

Pedestrian Crossing Policy Study



Overview of Presentation

- Policy Objectives
- Crossing Alternatives
- Best Practices
- Recommended Pedestrian Crossing Policy
- Highlights of Pedestrian Crossing Reviews:
 - Elm Street
 - Brady Street
 - Ste. Anne Road



Primary Objectives

- Improve awareness of crossings for both drivers and pedestrians
- Encourage an intuitive understanding of right-of-way at the crossing
- Ensure consistency in the implementation and operations of crossing facilities
- Allow for unique requirements of each site

Related Research: Expectation Increases Safety

- Study by Theeuwes & Hagenzieker, 1993
- Slides shown for two seconds – some normal, some reversed
- People asked to identify bicycles, other cars, signs
- For the reversed images, times to detect targets lengthened and misses increased by a factor of 60%

Related Research: Comprehension and Experience

- People have a limited capacity to process information
 - 1 billion bits/sec received by sensory systems
 - Awareness: 16 bits/sec
- Compensate by using pattern recognition and previous experience
- Need to promote an environment that corresponds to expectations (of both familiar and unfamiliar drivers)

Promoting Driver Expectation

- Driver expectation can be improved if:
 - We adopt “standard” signs
 - Similar crossing types are signed and marked consistently

Crossing Alternatives

- Two types of crossings:
 - Controlled
 - Uncontrolled
- Controlled crossings give pedestrians the right-of-way
- Vehicles have the right-of-way at uncontrolled crossings



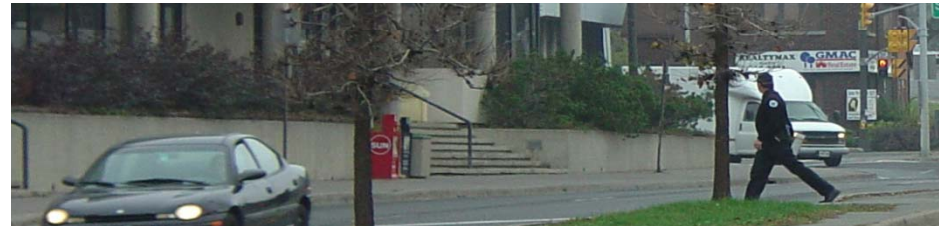
Controlled Crossings

- Traffic signals
- Intersection pedestrian signals
- Pedestrian signals
- All-way stop control
- Pedestrian Crossovers (PXO)
- School crossings with a guard
- Grade separation



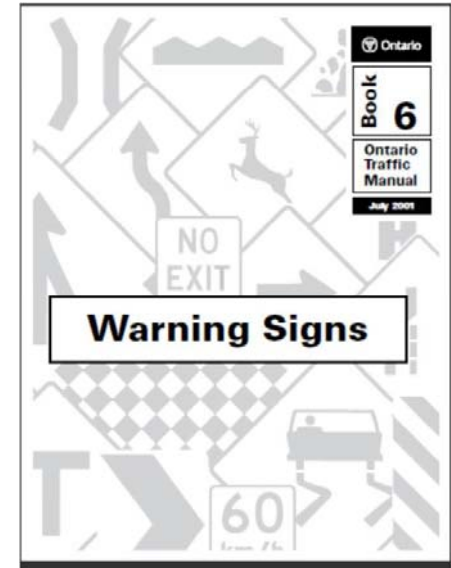
Uncontrolled Crossings

- Need to ensure pedestrians realize they do not have the right-of-way
- Drivers should be aware of the potential for pedestrians
- Generally not marked to avoid confusion
 - Pedestrians mistakenly think they have the right-of-way
 - Drivers provide a “courtesy gap”
 - Exception: in highly urbanized environments with apparent pedestrian desire lines



Best Practices

- Ontario Traffic Manuals
 - Book 6 – Warning Signs
 - Book 12 – Traffic Signals
 - Book 15 – Pedestrian Crossings
- Warrants provide consistency
- Pavement markings are generally avoided at unprotected crossings
- There are wide-spread operational concerns with PXO's
- The best policies account for unique requirements at each crossing



Recommended Pedestrian Crossing Policy (1/2)

- Implement the following pedestrian crossings as warranted:
 - Traffic signals at intersections
 - Pedestrian signals at mid-block locations
 - Intersection pedestrian signals
 - Crossing guards
- Avoid pavement markings at unprotected crossing locations (with one exception)

Recommended Pedestrian Crossing Policy (2/2)

- Sign and mark crossings consistently
- Where appropriate, consider:
 - Standard warning and regulatory signage
 - Pedestrian refuge islands
 - Bulb outs
 - Median Barriers

Exception for Unmarked, Unprotected Crossings

- Marked, unprotected crossings may be considered where:
 - A protected crossing is not feasible
 - Environment is highly urbanized
 - There are apparent pedestrian desire lines
 - There are high pedestrian volumes
- At marked, unprotected crossings, the following features are recommended:
 - Pedestrian signs (both sides)
 - Yield to traffic signs
 - Median barriers
 - Zebra style markings

Pedestrian Crossing Review Elm Street

- Review of:
 - Traffic Control
 - Confirm Location
 - Suggested Modifications
 - Applicability to the Policy

Elm Street Crossing



Elm Street Crossing Unprotected Crossing



Elm Street Crossing Traffic Control

- Traffic signals cannot be installed:
 - Too close to signals at both Notre Dame and Lisgar Street (215 m recommended). Current spacing is between 50 and 80 m.
 - Driver confusion of signal indications
- Stop control would “flip” right-of-way, but does not promote driver expectation (being mid-block location)
- Result – leave as unprotected crossing

Elm Street Crossing Confirm Location



- Shift west to Rainbow Value Centre Driveway
 - Shift does not align crossing and pedestrian desire line
 - More time for westbound drivers, but marginal
 - Conclusion – leave in current location

Elm Street Crossing

Suggested Modifications

- At time of initial review:
 - Southbound channelized right turn at Notre Dame – made a recommendation to remove
- Do not remove zebra crossings
- Routinely maintain signage
- Monitor recent change to use of Rainbow Value Centre entrances by pedestrians



Elm Street Crossing

Applicability to Policy

- Policy accounts for unique needs of specific locations
- Conforms to exception for unmarked, unprotected crossings:
 - Inability to implement protected crossing
 - Highly urbanized area
 - Apparent pedestrian desire lines
 - High pedestrian volumes

Pedestrian Crossing Review Brady Street

- Review of:
 - Traffic control
 - Crossing location
 - Suggested modifications
 - Applicability to the policy

Brady Street Crossing



Brady Street Crossing Unprotected Crossing



Brady Street Crossing Traffic Control

- Signals cannot be installed due to spacing with adjacent traffic signals (would be less than 100 m)
- Stop sign is expected to violate driver expectation
- Result – investigate an unprotected crossing

Brady Street Crossing - Crossing Location

- Shaughnessy Street intersection represents the best location for the crossing:
 - Aligns with pedestrian desire line
 - Approximately mid-way between Paris and Minto Streets

Brady Street Crossing Suggested Modifications



- Consider a median barrier to channel pedestrians to the crossing
- Consider signs and markings similar to the Elm Street Crossing
 - Zebra markings
 - Pedestrian warning signs
 - “Yield to Traffic” signs
- Implement and enforce a “Pedestrians Cross Other Side” by-law for the east leg of Brady and Shaughnessy Streets

Brady Street Crossing

Applicability to Policy

- Policy accounts for unique needs of specific locations
- Conforms with criteria for marked, unprotected crossing:
 - Inability to implement protected crossing
 - Highly urbanized area
 - Apparent pedestrian desire lines
 - High pedestrian volumes

Pedestrian Crossing Review

Ste. Anne Road

- Review of:
 - Traffic control
 - Crossing location
 - Suggested modifications
 - Applicability to the policy

Ste. Anne Road Crossing

- Formerly an unprotected, marked crossing
- Traffic signals installed at Ste. Anne Road and the Radisson Inn entrance
- Meets the recommended policy which encourages protected crossings
- Location of nearby stairway should be retained with directional signs encouraging pedestrians to use the signalized crossing

Questions