CITY OF **VANCOUVER**

ADMINISTRATIVE REPORT

Report Date:	May 04, 2005
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Meeting Date:	May 24, 2005

TO: Standing Committee on Transportation and Traffic

FROM: General Manager of Engineering Services

SUBJECT: 2005 Traffic Signal Program

RECOMMENDATION

A. THAT Council approve the 2005 Traffic Signal Program, with city funding of $1,297,000 to be provided from the 2005 Streets Basic Capital for the Traffic Signal Program; and that the General Manager of Engineering Services be authorized to install and modify pedestrian and traffic signals, as described in this report.

B. THAT additional annual costs of $22,000 related to ongoing maintenance be reflected in future Operating Budgets, subject to the 2006 budget review process.

COUNCIL POLICY

Council approved funding which provides for traffic signal installations as part of the 2003-2005 Streets Capital Plan.

On May 27, 1997, Council approved the Vancouver Transportation Plan which emphasizes the need for improved pedestrian facilities.

SUMMARY

Council has approved funding as part of the 2003 - 2005 Streets Capital Plan for the Annual Traffic Signal Program. Funding requests included in this report account for one-third of the money approved in the three year Capital Plan. The 2005 Traffic Signal Program is recommended as follows:

A) Pedestrian-Controlled Signals	City	ICBC	Translink
A1) McGill at Slocan	$82,000	$8,000	----------
A2) Fraser at 27th Avenue	$80,000	$15,000	----------
A3) Hastings at Lillooet	$76,000	$16,000	----------
A4) 41st Avenue at Collingwood	$92,000	$8,000	----------
A5) Commercial at 4th Avenue	$93,000	$8,000	----------
A6) 41st Avenue at Wales	$64,000	$38,000	----------
A7) Alma at 6th Avenue	$86,000	$4,000	----------
A8) Victoria at 40th Avenue	$87,000	$10,000	----------
A9) 4th Avenue and Stephens	$88,000	$10,000	----------
A10) 10th Avenue and Tolmie	$80,000	$10,000	----------
SUBTOTAL	$828,000	$127,000	----------
B) Full Signals			
B1) Marine Drive & Yukon	$50,000	$14,000	$50,000
C) Special Crosswalks			
C1) Slocan at Norquay	$34,000	$3,000	----------
D) Signal Modifications	$385,000		

FUNDING SUMMARY

Total City Funding	$1,297,000
Total ICBC Funding	$ 144,000
Total TransLink Funding	$ 50,000
TOTAL 2005 PROGRAM	$1,491,000

PURPOSE

This report lists the locations recommended for signal installations or modifications and the reasons for these recommendations.

BACKGROUND

The City of Vancouver relies on a surface street network to handle its transportation needs. Therefore, pedestrian, cyclist, transit and traffic signals are significant traffic management elements in the safe movement of people and goods. Detailed studies are undertaken each year by staff to determine locations that require new or modified traffic signal controls. Users of the transportation system such as pedestrians, cyclists, transit vehicles, trucks and automobiles are considered in these studies. Many locations are reviewed in this program to provide a comprehensive coverage. Based on this review, a recommended Traffic Signal Program has been prepared.

Council's top transportation priority is pedestrians, and ten of the eleven recommended signals are pedestrian-controlled signals, six of which will assist school students. Transit customers and transit vehicles are being aided at several of the recommended signals and signal improvements. The proposed vehicle signals will address pedestrian and traffic safety. Furthermore, a special crosswalk is recommended as part of this year's program. This device will assist pedestrians by enhancing pedestrian and driver awareness at pedestrian crossings.

Traffic and Pedestrian Signals in the City of Vancouver originate through various programs, including the signal program. Signal installation and modifications may also be generated through other programs or agencies such as Developers, Bikeways and Greenways. On average, the signal program annually recommends 10 signals to be installed. Other programs have accounted for up to 16 additional locations in a year and on average account for 7 additional signals. Trends of signal installations over the last 20 years are shown in Appendix A.

DISCUSSION

A) Pedestrian Signals - Recommended Locations

A1) McGill Street at Slocan Street $82,000

A marked crosswalk with overhead signs is in place at this crossing to assist pedestrians in crossing McGill. However, staff have received numerous requests including a neighbourhood petition with over 200 signatures to enhance the crossing at this location. Field studies have shown that traffic volumes on McGill, especially during peak hours, are high enough that very few gaps are created for pedestrians to cross. In addition staff observed that many motorists ignored pedestrians at the crosswalk. It was observed that motorists were not obeying the speed limit which resulted in excessive braking maneuvers when pedestrians attempted to cross McGill. Forty percent of the crossings were conducted by teens and children, as both Hastings Elementary School and Templeton High School are nearby. A neighbourhood grocery store on the northeast corner of the intersection and a bus stop on the south side of the street generated most of the crossings. Burrard View Park located 2 blocks north of the intersection attracts pedestrian activity from the neighbourhood south of McGill Street. As part of the City of Vancouver's visioning process, CityPlan staff along with the Hastings-Sunrise community strongly support this location for a pedestrian signal. Within the past five years there have been two vehicle-pedestrian

collisions at this intersection. For these reasons staff recommend a pedestrian signal at this intersection. ICBC is willing to contribute $8, 000 towards this signal for a total cost of $90,000.

A2) Fraser Street at 27th Avenue $80,000

Currently, there is a marked crosswalk located at the south crossing of the intersection to assist pedestrians to cross Fraser Street in this busy retail oriented portion of the street. In addition a bus bulge at the southwest corner and a pedestrian bulge at the southeast corner were installed in 2003 to enhance crossing conditions at the intersection. However, increased pedestrian activity at the crossing has created the need for additional pedestrian safety measures. The Fraser and 27th intersection is also located in a four block stretch between King Edward and 29th Avenue where no pedestrian signal exists to assist pedestrians crossing Fraser Street. During field studies staff observed that motorists did not generally yield to pedestrians. Within the past five years there has been one Police reported vehicle-pedestrian collision at this intersection. A pedestrian controlled signal is recommended to address the additional pedestrian volumes observed and to create a safer crossing for pedestrians. ICBC is willing to contribute $15,000 towards this signal for a total cost of $95,000.

A3) Hastings Street at Lillooet Street $76,000

The intersection of Hastings and Lillooet is adjacent to Hastings Park and the Hastings Community Centre. Residents of the Hastings-Sunrise Community expressed concerns with this crossing and have requested a pedestrian signal to access the park grounds from the community centre. CityPlan staff strongly support that this location be recommended through the visioning process. In addition, plans from the Park Board have included improved crossing conditions to access Hastings Park for residents south of Hastings Street. In particular, residents desire to access the sanctuary and walking trails located on the park grounds immediately north of the intersection. Field studies have shown that pedestrians must cross three travel lanes in each direction, with heavy volumes of traffic traveling at high speeds, especially in the pm peak. It was also observed that no adequate gaps were created during the study for pedestrians to cross Hastings Street. Visibility issues are also exhibited at the intersection. Hastings Street crests approximately 100 metres east of the intersection creating visual constraint for vehicles approaching from the east. For these reasons a pedestrian controlled signal is recommended for this intersection to increase pedestrian safety. ICBC is willing to contribute $16,000 towards this signal for a total cost of $92,000

A4) 41st Avenue at Collingwood Street $92,000

The intersection of 41st Avenue and Collingwood is located in a commercial/retail block that includes a large grocery store, other shops and services, and medical facilities. The main generator of pedestrian traffic is the grocery store at the northwest corner of the intersection. Staff observed illegal pedestrian crossings mid-block at this location. It is expected that the installation of a signal at Collingwood would help to address many of these mid-block crossings and give a safe option for pedestrians frequenting the area. In fact, a survey conducted by staff determined that 70% of the mid block crossings would be re-directed to the intersection at Collingwood if a pedestrian signal was present. Heavy volumes of traffic using 41st Avenue to get to and from UBC also create conflicting conditions for pedestrians. The nearest crossing on 41st is a long block uphill to Dunbar Street. To promote legal crossings and increase safety in the stretch of 41st between Dunbar and Collingwood, it is recommended that a pedestrian signal be installed at Collingwood. ICBC is willing to contribute $8,000 towards this signal for a total cost of $100,000.

A5) Commercial Drive at 4th Avenue $93,000

Currently, there is a zebra marked crosswalk with overhead signs at this location. The T-intersection has a pedestrian bulge on the east side to increase visibility for motorists and pedestrians. Although these safety measures are in place, staff have received complaints about crossing at the intersection. The intersection is located in a heavily used retail area where a substantial number of residents walk to shopping locations. In addition, students from Queen Victoria School, located one block east, use the crosswalk to access the school grounds. Staff have completed field studies that show that drivers commonly ignored pedestrians waiting to use the crosswalk. Subsequently, pedestrians are forced to wait long periods before being able to cross Commercial Drive. Along this portion of Commercial Drive, pedestrians must cross two lanes of traffic in each direction along with a parking lane on the west side. In addition to the signal, the pedestrian bulge on the east side is to be extended to the northeast corner to improve crossing conditions. The total cost of the signal is $101,000 and ICBC is willing to contribute $8,000.

A6) 41st Avenue at Wales $64,000

A marked and signed crosswalk is currently in place to assist in crossing 41st Avenue at Wales. Complaints from residents have been received outlining their concerns for safety at this intersection. Field studies have shown that drivers do not commonly stop for pedestrians waiting to cross at the intersection. Pedestrian generators in the area include the School Board Nursery, eastbound and westbound bus stops, Norquay Park and the First Lutheran Church. In addition, businesses located east of the intersection created some pedestrian activity. Pedestrians must cross two lanes of heavy volumes of traffic in each direction on 41st Avenue. With these high volumes and aggressive motorist behavior, few

opportunities are created for pedestrians to cross safely at this intersection. 41st at Wales is located in a long 3 block stretch on 41st Avenue that does not have any pedestrian signal to assist in crossing. Within the past five years there have been two vehicle-pedestrian collisions at the intersection. For these reasons staff recommend a pedestrian controlled signal for this intersection to increase pedestrian safety. ICBC is willing to contribute $38,000 towards this signal for a total cost of $102,000.

A7) Alma Street at 6th Avenue $86,000

Alma and 6th Avenue is the location of an ICBC pilot project that began in 2000. The project consisted of the installation of "flight lights" embedded in the pavement to increase visibility at the school crosswalk. The crosswalk is also signed and equipped with overhead signs. These flight lights have been met with mixed reactions and their effectiveness has been debated by users of the crossing. In fact, a 2002 study by ICBC was inconclusive on the effectiveness of flight lights. Staff has also reviewed their effectiveness and found that although the flight lights increase visibility for motorists and pedestrians, a pedestrian signal is more appropriate for this intersection. Field studies have shown that pedestrians must cross two travel lanes and one parking lane in each direction and are often obscured by parked cars when standing on the curb. Students from Bayview Elementary School, 2 blocks east of the intersection, also cross at the intersection since the school's catchment crosses Alma. It should also be noted that this location is in a five block stretch between 4th Avenue and Broadway that does not have any pedestrian signal to assist crossing Alma. For these reasons a pedestrian controlled signal is recommended for this intersection to increase pedestrian safety. ICBC is willing to contribute $4,000 towards this signal for a total cost of $90,000

A8) Victoria Drive at 40th Avenue $87,000

The T-intersection is equipped with a marked crosswalk with overhead signs. A busy retail development that includes a large drug store, video store and restaurants has increased pedestrian activity in the area to the point that many crossings occur at the intersection of Victoria and 40th. In fact many of the destinations are closer to 40th Avenue than 41st Avenue where there is a signal. In addition to the retail development on the west side of Victoria, this portion of Victoria is occupied by many businesses including banking facilities and local shops. These commercial uses create a high volume of pedestrians in the block. Field studies have shown that drivers were generally not courteous to pedestrians and that traffic volumes were high in the pm rush periods. It was also noted that traffic would back up into the crosswalk when the light at 41st was red, thus creating visibility concerns for pedestrians. Within the past five years there have been two vehicle-pedestrian collisions at the intersection. ICBC is willing to contribute $10,000 towards the signal for a total cost of $97,000.

A9) 4th Avenue at Stephens $88,000

The intersection of 4th Avenue at Stephens is located between two signalized intersections. However, there is still a demand for pedestrians to cross at Stephens as there are a number of commercial and residential buildings on both sides of 4th Avenue. During field studies, staff observed that visibility at the crossing is good, but motorists did not generally yield to pedestrians. Residents of the area have submitted a petition in support of a pedestrian controlled signal at this intersection. Pedestrians must cross 4 lanes of heavy volumes of traffic along with 2 parking lanes. In addition, westbound motorists drive down a considerable grade as they approach the intersection, which may contribute to the lack of compliance at this intersection. Within the past five years there has been one vehicle-pedestrian collision at the intersection. ICBC is willing to contribute $10,000 towards the signal for a total cost of $98,000.

A10) 10th Avenue at Tolmie $80,000

Concerns for pedestrian safety have been forwarded to staff by area residents regarding the existing crossing conditions at this intersection. The intersection of 10th Avenue and Tolmie is located at the transition of a residential land use to a commercial land use. Currently, there is a zebra marked crosswalk at the south crossing and bulges on each side of the crosswalk. However, residents continue to request that a pedestrian signal be considered. Pedestrian generators include a large grocery store, bus stops and various restaurants and services. 10th Avenue carries a high volume of traffic to and from UBC that includes substantial bus service for residents in the area. Field observations conducted by staff show that visibility for pedestrians and motorists at the intersection is good, but motorists typically ignore pedestrians waiting at the crosswalk. ICBC is willing to contribute $10,000 towards the signal for a total cost of $90,000.

B) Full Signals - Recommended Locations

B1) SE Marine Drive & Yukon Street $50,000

The intersection is located a block east of the intersection of Marine and Cambie Street, where a station is to be constructed as part of the rapid transit line between Richmond and Vancouver (RAV). The RAV Station at Marine and Cambie will result in an increase in circulating traffic in the vicinity of the station including buses entering and exiting a new bus loop on the ICBC site on the southeast corner of the intersection. Cambie, south of Marine Drive is an important route to the industrial area to the south, particularly the City's works yard at Kent and Manitoba. Installing a new signal at Yukon and Cambie will provide an alternative route for trucks into or out of the industrial area, including City Sanitation vehicles operating between the transfer station and the landfill. As well, some circulating buses to or from the Marine Drive Station may also use this intersection and a signal would be useful to them. A signal should be installed at Yukon and Cambie as an

alternative access point to the industrial area to the south this year to reduce the pressures on Cambie south of Marine as the RAV construction begins. ICBC is willing to contribute $14,000 and the City will submit an application to Translink for fifty percent funding ($50,000) towards this signal, under their Major Road Network Minor Capital Program. The total cost of the signal is $114,000.

C) Special Crosswalks

Special crosswalks help enhance intersections by increasing driver visibility and awareness of pedestrians. This pedestrian crossing device, as shown in Appendix D, consists of the following features: zebra pavement markings, overhead internally-illuminated signs with pedestrian-activated flashing amber beacons, ground mounted signs, advance warning signs and special lighting of the crosswalk area.

C1) Slocan and Norquay $34,000

The intersection of Slocan and Norquay is currently equipped with a zebra marked, bulged school crosswalk. John Norquay School, adjacent to the intersection generates a majority of the crossings at this location. The large elementary school has one of the highest percentages of students walking to and from school. As a result, the crosswalk is heavily used during school times. This location has been acknowledged by the Police School Safety Patrol who has requested enhancements at this location. Field studies show that it would be appropriate to enhance pedestrian safety further by installing the Special Crosswalk. ICBC is willing to contribute $3, 000 bringing the total cost for the Special Crosswalk to $37,000.

D) Signal Modifications

D1) Pedestrian Indicators $55,000

Pedestrian indicators provide "walk" and "don't walk" indications for pedestrians at signalized intersections. Existing signals that do not have pedestrian indicators are reviewed and retrofitted each year. It is recommended that funding for up to seven suitable locations at an average cost of $7,500 be appropriated for 2005.

D2) Left-Turn Phasing $125,000

The City receives many requests for left-turn flashing arrows at existing traffic signals. They are best suited at intersections with left-turn bays and high left-turn volumes which cannot clear during gaps in opposing traffic flow. This program also provides funding for the addition of detectors in the left-turn bay so the length of the left-turn phase responds to demand.

D3) Audible Signals $50,000

Vancouver has more audible signals than any other Canadian city. Over two hundred and ninety locations have been completed as of March 2005. Funding of $50,000 is recommended to install audible signals at existing and new signal installations. The priority of installation is established by user requests, land use, and transit availability in consultation with local advocacy groups, the CNIB, Vancouver School Board and the Special Advisory Committee on Disability Issues.

D4) Signal Modifications $65,000

There are routine modifications required on the present signal system from time to time. Some examples of the modifications are:

· adjustment of signal timings in the local controllers;
· visibility improvements of existing signal equipment by the relocation or addition of signal heads;
· the modification of overhead signs;
· minor modifications to hardware and software for the controllers and Central Control System;
· installation of intersection monitoring and related data transfer equipment; and
· purchase of computer hardware and software to allow staff to better manage the existing signal system, utilize database software to inventory pedestrian and vehicle information, and to handle increasing requests from the public for traffic related data.

D5) Intelligent Transportation Systems $30,000

Intelligent Transportation Systems are the application and use of technology to optimize the effectiveness of the existing street infrastructure. Intelligent Transportation Systems (ITS) provide the technology to enable people to make smart travel choices.

With the implementation of the Traffic Signal Management System improved functionality and information exchange is possible. Initiatives which are being proposed in this program include: testing detection equipment, installation of permanent counting stations, and providing information to the City's public web page.

D6) Tertiary Heads $60,000

Since 1994, the City has been cost-sharing with ICBC the upgrade of existing signalized locations for improved signal visibility. These upgrades include the addition of a third signal head and have achieved significant reduction of traffic collisions at many high-accident intersections. Throughout the coming year, staff will continue to pursue further support from ICBC. This funding partnership will allow the City

to continue to install tertiary signal heads at high volume/high collision intersections. ICBC funding has yet to be determined.

OTHER SIGNAL INSTALLATIONS

Signal installation and modifications may also be initiated through other programs or agencies. Appendix C lists signals which are being reviewed due to private developments and through other projects such as Greenways, Bikeways, Community Visions, and Neighbourhood Centres. Additional reports will be forwarded to Council as these public processes are completed.

FINANCIAL IMPLICATIONS

The total cost of the 2005 Traffic Signal Program is $1,491,000, of which $1,297,000 will be funded from 2005 Street Basic Capital for the Traffic Signal program; $144,000 from ICBC $144,000 and $50,000 from TransLink, subject to funding approval available through the 2006 Major Road Network (MRN) - minor capital program.

Future Operating Budgets will be affected by increases in maintenance costs associated with the addition of new signals, signage, road marking, intersection traffic counts, and increased energy consumption. This year's Signal Program represents roughly a one and one-half percent increase in the plant of the Traffic Signal System. The annual operating cost will be increased by $22,000, which will be subject to the 2006 Budget Review.

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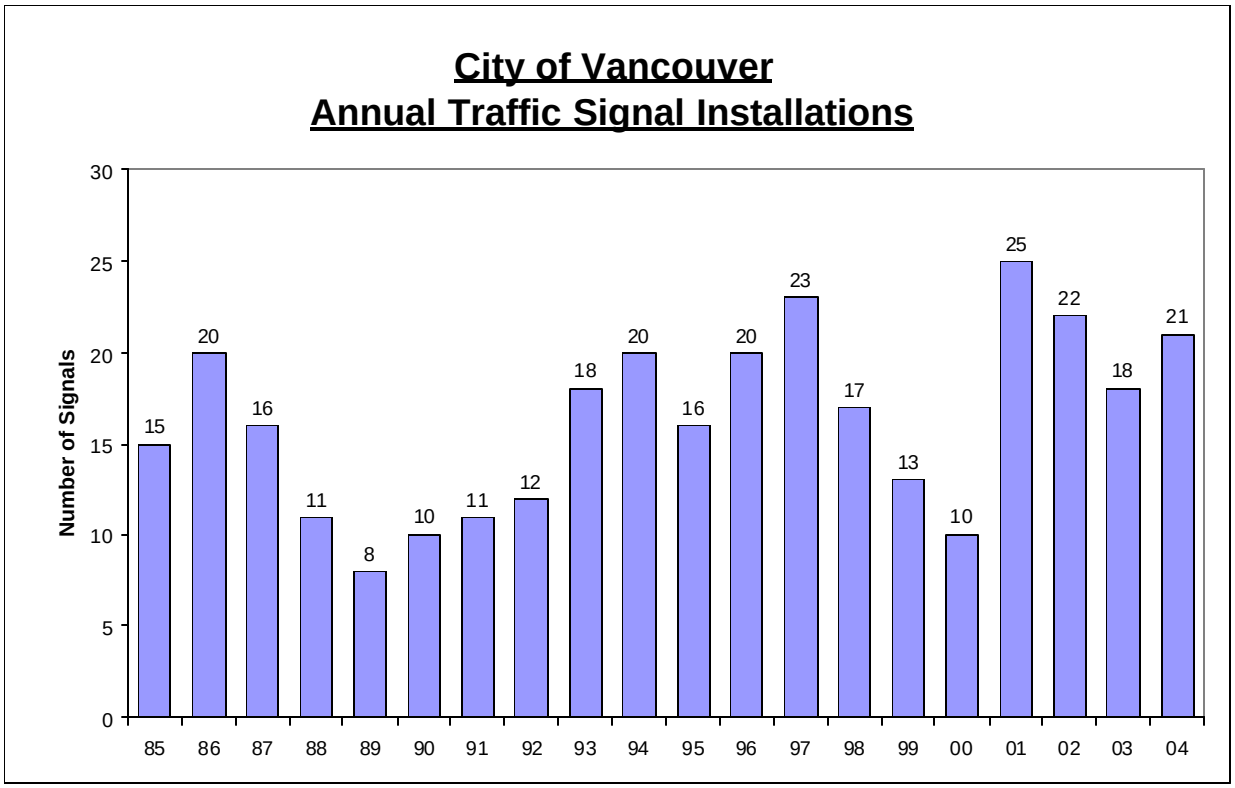
City of Vancouver
Annual Traffic Signal Installations
Number of Signals
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20
25
30
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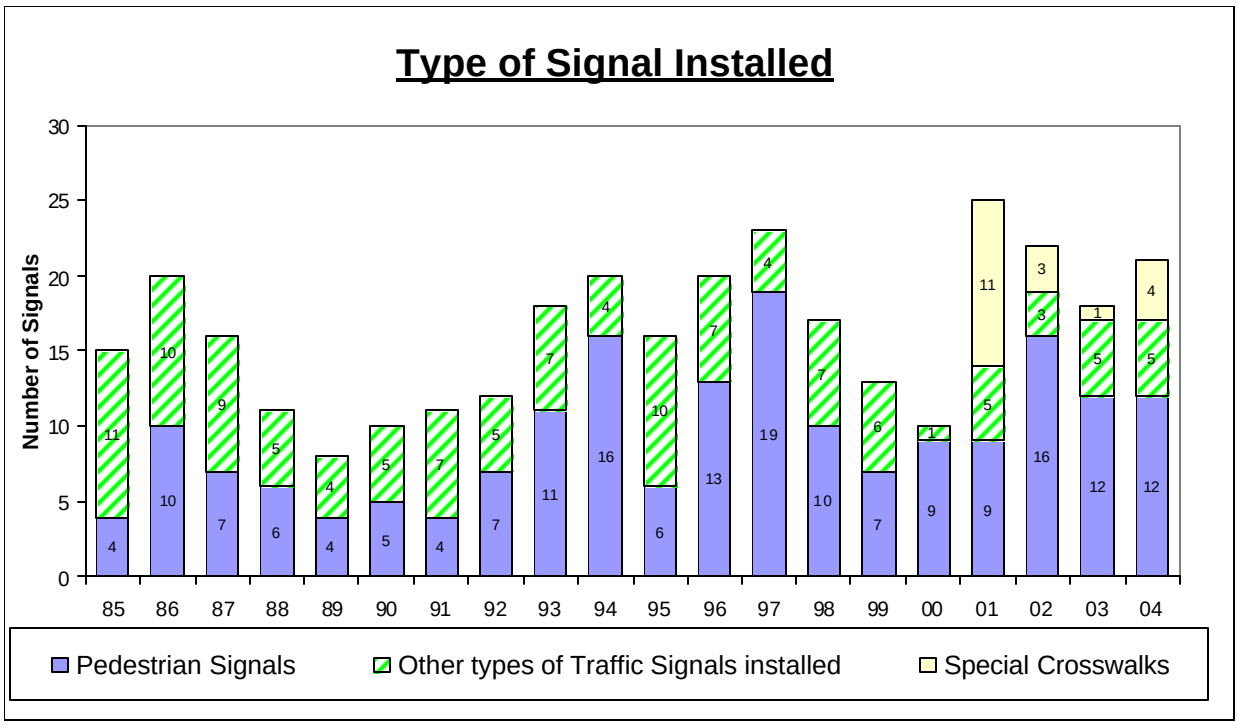
Type of Signal Installed
Number of Signals
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5
10
15
20
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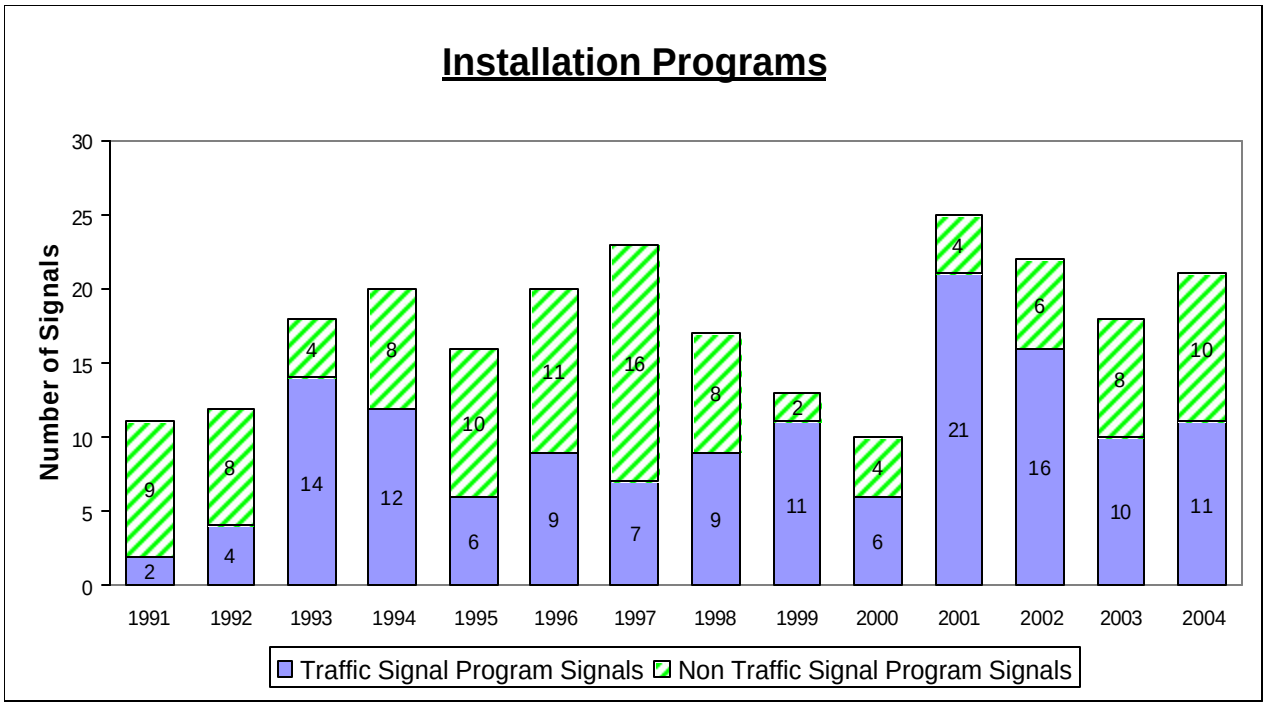
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04
Pedestrian Signals
Other types of Traffic Signals installed
Special Crosswalks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1994
1995
1996
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2002
2003
2004
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9
4
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4
12
8
6
10
9
11
7
16
9
8
11
2
6
4
21
4
16
6
10
8
11
10
Traffic Signal Program Signals
Non Traffic Signal Program Signals

LOCATIONS FOR FURTHER REVIEW

4th Avenue at Dunbar St
10th Avenue at Carnarvon
10th Avenue at Crown St
57th Avenue at Fleming St
57th Avenue at Prince Edward St
Cambie at 14th
Cambie at 17th
Cambie at 22nd
Dunbar and 26th
Homer at Helmcken
King Edward at Brakenridge
King Edward at Valley
King Edward at Windsor
McGill Street at Kamloops St
Nanaimo at 3rd - 6th Avenue
Nootka at 27th
Pender at Nicola
Powell at Princess
Robson at Bidwell
Rupert at 27th
SW Marine at 49th
SW Marine Dr at Angus
Thurlow Street at Barclay St

Signal Improvements Funded Through Other Projects

New signal installations and upgrades to existing signals through Greenways, Bikeways, Community Visions, and Neighbourhood Centres are listed below. The following locations have had signal work completed within the past year or are currently underway. The upgrading of signals refers to one or more of the following:

- the addition of cyclist push-buttons

- major reconstruction of an existing signal in which items such as turning movements and/or arrows have been added.

1) Beach & Cardero New Signal underway Cardero Bikeway
2) Kingsway at Dumfries New Signal Underway Neighbourhood Centres

The following locations are under review at this time and have yet to go through neighbourhood consultation, the Bicycle Advisory Committee or approved by Council

1) Oak and Nanton/28th Avenue under review Bikeway
2) 12th and Trafalgar under review Bikeway
3) Alberni and Broughton under review Bikeway
4) Alberni and Jervis under review Bikeway
5) Robson and Jervis under review Bikeway
6) 4th Avenue and Balaclava under review Bikeway
7) 10th Avenue and Balaclava under review Bikeway
8) SW Marine and Blaclava under Review Bikeway
9) 12th Avenue and Sophia under review Greenways
10) King Edward and Quesnel under review Greenways
11) Main and 20th under review Main Street Showcase
12) Main and 46th under review Main Street Showcase
13) Main and 52nd under review Main Street Showcase

Signal Locations to be Funded by Developers

There are locations where, in accordance to the rezoning agreements or as a condition of development approval, signals may be installed at the expense of the developers. These are locations where existing conditions are satisfactory but as a direct result of the developments, future conditions may be affected and signals will be required to accommodate pedestrians and traffic. Future signal locations to be funded by others are as follows:

1) Thurlow and Canada Place Way – New Signal recommended – Vancouver Conference Centre
2) Burrard and Canada Place Way - New Signal recommended -Vancouver Conference Centre
3) Marine and Ontario - signal upgrade under review - Wal-Mart Canadian Tire

4) Broadway and Yew - New Signal under review - London Drugs
5) Hamilton and Nelson - New Signal recommended - Wall Financial
6) Grandview and Cornett - New Signal under Review - Canadian Tire
7) Pacific & Smithe - New Signal recommended - Concord Pacific
8) 6th/GNW & Keith - New Signal recommended - Vancouver Community College
9) Yukon & 7th Avenue - New Signal recommended - Canadian Tire/Grosvenor
10) Expo and Griffiths - New Signal recommended - Costco Development

APPENDIX

The "Special Crosswalk" pedestrian crossing device consists of the following features: pavement markings, overhead internally-illuminated signs with pedestrian-activated flashing amber beacons, ground mounted signs, advance warning signs and special lighting of the crosswalk area.

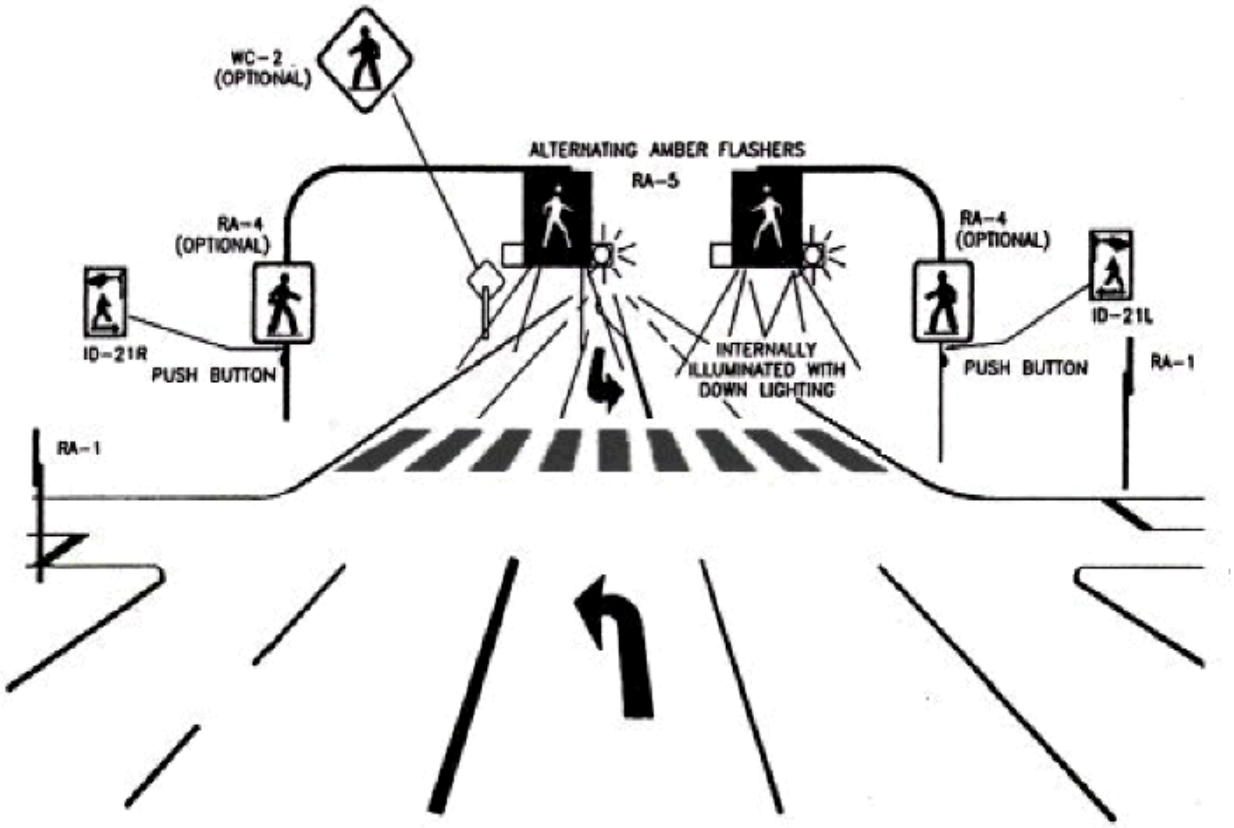

Figure 1 - Typical "Special Crosswalk" installation