HALDIMAND COUNTY

Report PW-ES-12-2017 Intersection Improvements Study - Haddington Street and Argyle Street, Caledonia

For Consideration by Council in Committee on May 30, 2017

OBJECTIVE:
To provide Council with the results of a study reviewing options to improve pedestrian and traffic safety at the intersection of Haddington Street and Argyle Street in Caledonia.

RECOMMENDATIONS:
1. THAT Report PW-ES-12-2017 Intersection Improvements Study – Haddington Street and Argyle Street, Caledonia be received;
2. AND THAT staff be directed to include the design, engineering and construction of a mini-roundabout at the Haddington Street and Argyle Street intersection for consideration in the Draft 2018 Tax Supported Capital Budget;
3. AND THAT a mini-roundabout at the Haddington Street and Argyle Street intersection be included for analysis in the transportation component of the 2017 Caledonia Master Servicing Plan.

Prepared by: Tyson Haedrich, M. Eng., P. Eng., Director, Engineering Services
Respectfully submitted: Paul Mungar, C.E.T., CMM III, General Manager of Public Works
Approved: Donald G. Boyle, Chief Administrative Officer

EXECUTIVE SUMMARY:
CIMA Canada Inc. was retained to complete a study looking at options to improve the operation of the Haddington Street and Argyle Street intersection with a focus on pedestrian and vehicle safety. The study looked at five options including do-nothing, two traffic signal options, an intersection pedestrian signal (IPS) and a mini-roundabout. The five options were evaluated on a number of factors with pedestrian safety and traffic safety weighted the highest.

Based on the results of the study the mini-roundabout provides the best balance of traffic and pedestrian safety however it is the highest priced option. The IPS provides the lowest cost option to improve pedestrian safety while still providing adequate traffic operations. The two signalization options, while improving traffic and pedestrian safety compared to the existing conditions, may negatively impact traffic operations at the intersection. The do-nothing option provides good traffic operations and will continue to do so in the future but does not address the pedestrian and traffic safety issues.
BACKGROUND:

At the December 8, 2015 Council in Committee meeting, staff were given direction through the following resolution:

“THAT the Public Works staff be directed to include $25,000 in the Draft 2016 Capital Budget in order to investigate the intersection of Haddington and Argyle Streets and determine options that support safety for both vehicular and pedestrian traffic.”

Haldimand County retained CIMA Canada Inc. (CIMA) to conduct a review of the intersection of Argyle Street and Haddington Street in Caledonia evaluating four options for the intersection which currently operates with a stop control on Haddington Street.

The review was initiated by Council to address safety concerns raised by the public, including motor vehicle collisions and the safety of pedestrians, particularly relating to the complex configuration of the intersection and to the presence of a long term retirement home and plaza, as well as numerous fast food restaurants and high school in the surrounding area.

ANALYSIS:

In coordination with County staff, CIMA conducted a comprehensive evaluation of the intersection with a focus on pedestrian and traffic safety. The study is included as Attachment 1 to this report.

The study approach included the following tasks:

- Review of existing traffic and collision data to identify traffic volumes/operational conditions and collision patterns;
- Development of options to address any identified issues;
- Evaluation of options including criteria such as pedestrian safety, traffic safety, traffic operations and access concerns;
- Weighted ranking of preferred options;
- Estimation of costs for each option; and
- Environmental Assessment requirements for each option.

The options under consideration include the following:

- Do-nothing;
- Intersection Pedestrian Signal (IPS);
- Traffic signal option designed by Stantec in 2005;
- Traffic signal option developed by CIMA; and
- Mini-roundabout option.

As shown in the study plans, all new options require the consolidation of the retirement home entrance, the plaza entrance and the County owned gravel access road on the west side into one shared access for all three purposes.

As outlined in Section 5 of the report, each of the five options was scored using a weighted scoring system based on five criteria. Pedestrian safety is the highest weighted criteria followed by traffic safety.
The following table summarizes the scoring for each option:

<table>
<thead>
<tr>
<th>Option</th>
<th>Pedestrian Safety (16 total)</th>
<th>Traffic Safety (12 total)</th>
<th>Traffic Operations (8 total)</th>
<th>Property Requirements (6 total)</th>
<th>Access Concerns (4 total)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do-Nothing</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>8</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>Intersection Pedestrian Signal (IPS)</td>
<td>16</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>3</td>
<td>39</td>
</tr>
<tr>
<td>Stantec Traffic Signals</td>
<td>12</td>
<td>9</td>
<td>2</td>
<td>8</td>
<td>3</td>
<td>34</td>
</tr>
<tr>
<td>CIMA Traffic Signals</td>
<td>12</td>
<td>9</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>32</td>
</tr>
<tr>
<td>Mini-Roundabout</td>
<td>16</td>
<td>12</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>40</td>
</tr>
</tbody>
</table>

An evaluation summary of options in order of scoring from highest to lowest based on the ranking criteria is as follows:

**Mini-Roundabout**
- Highest overall score
- Pedestrian safety rated as excellent
- Traffic safety rated as excellent
- Traffic operations rated as excellent
- Driveway access rated as fair
- Requires about 700 m² (0.2 acres) of additional property and relocation of two hydro poles
- Highest overall cost
- Two year implementation schedule due to engineering design and EA requirements

**Intersection Pedestrian Signal (IPS)**
- Second highest overall score (very close to mini-roundabout)
- Pedestrian safety rated as excellent
- Traffic safety rated as fair due to skewed intersection and IPS operation
- Traffic operations rated as good
- Driveway access rated as good
- Lowest overall cost
- No additional property required
- One year implementation schedule

**Stantec Traffic Lights**
- Pedestrian safety rated as good
- Traffic safety rated as good
- Traffic operations rated as poor due to required signal timing and future capacity restraints
- Driveway access rated as good
- Second lowest overall cost
- No additional property required
- One year implementation schedule
CIMA Signal Lights
- Pedestrian safety rated as good
- Traffic safety rated as good
- Traffic operations rated as good
- Driveway access rated as good
- Requires about 700 m² (0.2 acres) of additional property and relocation of two hydro poles
- Second highest overall cost
- Two year implementation schedule due to engineering design and EA requirements

Do-Nothing (Existing Conditions)
- Lowest overall score
- Pedestrian safety rated as poor
- Traffic safety rated as poor
- Traffic operations rated as excellent
- Driveway access rated as fair

It should be noted that while the Do-Nothing option has the highest score from a traffic operations perspective along with the mini-roundabout, the IPS and CIMA signal lights also provide acceptable traffic operations. It should also be noted that the Do-Nothing option (existing conditions) is expected to continue to function relatively well for traffic operations over the twenty-year review window.

FINANCIAL/LEGAL IMPLICATIONS:
The estimated engineering, construction and property acquisition costs for each option are summarized below:

<table>
<thead>
<tr>
<th>Option</th>
<th>Engineering Cost</th>
<th>Construction Cost</th>
<th>Property Cost</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection Pedestrian Signal (IPS)</td>
<td>$50,000</td>
<td>$267,000</td>
<td>$0</td>
<td>$317,000</td>
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<tr>
<td>Stantec Traffic Signals</td>
<td>$50,000</td>
<td>$288,000</td>
<td>$0</td>
<td>$338,000</td>
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<td>CIMA Traffic Signals</td>
<td>$75,000</td>
<td>$636,000</td>
<td>$80,000</td>
<td>$791,000</td>
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<td>Mini-Roundabout</td>
<td>$100,000</td>
<td>$743,000</td>
<td>$80,000</td>
<td>$923,000</td>
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</tbody>
</table>

STAKEHOLDER IMPACTS:
The impacts of the different options on pedestrians and traffic are discussed in Section 5.1 of the attached study.

REPORT IMPACTS:
Agreement: No
By-law: No
Budget Amendment: No
Policy: No
ATTACHMENTS:

1. Argyle Street and Haddington Street Intersection Study.