

Application to the City of Calgary Council Innovation Fund

Date: 2014 September 30

Name of Project: In-Roadway Lighting (IRWL) at Crosswalks

Sponsor: Councillors Keating, Farrell, Woolley & Pincott

Address: 2808 Spiller Road SE, Calgary, AB T2P 2M5

Affected Business Unit(s) and/or Departments: Roads, Transportation

Amount of Funds Requested: Up to \$50,000

Summary Description of Project (Max 1 page):

Statement of Problem:

Many people have a tendency to simply look at objects but not actually register or see these objects while driving. This is called inattention blindness and it is happening in the eyes of distracted drivers. These drivers have cognitive distractions such as texting on a cell phone, talking on cell phone, or talking on a hands-free cell phone that cause them to withdraw their attention from the visual scene through the windshield. This can cause drivers to miss signage, traffic signals, stop signs, crosswalks, pedestrians, and other vehicles as their field of view narrows to a much smaller visual scene than when they are not distracted. This effect was shown in a study done by Transport Canada and is presented in the attached documents. Inattention blindness causes potentially dangerous situations in which a driver fails to notice surrounding events that require the response of the driver such as a sudden brake or a manoeuvre specifically at traffic signals and pedestrian crosswalks. This poses a big threat to pedestrians or other roadway users.

Proposed Solution:

One engineering solution to this problem is to implement pedestrian activated IRWL crosswalk systems at targeted crosswalks or intersections. These systems aid in the safety of crosswalks and intersections by increasing the conspicuity of crosswalks to distracted drivers that have inattention blindness or a narrowed field of view. It uses a series of lights implanted into the roadway that light up the crosswalks along the painted white crosswalk guidelines or a series of lights along a stop line at an intersection, rather than relying solely on the use of passive crosswalk systems. Lighting options can include amber crosswalk lights to warn of a pedestrian crossing or red stop lights to warn of a proper stop location to prevent encroachment on a pedestrian crossing at a traffic signal. A visual depiction of how both systems would look is attached for better clarity. This system differs from a Rapid Rectangular Flashing Beacon (RRFB) in that it acts to mitigate driver tunnel vision by lighting the visual areas in which distracted drivers are still seeing as opposed to a RRFB which is a roadside warning system that a distracted

driver still may miss due to a narrowed field of view. In terms of the life cycle, each system has a five year warranty with an operation life of 10 to 15 years. Implementing these IRWL systems has the potential to reduce or mitigate inattention blindness and bring more awareness to drivers.

Proposed Timeline (including proposed date of final report):

The goal is to complete a pilot of this technology to enhance two crossing locations that would be good candidates for this measure with amber Lanelight IRWL crosswalk systems. The final report on the pilot project will be submitted to the Director of Roads and the project sponsors by eight weeks after the award date.

How does this project meet the criteria of the fund as set out in the Terms of Reference for the Council Innovation Fund?

The Lanelight IWRL crosswalk system keeps the pedestrians best interest in mind and helps consider and mitigate the reality of distracted driving. It has the potential to be used at many locations where high driver workload or limited visibility of pedestrians is evident. It can also be used in conjunction with the RRFB program being implemented throughout the City as an enhancement at non-signalized crosswalks. Although it is typically placed at a higher price than the RRFB systems its benefits could be greater as it provides the necessary visibility advantages when compared to an RRFB and advantages in terms of traffic flow when compared to a full traffic signal. The pricing estimates for one location of amber Lanelight IRWL can be found attached to this document.

What does success look like and how will it be measured?

The successes of the Lanelight IRWL system will be measured in a similar manner the RRFBs are measured. A compliance rate would have to be studied for the implemented Lanelight IRWL crosswalk systems in order to see if they are effective at improving pedestrian crosswalk safety by properly warning drivers and increasing yield compliance. It would be expected that a compliance rate of over 90 percent would be found at the in-roadway lighting set ups in order to consider them effective. As well it would be ideal to see a reduction in distracted driving collisions at these locations with IRWL systems implemented. This type of system demonstrates a priority to keep improving pedestrian safety throughout the City of Calgary.