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Philip E. Grubb
B.A.Sc., P.Eng.
President

James J.L. Mallett
M.A.Sc., P.Eng., PTOE
Vice President

43 Forest Road
Cambridge ON N1S 3B4

Email: jmallett@ptsl.com
Phone: 519-896-3163
905-381-2229
Fax: 1-866-722-5117

www.ptsl.com

September 29, 2010
Project: 080270

Adrian Cammaert, BA
MHBC Planning Limited
13 Poyntz Street
Barrie, ON L4M 3N6

Dear Mr. Cammaert:

Re: Zavarella/Kulmatychy Residential Response to Agency Review Comments

This letter is in response to the Nith Peninsula Area Study comments dated August 4, 2010 and August 20, 2010. The analysis and information contained within this intended to be reviewed in conjunction with the Traffic Impact Study completed in October 2008.

Existing Traffic

The existing traffic conditions have been established through turning movement counts conducted by Pyramid Traffic Incorporated during February 2008.

Site Plan and Site Trip Generation

The current site plan for the subject site proposes three connections to the external road network. The first connection is via the extension of Gort Avenue northward into the site, the second connection via Barker Street and the third connection, a new intersection with Dundas Street labelled as Street "C".

The Town has expressed concern relating to the proposed Street "C" connection and would prefer access along Dundas be restricted. As a result, the internal layout of the proposed subdivision will require modification to the road network and parcel fabrics.

The trips estimated to be generated by the subject site for the AM peak hour and PM peak hours were developed using the Eighth Edition of the ITE Trip Generation Manual. The average trip rates for land use codes 210 (Single Family Detached), 221 (Low-Rise Apartment) and 230 (Residential Condominium/Townhouse) have been used to estimate the peak hour



vehicular trips expected to be generated by the subject site. Table 1 indicates that the subject site is estimated to have a total trip generation of approximately 258 vehicle trips during the AM peak hour and 335 vehicle trips during the PM peak hour.

TABLE 1: ESTIMATED SITE GENERATION

| Land Use | Land Use Code | Units of Measure | Number of Units | AM Peak Hour | | | | PM Peak Hour | | | |
|-----------------------------------|---------------|------------------|-----------------|--------------|----|-----|-------|--------------|-----|-----|-------|
| | | | | Rate | In | Out | Total | Rate | In | Out | Total |
| Single Family Detached | 210 | Units | 264 | 0.75 | 50 | 149 | 199 | 1.01 | 168 | 99 | 267 |
| Low-Rise Apartment | 221 | Units | 90 | 0.46 | 9 | 33 | 42 | 0.58 | 34 | 18 | 52 |
| Residential Condominium/Townhouse | 230 | Units | 102 | 0.44 | 8 | 37 | 45 | 0.52 | 36 | 18 | 54 |
| Total Generation | | | | | 67 | 219 | 286 | 2 | 238 | 135 | 373 |
| Transit Reduction | | | | 10% | 14 | 14 | 28 | 10% | 19 | 19 | 38 |
| Net Generation | | | | | 53 | 205 | 258 | | 219 | 116 | 335 |

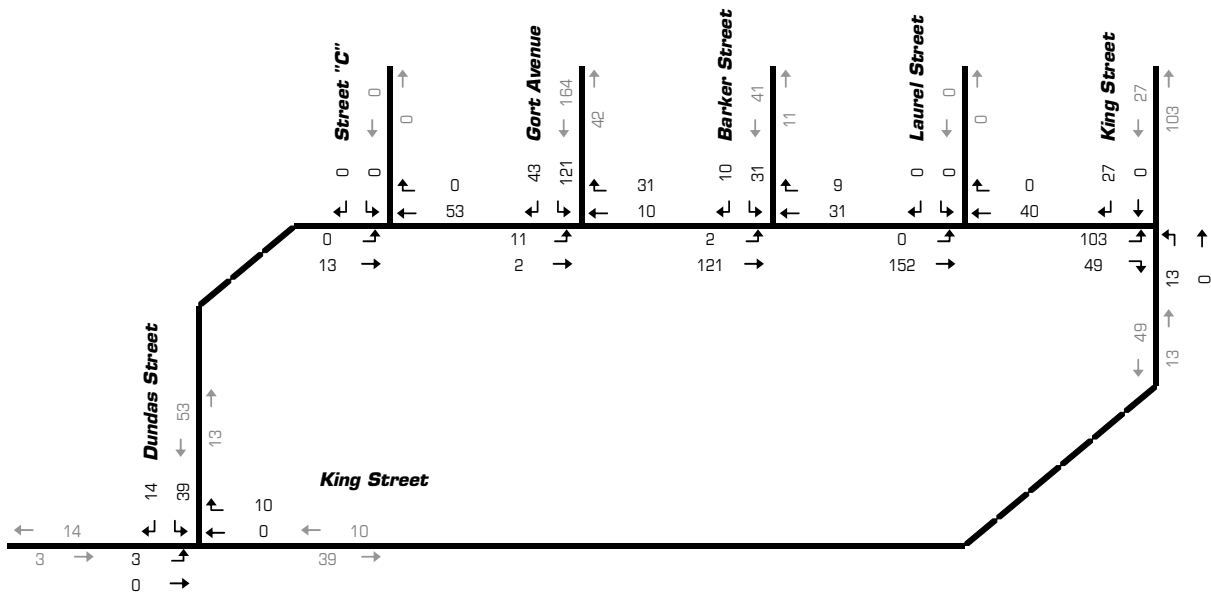
Site Traffic Distribution & Assignment

The site traffic distribution is assumed to continue to follow the general distribution noted in the October 2008 TIS. The distribution is noted to be 50 percent north on King Street, 24 percent south on King Street, 19 percent east on King Street and 7 percent west on King Street. The resulting site traffic assignment is illustrated in Figure 1.

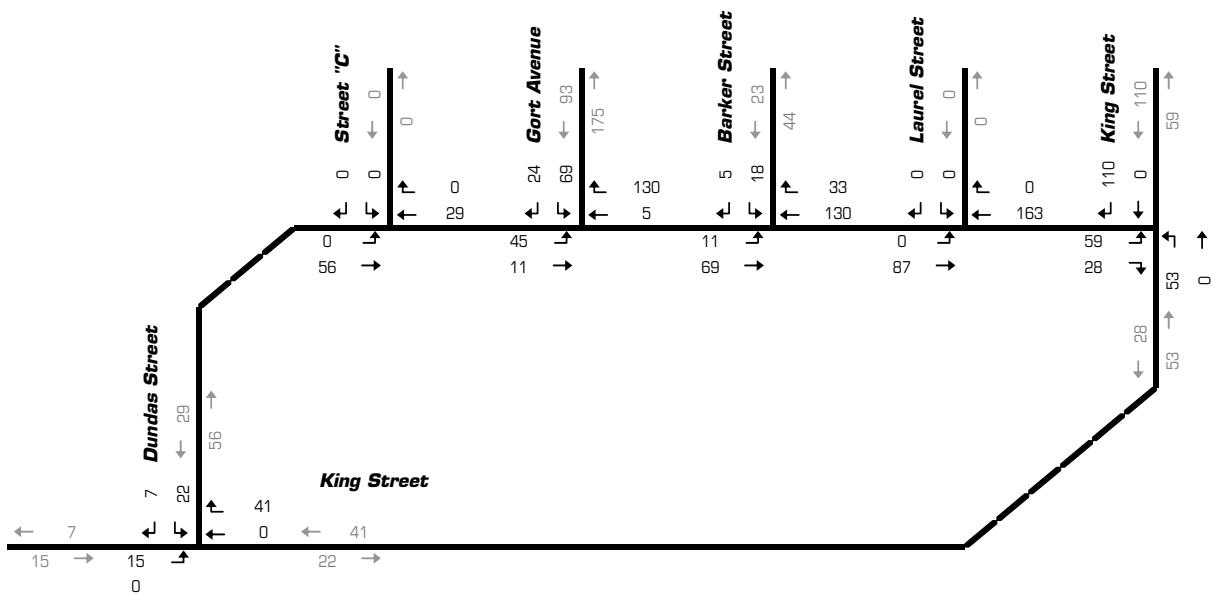


FIGURE 1: SITE TRAFFIC

AM Peak Hour



PM Peak Hour





Total Traffic Forecasts & Operations

The total traffic forecast is a combination of the background traffic estimates noted in the October 2008 TIS and the above noted site traffic volumes (Figure 1) and define the anticipated traffic volumes following the build-out of the subject site. The total traffic forecast volumes are illustrated in Figure 2.

The level of service conditions for the study intersections have been assess and are summarized in Table 2 below. Overall, the study intersections are anticipated to operate with satisfactory levels of service during the AM and PM peak hours with exception to the Dundas Street intersection with King Street (East Intersection). At this location, the eastbound approach is estimated to have delays in the LOS E range with v/c ratios of less than 0.85.

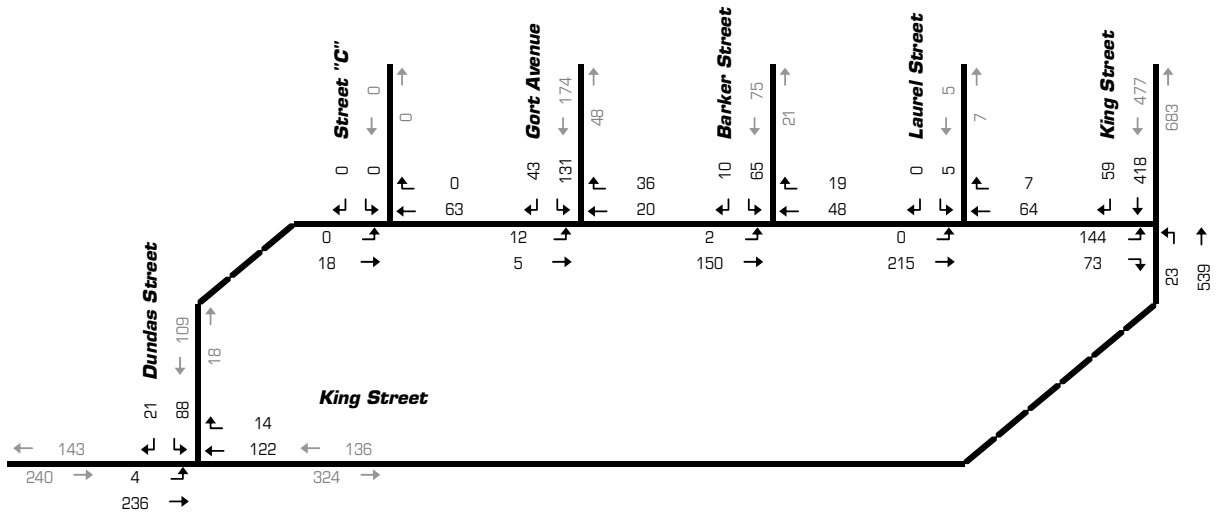
TABLE 2: TOTAL TRAFFIC OPERATIONAL CONDITIONS

| Intersection | MOE | Analysis Period | | | | | | | |
|-------------------------------------------------|-------|--------------------|--------------------|---------------------|---------------------|--------------------|--------------------|---------------------|---------------------|
| | | AM Peak Hour | | | | PM Peak Hour | | | |
| | | EASTBOUND APPROACH | WESTBOUND APPROACH | NORTHBOUND APPROACH | SOUTHBOUND APPROACH | EASTBOUND APPROACH | WESTBOUND APPROACH | NORTHBOUND APPROACH | SOUTHBOUND APPROACH |
| Dundas Street & King Street (East Intersection) | LOS | F | | A | A | F | | A | A |
| | Delay | 60.3 | | 0.6 | 0.0 | 60.4 | | 2.6 | 0.0 |
| | V/C | 0.84 | | 0.02 | 0.30 | 0.74 | | 0.10 | 0.42 |
| Dundas Street & Laurel Street | LOS | A | A | | B | A | A | | B |
| | Delay | 0.0 | 0.0 | | 10.3 | 0.0 | 0.0 | | 11.2 |
| | V/C | 0.00 | 0.05 | | 0.01 | 0.00 | 0.17 | | 0.01 |
| Dundas Street & Barker Street | LOS | A | A | | B | A | A | | B |
| | Delay | 0.1 | 0.0 | | 10.1 | 0.9 | 0.0 | | 11.0 |
| | V/C | 0.00 | 0.04 | | 0.10 | 0.01 | 0.17 | | 0.07 |
| Dundas Street & Gort Avenue | LOS | A | A | | A | A | A | | B |
| | Delay | 5.2 | 0.0 | | 9.7 | 5.0 | 0.0 | | 10.6 |
| | V/C | 0.01 | 0.04 | | 0.20 | 0.04 | 0.11 | | 0.15 |
| Dundas Street & King Street (West Intersection) | LOS | A | A | | B | A | A | | B |
| | Delay | 0.2 | 0.0 | | 11.9 | 1.1 | 0.0 | | 12.1 |
| | V/C | 0.00 | 0.09 | | 0.18 | 0.02 | 0.17 | | 0.09 |

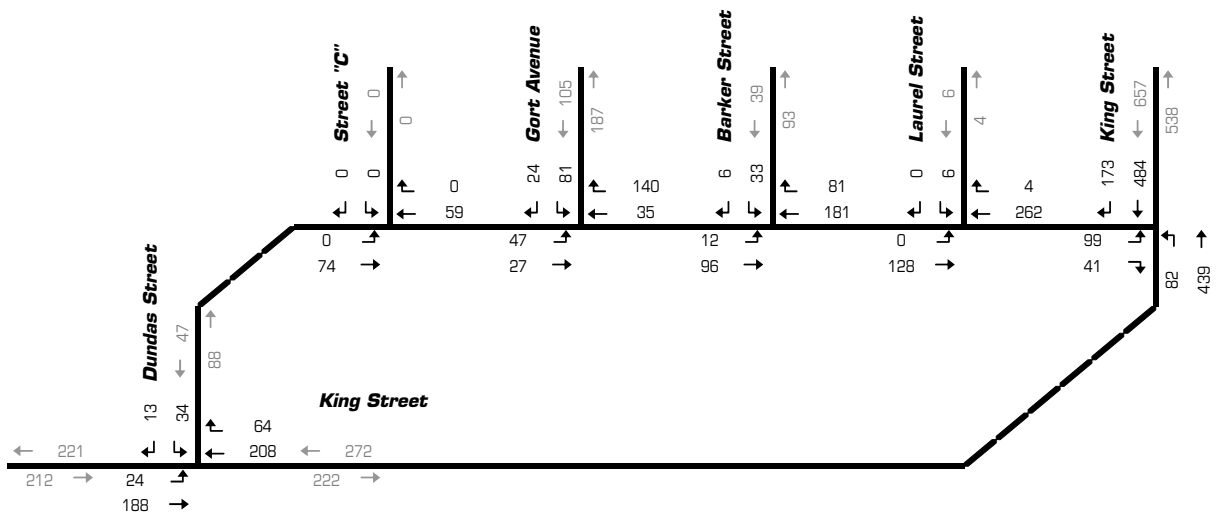


FIGURE 2: TOTAL TRAFFIC FORECAST

AM Peak Hour



PM Peak Hour





Remedial Measures – Traffic Control Signals

The intersection of King Street with Dundas Street (East Intersection) is anticipated to experience less than ideal levels of service for the eastbound approach to King Street during the AM and PM peak hours. To mitigate the high levels of delay estimated to occur, the intersection was assessed using the Ontario Traffic Manual (OTM Book 12) signal warrant¹ procedures. The projected Five-Year total traffic volumes (Figure 2) have been used in the warrant analysis.

To warrant the installation of a traffic control signal at an existing intersection with forecast traffic volumes, the minimum vehicular warrant or the delay to cross traffic warrant must be 120 percent fulfilled in order to merit the installation of a traffic control signal.

The signal warrant analysis can be found attached. Based on the warrant analysis, the intersections were found to not meet the criteria necessary to warrant the installation of a traffic control signal. The minimum vehicular warrant is calculated to be 35 percent, while the delay to cross traffic warrant is calculated to be 77 percent.

Remedial Measures – Auxiliary Left-Turn Lanes

The requirements for auxiliary left-turn lanes on King Street at the Dundas Street intersections (East and West) have been assessed based on the Ministry of Transportation of Ontario left-turn lane warrants². Left-turn lane warrants for a two-lane roadway are based on turning percentage (5 percent minimum), advancing and opposing design hour volume. Where a left-turn lane is warranted the minimum storage length that should be provided is 15 metres, which provides adequate storage for the queuing of two vehicles. The left-turn lane warrants can be found attached.

A northbound left-turn lane is warranted under the background and total traffic conditions for the East intersection of King Street at Dundas Street. Under background conditions, a turn lane with 15 metres of storage is warranted. Under build-out conditions, a turn lane with 30 metres of storage is warranted.

The analysis for the West intersection of King Street at Dundas does not satisfy the warrant criteria for an eastbound left-turn lane.

It is recommended that a northbound left-turn lane with 30 metres of storage be developed at the East intersection of King Street at Dundas Street.

¹ Ontario Traffic Manual Book 12, Ministry of Transportation of Ontario, July 2001.

² Geometric Design Manual for Ontario Highways, Queen's Printer for Ontario, 1986



Conclusions

Based on the investigations carried out, the following conclusions have been reached:

- ▶ With the build-out of the subject site and the elimination of the Street "C" connection to Dundas Street no additional geometric or traffic control improvements are required along the Dundas Street corridor to accommodate the traffic estimated to be generated by the subject site.
- ▶ With the removal of the Street "C" connection consideration should be given to providing an emergency access point at this location. Without an emergency access point, the response time for emergency vehicles will be increased as the travel time and distance between the south-western most residential parcels is increased.
- ▶ A northbound left-turn lane with 30 metres of storage should be developed at the east intersection of King Street at Dundas Street prior to the build-out of the subject site.

I trust that you will find this information satisfactory. Should you have any questions regarding the above, or require any additional information, please do not hesitate to contact me.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

A handwritten signature in black ink, appearing to read "James J.L. Mallett", written over a white background.

James J.L. Mallett
M.A.Sc., P.Eng., PTOE
Vice President



Signal Warrant Calculation (OTM Book 12)



Horizon Year: Total Traffic

Region/City/Township: Paris, Ontario

Major Street: King Street North / South (Y/N): Y

Minor Street: Dundas Street West

Number of Approach Lanes (1/2): 1

Tee Intersection Configuration (Y/N): Y

Flow Conditions (R/F): R

Land Use West Side (I/C/R): R

Land Use East Side (I/C/R): R

PM Forecast Only (Y/N): N

| Overall Warrant | | |
|-----------------|----|----------------------------------------------------------|
| 150% Satisfied: | NO | Warrant for new intersections with forecast traffic |
| 120% Satisfied: | NO | Warrant for existing intersections with forecast traffic |
| 100% Satisfied: | NO | Warrant for existing intersections with existing traffic |

| Time Period | MAJOR STREET <i>King Street</i> | | | | | | MINOR STREET <i>Dundas Street West</i> | | | | | |
|--------------|------------------------------------|------|-------|------------|------|-------|-------------------------------------------|------|-------|-----------|------|-------|
| | NORTHBOUND | | | SOUTHBOUND | | | WESTBOUND | | | EASTBOUND | | |
| | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| AM Peak Hour | 23 | 539 | 0 | 0 | 418 | 59 | 0 | 0 | 0 | 144 | 0 | 73 |
| PM Peak Hour | 82 | 439 | 0 | 0 | 484 | 173 | 0 | 0 | 0 | 99 | 0 | 41 |

| Average Hourly Volumes | | | |
|------------------------|-------|-------|-----|
| VOLUME | PM | SAT | AHV |
| 1A - All | 1,256 | 1,318 | 644 |
| 1B - Minor | 217 | 140 | 89 |
| 2A - Major | 1,039 | 1,178 | 554 |
| 2B - Cross | 144 | 99 | 61 |

WARRANT 1 - MINIMUM VEHICULAR VOLUME

| 1A | APPROACH LANES | 1 | | 2 OR MORE | | AVERAGE |
|--------------------|----------------|------|-------|-----------|-------|-------------|
| | FLOW CONDITION | FREE | REST. | FREE | REST. | HOUR PERIOD |
| | | FLOW | FLOW | FLOW | FLOW | |
| | | | X | | | |
| ALL APPROACHES | 480 | 720 | 600 | 900 | 644 | |
| % FULFILLED | | | | | | 89% |

| 1B | APPROACH LANES | 1 | | 2 OR MORE | | AVERAGE |
|-------------------------|----------------|------|-------|-----------|-------|-------------|
| | FLOW CONDITION | FREE | REST. | FREE | REST. | HOUR PERIOD |
| | | FLOW | FLOW | FLOW | FLOW | |
| | | | X | | | |
| MINOR STREET APPROACHES | 180 | 255 | 180 | 255 | 89 | |
| % FULFILLED | | | | | | 35% |

WARRANT 2 - DELAY TO CROSS TRAFFIC

| 2A | APPROACH LANES | 1 | | 2 OR MORE | | AVERAGE |
|-------------------------|----------------|------|-------|-----------|-------|-------------|
| | FLOW CONDITION | FREE | REST. | FREE | REST. | HOUR PERIOD |
| | | FLOW | FLOW | FLOW | FLOW | |
| | | | X | | | |
| MAJOR STREET APPROACHES | 480 | 720 | 600 | 900 | 554 | |
| % FULFILLED | | | | | | 77% |

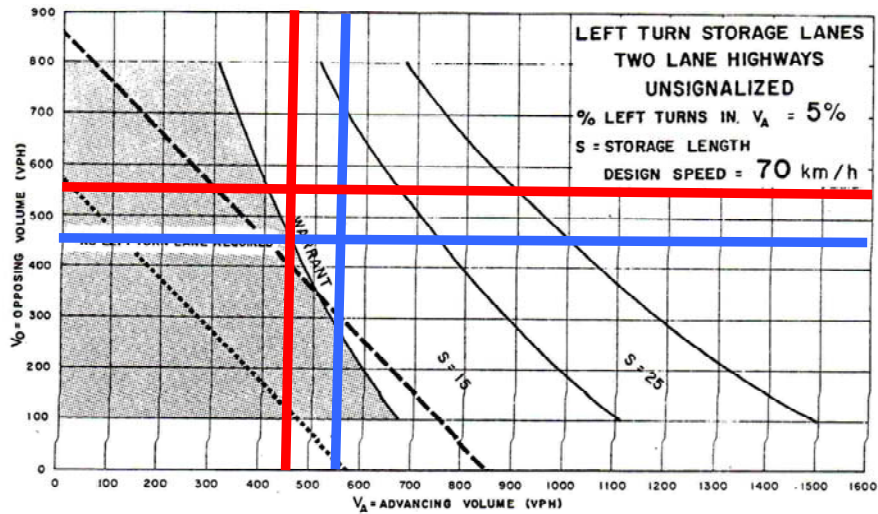
| 2B | APPROACH LANES | 1 | | 2 OR MORE | | AVERAGE |
|-------------------------------|----------------|------|-------|-----------|-------|-------------|
| | FLOW CONDITION | FREE | REST. | FREE | REST. | HOUR PERIOD |
| | | FLOW | FLOW | FLOW | FLOW | |
| | | | X | | | |
| TRAFFIC CROSSING MAJOR STREET | 50 | 75 | 50 | 75 | 61 | |
| % FULFILLED | | | | | | 81% |

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

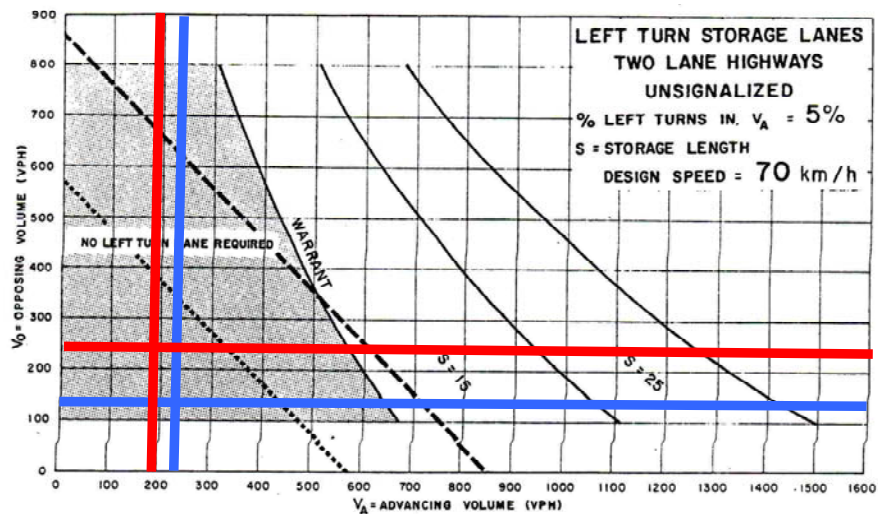
2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street: comprising: (1) lefts from both minor street, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a)



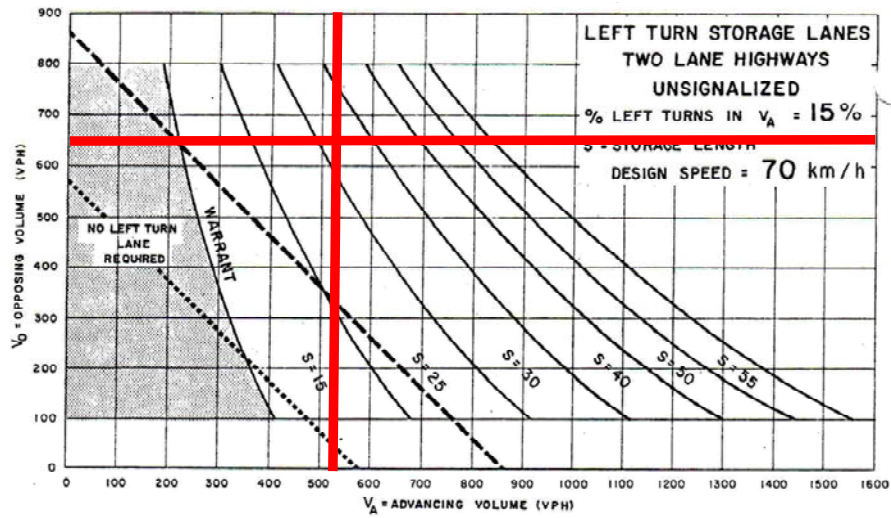
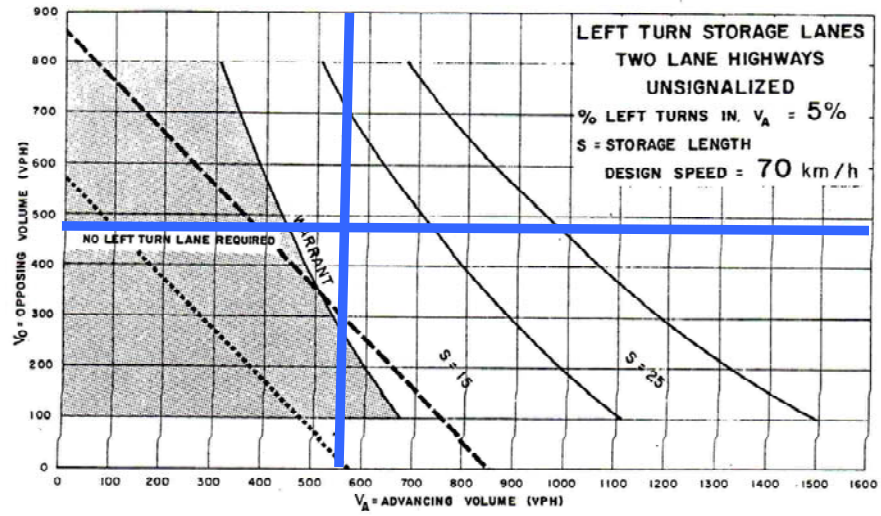
AM Peak Hour PM Peak Hour

**Northbound Left-Turn Lane
King Street at Dundas Street
(East Intersection)
Background Traffic Forecast**



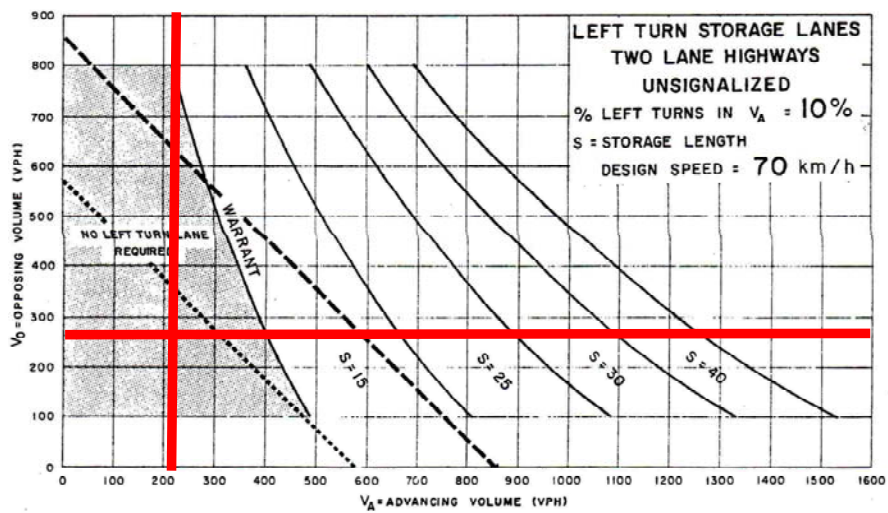
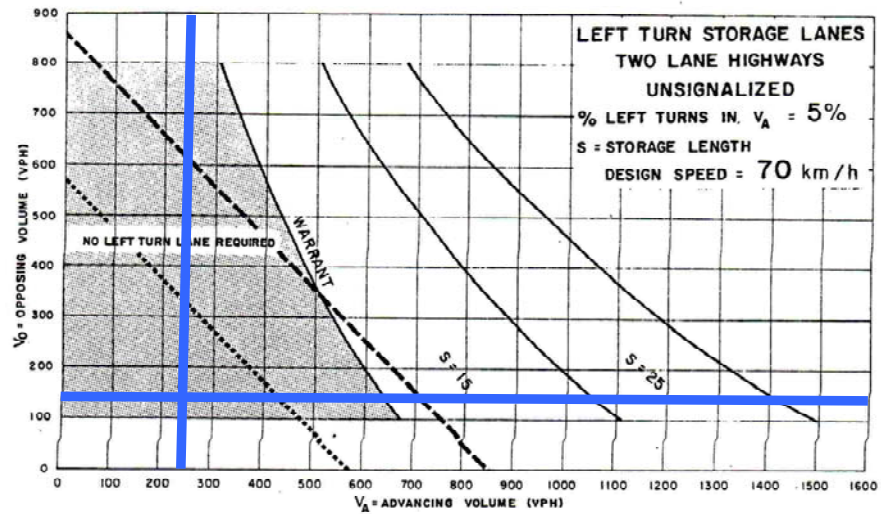
AM Peak Hour PM Peak Hour

**Eastbound Left-Turn Lane
King Street at Dundas Street
(West Intersection)
Background Traffic Forecast**



■ AM Peak Hour ■ PM Peak Hour

**Northbound Left-Turn Lane
King Street at Dundas Street
(East Intersection)
Total Traffic Forecast**



■ AM Peak Hour
 ■ PM Peak Hour

**Eastbound Left-Turn Lane
 King Street at Dundas Street
 (West Intersection)
 Total Traffic Forecast**

Lanes, Volumes, Timings
1: Dundas St W & King St

26/04/2011



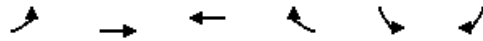
| Lane Group | EBL | EBR | NBL | NBT | SBT | SBR |
|----------------------------|-------|-------|------|-------|-------|-------|
| Lane Configurations | | | | | | |
| Volume (vph) | 144 | 73 | 23 | 539 | 418 | 59 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.955 | | | | 0.983 | |
| Flt Protected | 0.968 | | | 0.998 | | |
| Satd. Flow (prot) | 1722 | 0 | 0 | 1859 | 1831 | 0 |
| Flt Permitted | 0.968 | | | 0.998 | | |
| Satd. Flow (perm) | 1722 | 0 | 0 | 1859 | 1831 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 31.5 | | | 58.6 | 47.7 | |
| Travel Time (s) | 2.3 | | | 4.2 | 3.4 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 157 | 79 | 25 | 586 | 454 | 64 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 236 | 0 | 0 | 611 | 518 | 0 |
| Enter Blocked Intersection | Yes | Yes | Yes | Yes | Yes | Yes |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 3.6 | | | 0.0 | 0.0 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 4.8 | | | 4.8 | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | 15 | 25 | | | 15 |
| Sign Control | Stop | | | Free | Free | |

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 66.1% ICU Level of Service C
 Analysis Period (min) 15

Lanes, Volumes, Timings
2: Dundas St W & Laurel St

26/04/2011



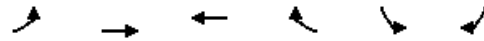
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|----------------------------|------|-------|------|-------|-------|-------|
| Lane Configurations | | | | | | |
| Volume (vph) | 0 | 215 | 64 | 7 | 5 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | 0.986 | | | | |
| Flt Protected | | | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1863 | 1837 | 0 | 1770 | 0 |
| Flt Permitted | | | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1863 | 1837 | 0 | 1770 | 0 |
| Link Speed (k/h) | | 50 | 50 | | 50 | |
| Link Distance (m) | | 71.2 | 31.5 | | 73.8 | |
| Travel Time (s) | | 5.1 | 2.3 | | 5.3 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 234 | 70 | 8 | 5 | 0 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 234 | 78 | 0 | 5 | 0 |
| Enter Blocked Intersection | Yes | Yes | Yes | Yes | Yes | Yes |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

Intersection Summary

| | |
|-----------------------------------|------------------------|
| Area Type: | Other |
| Control Type: | Unsignalized |
| Intersection Capacity Utilization | 21.3% |
| Analysis Period (min) | 15 |
| | ICU Level of Service A |

Lanes, Volumes, Timings
3: Dundas St W & Barker St

26/04/2011



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|----------------------------|------|-------|-------|-------|-------|-------|
| Lane Configurations | | | | | | |
| Volume (vph) | 2 | 150 | 48 | 19 | 65 | 10 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.961 | | 0.982 | |
| Flt Protected | | 0.999 | | | 0.959 | |
| Satd. Flow (prot) | 0 | 1861 | 1790 | 0 | 1754 | 0 |
| Flt Permitted | | 0.999 | | | 0.959 | |
| Satd. Flow (perm) | 0 | 1861 | 1790 | 0 | 1754 | 0 |
| Link Speed (k/h) | | 50 | 50 | | 50 | |
| Link Distance (m) | | 196.8 | 71.2 | | 106.0 | |
| Travel Time (s) | | 14.2 | 5.1 | | 7.6 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 2 | 163 | 52 | 21 | 71 | 11 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 165 | 73 | 0 | 82 | 0 |
| Enter Blocked Intersection | Yes | Yes | Yes | Yes | Yes | Yes |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

Intersection Summary

| | |
|-----------------------------------|------------------------|
| Area Type: | Other |
| Control Type: | Unsignalized |
| Intersection Capacity Utilization | 20.4% |
| Analysis Period (min) | 15 |
| | ICU Level of Service A |

Lanes, Volumes, Timings
4: Dundas St W & Gort Ave

26/04/2011



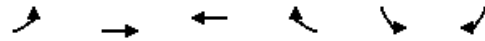
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|----------------------------|------|-------|-------|-------|-------|-------|
| Lane Configurations | | | | | | |
| Volume (vph) | 12 | 5 | 20 | 36 | 131 | 43 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.914 | | 0.966 | |
| Flt Protected | | 0.965 | | | 0.964 | |
| Satd. Flow (prot) | 0 | 1798 | 1703 | 0 | 1735 | 0 |
| Flt Permitted | | 0.965 | | | 0.964 | |
| Satd. Flow (perm) | 0 | 1798 | 1703 | 0 | 1735 | 0 |
| Link Speed (k/h) | | 50 | 50 | | 50 | |
| Link Distance (m) | | 245.4 | 196.8 | | 83.6 | |
| Travel Time (s) | | 17.7 | 14.2 | | 6.0 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 13 | 5 | 22 | 39 | 142 | 47 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 18 | 61 | 0 | 189 | 0 |
| Enter Blocked Intersection | Yes | Yes | Yes | Yes | Yes | Yes |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 24.1% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
5: King St & Dundas St W

26/04/2011



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|----------------------------|------|-------|-------|-------|-------|-------|
| Lane Configurations | | | | | | |
| Volume (vph) | 4 | 236 | 122 | 14 | 88 | 21 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.986 | | 0.974 | |
| Flt Protected | | 0.999 | | | 0.961 | |
| Satd. Flow (prot) | 0 | 1861 | 1837 | 0 | 1744 | 0 |
| Flt Permitted | | 0.999 | | | 0.961 | |
| Satd. Flow (perm) | 0 | 1861 | 1837 | 0 | 1744 | 0 |
| Link Speed (k/h) | | 50 | 50 | | 50 | |
| Link Distance (m) | | 87.0 | 123.1 | | 110.2 | |
| Travel Time (s) | | 6.3 | 8.9 | | 7.9 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 4 | 257 | 133 | 15 | 96 | 23 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 261 | 148 | 0 | 119 | 0 |
| Enter Blocked Intersection | Yes | Yes | Yes | Yes | Yes | Yes |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 28.4% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
1: Dundas St W & King St

26/04/2011



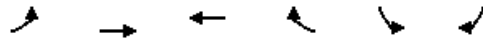
| Lane Group | EBL | EBR | NBL | NBT | SBT | SBR |
|----------------------------|-------|-------|------|-------|-------|-------|
| Lane Configurations | | | | | | |
| Volume (vph) | 99 | 41 | 82 | 439 | 484 | 173 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 0.960 | | | | 0.964 | |
| Flt Protected | 0.966 | | | 0.992 | | |
| Satd. Flow (prot) | 1727 | 0 | 0 | 1848 | 1796 | 0 |
| Flt Permitted | 0.966 | | | 0.992 | | |
| Satd. Flow (perm) | 1727 | 0 | 0 | 1848 | 1796 | 0 |
| Link Speed (k/h) | 50 | | | 50 | 50 | |
| Link Distance (m) | 31.5 | | | 58.6 | 47.7 | |
| Travel Time (s) | 2.3 | | | 4.2 | 3.4 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 108 | 45 | 89 | 477 | 526 | 188 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 153 | 0 | 0 | 566 | 714 | 0 |
| Enter Blocked Intersection | Yes | Yes | Yes | Yes | Yes | Yes |
| Lane Alignment | Left | Right | Left | Left | Left | Right |
| Median Width(m) | 3.6 | | | 0.0 | 0.0 | |
| Link Offset(m) | 0.0 | | | 0.0 | 0.0 | |
| Crosswalk Width(m) | 4.8 | | | 4.8 | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | 15 | 25 | | | 15 |
| Sign Control | Stop | | | Free | Free | |

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 81.6% ICU Level of Service D
 Analysis Period (min) 15

Lanes, Volumes, Timings
2: Dundas St W & Laurel St

26/04/2011



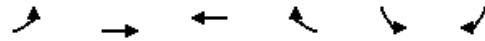
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|----------------------------|------|------|-------|-------|-------|-------|
| Lane Configurations | | ↶ | ↷ | | ↘ | ↙ |
| Volume (vph) | 0 | 128 | 262 | 4 | 6 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.998 | | | |
| Flt Protected | | | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1863 | 1859 | 0 | 1770 | 0 |
| Flt Permitted | | | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1863 | 1859 | 0 | 1770 | 0 |
| Link Speed (k/h) | | 50 | 50 | | 50 | |
| Link Distance (m) | | 71.2 | 31.5 | | 73.8 | |
| Travel Time (s) | | 5.1 | 2.3 | | 5.3 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 139 | 285 | 4 | 7 | 0 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 139 | 289 | 0 | 7 | 0 |
| Enter Blocked Intersection | Yes | Yes | Yes | Yes | Yes | Yes |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 24.0% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
3: Dundas St W & Barker St

26/04/2011



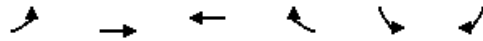
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|----------------------------|------|-------|-------|-------|-------|-------|
| Lane Configurations | | | | | | |
| Volume (vph) | 12 | 96 | 181 | 81 | 33 | 6 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.958 | | 0.978 | |
| Flt Protected | | 0.994 | | | 0.960 | |
| Satd. Flow (prot) | 0 | 1852 | 1785 | 0 | 1749 | 0 |
| Flt Permitted | | 0.994 | | | 0.960 | |
| Satd. Flow (perm) | 0 | 1852 | 1785 | 0 | 1749 | 0 |
| Link Speed (k/h) | | 50 | 50 | | 50 | |
| Link Distance (m) | | 196.8 | 71.2 | | 106.0 | |
| Travel Time (s) | | 14.2 | 5.1 | | 7.6 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 13 | 104 | 197 | 88 | 36 | 7 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 117 | 285 | 0 | 43 | 0 |
| Enter Blocked Intersection | Yes | Yes | Yes | Yes | Yes | Yes |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 25.1% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
4: Dundas St W & Gort Ave

26/04/2011



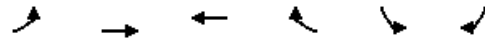
| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|----------------------------|------|-------|-------|-------|-------|-------|
| Lane Configurations | | | | | | |
| Volume (vph) | 47 | 27 | 35 | 140 | 81 | 24 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.892 | | 0.969 | |
| Flt Protected | | 0.969 | | | 0.963 | |
| Satd. Flow (prot) | 0 | 1805 | 1662 | 0 | 1738 | 0 |
| Flt Permitted | | 0.969 | | | 0.963 | |
| Satd. Flow (perm) | 0 | 1805 | 1662 | 0 | 1738 | 0 |
| Link Speed (k/h) | | 50 | 50 | | 50 | |
| Link Distance (m) | | 245.4 | 196.8 | | 83.6 | |
| Travel Time (s) | | 17.7 | 14.2 | | 6.0 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 51 | 29 | 38 | 152 | 88 | 26 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 80 | 190 | 0 | 114 | 0 |
| Enter Blocked Intersection | Yes | Yes | Yes | Yes | Yes | Yes |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

Intersection Summary

| | |
|-----------------------------------|------------------------|
| Area Type: | Other |
| Control Type: | Unsignalized |
| Intersection Capacity Utilization | 30.4% |
| Analysis Period (min) | 15 |
| | ICU Level of Service A |

Lanes, Volumes, Timings
5: King St & Dundas St W

26/04/2011



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|----------------------------|------|-------|-------|-------|-------|-------|
| Lane Configurations | | | | | | |
| Volume (vph) | 24 | 188 | 208 | 64 | 34 | 13 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.968 | | 0.963 | |
| Flt Protected | | 0.994 | | | 0.965 | |
| Satd. Flow (prot) | 0 | 1852 | 1803 | 0 | 1731 | 0 |
| Flt Permitted | | 0.994 | | | 0.965 | |
| Satd. Flow (perm) | 0 | 1852 | 1803 | 0 | 1731 | 0 |
| Link Speed (k/h) | | 50 | 50 | | 50 | |
| Link Distance (m) | | 87.0 | 123.1 | | 110.2 | |
| Travel Time (s) | | 6.3 | 8.9 | | 7.9 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 26 | 204 | 226 | 70 | 37 | 14 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 230 | 296 | 0 | 51 | 0 |
| Enter Blocked Intersection | Yes | Yes | Yes | Yes | Yes | Yes |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

Intersection Summary

Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 39.4% ICU Level of Service A
 Analysis Period (min) 15