Supports Item No. 1
T&T Committee Agenda
July 26, 2011

CITY OF VANCOUVER | 125 YEARS

ADMINISTRATIVE REPORT

Report Date:	July 13, 2011
Contact:	Jerry Dobrovolny
Contact No.:	604.873.7331
RTS No.:	08992
VanRIMS No.:	08-2000-20
Meeting Date:	July 26, 2011

TO: Standing Committee on Transportation and Traffic

FROM: General Manager of Engineering Services

SUBJECT: Report Back - Improving Pedestrian Safety and Accessibility

RECOMMENDATIONS

A. THAT Council receive for information this overview of immediate actions undertaken by Engineering to improve pedestrian safety and accessibility.

B. THAT Council approve the 2011 Road Safety Awareness Program as described in this report, with funding of $150,000 to be provided from the 2009 Streets Basic Capital Budget - Traffic Calming Program (CER-00084).

C. THAT Council approve the establishment of a 30 km/h Pedestrian Safety Zone on Hastings Street between Abbott and Jackson Streets.

D. THAT Council approve the establishment of the Active Transportation Advisory Committee.

CHIEF CONSTABLE'S COMMENTS

One of the cornerstones of the Vancouver Police Department's Strategic Plan is a goal to reduce traffic-related injuries and deaths. Since pedestrian deaths account for half of all traffic fatalities, it is essential that the VPD develop effective pedestrian safety strategies in conjunction with the City and other key stakeholders.

This Report to Council identifies several initiatives that are currently being implemented or proposed by Engineering that the VPD supports. For example, the installation of Intersection Safety Cameras and Pedestrian Countdown Timers at high pedestrian collision locations are innovative strategies. The VPD also supports the 2011 Road Safety Awareness Program and is currently collaborating with Engineering, ICBC and other external agencies to coordinate the delivery of this program early this fall. This multi-faceted approach will focus on education

through various mediums to enhance awareness and targeted enforcement to increase safety for pedestrians, cyclists and motorists.

However, the VPD does not support this report's recommendation for a 30km/h speed zone along Hastings St. Collision data suggest that the majority of pedestrian fatalities are a result of pedestrians entering the roadway when unsafe and, to a lesser extent, inattentive drivers. Speed is not the primary contributing factor in most incidents, and daytime traffic flow along this major arterial route is typically less than 50 km/h. Furthermore, the posting of additional traffic restrictions in this area of the city will result in a significant increase in traffic complaints and citizens' requests for enforcement. Unfortunately, strategic priorities and staffing levels significantly reduce our capacity to conduct effect enforcement in this area. The VPD would be supportive of engineering alternatives that don't require increased police enforcement to reduce pedestrian/traffic collisions in this area.

CHIEF MEDICAL OFFICER – VANCOUVER COASTAL HEALTH

The Chief Medical Health Officer fully supports the recommendations in the report and strongly supports measures to improve pedestrian safety, not only to prevent injury and death, but also to help Vancouver become a more walkable city.

COUNCIL POLICY

On November 18, 2010 Council approved a motion directing staff to:

1. Identify locations and priority measures for improving pedestrian safety and accessibility in Vancouver in conjunction with the Vancouver Police Department (VPD) and the Vancouver School Board (VSB).
2. Include recommendations in this report on how to improve pedestrian input into the City's Transportation Plan.

Other Relevant Council Policies include:

- Greenways Plan (1995)
- Transportation Plan (1997)
- Downtown Transportation Plan (2002)
- Sidewalk Task Force - Implementation Plan (2004)
- Community Climate Change Action Plan (2005)
- Greenest City Action Team 'Quick Start' (2009)
- Vancouver 2020: A Bright Green Future Report (2010)
- Greenest City Targets (2011)

SUMMARY and PURPOSE

The purpose of this report is to update Council on the actions that the City has taken since November 2010 to improve pedestrian safety and accessibility in response to Councils motion, and to present strategies for improving pedestrian input into the Transportation Plan.

Since last November, Engineering has actively taken steps to help pedestrians safely access their neighbourhoods and the city at large, including the installation of intersection safety cameras and countdown timers. The most significant medium term action being undertaken by Engineering is the Pedestrian Safety Study and Action Plan. The results of this study and action plan will help the City better understand the effectiveness of its existing pedestrian

safety treatments and will also help indentify and prioritize locations for future pedestrian improvements.

Staff undertook research of North American pedestrian safety reports and contacted several North American cities to discuss how those cities were measuring the effectiveness of their pedestrian treatments and to benchmark the City's efforts. Staff found that there is very little existing evidence based research regarding pedestrian safety treatments, and that developing the City's Pedestrian Safety Study and Action Plan is needed to provide evidence based data and an action plan for future pedestrian safety improvements.

In 1997 the City undertook the current Transportation Plan, followed by the Downtown Transportation Plan in 2002. Staff is in the process of updating the Transportation Plan and has developed strategies to ensure that all residents, businesses, and visitors have an opportunity to provide input into the plan.

Immediate actions that staff is recommending in this report include:

2011 Road Safety Awareness Program:

- The Program will focus on all road users in an effort to help people understand that the responsibility for safer streets depends on everyone practicing courtesy and awareness of their surroundings, and upon working together to share the road, regardless of the mode of travel.

Pedestrian Safety Zone:

- The 30km/h pedestrian safety zone on Hastings Street between Abbott and Jackson Streets which was initially proposed by the Vancouver Area Network of Drug Users (VANDU) will be supported by speed reader boards, signage and 30km/h pavement markings.

Active Transportation Advisory Committee:

- The Committee will provide a stronger voice for pedestrians and will provide input to the Transportation Plan update.

BACKGROUND

This section of the report provides the supporting policy and data in Vancouver and research from other cities for improving pedestrian safety and accessibility in Vancouver

Pedestrians are Vancouver's number one priority. This was established in the City's 1997 Transportation Plan, re-confirmed in the 2002 Downtown Transportation Plan and reinforced in 2011 in the Greenest City Action Team's report *Vancouver 2020 "A Bright Future"*. To further support this, the City is currently updating the Transportation Plan.

In order to increase the number of walking trips and meet the goals set out in *Vancouver 2020 "A Bright Future",* the City is actively committed to making walking to work, shop or to explore a part of everyday life. Vancouver Coastal Health's Chief Medical Health Officer states that "motor vehicle collisions, including those involving pedestrians, are the leading cause of mortality among children and young adults, and that pedestrian injuries are a significant cause of morbidity at all ages." In order to improve pedestrian safety and comfort, Engineering has implemented a series of actions and reviewed other cities to learn from their experiences.

In 2010, New York City published their Pedestrian Safety Study and Action Plan. The study looked at the where, when, how and who of pedestrian collisions and in response developed an action plan that focused on engineering, enforcement, public communication, policy and legislation, and interagency coordination and cooperation.

Using information from the New York City Pedestrian Safety Study and Action Plan we compared Vancouver with other cities. Figure 1 provides a snapshot of total traffic fatalities in Vancouver and other cities. In 2008 Vancouver had a population of 592,000 and based on data from the VPD there were 19 traffic fatalities. Overall that year Vancouver had the 7th lowest number of traffic fatalities per 100,000 people, fewer than New York, Copenhagen, Portland and Seattle, and just behind Paris.

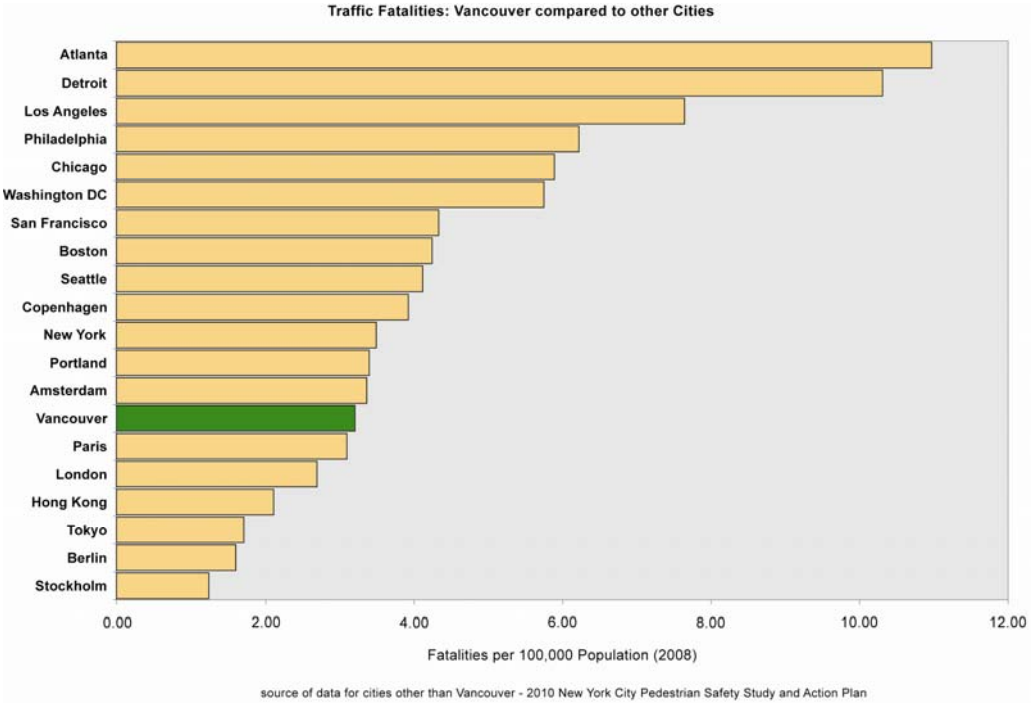

Figure 1. Traffic Fatalities: Vancouver compared to other cities
(Note that traffic fatalities includes pedestrians, motorists, motorcyclists and cyclists)

Pedestrian traffic fatalities vary from year to year, but generally the trend in Vancouver has been towards fewer fatalities. In 2010 Vancouver had the lowest number of pedestrian traffic fatalities since 1992. Based on the graph in Figure 2, one could assume that the number of pedestrian traffic fatalities would continue to decline, but already as of July 12th this year, there have been 8 pedestrian traffic fatalities which is already 2 more than the previous year.

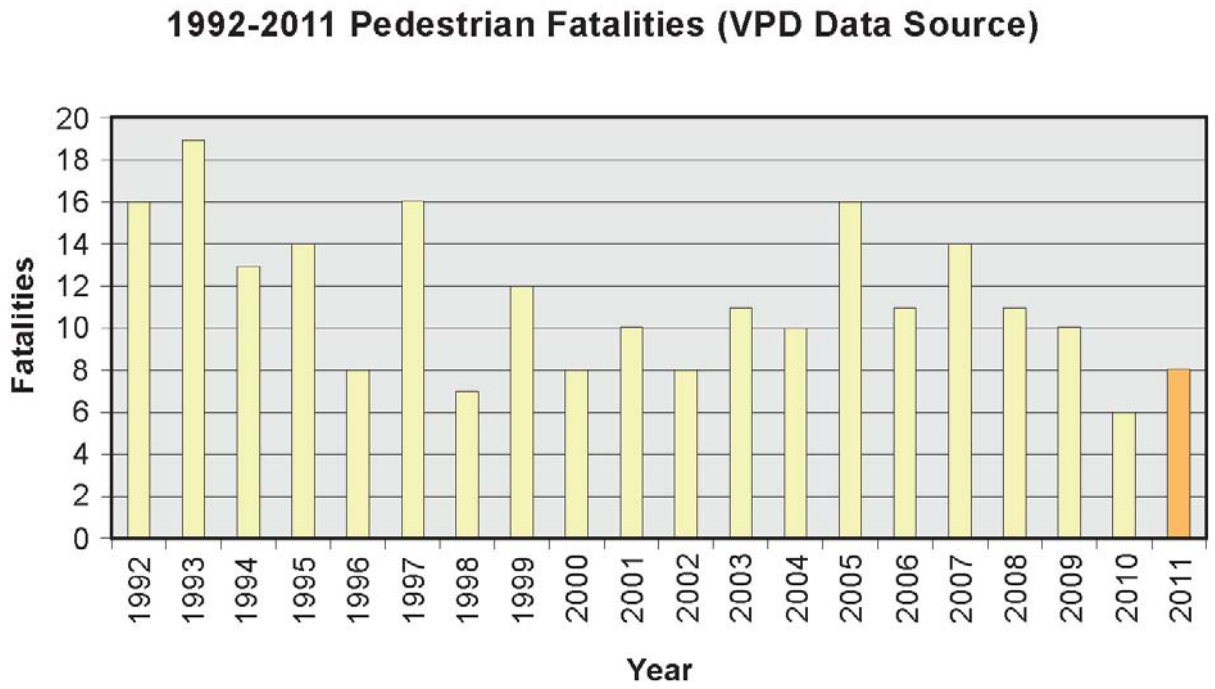

Figure 2. Total Pedestrian Fatalities 1992 -2001 (this includes data for 2011 up to July 12th)

Why does the number of pedestrian fatalities vary from year to year? If pedestrian safety was just a result of engineering infrastructure then one would expect little annual variation, but traffic fatalities are the result of a combination of factors. Research and discussions with other cities suggests that pedestrian fatalities vary annually based on a number of factors including driver and pedestrian behaviour, legislation, infrastructure, environment and even vehicle design. In Vancouver, statistics indicate that the responsibility for pedestrian fatalities is evenly shared by pedestrians and motorists. The approach to reducing traffic fatalities is one that combines the 3 E's: engineering, education and enforcement.

The following list identifies the top 10 pedestrian collision locations in Vancouver including the number of pedestrian collisions at each location between 2005 and 2009. Refer to Figure 3 for a map of the locations.

Rank	Location	Number
1	Main and Hastings	32
2	Broadway and Commercial	22
3	Burrard and Davie	20
4	Kingsway and Joyce	19
5	Kingsway and Victoria	17
6	Grandview Highway South and Rupert	17
7	Broadway and Fraser	15
8	Burrard and Georgia	14
9	Main and Terminal	14
10	Broadway and Clark	14

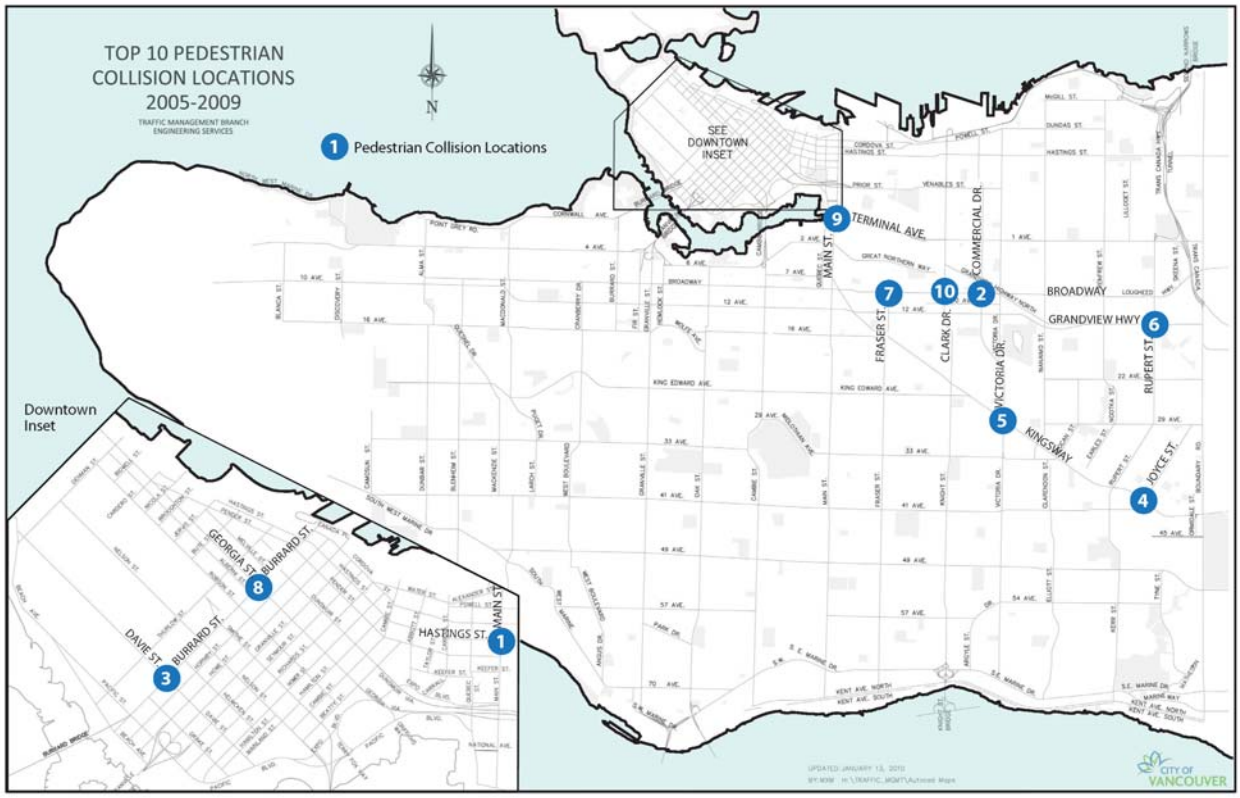

Figure 3. Top 10 Pedestrian Collision Locations 2005 - 2009

For information on the City's current pedestrian programs and services please refer to Appendix C.

DISCUSSION

This section of the report provides information on actions that the City has taken since November 18th, 2010 in response to Councils direction to improve pedestrian safety and accessibility including the Pedestrian Safety Study and Action Plan, the rationale for the recommendations, and strategies to improve pedestrian input in the Transportation Plan.

1.0 Recommendation A - Actions Taken to Improve Pedestrian Safety and Accessibility

In response to Council direction on Novemebr 18th, 2010, Engineering has taken the following actions to improve pedestrian safety and accessibility across the City.

1.1 Intersection Safety Cameras

The Province's Intersection Safety Camera (ISC) program is currently being upgraded and expanded. Approximately 45 locations were selected for the new cameras in Vancouver. Of the 32 intersection safety cameras that have been installed, 7 have been strategically placed at the top 10 pedestrian collision locations. (Note that the numbering sequence below is consistent with Figure. 3)

The following 7 of the top 10 pedestrian collision locations have had cameras installed or are in the process of being installed:

1. Main and Hastings
2. Broadway and Commercial
3. Burrard and Davie
4. Kingsway and Joyce
5. Kingsway and Victoria
6. Grandview Highway South and Rupert
9. Main and Terminal

1.2 Pedestrian Countdown Timers

Engineering is installing pedestrian countdown timers at all of the top 10 pedestrian collision locations within the City. (Refer to Figure. 3 for a map of the top 10 locations). Furthermore, new signals will have pedestrian count-down timers. (For additional information on countdown timers please refer to Appendix B)

1.3 Speed Reader Boards

A speed reader board was installed at Oak Street and 33rd Avenue, and other locations are planned for 2011 through a coordinated effort with the VPD and ICBC including the bridges crossing False Creek and possibly other locations. The effectiveness of this technology will be reviewed in collaboration with the VPD and ICBC, and as part of the Pedestrian Safety Study and Action Plan.

1.4 Downtown Eastside Pedestrian Safety Study

In October, 2010 the Vancouver Area Network of Drug Users (VANDU) published a report for the Downtown Eastside (DTES) Pedestrian Safety Project entitled *We're All Pedestrians*. The report recommended a number of initiatives, including speed reader boards, pedestrian countdown timers at traffic signals, increased walk time, and a 30 km/h pedestrian safety zone.

In response to this report and some recent pedestrian fatalities in this area, Engineering has taken the following actions:

- Countdown timers installed at the intersection of Main and Hastings Streets and Pender & Carrall Streets;
- Increased walk times for pedestrians at numerous signal locations in the DTES including most of the intersections on Hastings Street;
- Review of some mid-block locations on Hasting Street for future signals;
- New curb bulges installed at Oppenheimer Park to shorten the crossing distance and improve pedestrian safety and accessibility.

2.0 Recommendations B, C and D

The following recommendations are intended to further improve pedestrian safety and accessibility through engineering, education and enforcement.

2.1 Recommendation B - Road Safety Awareness Program

Staff recommends that Council approve the 2011 Road Safety Awareness Program. This fall the City will collaborate with ICBC and the VPD to launch a road safety awareness program which targets pedestrians, cyclists and motorists. The objective is to help people understand that the responsibility for safer streets depends on everyone practicing courtesy and awareness of their surroundings, and upon working together to share the road, regardless of the mode of travel. A component of the Program's education and enforcement will include educational pamphlets that the VPD can issue to pedestrians, cyclists and motorists when they observe activity that may warrant education but not necessarily a ticket.

2.2 Recommendation C - Pedestrian Safety Zone

Staff recommends that Council establish a 30km/h pedestrian safety zone on Hastings Street between Abbott and Jackson Streets. This 6 block zone could be implemented later this year and will be supported by speed reader boards, signage and 30km/h pavement markings. The VPD have advised staff that enforcement of the 30km/h zone will require significantly more resources than they currently have available in their Traffic Section. As with all enforcement requests enforcement will be based on city wide priorities. Staff will monitor this new safety zone and report back if significant issues occur.

2.3 Recommendation D - Active Transportation Advisory Committee

Staff recommends that Council establish an Active Transportation Advisory Committee to:

- advise on the Transportation Plan and Active Transportation Master Plan;
- advise on planning, policy and management issues that support active forms of transportation;
- promote active transportation as a viable form of urban transportation and recreation;
- promote pedestrian, cyclist and motorist awareness, competence and safety;
- ensure that City Policy, and that planning and infrastructure reports include adequate consideration of accessibility, walking and cycling, education and promotion of active transportation.

The Committee would include 3 sub-committees:

- The Pedestrian Subcommittee would advise on matters that encourage and enhance walking as a means of transportation, recreation, health and environmental design.

- The Bicycle Subcommittee would advise on matters that encourage and enhance cycling, in-line skating, and skateboarding as a means of transportation, recreation, health and environmental design.
- The Education/Promotion Subcommittee would advise on matters that promote or educate the public on active transportation modes and its benefits.

The Bicycle Advisory Committee has been consulted and supports the recommendation to establish the Active Transportation Advisory Committee and provide a voice for pedestrians.

3.0 Medium and Long Term Actions

Staff undertook internet research of North American pedestrian safety reports and contacted several North American cities to discuss how those cities were measuring the effectiveness their pedestrian treatments and to benchmark the City's efforts (Refer to Appendix B for additional research information).

Generally the research found that:

- the installation of pedestrian signals improved intersection safety for pedestrians;
- pedestrian fatalities and serious injuries involve a number of factors and conditions including driver and pedestrian behaviour, legislation, infrastructure, and environment;
- additional research and extensive field demonstrations in real-world settings are needed to evaluate the benefits and effectiveness of advanced pedestrian safety technologies;
- there is very little existing evidence based research on the effectiveness of pedestrian treatments in other cities.

In response to the limited data and research relative to the effectiveness of current pedestrian treatments staff is pursuing the following course of medium and long term actions to help prioritize our responses, improve our own evidence based research and continue to improve pedestrian safety.

3.1 Pedestrian Safety Study and Action Plan

The City has recently issued a request for proposals from consultants to develop a Pedestrian Safety Study and Action Plan. This will be a significant new action undertaken by Engineering for pedestrian safety, and will provide important information for the Transportation Plan. The study will be modeled on *The New York City Pedestrian Safety Study & Action Plan* which was completed in August 2010. For additional information on *The New York City Pedestrian Safety Study & Action Plan* please refer to Appendix A or http://www.nyc.gov/html/dot.

The Pedestrian Safety Study and Action Plan, which is expected to be completed by the end of the year, will identify opportunities to improve pedestrian safety through engineering, education and enforcement measures and will include:

- a review of the impacts and costs of pedestrian accidents;
- a history and trends in other cities;
- a review of pedestrian treatments in Vancouver and their effectiveness;
- an analysis of pedestrian accidents in Vancouver;
- and the development of a pedestrian safety action plan.

The review and analysis of locations such as those with the top 10 pedestrian collisions identified in Figure 3 will help staff to develop priority measures and an action plan. In

addition, the study will explore opportunities for additional inter-agency coordination between the City, the Vancouver Board of Parks and Recreation, ICBC, the VPD, the VSB, Vancouver Coastal Health and other relevant agencies.

3.2 Pedestrian Scramble Review

Staff have completed a review of exclusive pedestrian phasing, also called "pedestrian scramble," projects across North America including the pilot project in Toronto to determine the feasibility of implementing such a project in Vancouver. The exclusive pedestrian phase stops all vehicular movement and allows pedestrians to cross in any direction at the intersection, including diagonally. The staff review examined the benefits and impacts to pedestrians, vehicles, transit, cyclists and people with visual impairments, and concluded that there could be a slight improvement for pedestrians with increased delays to vehicles and transit due to the additional exclusive pedestrian phase. The US Department of Transportation Report to Congress on Pedestrian Safety in 2008 examined pedestrian scrambles but found that there were no studies at the time that established improved pedestrian safety and that there was as yet no evidence to support the potential safety benefits. Staff is reviewing potential locations for an exclusive pedestrian phasing pilot project in Vancouver.

3.3 Pedestrian Conflict Analysis Model

Staff are working with UBC researchers in the Department of Civil Engineering to study the benefits of video detection technology and pedestrian conflict analysis research. The pedestrian conflict analysis model is a way to automatically track and analyze "near misses." One advantage of using video recording and automated analysis of near misses over accident statistics is that it reduces the amount of required data from years to mere days, and therefore has the potential to reduce the time for implementing pedestrian safety improvements. Potential locations for the pilot project are under review including the intersections at Burrard and Pacific Streets, and Main and Hastings Streets. The technology could also be used to study the impacts and benefits of the 30 km/h pedestrian safety zone in the DTES.

3.4 Accessible Pedestrian Signals Consultation

The Transportation Association of Canada recently changed the guidelines for Accessible Pedestrian Signals with a recommendation that the east-west audible tone be changed from the "chirp-chirp" to the Canadian Melody. Engineering is undertaking a consultation process with people who are visually impaired prior to introducing any changes. The purpose of this consultation is to gain a better understanding of what features they would prefer with respect to traffic signals. Issues under consideration include audible signal devices, tactile signal devices and directional messaging.

3.5 TransLink Major Road Network Sub-regional Review

Staff are participating with TransLink in a review of their Major Road Network programs and guidelines, and are requesting increased support and funding flexibility for active transportation initiatives. Pedestrian level lighting is an example of a pedestrian enhancement that could be an eligible project component in the updated cost-sharing guidelines. The review is expected to be completed later this year.

4.0 Improving Pedestrian Input into the Transportation Plan

In 1997 the City undertook the current Transportation Plan, followed by the Downtown Transportation Plan in 2002. It is time to update the Transportation Plan. Staff provided an overview of the public engagement process to Council on May 3, 2011, and launched Phase 1 to the public on May 25, 2011. The planning team is working to ensure that all residents, businesses, and visitors have an opportunity to provide input into the plans. There have been 11 public meetings and 30 stakeholder meetings, and 3,500 visits to the Talk Transportation 2040 web site http://talkvancouver.com/transportation. The Transportation 2040 team has incorporated the following strategies to improve pedestrian participation in the process:

- The 1997 Transportation Plan established walking as the City's highest priority mode. This idea is being carried forward as a fundamental premise of the plans, and will be a cornerstone of communications and consultation materials throughout the planning process.

- To ensure ample opportunities for input, public open houses and workshops will be advertised and held in locations with large amounts of foot traffic, and with a high degree of pedestrian, bicycle, and transit access. These events will be promoted partly through the distribution of postcards to pedestrians in commercial districts near the events.

- The planning team will engage existing advisory committees with an interest in transportation issues, including those explicitly concerned with a safe and accessible pedestrian environment (e.g. *Persons with Disabilities Advisory Committee, Seniors Advisory Committee*, *Womens Advisory Committee*). These committees and other advocacy groups are already engaged in the process through the Stakeholder Advisory Committee for the plan. The team will also engage any new committees that are formed to improve pedestrian input on City plans and projects.

- Staff are partnering with a variety of agencies and organizations to improve pedestrian safety and accessibility, and to encourage walking and other forms of active transportation. Examples include the the *Walk the Talk* research project, UBC MetroQuest and the UBC Facebook focus group project. Lessons learned will be incorporated into the new plans.

FINANCIAL IMPLICATIONS

In this report, staff are requesting that Council approve $150,000 from the 2009 Streets Basic Capital Budget (Traffic Calming Program – CER-00084) to enable development and implementation of the 2011 Road Safety Awareness Program.

Recommendation B, establishment of a 30km/h pedestrian safety zone on Hastings Street between Abbott and Jackson Streets will be funded through existing funding allocations.

CONCLUSION

Since November 2010 Engineering has successfully taken immediate actions to improve pedestrian safety and accessibility based on Council direction. The recommendations presented in this report to establish a Road Safety Awareness Program, a pedestrian safety zone in the DTES, and an Active Transportation Advisory Committee are designed to support

pedestrian safety and accessibility across the City. The development of medium and long term action items such as the Pedestrian Safety Study and Action Plan will help the City better understand the effectiveness of its pedestrian safety measures and will also help identify and prioritize locations for future pedestrian improvements. The strategies presented in this report are intended to improve pedestrian input to the Transportation Plan.

* * * * *

Executive Summary

Key Findings of the New York City Pedestrian Safety Study

This landmark study is the most statistically ambitious of its kind ever undertaken by a US city. The researchers worked to identify the causes, common factors, and geographic distribution of over 7,000 pedestrian crashes in New York City. These are some of the results.

- 2009 was the safest year on record in New York City history.
- Traffic fatalities in 2009 were down by 35% from 2001.
- NYC's traffic fatality rate is about one-quarter of the national rate and less than half the rate of the next 10 largest U.S. cities.
- Traffic crashes cost the City's economy $4.29 billion annually.
- Pedestrians are ten times more likely to die than a motor vehicle occupant in the event of a crash.
- Pedestrians accounted for 52% of traffic fatalities from 2005-2009.
- Driver inattention was cited in nearly 36% of crashes resulting in pedestrians killed or seriously injured.
- 27% of crashes that kill or seriously injure pedestrians involved driver failure to yield.
- Serious pedestrian crashes involving unsafe speeds are twice as deadly as other such crashes.
- Most New Yorkers do not know that the standard speed limit for city streets is 30mph.
- 80% of crashes that kill or seriously injure pedestrians involve male drivers.
- 79% of crashes that kill or seriously injure pedestrians involve private automobiles as opposed to taxis, trucks and buses.
- Serious pedestrian crashes are about two-thirds more deadly on major street corridors than on smaller local streets.
- Manhattan has four times as many pedestrians killed or severely injured per mile of street compared to the other four boroughs.
- 43% of pedestrians killed in Manhattan lived in another borough or outside of New York City.

2010-2011 Action Plan

Based on the findings of this study, DOT recommends a comprehensive set of actions; select programs are shown below.

- Install countdown pedestrian signals at 1,500 intersections.
- Re-engineer 60 miles of streets for greater pedestrian safety, according to corridor crash data.
- Re-engineer 20 intersections for pedestrian safety on major Manhattan two-way streets.
- Launch a pilot program to test the safety performance of neighborhood 20 mph zone.
- Implement pilot program to improve visibility at left turns along avenues in Manhattan.

Overview of Pedestrian Safety Research

Staff undertook internet research of North American pedestrian safety reports and contacted several North American cities to discuss how those cities were measuring the effectiveness their pedestrian treatments and to benchmark the City's efforts.

Generally the research found that:

- the installation of pedestrian signals improved intersection safety for pedestrians;
- pedestrian fatalities and serious injuries involve a number of factors and conditions including driver and pedestrian behaviour, infrastructure, and environment;
- additional research and extensive field demonstrations in real-world settings are needed to evaluate the benefits and effectiveness of advanced pedestrian safety technologies;
- there is very little existing evidence based research on the effectiveness of pedestrian treatments in other cities.

How can we measure the effectiveness of our pedestrian infrastructure and our education programs and services? In discussions with other cities such as New York, Chicago, Portland, Seattle, Toronto, Richmond and Calgary we found that there is very little existing evidence based research on the effectiveness of pedestrian treatments in other cities.

A Technical Review of Pedestrian Signals in Canada

In 2005, the Canadian Institute of Transportation Engineers in partnership with ICBC and the Transportation Association of Canada conducted a review of pedestrian signals in Canada. Pedestrian traffic signals have been in use in Canada since the mid-1960's, primarily in large metropolitan areas and they are relatively common in British Columbia, Alberta and Ontario. The review of available reports and studies on the relationship between pedestrian signals and collisions involving pedestrians elsewhere in Canada identified relevant research in both Edmonton, Alberta and Hamilton, Ontario. The review found that the rate of pedestrian-motor vehicle collisions in both cities declined after the installation of pedestrian signals. The review concluded that the installation of pedestrian signals improved intersection safety for pedestrians.

Pedestrian Safety Report to Congress

In 2008, the U.S. Department of Transportation Federal Highway Administration published a Congressional Pedestrian Safety Report. This report was prepared in response to the 2003 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, which required the Secretary of Transportation to produce a comprehensive report on pedestrian safety. The report found that pedestrian fatalities and serious injuries involve a number of factors and conditions including:

- driver and pedestrian behaviour;
- infrastructure;
- environment;
- vehicle design;
- and combinations of these.

The Congressional Pedestrian Safety Report looked at new technologies and intelligent transportation systems in relation to:

- pedestrian countdown timers;

- exclusive pedestrian phasing;
- and mid-block crossing treatments.

The report noted that traditional traffic enforcement posed significant difficulties for police and recommended such treatments as automated red light and speed enforcement at intersections with significant pedestrian activity and at mid-block crossings, and automated crosswalk enforcement at crosswalks with considerable violations. In addition it recommended several education programs related to the roll out of new pedestrian technology. Overall, the report, which is perhaps the most current and comprehensive of it's kind, concluded that while advanced technologies offer the potential to significantly improve pedestrian safety, additional research and extensive field demonstrations in real-world settings are needed to evaluate the benefits and effectiveness of the advanced technologies described in the report.

Countdown Timers
A review of pedestrian countdown timers in New York, Chicago, Toronto, Portland and Seattle indicates that some cities such as Toronto have installed them on almost all their signals while Chicago have less than 10%. While there are anecdotal accounts of people liking the countdown timers in Vancouver and other cities, none of these cities have evidence based data on the effectiveness of countdown timers.

The 2008 US Department of Transportation Report to Congress on Pedestrian Safety found that there had been very limited study done on the impact of pedestrian countdown signals on pedestrian safety, and that a greater emphasis on educating the public on how to cross streets at pedestrian crossings would be beneficial.

Intersection Safety Cameras
The Province's Intersection Safety Camera (ISC) program provides automated red light and speed enforcement at intersections. Locations are selected based on collision type, severity and frequency, as well as the potential for improvement to reduce t-bone and head-on crashes, severe injuries and fatalities.

The 2008 US Department of Transportation Report to Congress on Pedestrian Safety reported the following findings:
Automated red light enforcement is currently deployed at a variety of locations and is authorized by law in about half of the States. This technology utilizes static cameras placed at various points at an intersection to identify vehicles that fail to stop at red signals. The technology uses cameras triggered by sensors that detect vehicles entering the intersection above a preset minimum speed and at a specified time after the signal has turned red. In addition to vehicle identification, the systems record the date, time of day, time elapsed since the beginning of the red signal, and vehicle speed. Tickets typically are sent by mail to owners of violating vehicles based on this photographic evidence.

Automated speed enforcement is used in approximately 20 communities in the United States. These systems use radar detectors at given multiple static or portable locations to identify vehicles that are exceeding an established threshold speed. Once a vehicle is detected above the threshold, a camera takes a frontal and possibly rear photograph of the vehicle, capturing the license plate and copying the recorded speed and time on the photo. The picture is then

matched with the vehicle owner through motor vehicle registration files, and a specified fine is mailed to the owner.

Automated red light enforcement may be appropriate to consider at intersections with significant pedestrian activity or pedestrian crashes, and automated speed enforcement may be appropriate to consider in advance of mid-block crosswalks on multilane arterials with significant pedestrian activity or pedestrian crashes. In the case of both technologies, however, studies should be undertaken to determine safety benefits to pedestrians of these automated enforcement technologies.

1.0 Current Pedestrian Programs and Services

The City has numerous programs and services in place to assess and improve pedestrian safety and accessibility. Though most of these are implemented through Engineering Services, many are coordinated in partnership with other agencies, including the Vancouver Police Department (VPD), the Vancouver School Board (VSB), the Insurance Corporation of British Columbia (ICBC) and the South Coast British Columbia Transportation Authority (TransLink). The current programs and services include:

1.1 Pedestrian Studies and Traffic Signal Program

Each year, Engineering receives approximately 100 to 150 inquiries from citizens and staff regarding pedestrian safety. In response to these inquiries, staff conduct detailed studies which include a review of pedestrian and traffic volumes, demographics, driver behaviour, collision history, road geometry, nearby street use, and input from the VPD, ICBC and TransLink. The results help staff identify and prioritize locations throughout the City for new facilities and infrastructure that improve pedestrian safety. As a result, in past years 12-15 traffic signals have been installed each year.

One of the City's goals is to improve accessibility and safety for everyone through the installation of pedestrian signals. Another is to equip all traffic signals with audible signal devices to assist pedestrians who are visually impaired. Currently, 409 of the 811 traffic signal locations throughout the City are equipped with audible signal devices. All new traffic signals will be equipped with audible signal devices, and in past years approximately 10 intersections have been retrofitted with new audible devices each year.

1.2 Pedestrian Volume and Opinion Survey of Commercial Streets

This City survey, which is carried out every 5 years, provides pedestrian volume and survey results on approximately 400 blocks of the City's commercial sidewalks. This information helps staff analyze and prioritize future pedestrian safety and accessibility initiatives.

Through the opinion survey in 2008, over 2,000 pedestrians provided feedback on their origins and destinations, trip purpose, other modes of transportation used to complete their trip, route choice, the time they were willing to take for a walking trip, ratings of pedestrian facilities/services and specific concerns. Overall responses indicated that pedestrians were generally satisfied with being able to walk safely in the City's commercial areas.

1.3 ICBC Road Improvement Program

The City receives funding for transportation projects through ICBC's Road Improvement Program. In the last 5 years, ICBC has contributed over $3,000,000 to a variety of transportation safety projects, most of which has been used to install new pedestrian signals throughout the City. ICBC is a valuable partner and the City will continue to rely on this ICBC funding for future road and signal improvements.

1.4 Sidewalk and Curb Ramp Program

A complete sidewalk network is fundamental to people's ability to safely and easily walk throughout the City. To address this need, Engineering has a program in place to construct and maintain sidewalks and curb ramps.

There are approximately 2,400 km of sidewalks across the City with 91% of all streets having a sidewalk on at least one side. The vast majority of sidewalks in commercial areas, and along

arterial streets and transit routes have been completed. In 2010/2011 the City was able to complete over 20 kms of new sidewalk with the help of Federal Infrastructure funding. Engineering will continue to explore partnerships to complete the network.

Every year between 3 and 6 km of our existing sidewalks are rebuilt primarily due to heaving of the sidewalk from tree roots. While this happens across the City, resources are focused along commercial streets and transit routes, and streets with high pedestrian volumes.

The City began installing curb ramps in the late 1950's to improve the accessibility of sidewalks. The curb ramp design has gone through several reviews and design improvements in consultation with various groups representing people with physical and visual disabilities. Approximately 19,000 curb ramps have been installed and an estimated 8,000 ramps remain to be constructed throughout the City. As a result, in past years 200 curb ramps have been installed each year.

1.5 School Programs and Services

The City has a number of programs and services to improve pedestrian safety for children walking to school that focus on engineering, education and enforcement. These include:

School Traffic Working Group

Engineering, the VPD and the VSB established the School Traffic Working Group to have a coordinated approach to pedestrian traffic safety around schools. This partnership has improved the identification, analysis and response to safety issues for children at nearly all of the 109 Vancouver elementary and secondary schools. The Group has successfully built relationships with school administrators and the local community to improve service.

School Traffic Liaison

Engineering's school traffic liaison is responsible for reviewing and improving school related pedestrian safety. Inquiries originate from various sources including the 3-1-1 call centre, the Parent Advisory Committee members, school administrators, and the School Traffic Working Group. The school traffic liaison is also responsible for assisting the VSB with the promotion of walking and cycling to and from school.

School Bulge Program

The School Traffic Working Group identifies 3 to 5 priority crossing locations annually. Constructing curb bulges at these locations improves crossing conditions for children by increasing their visibility, reducing their crossing distance, and preventing parking close to the intersection. Upon construction, the VPD undertakes safety talks and education at the nearby school, and the VSB organizes school crossing guards for the new bulge locations.

School Active Transportation Program

This pilot program, formerly called *One Day One School*, aims to reduce greenhouse gases, vehicle traffic and congestion around schools by encouraging students, parents and school staff to walk and cycle. By reducing barriers and making walking and cycling to school a fun activity, the program supports Vancouver being the healthiest, cleanest, greenest city in the world. Schools are encouraged to submit proposals that best fit their needs such as cycling skills training, traffic safety reviews, unclaimed bicycle donation programs, climate change related classroom activities and workshops, or the Best Route to School maps.

1.6 Construction Management

Engineering staff work closely with construction crews, utility companies, and film and special events crews to provide for safe pedestrian movements around worksites, while abiding by City by-laws, WorkSafeBC regulations, and the Ministry of Transportation regulations. Often this involves closing a lane to vehicle traffic or having traffic control people assist pedestrians safely past a worksite.