



City of Richmond

Report to Committee

To: Public Works and Transportation Committee **Date:** June 8, 2007
From: Victor Wei, P. Eng.
Director, Transportation **File:** 10-6450-07-03/2007-Vol 01
Re: **PROPOSED IMPLEMENTATION STRATEGY FOR ENHANCED ACCESSIBLE INTERSECTIONS, SPECIAL CROSSWALKS AND PEDESTRIAN SIGNALS**

Staff Recommendation

1. That the establishment of an annual program for the installation of enhanced accessible pedestrian features at signalized intersections, special crosswalks and pedestrian signals as described in the attached report, be endorsed subject to Council's further consideration of the associated costs as part of the City's capital and operating budget approval processes starting with the 2008 programs.
2. That staff examine the feasibility of establishing an annual program to install illuminated street name signs in place of existing ones at signalized intersections throughout the City and report back on the recommended implementation strategy and associated costs.

Victor Wei, P. Eng.
Director, Transportation
(4131)

Att. 2

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ROUTED TO:	CONCURRENCE		CONCURRENCE OF GENERAL MANAGER
Recreation & Culture	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		
REVIEWED BY TAG	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	REVIEWED BY CAO
			YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>

Staff Report

Origin

At the regular Council meeting held on March 26, 2007, the following resolutions were approved:

- (1) *That an implementation strategy be developed for enhanced accessible features at signalized intersections and crosswalks in Richmond (as described in the report dated February 27, 2007, from the Director, Transportation); and*
- (2) *That staff report on the outcome of the above work in time for Council's consideration as part of the City's 2008 capital budget approval process.*

This report proposes that the establishment of an annual program for the installation of enhanced accessible pedestrian features at signalized intersections, special crosswalks and pedestrian signals as described in this report be endorsed subject to Council's further consideration of the associated costs as part of the City's capital and operating budget approval processes starting with the 2008 programs.

At the regular Council meeting held April 10, 2007, Council approved the guidelines that would inform the potential future use of interest on the funds from the balance of the sale and lease proceeds of the oval lands development, and those guidelines included potential uses for capital improvement projects that would improve accessibility and mobility for seniors and people with disabilities. Further to this meeting, the following motion was carried at the June 20, 2007 Public Works and Transportation Committee and adopted on consent at the regular Council meeting held on June 25, 2007:

That staff develop a process to define parameters for accessibility funding in accordance with the Community Legacy Accessibility Fund, and identify potential projects.

The referral, which is being addressed in a separate staff report, would lead to corporate strategies to ensure physical accessibility to properties for those individuals with disabilities, and would include all aspects from buildings to roads, including parks and recreational facilities and could also include an examination of the universal guidelines for people with disabilities.

Analysis

1. Recent Universal Accessibility Initiatives

Demographic projections for the Lower Mainland suggest that, over the next 25 to 30 years, the region's population will grow by more than a million people to reach 3.2 million in 2034, an increase of 48%. However, the population in every age group over 65 years of age will increase by more than triple this rate: the 65-74, 75-84 and 85 plus age groups will see 186%, 192% and 239% growth, respectively. In recognition of this anticipated change, a number of national, regional and City initiatives are underway to improve the accessibility of the region's transportation system and built environment.

- Accessible Pedestrian Signal Guidelines: The Transportation Association of Canada (TAC) has developed guidelines for the understanding, use and implementation of accessible pedestrian signals (APS), which are expected to be adopted by the end of 2007. The

guidelines would provide deploying agencies with practical and uniform information on public liaison, APS installation prioritization and design, installation, operations and maintenance. The guidelines will accompany the new standards that will be updated in the TAC Manual of Uniform Traffic Control Devices for Canada (MUTCD), which is also expected to be adopted by the end of 2007.

- *Access Transit*: In 2005, TransLink initiated a review of accessibility of the entire transit system. Recently completed, the project identified three areas that need attention – customer support, transit services and custom transit – and has recommended a number of actions to improve the accessibility of the region's transit system.
- *Universally Accessible Bus Stop Design Guidelines*: TransLink has developed new guidelines for bus stop design to improve accessibility for all users. The design guidelines provide features with respect to configuration of the various elements, tactile surface indicators, shelter and seating, and customer information. TransLink intends to implement six to 10 redesigned bus stops as a pilot project in 2007 and, following public feedback and technical evaluation, finalize the guidelines in 2008.
- *City Initiatives*: Current City projects and initiatives that will help to improve accessibility include the update of the City Centre Area Plan and City Centre Transportation Plan, the No. 3 Road Streetscape Study, the development of guidelines for the placement of newspaper boxes, and the development of service, equipment and driver training standards for taxicab operators of both conventional and accessible vehicles.

The establishment of a program for the installation of APS features at existing and new signalized intersections, special crosswalks (pushbutton with overhead amber flashers) and pedestrian signals would be an additional and timely complementary initiative that would significantly improve the level of accessibility in Richmond, particularly in the years leading up to the 2010 Olympic and Paralympic Games.

2. Accessible Pedestrian Signal Features

In developing a city-wide accessible intersection and pedestrian crossing strategy, staff first determined the desired APS features as identified by the draft TAC guidelines, which are expected to be adopted in 2007, and in consultation with a special working group of the Richmond Committee on Disability (RCD), which included representatives from CNIB (Canadian Institute for the Blind) and ASIC (Advocates for Sight Impaired Consumers). The TAC guidelines state that a typical APS operation at a signalized intersection features pedestrian wayfinding via a pushbutton locator tone and pedestrian orientation guidance through signs and other audible and vibrotactile assistance.

However, there is a distinction in accessible features between signalized intersections and specialized crosswalks with flashing ambers. For the special crosswalks, there are no national or industry guidelines for accessible features. CNIB has recently recognized through an award one particular manufacturer, however, the City has had limited opportunity to evaluate the merits of this supplier and other suppliers. Staff plan to evaluate the suppliers in providing the desired features for local application in consultation with RCD.

3. Current Status of Accessible Signals in the City in meeting TAC Guidelines

Staff compared the City's existing audible/accessible signals against the desired APS features. As shown in Table 1, the City currently has audible and/or accessible signals in place at 15 intersections, four of which meet the TAC guidelines of incorporating all five APS elements:

- pole locator tones – used to assist pedestrians in identifying that an intersection is APS equipped and in locating the pushbuttons;
- audible – distinct audible indications should be provided for each discrete direction of travel where the north-south direction of travel would have a “cuckoo sound” and the east-west would have a “chirp sound” each concurrent with a visual walk display;
- vibrate – upon actuation, the APS should provide a vibrotactile indication from the pushbutton or vicinity;
- tactile arrows – point in a direction parallel to the crosswalk that is controlled by the associated pushbutton and should be provided as part of the pushbutton assembly or as part of the pedestrian information sign; and
- pushbutton confirmation – when a pedestrian pushes the button there is a confirmation beep that sounds to indicate to the pedestrian that a call has been sent to the controller.

Although the hardware is available at the four locations referred to above, some of the APS features may need to be activated or modified to be consistent with the desired APS features. The other locations have now been included in the list of locations identified for APS installation (**Attachment 1**). It should be noted that the intersections along the No. 3 Road corridor in the City Centre are currently under review and are expected to be modified as part of the Canada Line traffic signal restoration work.

Table 1: Existing Locations with Audible/Accessible Signal Features

Location	Device Type	Existing APS Hardware	Status	Additional Hardware Required to meet TAC Guidelines
No. 1 Rd / Chatham St	TS	A-V-L-T	Under	yes
No. 1 Rd / Blundell Rd	TS	A-V-L-T	Under	yes, only one leg meets guidelines
No. 1 Rd / Youngmore Rd	PS	A	Under	V-L-T
No. 2 Rd / Blundell Rd	TS	A-V-L-T	Meets	no
No. 2 Rd / Blundell Centre	EPS	A-L	Under	V-T
No. 3 Rd / Williams Rd	TS	A	Under	V-L-T
No. 3 Rd / Cook Rd	TS	A-V-L-T	Meets	no
No. 3 Rd / Saba Rd	TS	A-V-L-T	Meets	no
No. 3 Rd / Westminster Hwy	TS	A	Under	V-L-T
No. 3 Rd / Lansdowne Rd	TS	A-V-L-T	Under	yes
Gilbert Rd / Azure Rd North	EPS	A	Under	V-L-T
Gilbert Rd / Westminster Hwy	TS	A	Under	V-L-T
Minoru Gate / Granville Ave	EPS	A	Under	V-L-T
Minoru Blvd / Granville Ave	TS	A-V-L-T	Meets	no
Minoru Blvd / Library Entrance	TS	A	Under	V-L-T

Notes:

- TS = Traffic Signal / PS = Pedestrian Signal / EPS = Enhanced Pedestrian Signal / SC = Special Crosswalk
- A = Audible / V = Vibrate / L = Locator Tone / T = Tactile

4. Prioritization of APS Installation

Staff and the RCD working group agreed to use a methodology based on the draft TAC guidelines as well as that used by other US cities to establish installation priorities, which is based on the following factors:

- Intersection Safety: intersection configuration, width of crossing and vehicle speeds;
- Traffic Conditions: vehicle volumes, traffic distribution, congestion and flow characteristics;
- Pedestrian Usage: number of potential users and proximity to pedestrian generators and transit; and
- Mobility and Other Factors: recurring congestion and queues through the intersection, heavy right-turn volumes, presence of a right-turn island, complex signal phasing, etc.

All 237 existing locations, ranked according to the above criteria, include:

- 146 full signalized intersections, including those already equipped with audible/accessible features;
- 50 special crosswalks;
- 30 pedestrian signals; and
- 11 pedestrian signals enhanced with countdown timers.

This process provided objective guidance in determining the need and priority for the installation of APS. **Attachment 1** is a priority list for the installation of APS at existing locations, broken down by type of location, i.e. signalized intersections, special pedestrian crosswalks, pedestrian signals and pedestrian signals with countdown timers. The highest ranked locations typically are those that are in close proximity to facilities serving people with disabilities, transit facilities and key pedestrian destinations as well as have wider crossing widths and left-turn signal phasing.

5. Implementation Strategy

5.1 Existing Locations

Staff propose to install accessible devices at signalized intersections, special crosswalks and pedestrian signals, in consultation with RCD, that fit the criteria for locations that exhibit a "demonstrated need" as per the new TAC guidelines, subject to approval of capital and operating budget funding. Additional enhanced features requested by the RCD that the City currently does not provide will be tested over a trial period of one year. During and after this trial period staff would consult with RCD to evaluate the merits and any shortfalls of the features including an assessment of the reliability and maintenance needs of the features as well as any necessary mitigating measures particularly at special crosswalks as there are no national or industry standards or guidelines for APS features for this type of device. Staff would report back to Council should there be a need to make any significant modifications to the program.

After the trial period, assuming there are no significant modifications to be made, staff would continue to work with RCD to verify the priority of the locations where accessible devices will be installed at existing traffic signals, pedestrian signals and special crosswalks.

5.2 New Locations

With respect to any new signalized intersections, pedestrian signals and special crosswalks, staff propose that all new locations within the City Centre area be designed with the new accessible features intact and that all other areas outside of the core area be dealt with by verifying a "demonstrated need" or evaluation by the established criteria and in consultation with RCD. The funding source for new locations within the City Centre would be through an increase to the existing annual capital programs or through development requirements of any new applications. Funding for new locations outside of the City Centre would be on a priority basis along with retrofitting of existing signal locations from the same funding source, that is, a new item in the City's capital and operating budget approval processes (see **Table 2**).

Table 2: Funding Source for Different Locations of Accessible Features

Type of Location	Funding Source
Retrofit of existing locations	New capital program item (\$150,000 per annum)
New locations outside of City Centre	
New locations within the City Centre	Development driven or increase to existing programs

Any individual requests for the installation of accessible features at existing or new locations would be reviewed by the City in consultation with RCD in order to assess priority and confirm a "demonstrated need". For example, a person with vision loss may move to a new neighbourhood and have difficulty getting to and from work due to challenges in negotiating a crosswalk or signalized intersection as it has no APS features. If warranted, the accessible devices would then be installed at the requested location.

As new development occurs, applicants would be required to fund the installation of these APS features at any existing or new signalized intersection, pedestrian signal and special crosswalk within the City Centre, and other parts of the City if warranted as part of the development requirements.

5.3 Estimated Costs

The estimated cost to equip an existing or new typical four-leg signalized intersection with APS is \$12,000 per intersection while the estimated cost to upgrade an existing or new pedestrian signal or special crosswalk to include accessible features is \$3,000 per site. Once a location is equipped with APS devices, the incremental annual maintenance cost is estimated to be \$560 per traffic signal and \$140 per pedestrian signal or special crosswalk. The cost of upgrading all of the 237 existing signalized intersections, pedestrian signals and special crosswalks with APS features would cost a total of \$2.03 million in capital funds plus \$95,000 for the annual maintenance and operating costs.

6. **Illuminated Street Name Signs**

Given the anticipated change in the demographics of our aging population, special wayfinding provisions such as the conversion of the existing street name signs to illuminated street name signs are complementary and an added feature that could readily be implemented. Currently, there are two locations where the illuminated street name signs have been installed: westbound at the intersection of No. 3 Road and Granville Avenue and westbound at the intersection of Gilbert

Road and Granville Avenue. **Attachment 2** shows the illuminated street name sign at the intersection of No. 3 Road and Granville Avenue.

A 2005 report in the International Municipal Signal Association (IMSA) journal states that: *"Although only 25 percent of driving occurs at night, this time is when more than half of traffic fatalities happen - with "inadequate and poorly maintained signs" often cited as a contributing factor."* In order to improve night road safety, various traffic agencies have used internally illuminated street name signs for almost three decades. These signs are particularly beneficial in winter and at night for older road users unfamiliar with the roadways as they improve sign visibility and legibility at all distances and in all conditions, reducing the time needed to find street names and providing drivers more time to plan their action at intersections. In light of the upcoming Olympics and the many visitors attending from out-of-town this would be a valuable enhancement to our road network and wayfinding.

The illuminated street name signs are LED (light emitting diodes) edge-lit and the front panel is UV, weather, abrasion and impact resistant. The LEDs would be mounted along the top and bottom edges of the sign. These illuminated street name signs (depending upon size) will operate between 30 to 55 watts and have a warranty of 3 years against manufacturer's defects, etc. The cost of these signs is in the range of \$2,500 each. There would be an additional cost for installation and maintenance. There is the potential for external funding such as contribution from ICBC.

Therefore, it is recommended that the illuminated street name signs be incorporated with the overall improvement strategy to enhance accessibility in the City.

Financial Impact

Staff propose that the upgrade and maintenance of existing intersections, special crosswalks and pedestrian signals and new locations outside of the City Centre be funded via an annual increase of \$150,000 to the City's capital budget and \$7,000 to the City's existing operating and maintenance budget. The above recommended funding level is similar to the amount typically requested for the city-wide annual arterial special crosswalk program. The number of locations upgraded will vary depending on the priorities, type of location and budget approved per year. RCD has indicated that a higher priority should be given to special crosswalks; the distribution of the capital funds to implement accessible devices at the different types of locations will be discussed further with RCD.

RCD would also like consideration for increasing this budget in order that a maximum number of locations can be made accessible in the first year. However, staff advise that the consideration of any funding amount greater than the recommended \$150,000 should take into account the impacts on other capital programs and limitations of staff resources available to implement such upgrades.

Staff also propose that new locations within the City Centre would be funded through an increase to the existing annual capital programs or through development requirements of any new applications. In addition, as a separate report is currently being prepared on defining the purpose of the establishment of a reserve fund for the *Community Legacy Accessibility Fund*, staff will explore the eligibility of this initiative in accessing this fund for the installation of accessible

features at intersections and crosswalks, and report back to Council as part of the report on the 2008 Capital Program submission.

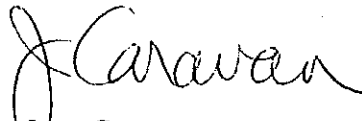
Conclusion

Staff have developed a proposed implementation strategy for accessible pedestrian signal features at existing and new signalized intersections, special crosswalks and pedestrian signals throughout the City in close consultation with the Richmond Committee on Disability. Based on the recommended annual funding for accessible features at signalized intersections, special crosswalks and pedestrian signals, the highest priority locations are expected to be upgraded within 5 years time. Staff propose that the identified budgets be considered as part of the City's capital and operating budget approval processes, starting with the 2008 programs. In addition, staff propose to investigate further the feasibility of replacing existing street name signs with new illuminated ones city-wide.

The implementation of this program will ensure that the City continues with its goal to becoming "a community that is universally accessible for everyone" as stated in the Official Community Plan.



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Joan Caravan
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Priority List for the Installation of APS at Existing Locations

Traffic Signals (146 locations):

Area	Intersection Name	Score by criteria *
City Centre	NO.3 & CAMBIE	21
City Centre	NO.3 & LANSDOWNE	21
Ironwood	NO.5 & STEVESTON	21
City Centre	BUSWELL & COOK	20
City Centre	GILBERT & WESTMINSTER	20
City Centre	MINORU & GRANVILLE	20
Steveston	NO. 1 & CHATHAM	20
City Centre	NO.3 & CAPSTAN	19
City Centre	GARDEN CITY & BRIDGEPORT	19
City Centre	GARDEN CITY & LANSDOWNE	18
City Centre	GARDEN CITY & ALDERBRIDGE	18
Sea Island	RUSS BAKER & MILLER	18
City Centre	COONEY & LANSDOWNE	17
City Centre	MINORU & LIBRARY/ARTS	17
Steveston	NO.1 & STEVESTON	17
City Centre	COONEY & WESTMINSTER	17
City Centre	GILBERT & GRANVILLE	17
West Cambie	GARDEN CITY & SEA ISLAND	17
East Richmond	NO.5 & WESTMINSTER	17
City Centre	MINORU & WESTMINSTER	16
City Centre	NO.3 & ALDERBRIDGE	16
City Centre	NO.3 & COOK	16
City Centre	NO.3 & GRANVILLE	16
South Arm	GARDEN CITY & WILLIAMS	16
Bridgeport	GARDEN CITY & RIVER	16
West Cambie	SHELL & CAMBIE	16
East Richmond	SHELL & WESTMINSTER	16
East Richmond	VIKING & CAMBIE	16
Steveston	RAILWAY & WILLIAMS	16
West Cambie	SHELL & ALDERBRIDGE	16
Broadmoor	NO.3 & WILLIAMS	15
City Centre	NO.3 & PARK	15

- * Note: Criteria for determining the score include the following factors:
- intersection configuration
 - width of crossing
 - posted vehicle speed
 - pedestrian usage (i.e., proximity to facilities serving people with disabilities and proximity to transit in one block)
 - traffic conditions (>2000 vehicles per hour on all legs in peak hour, <900 vehicles per hour on all legs in peak hour)
 - left turn phasing,
 - right turn island

Area	Intersection Name	Score by criteria
City Centre	GARDEN CITY & WESTMINSTER	15
City Centre	ST.ALBANS & GRANVILLE	15
East Richmond	JACOMBS & CAMBIE	15
City Centre	GARDEN CITY & CAMBIE	15
East Richmond	NO.5 & BRIDGEPORT	15
East Richmond	VIKING & BRIDGEPORT	15
Sea Island	RUSS BAKER & GILBERT	15
Shellmont	NO.4 & WILLIAMS	15
West Cambie	NO.4 & ALDERBRIDGE	15
Broadmoor	NO.2 & BLUNDELL	14
City Centre	ELMBRIDGE & WESTMINSTER	14
City Centre	NO.3 & LANSDOWNE MALL	14
City Centre	NO.3 & SABA	14
City Centre	NO.3 & WESTMINSTER	14
Ironwood	COPPERSMITH & STEVESTON	14
Seafair	NO.1 & FRANCIS	14
City Centre	GILBERT & ELMBRIDGE	14
City Centre	NO.3 & BLUNDELL	14
City Centre	NO.2 & WESTMINSTER	14
East Richmond	NO.6 & BRIDGEPORT	14
Sea Island	RUSS BAKER & INGLIS	14
Steveston	NO. 1 & WILLIAMS	14
City Centre	ABERDEEN & CAMBIE	13
City Centre	COONEY & ACKROYD	13
City Centre	COONEY & COOK	13
City Centre	HAZELBRIDGE & ALDERBRIDGE	13
City Centre	MINORU & LANSDOWNE	13
East Richmond	NO.5 & CAMBIE	13
Sea Island	RUSS BAKER & CESSNA	13
City Centre	HAZELBRIDGE & BROWNGATE	13
City Centre	HAZELBRIDGE & LESLIE	13
City Centre	NO.3 & SEA ISLAND	13

Priority List for the Installation of APS at Existing Locations

Traffic Signals (146 locations) continued:

Area	Intersection Name	Score by Criteria
East Richmond	SWEDEN & BRIDGEPORT	13
South Arm	GARDEN CITY & FRANCIS	13
Sea Island	CANADIAN & MILLER	13
Sea Island	TEMPLETON & GRANT MCCONACHIE	13
Sea Island	TEMPLETON & MILLER	13
Steveston	RAILWAY & MONCTON	13
City Centre	GARDEN CITY & BLUNDELL	12
City Centre	GARDEN CITY & GRANVILLE	12
City Centre	KWANTLEN & ALDERBRIDGE	12
City Centre	NO.3 & ACKROYD	12
City Centre	NO.3 & BROWNGATE	12
City Centre	HAZELBRIDGE & ALEXANDRA	12
City Centre	MINORU & ALDERBRIDGE	12
City Centre	MINORU & ELMBRIDGE	12
Ironwood	SHELL & STEVESTON	12
Bridgeport	SHELL & BRIDGEPORT	12
Bridgeport	SIMPSON & BRIDGEPORT	12
Broadmoor	GILBERT & WILLIAMS	12
City Centre	GILBERT & BLUNDELL	12
City Centre	NO.4 & WESTMINSTER	12
East Richmond	NELSON & WESTMINSTER	12
East Richmond	NO.6 & COMMERCE	12
Ironwood	NO.5 & HORSESHOE	12
Sea Island	MCDONALD & MCCONACHIE	12
Steveston	NO.2 & WILLIAMS	12
Terra Nova	NO.1 & WESTMINSTER	11
Terra Nova	RAILWAY & GRANVILLE	11
Bridgeport	HWY.99 & BRIDGEPORT	11
Bridgeport	NO.3 & BRIDGEPORT	11
Bridgeport	ST.EDWARDS & BRIDGEPORT	11
City Centre	ALDERBRIDGE & ELMBRIDGE	11
City Centre	ALDERBRIDGE & WESTMINSTER	11
City Centre	GARDEN CITY & ODLIN	11
East Richmond	JACOMBS & WESTMINSTER	11
West Cambie	ST.EDWARDS & CAMBIE	11
Broadmoor	NO.2 & GRANVILLE	11
City Centre	GARDEN CITY & CAPSTAN	11
East Richmond	NO.6 & CAMBIE	11
East Richmond	NO.6 & WESTMINSTER	11
Sea Island	CANADIAN & GRANT MCCONACHIE	11
Shellmont	NO.5 & WILLIAMS	11

Area	Intersection Name	Score by Criteria
City Centre	HAZELBRIDGE & CAMBIE	10
City Centre	NO.3 & LESLIE	10
City Centre	GARDEN CITY & COOK	10
City Centre	NO.3 & YAOHAN	10
Ironwood	HWY.99 & STEVESTON WEST	10
Steveston	NO.2 & STEVESTON	10
Steveston	RAILWAY & STEVESTON	10
Hamilton	HWY.91 & WESTMINSTER NORTH	10
Seafair	RAILWAY & FRANCIS	10
South Arm	NO.3 & STEVESTON	10
Terra Nova	LYNAS & WESTMINSTER	10
West Cambie	NO.4 & CAMBIE	10
East Richmond	NO.5 & BLUNDELL	9
Seafair	NO.1 & BLUNDELL	9
West Cambie	SEXSMITH & CAMBIE	9
Broadmoor	GILBERT & STEVESTON	9
Shellmont	NO.4 & STEVESTON	9
Seafair	NO.1 & OSMOND	8
City Centre	COONEY & SABA	8
South Arm	NO.3 & FRANCIS	8
East Richmond	HWY.99 & WESTMINSTER	8
East Richmond	NO.6 & MAYFIELD	8
Hamilton	HWY.91 & WESTMINSTER SOUTH	8
Terra Nova	NO.1 & GRANVILLE	8
Broadmoor	GILBERT & FRANCIS	7
City Centre	MINORU & BLUNDELL	7
Ironwood	HWY.99 & STEVESTON EAST	7
West Cambie	SEXSMITH & SEA ISLAND	7
Broadmoor	NO.2 & FRANCIS	7
East Richmond	KNIGHT & WESTMINSTER	7
East Richmond	NO.8 & WESTMINSTER	7
Seafair	RAILWAY & BLUNDELL	7
City Centre	NO.4 & BLUNDELL	6
City Centre	NO.4 & GRANVILLE	6
City Centre	ST. ALBANS & BLUNDELL	6
Sea Island	RUSS BAKER & HUDSON	6
Shellmont	NO.4 & FRANCIS	6
East Richmond	FRASERWOOD & WESTMINSTER	5
Sea Island	BEAVER & INGLIS	4
West Cambie	HWY.99 & SHELL	4
Ironwood	HWY.99 & STEVESTON BUS	1

Priority List for the Installation of APS at Existing Locations

Special Pedestrian Crosswalks (50 locations):

Area	Intersection Name	Score by Criteria
City Centre	KWANTLEN & LANSDOWNE	18
City Centre	MINORU & LIBRARY SOUTH	16
City Centre	MINORU & BENNETT	15
Shellmont	SHELL & WILLIAMS EAST	15
Shellmont	SHELL & WILLIAMS WEST	15
City Centre	MINORU & BAY ENTRANCE	14
Steveston	RAILWAY & 11100 BLK.	14
City Centre	HAZELBRIDGE & 4400 BLK	13
City Centre	MINORU & SENIOR APPTS.	13
Terra Nova	DOVER & RIVER	13
Broadmoor	CHEVIOT & BLUNDELL	12
Steveston	RAILWAY & GARRY	12
Broadmoor	CARRICK & FRANCIS	11
City Centre	GARDEN CITY & BENNETT	11
City Centre	NO.3 & ANDERSON	11
East Rmd	NO.5 & 8500	11
East Rmd	NO.6 & MAYCREST	11
South Arm	GARDEN CITY & DIXON	11
Steveston	NO.1 & GARRY	11
Steveston	NO.1 & REGENT	11
Broadmoor	NO.3 & BROADMOOR	10
City Centre	BUSWELL & GRANVILLE	10
South Arm	GARDEN CITY & GLENALLEN	10
South Arm	MORTFIELD & STEVESTON	10
Steveston	NO. 1 & SPRINGFIELD	10

Area	Intersection Name	Score by Criteria
Terra Nova	LYNAS & GRANVILLE	10
Broadmoor	CLIFTON & BLUNDELL	9
Broadmoor	GILBERT & MAPLE	9
City Centre	BAY ENTRANCE & WESTMINSTER	9
Seafair	MONTANA & BLUNDELL	9
Bridgeport	GAGE & BRIDGEPORT	8
Broadmoor	NO.2 & COLVILLE	8
City Centre	NO.3 & JONES	8
East Rmd	NO.5 & KINGSBRIDGE	8
Shellmont	NO.4 & ALBION	8
Shellmont	NO.4 & SAUNDERS	8
Shellmont	NO.5 & SEACLIFF	8
South Arm	NO.3 & SAUNDERS	8
Broadmoor	LASSAM & STEVESTON	7
City Centre	HEATHER & BLUNDELL	7
East Rmd	NO.5 & MCNEELY	7
Shellmont	SWINTON & STEVESTON	7
South Arm	ROSELAND & STEVESTON	7
Terra Nova	MCCALLAN & WESTMINSTER	7
Broadmoor	GILBERT & LUCAS	6
Broadmoor	NO.2 & MAPLE	6
City Centre	ASH & BLUNDELL	6
Seafair	NO.1 & PETERSON	6
Terra Nova	RIVERDALE & WESTMINSTER	6
West Cambie	NO.4 & KILBY	6

Priority List for the Installation of APS at Existing Locations

Pedestrian Signals (30 Locations):

Area	Intersection Name	Score by Criteria
South Arm	ASH & WILLIAMS	14
City Centre	COOK GT. & COOK RD.	13
Broadmoor	BLUNDELL SCHOOL & BLUNDELL	12
South Arm	GARDEN CITY & DAYTON	12
Steveston	RANSFORD & STEVESTON	12
Steveston	NO.1 & GEORGIA	11
Terra Nova	NO.1 & 6300 BLK	10
East Rmd	CAMBIE SCHOOL & CAMBIE RD.	10
East Rmd	E.R.C.C. & CAMBIE	10
Broadmoor	GILBERT & BAMBERTON	10
Broadmoor	NO.2 & WALLACE	10
Seafair	EPPERSON & BLUNDELL	10
City Centre	BUSWELL & WESTMINSTER	9
City Centre	ST.ALBANS & GENERAL CURRIE	9
Broadmoor	GILBERT & WOODWARDS	9
City Centre	GILBERT & AZURE SOUTH	8
City Centre	NO.3 & GENERAL CURRIE	8
West Cambie	NO.4 & ODLIN	8
Terra Nova	GIBBONS & WESTMINSTER	8
City Centre	MOFFAT & BLUNDELL	7
Seafair	NO.1 & MORESBY	7
South Arm	NO.3 & LUCAS	7
City Centre	NO.4 & ALBERTA	6
East Rmd	BARGEN & CAMBIE	6
East Rmd	NO.5 & GREENLAND	6
East Rmd	NO.5 & WOODHEAD	6
Hamilton	WESTMINSTER & MCCLEAN	6
Seafair	NO.1 & YOUNGMORE	6
Shellmont	NO.4 & GLENDOWER	6
East Rmd	NO.7 & WESTMINSTER	4

**Pedestrian Signals with Countdown Timer
(11 Locations):**

Area	Intersection Name	Score by Criteria
City Centre	MINORU & FOOD COURT	12
Terra Nova	BLANSHARD & WESTMINSTER	12
Ironwood	SEAWARD & STEVESTON	11
City Centre	MINORU GT. & GRANVILLE	10
Broadmoor	NO.2 & MCDONALDS REST.	8
City Centre	GILBERT & AZURE NORTH	8
South Arm	NO.3 & RYAN	8
Bridgeport	MCLENNAN & BRIDGEPORT	7
Terra Nova	NO.2 & GARRISON	7
Broadmoor	NO.2 & WOODWARDS	6
Hamilton	WESTMINSTER & GILLEY	6

Illuminated Street Name Sign

westbound at intersection of No. 3 Road and Granville Avenue

