



Ref. No.171-00927 Task 2

March 29, 2017

Mr. Cesar Saleh, P. Eng.
VP Planning and Design
W.M. Fares Architects
3480 Joseph Howe Drive, 5th Floor
HALIFAX NS B3L 4H7

Sent via Email to cesar.saleh@wmfares.com

RE: Addendum Traffic Impact Statement, Proposed Multi-Tenant Residential Building with Ground Floor Commercial Space, 651 Portland Hills Drive, Dartmouth (WSP May 10, 2016)

Dear Mr. Saleh:

This Addendum to *Traffic Impact Statement, Proposed Multi-Tenant Residential Building with Ground Floor Commercial Space, 651 Portland Hills Drive, Dartmouth* (WSP, May 10, 2016; copy attached Pages B-1 to B-5) has been prepared in response to HRM comments (copy attached, Pages B-6 and B-7) regarding Case # 20573 (July 18, 2016). The Addendum includes an update to the level of service analysis for the Portland Street / Portland Hills Drive / Regal Road intersection.

Background - Ashley Blissett, P. Eng., provided comments concerning Case #20573 in a Memorandum (copy attached, Pages B-6 and B-7) to Darrell Joudrey, HRM Planner, on July 18, 2016. Item #4 of the Memorandum included four 'bullet' comments regarding *Traffic Impact Statement, Proposed Multi-Tenant Residential Building with Ground Floor Commercial Space, 651 Portland Hills Drive, Dartmouth* (WSP, May 10, 2016). We responded to the four 'bullet' comments in an Email (copy attached, Pages B-8 and B-9) to Ashley Blissett, P. Eng., on September 26, 2016.

HRM accepted our responses to Bullets #1, #2, and #4, however, a response from HRM prepared by Hugh Morrison, P. Eng., on October 16, 2016 referring to Bullet #3 indicated that "the report should include an updated level of service analysis to justify the provided response and ensure further traffic mitigation measures are not required." Bullet #3 referred to a proposed development on the west side of Portland Hills Drive opposite 651 Portland Hills Drive that was considered in *Traffic Impact Study for the Proposed Commercial and Residential Development, Southwest Corner Portland Street / Portland Hills Drive Intersection, Dartmouth, NS* (WSP, June 2014). HRM requested an update to the level of service analysis for the Portland Street / Portland Hills Drive / Regal Road intersection to ensure that further traffic mitigation would not be required.

Background Traffic Volumes - Projected 2017 AM and PM peak hour volumes with site generated trips for the Portland Street / Portland Hills Drive / Regal Road intersection included in *Traffic Impact Study for the Proposed Commercial and Residential Development, Southwest Corner Portland Street / Portland Hills Drive Intersection, Dartmouth, NS* (WSP, June 2014) have been considered as background volumes for this analysis. The 2017 background volumes are illustrated diagrammatically Figure A-1, Boxes A and B.

Distribution and Assignment of Site Trips for 651 Portland Hills Drive - Trip generation estimates for the proposed development are included in *Traffic Impact Statement, Proposed Multi-Tenant Residential Building with Ground Floor Commercial Space, 651 Portland Hills Drive, Dartmouth* (WSP, May 10, 2016). It is estimated that the proposed mid-rise apartment building with ground level commercial space will generate about 36 two-way vehicle trips (16 entering and 20 exiting) during the AM peak hour and 59 two-way vehicle trips (30 entering and 29 exiting) during the PM peak hour.

Site generated trips were distributed with 20% south on Portland Hills Drive and 80% north on Portland Hills Drive to the Portland Street / Portland Hills Drive / Regal Road intersection. Site trips were assigned to various turning movements at the intersection in relation to background volume turning movements. Assigned AM and PM site generated trips at the intersection are illustrated diagrammatically Figure A-1, Boxes C and D.

Projected 2017 Volumes that Include Trips from 651 Portland Hills Drive - Site generated trips (Figure A-1, Boxes C and D) have been added to 2017 background volumes (Figure A-1, Boxes A and B) to provide projected 2017 AM and PM peak hourly volumes at the Portland Street / Portland Hills Drive / Regal Road intersection which are illustrated diagrammatically Figure A-1, Boxes E and F.

Intersection Level of Service Analysis - Synchro 9.0 software has been used for performance evaluation of projected 2017 AM and PM peak hour volumes for the Portland Street @ Portland Hills Drive / Regal Road intersection, both without and with addition of site generated trips from 651 Portland Hills Drive. LOS analysis sheets are included in Appendix A, Pages A-2 to A-7 and results are summarized in Table 1.

The following analyses have been completed:

1. Existing intersection lanes and 100 second actuated cycle length (Pages A-2 and A-3) for projected 2017 volumes without site trips from 651 Portland Hills Drive.
2. Existing intersection lanes and 100 second actuated cycle length (Pages A-4 and A-5) for projected 2017 volumes with site trips from 651 Portland Hills Drive.
3. Added eastbound right turn lane and 100 second actuated cycle length (Pages A-6 and A-7) for projected 2017 volumes with site trips from 651 Portland Hills Drive.

HRM Critical Limits for Intersection Performance Evaluation - The HRM *Guidelines for Preparation of Transportation Impact Studies* indicate the following critical limits for intersection evaluation:

1. the v/c ratio of an intersection exceeds 0.85;
2. the v/c ratio of an individual through movement or shared through / turning movement exceeds 0.85;
3. the v/c ratio of an exclusive turning movement exceeds 1.0;
4. an exclusive turning movement generates queues which exceed the available turning lane storage space.

| Table 1 - LOS for Portland Street @ Portland Hills Drive / Regal Road Intersection | | | | | | | | | | |
|---|--|-------|------|------|-------|------|-------|------|------------------|-------|
| LOS Criteria | Control Delay (sec/veh), v/c Ratio, and 95% Queue (m) by Intersection Movement | | | | | | | | Intersection LOS | |
| | EB-L | EB-T | EB-R | WB-L | WB-TR | NB-L | NB-TR | SB-L | | SB-TR |
| AM Peak Hour - Projected 2017 Background Volumes - Existing Intersection with 100 sec. Cycle (Page A-2) | | | | | | | | | | |
| Delay | 6.0 | 14.0 | | 7.7 | 17.6 | 42.4 | 14.5 | 27.6 | 17.3 | 17.5 |
| v/c | 0.02 | 0.31 | | 0.39 | 0.80 | 0.65 | 0.31 | 0.08 | 0.20 | - |
| Queue | 1.4 | 40.6 | | 26.5 | 219.3 | 49.4 | 20.9 | 9.0 | 16.3 | - |
| AM Peak Hour - Projected 2017 Volumes with Site - Existing Intersection with 100 sec. Cycle (Page A-4) | | | | | | | | | | |
| Delay | 6.2 | 14.2 | | 8.0 | 17.9 | 42.3 | 14.0 | 27.4 | 17.5 | 17.7 |
| v/c | 0.02 | 0.32 | | 0.40 | 0.81 | 0.65 | 0.34 | 0.08 | 0.20 | - |
| Queue | 1.4 | 41.0 | | 27.3 | 219.3 | 50.3 | 22.3 | 9.0 | 16.7 | - |
| AM Peak Hour - Projected 2017 Volumes with Site - Added EB Right Turn Lane with 100 sec. Cycle (Page A-6) | | | | | | | | | | |
| Delay | 6.2 | 14.3 | 1.5 | 7.7 | 17.9 | 42.3 | 14.0 | 27.4 | 17.5 | 17.5 |
| v/c | 0.02 | 0.28 | 0.06 | 0.38 | 0.81 | 0.65 | 0.34 | 0.08 | 0.20 | - |
| Queue | 1.4 | 37.6 | 2.9 | 27.3 | 219.3 | 50.3 | 22.3 | 9.0 | 16.7 | - |
| PM Peak Hour - Projected 2017 Background Volumes - Existing Intersection with 100 sec. Cycle (Page A-3) | | | | | | | | | | |
| Delay | 5.4 | 23.1 | | 21.5 | 9.7 | 39.8 | 22.2 | 81.2 | 29.1 | 21.1 |
| v/c | 0.03 | 0.84 | | 0.56 | 0.36 | 0.44 | 0.70 | 0.74 | 0.20 | - |
| Queue | 3.1 | 197.0 | | 29.2 | 63.0 | 30.8 | 44.2 | 27.3 | 19.0 | - |
| PM Peak Hour - Projected 2017 Volumes with Site - Existing Intersection with 100 sec. Cycle (Page A-5) | | | | | | | | | | |
| Delay | 5.6 | 24.2 | | 25.4 | 10.1 | 39.3 | 24.7 | 82.9 | 29.6 | 22.3 |
| v/c | 0.03 | 0.85 | | 0.61 | 0.37 | 0.44 | 0.74 | 0.75 | 0.21 | - |
| Queue | 3.1 | 199.0 | | 32.8 | 63.0 | 32.0 | 50.5 | 28.5 | 20.0 | - |
| PM Peak Hour - Projected 2017 Volumes with Site - Added EB Right Turn Lane with 100 sec. Cycle (Page A-7) | | | | | | | | | | |
| Delay | 5.6 | 22.4 | 3.7 | 24.3 | 10.1 | 39.0 | 24.5 | 80.0 | 29.4 | 20.8 |
| v/c | 0.03 | 0.81 | 0.10 | 0.60 | 0.37 | 0.44 | 0.73 | 0.73 | 0.20 | - |
| Queue | 3.1 | 165.0 | 7.7 | 32.3 | 63.0 | 32.0 | 50.5 | 28.3 | 20.0 | - |

Summary Level of Service Analysis - Level of service (LOS) analysis (Table 1) for the Portland Street @ Portland Hills Drive / Regal Road intersection indicates the following:

1. The intersection is expected to provide good overall performance for projected 2017 volumes without added site trips from 651 Portland Hills Drive.
2. The existing intersection configuration will continue to achieve good overall performance and all approach movements will be within HRM critical limits for projected 2017 volumes that include site generated trips from 651 Portland Hills Drive.
3. The addition by HRM of a future right turn lane on the eastbound Portland Street approach would add capacity to that approach which could reduce the v/c ratio from 0.85 to 0.81 during the PM peak hour.

Conclusion - The moderate number of AM and PM peak hourly trips estimated to be generated by the proposed development at 651 Portland Hills Drive will not have any cumulative effect on the level of performance of the Portland Street @ Portland Hills Drive / Regal Road intersection to analyses previously considered for the proposed development on the west side of Portland Hills Drive opposite 651 Portland Hills Drive.

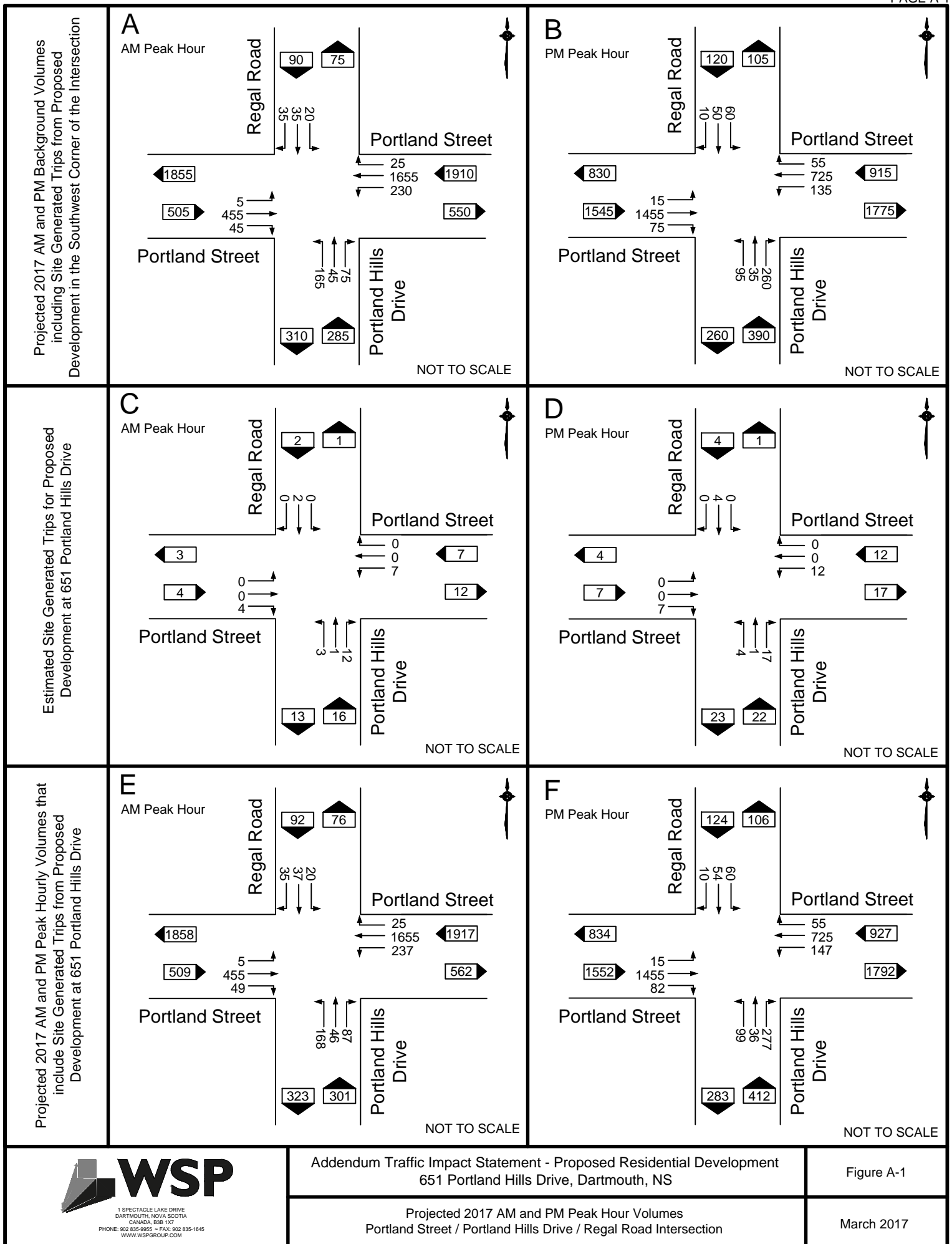
If you have any questions, please contact me by telephone at 902-443-7747 or Email to ken.obrien@wspgroup.com.

Sincerely,
Originally Signed

Ken O'Brien, P. Eng.
Senior Traffic Engineer
WSP Canada Inc.























Attachments: Appendix A - Volume Figures and Level of Service Analysis, Pages A-1 to A-7
Appendix B - Traffic Impact Statement - May 2016, Pages B-1 to B-5
- HRM Comments - July 2016, Pages B-6 and B-7
- WSP Response to HRM Comments - September 2016, Pages B-8 and B-9



1: Portland Hills Dr/Regal Rd & Portland St

2017 AM Peak Hour without Site Development

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Volume (vph) | 5 | 455 | 45 | 230 | 1655 | 25 | 165 | 45 | 75 | 20 | 35 | 35 |
| Future Volume (vph) | 5 | 455 | 45 | 230 | 1655 | 25 | 165 | 45 | 75 | 20 | 35 | 35 |
| Satd. Flow (prot) | 1789 | 3532 | 0 | 1789 | 3571 | 0 | 1789 | 1706 | 0 | 1789 | 1742 | 0 |
| Flt Permitted | 0.095 | | | 0.406 | | | 0.709 | | | 0.676 | | |
| Satd. Flow (perm) | 179 | 3532 | 0 | 765 | 3571 | 0 | 1335 | 1706 | 0 | 1273 | 1742 | 0 |
| Satd. Flow (RTOR) | | 15 | | | 2 | | | 79 | | | 37 | |
| Lane Group Flow (vph) | 5 | 526 | 0 | 242 | 1768 | 0 | 174 | 126 | 0 | 21 | 74 | 0 |
| Turn Type | pm+pt | NA | | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Total Split (s) | 14.0 | 56.0 | | 14.0 | 56.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Lost Time (s) | 4.0 | 6.5 | | 4.0 | 6.5 | | 6.5 | 6.5 | | 6.5 | 6.5 | |
| Act Effct Green (s) | 48.3 | 38.7 | | 54.2 | 50.0 | | 16.2 | 16.2 | | 16.2 | 16.2 | |
| Actuated g/C Ratio | 0.59 | 0.48 | | 0.67 | 0.62 | | 0.20 | 0.20 | | 0.20 | 0.20 | |
| v/c Ratio | 0.02 | 0.31 | | 0.39 | 0.80 | | 0.65 | 0.31 | | 0.08 | 0.20 | |
| Control Delay | 6.0 | 14.0 | | 7.7 | 17.6 | | 42.4 | 14.4 | | 27.6 | 17.3 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 6.0 | 14.0 | | 7.7 | 17.6 | | 42.4 | 14.4 | | 27.6 | 17.3 | |
| LOS | A | B | | A | B | | D | B | | C | B | |
| Approach Delay | | 13.9 | | | 16.4 | | | 30.7 | | | 19.6 | |
| Approach LOS | | B | | | B | | | C | | | B | |
| Queue Length 50th (m) | 0.3 | 24.7 | | 12.3 | 90.4 | | 23.9 | 5.8 | | 2.6 | 4.5 | |
| Queue Length 95th (m) | 1.4 | 40.6 | | 26.5 | #219.3 | | 49.4 | 20.9 | | 9.0 | 16.3 | |
| Internal Link Dist (m) | | 293.1 | | | 334.4 | | | 223.8 | | | 202.8 | |
| Turn Bay Length (m) | 50.0 | | | 80.0 | | | 40.0 | | | 10.0 | | |
| Base Capacity (vph) | 313 | 2180 | | 637 | 2199 | | 390 | 554 | | 372 | 535 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.02 | 0.24 | | 0.38 | 0.80 | | 0.45 | 0.23 | | 0.06 | 0.14 | |

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 81.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 17.5

Intersection LOS: B

Intersection Capacity Utilization 82.4%







ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.





















Queue shown is maximum after two cycles.

Splits and Phases: 1: Portland Hills Dr/Regal Rd & Portland St

| | | |
|--|--|--|
|  Ø1 |  Ø2 |  Ø4 |
| 14 s | 56 s | 30 s |
|  Ø5 |  Ø6 |  Ø8 |
| 14 s | 56 s | 30 s |

1: Portland Hills Dr/Regal Rd & Portland St

2017 PM Peak Hour With Site Development

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Volume (vph) | 15 | 1455 | 74 | 135 | 725 | 55 | 95 | 33 | 258 | 60 | 50 | 10 |
| Future Volume (vph) | 15 | 1455 | 74 | 135 | 725 | 55 | 95 | 33 | 258 | 60 | 50 | 10 |
| Satd. Flow (prot) | 1789 | 3553 | 0 | 1789 | 3539 | 0 | 1789 | 1633 | 0 | 1789 | 1834 | 0 |
| Flt Permitted | 0.342 | | | 0.074 | | | 0.715 | | | 0.270 | | |
| Satd. Flow (perm) | 644 | 3553 | 0 | 139 | 3539 | 0 | 1347 | 1633 | 0 | 509 | 1834 | 0 |
| Satd. Flow (RTOR) | | 7 | | | 11 | | | 197 | | | 10 | |
| Lane Group Flow (vph) | 16 | 1610 | 0 | 142 | 821 | 0 | 100 | 307 | 0 | 63 | 64 | 0 |
| Turn Type | pm+pt | NA | | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Total Split (s) | 14.0 | 56.0 | | 14.0 | 56.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Lost Time (s) | 4.0 | 6.5 | | 4.0 | 6.5 | | 6.5 | 6.5 | | 6.5 | 6.5 | |
| Act Effct Green (s) | 57.1 | 47.5 | | 62.0 | 55.9 | | 14.8 | 14.8 | | 14.8 | 14.8 | |
| Actuated g/C Ratio | 0.65 | 0.54 | | 0.71 | 0.64 | | 0.17 | 0.17 | | 0.17 | 0.17 | |
| v/c Ratio | 0.03 | 0.84 | | 0.56 | 0.36 | | 0.44 | 0.70 | | 0.74 | 0.20 | |
| Control Delay | 5.4 | 23.1 | | 21.5 | 9.7 | | 39.8 | 22.2 | | 81.2 | 29.1 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 5.4 | 23.1 | | 21.5 | 9.7 | | 39.8 | 22.2 | | 81.2 | 29.1 | |
| LOS | A | C | | C | A | | D | C | | F | C | |
| Approach Delay | | 22.9 | | | 11.5 | | | 26.5 | | | 55.0 | |
| Approach LOS | | C | | | B | | | C | | | D | |
| Queue Length 50th (m) | 0.7 | 108.3 | | 6.6 | 25.3 | | 15.5 | 17.0 | | 10.4 | 8.0 | |
| Queue Length 95th (m) | 3.1 | #197.0 | | 29.2 | 63.0 | | 30.8 | 44.2 | | #27.3 | 19.0 | |
| Internal Link Dist (m) | | 293.1 | | | 334.4 | | | 223.8 | | | 202.8 | |
| Turn Bay Length (m) | 50.0 | | | 80.0 | | | 40.0 | | | 10.0 | | |
| Base Capacity (vph) | 573 | 2035 | | 289 | 2257 | | 365 | 587 | | 138 | 505 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.03 | 0.79 | | 0.49 | 0.36 | | 0.27 | 0.52 | | 0.46 | 0.13 | |

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 87.8

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 21.1

Intersection Capacity Utilization 93.1%

Analysis Period (min) 15







Intersection LOS: C

ICU Level of Service F

95th percentile volume exceeds capacity, queue may be longer.





















Queue shown is maximum after two cycles.

Splits and Phases: 1: Portland Hills Dr/Regal Rd & Portland St

| | | |
|--|--|--|
|  Ø1 |  Ø2 |  Ø4 |
| 14 s | 56 s | 30 s |
|  Ø5 |  Ø6 |  Ø8 |
| 14 s | 56 s | 30 s |

1: Portland Hills Dr/Regal Rd & Portland St

2017 AM Peak Hour with Site Development

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Volume (vph) | 5 | 455 | 49 | 237 | 1655 | 25 | 168 | 46 | 87 | 20 | 37 | 35 |
| Future Volume (vph) | 5 | 455 | 49 | 237 | 1655 | 25 | 168 | 46 | 87 | 20 | 37 | 35 |
| Satd. Flow (prot) | 1789 | 3525 | 0 | 1789 | 3571 | 0 | 1789 | 1697 | 0 | 1789 | 1746 | 0 |
| Flt Permitted | 0.095 | | | 0.402 | | | 0.708 | | | 0.668 | | |
| Satd. Flow (perm) | 179 | 3525 | 0 | 757 | 3571 | 0 | 1333 | 1697 | 0 | 1258 | 1746 | 0 |
| Satd. Flow (RTOR) | | 16 | | | 2 | | | 90 | | | 37 | |
| Lane Group Flow (vph) | 5 | 531 | 0 | 249 | 1768 | 0 | 177 | 140 | 0 | 21 | 76 | 0 |
| Turn Type | pm+pt | NA | | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Total Split (s) | 14.0 | 56.0 | | 14.0 | 56.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Lost Time (s) | 4.0 | 6.5 | | 4.0 | 6.5 | | 6.5 | 6.5 | | 6.5 | 6.5 | |
| Act Effct Green (s) | 48.2 | 38.6 | | 54.2 | 50.0 | | 16.6 | 16.6 | | 16.6 | 16.6 | |
| Actuated g/C Ratio | 0.59 | 0.47 | | 0.67 | 0.61 | | 0.20 | 0.20 | | 0.20 | 0.20 | |
| v/c Ratio | 0.02 | 0.32 | | 0.40 | 0.81 | | 0.65 | 0.34 | | 0.08 | 0.20 | |
| Control Delay | 6.2 | 14.2 | | 8.0 | 17.9 | | 42.3 | 14.0 | | 27.4 | 17.5 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 6.2 | 14.2 | | 8.0 | 17.9 | | 42.3 | 14.0 | | 27.4 | 17.5 | |
| LOS | A | B | | A | B | | D | B | | C | B | |
| Approach Delay | | 14.1 | | | 16.7 | | | 29.8 | | | 19.7 | |
| Approach LOS | | B | | | B | | | C | | | B | |
| Queue Length 50th (m) | 0.3 | 25.1 | | 12.8 | 91.0 | | 24.3 | 6.2 | | 2.6 | 4.8 | |
| Queue Length 95th (m) | 1.4 | 41.0 | | 27.3 | #219.3 | | 50.3 | 22.3 | | 9.0 | 16.7 | |
| Internal Link Dist (m) | | 293.1 | | | 334.4 | | | 223.8 | | | 202.8 | |
| Turn Bay Length (m) | 50.0 | | | 80.0 | | | 40.0 | | | 10.0 | | |
| Base Capacity (vph) | 311 | 2166 | | 630 | 2189 | | 387 | 557 | | 366 | 534 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.02 | 0.25 | | 0.40 | 0.81 | | 0.46 | 0.25 | | 0.06 | 0.14 | |

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 81.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 17.7

Intersection Capacity Utilization 83.2%

Analysis Period (min) 15







Intersection LOS: B

ICU Level of Service E

95th percentile volume exceeds capacity, queue may be longer.





















Queue shown is maximum after two cycles.

Splits and Phases: 1: Portland Hills Dr/Regal Rd & Portland St

| | | |
|--|--|--|
|  Ø1 |  Ø2 |  Ø4 |
| 14 s | 56 s | 30 s |
|  Ø5 |  Ø6 |  Ø8 |
| 14 s | 56 s | 30 s |

1: Portland Hills Dr/Regal Rd & Portland St

2017 PM Peak Hour with Site Development

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  | |  |  | |  |  | |  |  | |
| Traffic Volume (vph) | 15 | 1455 | 82 | 147 | 725 | 55 | 99 | 36 | 277 | 60 | 54 | 10 |
| Future Volume (vph) | 15 | 1455 | 82 | 147 | 725 | 55 | 99 | 36 | 277 | 60 | 54 | 10 |
| Satd. Flow (prot) | 1789 | 3550 | 0 | 1789 | 3539 | 0 | 1789 | 1633 | 0 | 1789 | 1838 | 0 |
| Flt Permitted | 0.342 | | | 0.074 | | | 0.713 | | | 0.256 | | |
| Satd. Flow (perm) | 644 | 3550 | 0 | 139 | 3539 | 0 | 1343 | 1633 | 0 | 482 | 1838 | 0 |
| Satd. Flow (RTOR) | | 8 | | | 11 | | | 197 | | | 9 | |
| Lane Group Flow (vph) | 16 | 1618 | 0 | 155 | 821 | 0 | 104 | 330 | 0 | 63 | 68 | 0 |
| Turn Type | pm+pt | NA | | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | | 6 | | | 8 | | | 4 | | |
| Total Split (s) | 14.0 | 56.0 | | 14.0 | 56.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Lost Time (s) | 4.0 | 6.5 | | 4.0 | 6.5 | | 6.5 | 6.5 | | 6.5 | 6.5 | |
| Act Effct Green (s) | 57.3 | 47.7 | | 62.3 | 56.1 | | 15.6 | 15.6 | | 15.6 | 15.6 | |
| Actuated g/C Ratio | 0.64 | 0.54 | | 0.70 | 0.63 | | 0.18 | 0.18 | | 0.18 | 0.18 | |
| v/c Ratio | 0.03 | 0.85 | | 0.61 | 0.37 | | 0.44 | 0.74 | | 0.75 | 0.21 | |
| Control Delay | 5.6 | 24.2 | | 25.4 | 10.1 | | 39.3 | 24.7 | | 82.9 | 29.6 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 5.6 | 24.2 | | 25.4 | 10.1 | | 39.3 | 24.7 | | 82.9 | 29.6 | |
| LOS | A | C | | C | B | | D | C | | F | C | |
| Approach Delay | | 24.0 | | | 12.5 | | | 28.2 | | | 55.2 | |
| Approach LOS | | C | | | B | | | C | | | E | |
| Queue Length 50th (m) | 0.7 | 115.6 | | 9.5 | 26.9 | | 16.3 | 21.1 | | 10.5 | 8.8 | |
| Queue Length 95th (m) | 3.1 | #199.0 | | 32.8 | 63.0 | | 32.0 | 50.5 | | #28.5 | 20.0 | |
| Internal Link Dist (m) | | 293.1 | | | 334.4 | | | 223.8 | | | 202.8 | |
| Turn Bay Length (m) | 50.0 | | | 80.0 | | | 40.0 | | | 10.0 | | |
| Base Capacity (vph) | 567 | 2009 | | 285 | 2239 | | 360 | 582 | | 129 | 499 | |
| Starvation Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.03 | 0.81 | | 0.54 | 0.37 | | 0.29 | 0.57 | | 0.49 | 0.14 | |

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 88.9

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 22.3

Intersection Capacity Utilization 95.4%

Analysis Period (min) 15







Intersection LOS: C

ICU Level of Service F

95th percentile volume exceeds capacity, queue may be longer.






















Queue shown is maximum after two cycles.

Splits and Phases: 1: Portland Hills Dr/Regal Rd & Portland St

| | | |
|--|--|--|
|  Ø1 |  Ø2 |  Ø4 |
| 14 s | 56 s | 30 s |
|  Ø5 |  Ø6 |  Ø8 |
| 14 s | 56 s | 30 s |

1: Portland Hills Dr/Regal Rd & Portland St

2017 AM Peak Hour with Site Development - Added EB RT Lane

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Traffic Volume (vph) | 5 | 455 | 49 | 237 | 1655 | 25 | 168 | 46 | 87 | 20 | 37 | 35 |
| Future Volume (vph) | 5 | 455 | 49 | 237 | 1655 | 25 | 168 | 46 | 87 | 20 | 37 | 35 |
| Satd. Flow (prot) | 1789 | 3579 | 1601 | 1789 | 3571 | 0 | 1789 | 1697 | 0 | 1789 | 1746 | 0 |
| Flt Permitted | 0.095 | | | 0.432 | | | 0.708 | | | 0.668 | | |
| Satd. Flow (perm) | 179 | 3579 | 1601 | 814 | 3571 | 0 | 1333 | 1697 | 0 | 1258 | 1746 | 0 |
| Satd. Flow (RTOR) | | | 82 | | 2 | | | 90 | | | 37 | |
| Lane Group Flow (vph) | 5 | 479 | 52 | 249 | 1768 | 0 | 177 | 140 | 0 | 21 | 76 | 0 |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Total Split (s) | 14.0 | 56.0 | 56.0 | 14.0 | 56.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Lost Time (s) | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | | 6.5 | 6.5 | | 6.5 | 6.5 | |
| Act Effct Green (s) | 48.2 | 38.6 | 38.6 | 54.2 | 50.0 | | 16.6 | 16.6 | | 16.6 | 16.6 | |
| Actuated g/C Ratio | 0.59 | 0.47 | 0.47 | 0.67 | 0.61 | | 0.20 | 0.20 | | 0.20 | 0.20 | |
| v/c Ratio | 0.02 | 0.28 | 0.06 | 0.38 | 0.81 | | 0.65 | 0.34 | | 0.08 | 0.20 | |
| Control Delay | 6.2 | 14.3 | 1.5 | 7.7 | 17.9 | | 42.3 | 14.0 | | 27.4 | 17.5 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 6.2 | 14.3 | 1.5 | 7.7 | 17.9 | | 42.3 | 14.0 | | 27.4 | 17.5 | |
| LOS | A | B | A | A | B | | D | B | | C | B | |
| Approach Delay | | 13.0 | | | 16.7 | | | 29.8 | | | 19.7 | |
| Approach LOS | | B | | | B | | | C | | | B | |
| Queue Length 50th (m) | 0.3 | 23.0 | 0.0 | 12.8 | 91.0 | | 24.3 | 6.2 | | 2.6 | 4.8 | |
| Queue Length 95th (m) | 1.4 | 37.6 | 2.9 | 27.3 | #219.3 | | 50.3 | 22.3 | | 9.0 | 16.7 | |
| Internal Link Dist (m) | | 293.1 | | | 334.4 | | | 223.8 | | | 202.8 | |
| Turn Bay Length (m) | 50.0 | | 30.0 | 80.0 | | | 40.0 | | | 10.0 | | |
| Base Capacity (vph) | 311 | 2193 | 1013 | 661 | 2189 | | 387 | 557 | | 366 | 534 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.02 | 0.22 | 0.05 | 0.38 | 0.81 | | 0.46 | 0.25 | | 0.06 | 0.14 | |

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 81.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 17.5

Intersection LOS: B

Intersection Capacity Utilization 83.2%







ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.






















Queue shown is maximum after two cycles.

Splits and Phases: 1: Portland Hills Dr/Regal Rd & Portland St

| | | |
|--|--|--|
|  Ø1 |  Ø2 |  Ø4 |
| 14 s | 56 s | 30 s |
|  Ø5 |  Ø6 |  Ø8 |
| 14 s | 56 s | 30 s |

1: Portland Hills Dr/Regal Rd & Portland St

2017 PM Peak Hour with Site Development - Added EB RT Lane

| |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|---|---|---|---|---|---|--|---|---|---|---|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  |  |  |  |  | |  |  | |  |  | |
| Traffic Volume (vph) | 15 | 1455 | 82 | 147 | 725 | 55 | 99 | 36 | 277 | 60 | 54 | 10 |
| Future Volume (vph) | 15 | 1455 | 82 | 147 | 725 | 55 | 99 | 36 | 277 | 60 | 54 | 10 |
| Satd. Flow (prot) | 1789 | 3579 | 1601 | 1789 | 3539 | 0 | 1789 | 1633 | 0 | 1789 | 1838 | 0 |
| Flt Permitted | 0.342 | | | 0.076 | | | 0.713 | | | 0.258 | | |
| Satd. Flow (perm) | 644 | 3579 | 1601 | 143 | 3539 | 0 | 1343 | 1633 | 0 | 486 | 1838 | 0 |
| Satd. Flow (RTOR) | | | 82 | | 11 | | | 197 | | | 9 | |
| Lane Group Flow (vph) | 16 | 1532 | 86 | 155 | 821 | 0 | 104 | 330 | 0 | 63 | 68 | 0 |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | 5 | 2 | | 1 | 6 | | | 8 | | | 4 | |
| Permitted Phases | 2 | | 2 | 6 | | | 8 | | | 4 | | |
| Total Split (s) | 14.0 | 56.0 | 56.0 | 14.0 | 56.0 | | 30.0 | 30.0 | | 30.0 | 30.0 | |
| Total Lost Time (s) | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | | 6.5 | 6.5 | | 6.5 | 6.5 | |
| Act Effct Green (s) | 55.9 | 46.2 | 46.2 | 60.9 | 54.8 | | 15.5 | 15.5 | | 15.5 | 15.5 | |
| Actuated g/C Ratio | 0.64 | 0.53 | 0.53 | 0.70 | 0.63 | | 0.18 | 0.18 | | 0.18 | 0.18 | |
| v/c Ratio | 0.03 | 0.81 | 0.10 | 0.60 | 0.37 | | 0.44 | 0.73 | | 0.73 | 0.20 | |
| Control Delay | 5.6 | 22.4 | 3.7 | 24.3 | 10.1 | | 39.0 | 24.5 | | 80.0 | 29.4 | |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 5.6 | 22.4 | 3.7 | 24.3 | 10.1 | | 39.0 | 24.5 | | 80.0 | 29.4 | |
| LOS | A | C | A | C | B | | D | C | | E | C | |
| Approach Delay | | 21.3 | | | 12.4 | | | 27.9 | | | 53.7 | |
| Approach LOS | | C | | | B | | | C | | | D | |
| Queue Length 50th (m) | 0.7 | 104.7 | 0.3 | 8.9 | 26.9 | | 16.3 | 21.1 | | 10.5 | 8.8 | |
| Queue Length 95th (m) | 3.1 | 165.0 | 7.7 | 32.3 | 63.0 | | 32.0 | 50.5 | | #28.3 | 20.0 | |
| Internal Link Dist (m) | | 293.1 | | | 334.4 | | | 223.8 | | | 202.8 | |
| Turn Bay Length (m) | 50.0 | | 30.0 | 80.0 | | | 40.0 | | | 10.0 | | |
| Base Capacity (vph) | 567 | 2068 | 959 | 291 | 2261 | | 368 | 591 | | 133 | 510 | |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Reduced v/c Ratio | 0.03 | 0.74 | 0.09 | 0.53 | 0.36 | | 0.28 | 0.56 | | 0.47 | 0.13 | |

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 87.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 20.8

Intersection LOS: C

Intersection Capacity Utilization 92.8%







ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Portland Hills Dr/Regal Rd & Portland St

| | | |
|--|--|--|
|  Ø1 |  Ø2 |  Ø4 |
| 14 s | 56 s | 30 s |
|  Ø5 |  Ø6 |  Ø8 |
| 14 s | 56 s | 30 s |



Ref. No. 161-04044 Task 2

May 10, 2016

Mr. Cesar Saleh, P. Eng.
VP Planning and Design
W.M. Fares Group
3480 Joseph Howe Drive, 5th Floor
HALIFAX NS B3L 4H7

RE: Traffic Impact Statement, Proposed Multi-Tenant Residential Building with Ground Floor Commercial Space, 651 Portland Hills Drive, Dartmouth

Dear Saleh:

This is the Traffic Impact Statement you have requested for the proposed multi-unit residential building with ground floor commercial space on a vacant lot at 651 Portland Hills Drive (Figure 1).

Description of Development Site - The proposed development will include approximately 70 apartment units, 14,000 square feet of commercial space, with approximately 70 underground parking spaces and 77 exterior parking spaces. The development will be accessed by an existing driveway on Portland Hills Drive for Portland Hills Centre at 635 and 639 Portland Hills Drive, a access at an existing curb cut on the Portland Hills Park & Ride driveway, and an additional one-way driveway with sidewalk from the site to the Park & Ride lot.

The driveway on Portland Hills Drive will provide access to the underground parking spaces, and approximately 55 of the exterior parking spaces. The access on the Portland Hills Park & Ride driveway will provide access for approximately 12 exterior parking spaces.

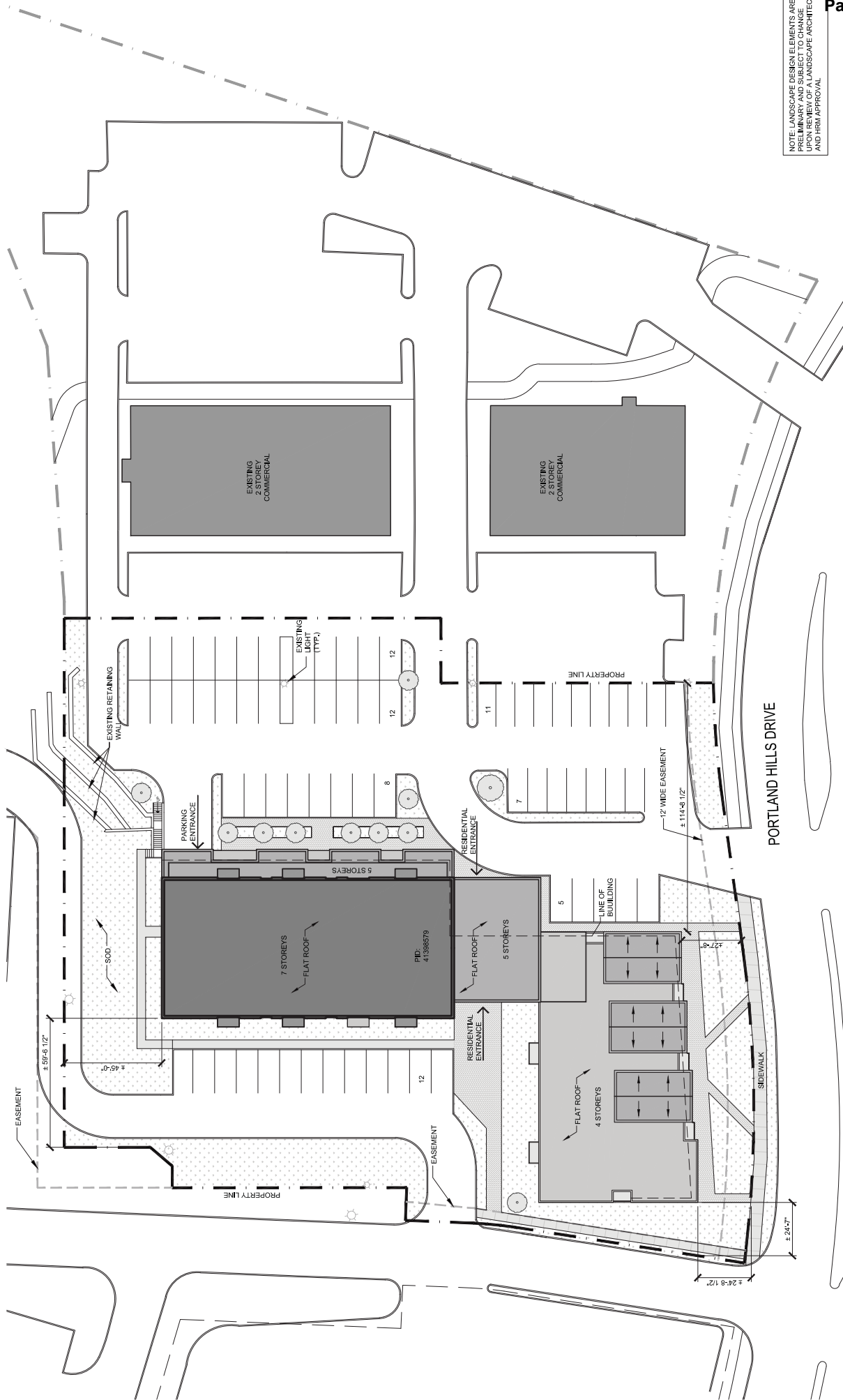
Portland Hills Drive is a two lane collector street with sidewalks on both sides. The street has a grassed center median with a southbound left turn lane at the existing site driveway. Visibility is good on both approaches to the driveway as illustrated on Photos 1 and 2. A manual count obtained by WSP Canada Inc. on Thursday, October 30, 2014, north of the site driveway indicated a two-way Portland Hills Drive volume of 530 vehicles per hour (vph) during the PM peak hour. The AM peak hourly volume is expected to be similar to the PM volume at this location.



Photo 1 - Looking south on Portland Hills Drive from the site driveway. Portland Hills Centre, 635 Portland Hills Drive, is at the left of the photo.



Photo 2 - Looking north on Portland Hills Drive towards the Portland Hills Park & Ride driveway and Portland Street from the site driveway.



NOTE: LANDSCAPE DESIGN ELEMENTS ARE
PRELIMINARY AND SUBJECT TO CHANGE
UPON REVIEW OF A LANDSCAPE ARCHITECT
AND HRM APPROVAL

Pa



Project No.: 2015.01
Scale: 1" = 40'-0"
Date: 15 Apr 2016

PORTLAND HILLS
DARTMOUTH, NS

SITE PLAN

WM FARES
ARCHITECTS

SDP

Portland Hills Park & Ride Access - The Park & Ride driveway extends easterly from its intersection with Portland Hills Drive just south of Portland Street to the Portland Hills Transit Terminal. The Park & Ride driveway is similar to a local two-lane street with curbs on both sides. A site access is proposed at an existing curb cut opposite the driveway to Petworks Veterinary Hospital. Visibility is good on both approaches to the proposed site access location as illustrated in Photos 3 and 4.



Photo 3 - Looking towards Portland Hills Drive from the proposed site access on the Portland Hills Park & Ride driveway.

A manual count obtained by WSP Canada Inc. on Thursday, October 30, 2014, at the intersection of Portland Hills Drive and the Park & Ride driveway indicated a two-way driveway volume of 180 vehicles per hour (vph) during the PM peak hour. The AM peak hourly volume is expected to be similar to the PM volume at this location.



Photo 4 - Looking towards the parking lot from the proposed site access on the Portland Hills Park & Ride driveway.

Additional Site Exit - A one-way driveway exit with sidewalk is proposed from the parking area at the north side of the building to the Park & Ride lot (Figure 1). The exit driveway meets the Park & Ride lot in an area that does not have parking spaces. There is good visibility for both approaches where the site exit meets the parking lot as illustrated in Photos 5 and 6.



Photo 5 - Looking north across the Park & Ride lot from the location the one-way driveway exiting the proposed development intersects with the existing curb line.



Photo 6 - Looking south across the Park & Ride lot from the location the one-way exit from the proposed development intersects with the existing curb line.

Trip Generation - Trip generation estimates for the proposed and existing land uses, prepared using published trip generation rates from *Trip Generation, 9th Edition*, are included in Table 1. The trip estimates for the site have been reduced by 10% to account for on-site synergies between the existing and proposed land uses, and pedestrian trips to and from the adjacent Portland Hills Transit Terminal. It is estimated that the proposed mid-rise apartment building with ground level commercial space will generate about 36 two-way vehicle trips (16 entering and 20 exiting) during the AM peak hour and 59 two-way vehicle trips (30 entering and 29 exiting) during the PM peak hour.

| Table 1 - Trip Generation Estimates for Proposed Development | | | | | | | | | |
|---|--------------------|------------------------------------|------|---------|------|------------------------------|-----|---------|-----|
| Land Use ¹ | Units ² | Trip Generation Rates ³ | | | | Trips Generated ³ | | | |
| | | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | | In | Out | In | Out | In | Out | In | Out |
| Mid-Rise Apartment (Land Use 223) | 70 units | 0.09 | 0.21 | 0.23 | 0.16 | 7 | 14 | 16 | 11 |
| Specialty Retail (Use Code 826) ⁴ | 14,000 KGLA | 0.76 | 0.60 | 1.19 | 1.52 | 11 | 8 | 17 | 21 |
| Total Trip Generation Estimates for Proposed Development | | | | | | 18 | 22 | 33 | 32 |
| 10% Reduction for On-Site Synergy and Non-Vehicle Trips | | | | | | 2 | 2 | 3 | 3 |
| Adjusted Trip Estimates for Site Generated Trips | | | | | | 16 | 20 | 30 | 29 |
| NOTES: 1. Rates are for the indicated Land Use Codes, <i>Trip Generation, 9th Edition</i> , Institute of Transportation Engineers, 2012. 2. KGLA is 'Gross Leasable Area x 1000 square feet'. 3. Rates are 'vehicles per hour per unit'; trips generated are 'vehicles per hour for peak hours'. 4. The Speciality Retail (Land Use 826) rate for 'Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 PM' has been used. Since there is no published rate for the AM peak hour of adjacent street for this Land Use, and since AM peak hour trips to Speciality Retail are generally low, AM trip rates have been assumed to be 50% of the PM rate with reversal of the directional split. | | | | | | | | | |

Additional Proposed Development Near the Site - A mixed use commercial site with approximately 81 apartment units and 27,159 square feet of commercial space is proposed on a lot on the west side of Portland Hills Drive opposite the 651 Portland Hills Drive site and extending northerly to Portland Street. That development will be served by a right-in only driveway from Portland Street and two driveways on Portland Hills Drive, one opposite the existing 651 Portland Hills Drive driveway and the other opposite the Park & Ride driveway. A Traffic Impact Study (WSP Canada Inc., June 2014) concluded that with a small adjustment to timing at the Portland Street @ Portland Hills Drive / Regal Road intersection signal installation, site generated trips from that development would not have any significant impact on level of performance of intersections or adjacent streets.

Summary -

1. The proposed development at 651 Portland Hills Drive will include approximately 70 apartment units, 14,000 square feet of commercial space, with approximately 70 underground parking spaces and 77 exterior parking spaces.
2. The development will be served by an existing driveway on Portland Hills Drive for Portland Hills Centre at 635 and 639 Portland Hills Drive, an access at an existing curb cut on the Portland Hills Park & Ride driveway, and a one-way exit driveway with a sidewalk from the site to the Park & Ride lot. Visibility is good on the approaches to the three driveways.

3. After a 10% reduction to account for on-site synergies and expected pedestrian trips using the adjacent Portland Hills Transit Terminal, it is estimated that the proposed mid-rise apartment building with ground level commercial space will generate about 36 two-way vehicle trips (16 entering and 20 exiting) during the AM peak hour and 59 two-way vehicle trips (30 entering and 29 exiting) during the PM peak hour.
4. The site is well served by pedestrian facilities and transit services. There are sidewalks on both sides of Portland Hills Drive, a sidewalk is proposed between the site and the adjacent Portland Hills Transit Terminal, and Halifax Transit provides service for several routes at the Terminal.
5. A manual count obtained by WSP Canada Inc. during October 2014 indicated a two-way Portland Hills Drive volume of 530 vehicles per hour (vph) during the PM peak hour adjacent to the site. The AM peak hourly volume is expected to be similar to the PM volume at this location.

Conclusions -

6. Since the volumes on Portland Hills Drive are moderate, the low numbers of site generated trips are not expected to have any significant impact to the level of performance of adjacent streets and intersections, or the regional street network.
7. The cumulative numbers of trips between this development and the proposed development on the opposite side of Portland Hills Drive are not expected to have any significant impact to performance of intersections or streets near the proposed developments.

If you have any questions or comments, please contact me by Email to ken.obrien@wspgroup.com or telephone 902-443-7747.

Sincerely:
Originally Signed

Ken O'Brien, P. Eng.
Senior Traffic Engineer
WSP Canada Inc.



HALIFAX

PO Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

MEMORANDUM

TO: Darrell Joudrey, Planner II

FROM: Ashley Blissett, P. Eng., Development Engineering Program Manager

DATE: July 18, 2016

SUBJECT: Case # 20573, Application by W. M. Fares to enter into a Development Agreement enabling mixed use development of lands at 651 Portland Hills Drive, Dartmouth

We have reviewed the above application and offer the following:

- 1) Portland Hills Drive is a municipally owned and maintained street.
- 2) Access to the property will be achieved via existing accesses from Portland Hills Drive, with additional access from the existing Park & Ride associated with the Transit Terminal.
- 3) The proposed lots lie within the HRM sewer servicing boundary.
- 4) The traffic impact statement has been forwarded to HRM Traffic Services for review & the following applies:
 - There is no justification provided for the one-way driveway exit to the park & ride lot. Traffic Services opinion is that this additional access is not required as the 12 parking spaces can exit at the park & ride driveway. Having them exit into the park & ride lot would only result in looping back around onto the park & ride driveway.
 - Providing a pedestrian connection to the park & ride would be beneficial.
 - The proposed development opposite 651 Portland Hills Drive is mentioned in the report but they fail to provide information on the potential right turn slip lane that may be required to increase the level of service at the intersection of Portland Street/Portland Hills Drive/Regal Road. This report should include an updated level of service analysis to ensure further traffic mitigation measures are not required.

...2/

-2-

- When updating the level of service analysis, trip generation equations should be used when possible instead of the average rates, unless proper justification can be presented.
- 5) Halifax Water Comments dated July 14, 2016 are attached for your information.
 - 6) Permits must be secured from the Municipality for the installation or alteration of driveways, services and culverts (if applicable). These works must meet the requirements of the Streets and Services Bylaw, the HRM Municipal Design Guidelines, as well as the Halifax Water Design and Construction Specifications, and, are the sole responsibility of the applicant.

PLANNING & DEVELOPMENT – DEVELOPMENT APPROVALS

7071 Bayers Road, Halifax

Tel: (902) 490-6848 Fax: (902) 490-4645

E-mail: blissea@halifax.ca Web Site: www.halifax.ca

O'Brien, Ken

From: O'Brien, Ken
Sent: Monday, September 26, 2016 12:28 PM
To: Ashley Blissett
Cc: Cesar Saleh; 'Greg O'Brien'
Subject: 651 Portland Hills Drive
Attachments: Case 20573 Review Team Meeting Comments.pdf - Adobe Acrobat Pro.pdf; DA (abbreviated).pdf; Letter of Offer Portland Hills Blue Basin Sept 6, 2013 Final-1.pdf

Ashley:

This Email is further to our telephone discussion on September 20, 2016, with regards to a Memorandum (copy attached) that you sent to Darrell Joudrey on July 18, 2016. Item 4 of the Memorandum includes four 'bullet' comments with regards to a Traffic Impact Statement (WSP Canada Inc., May 10, 2016) prepared for a mixed residential and commercial development at 651 Portland Hills's Drive.

Bullets 1 and 2 relate to a proposed driveway from the east part of the site to the adjacent park & ride lot. The developer entered into an agreement with HRM during September 2013 (copy attached) for construction of the one-way driveway with a pedestrian sidewalk.

Bullet 3 refers to a proposed development in the southwest corner of the Portland Street / Portland Hills Drive intersection and requests an update level of service analysis of the intersection to ensure further traffic mitigation measures are not required.

The trip generation estimates included in the May 2016 TIS (36 two-way vehicle trips (16 entering and 20 exiting) during the AM peak hour and 59 two-way vehicle trips (30 entering and 29 exiting) during the PM peak hour) do not justify completion of what would amount to a Traffic Impact Study which would result from further LOS studies. The TIS concluded that "the low numbers of site generated trips are not expected to have any significant impact to the level of performance of adjacent streets and intersections, or the regional street network"

Also, I have been provided with a partial DA from 2000 (copy attached) that includes 100,000 SF of commercial space. Since only 24,000 SF have been built, there would be 76,000 SF of commercial space remaining in the DA. If this were constructed as 50% retail / 50% office it is estimated that the additional allowed development would generate about 2.5 times as much traffic during the PM peak hour (153 two-way vehicle trips).

Bullet 4 requests that trip generation equations should be used rather than average rates unless proper justification can be presented. When using the published trip generation rates in *Trip Generation, 9th Edition* (Institute of Transportation Engineers, 2012) the traffic engineer's objective should be to provide a realistic estimate of the number of trips that will be generated. Since some equations produce illogical trip-end estimates when the proposed site size is significantly smaller than the average-sized facility included in *Trip Generation*, we only use the published equations when the proposed development has land use areas or units near the average.

Could you please consider our responses and comments and advise whether any additional action is required with regards to the Traffic Impact Statement.

Sincerely,
Ken O'Brien, P. Eng.



Ken O'Brien, M.Eng., P.Eng.
Senior Traffic Engineer

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