

Pedestrian Traffic Safety Initiatives Update Report

Traffic Engineering
Roads

The City of Calgary
October 2014

PEDESTRIAN TRAFFIC SAFETY INITIATIVES UPDATE

1. Organizational initiatives

1.1 Calgary Safer Mobility Plan 2013-2017 (Content updated in 2014)

Overview: This five-year plan includes reducing Calgary's pedestrian and bicycle casualty collision rate 12 per cent. The plan proposes further development of a comprehensive pedestrian safety plan with consideration for:

- Research for the potential use of High-Intensity Activated Crosswalk (HAWK) Beacons
- Conducting studies to review the safety of vulnerable road users near schools, within school zones and near bus stops.

The plan includes the creation of a Safer Mobility Leadership Team of professionals in the Transportation Department and the Calgary Police Service (CPS). Members of the team will work closely together with dedicated resources to address transportation safety issues and identify countermeasures. Analysis and evaluation of problems and solutions will be a critical component of this team's work through the Safer Mobility Operations Team (formerly Ops & Cops). Actions have been taken to establish a third group, the Safer Mobility Communities Team. The Safer Mobility Conference, in the spring of 2015, will be an opportunity for citizens to learn more about traffic safety and provide feedback and guidance to the City.

Lead: Transportation Department

1.2 Pedestrian Strategy (TT2014-0486) (Added to Update in 2014)

Overview: The Pedestrian Strategy is an action plan for improving pedestrian safety, reducing pedestrian vehicle collisions, providing universal accessibility, improving the quality and experience of the pedestrian realm, promoting a culture of walking and for furthering walking as a safe, healthy, convenient and viable part of Calgary's multi-modal transportation system. Work began in 2014 and a Pedestrian Strategy will be presented to Council in late 2015.

Lead: Transportation Planning

1.3 Complete Streets Guide (Added to Update in 2014)

Overview: The purpose of the Complete Streets Guide is to create more liveable neighbourhoods and to encourage people to travel by foot, bicycle and transit. An important aspect of this work is providing safe options for walking. Complete Streets will improve both measurable and perceived safety, provide attractive streetscapes, provide transportation options, improve universal accessibility, promote economic well-being of both businesses and residents, and increase civic space. Transportation Planning is taking the Complete Streets Guide/Policy forward to the September 19, 2014 meeting of the Standing Policy Committee (SPC) on Transportation and Transit. This is the opportunity for formal review of this work which is planned to move forward to Council November 3, 2014.

Lead: Transportation Planning

1.4 Update to Calgary Temporary Traffic Control Manual (Added to Update in 2014)

Overview: The Temporary Traffic Control Manual was last updated in 2011. A comprehensive review of the Manual has been completed and guidance regarding the safe accommodation of pedestrians and cyclists in and near work zones has been added. An updated manual will be issued in 2015.

Lead: Roads-Traffic Engineering

1.5 Calgary Transit LRT Crossing Guidelines (Added to Update in 2014)

Overview: The Calgary Transit LRT Crossing Committee has been tasked with the finalization of the LRT Crossing Guidelines and the establishment of a prioritized work plan to address

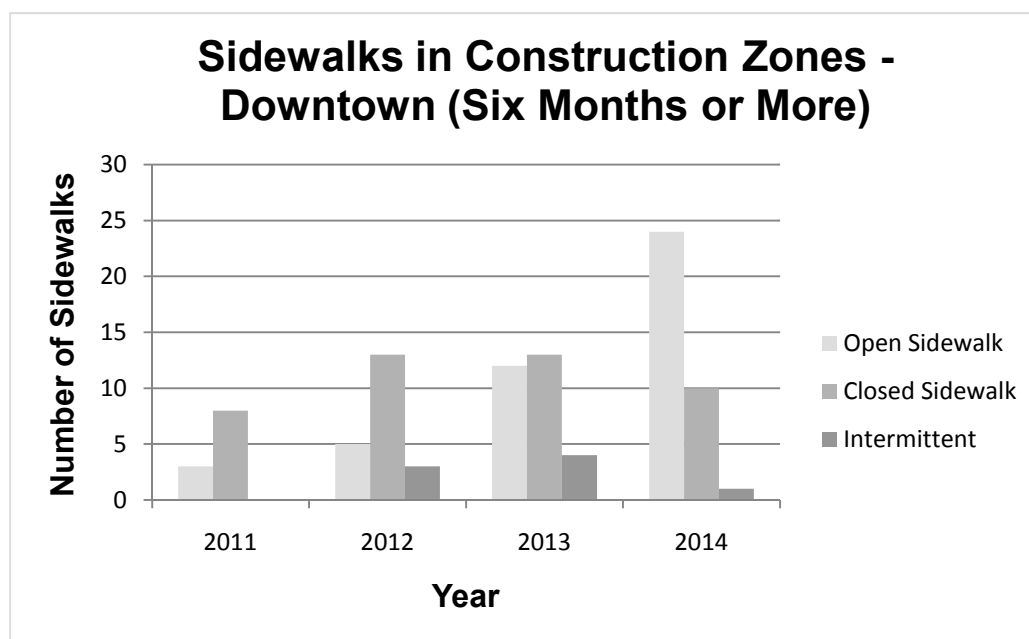
identified issues. The development of the LRT Crossing Guidelines has been completed by a consultant and the final draft guideline is undergoing a review by the LRT Crossing Committee. There is currently no formal guideline, although crossings are regularly reviewed.

Lead: Calgary Transit

1.6 Construction hoarding practices (TT2013-0361) (Content Updated in 2014)

Overview: A review of construction hoarding practices is ongoing to determine how to best accommodate pedestrians during construction. In past years, construction activities have overlapped or resulted in pedestrians not being able to access blocks of sidewalk. While safety is the primary consideration with all hoarding, Administration was tasked with finding ways to mitigate impacts to pedestrians.

As a result of the review, pedestrian accommodation during construction has improved measurably from 2011 until 2014 because alternatives to sidewalk closures are investigated in more detail before a hoarding permit to close the sidewalk would be approved.



Lead: Roads-Traffic Engineering; Development and Building Approvals

1.7 Review of Pedestrian Collisions as a Function of Posted Speed Limit (Added to Update in 2014)

Overview: To support the Playground Zone Timing Report (TT2014-0469) a review of pedestrian collisions was completed using Calgary collision data. During the most recent ten years of data (2004-2013 inclusive) there were 6 fatal collisions and 189 injury collisions involving pedestrians on roadways with 30 km/h posted speed limits. Compared to roadways with a posted speed limit of 50 km/h, there are approximately 2.5 times as many collisions per km on the 30 km/h roadways. This is not unexpected due to the potential for more pedestrians and a higher concentration of children who are less familiar with traffic interactions. Using the posted speed limit as a proxy for collision impact speed the Calgary collision data supports the use of the survivability curve for pedestrians included in the Safer Mobility Plan. This information will be used to support the implementation of traffic calming initiatives where required and to support recent changes to school and playground zone times.

Lead: Roads-Traffic Engineering

2. Education programs

2.1 Point, Pause and Proceed

Overview: As part of this outreach program, CPS visits elementary schools to provide information about how to use the street. A key focus of the program is teaching children to cross safely at crosswalks by first pointing to where they intend to go and then pausing to ensure vehicles have stopped before proceeding.

Lead: CPS

2.2 Selected Targeted Enforcement Program (STEP) (Content updated in 2014)

Overview: This CPS program provides education, enforcement and awareness. The program focuses on different themes every month. Pedestrian safety is typically addressed in November, and back to school safety, including pedestrian safety, is the focus for September. Impaired and distracted walking will be a focus for educational and enforcement campaigns.

Officers educate citizens and provide information about safe behaviour and rules of the road.

Lead: CPS

2.3 School and Playground Time Change Education (Added to Update in 2014)

Overview: Council directed administration to harmonize school and playground times during discussion of the Playground Zone Timing Report (TT2014-0469). Timing changes for school and playground zones to be 7:30 to 21:00 have been communicated to Citizens through radio advertisements and a *Report to Calgarians* video on television and the City of Calgary YouTube channel. CPS will be distributing a 'back to school traffic safety info-graphic' through social media and education/enforcement activities focused on pedestrian safety in September.

Lead: Roads-Traffic Engineering / CPS

2.4 School Bus Safety Education (Added to Update in 2014)

Overview: One of the recommendations from council during discussions about the Use of Flashing Lights on School Busses (TT2014-0467) was to work collaboratively with external stakeholders to develop a public awareness campaign regarding school bus safety. A *Report to Calgarians* video on television and the City of Calgary YouTube channel is also being prepared for 2014. Safety of young pedestrians is the focus of these messages to reinforce that bus riders should wait for the bus to depart before safely crossing at a crosswalk. A communications plan was developed and stakeholders have been engaged to enhance their campaigns. CPS will be distributing a 'back to school traffic safety info-graphic' through social media in September, which includes school bus safety.

Lead: Roads-Traffic Engineering / CPS

2.5 Traffic Tips Booklet

Overview: This booklet, updated in 2013, is published by The City to provide citizens with a quick reference for safely navigating Calgary roads. It includes sections for pedestrians as well as other road users who interact with them. The tips booklet is available on Calgary.ca and in hard copy. Copies of the booklet have been provided to other departments for distribution at public education events.

Lead: Roads-Traffic Engineering

3. Equipment and paint markings

3.1 Sign updates for harmonized school zone and playground zone times (Added to Update in 2014)

Overview: Council directed administration to harmonize school and playground times during discussion of the Playground Zone Timing Report (TT2014-0469). Timing changes for school and playground zones to be 7:30 to 21:00 are being completed through a program of applying decals to the existing signs. During this process sign quality is being assessed and any signs in poor condition are being replaced or identified for future replacement, as a part of good asset management practices. The decaling program was completed on schedule before the start of the 2014/2015 school year.

Lead: Roads - Traffic Operations

3.2 Crosswalks and signs

Overview: Standardized criteria are used to determine when a crosswalk should be painted. The criteria include traffic and pedestrian volumes, road geometry, mid-block crossing locations, and amenities such as schools in the area. Painted crosswalks are accompanied with crosswalk signage to ensure that the location is visible even if lines are faded or covered with snow in the winter.

Crosswalk painting is an annual City program that involves repainting 17,500 crosswalks and refreshing stencils. This includes painting arrows, yield symbols, stop bars, and bike symbols that have become faded during the winter months. This road maintenance helps make the crossing location more visible to both pedestrians and vehicles.

Lead: Roads - Traffic Operations

3.3 Pedestrian countdown timers (Content updated in 2014)

Overview: The installation of pedestrian countdown timers at existing signalized intersections has been part of the Roads annual capital program since 2007. This is in keeping with Roads performance measure PM3.3, number of traffic signals installations incorporating crosswalks that are equipped with pedestrian countdown signals. Since the start of the annual program in 2007, pedestrian countdown timers have been installed at 197 signals, including 13 intersections which were retrofitted in the past year.

Lead: Roads-Traffic Engineering

3.4 Scramble crossings (Content updated in 2014)

Overview: Scramble crossings are signalized crossings where all traffic is stopped so pedestrians can cross in any direction, or diagonally through the intersection. They can be effective in areas where the volume of crossing pedestrians causes significant delays to turning vehicles. In addition, they work effectively where pedestrians prefer to cross diagonally through an intersection.

Scramble crossings have been installed at 2 Avenue and 3 Avenue on 3 Street SW and one is planned for 5 Street SW on the west side of the Chinook Centre. The feasibility of scramble crossings in Chinatown is also being determined.

Lead: Roads-Traffic Engineering

3.5 Pedestrian corridor installations (Content updated in 2014)

Overview: The pedestrian-activated corridor provides a higher degree of control at locations that have a larger number of pedestrians crossing. At the end of 2012 there were 237 pedestrian corridors in Calgary. Pedestrian activated crossings are reviewed annually and approximately 5 locations are built annually, within the traffic signals budget. Three locations have been built this year and 5 more are planned for construction before the end of 2014.

Lead: Roads-Traffic Engineering

3.6 Solar-powered Rectangular Rapid Flash Beacons (RRFBs) (PFC2013-0438) (Content updated in 2014)

Overview: A trial program to test the rapid flash effectiveness of RRFBs was completed in early 2013. It focused on determining if RRFBs increased the frequency of driver yielding at pedestrian crosswalks. It also investigated the reliability of solar batteries as a power source. Study findings indicate the beacons are effective at increasing driver yielding but that the solar power is not sufficiently reliable. Consequently, the use of RRFBs is recommended pending the development of application and product guidelines. In addition to their solar power, a continuous power source is recommended to ensure these devices are reliable.

Further investigations into the development of national standards and guidelines for the use of RRFBs are underway. Traffic Engineering is leading work with the Transportation Association of Canada to develop these standards and guidelines. An extension of the trial to further investigate power sources was completed in 2014. Studies this year confirmed that RRFBs installed in 2013 are still resulting in yield compliance of greater than 90%. By the end of 2014 there will be 21 RRFB installations in Calgary.

Lead: Roads-Traffic Engineering

3.7 Audible pedestrian signals

Overview: Audible pedestrian signals provide an alert for visually impaired pedestrians to indicate when the pedestrian walk display for a crosswalk is active. Until 2012, audible signals were only installed after a formal request was received from the Canadian National Institute for the Blind. However, in 2012 The City initiated a more inclusive approach to installing audible signals at new traffic signals and considering more locations for retrofits. Audible pedestrian signals were installed at 20 locations in 2012. Prior to this initiative approximately 6 locations were retrofitted annually. Calgary has audible pedestrian signals at 111 locations.

Lead: Roads-Traffic Engineering

3.8 Pedestrian signal improvements (Content Updated in 2014)

Overview: The City of Calgary makes improvements to signals to help pedestrians in a number of ways:

1. Pedestrian walk speeds: Calgary adopted a walk speed of 1.0 m/s, down from 1.1 m/s to allow more time for pedestrians to safely cross the street.
2. Signal timing changes for pedestrians: Signals in some areas, such as Stephen Avenue Mall, were synchronized to better accommodate pedestrians.
3. Protected turn arrow installations at high volume intersections: Some busy intersections, such as Centre Street and 6 Avenue SW, had protected turn arrows added to the signal configuration to make crossing safer for pedestrians with vehicles making right hand turns.

Lead: Roads-Traffic Engineering

3.9 Various Street and Safety Improvements Program (Added to Update in 2014)

Overview: The addition of missing sidewalk links and wheel chair ramps is completed through the Various Street Improvements Program. In 2014 projects included physical improvements to support RRFB placement, curb extensions to reduce crossing distances and increase pedestrian visibility and pathway construction to remove stairs and increase accessibility. 120 pedestrian ramps were also recently installed at intersections throughout Calgary.

Lead: Roads-Development

3.10 Network Review of Marked and Signed Crosswalks (Added to Update in 2014)

Overview: All marked and signed crosswalks in the city have been reviewed and deficiencies in sign placement or orientation have been identified. Work is underway to correct identified deficiencies.

Lead: Roads- Traffic Engineering/Traffic Operations

3.11 LED Street Lighting Reviews (Added to Update in 2014)

Overview: As part of the conversion to LED street lights in the City, a lighting level review is carried out in all retrofitted areas. Current Transportation Association of Canada guidelines require that lighting at intersections be 150 percent of normal lighting levels as compared to the street. Review of intersection lighting is currently underway in Altadore, Tuxedo, Marlborough, Douglasdale and Brentwood to coincide with LED street light upgrades. Higher lighting levels at intersections increases pedestrian visibility to drivers.

Lead: Roads- Traffic Engineering/Traffic Operations

4. Studies and trials

4.1 Driver awareness of school and playground zones (TT2013-0362) (Content updated in 2014)

Overview: A one-year trial of measures intended to increase driver awareness in school and playground zones began in fall 2013. This initiative is intended to help increase the safety of young pedestrians in school and playground zones.

To determine what measures were feasible, a Canada-wide jurisdictional survey was conducted. Representatives from the Calgary Fire Department, CPS, Transportation Solutions, and Transit were also consulted in the review. Potential measures were then selected based on an evaluation of expected effectiveness, expected negative impacts, and city-wide implementation costs with net benefits. The measures selected for the trial include:

- Traffic cones with reflective spinning anemometer
- Neighbourhood speed watch program
- Reflective panel or tape on sign pole
- Double signing at start of zone
- Bigger signs
- Multiple signs along zone
- Zone ahead signs
- Road marking stencils

A trial for each measure was completed at three or four locations to ensure sufficient data was obtained. Control sites for each measure are also required for comparison purposes.

The effectiveness of the initiative will be determined based on vehicle speed before and after the implementation of the measures at each site.

Data has been collected for all but one measure and results will be reported to SCP on Transportation and Transit in December 2014.

Lead: Roads-Traffic Engineering

4.2 School site review (PFC2013-0052)

Overview: A comprehensive study is underway in response to Notice of Motion NM2012-42 to determine possible adjustments to improve the safety of road users, including pedestrians, in and around school sites in Calgary. It will include investigations of representative school sites in Calgary. These include public and private schools as well as newer and older schools. Physical factors including site layout, site location, adjacent road network, adjacent traffic controls and school traffic management will be included in the review. The review will also include a review of best practices.

Representatives from Calgary's two major school boards, local communities, Alberta Transportation, CPS, Bylaw, Roads, Transportation Planning, Transit and Land Use Planning are among the stakeholders consulted for this review.

Lead: Land Use Planning

4.3 Advance yield line trial (Content updated in 2014)

Overview: Advance yield lines are one of the countermeasures proposed to increase visibility of pedestrians where a 'double threat' exists when a stopped vehicle reduces the visibility of pedestrians for drivers in an adjacent lane approaching the crosswalk. Advance yield lines are a form of traffic control that includes the installation of a broken line of triangular road markings referred to as "shark teeth." They are installed approximately 10 metres upstream from pedestrian crosswalk lines. "Yield Here to Pedestrians" signs are also installed next to the road marking with an arrow pointing down to the roadway indicating where motorists must stop when

pedestrians are crossing. There are more than 10 trial locations in the city and yield compliance studies are underway. Standards for advanced yield line installations have been developed during the trial.

Project Lead: Roads-Traffic Engineering

4.4 In-pavement roadway lighting (Added to Update in 2014)

Overview: An application to the Priorities and Finance Committee has been prepared for innovation funding to pilot in-pavement roadway lighting.

Distracted driving has been identified as a major safety challenge on our roads. 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 is called inattention blindness. Similarly, glance patterns of drivers during sun glare conditions are typically lower than when there is no sun glare. In-pavement roadway lighting uses a series of lights implanted into the roadway that light up along the painted white crosswalk guidelines when pedestrians are about to cross. Implementing this system has potential to reduce or mitigate inattention blindness and poor visibility due to sun glare and to increase awareness of pedestrians by drivers. This engineering measure has proven to be effective in other jurisdictions.

Lead: Roads-Traffic Engineering

4.5 In-Service Road Safety Review (ISRSR) Program (Added to Update in 2014)

Overview: In-Service Road Safety Reviews are completed regularly to identify measures to improve safety for all road users, including pedestrians. Reviews at four sites were initiated in 2013 and completed in 2014, while four more sites are scheduled to be complete by the end of 2014. Recommended measures are prioritized for implementation. Selected improvements at four sites are planned for completion in 2014.

Lead: Roads-Traffic Engineering

4.6 In-Service Road Safety Review of 7 Street SW Cycle Track (Added to Update in 2014)

Overview: An ISRSR has been completed for the 7 Street SW cycle track. Consultation with internal and external stakeholders was included as an innovation to the traditional ISRSR process. The review identified several measures to improve safety for pedestrians as well as cyclists. Findings from this report will be applied proactively to the design process which is underway for the downtown cycle track pilot project.

Lead: Roads-Traffic Engineering