

--	--

<b>TO:</b>	<b>CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON APRIL 22, 2013</b>
<b>FROM:</b>	<b>EDWARD SOLDO, P.ENG. DIRECTOR, ROADS AND TRANSPORTATION</b>
<b>SUBJECT:</b>	<b>DUNDAS STREET &amp; HALE STREET INTERSECTION MODIFICATIONS</b>

<b>RECOMMENDATION</b>
-----------------------

That, on the recommendation of the Director, Roads and Transportation, the following information report related to Dundas Street & Hale Street Intersection Modifications **BE RECEIVED** for information.

<b>PREVIOUS REPORTS PERTINENT TO THIS MATTER</b>
--

- Civic Works Committee – November 12, 2012 – Dundas Street and Hale Street Intersection.

<b>BACKGROUND</b>
-------------------

**Purpose:**

In 2011, Civic Administration was requested to review potential improvements to the intersection; specifically the requirement for a right turn lane to accommodate changes in traffic flows as a result of the improvements at the Hale Street / Trafalgar Street overpass. A report was presented to Civic Works Committee on November 12, 2012.

The purpose of this report is to respond to a Council Resolution, dated November 21, 2012, requesting that Civic Administration report back on the visibility for an eastbound right turn lane on Dundas Street, at Hale Street, and the potential removal of the vacant building at the southwest corner of the intersection.

<b>DISCUSSION</b>
-------------------

The Dundas Street / Hale Street intersection is controlled by a traffic signal. Dundas Street is a four-lane arterial roadway which has a traffic volume of 32,000 vehicles per day, and Hale Street is a two-lane secondary collector with a traffic volume of 9,000 vehicles per day. Due to the close proximity of the railway crossing, the traffic signals are hardwired into the railway crossing signals on Dundas Street to reduce the chance of traffic being caught in between. Any changes to the traffic operation of this intersection would need to be reviewed and approved by the Canadian National Railway (CNR). An aerial photo is included in Appendix A.

*Right Turn Lane Warrant*

The November 12, 2012 report reviewed the warrants for an eastbound right turn lane at this intersection based on operational level of service and traffic volumes. Both approaches are described below and the analysis determined an eastbound right turn lane at the intersection of Dundas Street / Hale Street is not warranted.

--	--

The operational analysis indicated the overall level of service is very good at this time and the introduction of a right turn lane would only slightly improve the intersection operation. The minimal change on the volume/capacity ratio from 0.69 to 0.59 will not make any significant difference in the operations for eastbound traffic. Infrastructure improvements are not warranted until the volume/capacity ratio reaches 0.9. Volume/capacity ratios are categorized from A to F, where A is excellent and F is congested. The corresponding level of service category description for this intersection is B, with and without an eastbound right-turn lane.

Using traffic volumes, a right turn lane is warranted if the right turn volume during the peak hour exceeds 300 vehicles or the right turn volume as a percentage of the total approach volume in one direction is at least 30%. Currently, the highest right-turn volume is encountered during the afternoon peak hour at 184 vehicles or 15% of the through volume. The following table summarizes the eastbound traffic volume on Dundas Street at Hale Street and the volume warrants for a right turn lane in response to the Civic Works Committee request for some clarification on the traffic volumes:

Dundas Street Eastbound Traffic Volumes (April 2012)					
Hour	Through	Right Turns	Warrant #1	Percentage* (%)	Warrant #2 (%)
AM Peak	942	61	300	7	30
Noon	1023	91	300	9	30
PM Peak	1254	184	300	15	30
8 Hours	7840	758		10	30

\* Percentage is portion of right turns as a percentage of total approach volume

A diagram depicting the detailed traffic volumes and movements at the intersection are attached in Appendix A. The count was undertaken in April 2011, after the completion of the Hale/Trafalgar Roundabout. As this is a 'T' intersection with no north leg, all of the numbers along the top of the traffic count diagram are zero.

In summary, a right turn lane is not warranted based on operational (level of service) analysis and traffic volume warrants.

*Sight Lines*

Minimum sight distances are desirable in order to execute the anticipated turning movements while minimizing interference with existing traffic operations on the arterial road. Sightline requirements at signalized intersections are desirable, but not critical, since they pertain only to signal malfunction or driver violation events. The only sight distance pertaining to normal intersection operations at this location is the sight distance of a Hale Street vehicle turning right during the red signal phase. This sight distance is required to allow a vehicle to enter the Dundas Street traffic flow without affecting other vehicles. The building at the southwest corner blocks the desirable sightline for this move.

To assess the impacts of this condition, the collision history at the intersection was analyzed. In the last five years, there were 22 reported collisions at the intersection. Only 3 of the reported collisions are documented as being associated with right turns from Hale Street on to Dundas Street. The majority of the collisions were associated with rear end incidents for westbound and eastbound traffic. In general, the current collision rate is lower than expected for an intersection of this type in the City of London. The severity of the collisions is also low due to the posted speed of 50 km/hr on both streets.

New construction or development aims to provide desirable sightlines. At built-out/retrofit locations like this, alternative measures are commonly considered. The preferred mitigation for this site if a collision concern was evident would be to prohibit right turns from Hale Street during the red signal phase. This would be preferred based on reduced cost and property impacts.

--	--

*Impacts of Right Turn Lane Construction*

Civic Administration was also requested to review the engineering and property impacts with implementation of a right turn lane.

Two eastbound right turn lane options were developed and assessed. The first right turn lane option developed adheres to the City Standards for arterial roads. It consists of a 65 m taper lane, a 45 m storage lane and a 15 m turning radius as seen in Appendix B, Option 1. Construction would require the relocation of two signal poles, CN rail crossing warning flashers and other utilities currently in the boulevard. The second right turn lane option was developed to fit within the constraints imposed by the CN rail line and does not require the relocation of the CN signal equipment. However, it does not meet City standards, is abnormally short and would provide significantly reduced benefit since vehicles would have to begin deceleration in the through lane. It consists of a 15 m taper lane, a 16 m storage lane and a 7 m turning radius as seen in Appendix B, Option 2. Both options include the removal of the existing sidewalk and the restoration of a 1.8 m wide curb face sidewalk.

The existing right-of-way on Dundas Street is 23.3 m. An additional 3.2 m along the south side of Dundas Street would be required to accommodate a right turn lane. Currently, the existing building on the corner abuts the property line with the City sidewalk against the building. Consequently, either turn lane option will likely require the purchase of the entire corner property and demolition of the building. Purchase of the corner property on Dundas Street beside the rail line also carries a risk of soil, groundwater or building material contamination which would trigger a Phase 1 and 2 Environmental Site Assessment (ESA). ESA's are routinely used to determine the environmental condition of a property prior to realty transactions.

A new agreement with CN would also be required.

Appendix C provides cost estimates for both options. The estimated cost for Option 1 is \$934,800 and Option 2 is \$541,200.

<b>CONCLUSION</b>
-------------------

**Recommendation:**

An eastbound right turn lane is not warranted based on level of service analysis and traffic volumes.

One intersection sightline is constrained but does not appear to be causing a collision problem. Removing a building for sightlines is not justified at this location based on a collision analysis. A Hale Street "no rights on red" restriction would be the first countermeasure if an issue was detected.

The construction of an eastbound right turn lane would require property acquisition, surface utility relocation and significantly impact the existing corner property. The cost to construct a right turn lane to City standards is approximately \$934,800 and this project has not been included in the Capital Budget forecast. A Schedule 'B' Environmental Assessment screening would need to be completed to provide justification for the property requirements.

Therefore, it is recommended that no action be taken at this time. This intersection will continue to be monitored for operational and safety performance.

--	--

**Acknowledgements:**

This report was prepared with assistance of Josh Ackworth, C.E.T., Technologist II, Maged Elmadhoon, Traffic Planning Engineer and Karl Grabowski, Transportation Design Engineer within the Transportation Planning and Design Division.

<b>PREPARED BY:</b>	<b>RECOMMENDED BY:</b>
<b>DOUG MACRAE, P. ENG DIVISION MANAGER, TRANSPORTATION, PLANNING &amp; DESIGN</b>	<b>EDWARD SOLDI, P. ENG. DIRECTOR, ROADS AND TRANSPORTATION</b>
<b>REVIEWED &amp; CONCURRED BY:</b>	
<b>JOHN BRAAM, P.ENG. MANAGING DIRECTOR, ENVIRONMENTAL AND ENGINEERING SERVICES &amp; CITY ENGINEER</b>	

Cc:      Councilor S. Orser  
           A. Haidar & K. Parker, Argyle Community Association - 204 Tremont Rd, London, ON N5V 1C4  
           O. Katolyk, Manager of By-Law Enforcement

- Appendix A – Aerial Photo, Traffic Volumes and Movements Diagram
- Appendix B – Right Turn Lane: Options 1 and 2
- Appendix C – Cost Estimates

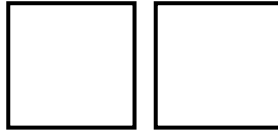
Agenda Item #    Page #

--	--

**Appendix A**

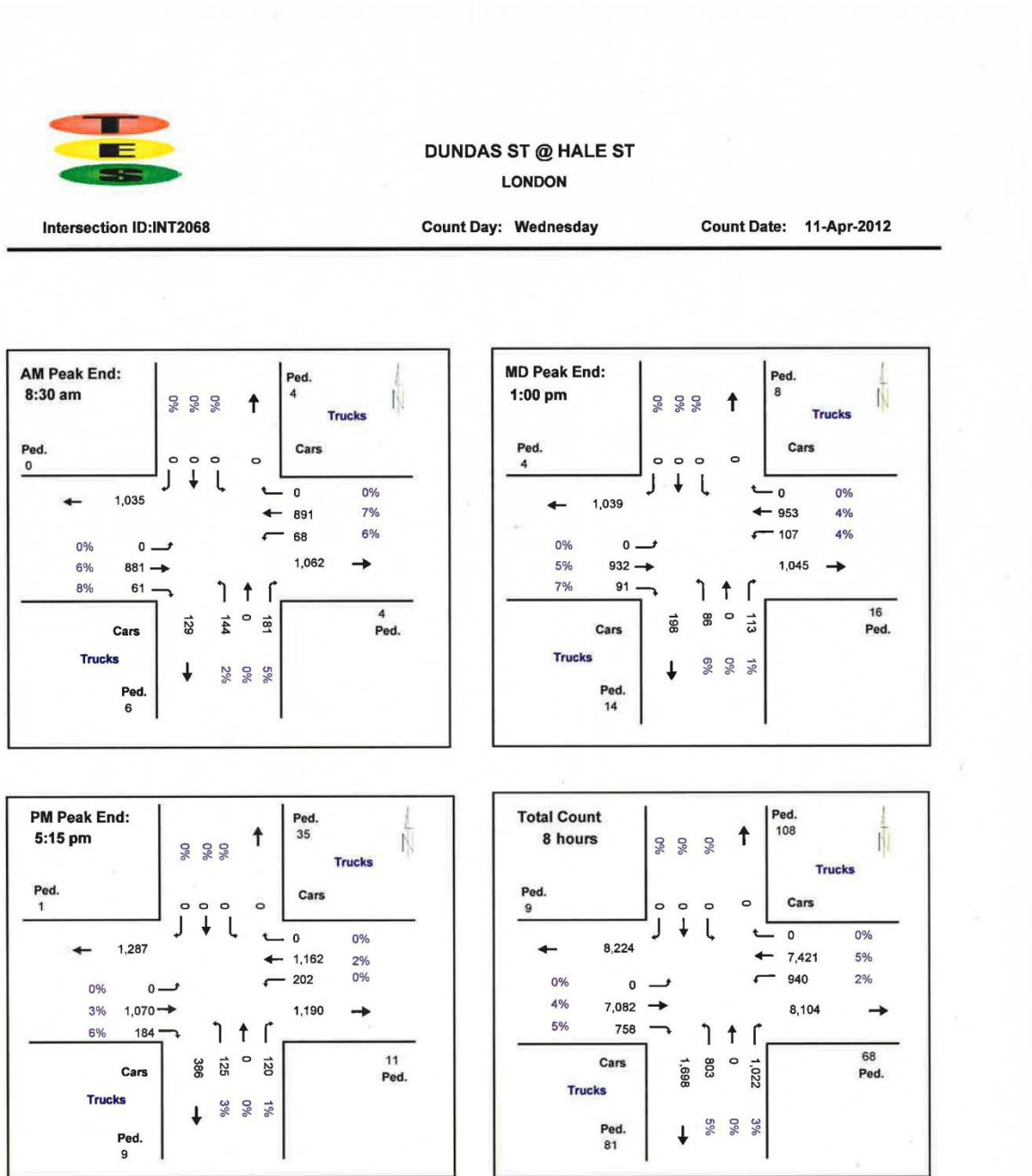
Aerial Photo





**Appendix A**

Traffic Volumes and Movements Diagram

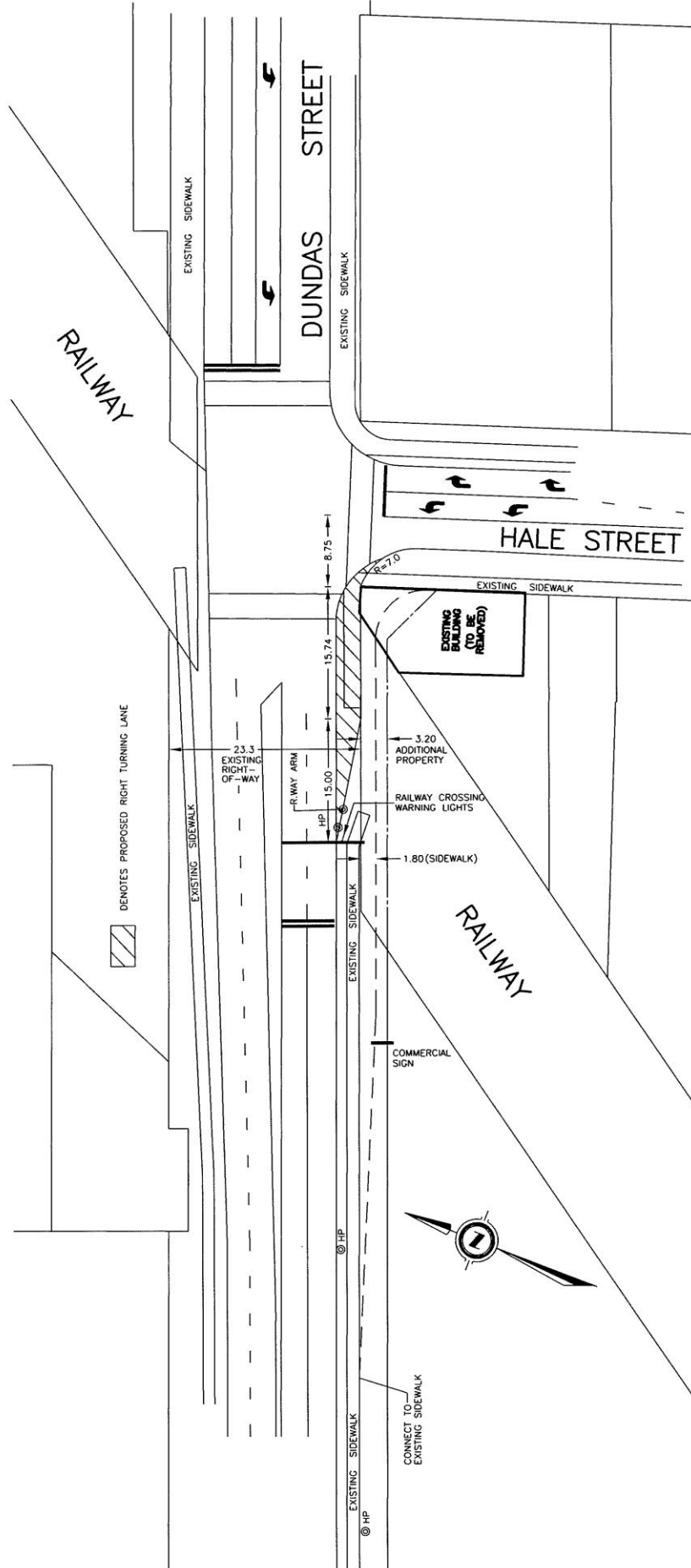




--	--

**Appendix B**

Right Turn Lane: Option 2 (Reduced length to reduce impact on Rail property)





--	--

**Appendix C**

Cost Estimates

<b>Dundas Street at Hale Street – Right Turn Lane</b>
---

Description		Estimated Cost City Standard	Estimated Cost Non- City Standard
		(Option 1)	(Option 2)
Road Works		\$ 75,000.00	\$ 35,000.00
Street lights and Traffic signals		\$ 45,000.00	\$ 25,000.00
Property *		\$ 250,000.00	\$ 250,000.00
Demolition/ site clean up		\$ 50,000.00	\$ 50,000.00
Environmental Site Assessment		\$ 10,000.00	\$ 10,000.00
Utilities (Bell, Hydro, UG etc.)		\$ 80,000.00	\$ 40,000.00
Rail Signal Relocation and Flagging		\$ 250,000.00	\$ 30,000.00

Sub Total		\$ 760,000.00	\$ 440,000.00
Contingency (10%)		\$ 76,000.00	\$ 44,000.00
HST (13%)		\$ 98,800.00	\$ 57,200.00
<b>Total</b>		<b>\$ 934,800.00</b>	<b>\$ 541,200.00</b>

\* value is a combination of purchase, resale values, associated studies and fees and is therefore not an indicator of fee simple property value.