# APPENDIX I

# ALTERNATIVES

**TRAVEL DEMAND FORECAST (LOWER DENSITY ALTERNATIVE)**

| **Land Use:** | **Local Retail** | **Residential** | **Supermarket** | **PS school** | **PS Staff** | **Warehouse** | | Total After 25% Retail/ Supermarket Linked Trips |
|---|---|---|---|---|---|---|---|---|
| **Size/Units:** | 84,470 gsf | 1,256 DU | 25,000 gsf | 456 Outside student | 35 staff | -194,700 gsf | Total | |
| **Peak Hour Trips:** | | | | | | | | |
| **AM** | 518 | 1,016 | 220 | 412 | 35 | NA | 2,201 | 2,018 |
| **MD** | 3,290 | 508 | 264 | 0 | 0 | NA | 4,062 | 3,174 |
| **PM** | 1,732 | 1,116 | 438 | 42 | 35 | NA | 3,363 | 2,822 |
| **Sat MD** | 2,028 | 966 | 520 | 0 | 0 | NA | 3,514 | 2,878 |

**Person Trips:**

| | | Local Retail | | Residential | | Supermarket | | PS school Off-site | | PS school On-site Student | | PS Staff | | Warehouse | | Total | | Total After 25% Retail/ Supermarket Linked Trips | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out |
| **AM** | **Auto** | 5 | 5 | 66 | 263 | 76 | 58 | 21 | 0 | 0 | 0 | 20 | 0 | NA | NA | 188 | 326 | 168 | 310 |
| | **Taxi** | 8 | 8 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 9 | 12 | 7 | 10 |
| | **Subway** | 16 | 16 | 113 | 450 | 1 | 1 | 0 | 0 | 0 | 0 | 6 | 0 | NA | NA | 136 | 467 | 132 | 463 |
| | **Bus** | 16 | 16 | 7 | 26 | 6 | 6 | 0 | 0 | 0 | 0 | 4 | 0 | NA | NA | 33 | 48 | 28 | 43 |
| | **Schoolbus** | | | | | | | 20 | 0 | 0 | 0 | | | NA | NA | 20 | 0 | 20 | 0 |
| | **Walk/Other** | 214 | 214 | 17 | 69 | 41 | 31 | 21 | 0 | 350 | 0 | 5 | 0 | NA | NA | 648 | 314 | 584 | 253 |
| | **Total** | 259 | 259 | 204 | 812 | 124 | 96 | 62 | 0 | 350 | 0 | 35 | 0 | NA | NA | 1,034 | 1,167 | 939 | 1,079 |
| | | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out |
| **MD** | **Auto** | 33 | 33 | 82 | 82 | 90 | 90 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 205 | 205 | 174 | 174 |
| | **Taxi** | 49 | 49 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 50 | 50 | 38 | 38 |
| | **Subway** | 99 | 99 | 141 | 141 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 240 | 240 | 215 | 215 |
| | **Bus** | 99 | 99 | 8 | 8 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 114 | 114 | 88 | 88 |
| | **Schoolbus** | | | | | | | 0 | 0 | 0 | 0 | | | NA | NA | 0 | 0 | 0 | 0 |
| | **Walk/Other** | 1,365 | 1,365 | 22 | 22 | 35 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 1,422 | 1,422 | 1,072 | 1,072 |
| | **Total** | 1,645 | 1,645 | 254 | 254 | 132 | 132 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 2,031 | 2,031 | 1,587 | 1,587 |
| | | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out |
| **PM** | **Auto** | 17 | 17 | 235 | 127 | 153 | 141 | 0 | 3 | 0 | 0 | 0 | 20 | NA | NA | 405 | 308 | 363 | 269 |
| | **Taxi** | 26 | 26 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | NA | NA | 30 | 28 | 24 | 22 |
| | **Subway** | 52 | 52 | 402 | 216 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | NA | NA | 454 | 274 | 441 | 261 |
| | **Bus** | 52 | 52 | 23 | 12 | 7 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | NA | NA | 82 | 74 | 67 | 60 |
| | **Schoolbus** | | | | | | | 0 | 0 | 0 | 0 | | | NA | NA | 0 | 0 | 0 | 0 |
| | **Walk/Other** | 719 | 719 | 62 | 33 | 68 | 63 | 0 | 3 | 0 | 36 | 0 | 5 | NA | NA | 849 | 859 | 651 | 664 |
| | **Total** | 866 | 866 | 726 | 390 | 228 | 210 | 0 | 6 | 0 | 36 | 0 | 35 | NA | NA | 1,820 | 1,543 | 1,546 | 1,276 |

**Vehicle Trips :**

| | | Local Retail | | Residential | | Supermarket | | PS school Off-site | | PS school On-site Student | | PS Staff | | Warehouse | | Total | | Total After 25% Retail/ Supermarket Linked Trips | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out |
| **AM** | **Auto (Total)** | 3 | 3 | 59 | 237 | 68 | 52 | 16 | 16 | 0 | 0 | 17 | 0 | -18 | -8 | 145 | 300 | 127 | 286 |
| | **Taxi** | 4 | 4 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 7 | 4 | 6 |
| | **Taxi Balanced** | 8 | 8 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 | 10 | 10 |
| | **Shuttle/Schoolbus** | | | 9 | 9 | | | 3 | 3 | 0 | 0 | | | 0 | 0 | 12 | 12 | 12 | 12 |
| | **Truck** | 1 | 1 | 5 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 0 | 5 | 7 | 5 | 7 |
| | **Total** | 12 | 12 | 77 | 255 | 69 | 53 | 19 | 19 | 0 | 0 | 17 | 0 | -20 | -8 | 174 | 331 | 154 | 315 |
| | | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out |
| **MD** | **Auto (Total)** | 17 | 17 | 74 | 74 | 68 | 68 | 0 | 0 | 0 | 0 | 0 | 0 | -11 | -15 | 148 | 144 | 127 | 123 |
| | **Taxi** | 25 | 25 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 26 | 20 | 20 |
| | **Taxi Balanced** | 50 | 50 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 52 | 40 | 40 |
| | **Shuttle/Schoolbus** | | | 0 | 0 | | | 0 | 0 | | | | | 0 | -1 | 0 | -1 | 0 | -1 |
| | **Truck** | 2 | 2 | 3 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | -2 | 4 | 4 | 3 | 3 |
| | **Total** | 69 | 69 | 79 | 79 | 69 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | -13 | -18 | 204 | 199 | 170 | 165 |
| | | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out | In | Out |
| **PM** | **Auto (Total)** | 9 | 9 | 212 | 114 | 114 | 105 | 2 | 2 | 0 | 0 | 0 | 17 | -5 | -16 | 332 | 231 | 301 | 203 |
| | **Taxi** | 13 | 13 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 14 | 13 | 11 |
| | **Taxi Balanced** | 26 | 26 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 30 | 24 | 24 |
| | **Shuttle/Schoolbus** | | | 9 | 9 | | | 0 | 0 | | | | | -3 | 0 | 6 | 9 | 6 | 9 |
| | **Truck** | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 0 | 1 | 0 | 1 |
| | **Total** | 35 | 35 | 226 | 128 | 114 | 105 | 2 | 2 | 0 | 0 | 0 | 17 | -9 | -16 | 368 | 271 | 331 | 237 |

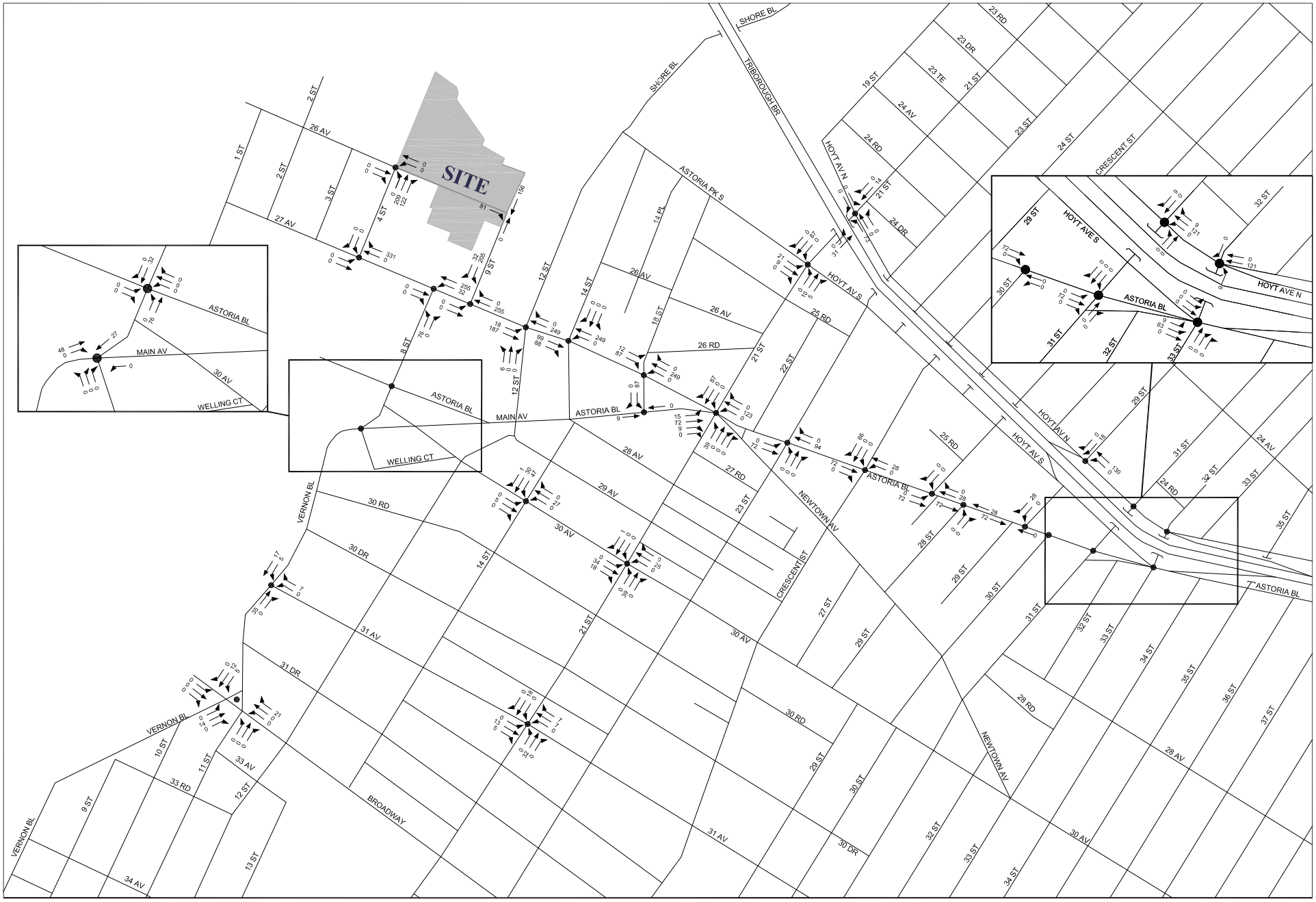
| | Total | | | Total After Linked Trips | | | Q103 Bus-to-Subway Transfer* | | |
|---|---|---|---|---|---|---|---|---|---|
| **Total Vehicle** | In | Out | Total | In | Out | Total | In | Out | Total |
| **AM** | 174 | 331 | 505 | 154 | 315 | 469 | 35 | 107 | 142 |
| **MD** | 204 | 199 | 403 | 170 | 165 | 335 | 72 | 72 | 144 |
| **PM** | 368 | 271 | 639 | 331 | 237 | 568 | 110 | 72 | 182 |
| **Sat MD** | 306 | 300 | 606 | 263 | 257 | 520 | 85 | 85 | 170 |

Notes : 25% link trips applied to Retail and Supermarket Uses.

80% of resident subway users will be shuttled to subway station at 30th Ave and 31st Street

10% Absentee rate is applied for students of the public school.

* 20% of subway demand added to 1/3 of bus users that would utilize Q103.

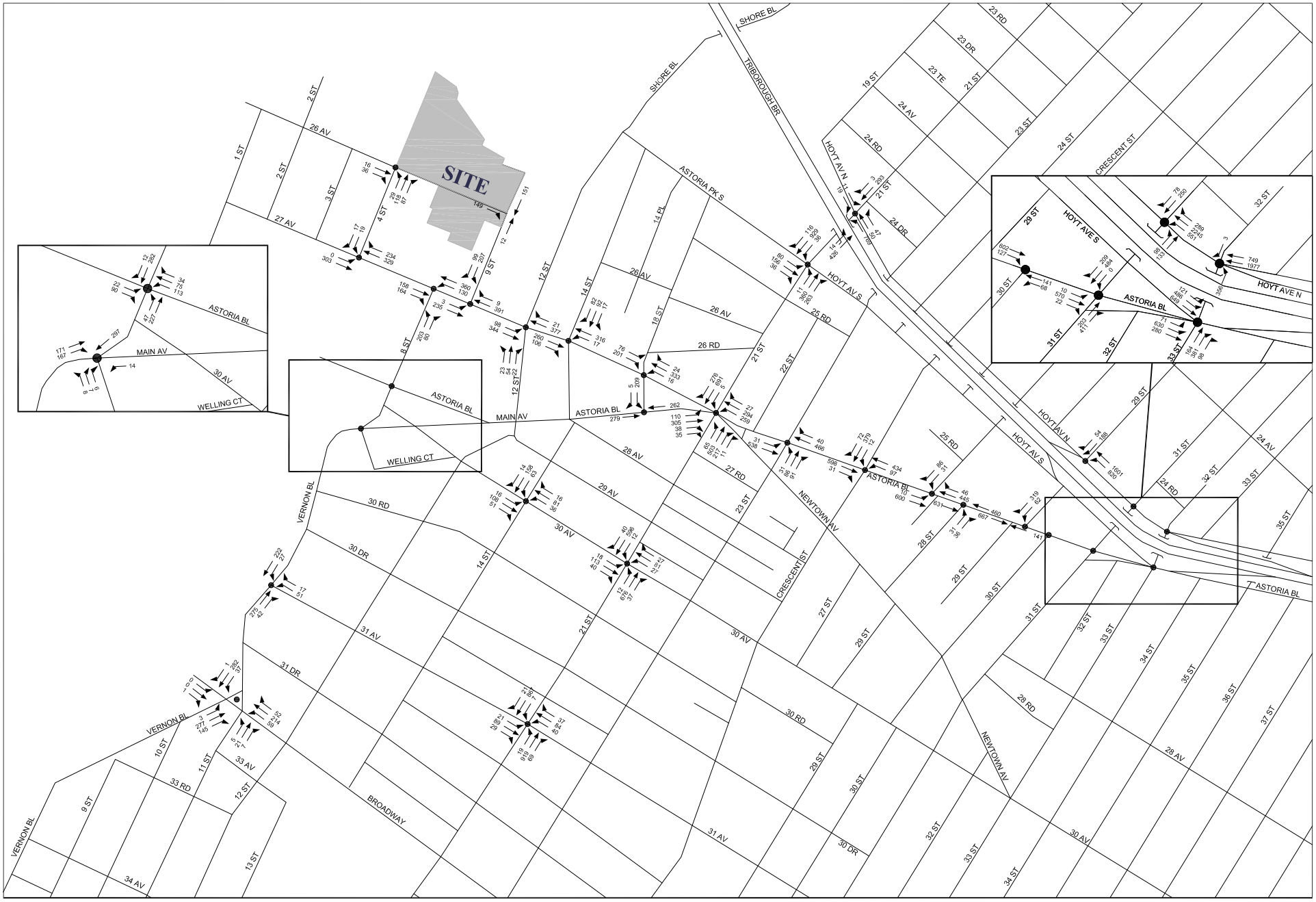



● Analyzed Locations

**Astoria Cove**

**Figure XX-XX**

**Lower Density Alternative Increment Volumes - PM Peak Hour**

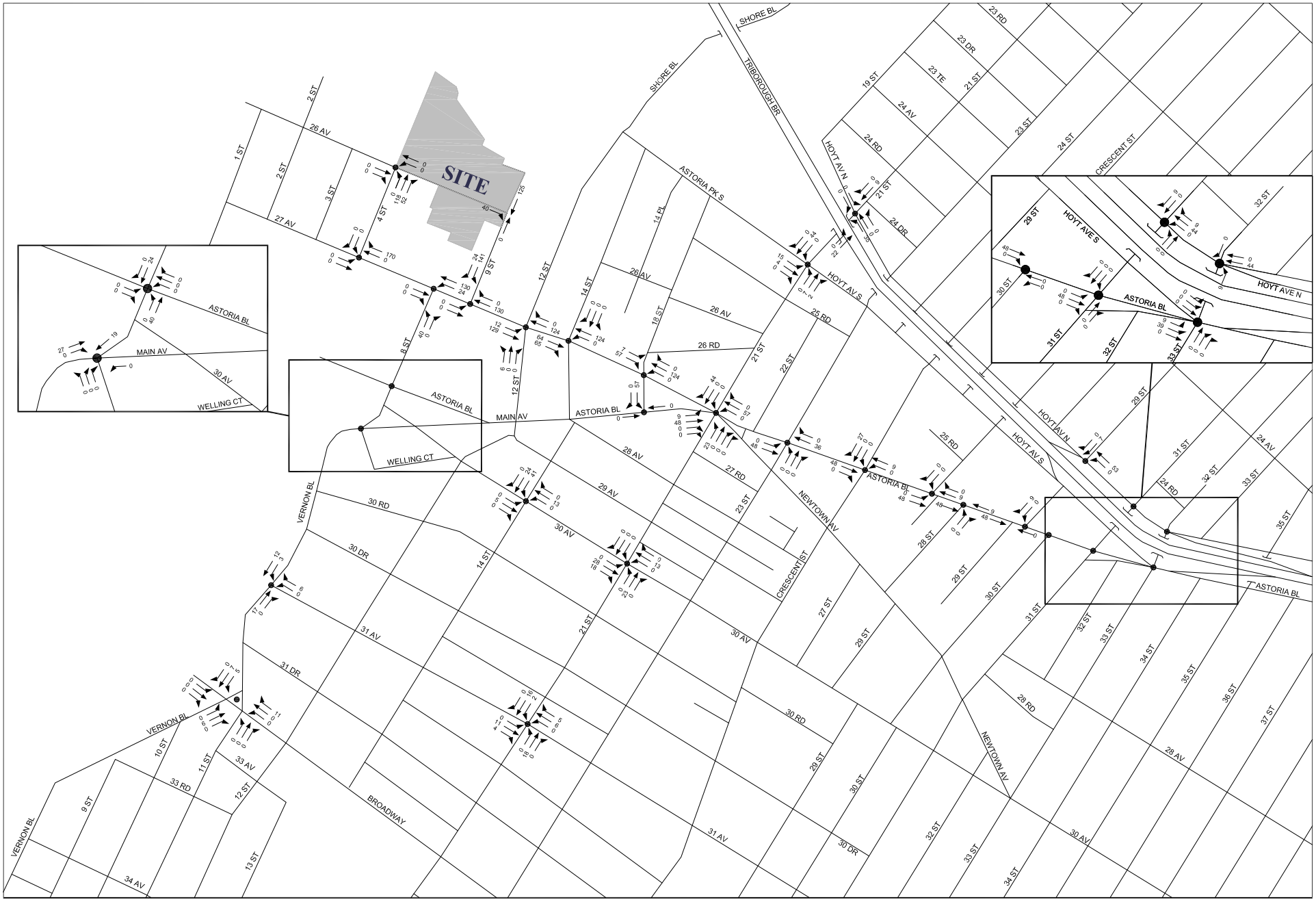



● Analyzed Locations

**Astoria Cove**

**Figure XX-XX**

**Lower Density Alternative Volumes - Midday Peak Hour**

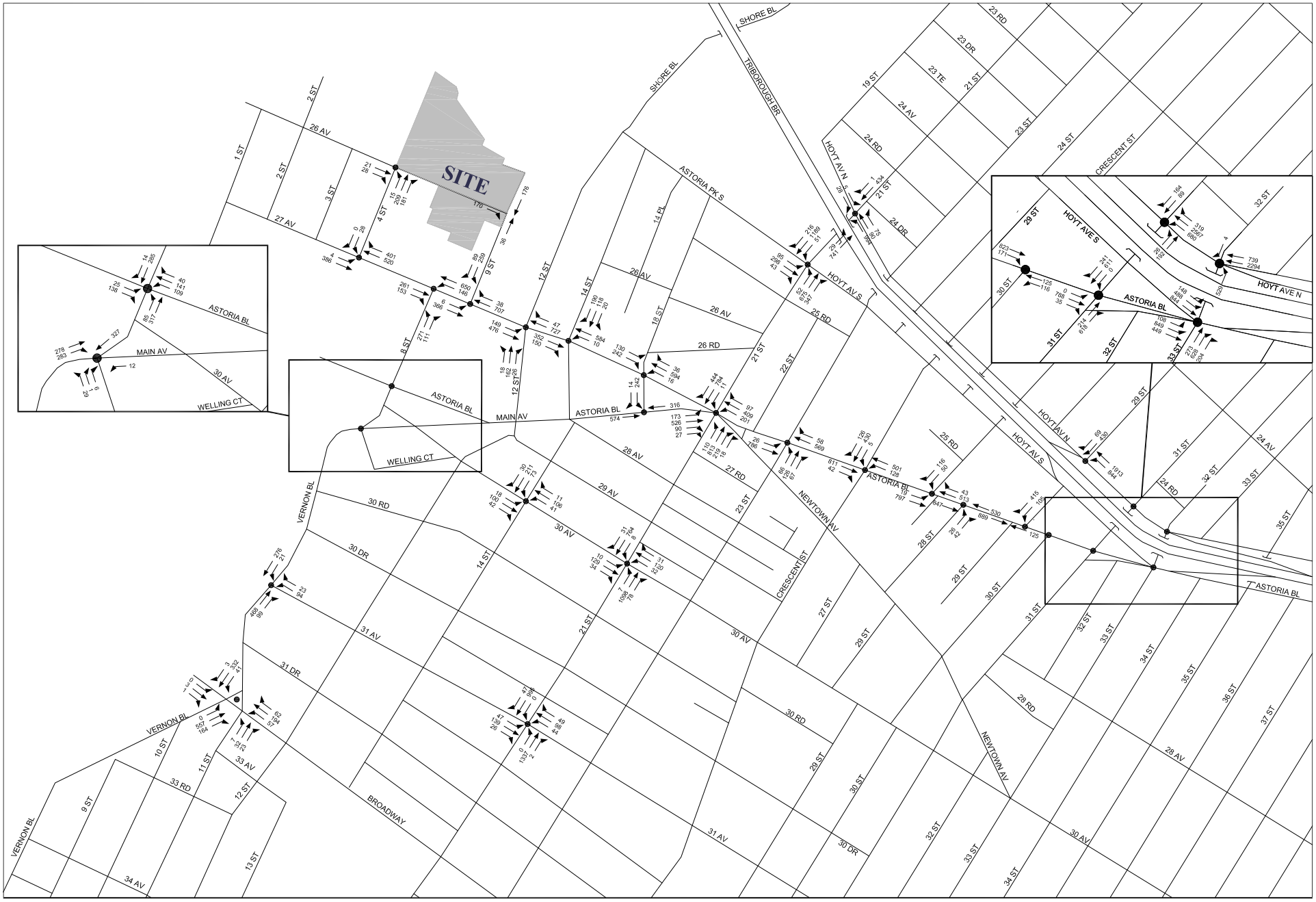



● Analyzed Locations

**Astoria Cove**

**Figure XX-XX**

**Lower Density Allternative Increment Volumes - Midday Peak Hour**

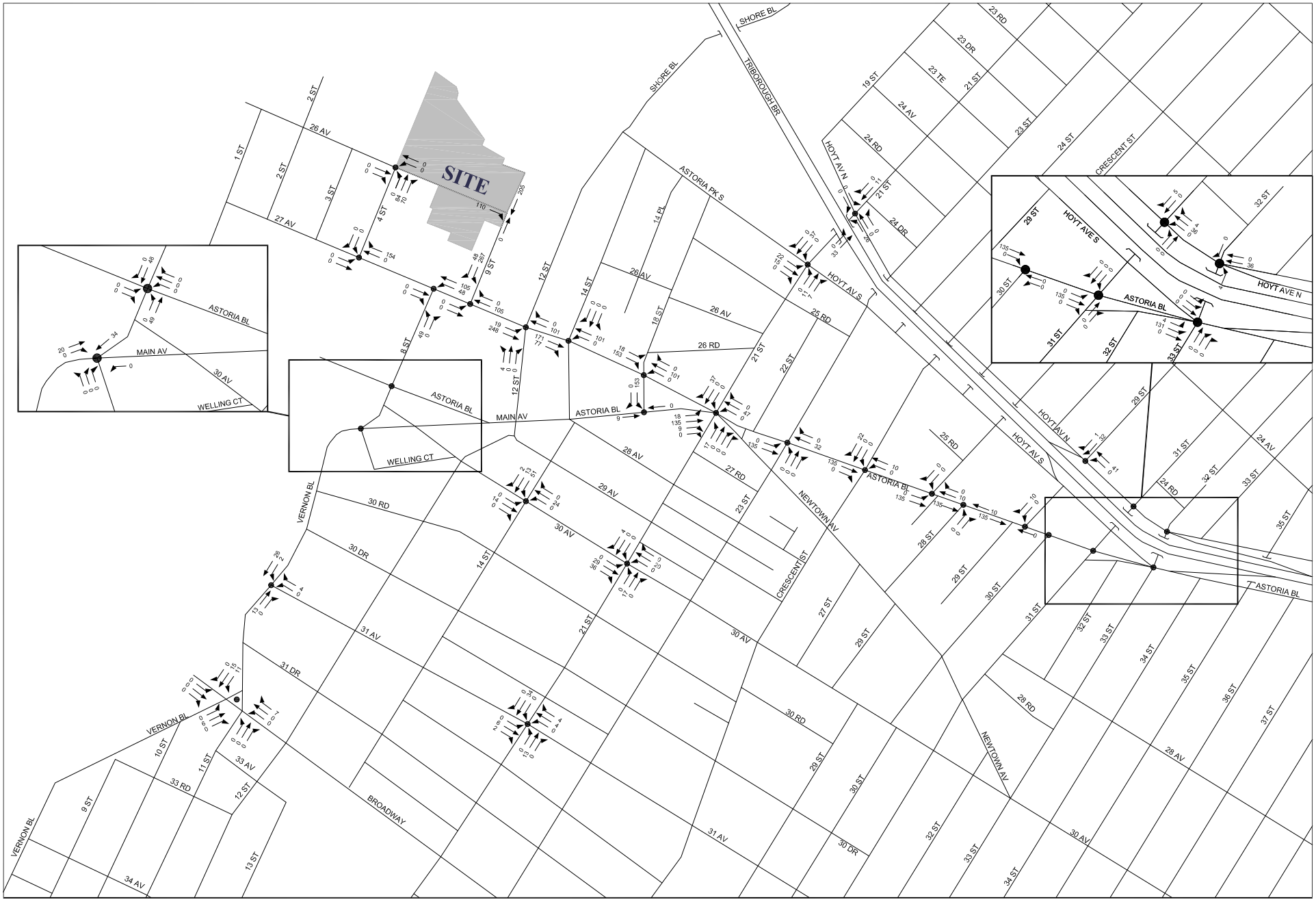



● Analyzed Locations

**Astoria Cove**

**Figure XX-XX**

**Lower Density Alternative Volumes - PM Peak Hour**

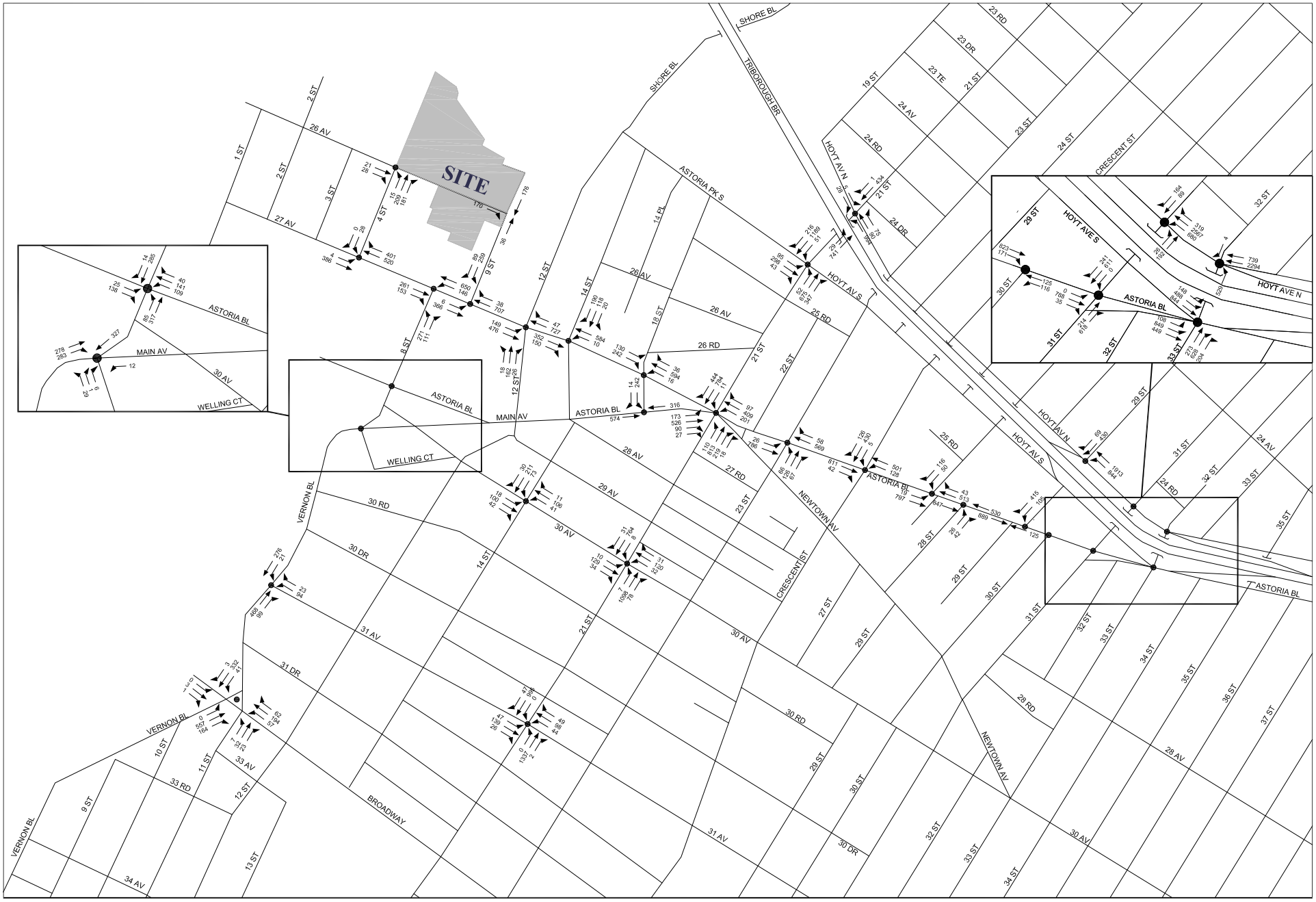



● Analyzed Locations

**Astoria Cove**

**Figure XX-XX**

**Lower Density Alternative Increment Volumes - AM Peak Hour**




● Analyzed Locations

**Astoria Cove**

**Figure XX-XX**

**Lower Density Alternative Volumes - PM Peak Hour**

# 2023 Lower Density Alternative With Halletts Point Project - Traffic Levels of Service

| Intersection | Lane Group | AM PEAK HOUR | | | | | | | MIDDAY PEAK HOUR | | | | | | | PM PEAK HOUR | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NO-ACTION (2) | | | LDA | | | | NO-ACTION (2) | | | LDA | | | | NO-ACTION (2) | | | LDA | | | |
| | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | |
| 1. 26th Avenue & 4th Street | EB-LTR | - | - | - | NA | 7.8 | A | | - | - | - | NA | 7.6 | A | | - | - | - | NA | 8.0 | A | |
| (Unsignalized-Two Way Stop) | NB-LR | 0.11 | 9.7 | A | NA | 9.2 | A | | 0.08 | 9.4 | A | NA | 8.9 | A | | 0.09 | 9.3 | A | NA | 10.9 | B | |
| A. 26th Avenue & 9th Street | EB-R | 0.09 | 8.9 | A | 0.32 | 12.3 | B | | 0.13 | 8.9 | A | 0.22 | 10.4 | B | | 0.10 | 8.8 | A | 0.26 | 11.0 | B | |
| (Unsignalized-Two Way Stop) | | | | | | | | | | | | | | | | | | | | | | |
| 2. 27th Avenue & 4th Street | EB-LT | 0.78 | 22.4 | C | 0.78 | 22.4 | C | | 0.45 | 14.1 | B | 0.45 | 14.1 | B | | 0.56 | 15.0 | B | 0.56 | 15.0 | B | |
| (Existing Unsignalized-All Way Stop) | WB-T | 0.44 | 13.7 | B | 0.44 | 13.7 | B | | 0.43 | 13.1 | B | 0.43 | 13.1 | B | | 0.65 | 15.6 | B | 0.65 | 15.6 | B | |
| (No-Action Signalized) | WB-R | 0.25 | 12.2 | B | 0.64 | 20.6 | C | | 0.27 | 12.5 | B | 0.83 | 32.3 | C | | 0.29 | 11.8 | B | 1.28 | 159.8 | F | * |
| | SB-LR | 0.10 | 20.4 | C | 0.10 | 20.4 | C | | 0.09 | 20.3 | C | 0.09 | 20.3 | C | | 0.08 | 21.6 | C | 0.08 | 21.6 | C | |
| 3. 27th Avenue & 8th Street | EB-T | 0.53 | 14.9 | B | 0.53 | 14.9 | B | | 0.24 | 11.9 | B | 0.24 | 11.9 | B | | 0.36 | 13.2 | B | 0.36 | 13.2 | B | |
| | EB-R | 0.66 | 21.2 | C | 0.66 | 21.2 | C | | 0.61 | 22.5 | C | 0.61 | 22.5 | C | | 0.42 | 15.9 | B | 0.42 | 15.9 | B | |
| | WB-LT | 1.32 | 179.6 | F | 1.80 | 387.4 | F | * | 1.25 | 151.3 | F | 1.68 | 336.1 | F | * | 1.22 | 138.6 | F | 1.83 | 400.4 | F | * |
| | NB-L | 0.52 | 28.4 | C | 0.70 | 34.6 | C | | 0.36 | 23.3 | C | 0.45 | 25.0 | C | | 0.48 | 25.8 | C | 0.66 | 31.2 | C | |
| | NB-R | 0.57 | 34.6 | C | 0.57 | 34.6 | C | | 0.73 | 47.7 | D | 0.73 | 47.7 | D | | 0.75 | 47.4 | D | 0.75 | 47.4 | D | |
| 26. 27th Avenue & 9th Street | EB-LT | 0.02 | 8.5 | A | 0.01 | 8.9 | A | | 0.01 | 8.1 | A | 0.00 | 8.6 | A | | 0.01 | 8.8 | A | 0.01 | 9.8 | A | |
| (Unsignalized-Two Way Stop) | SB-LR | 0.56 | 29.6 | D | 2.06 | 521.3 | F | * | 0.43 | 15.9 | C | 0.93 | 61.6 | F | * | 0.60 | 31.2 | D | 2.23 | 606.7 | F | * |
| 4. 27th Avenue & 12th Street | EB-LT | 0.64 | 9.9 | A | 1.04 | 50.4 | D | * | 0.47 | 11.2 | B | 0.74 | 18.0 | B | | 0.54 | 8.2 | A | 0.94 | 30.0 | C | |
| (Existing Unsignalized-Two Way Stop) | WB-TR | 0.47 | 6.2 | A | 0.58 | 7.3 | A | | 0.41 | 10.4 | B | 0.59 | 13.4 | B | | 0.66 | 8.8 | A | 0.96 | 25.3 | C | |
| (No-Action Signalized) | NB-LTR | 0.57 | 43.1 | D | 0.59 | 44.1 | D | | 0.28 | 27.3 | C | 0.30 | 27.7 | C | | 0.86 | 65.8 | E | 0.90 | 70.6 | E | * |
| 5. 27th Avenue & 14th Street | EB-TR | 0.61 | 19.4 | B | 1.08 | 64.7 | E | * | 0.33 | 11.5 | B | 0.52 | 13.9 | B | | 0.45 | 15.7 | B | 0.75 | 20.5 | C | |
| (Existing Unsignalized-All Way Stop) | WB-LT | 0.66 | 22.9 | C | 1.18 | 117.7 | F | * | 0.29 | 11.0 | B | 0.45 | 12.8 | B | | 0.57 | 16.6 | B | 0.97 | 28.1 | C | |
| (No-Action Signalized) | SB-LTR | 0.89 | 41.0 | D | 0.89 | 41.0 | D | | 0.52 | 28.5 | C | 0.52 | 28.5 | C | | 0.79 | 36.0 | D | 0.79 | 36.0 | D | |
| 6. 27th Avenue & 18th Street | EB-LTR | 0.10 | 9.5 | A | 0.12 | 9.6 | A | | 0.06 | 8.3 | A | 0.08 | 8.9 | A | | 0.12 | 9.1 | A | 0.18 | 10.9 | B | |
| (Unsignalized-Two Way Stop) | WB-LTR | 0.02 | 7.8 | A | 0.02 | 8.2 | A | | 0.01 | 7.7 | A | 0.01 | 7.8 | A | | 0.01 | 7.8 | A | 0.01 | 8.0 | A | |
| 7. Astoria Boulevard & 21st Street | EB-L | 1.20 | 156.4 | F | 1.21 | 160.0 | F | * | 0.33 | 36.9 | D | 0.36 | 37.5 | D | | 0.61 | 46.8 | D | 0.67 | 48.8 | D | |
| | EB-TR | 1.70 | 365.9 | F | 2.00 | 503.3 | F | * | 0.61 | 41.5 | D | 0.68 | 43.6 | D | | 1.13 | 118.0 | F | 1.27 | 174.5 | F | * |
| | WB-L | 1.01 | 69.0 | E | 1.01 | 69.0 | E | | 0.86 | 53.2 | D | 0.86 | 53.2 | D | | 0.92 | 68.3 | E | 0.91 | 66.7 | E | |
| | WB-TR | 0.82 | 45.2 | D | 0.89 | 47.7 | D | | 0.46 | 36.4 | D | 0.54 | 37.9 | D | | 0.99 | 73.3 | E | 1.22 | 156.2 | F | * |
| | NB-LT | 0.71 | 31.5 | C | 0.79 | 34.6 | C | | 0.79 | 38.2 | D | 0.94 | 43.6 | D | | 1.10 | 80.8 | F | 1.26 | 152.5 | F | * |
| | NB-R | 0.37 | 24.7 | C | 0.37 | 24.7 | C | | 0.65 | 36.1 | D | 0.65 | 36.1 | D | | 0.44 | 22.9 | C | 0.44 | 22.9 | C | |
| | SB-LT | 0.86 | 30.8 | C | 0.85 | 30.7 | C | | 0.76 | 38.1 | D | 0.76 | 38.1 | D | | 0.77 | 29.6 | C | 0.77 | 29.6 | C | |
| | SB-R | 0.59 | 26.9 | C | 0.66 | 28.2 | C | | 0.75 | 39.7 | D | 0.90 | 46.6 | D | * | 0.80 | 33.1 | C | 0.99 | 54.5 | D | * |
| 8. Astoria Boulevard & 23rd Street | EB-LT | 1.21 | 127.5 | F | 1.43 | 224.3 | F | * | 0.81 | 23.1 | C | 0.88 | 27.8 | C | | 0.95 | 35.5 | D | 1.04 | 58.0 | E | * |
| | WB-TR | 0.91 | 29.7 | C | 0.94 | 33.4 | C | | 0.77 | 17.4 | B | 0.83 | 18.8 | B | | 0.84 | 22.7 | C | 0.98 | 32.7 | C | |
| | NB-LTR | 0.50 | 33.5 | C | 0.50 | 33.5 | C | | 0.56 | 28.5 | C | 0.56 | 28.5 | C | | 0.61 | 37.4 | D | 0.61 | 37.4 | D | |

# 2023 Lower Density Alternative With Halletts Point Project - Traffic Levels of Service

| Intersection | Lane Group | AM PEAK HOUR | | | | | | | MIDDAY PEAK HOUR | | | | | | | PM PEAK HOUR | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NO-ACTION (2) | | | LDA | | | | NO-ACTION (2) | | | LDA | | | | NO-ACTION (2) | | | LDA | | | |
| | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | |
| 9. Astoria Boulevard & Crescent Street | EB-TR | 1.28 | 159.6 | F | 1.49 | 252.6 | F | * | 0.83 | 25.1 | C | 0.90 | 30.8 | C | | 1.11 | 88.2 | F | 1.21 | 128.8 | F | * |
| | WB-LT | 1.24 | 139.4 | F | 1.38 | 201.4 | F | * | 1.27 | 143.1 | F | 1.34 | 175.3 | F | * | 1.53 | 267.6 | F | 1.71 | 347.5 | F | * |
| | SB-LTR | 1.11 | 89.1 | F | 1.18 | 120.4 | F | * | 1.09 | 73.8 | E | 1.17 | 111.4 | F | * | 1.07 | 74.4 | E | 1.29 | 171.5 | F | * |
| 10. Astoria Boulevard & 27th Street | EB-LT | 0.96 | 38.2 | D | 1.12 | 87.3 | F | * | 0.59 | 16.2 | B | 0.64 | 17.3 | B | | 0.79 | 22.1 | C | 0.86 | 26.4 | C | |
| | WB-TR | 0.84 | 23.0 | C | 0.85 | 23.6 | C | | 0.71 | 18.3 | B | 0.72 | 18.7 | B | | 0.65 | 16.8 | B | 0.68 | 17.6 | B | |
| | SB-LR | 0.83 | 41.1 | D | 0.83 | 41.1 | D | | 0.53 | 34.9 | C | 0.53 | 34.9 | C | | 0.88 | 42.7 | D | 0.88 | 42.7 | D | |
| 11. Astoria Boulevard & 28th Street (Unsignalized-Two Way Stop) | NB-LR | 0.70 | 68.0 | F | 0.91 | 126.0 | F | | 0.42 | 28.3 | D | 0.47 | 32.9 | D | | 0.41 | 30.1 | D | 0.48 | 38.0 | E | |
| 12. Astoria Boulevard & 29th Street | EB-T | 1.63 | 328.2 | F | 1.89 | 439.8 | F | * | 0.97 | 48.8 | D | 1.05 | 69.0 | E | * | 1.30 | 179.5 | F | 1.42 | 229.4 | F | * |
| | WB-T | 0.44 | 27.5 | C | 0.44 | 27.5 | C | | 0.23 | 13.5 | B | 0.23 | 13.5 | B | | 0.22 | 20.3 | C | 0.22 | 20.3 | C | |
| | SB-L | 0.18 | 17.0 | B | 0.18 | 17.0 | B | | 0.12 | 18.1 | B | 0.12 | 18.1 | B | | 0.16 | 19.5 | B | 0.16 | 19.5 | B | |
| | SB-R | 0.75 | 31.3 | C | 0.77 | 32.2 | C | | 0.70 | 30.5 | C | 0.72 | 31.4 | C | | 0.66 | 30.4 | C | 0.70 | 32.5 | C | |
| 13. Astoria Boulevard & 30th Street (Unsignalized-Two Way Stop) | WB-LT | 0.00 | 12.9 | B | 0.00 | 14.6 | B | | 0.10 | 10.1 | B | 0.11 | 10.5 | B | | 0.23 | 12.6 | B | 0.25 | 13.5 | B | |
| 14. Astoria Boulevard & 31st Street | EB-LTR | 0.83 | 37.5 | D | 0.97 | 47.4 | D | * | 0.57 | 22.4 | C | 0.62 | 23.1 | C | | 0.75 | 34.8 | C | 0.82 | 36.5 | D | |
| | NB-T | 0.52 | 41.8 | D | 0.52 | 41.8 | D | | 0.54 | 33.7 | C | 0.54 | 33.7 | C | | 0.52 | 41.6 | D | 0.52 | 41.6 | D | |
| | NB-R | 0.67 | 16.5 | B | 0.67 | 16.5 | B | | 0.53 | 8.9 | A | 0.53 | 8.9 | A | | 0.84 | 24.2 | C | 0.84 | 24.2 | C | |
| | SB-T | 1.10 | 85.7 | F | 1.10 | 85.7 | F | | 0.65 | 19.8 | B | 0.65 | 19.8 | B | | 0.69 | 22.8 | C | 0.69 | 22.8 | C | |
| | SB-R | 0.30 | 14.9 | B | 0.30 | 14.9 | B | | 0.31 | 14.3 | B | 0.31 | 14.3 | B | | 0.31 | 15.1 | B | 0.31 | 15.1 | B | |
| 15. Hoyt Avenue S./Astoria Boulevard & 33rd Street | Astoria Blvd (EB-LT) | 1.32 | 192.2 | F | 1.46 | 256.5 | F | * | 1.02 | 62.4 | E | 1.08 | 80.7 | F | * | 1.17 | 121.1 | F | 1.23 | 149.1 | F | * |
| | NB-TR | 1.09 | 94.2 | F | 1.09 | 94.2 | F | | 0.81 | 38.6 | D | 0.81 | 38.6 | D | | 1.09 | 86.7 | F | 1.09 | 86.7 | F | |
| | NB-R | 1.08 | 92.9 | F | 1.08 | 92.9 | F | | 0.79 | 42.6 | D | 0.79 | 42.6 | D | | 1.08 | 86.6 | F | 1.08 | 86.6 | F | |
| | Hoyt Ave (EB-LT) | 0.63 | 27.1 | C | 0.63 | 27.1 | C | | 0.78 | 30.4 | C | 0.78 | 30.4 | C | | 0.87 | 41.3 | D | 0.87 | 41.3 | D | |
| 16. Hoyt Ave N. & 29th Street | WB-L | 0.80 | 14.6 | B | 0.80 | 14.6 | B | | 0.57 | 12.0 | B | 0.57 | 12.0 | B | | 0.45 | 12.7 | B | 0.45 | 12.7 | B | |
| | WB-LT | 0.82 | 14.6 | B | 0.84 | 15.1 | B | | 0.58 | 11.7 | B | 0.60 | 11.9 | B | | 0.74 | 17.5 | B | 0.80 | 19.0 | B | |
| | SB-R | 1.03 | 98.5 | F | 1.11 | 125.2 | F | * | 0.53 | 35.5 | D | 0.55 | 35.9 | D | | 0.85 | 54.2 | D | 0.88 | 57.0 | E | |
| 17. Hoyt Ave N. & 31st Street | WB-L | 1.06 | 101.1 | F | 1.06 | 101.1 | F | | 1.05 | 95.0 | F | 1.05 | 95.0 | F | | 0.44 | 16.3 | B | 0.44 | 16.3 | B | |
| | WB-T | 1.01 | 37.4 | D | 1.02 | 40.9 | D | | 0.80 | 19.5 | B | 0.82 | 20.1 | C | | 0.85 | 25.4 | C | 0.90 | 27.7 | C | |
| | WB-R | 0.34 | 10.4 | B | 0.34 | 10.5 | B | | 0.66 | 21.5 | C | 0.68 | 22.3 | C | | 0.72 | 26.8 | C | 0.74 | 28.0 | C | |
| | NB-DefL | - | - | - | - | - | - | | 0.54 | 31.1 | C | 0.54 | 31.1 | C | | - | - | - | - | - | - | |
| | NB-T | - | - | - | - | - | - | | 0.23 | 21.2 | C | 0.23 | 21.2 | C | | - | - | - | - | - | - | |
| | NB-LT | 0.30 | 35.9 | D | 0.30 | 35.9 | D | | | 26.0 | C | | 26.0 | C | | 0.29 | 28.3 | C | 0.29 | 28.3 | C | |
| | SB-T | 0.28 | 36.3 | D | 0.28 | 36.3 | D | | 0.46 | 24.4 | C | 0.46 | 24.4 | C | | 0.15 | 26.6 | C | 0.15 | 26.6 | C | |
| | SB-R | 0.74 | 57.8 | E | 0.77 | 60.1 | E | | 0.26 | 22.2 | C | 0.29 | 22.7 | C | | 0.49 | 34.6 | C | 0.52 | 35.5 | D | |

# 2023 Lower Density Alternative With Halletts Point Project - Traffic Levels of Service

| Intersection | Lane Group | AM PEAK HOUR | | | | | | | MIDDAY PEAK HOUR | | | | | | | PM PEAK HOUR | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NO-ACTION (2) | | | LDA | | | | NO-ACTION (2) | | | LDA | | | | NO-ACTION (2) | | | LDA | | | |
| | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | |
| 18. Astoria Boulevard N. & 32nd Street | WB(Main)-T | 0.53 | 8.9 | A | 0.53 | 8.9 | A | | 0.37 | 7.9 | A | 0.37 | 7.9 | A | | 0.32 | 9.2 | A | 0.32 | 9.2 | A | |
| | WB(Ramp)-T | 1.17 | 127.2 | F | 1.19 | 134.9 | F | * | 1.03 | 45.5 | D | 1.06 | 53.3 | D | * | 1.13 | 84.7 | F | 1.19 | 111.0 | F | * |
| | NB-L | 0.66 | 45.3 | D | 0.67 | 45.4 | D | | 0.38 | 29.0 | C | 0.39 | 29.1 | C | | 0.57 | 39.2 | D | 0.58 | 39.3 | D | |
| | SB-R | 0.03 | 38.0 | D | 0.03 | 38.0 | D | | 0.02 | 25.9 | C | 0.02 | 25.9 | C | | 0.02 | 33.3 | C | 0.02 | 33.3 | C | |
| 19. Astoria Boulevard & 8th Street | EB-L | 0.16 | 24.6 | C | 0.16 | 24.6 | C | | 0.09 | 26.1 | C | 0.09 | 26.1 | C | | 0.17 | 29.0 | C | 0.17 | 29.0 | C | |
| | EB-R | 0.77 | 44.4 | D | 0.77 | 44.4 | D | | 0.27 | 29.0 | C | 0.27 | 29.0 | C | | 0.66 | 40.6 | D | 0.66 | 40.6 | D | |
| | WB-L | 0.32 | 26.9 | C | 0.32 | 26.9 | C | | 0.36 | 30.6 | C | 0.36 | 30.6 | C | | 0.31 | 31.0 | C | 0.31 | 31.0 | C | |
| | WB-TR | 0.34 | 27.3 | C | 0.34 | 27.3 | C | | 0.34 | 30.3 | C | 0.34 | 30.3 | C | | 0.50 | 35.3 | D | 0.50 | 35.3 | D | |
| | NB-LT | 0.52 | 20.2 | C | 0.65 | 23.3 | C | | 0.46 | 17.2 | B | 0.52 | 18.5 | B | | 0.87 | 27.7 | C | 1.03 | 53.8 | D | * |
| | SB-TR | 0.74 | 27.0 | C | 0.83 | 31.7 | C | | 0.40 | 16.3 | B | 0.43 | 16.8 | B | | 0.39 | 15.1 | B | 0.43 | 15.8 | B | |
| 20. 30th Avenue & 14th Street | EB-LTR | NA | 13.0 | B | NA | 15.1 | C | | NA | 9.1 | A | NA | 9.6 | A | | NA | 9.6 | A | NA | 10.4 | B | |
| (Unsignalized-All Way Stop) | WB-LTR | NA | 13.4 | B | NA | 16.1 | C | | NA | 9.1 | A | NA | 9.7 | A | | NA | 9.5 | A | NA | 10.6 | B | |
| | SB-LTR | NA | 28.5 | D | NA | 56.0 | F | * | NA | 9.5 | A | NA | 10.9 | B | | NA | 11.4 | B | NA | 15.2 | C | |
| 21. 30th Avenue & 21st Street | EB-LTR | 0.52 | 39.0 | D | 0.73 | 48.8 | D | * | 0.35 | 34.5 | C | 0.47 | 37.6 | D | | 0.37 | 35.1 | D | 0.53 | 39.4 | D | |
| | WB-LTR | 0.48 | 38.0 | D | 0.55 | 40.1 | D | | 0.39 | 35.6 | D | 0.42 | 36.5 | D | | 0.50 | 38.8 | D | 0.58 | 41.3 | D | |
| | NB-LTR | 0.53 | 15.0 | B | 0.55 | 15.2 | B | | 0.53 | 14.9 | B | 0.54 | 15.2 | B | | 0.78 | 21.7 | C | 0.81 | 22.9 | C | |
| | SB-LTR | 0.75 | 19.8 | B | 0.75 | 19.9 | B | | 0.42 | 13.0 | B | 0.42 | 13.0 | B | | 0.48 | 13.9 | B | 0.48 | 13.9 | B | |
| 22. Vernon Boulevard & Welling Court/ | EB-LT | 1.18 | 116.5 | F | 1.25 | 149.0 | F | * | 0.91 | 45.7 | D | 0.98 | 57.7 | E | * | 1.43 | 229.6 | F | 1.57 | 292.1 | F | * |
| 8th Street | WB-TR | 0.04 | 21.1 | C | 0.04 | 21.1 | C | | 0.04 | 21.1 | C | 0.04 | 21.1 | C | | 0.06 | 21.3 | C | 0.06 | 21.3 | C | |
| | NB-LTR | 0.33 | 36.1 | D | 0.33 | 36.1 | D | | 0.17 | 31.0 | C | 0.17 | 31.0 | C | | 0.18 | 29.5 | C | 0.18 | 29.5 | C | |
| | SB-R | 1.01 | 68.7 | E | 1.10 | 95.3 | F | * | 0.71 | 35.1 | D | 0.76 | 37.6 | D | | 0.72 | 37.9 | D | 0.79 | 41.8 | D | |
| 23. Astoria Boulevard & 18th Street | EB-T | 0.91 | 39.6 | D | 0.92 | 41.0 | D | | 0.41 | 23.1 | C | 0.41 | 23.1 | C | | 0.76 | 31.5 | C | 0.77 | 32.0 | C | |
| (Existing Unsignalized-Two Way Stop) | WB-T | 0.66 | 27.1 | C | 0.66 | 27.1 | C | | 0.41 | 22.9 | C | 0.41 | 22.9 | C | | 0.44 | 22.2 | C | 0.44 | 22.2 | C | |
| (No-Action Signalized) | SB-LR | 0.46 | 25.0 | C | 0.78 | 37.2 | D | | 0.32 | 22.1 | C | 0.43 | 24.3 | C | | 0.32 | 22.0 | C | 0.48 | 25.2 | C | |
| 24. Hoyt Avenue N. & 21st Street | EB-L | 0.02 | 40.4 | D | 0.02 | 40.4 | D | | 0.12 | 44.0 | D | 0.12 | 44.0 | D | | 0.11 | 43.9 | D | 0.11 | 43.9 | D | |
| | EB-R | 0.37 | 47.5 | D | 0.37 | 47.5 | D | | 0.15 | 44.5 | D | 0.15 | 44.5 | D | | 0.19 | 45.3 | D | 0.19 | 45.3 | D | |
| | WB-L | 1.07 | 78.5 | E | 1.09 | 89.6 | F | * | 0.81 | 41.3 | D | 0.85 | 43.3 | D | | 0.97 | 58.9 | E | 1.04 | 78.4 | E | * |
| | WB-TR | 0.25 | 14.8 | B | 0.25 | 14.8 | B | | 0.17 | 14.2 | B | 0.17 | 14.2 | B | | 0.30 | 16.9 | B | 0.30 | 16.9 | B | |
| | NB-L | 0.31 | 32.3 | C | 0.32 | 32.9 | C | | 0.12 | 25.4 | C | 0.12 | 25.5 | C | | 0.17 | 24.7 | C | 0.17 | 24.8 | C | |
| | NB-T | 1.20 | 143.8 | F | 1.29 | 180.0 | F | * | 0.81 | 46.3 | D | 0.86 | 50.7 | D | | 1.12 | 99.0 | F | 1.16 | 118.8 | F | * |
| | SB-TR | 1.04 | 65.0 | E | 1.06 | 73.1 | E | * | 0.60 | 34.1 | C | 0.61 | 34.6 | C | | 0.77 | 37.9 | D | 0.80 | 39.2 | D | |

# 2023 Lower Density Alternative With Halletts Point Project - Traffic Levels of Service

| Intersection | Lane Group | AM PEAK HOUR | | | | | | | MIDDAY PEAK HOUR | | | | | | | PM PEAK HOUR | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | NO-ACTION (2) | | | LDA | | | | NO-ACTION (2) | | | LDA | | | | NO-ACTION (2) | | | LDA | | | |
| | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | | V/C Ratio | Delay (sec.) | LOS | V/C Ratio | Delay (sec.) | LOS | |
| 25. Hoyt Avenue S./Astoria Park S. & 21st Street | EB-LTR | 0.84 | 41.9 | D | 0.92 | 44.3 | D | | 0.36 | 32.0 | C | 0.40 | 32.6 | C | | 0.58 | 37.9 | D | 0.63 | 39.0 | D | |
| | NB-LT | - | - | - | - | - | - | | - | - | - | - | - | - | | 0.72 | 16.8 | B | 0.75 | 17.6 | B | |
| | NB-R | - | - | - | - | - | - | | - | - | - | - | - | - | | 0.51 | 13.3 | B | 0.52 | 13.4 | B | |
| | NB-LTR | 0.60 | 14.2 | B | 0.63 | 14.7 | B | | 0.48 | 15.0 | B | 0.48 | 15.1 | B | | | 15.7 | B | | 16.3 | B | |
| | SB-LTR | 1.11 | 75.4 | E | 1.14 | 89.2 | F | * | 0.73 | 19.8 | B | 0.76 | 20.7 | C | | 0.99 | 38.1 | D | 1.04 | 53.5 | D | * |
| 27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop) | WB-LR | 0.66 | 38.2 | E | 0.71 | 44.5 | E | * | 0.25 | 17.7 | C | 0.28 | 18.5 | C | | 0.51 | 29.2 | D | 0.58 | 35.1 | E | * |
| | SB-LT | 0.02 | 8.3 | A | 0.02 | 8.3 | A | | 0.03 | 8.1 | A | 0.03 | 8.2 | A | | 0.02 | 8.9 | A | 0.03 | 9.0 | A | |
| 28. Vernon Boulevard & Broadway/11th Street | EB-LTR | 0.01 | 28.2 | C | 0.01 | 28.2 | C | | 0.02 | 25.4 | C | 0.02 | 25.4 | C | | 0.03 | 33.2 | C | 0.03 | 33.2 | C | |
| | WB-LT | 0.87 | 38.9 | D | 0.87 | 38.9 | D | | - | - | - | - | - | - | | 0.77 | 47.0 | D | 0.77 | 47.0 | D | |
| | WB-R | 0.21 | 29.9 | C | 0.25 | 30.3 | C | | - | - | - | - | - | - | | 0.24 | 35.8 | D | 0.36 | 37.8 | D | |
| | WB-LTR | 0.00 | 37.7 | D | | 37.6 | D | | 0.96 | 55.5 | E | 1.01 | 66.3 | E | * | 0.00 | 45.1 | D | | 44.9 | D | |
| | NB (Vernon Blvd)-LT | 0.28 | 8.2 | A | 0.29 | 8.2 | A | | 0.29 | 9.0 | A | 0.30 | 9.1 | A | | 0.52 | 10.1 | B | 0.54 | 10.3 | B | |
| | NB (Vernon Blvd)-R | 0.11 | 6.8 | A | 0.11 | 6.8 | A | | 0.21 | 8.3 | A | 0.21 | 8.3 | A | | 0.18 | 6.7 | A | 0.18 | 6.7 | A | |
| | NB (11th Street)-LTR | 0.38 | 41.1 | D | 0.38 | 41.1 | D | | 0.22 | 32.8 | C | 0.22 | 32.8 | C | | 0.33 | 38.2 | D | 0.33 | 38.2 | D | |
| | SB-LTR | 1.36 | 195.9 | F | 1.45 | 234.1 | F | * | 0.67 | 31.5 | C | 0.71 | 33.2 | C | | 0.88 | 45.4 | D | 0.99 | 65.6 | E | * |
| 29. 31st Avenue & 21st Street | EB-LTR | 0.67 | 45.6 | D | 0.70 | 47.3 | D | | 0.34 | 34.5 | C | 0.38 | 35.4 | D | | 0.57 | 41.2 | D | 0.63 | 43.3 | D | |
| | WB-LTR | 0.58 | 41.1 | D | 0.61 | 42.0 | D | | 0.42 | 35.9 | D | 0.45 | 36.7 | D | | 0.48 | 37.7 | D | 0.52 | 38.9 | D | |
| | NB-TR | 0.50 | 14.2 | B | 0.51 | 14.3 | B | | 0.64 | 17.0 | B | 0.65 | 17.3 | B | | 0.74 | 19.3 | B | 0.75 | 19.9 | B | |
| | SB-TR | 0.89 | 26.8 | C | 0.90 | 28.0 | C | | 0.57 | 15.5 | B | 0.58 | 15.8 | B | | 0.61 | 16.3 | B | 0.63 | 16.5 | B | |

**Note:**

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, Dfl-Analysis considers a Defacto Left Lane on this approach

V/C Ratio - Volume to Capacity Ratio, sec. - Seconds

LOS - Level of Service

* - Denotes a congested movement (LOS E or F, or V/C ratio greater than or equal to 0.9)

Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

# 2023 Lower Density Alternative With Halletts - Mitigation

| Intersection | Lane Group | No-Action (2) V/C Ratio | No-Action (2) Delay (sec.) | No-Action (2) LOS | LDA V/C Ratio | LDA Delay (sec.) | LDA LOS | LDA V/C Ratio | LDA Delay (sec.) | LDA LOS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **AM PEAK HOUR** | | | | | | | | | | | |
| 3. 27th Avenue & 8th Street | EB-T | 0.53 | 14.9 | B | 0.53 | 14.9 | B | 0.51 | 13.4 | B | Partially Mitigated. |
| | EB-R | 0.66 | 21.2 | C | 0.66 | 21.2 | C | 0.63 | 18.5 | B | Modify signal timing: Shift 2s of green from the NB phase to the EB/WB phase [NB phase green shifts from 30s to 28s; EB/WB phase green shifts from |
| | WB-LT | 1.32 | 179.6 | F | 1.80 | 387.4 | F | 1.68 | 334.7 | F | 50s to 52s]. |
| | NB-L | 0.52 | 28.4 | C | 0.70 | 34.6 | C | 0.75 | 39.3 | D | |
| | NB-R | 0.57 | 34.6 | C | 0.57 | 34.6 | C | 0.65 | 42.0 | D | |
| 4. 27th Avenue & 12th Street | EB-LT | 0.64 | 9.9 | A | 1.04 | 50.4 | D | 1.01 | 42.2 | D | Modify signal timing: Shift 1s of green from the NB phase to the EB/WB phase [NB phase green shifts from 16s to 15s; EB/WB phase green shifts from |
| (Existing Unsignalized-Two Way Stop) | WB-TR | 0.47 | 6.2 | A | 0.58 | 7.3 | A | 0.58 | 6.7 | A | 64s to 65s]. |
| (No-Action Signalized) | NB-LTR | 0.57 | 43.1 | D | 0.59 | 44.1 | D | 0.63 | 47.5 | D | |
| 5. 27th Avenue & 14th Street | EB-TR | 0.61 | 19.4 | B | 1.08 | 64.7 | E | 1.01 | 34.8 | C | Install "No Standing 7AM - 10AM Mon-Fri" regulations along the WB approach for 250 feet and along the SB approach on the west side for 250 feet. |
| (Existing Unsignalized-All Way Stop) | WB-LT | 0.66 | 22.9 | C | 1.18 | 117.7 | F | 0.86 | 29.9 | C | Modify signal timing: shift 3s of green from the SB phase to the EB/WB phase [SB phase green shifts from 40s to 37s; EB/WB phase green shifts from |
| (No-Action Signalized) | SB-LTR | 0.89 | 41.0 | D | 0.89 | 41.0 | D | 0.77 | 31.0 | C | 40s to 43s]. |
| 7. Astoria Boulevard & 21st Street | EB-L | 1.20 | 156.4 | F | 1.21 | 160.0 | F | 1.07 | 106.2 | F | Partially Mitigated |
| | EB-TR | 1.70 | 365.9 | F | 2.00 | 503.3 | F | 1.78 | 401.1 | F | Modify signal timing: Shift 3s of green from the NB/SB phase to the EB phase [NB/SB phase green shifts from 51s to 48s; EB phase green shifts from |
| | WB-L | 1.01 | 69.0 | E | 1.01 | 69.0 | E | 1.01 | 69.0 | E | 24s to 27s; WB phase green time remains the same]. |
| | WB-TR | 0.82 | 45.2 | D | 0.89 | 47.7 | D | 0.89 | 47.7 | D | |
| | NB-LT | 0.71 | 31.5 | C | 0.79 | 34.6 | C | 0.86 | 41.0 | D | |
| | NB-R | 0.37 | 24.7 | C | 0.37 | 24.7 | C | 0.40 | 27.1 | C | |
| | SB-LT | 0.86 | 30.8 | C | 0.85 | 30.7 | C | 0.91 | 34.0 | C | |
| | SB-R | 0.59 | 26.9 | C | 0.66 | 28.2 | C | 0.71 | 31.0 | C | |
| 8. Astoria Boulevard & 23rd Street | EB-LT | 1.21 | 127.5 | F | 1.43 | 224.3 | F | 1.18 | 112.1 | F | Install "No Standing 7AM - 10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 100 feet to daylight the approach. |
| | WB-TR | 0.91 | 29.7 | C | 0.94 | 33.4 | C | 0.91 | 29.2 | C | Modify signal timing: Shift 2s of green from the NB phase to the EB/WB phase [NB phase green shifts from 43s to 41s; EB/WB phase green shifts from |
| | NB-LTR | 0.50 | 33.5 | C | 0.50 | 33.5 | C | 0.52 | 35.6 | D | 67s to 69s]. |
| 9. Astoria Boulevard & Crescent Street | EB-TR | 1.28 | 159.6 | F | 1.49 | 252.6 | F | 1.23 | 136.2 | F | Partially Mitigated |
| | WB-LT | 1.24 | 139.4 | F | 1.38 | 201.4 | F | 1.38 | 201.4 | F | Install "No Standing 7AM - 10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 250 feet to daylight the approach. Install "No Standing |
| | SB-LTR | 1.11 | 89.1 | F | 1.18 | 120.4 | F | - | - | - | 4PM - 7PM Mon-Fri" regulations along the WB approach for 250 feet to daylight the approach. Install "No Standing Anytime" regulations along the SB |
| | SB-LT | - | - | - | - | - | - | 1.06 | 70.0 | E | approach for 250 feet on the west side to allow for two moving lanes at the approach. Restripe the SB approach from one 30-foot wide travel lane with |
| | SB-R | - | - | - | - | - | - | 0.19 | 26.6 | C | parking on both sides to one 11-foot wide right-turn lane, and one 19-foot wide left-through lane with parking for 250 feet. |
| 10. Astoria Boulevard & 27th Street | EB-LT | 0.96 | 38.2 | D | 1.12 | 87.3 | F | 1.09 | 74.4 | E | Partially Mitigated. |
| | WB-TR | 0.84 | 23.0 | C | 0.85 | 23.6 | C | 0.83 | 21.3 | C | Modify signal timing: Shift 2s of green from the SB phase to the EB/WB phase [SB phase green shifts from 37s to 35s; EB/WB phase green shifts from |
| | SB-LR | 0.83 | 41.1 | D | 0.83 | 41.1 | D | 0.89 | 44.5 | D | 73s to 75s]. |
| 12. Astoria Boulevard & 29th Street | EB-T | 1.63 | 328.2 | F | 1.89 | 439.8 | F | 1.59 | 304.6 | F | Install "No Standing 7AM-10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 200 feet to daylight the approach. Modify signal timing: |
| | WB-T | 0.44 | 27.5 | C | 0.44 | 27.5 | C | 0.43 | 25.8 | C | Shift 2s of green from the SB phase to the EB/WB phase [SB phase green shifts from 60s to 58s; EB/WB phase green shifts from 50s to 52s]. |
| | SB-L | 0.18 | 17.0 | B | 0.18 | 17.0 | B | 0.19 | 18.2 | B | |
| | SB-R | 0.75 | 31.3 | C | 0.77 | 32.2 | C | 0.80 | 35.5 | D | |
| 14. Astoria Boulevard & 31st Street | EB-LTR | 0.83 | 37.5 | D | 0.97 | 47.4 | D | | | | Unmitigatable. |
| | NB-T | 0.52 | 41.8 | D | 0.52 | 41.8 | D | | | | |
| | NB-R | 0.67 | 16.5 | B | 0.67 | 16.5 | B | | | | |
| | SB-T | 1.10 | 85.7 | F | 1.10 | 85.7 | F | | | | |
| | SB-R | 0.30 | 14.9 | B | 0.30 | 14.9 | B | | | | |
| 15. Hoyt Avenue S./Astoria Boulevard & | Astoria Blvd (EB-LT) | 1.32 | 192.2 | F | 1.46 | 256.5 | F | 1.28 | 172.6 | F | Install "No Standing 7AM-10AM" regulations along the EB Astoria Boulevard approach for 250 feet to daylight the approach. Modify signal timing: |
| 33rd Street | NB-TR | 1.09 | 94.2 | F | 1.09 | 94.2 | F | 1.09 | 94.2 | F | Shift 3s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shifts from 52s to 49s; |
| | NB-R | 1.08 | 92.9 | F | 1.08 | 92.9 | F | 1.08 | 92.9 | F | EB Astoria Boulevard phase green time shifts from 31s to 34s; NB phase green time remains the same]. |
| | Hoyt Ave (EB-LT) | 0.63 | 27.1 | C | 0.63 | 27.1 | C | 0.67 | 29.6 | C | |
| 16. Hoyt Ave N. & 29th Street | WB-L | 0.80 | 14.6 | B | 0.80 | 14.6 | B | 0.82 | 16.2 | B | Modify signal timing: Shift 2s of green time from the WB phase to the SB phase [WB phase green time shifts from 82s to 80s; SB phase green time shifts |
| | WB-LT | 0.82 | 14.6 | B | 0.84 | 15.1 | B | 0.86 | 16.8 | B | from 21s to 23s; the bus queue jump phase green time remains the same]. |
| | SB-R | 1.03 | 98.5 | F | 1.11 | 125.2 | F | 1.02 | 91.8 | F | |
| 18. Astoria Boulevard N. & 32nd Street | WB(Main)-T | 0.53 | 8.9 | A | 0.53 | 8.9 | A | 0.53 | 8.4 | A | Modify signal timing: Shift 1s of green time from the NB/SB phase to the WB phase [NB/SB phase green time shifts from 25s to 24s; WB phase green |
| | WB(Ramp)-T | 1.17 | 127.2 | F | 1.19 | 134.9 | F | 1.17 | 128.2 | F | time shifts from 85s to 86s]. |
| | NB-L | 0.66 | 45.3 | D | 0.67 | 45.4 | D | 0.69 | 46.7 | D | |
| | SB-R | 0.03 | 38.0 | D | 0.03 | 38.0 | D | 0.03 | 38.8 | D | |

| Intersection | Lane Group | No-Action (2) V/C Ratio | No-Action (2) Delay (sec.) | No-Action (2) LOS | LDA V/C Ratio | LDA Delay (sec.) | LDA LOS | LDA V/C Ratio | LDA Delay (sec.) | LDA LOS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20. 30th Avenue & 14th Street (Unsignalized-All Way Stop) | EB-LTR | NA | 13.0 | B | NA | 15.1 | C | | | | Unmitigatable. |
| | WB-LTR | NA | 13.4 | B | NA | 16.1 | C | | | | |
| | SB-LTR | NA | 28.5 | D | NA | 56.0 | F | | | | |
| 21. 30th Avenue & 21st Street | EB-LTR | 0.52 | 39.0 | D | 0.73 | 48.8 | D | 0.68 | 43.0 | D | Modify signal timing: Shift 3s of green time from the NB/SB phase to the EB/WB phase [NB/SB phase green time shifts from 73s to 70s; EB/WB phase green time shifts from 37s to 40s]. |
| | WB-LTR | 0.48 | 38.0 | D | 0.55 | 40.1 | D | 0.50 | 36.3 | D | |
| | NB-LTR | 0.53 | 15.0 | B | 0.55 | 15.2 | B | 0.57 | 17.2 | B | |
| | SB-LTR | 0.75 | 19.8 | B | 0.75 | 19.9 | B | 0.79 | 22.9 | C | |
| 22. Vernon Boulevard & Welling Court/ 8th Street | EB-LT | 1.18 | 116.5 | F | 1.25 | 149.0 | F | 1.13 | 96.2 | F | Modify signal timing: Shift 3s of green time from the NB phase to the EB/SB phase [NB phase green time shifts from 17s to 14s; EB/SB phase green time shifts from 29s to 32s; WB phase green time remains the same]. |
| | WB-TR | 0.04 | 21.1 | C | 0.04 | 21.1 | C | 0.04 | 21.1 | C | |
| | NB-LTR | 0.33 | 36.1 | D | 0.33 | 36.1 | D | 0.41 | 42.0 | D | |
| | SB-R | 1.01 | 68.7 | E | 1.10 | 95.3 | F | 1.00 | 60.8 | E | |
| 24. Hoyt Avenue N. & 21st Street | EB-L | 0.02 | 40.4 | D | 0.02 | 40.4 | D | 0.02 | 42.1 | D | Partially Mitigated |
| | EB-R | 0.37 | 47.5 | D | 0.37 | 47.5 | D | 0.41 | 50.9 | D | Modify signal timing: Shift 1s of green time from the EB/WB phase to the NB/SB phase; Shift 1s of green time from the EB/WB phase to the WB lag phase [BE/WB phase green time shifts from 22s to 20s; NB/SB phase green time shifts from 45s to 46s; WB lag phase green time shifts from 38s to 39s]. |
| | WB-L | 1.07 | 78.5 | E | 1.09 | 89.6 | F | 1.07 | 78.0 | E | |
| | WB-TR | 0.25 | 14.8 | B | 0.25 | 14.8 | B | 0.25 | 15.4 | B | |
| | NB-L | 0.31 | 32.3 | C | 0.32 | 32.9 | C | 0.30 | 31.3 | C | |
| | NB-T | 1.20 | 143.8 | F | 1.29 | 180.0 | F | 1.26 | 167.1 | F | |
| | SB-TR | 1.04 | 65.0 | E | 1.06 | 73.1 | E | 1.04 | 64.1 | E | |
| 25. Hoyt Avenue S./Astoria Park S. & 21st Street | EB-LTR | 0.84 | 41.9 | D | 0.92 | 44.3 | D | | | | Unmitigatable. |
| | NB-LT | - | - | - | - | - | - | | | | |
| | NB-R | - | - | - | - | - | - | | | | |
| | NB-LTR | 0.60 | 14.2 | B | 0.63 | 14.7 | B | | | | |
| | SB-LTR | 1.11 | 75.4 | E | 1.14 | 89.2 | F | | | | |
| 26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop) | EB-LT | 0.02 | 8.5 | A | 0.01 | 8.9 | A | 0.63 | 20.2 | C | Install a traffic signal with 90-second cycle length and two phases. [EB/WB phase green time is 45s; SB phase green time is 35s; all phases have 3s of amber and 2s of all red time. Install "No Standing Anytime" regulations along the total western length of 9th Street and along the east curb of 9th Street for 150 to allow for two-way traffic. Restripe the SB approach from one 16.5-foot wide travel lane with parking and one 15.5 foot wide NB receiving lane with parking to one 10-foot wide right-turn lane, one 10-foot wide left-turn lane, and one 12-foot wide NB receiving lane for 100 feet. |
| | WB-TR | - | - | - | - | - | - | 0.83 | 30.0 | C | |
| | SB-LR | 0.56 | 29.6 | D | 2.06 | 521.3 | F | - | - | | |
| | SB-L | - | - | - | - | - | - | 0.67 | 28.4 | C | |
| | SB-R | - | - | - | - | - | - | 0.26 | 20.0 | B | |
| 27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop) | WB-LR | 0.66 | 38.2 | E | 0.71 | 44.5 | E | | | | Unmitigatable. |
| | SB-LT | 0.02 | 8.3 | A | 0.02 | 8.3 | A | | | | |
| 28. Vernon Boulevard & Broadway/11th Street | EB-LTR | 0.01 | 28.2 | C | 0.01 | 28.2 | C | 0.01 | 29.0 | C | Modify signal timing: Shift 1s of green time from the EB/WB phase to the NB/SB Vernon Boulevard phase; Shift 2s of green time from the NB 11th Street phase to the NB/SB Vernon Boulevard phase [EB/WB phase green time shifts from 25s to 24s; NB/SB Vernon Boulevard phase green time shifts from 43s to 46s; NB 11th Street phase green time shifts from 17s to 15s]. |
| | WB-LT | 0.87 | 38.9 | D | 0.87 | 38.9 | D | 0.91 | 41.3 | D | |
| | WB-R | 0.21 | 29.9 | C | 0.25 | 30.3 | C | 0.27 | 31.1 | C | |
| | WB-LTR | | 37.7 | D | | 37.6 | D | | 39.8 | D | |
| | NB (Vernon Blvd)-LT | 0.28 | 8.2 | A | 0.29 | 8.2 | A | 0.28 | 7.8 | A | |
| | NB (Vernon Blvd)-R | 0.11 | 6.8 | A | 0.11 | 6.8 | A | 0.11 | 6.4 | A | |
| | NB (11th Street)-LTR | 0.38 | 41.1 | D | 0.38 | 41.1 | D | 0.43 | 44.7 | D | |
| | SB-LTR | 1.36 | 195.9 | F | 1.45 | 234.1 | F | 1.34 | 184.2 | F | |
| **MIDDAY PEAK HOUR** | | | | | | | | | | | |
| 3. 27th Avenue & 8th Street | EB-T | 0.24 | 11.9 | B | 0.24 | 11.9 | B | | | | Unmitigatable. |
| | EB-R | 0.61 | 22.5 | C | 0.61 | 22.5 | C | | | | |
| | WB-LT | 1.25 | 151.3 | F | 1.68 | 336.1 | F | | | | |
| | NB-L | 0.36 | 23.3 | C | 0.45 | 25.0 | C | | | | |
| | NB-R | 0.73 | 47.7 | D | 0.73 | 47.7 | D | | | | |
| 7. Astoria Boulevard & 21st Street | EB-L | 0.33 | 36.9 | D | 0.36 | 37.5 | D | 0.36 | 37.5 | D | Modify signal timing: shift 1s of green from the WB phase to the NB/SB phase [WB phase green shifts from 34s to 33s; NB/SB phase green shifts from 38s to 39s; EB phase green time remains the same]. |
| | EB-TR | 0.61 | 41.5 | D | 0.68 | 43.6 | D | 0.68 | 43.6 | D | |
| | WB-L | 0.86 | 53.2 | D | 0.86 | 53.2 | D | 0.88 | 56.6 | E | |
| | WB-TR | 0.46 | 36.4 | D | 0.54 | 37.9 | D | 0.56 | 38.9 | D | |
| | NB-LT | 0.79 | 38.2 | D | 0.94 | 43.6 | D | 0.91 | 41.7 | D | |
| | NB-R | 0.65 | 36.1 | D | 0.65 | 36.1 | D | 0.63 | 35.1 | D | |
| | SB-LT | 0.76 | 38.1 | D | 0.76 | 38.1 | D | 0.74 | 37.0 | D | |
| | SB-R | 0.75 | 39.7 | D | 0.90 | 46.6 | D | 0.87 | 44.0 | D | |
| 9. Astoria Boulevard & Crescent Street | EB-TR | 0.83 | 25.1 | C | 0.90 | 30.8 | C | 0.86 | 26.0 | C | Install "No Standing 7AM - 10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 250 feet to daylight the approach. Install "No Standing 4PM - 7PM Mon-Fri" regulations along the WB approach for 250 feet to daylight the approach. Install "No Standing Anytime" regulations along the SB approach for 250 feet on the west side to allow for two moving lanes at the approach. Restripe the SB approach from one 30-foot wide travel lane with parking on both sides to one 11-foot wide right-turn lane, and one 19-foot wide left-through lane with parking for 250 feet. Modify signal timing: Shift 2s of green time from the SB phase to the EB/WB phase [SB phase green time shifts from 31s to 29s; EB/WB phase green time shifts from 49s to 51s]. |
| | WB-LT | 1.27 | 143.1 | F | 1.34 | 175.3 | F | 1.24 | 128.2 | F | |
| | SB-LTR | 1.09 | 73.8 | E | 1.17 | 111.4 | F | - | - | - | |
| | SB-LT | - | - | - | - | - | - | 1.08 | 71.2 | E | |
| | SB-R | - | - | - | - | - | - | 0.25 | 22.7 | C | |

| Intersection | Lane Group | No-Action (2) V/C Ratio | No-Action (2) Delay (sec.) | No-Action (2) LOS | LDA V/C Ratio | LDA Delay (sec.) | LDA LOS | LDA V/C Ratio | LDA Delay (sec.) | LDA LOS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12. Astoria Boulevard & 29th Street | EB-T | 0.97 | 48.8 | D | 1.05 | 69.0 | E | 0.98 | 48.7 | D | Install "No Standing 7AM-10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 200 feet to daylight the approach. Modify signal timing: Shift 3s of green from the SB phase to the EB/WB phase [SB phase green shifts from 35s to 32s; EB/WB phase green shifts from 45s to 48s]. |
| | WB-T | 0.23 | 13.5 | B | 0.23 | 13.5 | B | 0.22 | 11.7 | B | |
| | SB-L | 0.12 | 18.1 | B | 0.12 | 18.1 | B | 0.13 | 20.1 | C | |
| | SB-R | 0.70 | 30.5 | C | 0.72 | 31.4 | C | 0.79 | 39.0 | D | |
| 15. Hoyt Avenue S./Astoria Boulevard & 33rd Street | Astoria Blvd (EB-LT) | 1.02 | 62.4 | E | 1.08 | 80.7 | F | 1.00 | 53.0 | D | Install "No Standing 7AM-10AM Mon-Fri" regulations along the EB Astoria Boulevard approach for 250 feet to daylight the approach. Modify signal timing: Shift 2s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shifts from 29s to 27s; EB Astoria Boulevard phase green time shifts from 24s to 26s; NB phase green time remains the same]. |
| | NB-TR | 0.81 | 38.6 | D | 0.81 | 38.6 | D | 0.81 | 38.6 | D | |
| | NB-R | 0.79 | 42.6 | D | 0.79 | 42.6 | D | 0.79 | 42.6 | D | |
| | Hoyt Ave (EB-LT) | 0.78 | 30.4 | C | 0.78 | 30.4 | C | 0.84 | 33.6 | C | |
| 18. Astoria Boulevard N. & 32nd Street | WB(Main)-T | 0.37 | 7.9 | A | 0.37 | 7.9 | A | 0.36 | 7.0 | A | Modify signal timing: Shift 2s of green time from the NB/SB phase to the WB phase [NB/SB phase green time shifts from 22s to 20s; WB phase green time shifts from 58s to 60s]. |
| | WB(Ramp)-T | 1.03 | 45.5 | D | 1.06 | 53.3 | D | 1.02 | 40.7 | D | |
| | NB-L | 0.38 | 29.0 | C | 0.39 | 29.1 | C | 0.43 | 31.0 | C | |
| | SB-R | 0.02 | 25.9 | C | 0.02 | 25.9 | C | 0.02 | 27.5 | C | |
| 22. Vernon Boulevard & Welling Court/ 8th Street | EB-LT | 0.91 | 45.7 | D | 0.98 | 57.7 | E | 0.92 | 44.3 | D | Modify signal timing: Shift 2s of green time from the WB phase to the EB/SB phase [WB phase green time shifts from 29s to 27s; EB/SB phase green time shifts from 28s to 30s; NB phase green time remains the same]. |
| | WB-TR | 0.04 | 21.1 | C | 0.04 | 21.1 | C | 0.05 | 22.6 | C | |
| | NB-LTR | 0.17 | 31.0 | C | 0.17 | 31.0 | C | 0.17 | 31.0 | C | |
| | SB-R | 0.71 | 35.1 | D | 0.76 | 37.6 | D | 0.71 | 33.4 | C | |
| 26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop) | EB-LT | 0.01 | 8.1 | A | 0.00 | 8.6 | C | 0.36 | 15.0 | B | Install a traffic signal with 90-second cycle length and two phases. [EB/WB phase green time is 45s; SB phase green time is 35s; all phases have 3s of amber and 2s of all red time. Install "No Standing Anytime" regulations along the total western length of 9th Street and along the east curb of 9th Street for 150 to allow for two-way traffic. Restripe the SB approach from one 16.5-foot wide travel lane with parking and one 15.5 foot wide NB receiving lane with parking to one 10-foot wide right-turn lane, one 10-foot wide left-turn lane, and one 12-foot wide NB receiving lane for 100 feet. |
| | WB-TR | - | - | - | - | - | - | 0.69 | 22.4 | C | |
| | SB-LR | 0.43 | 15.9 | C | 0.93 | 61.6 | F | - | - | - | |
| | SB-L | - | - | - | - | - | - | 0.40 | 21.7 | C | |
| | SB-R | - | - | - | - | - | - | 0.26 | 19.9 | B | |
| 28. Vernon Boulevard & Broadway/11th Street | EB-LTR | 0.02 | 25.4 | C | 0.02 | 25.4 | C | 0.02 | 24.7 | C | Modify signal timing: Shift 1s of green time from the NB 11th Street phase to the EB/WB phase [NB 11th Street phase green time shifts from 20s to 19s; EB/WB phase green time shifts from 26s to 27s; NB/SB Vernon Boulevard phase green time remains the same]. |
| | WB-LT | - | - | - | - | - | - | - | - | - | |
| | WB-R | - | - | - | - | - | - | - | - | - | |
| | WB-LTR | 0.96 | 55.5 | E | 1.01 | 66.3 | E | 0.97 | 56.3 | E | |
| | NB (Vernon Blvd)-LT | 0.29 | 9.0 | A | 0.30 | 9.1 | A | 0.30 | 9.6 | A | |
| | NB (Vernon Blvd)-R | 0.21 | 8.3 | A | 0.21 | 8.3 | A | 0.21 | 8.7 | A | |
| | NB (11th Street)-LTR | 0.22 | 32.8 | C | 0.22 | 32.8 | C | 0.23 | 33.9 | C | |
| | SB-LTR | 0.67 | 31.5 | C | 0.71 | 33.2 | C | 0.71 | 33.2 | C | |
| **PM PEAK HOUR** | | | | | | | | | | | |
| 2. 27th Avenue & 4th Street (Existing Unsignalized-All Way Stop) (No-Action Signalized) | EB-LT | 0.56 | 15.0 | B | 0.56 | 15.0 | B | 0.53 | 12.7 | B | Partially Mitigated; Modify signal timing: Shift 3s of green time from the SB phase to the EB/WB phase [SB phase green time shifts from 29s to 26s; EB/WB phase green time shifts from 51s to 54s]. |
| | WB-T | 0.65 | 15.6 | B | 0.65 | 15.6 | B | 0.61 | 13.2 | B | |
| | WB-R | 0.29 | 11.8 | B | 1.28 | 159.8 | F | 1.17 | 111.4 | F | |
| | SB-LR | 0.08 | 21.6 | C | 0.08 | 21.6 | C | 0.09 | 23.8 | C | |
| 3. 27th Avenue & 8th Street | EB-T | 0.36 | 13.2 | B | 0.36 | 13.2 | B | | | | Unmitigatable. |
| | EB-R | 0.42 | 15.9 | B | 0.42 | 15.9 | B | | | | |
| | WB-LT | 1.22 | 138.6 | F | 1.83 | 400.4 | F | | | | |
| | NB-L | 0.48 | 25.8 | C | 0.66 | 31.2 | C | | | | |
| | NB-R | 0.75 | 47.4 | D | 0.75 | 47.4 | D | | | | |
| 4. 27th Avenue & 12th Street (Existing Unsignalized-Two Way Stop) (No-Action Signalized) | EB-LT | 0.54 | 8.2 | A | 0.94 | 30.0 | C | 0.97 | 36.5 | D | Modify signal timing: Shift 1s of green time from the EB/WB phase to the NB phase [EB/WB phase green time shifts from 64s to 63s; NB phase green time shifts from 16s to 17s]. |
| | WB-TR | 0.66 | 8.8 | A | 0.96 | 25.3 | C | 0.98 | 29.1 | C | |
| | NB-LTR | 0.86 | 65.8 | E | 0.90 | 70.6 | E | 0.84 | 60.6 | E | |
| 7. Astoria Boulevard & 21st Street | EB-L | 0.61 | 46.8 | D | 0.67 | 48.8 | D | | | | Unmitigatable. |
| | EB-TR | 1.13 | 118.0 | F | 1.27 | 174.5 | F | | | | |
| | WB-L | 0.92 | 68.3 | E | 0.91 | 66.7 | E | | | | |
| | WB-TR | 0.99 | 73.3 | E | 1.22 | 156.2 | F | | | | |
| | NB-LT | 1.10 | 80.8 | F | 1.26 | 152.5 | F | | | | |
| | NB-R | 0.44 | 22.9 | C | 0.44 | 22.9 | C | | | | |
| | SB-LT | 0.77 | 29.6 | C | 0.77 | 29.6 | C | | | | |
| | SB-R | 0.80 | 33.1 | C | 0.99 | 54.5 | D | | | | |
| 8. Astoria Boulevard & 23rd Street | EB-LT | 0.95 | 35.5 | D | 1.04 | 58.0 | E | 0.88 | 28.0 | C | Install "No Standing 7AM - 10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 100 feet to daylight the approach. |
| | WB-TR | 0.84 | 22.7 | C | 0.98 | 32.7 | C | 0.98 | 32.7 | C | |
| | NB-LTR | 0.61 | 37.4 | D | 0.61 | 37.4 | D | 0.61 | 37.4 | D | |
| 9. Astoria Boulevard & Crescent Street | EB-TR | 1.11 | 88.2 | F | 1.21 | 128.8 | F | 1.00 | 48.8 | D | Install "No Standing 7AM - 10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 250 feet to daylight the approach. Install "No Standing 4PM - 7PM Mon-Fri" regulations along the WB approach for 250 feet to daylight the approach. Install "No Standing Anytime" regulations along the SB approach for 250 feet on the west side to allow for two moving lanes at the approach. Restripe the SB approach from one 30-foot wide travel lane with parking on both sides to one 11-foot wide right-turn lane, and one 19-foot wide left-through lane with parking for 250 feet. |
| | WB-LT | 1.53 | 267.6 | F | 1.71 | 347.5 | F | 1.45 | 231.2 | F | |
| | SB-LTR | 1.07 | 74.4 | E | 1.29 | 171.5 | F | - | - | - | |
| | SB-LT | - | - | - | - | - | - | 0.94 | 41.3 | D | |
| | SB-R | - | - | - | - | - | - | 0.42 | 29.3 | C | |

| Intersection | Lane Group | No-Action (2) V/C Ratio | No-Action (2) Delay (sec.) | No-Action (2) LOS | LDA V/C Ratio | LDA Delay (sec.) | LDA LOS | LDA V/C Ratio | LDA Delay (sec.) | LDA LOS | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12. Astoria Boulevard & 29th Street | EB-T | 1.30 | 179.5 | F | 1.42 | 229.4 | F | 1.24 | 152.1 | F | Install "No Standing 7AM-10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 200 feet to daylight the approach. |
| | WB-T | 0.22 | 20.3 | C | 0.22 | 20.3 | C | 0.22 | 20.3 | C | |
| | SB-L | 0.16 | 19.5 | B | 0.16 | 19.5 | B | 0.16 | 19.5 | B | |
| | SB-R | 0.66 | 30.4 | C | 0.70 | 32.5 | C | 0.70 | 32.5 | C | |
| 15. Hoyt Avenue S./Astoria Boulevard & 33rd Street | Astoria Blvd (EB-LT) | 1.17 | 121.1 | F | 1.23 | 149.1 | F | 1.17 | 122.7 | F | Install "No Standing 7AM-10AM" regulations along the EB Astoria Boulevard approach for 250 feet to daylight the approach. Modify signal timing: Shift 2s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shifts from 40s to 38s; EB Astoria Boulevard phase green time shifts from 34s to 36s; NB phase green time remains the same]. |
| | NB-TR | 1.09 | 86.7 | F | 1.09 | 86.7 | F | 1.09 | 86.7 | F | |
| | NB-R | 1.08 | 86.6 | F | 1.08 | 86.6 | F | 1.08 | 86.6 | F | |
| | Hoyt Ave (EB-LT) | 0.87 | 41.3 | D | 0.87 | 41.3 | D | 0.91 | 44.5 | D | |
| 18. Astoria Boulevard N. & 32nd Street | WB(Main)-T | 0.32 | 9.2 | A | 0.32 | 9.2 | A | 0.31 | 7.9 | A | Partially Mitigated. Modify signal timing: Shift 3s of green time from the NB/SB phase to the WB phase [NB/SB phase green time shifts from 31s to 28s; WB phase green time shifts from 79s to 82s]. |
| | WB(Ramp)-T | 1.13 | 84.7 | F | 1.19 | 111.0 | F | 1.15 | 90.8 | F | |
| | NB-L | 0.57 | 39.2 | D | 0.58 | 39.3 | D | 0.64 | 42.2 | D | |
| | SB-R | 0.02 | 33.3 | C | 0.02 | 33.3 | C | 0.02 | 35.6 | D | |
| 19. Astoria Boulevard & 8th Street | EB-L | 0.17 | 29.0 | C | 0.17 | 29.0 | C | 0.17 | 29.0 | C | Install "No Standing 4PM - 7PM Mon-Fri" regulations along the NB approach for 70 feet to daylight the approach. |
| | EB-R | 0.66 | 40.6 | D | 0.66 | 40.6 | D | 0.66 | 40.6 | D | |
| | WB-L | 0.31 | 31.0 | C | 0.31 | 31.0 | C | 0.31 | 31.0 | C | |
| | WB-TR | 0.50 | 35.3 | D | 0.50 | 35.3 | D | 0.50 | 35.3 | D | |
| | NB-LT | 0.87 | 27.7 | C | 1.03 | 53.8 | D | 0.90 | 29.1 | C | |
| | SB-TR | 0.39 | 15.1 | B | 0.43 | 15.8 | B | 0.43 | 15.8 | B | |
| 22. Vernon Boulevard & Welling Court/ 8th Street | EB-LT | 1.43 | 229.6 | F | 1.57 | 292.1 | F | 1.41 | 218.7 | F | Modify signal timing: Shift 3s of green time from the WB phase to the EB/SB phase [WB phase green time shifts from 29s to 26s; EB/SB phase green time shifts from 26s to 29s; NB phase green time remains the same]. |
| | WB-TR | 0.06 | 21.3 | C | 0.06 | 21.3 | C | 0.07 | 23.5 | C | |
| | NB-LTR | 0.18 | 29.5 | C | 0.18 | 29.5 | C | 0.18 | 29.5 | C | |
| | SB-R | 0.72 | 37.9 | D | 0.79 | 41.8 | D | 0.71 | 34.4 | C | |
| 24. Hoyt Avenue N. & 21st Street | EB-L | 0.11 | 43.9 | D | 0.11 | 43.9 | D | 0.13 | 47.3 | D | Partially Mitigated. Modify signal timing: Shift 3s of green time from the EB/WB phase to the WB lag phase [EB/WB phase green time shifts from 20s to 17s; WB lag phase green time shifts from 38s to 41s; NB/SB phase green time remains the same]. |
| | EB-R | 0.19 | 45.3 | D | 0.19 | 45.3 | D | 0.23 | 49.1 | D | |
| | WB-L | 0.97 | 58.9 | E | 1.04 | 78.4 | E | 0.97 | 56.4 | E | |
| | WB-TR | 0.30 | 16.9 | B | 0.30 | 16.9 | B | 0.30 | 16.9 | B | |
| | NB-L | 0.17 | 24.7 | C | 0.17 | 24.8 | C | 0.17 | 24.8 | C | |
| | NB-T | 1.12 | 99.0 | F | 1.16 | 118.8 | F | 1.16 | 118.8 | F | |
| | SB-TR | 0.77 | 37.9 | D | 0.80 | 39.2 | D | 0.80 | 39.2 | D | |
| 25. Hoyt Avenue S./Astoria Park S. & 21st Street | EB-LTR | 0.58 | 37.9 | D | 0.63 | 39.0 | D | 0.69 | 42.5 | D | Modify signal timing: Shift 3s of green time from the EB phase to the NB/SB phase [EB phase green time shifts from 35s to 32s; NB/SB phase green time shifts from 75s to 78s]. |
| | NB-LT | 0.72 | 16.8 | B | 0.75 | 17.6 | B | 0.71 | 15.0 | B | |
| | NB-R | 0.51 | 13.3 | B | 0.52 | 13.4 | B | 0.50 | 11.7 | B | |
| | NB-LTR | | 15.7 | B | | 16.3 | B | | 13.9 | B | |
| | SB-LTR | 0.99 | 38.1 | D | 1.04 | 53.5 | D | 0.99 | 37.4 | D | |
| 26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop) | EB-LT | 0.01 | 8.8 | A | 0.01 | 9.8 | A | 0.44 | 10.7 | B | Install a traffic signal with 90-second cycle length and two phases. [EB/WB phase green time is 55s; SB phase green time is 25s; all phases have 3s of amber and 2s of all red time. Install "No Standing 4PM - 7PM Mon - Fri" regulation along the WB approach for 250 feet. Install "No Standing Anytime" regulations along the total western length of 9th Street and along the east curb of 9th Street for 150 to allow for two-way traffic. Restripe the SB approach from one 16.5-foot wide travel lane with parking and one 15.5 foot wide NB receiving lane with parking to one 10-foot wide right-turn lane, one 10-foot wide left-turn lane, and one 12-foot wide NB receiving lane for 100 feet. |
| | WB-TR | - | - | - | - | - | - | 0.90 | 27.3 | C | |
| | SB-LR | 0.60 | 31.2 | D | 2.23 | 606.7 | F | - | - | - | |
| | SB-L | - | - | - | - | - | - | 0.72 | 38.9 | D | |
| | SB-R | - | - | - | - | - | - | 0.34 | 28.7 | C | |
| 27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop) | WB-LR | 0.51 | 29.2 | D | 0.58 | 35.1 | E | | | | Unmitigatable. |
| | SB-LT | 0.02 | 8.9 | A | 0.03 | 9.0 | A | | | | |
| 28. Vernon Boulevard & Broadway/11th Street | EB-LTR | 0.03 | 33.2 | C | 0.03 | 33.2 | C | 0.03 | 33.2 | C | Modify signal timing: Shift 3s of green time from the NB 11th Street phase to the NB/SB Vernon Boulevard phase [NB 11th Street phase green time shifts from 25s to 22s; NB/SB Vernon Boulevard phase green time shifts from 45s to 48s; EB/WB phase green time remains the same]. |
| | WB-LT | 0.77 | 47.0 | D | 0.77 | 47.0 | D | 0.77 | 47.0 | D | |
| | WB-R | 0.24 | 35.8 | D | 0.36 | 37.8 | D | 0.36 | 37.8 | D | |
| | WB-LTR | | 45.1 | D | | 44.9 | D | | 44.9 | D | |
| | NB (Vernon Blvd)-LT | 0.52 | 10.1 | B | 0.54 | 10.3 | B | 0.54 | 10.4 | B | |
| | NB (Vernon Blvd)-R | 0.18 | 6.7 | A | 0.18 | 6.7 | A | 0.18 | 6.7 | A | |
| | NB (11th Street)-LTR | 0.33 | 38.2 | D | 0.33 | 38.2 | D | 0.38 | 41.9 | D | |
| | SB-LTR | 0.88 | 45.4 | D | 0.99 | 65.6 | E | 0.90 | 46.8 | D | |

**2023 Lower Density Alternative Subway Stair Level Of Service**

| Station | Stairway | Total Width (feet) | Effective Width (feet) | Peak 15-Minute Volumes | | Surging Factor | | Friction Factor | V/C Ratio | LOS | WIT | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Up | Down | Up | Down | | | | | |
| **Weekday AM Peak Hour** | | | | | | | | | | | | |
| venue (N,C | S3 (NW) | 5.0 | 4.0 | 345 | 155 | 0.90 | 0.8 | 0.9 | 1.07 | D | 3.30 | No Impact |
| | P5 (NW) | 5.0 | 4.0 | 519 | 7 | 0.95 | 0.75 | 1.0 | 0.93 | C | N/A | N/A |
| | P1 (SW) | 5.0 | 4.0 | 663 | 17 | 0.95 | 0.75 | 1.0 | 1.20 | D | 4.22 | No Impact |
| **Weekday PM Peak Hour** | | | | | | | | | | | | |
| venue (N,C | S3 (NW) | 5.0 | 4.0 | 126 | 474 | 0.90 | 0.8 | 0.9 | 1.36 | E | 17.11 | Impacted |
| | P7 (NE) | 5.0 | 4.0 | 14 | 396 | 0.95 | 0.75 | 1.0 | 0.90 | C | N/A | N/A |
| | P3(SE) | 5.0 | 4.0 | 15 | 461 | 0.95 | 0.75 | 1.0 | 1.05 | D | 2.44 | No Impact |

**Notes:**

Methodology based on *2014 CEQR Technical Manual* guidelines.

Volumes based on data collected in October 2012, June 2013 and March 2014, annual background growth rates, the Halletts Point FEIS, and projected No-With-Action Upland Site and project increments.

**2023 Lower Density Alternative Fare-Array Analysis**

| Station | Direction | Control Element | Quantity | Peak 15-Minute | | Surging Factor | | Friction Factor | V/C Ratio | LOS | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | In | Out | In | Out | | | | |
| **Weekday AM Peak Hour** | | | | | | | | | | | |
| ue Station | Northbound | Two-way Turnstile | 3 | 61 | 203 | 0.95 | 0.80 | 0.9 | 0.20 | A | No Impact |
| | Southbound | Two-way Turnstile | 3 | 1182 | 24 | 0.95 | 0.80 | 1.0 | 1.00297 | D | Impacted |
| **Weekday AM Peak Hour** | | | | | | | | | | | |
| ue Station | Northbound | Two-way Turnstile | 3 | 29 | 857 | 0.95 | 0.80 | 1.0 | 0.58 | B | No Impact |
| | Southbound | Two-way Turnstile | 3 | 396 | 40 | 0.95 | 0.80 | 0.9 | 0.40 | A | No Impact |

**Notes:**

Methodology based on *2014 CEQR Technical Manual* guidelines.

Volumes based on data collected in October 2012 and June 2013, annual background growth rates, the Halletts Point FEIS, and project increr

"In" refers to system entries.

"Out" refers to system exits.

**2012 Existing Conditions: Bus Line-Haul Analysis**

| Route | Direction | Peak Load Point | Hourly Volumes | Buses per Hour | Average passengers per bus |
|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | |
| Q103 | Northbound | 40th Avenue & 12th Street | 36 | 2 | **18** |
| | Southbound | Vernon Boulevard & 31st Avenue | 78 | 2 | **39** |
| **PM Peak Hour** | | | | | |
| Q103 | Northbound | 40th Avenue & 12th Street | 42 | 3 | **14** |
| | Southbound | 40th Avenue & 12th Street | 33 | 3 | **11** |

**Note:** Data provided by MTA Bus Company
Guideline Capacity = 54 passengers per bus.

**2023 No-Build Conditions: Bus Line-Haul Analysis**

| Route | Direction | Peak Load Point | Hourly Volumes | Buses per Hour | Average passengers per bus | Bus Demand at Guideline Capacity | New Bus Capacity | Available Capacity |
|---|---|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | | | |
| Q103 | Northbound | 40th Avenue & 12th Street | 113 | 2 | **57** | 3 | 162 | 49 |
| | Southbound | Vernon Boulevard & 31st Avenue | 369 | 2 | **185** | 7 | 378 | 9 |
| **PM Peak Hour** | | | | | | | | |
| Q103 | Northbound | 40th Avenue & 12th Street | 314 | 3 | **105** | 6 | 324 | 10 |
| | Southbound | 40th Avenue & 12th Street | 190 | 3 | **64** | 4 | 216 | 26 |

**Note:** Data provided by MTA Bus Company.
Guideline Capacity = 54 passengers per bus.

| Background Growth |
|---|
| **AM** |
| 2 |
| 4 |
| **PM** |
| 2 |
| 2 |

**ASSUMPTIONS**

| Halletts Existing | Halletts Background growth | Halletts No-Build Total | Halletts No-Build Increment | Halletts Build Volumes | Halletts Build Increment | 166 Dus Upland Site |
|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | |
| **35** | 2 | **72** | 35 | **144** | 72 | 3 |
| **38** | 2 | **162** | 122 | **436** | 274 | 13 |
| **PM Peak Hour** | | | | | | |
| **41** | 2 | **168** | 125 | **426** | 258 | 12 |
| **11** | 1 | **89** | 77 | **237** | 148 | 7 |

**Note:** **Bolded numbers are as shown in the FEIS**

**2023 Lower Density Alternative Conditions: Bus Line-Haul Analysis**

| Route | Direction | Peak Load Point | Hourly Volumes | Buses per Hour | Average passengers per bus | Bus Demand at Guideline Capacity | New Bus Capacity | Available Capacity |
|---|---|---|---|---|---|---|---|---|
| **AM Peak Hour** | | | | | | | | |
| Q103 | Northbound | 40th Avenue & 12th Street | 149 | 3 | **50** | 3 | 162 | 13 |
| | Southbound | Vernon Boulevard & 31st Avenue | 476 | 7 | **68** | 9 | 486 | 10 |
| **PM Peak Hour** | | | | | | | | |
| Q103 | Northbound | 40th Avenue & 12th Street | 425 | 6 | **71** | 8 | 432 | 7 |
| | Southbound | 40th Avenue & 12th Street | 262 | 4 | **66** | 5 | 270 | 8 |

**Note:** Data provided by MTA Bus Company.
Guideline Capacity = 54 passengers per bus.

**Astoria Cove**

| LDA Increment |
|---|
| **AM** |
| **36** |
| **107** |
| **PM** |
| **111** |
| **72** |