




PO Box 1749  
Halifax, Nova Scotia  
B3J 3A5 Canada

**Halifax Regional Council**  
**February 17, 2004**

**TO:** Mayor Kelly and Members of Halifax Regional Council

**SUBMITTED BY:**   
Ken Reashor, P.Eng., Traffic Authority

**DATE:** February 6, 2004

**SUBJECT:** Traffic Warrants for Crosswalks

**INFORMATION REPORT**

**ORIGIN**

Halifax Regional Council meeting of August 19, 2003, item 10.3.6.

**BACKGROUND**

Former Councillor Diana Whalen requested a staff report to review the Transportation Association of Canada's (TAC) guidelines for marked crosswalk installation as well as what other large municipalities are doing, to look specifically at updating HRM's standards to better serve the public need. Former Councillor Whalen requested that the report specifically address marked crosswalks in proximity to bus stops, parks and schools, and seniors' residences.

## DISCUSSION

Providing marked crosswalks has traditionally been one measure used to facilitate pedestrians' right to cross roads safely and without unreasonable delay. However, there has always been considerable controversy regarding whether providing marked crosswalks will increase or decrease pedestrian safety at crossing locations that are not controlled by a traffic signal or stop sign. Many pedestrians consider marked crosswalks as a tool to enhance pedestrian safety and mobility. They view the markings as proof that they have a right to share the roadway, and in their opinion, the more the better. Many people do not understand the legal definition of a crosswalk and think that there is no crosswalk unless it is marked. Pedestrians may think that the driver will be able to see the crosswalk markings as well as they do, and they assume that it will be safer to cross between the white crosswalk lines. There are still numerous drivers who seem to believe that they don't have to stop unless pedestrians are directly in front of their vehicle, between two white lines on the pavement.

Given that from a practical perspective it is impossible to mark crosswalks at every intersection, most jurisdictions use some form of criteria to determine which crosswalks will be marked and which will not. The criteria ranges from marking only locations that receive numerous complaints (public pressure) to fairly elaborate calculations based on number of pedestrians, age, ability, vehicle volume, speed, width of roadway, length of pedestrian delay, distance to nearest "protected" crossing area, etc. The intent of establishing objective guidelines is generally to provide a means of determining the appropriate level of protection required and ensure that available resources are allocated to the most critical locations in an equitable manner.

The table on page 5 summarizes some of the criteria used in other jurisdictions. The TAC Pedestrian Crossing Control Manual is used mainly in British Columbia, where it was originally developed, as well as several smaller municipalities across the country. Edmonton, Calgary, and Winnipeg each have their own warrants. The Ontario Ministry of Transportation Pedestrian Crossover Warrants is used by most municipalities in that Province.

The N. S. Motor Vehicle Act assigns sole responsibility for locating marked crosswalks to the Traffic Authority; Section 90(1) states:

"The traffic authority may establish and designate and may maintain, or cause to be maintained, by appropriate devices, marks or lines upon the surface of the highways, crosswalks at intersections where, in his opinion, there is particular danger to pedestrians crossing the highway, and at such other places as he may deem necessary."

Shortly after amalgamation, in the absence of any Provincial or national numerical guidelines, the newly appointed Traffic Authority of the day decided to adopt a simple numerical crosswalk warrant based on the number of pedestrians counted crossing in the busiest hour and the average daily volume of traffic. Both numbers were relatively easy to obtain; which was important, given the large number of requests for new marked crosswalks over a very large area and the limited staff available to collect the data. The warrant was adapted from a similar system used in the City of Halifax for 20 years and was chosen after an extensive survey of other Canadian jurisdictions. The TAC warrant

had not yet been accepted by the “National Committee of Uniform Traffic Devices” and did not appear likely to be, considering that it had been proposed eight years earlier.

When the TAC warrant model was finally officially approved by the Chief Engineer's Council in 1998 for use in Canada, the HRM Traffic Authority decided to wait for the Province to formally adopt it for use in Nova Scotia. In 1999, the Provincial Road Safety Advisory Committee (RSAC) created a Crosswalk Safety Sub-Committee comprised of representatives of Provincial, Municipal and private sector organizations involved in pedestrian safety. The mandate of the Crosswalk Safety Sub-Committee was to examine existing legislation, regulations, and traffic engineering practices in Nova Scotia and other jurisdictions and make recommendations related to crosswalk safety from a province-wide perspective. While several recommendations of the Sub-Committee have been implemented and the Sub-Committee continues to evaluate new design, legislation and educational program proposals, the Sub-Committee has so far been unable to reach a consensus on the use of the TAC warrants in the Province of Nova Scotia.

In view of the unlikelihood of Provincial crosswalk warrants being implemented in the foreseeable future and in consideration of Council's expressed wish to revise the criteria used by the HRM Traffic Authority in making decisions regarding the installation of pedestrian traffic control devices, the Traffic Authority has decided to adopt the TAC warrant model as contained in the Pedestrian Crossing Control Manual for use in the HRM Core Service Area.

Warrants for installation of pedestrian related traffic control devices have traditionally been based on vehicular and pedestrian volumes. The basis of the TAC warrant model is the principle that pedestrian delay is the most critical factor in determining the need for traffic control improvements. As pedestrian delay is difficult and time consuming to measure, the TAC warrant instead uses the concept of availability of crossing opportunities for pedestrians. These crossing opportunities are a function of the roadway width, the vehicular volume and the vehicular arrival pattern. Pedestrian demand, ability, and geometric features are also factored into the warrant model. While pedestrian accidents are not included as a direct component of the warrant model, a review of the accident history is conducted as part of the evaluation study. Warrants employed by other jurisdictions were considered and not adopted because they required long periods of manual counting which was not practical given HRM's limited resources for data collection.

It is expected that the adoption of the TAC warrants will result in more marked crosswalks on busy roadways because of the lower threshold of minimum pedestrian volumes required (20 instead of 50 crossings per hour). The use of age and ability factors (called Equivalent Adult Units in the TAC warrant) will also tend to increase the number of marked crosswalks installed at locations used most often by children, seniors or disabled persons.

Adopting a new set of warrants which results in more marked crosswalks will not necessarily result in fewer pedestrian collisions or lessen the public pressure for marking locations which still do not meet the revised standards. It will still be necessary to use technical merits rather than public sentiment to determine the proper placement of crosswalks.

Warrants for traffic control devices, (whether traffic signals, all-way stop signs or marked crosswalks) are not immutable laws etched in stone. Warrants are simply guidelines for best practice

based on extensive research and experience that enable decision makers to objectively evaluate whether or not a particular traffic control device would be an improvement or a detriment. While a Traffic Authority appointed pursuant to the N. S. Motor Vehicle Act (MVA) is under no legal obligation to use any particular warrant, he/she must exercise professional judgement in deciding which traffic control devices are most appropriate for use, and must be always prepared to defend in court any decision which strays from generally acceptable practice.

### **BUDGET IMPLICATIONS**

There will be increased costs associated with the installation and maintenance of additional marked crosswalks, although the specific amount has not been determined at this time.

### **FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN**

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

### **ALTERNATIVES**

There are no recommended alternatives.

Additional copies of this report, and information on its status, can be obtained by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Ken Reashor, P.Eng., Acting Manager, Traffic & Transportation Services, 490-6637

	Pedestrian Equivalent Factors	Minimum Vehicular Volume Required	Minimum Pedestrian Volume Required	Minimum Distance to nearest crosswalk
<b>HRM: Marked Crosswalk Criteria</b>	No	6000 vehicles per day (or 4000 vehicles per day for school crossing guard locations)	50 pedestrian crossings per hour	200 m
<b>TAC: Pedestrian Crossing Control Manual</b>	Yes child x 2 senior x 1.5 disabled x 2	n.a. (uses "crossing opportunities per hour" which vary according to traffic arrival patterns and roadway width)	> 20 Equivalent Adult Units (EAU) per hour	200 m
<b>Ontario: Ministry of Transportation Pedestrian Crossover Warrants</b>	Yes child x 2 senior x 2 disabled x 2	2000 vehicles per 12 hour period (generally 7 am - 7 pm)	> 200 EAU per 8 hour period (generally 7 am - 7 pm) <u>plus</u> at least 75 crossings were delayed > 10 seconds	215 m
<b>Edmonton: Pedestrian Control Guidelines</b>	yes child x 2 senior x 2	> 400 veh/hr for basic crosswalk > 800 veh/hr for zebra markings > 900 veh/hr for flashers only installed on arterial or collector roadways	> 10 EAU per hour for basic crosswalk > 20 EAU per hour for flashers	200 m
<b>Calgary: Guidelines for Crosswalk Installations at Uncontrolled Intersection Legs</b>	yes child x 1.5 senior x 1.5	1000 vehicles per day	>7 EAU per hour for volumes $\geq$ 6000 v.p.d. > 20 EAU per hour for volumes $\geq$ 4,000, $\leq$ 6000 v.p.d. > 60 EAU per hour for volumes $\geq$ 2000 $\leq$ 4000 v.p.d.	200 m
<b>Winnipeg: Regular Pedestrian Corridor Warrant</b>	yes seniors x 2	> 200 vehicles per hour in peak period	> 300 EAU per 8 hour period, of which at least 100 crossings delayed > 10 seconds	n. a.