1 | 5 | 8.6 | 21.7 | 0.2 | 37 |
| Mary St | 4 | 1.8 | 10.5 | 0.1 | 43 |
| John ST | 3 | 0.5 | 9.3 | 0.1 | 46 |
| Parking Entrance | 2 | 6.1 | 29.4 | 0.3 | 41 |
| Golding St | 1 | 2.1 | 24.6 | 0.3 | 49 |
| Total | | 26.4 | 115.6 | 1.3 | 41 |

Arterial Level of Service: NB #1

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|-----------|----------------|
| Broadwood Ave | 9 | 0.8 | 16.4 | 0.2 | 39 |
| Farah Ave | 10 | 1.4 | 31.4 | 0.3 | 38 |
| | 38 | 0.2 | 7.8 | 0.1 | 38 |
| Whitewood Ave | 5 | 14.9 | 20.7 | 0.1 | 13 |
| Total | | 17.3 | 76.3 | 0.7 | 32 |

Arterial Level of Service: SB #1

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|-----------|----------------|
| Whitewood Ave | 5 | 18.2 | 32.3 | 0.2 | 18 |
| | 38 | 1.3 | 8.5 | 0.1 | 32 |
| Farah Ave | 10 | 0.3 | 5.3 | 0.1 | 56 |
| Broadwood Ave | 9 | 0.5 | 29.0 | 0.3 | 42 |
| Total | | 20.3 | 75.1 | 0.7 | 31 |

Arterial Level of Service: NB Armstrong St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|-----------|----------------|
| Whitewood Ave | 6 | 21.4 | 36.1 | 0.2 | 20 |
| Church St | 11 | 2.3 | 12.4 | 0.1 | 42 |
| | 40 | 0.1 | 1.3 | 0.0 | 53 |
| Sharpe St | 12 | 0.1 | 1.9 | 0.0 | 58 |
| Elm Ave | 13 | 11.6 | 25.2 | 0.2 | 26 |
| Total | | 35.5 | 76.8 | 0.6 | 27 |

Arterial Level of Service: SB Armstrong St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|-----------|----------------|
| Beavis Terr | 13 | 15.0 | 26.9 | 0.2 | 23 |
| Sharpe St | 12 | 4.5 | 17.7 | 0.2 | 37 |
| | 40 | 0.8 | 3.0 | 0.0 | 36 |
| Church St | 11 | 0.4 | 1.6 | 0.0 | 43 |
| Whitewood Ave | 6 | 23.3 | 33.4 | 0.1 | 15 |
| Total | | 44.1 | 82.7 | 0.5 | 24 |

Arterial Level of Service: EB Main St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|-----------------|------|---------------|-----------------|-----------|----------------|
| Rorke Ave | 14 | 6.7 | 21.0 | 0.2 | 35 |
| Georgina Ave | 15 | 2.6 | 13.0 | 0.2 | 48 |
| Ferguson Ave #2 | 16 | 0.7 | 9.8 | 0.2 | 62 |
| Total | | 10.1 | 43.8 | 0.5 | 45 |

Arterial Level of Service: WB Main St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|-----------------|------|---------------|-----------------|-----------|----------------|
| Ferguson Ave #2 | 16 | 8.2 | 19.8 | 0.2 | 30 |
| Georgina Ave | 15 | 1.5 | 10.1 | 0.2 | 61 |
| Rorke Ave | 14 | 0.5 | 12.1 | 0.2 | 51 |
| Total | | 10.2 | 41.9 | 0.5 | 44 |

Arterial Level of Service: NB #2

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|-----------|----------------|
| Main St | 16 | 7.2 | 15.9 | 0.1 | 29 |
| Broadway St | 17 | 2.4 | 7.8 | 0.1 | 42 |
| Browning St | 18 | 6.5 | 12.3 | 0.1 | 24 |
| Total | | 16.1 | 36.1 | 0.3 | 30 |

Arterial Level of Service: SB #2

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|-----------|----------------|
| Browning St | 18 | 7.0 | 16.3 | 0.1 | 31 |
| Broadway St | 17 | 2.6 | 8.5 | 0.1 | 35 |
| Main St | 16 | 7.6 | 14.2 | 0.1 | 23 |
| Total | | 17.3 | 39.1 | 0.3 | 29 |

Arterial Level of Service: EB Whitewood Ave

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|------------|----------------|
| Golding St | 1 | 0.6 | 14.2 | 0.2 | 49 |
| Edith St | 2 | 6.1 | 28.5 | 0.3 | 42 |
| John ST | 3 | 2.5 | 25.4 | 0.3 | 48 |
| Mary St | 4 | 1.0 | 9.7 | 0.1 | 44 |
| Paget St #1 | 5 | 10.0 | 18.7 | 0.1 | 24 |
| Armstrong St | 6 | 6.8 | 18.5 | 0.2 | 42 |
| Total | | 26.9 | 115.0 | 1.3 | 42 |

Arterial Level of Service: WB Whitewood Ave

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|------------------|------|---------------|-----------------|------------|----------------|
| Armstrong St | 6 | 6.1 | 18.8 | 0.2 | 34 |
| Paget St #1 | 5 | 8.9 | 23.8 | 0.2 | 34 |
| Mary St | 4 | 1.6 | 10.1 | 0.1 | 45 |
| John ST | 3 | 0.6 | 9.5 | 0.1 | 45 |
| Parking Entrance | 2 | 8.0 | 31.1 | 0.3 | 39 |
| Golding St | 1 | 2.0 | 22.8 | 0.3 | 53 |
| Total | | 27.1 | 116.1 | 1.3 | 41 |

Arterial Level of Service: NB #1

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|------------|----------------|
| Broadwood Ave | 9 | 0.7 | 16.3 | 0.2 | 39 |
| Farah Ave | 10 | 1.2 | 31.1 | 0.3 | 39 |
| | 38 | 0.2 | 7.8 | 0.1 | 38 |
| Whitewood Ave | 5 | 17.5 | 23.2 | 0.1 | 12 |
| Total | | 19.6 | 78.3 | 0.7 | 31 |

Arterial Level of Service: SB #1

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|------------|----------------|
| Whitewood Ave | 5 | 18.4 | 32.0 | 0.2 | 18 |
| | 38 | 1.1 | 7.8 | 0.1 | 35 |
| Farah Ave | 10 | 0.6 | 7.3 | 0.1 | 40 |
| Broadwood Ave | 9 | 1.4 | 31.4 | 0.3 | 38 |
| Total | | 21.5 | 78.5 | 0.7 | 30 |

Arterial Level of Service: NB Armstrong St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|-----------|----------------|
| Whitewood Ave | 6 | 29.6 | 43.9 | 0.2 | 17 |
| Church St | 11 | 2.3 | 12.5 | 0.1 | 41 |
| | 40 | 0.1 | 1.3 | 0.0 | 51 |
| Sharpe St | 12 | 0.2 | 1.9 | 0.0 | 56 |
| Elm Ave | 13 | 12.4 | 25.9 | 0.2 | 26 |
| Total | | 44.6 | 85.6 | 0.6 | 24 |

Arterial Level of Service: SB Armstrong St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|-----------|----------------|
| Beavis Terr | 13 | 15.3 | 27.3 | 0.2 | 23 |
| Sharpe St | 12 | 4.3 | 18.1 | 0.2 | 37 |
| | 40 | 0.6 | 2.8 | 0.0 | 38 |
| Church St | 11 | 0.3 | 1.5 | 0.0 | 45 |
| Whitewood Ave | 6 | 26.0 | 35.9 | 0.1 | 14 |
| Total | | 46.5 | 85.6 | 0.5 | 23 |

Arterial Level of Service: EB Main St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|-----------------|------|---------------|-----------------|-----------|----------------|
| Rorke Ave | 14 | 8.3 | 22.7 | 0.2 | 32 |
| Georgina Ave | 15 | 3.0 | 15.0 | 0.2 | 42 |
| Ferguson Ave #2 | 16 | 1.0 | 12.7 | 0.2 | 48 |
| Total | | 12.4 | 50.4 | 0.5 | 39 |

Arterial Level of Service: WB Main St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|-----------------|------|---------------|-----------------|-----------|----------------|
| Ferguson Ave #2 | 16 | 8.4 | 20.0 | 0.2 | 30 |
| Georgina Ave | 15 | 1.5 | 10.0 | 0.2 | 62 |
| Rorke Ave | 14 | 0.8 | 11.2 | 0.2 | 55 |
| Total | | 10.7 | 41.3 | 0.5 | 44 |

Arterial Level of Service: NB #2

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|-----------|----------------|
| Main St | 16 | 7.4 | 16.0 | 0.1 | 29 |
| Broadway St | 17 | 2.9 | 8.6 | 0.1 | 38 |
| Browning St | 18 | 6.5 | 12.3 | 0.1 | 24 |
| Total | | 16.8 | 36.9 | 0.3 | 29 |

Arterial Level of Service: SB #2

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|-----------|----------------|
| Browning St | 18 | 7.9 | 17.4 | 0.1 | 29 |
| Broadway St | 17 | 2.9 | 8.9 | 0.1 | 33 |
| Main St | 16 | 7.4 | 13.9 | 0.1 | 24 |
| Total | | 18.2 | 40.2 | 0.3 | 28 |

Arterial Level of Service: EB Whitewood Ave

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|------------|----------------|
| Golding St | 1 | 0.6 | 14.4 | 0.2 | 49 |
| Edith St | 2 | 6.4 | 28.8 | 0.3 | 42 |
| John ST | 3 | 2.8 | 25.2 | 0.3 | 48 |
| Mary St | 4 | 1.1 | 9.9 | 0.1 | 44 |
| Paget St #1 | 5 | 8.9 | 17.6 | 0.1 | 26 |
| Armstrong St | 6 | 7.6 | 19.0 | 0.2 | 41 |
| Total | | 27.3 | 114.9 | 1.3 | 42 |

Arterial Level of Service: WB Whitewood Ave

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|------------------|------|---------------|-----------------|------------|----------------|
| Armstrong St | 6 | 8.2 | 20.9 | 0.2 | 31 |
| Paget St #1 | 5 | 9.0 | 22.1 | 0.2 | 37 |
| Mary St | 4 | 1.7 | 10.1 | 0.1 | 45 |
| John ST | 3 | 0.5 | 9.3 | 0.1 | 46 |
| Parking Entrance | 2 | 6.7 | 29.8 | 0.3 | 41 |
| Golding St | 1 | 2.3 | 24.8 | 0.3 | 49 |
| Total | | 28.4 | 117.2 | 1.3 | 41 |

Arterial Level of Service: NB #1

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|------------|----------------|
| Broadwood Ave | 9 | 0.9 | 16.6 | 0.2 | 39 |
| Farah Ave | 10 | 1.7 | 30.8 | 0.3 | 39 |
| | 38 | 0.2 | 7.8 | 0.1 | 37 |
| Whitewood Ave | 5 | 12.7 | 17.9 | 0.1 | 15 |
| Total | | 15.6 | 73.2 | 0.7 | 33 |

Arterial Level of Service: SB #1

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|------------|----------------|
| Whitewood Ave | 5 | 24.1 | 37.8 | 0.2 | 15 |
| | 38 | 1.6 | 8.7 | 0.1 | 31 |
| Farah Ave | 10 | 0.4 | 5.3 | 0.1 | 57 |
| Broadwood Ave | 9 | 0.8 | 28.7 | 0.3 | 42 |
| Total | | 26.9 | 80.5 | 0.7 | 29 |

Arterial Level of Service: NB Armstrong St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|-----------|----------------|
| Whitewood Ave | 6 | 30.5 | 44.9 | 0.2 | 16 |
| Church St | 11 | 2.2 | 11.8 | 0.1 | 44 |
| | 40 | 0.1 | 1.3 | 0.0 | 52 |
| Sharpe St | 12 | 0.2 | 1.9 | 0.0 | 57 |
| Elm Ave | 13 | 12.4 | 26.1 | 0.2 | 25 |
| Total | | 45.4 | 86.1 | 0.6 | 24 |

Arterial Level of Service: SB Armstrong St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|-----------|----------------|
| Beavis Terr | 13 | 16.0 | 28.0 | 0.2 | 23 |
| Sharpe St | 12 | 5.2 | 18.4 | 0.2 | 36 |
| | 40 | 0.8 | 3.0 | 0.0 | 36 |
| Church St | 11 | 0.4 | 1.6 | 0.0 | 43 |
| Whitewood Ave | 6 | 25.6 | 35.4 | 0.1 | 15 |
| Total | | 48.1 | 86.4 | 0.5 | 23 |

Arterial Level of Service: EB Main St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|-----------------|------|---------------|-----------------|-----------|----------------|
| Rorke Ave | 14 | 7.8 | 22.0 | 0.2 | 33 |
| Georgina Ave | 15 | 2.9 | 13.6 | 0.2 | 46 |
| Ferguson Ave #2 | 16 | 1.0 | 10.8 | 0.2 | 57 |
| Total | | 11.7 | 46.4 | 0.5 | 42 |

Arterial Level of Service: WB Main St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|-----------------|------|---------------|-----------------|-----------|----------------|
| Ferguson Ave #2 | 16 | 9.5 | 20.8 | 0.2 | 28 |
| Georgina Ave | 15 | 1.4 | 9.5 | 0.2 | 65 |
| Rorke Ave | 14 | 0.6 | 12.4 | 0.2 | 50 |
| Total | | 11.5 | 42.6 | 0.5 | 43 |

Arterial Level of Service: NB #2

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|-----------|----------------|
| Main St | 16 | 8.3 | 16.9 | 0.1 | 27 |
| Broadway St | 17 | 2.3 | 7.4 | 0.1 | 45 |
| Browning St | 18 | 7.1 | 13.0 | 0.1 | 23 |
| Total | | 17.7 | 37.4 | 0.3 | 29 |

Arterial Level of Service: SB #2

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|-----------|----------------|
| Browning St | 18 | 7.5 | 16.9 | 0.1 | 30 |
| Broadway St | 17 | 2.7 | 8.6 | 0.1 | 35 |
| Main St | 16 | 4.7 | 10.0 | 0.1 | 33 |
| Total | | 14.9 | 35.4 | 0.3 | 32 |

Arterial Level of Service: EB Whitewood Ave

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|------------|----------------|
| Golding St | 1 | 0.9 | 14.6 | 0.2 | 48 |
| Edith St | 2 | 7.7 | 30.2 | 0.3 | 40 |
| John ST | 3 | 2.8 | 25.3 | 0.3 | 48 |
| Mary St | 4 | 1.2 | 10.0 | 0.1 | 43 |
| Paget St #1 | 5 | 8.8 | 17.4 | 0.1 | 26 |
| Armstrong St | 6 | 12.4 | 24.4 | 0.2 | 32 |
| Total | | 33.8 | 121.8 | 1.3 | 39 |

Arterial Level of Service: WB Whitewood Ave

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|------------------|------|---------------|-----------------|------------|----------------|
| Armstrong St | 6 | 6.9 | 19.6 | 0.2 | 33 |
| Paget St #1 | 5 | 10.9 | 25.1 | 0.2 | 32 |
| Mary St | 4 | 1.6 | 9.8 | 0.1 | 46 |
| John ST | 3 | 0.6 | 9.6 | 0.1 | 45 |
| Parking Entrance | 2 | 9.4 | 33.6 | 0.3 | 36 |
| Golding St | 1 | 2.3 | 22.9 | 0.3 | 53 |
| Total | | 31.8 | 120.6 | 1.3 | 40 |

Arterial Level of Service: NB #1

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|------------|----------------|
| Broadwood Ave | 9 | 0.9 | 16.5 | 0.2 | 39 |
| Farah Ave | 10 | 1.5 | 30.9 | 0.3 | 39 |
| | 38 | 0.3 | 7.9 | 0.1 | 37 |
| Whitewood Ave | 5 | 17.8 | 23.6 | 0.1 | 12 |
| Total | | 20.5 | 79.0 | 0.7 | 30 |

Arterial Level of Service: SB #1

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|------------|----------------|
| Whitewood Ave | 5 | 26.1 | 40.1 | 0.2 | 15 |
| | 38 | 1.4 | 7.6 | 0.1 | 36 |
| Farah Ave | 10 | 0.8 | 7.4 | 0.1 | 40 |
| Broadwood Ave | 9 | 1.8 | 31.3 | 0.3 | 39 |
| Total | | 30.1 | 86.4 | 0.7 | 27 |

Arterial Level of Service: NB Armstrong St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|-----------|----------------|
| Whitewood Ave | 6 | 39.6 | 53.9 | 0.2 | 14 |
| Church St | 11 | 2.5 | 12.9 | 0.1 | 40 |
| | 40 | 0.1 | 1.4 | 0.0 | 50 |
| Sharpe St | 12 | 0.2 | 2.0 | 0.0 | 56 |
| Elm Ave | 13 | 14.8 | 28.2 | 0.2 | 23 |
| Total | | 57.2 | 98.3 | 0.6 | 21 |

Arterial Level of Service: SB Armstrong St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|---------------|------|---------------|-----------------|-----------|----------------|
| Beavis Terr | 13 | 20.1 | 32.2 | 0.2 | 20 |
| Sharpe St | 12 | 5.9 | 19.6 | 0.2 | 34 |
| | 40 | 0.9 | 3.1 | 0.0 | 36 |
| Church St | 11 | 0.5 | 1.7 | 0.0 | 41 |
| Whitewood Ave | 6 | 28.0 | 37.7 | 0.1 | 14 |
| Total | | 55.4 | 94.1 | 0.5 | 21 |

Arterial Level of Service: EB Main St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|-----------------|------|---------------|-----------------|-----------|----------------|
| Rorke Ave | 14 | 10.3 | 24.4 | 0.2 | 30 |
| Georgina Ave | 15 | 3.5 | 15.3 | 0.2 | 41 |
| Ferguson Ave #2 | 16 | 1.4 | 13.3 | 0.2 | 46 |
| Total | | 15.2 | 53.0 | 0.5 | 37 |

Arterial Level of Service: WB Main St

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|-----------------|------|---------------|-----------------|-----------|----------------|
| Ferguson Ave #2 | 16 | 9.0 | 20.1 | 0.2 | 29 |
| Georgina Ave | 15 | 1.5 | 9.5 | 0.2 | 66 |
| Rorke Ave | 14 | 0.9 | 11.8 | 0.2 | 53 |
| Total | | 11.4 | 41.5 | 0.5 | 44 |

Arterial Level of Service: NB #2

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|-----------|----------------|
| Main St | 16 | 8.0 | 16.8 | 0.1 | 27 |
| Broadway St | 17 | 3.1 | 8.8 | 0.1 | 37 |
| Browning St | 18 | 7.1 | 12.8 | 0.1 | 23 |
| Total | | 18.2 | 38.3 | 0.3 | 28 |

Arterial Level of Service: SB #2

| Cross Street | Node | Delay (s/veh) | Travel time (s) | Dist (km) | Arterial Speed |
|--------------|------|---------------|-----------------|-----------|----------------|
| Browning St | 18 | 9.0 | 18.6 | 0.1 | 27 |
| Broadway St | 17 | 3.1 | 9.2 | 0.1 | 32 |
| Main St | 16 | 6.3 | 12.3 | 0.1 | 27 |
| Total | | 18.5 | 40.2 | 0.3 | 28 |