APPENDIX 1

CIMA RECOMMENDED TREATMENTS
Recommended Potential Solutions

Hamilton Pipeline Trail Master Plan

May 1, 2015
Typical Uncontrolled Crossings
Typical Design for Uncontrolled Crossings

Curb Extensions or Optical Speed Table (photo below)

Recommendations:
+ Curb extensions could be utilized where width is available
+ Provide adequate sight lines for motorists and pedestrians in accordance with Provincial Design Standards
+ Assess illumination requirements for night-time visibility
+ Include signage for bicyclists to dismount when crossing
+ Consider pedestrian safety where alleys cross trail

OTM Book 15 Uncontrolled Crossing (pedestrians)

Figure 54: Typical Uncontrolled Pedestrian Crossing with Raised Crosswalk
Typical Uncontrolled Street Crossing

- **Wc-15**
- **Wc-32t**
- **Wc-28**
- **Rb-70**
- **Ra-1**

- **Stop Sign & Stop Bar**
- **Curb Extension or Optical Speed Table**
- **Realign Trail Path (90° with street)**
### Approximate Loss of On-Street Parking / Design Details

<table>
<thead>
<tr>
<th>Location</th>
<th>Parking Reduction</th>
<th>Required Realignment</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>London Street N</td>
<td>None</td>
<td>None</td>
<td>Relocate illumination pole (west side)</td>
</tr>
<tr>
<td>Edgemont Street N</td>
<td>4 west side†</td>
<td>Major</td>
<td>Requires encroachment onto private property</td>
</tr>
<tr>
<td></td>
<td>3 east side†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Park Row N</td>
<td>3 east side</td>
<td>Minor</td>
<td></td>
</tr>
<tr>
<td>Graham Avenue N</td>
<td>4 west side</td>
<td>Minor</td>
<td></td>
</tr>
<tr>
<td>Houghton Avenue N</td>
<td>3 west side†</td>
<td>Moderate</td>
<td>May require use of parking area of #93 to realign path</td>
</tr>
<tr>
<td></td>
<td>2 east side†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wexford Avenue N</td>
<td>2 west side†</td>
<td>Moderate</td>
<td>May require use of parking area of #105 and/or #88(?) to realign path</td>
</tr>
<tr>
<td></td>
<td>2 east side†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tragina Avenue N</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Weir Street N</td>
<td>None</td>
<td>Minor</td>
<td></td>
</tr>
<tr>
<td>Fairfield Avenue</td>
<td>3-4 east side</td>
<td>Minor</td>
<td>Close off south path on west side</td>
</tr>
<tr>
<td>Paling Avenue</td>
<td>2 west side†</td>
<td>Minor</td>
<td>Close off south path on west side</td>
</tr>
<tr>
<td></td>
<td>1 east side†</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

†These locations require only “partial” parking reduction due to parking being restricted only during certain periods of the year and/or month
Separate Crossride

+ Provides separate space for cyclists and pedestrians, the separate crossride design is generally applied where pedestrians and cyclists are segregated into exclusive facilities on the approach.

Combined Crossride

+ This design provides a combination with cyclists crossing on either side of pedestrians. This design may be more appropriate at midblock locations, due to the fact that it might funnel cyclists onto the sidewalk.

Mixed Crossride

+ Design suitable for locations with low volume crossings, particularly at unsignalized locations where motorists do not anticipate queueing of pedestrians or cyclists.
Dunsmure Rd & Province Ave + Mead Ave & Knox Ave

Curb Extensions or Optical Speed Table
Mixed Crossride

Wc-15  Ra-1
Wc-32t
Wc-28  Rb-70

Wc-15  Wc-32t
Ra-1
Wc-28  Rb-70

Wc-15  Wc-32t

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Consider PXO if volumes warrant (OTM Book 15)

PXO ‘C’

Figure 37: Pedestrian Crossover Type C – Intersection (2-way)

PXO ‘D’

Figure 45: Pedestrian Crossover Type D – Intersection (2-way)
Kenilworth Avenue Area
Roxborough Ave & Huxley Ave to Crosthwaite Ave

Map showing Roxborough Ave, Kentilworth Ave N, Crosthwaite Ave N, and Crosswalks with symbols for mixed crossride, optical speed table, signed bicycle route, sharrows, intersection, and pedestrian signal.
Roxborough Ave & Huxley Ave to Crosthwaite Ave

Kenilworth Ave IPS

OTM Book 15

- Full Signal not warranted based on 2011 count
- IPS potentially warranted based on 2011 count
- New count and pedestrian delay study should be conducted to properly calculate warrants following OTM Book 12 and Book 15 procedures
- Bicyclists cross Kenilworth Ave as a vehicle, obeying the Stop sign, or dismounting and using the IPS (provide signage)
- Consider bicycle push buttons if volumes high; otherwise bikes follow rules of the road
- Consider restricting on-street parking on Roxborough between Huxley and Tuxedo (approximately 10-12 spaces; can be relocated to side streets)
Sharrows (OTM Book 18)

Figure 2.3 – Shared Roadway with Sharrows

Signed Bicycle Route (OTM Book 18)

Bicycle Route Marker Sign
M511 (OTM)
(450 mm x 450 mm)
Cannon St E from Garside Ave to Barons Ave

- Existing Traffic Signal
- Proposed Bicycle Lanes
- Multi-use trail/path
- Crosswalk

Legend:
- Yellow: Multi-use trail/path
- Orange: Proposed Bicycle Lanes
- Traffic Signal: Existing Traffic Signal
Barton Street, Parkdale Avenue & Woodward Ave – Short Term Solutions
Strathhearne Ave to Barton St - Short Term

- No reduction in parking availability expected
- Provide wayfinding signage for pedestrians

Source: www.seareach.com
Barton St to Parkdale Ave – Short Term

Optical Speed Table
Signed Bicycle Route
Multi-use trail/path
Bicycle Lanes
Existing Traffic Signal
Intersection
Pedestrian Signal

To Brampton St

Mahony Ave
Adeline Ave
Barton St E
Parkdale Ave N

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Barton St to Parkdale Ave – Short Term

Parkdale Ave IPS

+ PXO not recommended on 4-lane roads over 7,500 8-hour vehicular volumes (2008 7-hour count: 9,500+)

+ Consider IPS (pending new count and pedestrian delay study)

Parkdale Ave Bicycle Lanes

+ Short term: assess operations (volume to capacity ratio) during different periods of the day with and without bicycle lanes

+ Long term: consider widening the road or following the pipeline (negotiate with Orlik Industries, currently using the pipeline’s ROW as an internal road)

Railway Crossing

+ Provide pedestrian gates at railway

Source: www.ite.org

Source: bikesandintransit.wordpress.com
Tate Ave & Glow Ave – Short Term

- Optical Speed Table
- Mixed Crossride
- Signed Bicycle Route
- Multi-use trail/path
Woodward Ave – Short Term

- Woodward Avenue speed limit: 60 km/h
- PXO Type ‘B’ located away from the curve to provide adequate visibility
- New counts required to confirm volumes and warrant in accordance with OTM Book 15
Table 7: Pedestrian Crossover Selection Matrix

<table>
<thead>
<tr>
<th>Two-way Vehicular Volume</th>
<th>Speed Limit (km/h)</th>
<th>1 or 2 Lanes</th>
<th>3 lanes</th>
<th>4 lanes w/raised refuge</th>
<th>4 lanes w/o raised refuge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Period</td>
<td>Lower Bound</td>
<td>Upper Bound</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Hour</td>
<td>750</td>
<td>2,250</td>
<td>PXO D</td>
<td>PXO C</td>
<td>PXO D^1</td>
</tr>
<tr>
<td>4 Hour</td>
<td>305</td>
<td>1,185</td>
<td>PXO C</td>
<td>PXO B</td>
<td>PXO C^1</td>
</tr>
<tr>
<td>8 Hour</td>
<td>2,250</td>
<td>4,500</td>
<td>PXO D</td>
<td>PXO B</td>
<td>PXO D^1</td>
</tr>
<tr>
<td>4 Hour</td>
<td>1,185</td>
<td>2,370</td>
<td>PXO C</td>
<td>PXO B</td>
<td>PXO C^1</td>
</tr>
<tr>
<td>8 Hour</td>
<td>2,250</td>
<td>4,500</td>
<td>PXO D</td>
<td>PXO B</td>
<td>PXO D^1</td>
</tr>
<tr>
<td>4 Hour</td>
<td>1,185</td>
<td>2,370</td>
<td>PXO C</td>
<td>PXO B</td>
<td>PXO C^1</td>
</tr>
<tr>
<td>8 Hour</td>
<td>4,500</td>
<td>6,000</td>
<td>PXO D</td>
<td>PXO B</td>
<td>PXO D^1</td>
</tr>
<tr>
<td>4 Hour</td>
<td>2,370</td>
<td>3,156</td>
<td>PXO C</td>
<td>PXO B</td>
<td>PXO C^1</td>
</tr>
<tr>
<td>8 Hour</td>
<td>4,500</td>
<td>6,000</td>
<td>PXO D</td>
<td>PXO B</td>
<td>PXO D^1</td>
</tr>
<tr>
<td>4 Hour</td>
<td>2,370</td>
<td>3,156</td>
<td>PXO C</td>
<td>PXO B</td>
<td>PXO C^1</td>
</tr>
<tr>
<td>8 Hour</td>
<td>6,000</td>
<td>2,500</td>
<td>PXO D</td>
<td>PXO B</td>
<td>PXO D^1</td>
</tr>
<tr>
<td>4 Hour</td>
<td>3,156</td>
<td>3,960</td>
<td>PXO C</td>
<td>PXO B</td>
<td>PXO C^1</td>
</tr>
<tr>
<td>8 Hour</td>
<td>6,000</td>
<td>2,500</td>
<td>PXO D</td>
<td>PXO B</td>
<td>PXO D^1</td>
</tr>
<tr>
<td>4 Hour</td>
<td>3,156</td>
<td>3,960</td>
<td>PXO C</td>
<td>PXO B</td>
<td>PXO C^1</td>
</tr>
<tr>
<td>8 Hour</td>
<td>750</td>
<td>12,500</td>
<td>PXO D</td>
<td>PXO B</td>
<td>PXO D^1</td>
</tr>
<tr>
<td>4 Hour</td>
<td>3,960</td>
<td>9,215</td>
<td>PXO C</td>
<td>PXO B</td>
<td>PXO C^1</td>
</tr>
<tr>
<td>8 Hour</td>
<td>750</td>
<td>12,500</td>
<td>PXO D</td>
<td>PXO B</td>
<td>PXO D^1</td>
</tr>
</tbody>
</table>

General notes:
- Required illumination of pedestrian crosswalk and waiting area to be provided
- Accessible as per AODA
- Pushbutton

Figure 28: Pedestrian Crossover Type B – Intersection (2-way)
Barton Street, Parkdale Avenue & Woodward Ave – Long Term Solutions
Strathearne Ave to Barton St – Long Term

- Multi-use pathway could be constructed with property from commercial areas on north side of Barton Street.
- Special attention to driveways would be required to ensure safety of bicycles and pedestrians.
- Access to area along east side of Coca-Cola plant would need agreement.
- Crossride could be implemented at traffic signal.
Barton St to Parkdale Ave – Long Term

- Trail runs approximately 500 metres through industrial property.
- Pedestrians and cyclists required to cross Parkdale Ave N along with an existing railway crossing to continue along the trail.
- Recommended installation of an optical speed table for pedestrians and cyclists to cross roadway to the north and south of railway crossing.
According to Transport Canada – Grade Crossings Standards, if the centreline of a sidewalk/path/trail is greater than 3.6 metres from an existing railway crossing signal head, then a separate pedestrian gate is required.

With the extension of the multi-use trail, it can be expected that pedestrian and cyclist activity in the area will increase.

It can also be expected some cyclists may use the sidewalk to travel and cross over the railway crossing.

Therefore, it is recommended that a ‘Detail Safety Assessment for a Railway Crossing’ be completed to determine if a separate pedestrian gate would be required.
Parkdale Ave to Brampton St – Long Term

- Trail runs approximately 550 metres through industrial property
- Large property acquisition by the City required to extend trail
- Consider installation of a IPS along the Brampton St crossing (pending new count and pedestrian delay study)
- Road crossings likely to need optical speed tables
Brampton St to Glow Ave – Long Term

- Trail extends approximately 500 metres
- Proposed extension of trail extends along City owned property, the Hamilton Pipeline
- Installation of optical speed tables recommended for pedestrians and cyclists to continue along the trail

Multi-use trail/path
Optical Speed Table
Signed Bicycle Route
Tate Ave & Glow Ave – Long Term

- Installation of optical speed table recommended along Glow Avenue for pedestrians and cyclists to cross and continue along the trail
- Tate Ave and Glow Ave to be signed as bicycle routes for cyclists crossing along the trail
Woodward Ave – Long Term

- Trail runs approximately 340 metres
- Approximately 130 metres run through industrial property which requires City acquisition
- Installation of PXO ‘B’ along Woodward Ave for pedestrians to cross and continue along existing sidewalks
- Woodward Ave contains existing bike lanes in both northbound and southbound directions for cyclists using the trail
- Road crossings would likely need optical speed tables