

**Pedestrian Traffic Control Signals Study – Warden Avenue south of Finch Avenue East**

|                          |  |
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| <b>Date:</b>             | September 13, 2011   |
| <b>To:</b>               | Scarborough Community Council  |
| <b>From:</b>             | Director, Transportation Services, Scarborough District  |
| <b>Wards:</b>            | Ward 40 – Scarborough-Agincourt  |
| <b>Reference Number:</b> | P:\2011\Cluster B\TRA\Scarborough\sc1201<br>D11-4445709 & D10-4091467 Warden traffic control signals |

**SUMMARY**

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The purpose of this report is to secure the authority for the installation of Pedestrian Traffic Control Signals on Warden Avenue approximately 220 metres south of Finch Avenue East.

Traffic studies reveal that a pedestrian crossing protection in the form of pedestrian activated traffic control signals is justified.

**RECOMMENDATIONS**

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**Transportation Services recommends that:**

1. City Council approve the installation of Pedestrian Traffic Control Signals on Warden Avenue approximately 220 metres south of Finch Avenue East.
2. City Council pass or amend the appropriate by-law(s) accordingly.

**Financial Impact**

The financial cost of installing these new traffic control signals is approximately \$150,000.00. The funding for these signals is currently not available in the Transportation Services Division's Capital Works Budget under Project No. CTP711-01. Installation will occur when funding and scheduling permit, taking competing priorities into consideration.

## **ISSUE BACKGROUND**

Further to a request from the public, Transportation Services staff have conducted Pedestrian Crossing Protection studies on Warden Avenue approximately 220 metres south of Finch Avenue East.

## **COMMENTS**

The following characteristics describe the pedestrian crossing area on Warden Avenue located approximately 220 metres south of Finch Avenue East:

- Warden Avenue is a four-lane major arterial road with a traffic volume of approximately 17, 240 vehicles per day, (vpd), having an operating speed of 70 Km/h.
- Warden Avenue has a posted speed limit of 60 kilometres per hour (kmh).
- Toronto Transit Commission bus stops for both the northbound and southbound directions are located on Warden Avenue approximately 220 metres south of Finch Avenue East.
- Traffic Control Signals are located approximately 220 metres to the north of the TTC stops at Finch Avenue East and approximately 282 metres to the south at Bridletowne Circle.
- Sidewalks are located on both sides of Warden Avenue.

The Pedestrian Crossing Protection studies involved incremental consideration of the warrants or technical justification for the following traffic control devices:

- Pedestrian Refuge Island (PRI)
- Pedestrian Crossover (PXO)
- Traffic Control Signals (TCS)

### **Pedestrian Refuge Island Warrant Study**

The first level of pedestrian crossing protection that has been considered is the installation of a Pedestrian Refuge Island.

## Pedestrian Crossing Study

Study Date: Thursday, June 12, 2011

### Pedestrian Crossing Volume

|                            |   |
|----------------------------|---|
| Pedestrian Characteristics | Eight –Hour Pedestrian Crossing Volume:<br>Warden Avenue, 220 metres south of Finch Avenue East |
|                            | Total – Both Sides  |
| Assisted Children*         | 10  |
| Youths /Adults             | 91  |
| Senior Citizens            | 6   |
| Total Pedestrian Volume    | 107   |

\* Assisted Children are children crossing the road accompanied by a youth, an adult or a senior citizen.

- Of the 107 pedestrians, 67 (63%) were generated by the TTC bus stops located in the vicinity of the TTC Bus stops on Warden Avenue located 220 metres south of Finch Avenue East

### **Pedestrian Refuge Island (PRI) Warrant Criteria**

| Pedestrian Refuge Island Warrant:<br>Warden Avenue<br>approximately 220 metres<br>south of Finch Avenue East | Requirement                  | Met/Not Met      |
|--|------------------------------|------------------|
| Pedestrian Volume  | > 100 pedestrians in 8 hours | 107 - Met        |
| Road Width   | > 16.4 metres                | 15.2 m – Not Met |
| Number of Travel Lanes   | 5 lanes or less              | Met              |

As outlined in the above table, two out of three requirements are met on Warden Avenue approximately 220 metres south of Finch Avenue East, justifying the installation of this type of Pedestrian Crossing Protection. However, a Pedestrian Refuge Island is not physically feasible at this location since the existing roadway is too narrow. A road widening for this purpose is not economically reasonable as it could cost several hundred thousand dollars.

### **Pedestrian Crossover Warrant Study**

The next level of crossing protection to consider is a Pedestrian Crossover (PXO).

## PXO Warrant Criteria

Study Date: Thursday, June 2, 2011

| Pedestrian Crossover Warrant | Compliance Level                                       |
|------------------------------|--|
|                              | Warden Avenue<br>200 metres south of Finch Avenue East |
| Pedestrian Volumes           | 46 %   |
| Pedestrian Delays            | 64 %   |

- For a pedestrian crossover to be numerically justified, both the “Pedestrian Volume” and “Pedestrian Delays” warrants must be 100% satisfied.

As outlined in the above table, the pedestrian volumes and delays do not satisfy the technical requirements to install a pedestrian crossover at the subject intersections at this time on its own. However, a PXO would be warranted under engineering judgement as the next level of pedestrian crossing protection to be provided as a PRI is warranted but not feasible.

## Collision History

A review of the Toronto Police Service collision records for the three-year period from January 1, 2008 to December 31, 2010 is summarized below.

| Three-Year Collision Information   | Number of Reported Collisions |      |      |       |
|--|-------------------------------|------|------|-------|
|  | 2008                          | 2009 | 2010 | Total |
| Collisions Potentially Preventable by the installation of Pedestrian Traffic Control Signals | 1*                            | 0    | 0    | 1     |
| Collisions Involving Pedestrians Crossing Warden Avenue                                      | 1*                            | 0    | 0    | 1     |

\*The above noted collision involved a pedestrian fatality on Wednesday, November 26, 2008.

## Environmental Standards for PXO Suitability

Transportation services staff conducted a detailed review of this location and compared the standards at this PXO with the recommended design standards, or “environmental standards, for PXO’s as developed by the Province of Ontario in consultation with Ontario municipalities. These criteria describe a roadway environment suitable for this type of control, and exposure factors which would make a PXO unsuitable or potentially unsafe.

The following table outlines our review of these PXO criteria and whether they are satisfied at this location, Warden Avenue approximately 220 metres south of Finch Avenue East:

| Standards or Criteria to be Met for Physical Suitability of a PXO                                    | Met/ Not Met | Comment  |
|--|--------------|--|
| Vehicle operating speed less than 60 km/h  | Not Met      | 85 <sup>th</sup> percentile is 73 km/h (NB), 85 <sup>th</sup> percentile is 67 km/h (SB); Average 85 <sup>th</sup> percentile is 70 km/h. (Posted speed limit is 60 km/h). |
| Not more than four lanes wide on a two-way street or more than three lanes wide on a one-way street. | Met          | 4 lanes 15.2 metres road width.  |
| Traffic volume less than 35,000 vehicles per day (total both directions)                             | Met          | 17,240 vehicles per day.   |
| No driveways or entrances nearby   | Met          | Not Applicable   |
| No significant volume of turning movements which interfere with PXO.                                 | Met          | Not Applicable   |
| No visibility problems exist for either pedestrians or motorists.                                    | Met          | Visibility is adequate   |
| No loading zones (including TTC) in the immediate vicinity.  | Not Met      | TTC bus stops are located on both sides of Warden Avenue   |
| Not less than 215 metres to another PXO or traffic control device.                                   | Met          | 220 metres north to TCS at Warden & Finch, 282 metres south to TCS at Warden Ave & Bridletowne Circle  |

As described above, this potential PXO location would fail to meet two of the above “Environmental Standards” and would not be feasible or practicable at this location. Of particular importance is the operating speed in excess of 60 km/h.

Since a PXO installation is considered unsuitable or potentially unsafe, the only form of Pedestrian Crossing Protection that can be considered is a Pedestrian Traffic Control Signal. This would be a suitable location in terms of signal spacing, sightlines, and pedestrian activity due to the TTC stops.

In summary, Pedestrian Traffic Control Signals are justified for the area 220 metres south of Finch Avenue East on Warden Avenue under Engineering Judgement as the only feasible form of warranted Pedestrian Crossing Protection.

## **CONTACT**

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## **SIGNATURE**

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## **ATTACHMENTS**

1. Location Plan (Pedestrian Traffic Control Signals Study – Warden Avenue south of Finch Avenue East)