Security, Safety, and Rapid Transit

A Cross-Jurisdictional Review of Safety and Security Prepared For:

Rapid Transit Project 2000 Ltd.
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Executive Summary

February 1999

The Assignment

Prior to construction of the original SkyTrain line, there was public concern expressed about the impact of the project on crime in neighbouring communities. There are the same concerns about the intended SkyTrain extension.

As a pro-active effort to address the public’s concerns about personal safety and security, as well as crime, Rapid Transit Project 2000 Ltd. (RTPO) contracted SRG Security Resource Group Inc. (SRG) to explore these issues in detail and provide direction on how to address them by:

• presenting comprehensive information and analysis of the existing SkyTrain system and of security issues in other major urban centres
• investigating the actual relationship, if any, between SkyTrain and crime in the GVRD
• researching and assessing ways in which problems can be avoided or mitigated
• formulating guidelines to be used by station designers, working in consultation with community groups in proximity to the stations

This study of “Security, Safety and Rapid Transit” represents a summary of SRG’s findings and a recommended course of action to address specific concerns. It is a comprehensive review of the existing literature as well as a precedent setting cross-jurisdictional compilation of relevant material drawn from Statistics Canada, RCMP detachments in Burnaby, Coquitlam and Surrey, municipal police forces in Vancouver, New Westminster and Port Moody, and BC Transit Security. As such it provides a comprehensive analysis of the growth of overall crime trends in the region, urban development which has affected those trends, and the influence of transit and general public mobility on urban development and crime.

Key Findings

1 While there is a common perception that crime increases where transit is introduced, there is no evidence to support a direct causal connection. Crime occurs where people and property are clustered. Understandably, transit is located where people are, or need to be. Research does suggest that SkyTrain, along with other modes of public and private transportation by improving areas of access, can act as a facilitator for certain types of criminal activity, such as vandalism, theft from autos, etc.

2 Overall crime in the Vancouver area rose rapidly in the early 1980’s, then decreased and levelled off until the early 1990’s when the rates went up again. Since the peak in 1991 and 1992, crime has been decreasing in the Vancouver area to a point where it is now below 1982 rates for most areas.

3 Throughout the 20 years studied in this report, the region also experienced significant changes in law, land use, population density and makeup, and development. All these changes have had an effect on crime trends.

4 There is some public concern about the impact of SkyTrain on crime, neighbourhoods and personal safety and security. According to studies gathered, the public is most fearful of nuisance behaviour, such as loitering, unsavory people and “street people”. These are fears expressed about urban life in general. SkyTrain-specific public concerns include property crime and the visible drug sub-culture.

5 The public also frequently cites media portrayals of crime, in general, as feeding fears. Media reports on crime tend to locate offences near SkyTrain stations even if the incident did not occur at the station. This tends to increase the perception of a direct relationship between crime and SkyTrain. Recent coverage of gang activity in the area around and including the Broadway station is an example of such media coverage.
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6 Data from local police agencies, particularly from Vancouver, Burnaby and New Westminster, indicate that primary concentrations of crime activity occur away from the SkyTrain system, usually in downtown cores. Downtown cores, in much of the world, typically support numerous other crime facilitators, making it difficult to separate the potential influence of SkyTrain from the influences of these other contributing factors.

7 Potential crime issues anticipated as a result of the extension of SkyTrain can be avoided, to some degree, through planning and designing stations with security aspects integral to the design. This forward-looking action will result in minimal crime impact around the majority of the proposed new SkyTrain stations when the system is fully implemented.

Significance of the Findings

Traditionally, in communities affected by the expansion of public transit service, the two greatest worries are (1) whether or not the transit systems are safe from criminal activities and (2) whether or not transit will cause a relative increase in crime within their neighbourhoods. It is important to address both of these concerns because rapid transit systems are built to serve communities and depend on those communities to maintain business revenues and ridership.

GVRD Crime – Then and Now

When looking at crime from an historical perspective, it is highly apparent that some of the same issues of concern today have been local issues of concern for a very long time. 1982 marked the beginning of a rapid increase in GVRD crime rates. Even in 1982, one quarter of the area’s commercial development was within walking distance of the then-proposed SkyTrain and one third of the population was within five minutes of the route. Not surprisingly, crime was distributed along major roadways, and in areas of population density.

An analysis of historical research indicates that there is no apparent correlation between the introduction of SkyTrain to a community and an increase, or decrease, in municipal-level crime rates.

Current SkyTrain Crime

Statistics provided by BC Transit show that in 1997 there were almost 42 million boardings on the 20 existing SkyTrain stations. The five busiest stations (Metrotown, Granville, Broadway, Burrard and Main Street) accounted for 44% of all boardings for the entire system during the year.

BC Transit Security and SkyTrain are the only sources of information relating to the entire SkyTrain system as the route crosses several police jurisdictions. While the data is comprehensive in terms of geography, it does not provide a complete picture. For example, BC Transit’s figures would not include incidents that occur just off Transit’s property, in the neighbouring community. There may also be incidents that occur on the system which are not reported to BC Transit Security but are instead reported to the municipal Police Department. Additionally, there are also incidents that go entirely unreported.

It is significant to note that, despite the volume of ridership noted above, the total number of crime and safety incidents recorded by BC Transit for SkyTrain in 1997 was only 2,232. While any such incident is repugnant and unpleasant for those victimized by it, the statistics indicate that a SkyTrain passenger has a very slim chance of being in that position. In fact, there is only 1 incident recorded for every 18,755 boardings, and not even half of these could be said to involve victims.

Of the 2,232 incidents cited:
- 43% were Other Criminal Code related (e.g. bail violation, breach of probation, disturbing the peace, mischief and property damage)
- 21% property related
- 13% assault related
- 6% robbery related
- 8% intoxicated persons related
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A thorough examination of all available statistics, overlaid on GIS information and tied together with expertise-based analysis, indicates that while crime can be correlated with transit, there is very little clear causal relationship.

Despite acknowledged perceptions and fears of crime related to SkyTrain, the system is relatively safe for users.

Recommendations for RTPO

Prevention of crime and solutions to its occurrence require a concerted and sustained effort, not only by the Rapid Transit Project Office, but also by BC Transit, BC Transit Security, SkyTrain, jurisdictional police, community groups and the community at large.

Transit is only one part of an overall urban infrastructure and will reflect the strengths and weaknesses of the urban environment in which it is located.

Communities expecting increased problems as a result of the introduction of SkyTrain have the opportunity to start implementing crime prevention measures today in order to plan for tomorrow. This proactive approach will result in minimal crime impact around the majority of the proposed new SkyTrain stations when the system is fully implemented.

While it is imperative that all parties work together to enhance the safety and security of the system and surrounding communities, there are specific tasks that can be undertaken by different groups.

1) Community Involvement

Crime prevention measures cannot be applied with a broad brush; each station must be examined and solutions tailored to the individual circumstances and community requirements.

a. Members of the neighbourhood and system riders should be involved in the design of station environments and be educated as to the design principles, security technologies and operational considerations available.
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b. The neighbourhood around SkyTrain stations might use the opportunity of working with station planners to also initiate safety audits in their own neighbourhoods. RTPO can assist in this process by helping to create safety programs in conjunction with community groups.

2) Design

The concept of environmental criminology is of particular assistance when studying crime trends and their relationship to public transit systems. The built environment can either discourage or encourage crime; good design can reduce crime as well as perceptions of fear and unease. This does not have to mean a return to fortress architecture.

Crime Prevention Through Environmental Design (CPTED, pronounced sep-ted) as defined by the U.S. National Crime Prevention Institute, is the “proper design and effective use of the built environment that can lead to a reduction in the fear and incidence of crime and the improvement in the quality of life”.

In working with community groups to determine design features of planned SkyTrain stations, RTPO can take advantage of a number of CPTED principles which, when applied, will reduce the potential for problems:

a. **Surveillance** really means people watching or “eyes on the street” – allowing people and spaces to be naturally observed by onlookers to enhance safety and security.

b. **Sightlines** give people visual prospect and control, enabling people to see a large area around them and anticipate threatening people and situations.

c. **Access and Egress** refers to the entry and exit points of a facility and the degree to which movement is restricted in and out.

d. **Territoriality** is a way for legitimate users of a facility to show “ownership”. Areas that are well maintained and cared for are less likely to be damaged or become places for crime, as compared to anonymous and uncontrolled spaces.

e. **Target Hardening** literally refers to ways of making it tougher for offenders to reach a given target through the use of locks and protective enclosures, for example.

f. **User Separation** can be used to avoid conflict between users and reduce fears of vulnerable individuals. By providing optional pathways or waiting areas, users are not forced to share territory with groups that they fear.

Additionally, considerations should be given to including dedicated office space for jurisdictional police either within or nearby the new stations. This office space could be used on an ad hoc basis, and shared with the BC Transit Special Provincial Constables.

3) Staffing

The experience of many other jurisdictions indicates that crime is prevented, and the public’s fear of crime is relieved, through the effective and judicious deployment of transit operations and security personnel. In SkyTrain’s case, the STA’s (SkyTrain attendants) are the first line response on the system and, although they do not have enforcement authority, are seen as the ‘eyes and ears’ of the system.

**Clarity of jurisdictional authority for effective enforcement strategies is a must, with all enforcement agencies working towards a common set of goals on the system.** BC Transit currently operates a force of Special Provincial Constables, who have been classified as such under the Police Act, and a team of fare inspectors. While their “beat” is the SkyTrain system and surrounding transit property, these groups provide first response service (if they are close by) to the system and act as a support agency to jurisdictional police departments, and share information with them. Only the Special Provincial Constables have the authority to enforce the provisions of the Criminal Code as well as Provincial Statutes. This group, however, currently has no power to execute warrants or to pursue drug-related investigations or seizures.

The following staffing recommendations are made as possible steps towards the objective of maintaining a high level of safety and security on the system:

a. Patrol and attempt to maintain full territorial control of all transit property, not just the platform areas.

b. Ensure regular fare inspections continue to be conducted and that largely a zero-tolerance attitude towards fare-evaders and non-compliance of transit station regulations and rules of conduct is enforced.

c. Provide increased staff visibility and surveillance of stations, especially in the afternoon and at night, when higher risk of incident exists. Consider enhancing the use of the BC Transit Special Constables to provide more effective enforcement coverage.
d. Passengers must be confident that there will be immediate and effective response to any emergency incident or call. A detailed *master security plan* should be created to ensure that the most effective security systems, policies, procedures and protocols are used in the new system and the new stations.

4) Security Techniques
General design concepts should be discussed at the station design level with community input, including:

a. Closed circuit TV systems can allow for security surveillance, monitoring and recording of activities at stations for various reasons, including assessment of incidents, deployment of security staff, investigations, and as a deterrent to potential offenders.
b. Users of the system must be able to quickly and easily contact transit operations and security staff. Different systems studied have placed two-way communications devices at locations on the platform, near elevators, in designated waiting areas and inside transit vehicles.
c. Designated waiting areas provide security and comfort to passengers transferring between SkyTrain, bus loops and “kiss and ride” pick up areas.

Each of the above techniques have already been applied to some degree throughout the existing SkyTrain system. Additional applications of these measures should to be addressed in conjunction with existing uses.

5) Fare Payment
Discussion on the subject of fare payment that requires further study:

a. BC Transit uses the honour system for fare payment. Fines are issued for those who cannot produce a proof of payment voucher during random checks conducted by staff.
b. Other systems use mandatory prepayment systems, many of which involve controlled entry to stations. The benefits of barrier-equipped systems include increased revenues through reduced fare evasion and reduced fear among passengers. The negatives include the creation of a fortress effect at stations which could actually lead to more fear in some cases, the need for larger stations with more capital outlay and need for more personnel to staff stations.

Further Study
The following issues require further examination and study in the on-going quest for improved services to the public users of transit services:

1. More effective and consistent statistical data collection methods by police departments, especially to maintain consistencies between jurisdictions.
2. A time-series analysis study would be useful to understand crime impact when a new station is built. Crime statistics should carefully be studied related to before and after effects of crime around new stations.
3. Special study of fare collection or payment methods and fare compliance, including cost/benefit analysis, etc.
4. Cost-benefit analysis of additional uniformed personnel at stations and on cars.
5. Cost-benefit analysis of security monitoring of CCTV system.
6. A special study on jurisdictional issues affecting the enforcement of provincial and federal statues related to undesirable and illegal behavior on the SkyTrain cars, the station platforms, and surrounding property should be considered. Policing on a system that crosses several jurisdictional boundaries should remain consistent. Variances in differential response to calls for service or threshold levels in investigations can adversely affect the system.
Executive Summary
Section 1: Building The Framework

February 1999

Purpose of the Study

Any discussion of extending transit lines into new areas or through communities previously unserved by it raises concerns among the public about safety and security.

Communities worry that transit systems might attract criminal activity or increase criminal mobility and they also worry that crime might be introduced into their communities.

Because transit systems are created to serve communities and their constituents, it is important, both for the public and for the viability of the transit system, that these fears be addressed and allayed.

Much of the concern being expressed about the extension of SkyTrain is based on partial or skewed information about the reality of crime trends and the existing system, and not on scientific data. As such, there is a responsibility on the part of the Rapid Transit Project Office (RTPO) to investigate these concerns and develop a more detailed understanding of the issues.

SRG Security Resource Group Inc. (SRG) was contracted by RTPO to address public concerns about safety and security and to work with the team to develop strategies which will result in a safer system for users and the general public.

The primary objectives in embarking on this study were to:

1. Investigate and determine the actual relationship, if any, between rapid transit and crime in the GVRD and provide the RTPO with valuable understanding about this general relationship.

2. Research and report on possible mitigation techniques for dealing with various crime, security, and safety issues.

3. Formulate station design guidelines or recommendations that attempt to minimize the potential for criminal opportunity in and around station environments.

4. Provide guidance and recommendations on operational approaches as well as community initiatives to address these issues.

Approach and Methodology

Crime is a complex phenomenon. It must be studied within the context of various social, environmental, political, and economic influences. Often, a combination of elements and factors need to be in place before a criminal incident will occur. There are no single causal elements that prompt the existence of crime and even with all the right ingredients, it doesn’t always happen. Occasionally, acts can be unpredictable and occur without apparent reason.

Although the threat of crime can never realistically be eliminated and is largely a result of societal factors, by developing an understanding of environmental influences that generate such activity, control measures can be introduced to address safety and security concerns before they arise.

Most crimes do not occur at random. Offenders and non-offenders all generate patterns and routines in their daily lives which dictate how they use the physical and social environment. We all have our routines for work, school, shopping, leisure and home; so do offenders.

To discover the various influences that may affect crime impact and extension of the SkyTrain system, SRG used several means of data collection to gather background material for this report, including:

- participation in over 12 public consultation forums to observe public opinion and collect thoughts and ideas from community members
Building The Framework

- a thorough international literature review, including searches of over 70 published documents from various sources, including academic journals, reports, periodicals, books and Internet searches
- review of available local studies and reports provided by SkyTrain, BC Transit Security, municipal agencies, and community groups
- collection and analysis of crime statistics from Statistics Canada, Attorney General of BC, RCMP, and various local municipal police forces
- workshops and discussions with various groups including municipal planning departments, police personnel, school boards, and community groups
- meetings and discussions with BC Transit Security, SkyTrain, criminologists, and RTPO planners, architects, and engineers
- interviews with transit officials from eight other transit systems throughout North America and in Europe

The result is a framework that will allow the RTPO to design a transit system as well as implement initiatives that minimize the risk of crime, both on the system and in the neighbourhoods that surround transit stations.

Fear of Crime

Despite statistics which show most of the crimes we fear are actually declining, criminal acts and personal security have become growing concerns over the past decade. In the context of transit, it has been found that fear of crime leads to a decline in ridership and a resulting decline in annual revenues.

Fear of crime can change the overall image of a community and relay feelings that the area is dangerous. This could, in turn, manifest itself as a change to those who use the area, thus reducing actual safety of the neighbourhood.¹

The fear of crime is influenced by the social activities that occur in a particular area, along with the physical design. Nasar and Fisher² stated that there are both physical and social cues that will help form an individual’s perception of a situation or environment. The physical cues include: poor lighting; blocked escape; concealment of potential offenders; litter; graffiti; broken windows; abandoned areas, such as empty retail shops, and areas of little use; and vandalism. It was discovered in Clarke’s study (1984) of the London subway that, although only 1 out of 173,000 passengers in the allegedly crime-ridden underground was a victim of theft, many people still feared the system.

When adding an activity node to an area, in this case a SkyTrain station, common pathways for the users of that area are automatically changed. By increasing safety and reducing fear along those pathways, it is possible to improve the image of the area and decrease threats of victimization to its users.

Physical and social incivilities within an environment also give rise to fears among area users.³ Examples of physical incivilities include vandalism, graffiti, litter and vacant buildings. Social incivilities would include drug addicts, prostitutes and panhandlers. Social incivilities convey negative messages about social conditions and, because of this, increase fear.⁴

Areas that lack spatial ownership (that is no one seems to be taking responsibility for them) will also create fear-inducing environments. These are areas where social and physical incivilities are allowed to carry on uninterrupted and largely uncontrolled by authorities. Order maintenance generally does not occur in these areas and users of the environments will feel a lack of control over their own well being.

This leads to an increase in crime due to isolated stations and lack of funding for security and maintenance personnel. This gives rise to illegitimate activities such as prostitution and drug use and creates more fear, forming a continuous circle.⁵ In this interrelationship, it is important to ensure that fear of crime is addressed in concert with the actual criminal activity patterns that exist in an area.

A related result of fear of crime can affect the actual policing of an area. Because heightened sensitivity to, and fear of, crime generates more “calls for service” to jurisdictional police, it reduces availability for proactive policing functions. The more reactive in nature the duties of the police, the less opportunity for participation in crime prevention and reduction activities. Increased fear can lead to reduced police effectiveness, and subsequently, greater risk of crime.
Crime Theory

Environmental criminology studies the criminal event itself and the factors that create an opportunity for its occurrence. Interestingly, public concerns about transit and its relationship to crime are based on the same, albeit unstated, assumptions.

Many of the principles of environmental criminology are interrelated and all have an effect on how criminals select opportunities and targets. This report will lay out the basic tenets of environmental criminology and take a more detailed look at the specifics of crime and transit. It will also examine some of the crime patterns that have developed within the GVRD and combine the information to draw meaningful conclusions about the reality of crime and the existing transit system, specifically SkyTrain.

The Criminal Event

A criminal event is said to have taken place when four key elements come together:

- A law
- An offender
- A target
- A place

Environmental criminology focuses on the fourth dimension of this definition, that is the place in time, or space, where the other three elements that make up a crime intersect. Understanding where, when and under what circumstances crimes are likely to occur is crucial to reducing the opportunity.

Movement of Criminals and Awareness Space

Most crimes do not occur at random. Offenders and non-offenders all generate patterns and routines in their daily lives which dictate how they use the physical and social environment. We all have our routines for work, school, shopping, leisure and home. So do offenders.

Routine activities

Most people, offenders included, will, by nature, take the shortest possible route to get from one place to another. Considering this, we all establish direct pathways from homes to work, school, shopping and leisure or entertainment. These daily movement patterns are referred to as routine activities. These patterns are often shaped by how a person travels. Activity patterns may actually change when new transit routes or modes of transportation are introduced. Think of the change in activities and patterns of someone that loses, or acquires, a car.

Awareness Space

The places you go regularly become familiar and are termed part of your awareness space. Consider the last time you drove into an unfamiliar area and were surprised that you had never noticed it before. This is an example of you generating your own awareness spaces. Awareness spaces fluctuate depending upon the mode of travel. Obviously, when travelling by foot, a more broad awareness space is formed because you can take more time and care in observing your surroundings. Rapid transit systems create awareness spaces that are narrow and confined primarily to isolated locations along the route alignment – namely those areas where you get on and off. Most system users will not develop an awareness space beyond the stations they primarily use.

Activity Space

The territory you travel through during your routine activities is referred to as your activity space. This is the area where most of your day to day activities are performed, and these pathways remain relatively constant over time, unless you move or change jobs or schools.

It is understood that offenders also tend to engage in their “criminal” activities while they carry out these routine activities and do so within the confines of their awareness spaces. Additionally, routine activities of individuals may also result in increased risk of victimization. For example, people who frequent bars regularly may be at an increased risk of assault or violence.
Nodes of Activity, Conflict Areas, and Hot Spots for Crime

Activity Nodes
When multiple users share common gathering places, these places become known as activity nodes. These are usually locations that attract a wide variety of users and user groups and maintain a high variation in land uses. Shopping centres, entertainment districts, and sports complexes can all be considered activity nodes. Many rapid transit stations are strategically located close to these types of environments to service the public, stimulate system use and increase ridership. Additionally, the building of transit systems themselves stimulate the development of construction projects that incorporate these types of land uses.\(^\text{10}\)

Conflict Areas
Because major urban centres are usually part of everyone’s awareness spaces and are frequented by many different user types, some of whom may have differing ideals, conflict areas are created. These are the places where movement patterns of conflicting user groups intersect in space and time.

Hot Spots
Traditionally, activity nodes such as urban centres have been known to sustain a relatively high degree of criminal activity compared to their surrounding areas. This is largely due to the sheer volume of users that converge upon the urban centre. These areas will not necessarily be high in crime, but they do bring many suitable targets into a confined area where the risk of incident is high.

The nature of the actual crime that results, however, will depend largely on the measures taken to prevent the criminal event from taking place.

When fear coincides with the potential for criminal activity, these areas become known as hot spots.\(^\text{11}\) These hot spots threaten the overall quality of life in a community.

By addressing issues such as fear, through effective urban planning techniques, these hot spots can become positive environments with reduced crime potential.

Crime as a Rational Choice and a Selected Target

Rational Choice
In general, the majority of criminal events are the result of a conscious decision on the part of the offender. Although these offenders may be plagued with social or psychological problems, and their decision to offend may not be entirely voluntary, most criminals will choose their targets, locations and times with a certain degree of regularity.

This process assumes offenders use rational choice when making their decision to commit a specific criminal act.\(^\text{12}\)

Crime Template
Target selection for an offender is a thought process. The decision is based on many factors including characteristics of a potential crime site, characteristics of a given situation, characteristics of the individual offender and his/her own experiences. Each offender forms what is known as a crime template on which they base their decisions to commit a crime.\(^\text{13}\) The formation of a crime template is a complex process, but it is this decision-making process which forms the basis for how criminals approach each individual opportunity.

Opportunity
When a motivated offender finds him/herself in a situation where there is a suitable target and where there is a limited likelihood of being detected or caught, an opportunity is presented. If certain environmental cues are present, the offender then makes a rational choice to commit a crime.\(^\text{14}\) Although the most common crimes are property offences and motivations to commit the crimes may vary, opportunity-based crimes can range from vandalism and petty theft to burglary, robbery and certain types of motivated assaults.
**Situational Crime Prevention**

In many cases, opportunity can be greatly reduced through the use of situational crime prevention techniques, either through increasing the effort, increasing the risk, or reducing the rewards for the offender, i.e. reducing their motivation. Techniques of situational crime prevention can include a variety of strategies, from building design to locking hardware to policy initiatives.

**Crime Prevention Through Environmental Design**

The concept of environmental criminology is of particular assistance when studying crime trends and their relationship to public transit systems. Crime Prevention Through Environmental Design (CPTED, pronounced *sep-ted*) as defined by the U.S. National Crime Prevention Institute, is the “proper design and effective use of the built environment that can lead to a reduction in the fear and incidence of crime and the improvement in the quality of life”.

The built environment can either discourage or encourage crime; good design can reduce crime as well as perceptions of fear and unease. This does not have to mean a return to “fortress” style architecture.

CPTED is best brought in at the planning stage of a project as there are fewer structural and economical limitations involved; however, many aspects can be incorporated into existing facilities.

In working with community groups to determine design features of planned SkyTrain extension stations, RTPO can take advantage of a number of CPTED principles which will head off problems.

A detailed discussion of these techniques is contained in this report.

**People Movement**

The very nature of enhanced mobility creates opportunities for crime and criminals. With transit, large numbers of people are moved from place to place and through that movement they increase their awareness space. For criminals this can increase their awareness of potential targets.

Mobility has also resulted in more homes sitting empty during the day, and more automobiles left parked. Brantingham and Brantingham (1993) concluded that property crime targets were usually located near the nodes of an individual, that is near an activity centre such as recreation, work, transportation centres or home.

Many of the crimes that occur at high activity locations such as sporting arenas or commercial centres, or that occur at high activity times such as store closing or bar closing, in fact occur at the edges of the high activity location or high activity time. Crimes cluster on the street near the subway station or bus stop, at the edge of the normal waiting area.

The same report also points out that people who commit crimes normally spend the majority of their time in non-criminal behaviour and activities, and that criminals find their targets through their routine activities, restricting those activities to known and often legitimate areas. These routines could include work, transportation centres, including transit stations and park and ride lots, and recreation and entertainment areas. The Barclay et al. (1996) study on parking lots found that juveniles are attracted to malls that, in most cases, have large unattended parking lots with a variety of vehicles from which to choose. These lots had higher rates of auto theft because of the opportunities that arose through the routine activity of going to the mall. When transit becomes part of a legitimate routine activity, it also has the potential to become part of an illegitimate routine activity.

**Effect on Crime Rates**

**Surrounding Community**

SkyTrain stations are often used, by media and by authorities, as landmarks for crimes that happen close to, but not at, the stations themselves. When reported in this fashion, one can easily be left with the perception that crime on SkyTrain is a problem.

In a recent study on the Vancouver SkyTrain line, Buckley (1996) determined that 49% of all police “calls for service” in the City of Vancouver occurred within 750 metres of an existing SkyTrain station. While this single figure has been relied upon by various
Interest groups throughout this study process, it is misleading, at best, if taken out of context and without regard to other factors. It is unfortunate that many people misinterpret Buckley’s findings as conclusive evidence that rapid transit causes crime. The report’s author herself states that this is not so.

Buckley’s study goes on to explain zoning areas and land use and the major role those factors play in the creation of this statistic. Inasmuch as the area studied encompasses all of the downtown, including the downtown eastside, it could be equally true, albeit equally inconclusive, to say that 49% of all police “calls for service” occurred within 750 metres of a bank.

Police “calls for service” is a very broad net which scoops up motor vehicle accidents, domestic violence, retail theft and a myriad of offences that have no bearing on, or relevance to, the presence of SkyTrain.

Poister (1996) conducted a time series analysis of crime incidents in suburban neighbourhoods surrounding two rapid rail stations opened in DeKalb County, Georgia. His findings suggest that when a new transit station provides direct access to a suburban area, the incidents of crime may increase initially as people’s cognitive maps (awareness spaces) are expanded. This was, however, followed by a decrease in crime as opportunity restrictions were realized and prevention measures put in place.

According to this study, the trend for crime increases after the introduction of transit could not be directly associated with the new stations as there are many other contributing circumstances, such as the continuation of a gradual increase in crime prior to transit’s implementation. Also, with changing population densities and demographic characteristics, crime rates are naturally likely to change:

Criminologists, demographers and other social scientists predict that the stabilization in serious crime that has characterized the middle years of this decade will give way to measurable increases in the late 1990’s and onto the early years of the 21st century due to a dramatic rise in the youth population which has a sizeable crime-prone sub population.

The pattern of crime is partially shaped by the city planners and decision-makers who shape travel paths and zoning, such as location of stores, activity centres and other places where people gather and cross paths. As a result, they shape the crime generating areas. Land use alone does not shape or encourage crime, however; it is the combination of land use and social behaviour of the individuals utilizing the built or physical environment that creates the opportunity for crime.
Station Environments

At times, areas where transit has been introduced seem to have an increase in crime, but there have not been enough studies to confirm whether or not crime can be directly linked to transit, or if there are other causes or influences that play a role.21

In general, it has been found that crimes at station and transit lines reflect the crime in the surrounding neighbourhoods, meaning that if the station is in a high crime neighbourhood, it is more likely to have a high rate of crime.22

In some cases, however, crime prevention techniques that have been applied in the stations are so effective that the stations have a lower rate of crime than the surrounding areas. This is particularly evident in Washington, D.C. with respect to the WMATA system.23

The level of impact that a surrounding community will have on the criminal environment within the stations is largely dependent upon the initiatives of the transit authorities to maintain control over the environment.

Findings

1. While there is a common perception that crime increases where transit is introduced, there are no studies to support a direct causal connection. Crime occurs where people and property are clustered. Understandably, transit is located where people are, or need to be. Research does suggest that SkyTrain, along with other modes of public and private transportation, can act as a facilitator for certain types of criminal activity, primarily property-related.

Notes

1. Kennedy, 1996
2. quoted in Buckley, 1996
3. Buckley, 1996
5. Clarke, 1984; Sloan-Howitt and Kelling, 1996
6. Brantingham and Brantingham, 1991
7. Felson, 1987
8. Brantingham and Brantingham, 1993
12. Brantingham and Brantingham, 1993; Wright et al., 1995
13. Brantingham and Brantingham, 1993
14. Wright et al., 1995
15. Clarke, 1992
16. Ekblom, 1995
17. Brantingham and Brantingham, 1993:18
18. Needle et al., 1997:3
20. Levine, 1986; Loewen, 1993
22. Nelson, 1997; La Vigne, 1996
23. La Vigne, 1996
Section 2: Historical Crime Review

February 1999

1977 to 1997 - A Look Back

Historically, transit systems have been the impetus for growth and change in communities. 1891 heralded the arrival of the first inter-urban tramway system in North America, linking Vancouver with New Westminster. Perhaps presciently, the tramway system followed much the same route as does the current SkyTrain system.

In general, people have welcomed transit and transportation improvements as a means to make improvements in their communities, but there have often been concerns over the potential for increased crime. In 1937, for example, following the opening of the Pattullo Bridge, Surrey tripled its police force from 1 officer to 3.

When looking at crime from an historical perspective, it is clear that some of the same issues of concern today have been issues of concern for a very long time. Prostitution is considered the world’s oldest profession. Drugs have been a problem in BC since the 1800s when opium smuggling was the primary concern. From 1914 to 1917, drug addiction was already becoming a big problem in Vancouver. By the 1950s, heroin had emerged as a major issue in inner-city areas, followed by the rise of “biker” gangs in the 1960s. The 1970s saw the introduction of cocaine to Vancouver and the 1980s brought us organized crime and gang activity.  

1982 marked the beginning of a rapid increase in Vancouver area crime rates. A study by the GVRD in 1982 titled “The Journey to Work: An Overview of Greater Vancouver’s Transportation Situation” reported that one quarter of the GVRD’s commercial development was within walking distance of the then proposed SkyTrain route. One third of the population was within five minutes of the route.

A non-scientific look at population density in the GVRD today would indicate that the SkyTrain route is still adjacent to some of the most densely populated areas of the region.  

Buckley’s thesis on public transit and crime contains an often misquoted statistic that nearly one half of all crime in Vancouver is within 750 meters of a SkyTrain station. In fact, Buckley stated that for a four-month period in the summer of 1995 nearly one half of calls for service to the Vancouver Police Department were within 750 meters of the nine SkyTrain stations studied. As discussed in Section 1 of this report, calls for service can include any number of situations which are entirely unrelated to transit. Additionally, this 750- metre area studied by Buckley is almost double the conventional walking distance of 400 meters to transit that is used by urban planners, and defined as transit’s catchment area.
1982 has the distinction of having the largest annual Vancouver area average crime rate increase of the twenty-year study period. The average crime rate was 16% higher than the previous year.

In 1983, Bill C-127 was introduced. It replaced the Criminal Code definition of rape with much more broad provisions of sexual assault. This is significant because it expanded the rights of assault victims to pursue criminal charges against assailants.

By 1984, the Vancouver area was in recession, resulting in the largest Surrey tax sale listed on record. Prostitutes moved from their traditional West End strolls to Seymour Street and points east. Perhaps most significant to a discussion of crime trends, 1984 saw the introduction of the Young Offenders Act which recognized rights of young people not previously recognized under the Juvenile Delinquents Act. Under this legislation, young persons came to be protected from unfair treatment under the criminal justice system. Public outcry against the act followed very quickly, with critics charging that it amounted to a form of judicial leniency which simply allowed young people to take unfair advantage of its provisions.

In 1985, Vancouver City Council approved a plan to force prostitutes to move into the industrial area near Mount Pleasant. 1985 was also the year that the Food and Drug Act, the Narcotic Control Act, and the Canada Evidence Act were amended. The Supreme Court of Canada declared section eight of the Narcotic Control Act (possession for trafficking provisions) unconstitutional in Regina v. Oakes. A new prostitution law was also enacted making it an offence for both prostitutes and their customers to communicate for the purposes of prostitution.

As a direct result of the changes to prostitution legislation, 1986 saw a jump in prostitution offences of a little over 600%: from 1,225 charges in 1985 to 7,426 charges in 1986. 1986 also saw the introduction of the SkyTrain system, Expo’86, and the opening of the Westminster Quay, Lonsdale Quay, and Metrotown Mall. The Alex Fraser Bridge came on the scene, providing another link between the central core district and outlying communities. Another major event occurring in 1986, that likely had an influence on the increase in crime for that year, was the eviction of 1000 people from their homes in the Downtown Eastside to make way for the Expo fair. Eleven people died as a direct result of these evictions, and hundreds of single room occupancy homes were torn down.

Unemployment in the Vancouver area was up to 12%.

Crime rates dropped dramatically in 1987 and by 1988, crime in the Vancouver area had levelled off to pre-1983 figures. 1989 saw the opening of SFU Harbour Centre Campus, Science World, the East West Connector, and a recreational complex in the old LaFarge gravel pit in Coquitlam.

Crime in the area would remain relatively static until 1990 but that year saw the beginning of a two-year increase in Vancouver area crime rates. The first Molson Indy car race was held in Vancouver and the City became North America’s third largest film production centre.
This was also the year that SkyTrain was extended to Surrey. Prior to the introduction of SkyTrain, Surrey’s average crime rate was already on a slight increasing trend from a low in 1987 and 1988. This trend continued through to its peak in 1991 after which crime in Surrey began to decrease again. In fact, the number of property offences in Surrey remained fairly level through the five year period from 1991 to 1996.

1991 was the year that the Burnaby Public Library opened at Metrotown and the Oakalla Prison Farm in Burnaby was closed. By 1991, Statistics Canada had reported the Vancouver area average household income to be $48,976 - over an 80% increase since 1981.

In 1992, Vancouver area crime rates were on a definite downward trend. Approximately 10 square blocks near Boundary Road along the SkyTrain route were changed from industrial zoning to comprehensive development district zoning. This was the beginning of a massive high-density residential area known as Collingwood Village.

In 1993, Woodward’s closed its downtown eastside department store. Some would consider this the beginning of a deterioration of commercial viability in the downtown eastside. Bill C-12 came into force, altering the Young Offenders Act by increasing penalties for murder; establishing a new test for transfer to adult court; and providing for adult sentences for youths transferred to adult court. Section 264 of the Criminal Code was enacted establishing the offence of criminal harassment (stalking).

The Stanley Cup riots were the big news of 1994. This was also the year that SkyTrain was extended into Surrey’s Whalley neighbourhood. Once again, overall Surrey crime rates were already on a decreasing trend from a high in 1991. Despite a slight exception in 1996, Surrey’s average crime rate was lower in 1997 (the last year for which complete figures are available) than it was in 1979 and is actually equal to 1977’s rate of 121 crimes per thousand population. This downward trend continues today.

1995 was the year that the West Coast Express commuter rail was introduced. This is also the year that General Motors Place opened in downtown Vancouver. As with the extension of SkyTrain to Surrey, the introduction of the West Coast Express does not appear to have had any effect on overall municipal crime rates in Port Moody or Coquitlam. In fact, Port Moody’s crime rate in 1997 was the lowest it had ever been during the twenty-year study period. Coquitlam’s crime rate was also lower in 1997 than it was in 1982. There were also several important legal changes implemented in 1995: the Criminal Code was amended to limit the use of intoxication defence in assault cases, extensive gun control legislation was introduced, and the Young Offenders Act was amended again to increase the penalties for murder convictions and to provide for automatic transfer of 16 and 17 year old offenders to adult court, for serious offences, unless a reason not to do so was established.

In 1996, Port Coquitlam had the world's largest LSD (and other drugs) factory raided.
Since 1988, approximately 75% of the area along the existing SkyTrain route from Broadway Station to Boundary Road has been changed from RS-1 (one family residential) to RS-1S (one family residential with conditional two family provisions). Worth noting is that since 1979, there has been a 63% increase in the amount of land use in the GVRD classified as medium and high density residential. This significant expansion of higher density residential uses has occurred mostly around major urban centres. The amount of commercial land use in the GVRD has increased by about 300 hectares. This growth has sprung from an expansion of existing commercial areas, the conversion of some industrial lands and the development of vacant lands.

Population densities calculated within residential areas for 1979 and 1996 indicate that, within the area defined by the 1979 administrative boundary of the GVRD, there were, on average, 8 more people per hectare, or 3 more people per acre, living within residential areas in 1996 than there were in 1979. While data limitations prohibit making any absolute conclusions, the data does provide a good sense of crime trends in this region of the past 20 years. All conclusions and analysis contained in this report should be reviewed with consideration given to the limitations of the quality, accuracy, and resolution of historical crime information provided for review.

Overall crime in the Vancouver area went through a rapid increasing trend in the early 1980’s, then decreasing and levelling off until the early 1990’s where the trend increased again. Since its peak in 1991 and 1992, crime rates have been decreasing in the Vancouver area to a point where they are now below 1982 rates for most areas. Throughout the twenty-year study period, there were many significant changes in law, land use, population density, and development, all of which have affected crime trends. The following section takes a detailed look at crime statistics by jurisdiction.

### Findings

1. Overall crime in the Vancouver area rose rapidly in the early 1980’s, then decreased and levelled off until the early 1990’s where the rates went up again. Since the peak in 1991 and 1992, crime has been decreasing in the Vancouver area to a point where it is now below 1982 rates for most areas.

2. Population densities align themselves to SkyTrain.

3. Throughout the 20 years studied in this report, the region also experienced significant changes in law, land use, population density and makeup, and development. All these changes have had an effect on crime trends.
Notes

1. Historical information presented in this report has been taken from a number of sources, details of which are provided in the References Section.


3. The municipal crime rate, or number of crimes per 1000 persons, is based on the resident population of a municipality that excludes commuters, students, tourists, and other part-time residents. For example, if a person from outside the municipal boundaries enters the municipality and commits a crime or becomes a victim of crime, the crime is attributed to that municipality. Since the person does not reside in the municipality, he or she is not included in the municipal population. More often than not, a high crime rate indicates that a municipality is a “core” city or tourist destination. Core cities are usually surrounded by unincorporated areas that have significant residential populations. These cities are also the business and entertainment centres for many people who reside outside, as well as inside, the municipality. (Source: Police Services Division Ministry of Attorney General, Province of British Columbia, Police and Crime Summary Statistics 1987 - 1996)

4. While there are several theories, changes in the incidence of criminal activity are not easily explained or understood. Many factors influence changes in the number of crimes. For instance, a change in the crime rate may be due to policy decisions, or changes in the law, which affect police enforcement practices. Factors such as age, gender, level of income and education of either the victim or offender may also affect the incidence and reporting of certain types of crimes. In addition, it has been suggested that population density and changes in public attitude may contribute to changes in the incidence and reporting of crime. (Source: Police Services Division Ministry of Attorney General, Province of British Columbia, Police and Crime Summary Statistics 1987 - 1996)

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<th>Surrey</th>
<th>Port Moody</th>
<th>Coquitlam</th>
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Section 3: SkyTrain and Crime

February 1999

There is a significant difference between perceptions of crime as they relate to SkyTrain and the reality of that relationship. There is also a difference between perceptions of SkyTrain among those who use the system and those who do not. For example, those people who do not use the system may derive their opinions from media coverage of community crime, whereas riders of the system would derive their opinions from personal observations and experience, as well as other information.

Exploring the general public’s fear of transit crime brings some interesting results. In a study prepared by BC Transit for the Safer City Task Force Committee in 1994, the following major conclusions were drawn:

- A significant level of apprehension exists with regard to personal safety issues in relation to the public transit system;
- Female respondents expressed a higher degree of concern with the security aspects of public transit than did their male counterparts;
- The two most frequently voiced concerns about the transit system were the presence of “undesirable people” and the feeling of insecurity within the “transit environment”.

Although this study was related to the transit system in general and was not specific to SkyTrain, the same concerns seem to exist with respect to all three modes of public transportation, i.e. SkyTrain, bus, and SeaBus.

In fact, the Vancouver Safer City Task Force Report of January 1993 confirmed that people’s reasons for feeling unsafe anywhere in the city, not just at SkyTrain stations, were more related to nuisance behaviour than actual crime. The top three factors cited by those feeling unsafe were loiterers, unsavory people, and street people. It must be noted, however, that SkyTrain is a mode of public transportation, and that even those people that some may classify as “unsavory” could be legitimate SkyTrain customers.

Citizens, particularly women, certain ethnic groups, seniors, and the disabled, expressed increasing fear of physical and sexual assault in Vancouver. While statistics do not seem to corroborate these fears, Vancouver’s livability is being eroded by the fear of assault. Accurate reporting of crime and an informed public would contribute to a clearer understanding of the true extent of the problem.¹

The Safer City Task Force also stated that in 1991,

- 61% of system wide ridership was female and 39% was male.
- 18 to 24 year old passengers were 49% female and 51% male.
- 65+ year old passengers were 73% female and 27% male.

Vancouver Safer City Task Force Findings Related to Source of Public Concerns Related to Transit Systems in General
SkyTrain and Crime

These figures indicate that female passengers use transit more frequently and tend to rely on transit with increased age which is opposite with males. The importance of this information is that women and the elderly, in general, are often more fearful of victimization, and are often the targets of assaults. This fact must be realized and kept in mind when developing new transit systems.

Public Consultations

At the time this report was created, SRG had attended more than 12 open houses and several meetings and workshops with various municipal groups. Although our group continues to attend these meetings and elicit public comments, some common concerns and perceptions have been generated in these forums. Detailed meeting minutes are outlined in Appendix A of this report, however, it is important to summarize our overall observations of what is being commented on in the public realm. The following represents a summary of the more prominent concerns expressed through public comments:

- Members of the public within most communities expressed an overall fear that crime, especially drug and property-related crime, would increase in their communities once the SkyTrain extended to their neighbourhoods. Most citizens cited New Westminster as the primary threat for the spread of drug activity.
- The public expressed specific concerns about the potential for crime “spill-over” from Columbia and New Westminster stations.
- Common concerns were expressed about the overall safety of the SkyTrain system, especially during the night time hours when reduced ridership increases the sense of isolation. This feeling is common despite the fact that staffing levels are actually higher on the SkyTrain in the evening hours.
- There is a perception that turnstile barriers in the station environments would be likely to reduce the likelihood of the criminal element entering the station areas and subsequently riding the trains.
- Several concerns were expressed about general loitering and littering around the proposed station areas.
- Concern about the proximity of stations to school areas was a repeated topic of discussion. Protection of children was of prime importance. Concerns were different in nature depending upon the type of school environment (i.e., Elementary School, Middle School, High School).
  - Elementary School - noise, distraction, safety
  - Middle School - drugs, truancy, recruiting prostitution
  - High School - drugs, prostitution, gangs, truancy
- Widespread concern was expressed about media coverage of Jennifer Buckley’s thesis. The specific concern was the perception that 49% of all crime occurs within 750 meters of a SkyTrain station. In fact, Buckley’s report states that 49% of all “calls for service” in the City of Vancouver occur within 750 metres of a SkyTrain station. It is important to note the erroneous impression left amongst members of the public, not to mention the lack of analysis of the actual findings.
- Safety concerns were expressed about SkyTrain not having a staff member assigned to each station at all times. People commented they would be more likely to use the system more often if there were more visible staffing.
- Many expressed a related concern about the lack of staff on board trains.
- A general fear was expressed with respect to underground stations and the increased likelihood of crime.

Despite acknowledged perceptions and fears of crime related to SkyTrain, the system is relatively safe for users.

In an article about how public transit feeds private crime, which compares public transit with other modes of transportation such as the automobile, Brantingham, Brantingham, and Wong (1991) draw some interesting conclusions that are relevant to the issues discussed in this report.

...Public transit riders are usually limited to a very limited set of pathways between destinations. Moreover, transit paths often run underground or on elevated levels that substantially limit (emphasis added) the entry of the pathways between stops into rider’s awareness spaces. As a consequence, crimes and victimizations associated with transit riders will be much more tightly clustered in space than will be crimes associated with automobile riders.


This observation suggests that crime and victimization may actually be lower along a public transportation route than traditional automobile based transportation routes. However, it also suggests that public transit crimes will be more concentrated in clusters at transportation nodes (such as stations) than the distributed pattern of crimes along traditional transportation routes.

A further quote from the same article suggests the following:

Private automobiles tend to facilitate crimes in which the offender must search extensively for suitable, unguarded targets or where there is substantial booty to be hauled away from the scene of the crime. It is difficult, for instance, to carry a computer and a video recorder away on a bus or subway car; it is easy to put them in the trunk of your car. Public transit tends to facilitate personal crimes in which potential target density is critical, such as pickpocketing, purse snatching, and robbery. Public transit also tends to generate high volumes of crimes against the transit system - vandalism, unpaid fares - as a normal by-product of handling very large volumes of people over time.  

The conclusions drawn in these excerpts would indicate that SkyTrain has the potential to facilitate crime opportunity by clustering large numbers of people in a small, well defined area, along a well defined path. However, by virtue of this clustering, the SkyTrain system also reduces the awareness space of users of the system, criminals included. In other words, the familiar areas that become targets will be concentrated at transit nodes - specifically destination nodes.

One can then draw the logical conclusion that if SkyTrain clusters crime around destination nodes, but that not every SkyTrain station is a strong destination node, then not every SkyTrain station is likely to experience increased crime as a result of the simple introduction of the system. Mobility may provide increased opportunity for crime, but in and of itself, it will not cause crime.

The type of station and the character of the immediate area have the greatest effect on the type of crime to be expected. For example, a study by Barclay et al. titled “Preventing Auto Theft in Suburban Vancouver Commuter Lots: Effects of a Bike Patrol” found that there was a large number of theft of and from autos at the Scott Road Station in Surrey. This is not surprising considering that, at the time, the Scott Road Park and Ride lot was the largest facility in the BC Transit System with 2,411 spaces (the second largest has only 400 spaces). This same study also found Bike Patrols by uniformed security officers to be an effective tool for reducing theft from and of auto at the Scott Road Park and Ride Lot during the period when the bike patrols were utilized (reduced motor vehicle theft counts by 87.5%).

For the six months prior to implementation of the bike patrols in 1995, the Scott Road lot averaged 24 thefts of auto per month. During and shortly after the study period, this figure was reduced to 3 per month. If you assume that the lot is filled to capacity each day (2411 cars), the probability of a car being stolen dropped from 1 in 3115 to 1 in 24,914 for each day it was parked during these periods.

As is demonstrated elsewhere in this report, there is an apparent clustering of drug related activity around the New Westminster (or 8th St.) Station that does not manifest itself at other New Westminster Stations.

### Crime Analysis/Statistical Information for Selected GVRD Municipalities

Although it is used extensively for purposes other than crime analysis, Geographical Information System (GIS) technology for use by police agencies is a relatively new trend. It is a powerful tool for studying location crime trends and determining resource allocation requirements. However, because many police agencies do not yet record or store their information in a format that transfers easily to a GIS analysis, it is not currently possible to perform a historical geographic analysis of crime over the past 20 years in computerized, GIS format. The study that can be achieved, however, provides a telling visual representation of the distribution of crime and crime trends in various municipalities across policing jurisdictions.

BC Transit Security and all municipalities in the study area were asked to provide crime information for areas around existing or proposed station locations. This section represents a summary and analysis of the data collected from these agencies.
SkyTrain and Crime

Definitions

Crime-related statistical information comes in various forms and can be defined in various ways. For the purposes of this report, the following definitions will apply throughout the following pages of this section:

- **Call for Service** – expressed as a raw number, any request for police service or assistance. Although calls relating to personal crimes, property crimes, and drug offences are received in this manner, general disturbance issues, motor vehicle accidents, lost property and nuisance complaints will all generate calls for service, even if they are deemed to be unsubstantiated.

- **Crime** – expressed as a raw number of verified crimes. These refer to those calls for service that have actually been substantiated by a peace officer and been assigned a definition under the Criminal Code of Canada or any other legislation.

- **Incidents** – expressed as a raw number of verified occurrences as defined by a given agency. As with calls for service, incidents are not necessarily classified as crimes, and vary depending on each agency’s definition of an incident.

- **Rate** – expressed as a number of crimes or incidents per a given population (i.e. crimes per 1000 population). Population can be defined in a variety of ways including as regional population, number of SkyTrain boardings, or number of vehicles in parking lots.

Data Sources

There are a number of different agencies in the GVRD responsible for collecting and maintaining information about crime. Each municipality has a police service responsible for the day to day policing requirements of the community. These agencies are the front line collectors of crime information. In addition to the municipal police departments, BC Transit also has a Security Division responsible for the SkyTrain system itself consisting of a team of fare inspectors and Provincial Special Constables who provide policing support to jurisdictional police on the SkyTrain system. **BC Transit and its security personnel have only partial policing powers, and do not have full jurisdictional authority over SkyTrain property.** Each municipal police service is required to report certain aspects of their crime information to centralized provincial and federal agencies in the standardized form of Uniform Crime Reports (UCR). The Royal Canadian Mounted Police (RCMP) also maintains the Police Information Retrieval System (PIRS) which all RCMP detachments and many municipal police departments report to (New Westminster and Port Moody maintain the PIRS system as well).

It is also important to identify the fact that the RCMP is contracted to provide municipal policing services to three of the study communities (Burnaby, Coquitlam, and Surrey). The remaining communities (Vancouver, New Westminster, and Port Moody) have independent municipal police services. At a municipal level, therefore, statistical record keeping and data availability varies considerably by municipality, even amongst the RCMP-served communities.

The B.C. Ministry of Attorney General’s Police Services Division produces a summary report of crime in BC each year based on the information provided by local jurisdictional police agencies. Numerous statistics from this source were cited in the previous section of this report.

BC Transit Security has maintained electronic records of calls for service on the SkyTrain system since 1988. Unfortunately, this information was contained in a proprietary Focus database that proved difficult to retrieve information from, requiring considerable programming of queries for each single variable of interest. Fortunately, in 1997, BC Transit implemented a new incident reporting and records system from which data can be quickly and reliably retrieved. As a result, data presented in this report from BC Transit is from 1997 and 1998 to date. There is no historical SkyTrain incident data prior to 1997 except occasional references from earlier studies and reports compiled for other purposes at earlier dates.

BC Transit Security

BC Transit Security currently operates a force of Special Provincial Constables, who have been classified as such under the Police Act, fare enforcement officers, and a team of security officers. While their “beat” is the SkyTrain system and surrounding transit property, these groups provide first response service to the system (if they are close by) and act as a support agency to jurisdictional police departments, and share information
SkyTrain and Crime

BC Transit Security and SkyTrain are, however, the only sources of information pertinent to the entire SkyTrain system as the route crosses several jurisdictional police boundaries. As with any statistical information, this data does have its limitations. Some incidents, for example, may be recorded by BC Transit/SkyTrain which would not normally be recorded by a jurisdictional police agency, causing an “increase” in overall incident numbers. By the same token, there may be incidents which occur on the system that do not get recorded by BC Transit/SkyTrain either because the victim did not report the incident directly to BC Transit/SkyTrain, or reported it directly to the jurisdictional police agency which did not subsequently pass that information on to BC Transit/SkyTrain. Keeping these limitations in mind, the following information does provide a useful base from which to compare different stations along the route for specific types of problems, and to conduct a cursory cross-examination of municipal crime data.

When looking at the statistics prepared by BC Transit, it is important to note that they deal with a very large “population” of riders. With nearly 42 million boardings the effective population is more than 40 times the combined 1991 population of the six study municipalities whose population was a little over 1 million. It is also 5.5 times the population of New York City (7,380,906), and nearly 1.4 times the entire population of Canada which is currently estimated at just over 30 million.

In 1997, the total number of calls for security related service recorded by BC Transit for the SkyTrain was only 2,232. Against a total of 42 million boardings that same year, the number of calls for service per boarding is an insignificant 0.000053318. Put another way, SkyTrain averaged one call for service for every 18,755 boardings.

Again it should be noted that these figures do not include incidents occurring just off BC Transit property in the surrounding community. Additionally, it is difficult to compare boardings to municipal population counts.
SkyTrain and Crime

Of the 2,232 incidents, 43% of the incidents were Other Criminal Code related, 21% Property related, 13% Assault related, 6% Robbery related, 8% Intoxicated Persons related, 8% Liquor Act related, and 1% Mental Health Act related.

BC Transit statistics show that in 1997, there were 41,861,441 boardings on the 20 existing SkyTrain stations. Preliminary 1998 figures for the first ten months of the year suggest that current year boardings are consistent with those of 1997. The five busiest stations in both 1997 and 1998 in order from highest to lowest are:

- Metrotown - 4,636,935 boardings in 1997
- Granville - 4,323,193 boardings in 1997
- Broadway - 3,729,515 boardings in 1997
- Burrard - 3,326,869 boardings in 1997
- Main Street - 2,585,208 boardings in 1997

These five stations accounted for 44% of all boardings for the entire system in 1997.

In terms of raw numbers in 1997, Metrotown Station experienced the most assaults and robberies of all stations; Scott Road Station had, by far, the highest number of property offences probably due in large part to the Park and Ride lot; Scott Road also had the largest number of Liquor Act offences, narrowly edging out Main Street and Metrotown; Surrey Centre had the most Other Criminal Code offences; Main Street had the most Intoxicated Persons offences; and Granville had the most Mental Health Act offences.

When expressing these numbers as offences per 100,000 boardings, however, things look a little different. The highest rate of assault occurs at New Westminster Station, followed closely by Gateway Station; 29th Ave. has the highest rate of Robbery, Scott Road...
maintains the highest rate of Property and Liquor Act offences, New Westminster has the highest rate of Other Criminal Code, Main Street maintains the highest rate of Intoxicated Persons, and Edmonds has the highest rate of Mental Health Act offences.

In 1994, BC transit reported to the Vancouver Safer City Task Force that:

• After 18:00 hrs ridership decreases dramatically as commuters complete their journey by bus and SkyTrain.

• Statistics show that most incidents occur between 18:00 hrs and 01:59 hrs with the greatest number between 22:00 and 01:59.

• Some stations have more customers than others at varying times of day. For example, Waterfront and Burrard have fewer customers after 18:00 than Granville, Broadway, and Metrotown.

• Those stations that experience the most incidents are not located near residential areas, but near malls, theatres, clubs and at Scott Road, a large isolated parking lot.

That same report concluded that:

It is safe to travel on SkyTrain, the number of accidents and incidents is minimal and has not varied significantly over the past three years. There is, however, a greater likelihood of incidents occurring after 18:00 hrs particularly at certain stations. Number of customers are fewer but instances of disorderly activity, vandalism and trespass increase. Often alcohol and youth activity are contributing factors and create an increased sense of isolation and vulnerability particularly among women.

In conclusion, when looking at BC Transit security incident data, it is apparent that the SkyTrain system is quite safe, notwithstanding perceptions and fear of crime. The majority of BC Transit Security compiled incidents are made up of Other Criminal Code offences such as Bail Violation, Breach of Probation, Disturbing the Peace, Mischief and Property Damage. Property Offences such as Break and Enter, Possession of Stolen Property, Theft of and from Auto, etc. are the second most frequent incidents recorded on the SkyTrain system. Assaults comprise 13% of all incidents that BC Transit Security deals with, however, the total number is 291 incidents occurring with nearly 42 million SkyTrain boardings.

**Vancouver Police Department**

The Vancouver Police Department was asked to provide crime data for a 250m radius area around existing and proposed SkyTrain stations. The following analysis presents that information and some of the geographical representations that the Vancouver Police Department was able to provide. Although the Vancouver Police Department was able to provide data for 1996, 1997, and the first six months of 1998, the present analysis will focus on 1997 data to maintain consistency with other analyses in this report.
In terms of raw number totals, the 250m centroids around the nine existing SkyTrain stations accounted for a total of 10,886 Property, Persons, and Other crimes. There were a total of 95,482 Property, Persons, and Other crimes in all of Vancouver in 1997. Therefore the 250m centroids around existing stations accounted for 11.4% of all Property, Persons, and Other crime in Vancouver that year.

When looking at each crime type independently, these areas around the stations account for 12.5% of all Property crime, 8.7% of all Persons crime, and 3.7% of all Other crime in Vancouver. The four downtown areas around stations account for 82% of the property crime for all nine stations. If you remove those four areas around stations from the equation, the remaining 5 areas around stations, including Main Street, account for only 2.2% of total property crime in Vancouver in 1997. Attractions such as GM Place, BC Place, Robson Street, Pacific Centre Mall, Granville Street, Gastown, and the majority of the downtown business core are also located within the areas covered by the 250m zone around of the four downtown stations, supporting the contention that SkyTrain is only one of many factors potentially contributing to crime.
The previous graph varies somewhat from the information provided by BC Transit Security. Both show Granville Station as having the highest number of incidents among the Vancouver stations. However, where BC Transit reports the next two stations with the most incidents as being Main Street and Broadway, the Vancouver Police Department data shows that the areas around Waterfront and Burrard Stations are actually higher in raw numbers of offences. Part of the discrepancy may stem from different reporting systems, i.e. some incidents are reported only to BC Transit Security and some only to the police. Vancouver Police report on incidents inside and outside the station whereas BC Transit Security reports “on the system”. There are also neighbourhood factors that could influence this, among them the close proximity of the Downtown Eastside (a well-known crime hotspot) to Waterfront Station. Another influencing factor is the relatively high number of property offences occurring at the areas around the four downtown stations: Waterfront, Burrard, Granville, and Stadium. No doubt much of this Property crime is theft from auto. It is interesting to note, for instance, that 17% of all parking spaces in the downtown core (9,291 out of a total of 55,395) are within a five block square area of Granville Station.

The following geographic representations of crime in Vancouver demonstrate that the main concentration of all types of criminal activity is directly adjacent to the downtown core, centred around the Downtown Eastside Neighbourhood.

What the images clearly show is that Persons and Other crimes are concentrated in the Downtown Eastside. There is also a pattern of slightly higher levels of Persons crime along the Broadway corridor between Main Street and Clark Drive, again along Commercial Drive between 12th Ave. and 1st Ave., and along East Hastings between Victoria and Nanaimo Streets. One may be tempted to draw the conclusion for instance that a
SkyTrain and Crime

The higher incidence of Persons crime occurs near the Broadway SkyTrain station. However, it should be noted that other areas of the city without SkyTrain stations have equal and greater incidence of Persons crime.

Property crime in Vancouver is centred more to the west within the downtown core. This is not surprising, as much of the property crime in Vancouver is automobile related and there is a high concentration of automobiles in downtown Vancouver.

The Vancouver Police Department also provided several pin maps of the 250m surrounding areas, of which a few are included below to illustrate some key points.

The above illustration is of the 250m area around Broadway Station. This represents Property crime in that area for a two and a half-year period from January 1995 through June 1998. It is evident that there is a concentration of incidents just east of the station, in the vicinity of a Safeway store and large parking lot, as represented by the largest dot. There is also a slightly smaller concentration at the intersection of Broadway and Commercial. This is likely due to the way incidents are reported - sometimes to a cross street rather than a precise address. Aside from those two points, however, the remaining
Property incidents are dispersed relatively evenly throughout the area. It is probable that had the area extended slightly further, this dispersal pattern would still exist. When looking at some of the other illustrations, it becomes evident that crime can be attributed to major streets and roadways as much as it can to the placement of SkyTrain stations.

The above illustration shows Property crime in an area around Clark Drive at Vancouver Community College. It is apparent that the incidents are clustered along Broadway and adjacent streets in existing traffic areas.

As for proposed station locations, several of the zones show that some of the proposed locations have equal to or greater numbers of crimes than several existing SkyTrain stations. For example, the area near the proposed Clark Drive station discussed above has about an equal number of Property, Persons, and Other incidents as does the area around Joyce Station, but only half that of the area near the Broadway Station. The proposed Grandview and Renfrew Stations have more Persons, Property, and Other crimes than the existing 29th Ave. and Nanaimo Stations. The remaining three proposed stations all have relatively low incidence of Property, Persons, or Other crime compared to existing stations.

In conclusion, when looking at official police statistics for Vancouver, it becomes apparent that many calls for service are unrelated to passenger use of the system and that there are other areas of the city that have higher crime rates or have greater instances of crime than areas that are near SkyTrain stations. It is also evident that one has to be careful about which incidents are attributed to the SkyTrain system, particularly in the downtown core, where there are a number of other factors at play.
SkyTrain and Crime

Burnaby RCMP Detachment

Burnaby RCMP, like Vancouver, were also asked to provide statistical information around existing and proposed SkyTrain stations. Rather than provide contour maps for each year as Vancouver had, Burnaby elected to provide a year to date pin map representation of crime distribution in the community. The nine circular areas running along the top of the image represent a 500m radius around proposed station locations. The four circular areas running along the bottom of the image represent a 500m radius around the existing SkyTrain stations. As the stations in Burnaby are further apart from one another and less likely to overlap, 500m zones were used as opposed to the 250m data provided by Vancouver.

This image provides some important information about crime in Burnaby. Firstly, although there are definite concentrations of criminal activity in the areas surrounding existing stations, there is a more definite concentration of activity along major streets and roads. Kingsway, Imperial Street, Edmonds Street, Marine Drive, Rumble Street, Canada Way, Lougheed Highway, Douglas Street, and Hastings Street all show concentrations of activity. It is also evident that there is a major cluster of activity in the northwest sector bounded by Lougheed Highway to the south, Burrard Inlet to the north, Boundary Road to the west, and Springer Street to the east.

Unfortunately, the tabular data used for analysis is aggregated to the atom level, providing little useful information for comparison purposes between station areas. As explained in “Notes” on page 37, each atom boundary is irregular, therefore creating atom areas of different sizes and shapes. When reviewing the crime occurrence statistics provided by Burnaby RCMP for the atoms surrounding existing and proposed stations, occurrences are broken down as follows: 9.4% Persons crime, 78.7% Property crime, and 11.8% Other crime. If Drug offences are added to the totals, they make up a mere 0.86% of Persons, Property, Other, or Drug occurrences in the atoms around existing and proposed station locations.
When comparing the data for the atoms identified by Burnaby RCMP as surrounding existing SkyTrain stations to total municipal data provided by the Ministry of Attorney General Police Services Division, one finds that areas near existing stations account for 2.6% of Burnaby’s total Persons crime, 2.1% of Burnaby’s total Property crime, and 1% of Burnaby’s total Other crime. The atoms identified by the Burnaby RCMP as surrounding proposed station locations account for 1.5% of Burnaby’s Persons crime, 2.2% Property crime, and 1.3% Other crime. One should also note that the single largest occurrence reported for the atoms identified by the Burnaby RCMP as surrounding existing and proposed station locations was for False Alarms (40%). This was followed closely by Property occurrences (39%).

What is useful for the present analysis, however, is the graphical representations of crime provided by Burnaby. The following image shows 1997 crime around existing stations in Burnaby.

In this image, it is shown that the major impact in the area is actually the Kingsway strip. If this data is removed, the Patterson Station area is left with virtually no activity. The image may be slightly misleading in that there are a number of points “stacked” on top of one another so the small clustering near Metrotown Station is actually greater than it appears, however, it is still smaller than the cluster along Kingsway within the same area. One reason for this is that many incidents occurring at Metrotown Mall are likely recorded as occurring at the Kingsway address of the Mall as opposed to the Central Blvd. address that would be adjacent to the SkyTrain station. There is also a large clustering of incidents around the intersection of Kingsway and Imperial near the Royal Oak station. Looking at the Atom level data suggests that these are likely Property offences and could be in relation to the large number of automobile sales lots in the area.

As with the other jurisdictions, it appears Property Crime is the most prevalent, followed by Other and then Persons crime. In conclusion, although the data presented here is limited, the graphical representation of crime distribution in Burnaby clearly indicates areas of more highly concentrated criminal activity outside the immediate SkyTrain station areas. The Burnaby data provides the most conclusive visual evidence that crime patterns are more closely related to street and land use patterns than they are to the

SkyTrain stations. Areas of older, ill-maintained commercial and residential land uses appear to be where these concentrations occur. This conclusion is also supported by data from New Westminster.

New Westminster Police Service

New Westminster records data to the atom level. As such, they provided information for the atoms around existing and proposed SkyTrain stations for year to date 1998. As mentioned, the limitations with this data are that atom boundaries are irregularly shaped, creating inconsistent areas from which detailed comparisons between areas cannot be made accurately. Fortunately, The New Westminster Police Service has been exploring GIS capabilities and as such, was able to provide limited mapped data for a one-month period during 1998. Although limited to only one month, it is useful enough to demonstrate patterns of calls for service within the community.

This image demonstrates several things. First, as with Burnaby and Vancouver, there is a high concentration of calls for service NOT adjacent to SkyTrain stations. There is a definite patterning along major streets and roads, particularly those with more
SkyTrain and Crime

Zooming in on the downtown area, it is clear that Columbia station is located in an area of fairly evenly dispersed activity, whereas the 8th Street station is definitely located at the centre of a hotspot of calls for service. The following close-up image also shows higher concentrations of activity in the areas of New Westminster’s two main malls and Upper 12th Street.

The following four images show offences, which the public most often cites, for a one month period in 1998. The first image depicts Drug related calls for service to the New Westminster Police Department. It is obvious that there is a relationship between the 8th Street station and drug activity but, as the historical data confirms, this area has been a drug centre for the better part of the century.
The images also show there is no drug activity at 22nd Street station and little at Columbia for the period reviewed. This would suggest that the station itself is not the primary cause, but highlights the influence of the surrounding neighbourhood. Thus a primarily residential station such as 22nd Street does not attract the drug activity that the bars, clubs, and commercial establishments around the 8th Street station attract.

The image depicting Assaults in New Westminster demonstrates that these are also dispersed throughout the community, although there is a definite clustering along the Columbia Street corridor. The Break and Enter image clearly shows that these incidents are concentrated in areas at some distance from existing station locations. There are very few incidents around any of the three stations. Most activity appears to occur in the 6th Ave. and 12th Street areas that are unrelated to SkyTrain stations. Finally, motor vehicle related thefts are also clearly distributed across the entire city.
SkyTrain and Crime

As a final note about crime in New Westminster, of the atom level data provided for year to date 1998 by the police service, 11% of total Property related crime, 13% of total Persons crime, and 10% of All Crime Categories occurred within the atoms directly adjacent to or surrounding existing station locations. Areas near proposed station locations accounted for 2% of crime in all categories.

Surrey RCMP Detachment

The Surrey RCMP Detachment provided 1996 and 1997 atom level data for the atoms they identified as being located around existing SkyTrain stations. This data was available only in tabular format, so no geographical analysis has been completed. Two of the stations, Gateway and Surrey Central fall within the same atom.

Surrey RCMP Detachment

Of the data reported, 63% of occurrences near stations were Property offences, 11% Persons offences, and 26% Other offences. These atoms accounted for 14.5% of Surrey’s total Property offences, 11% of Surrey’s total Persons offences, and 13% of Surrey’s total Other offences. When combined, the atoms around existing station locations account for 13.7% of Surrey’s total Property, Persons, and Other crime.

Surprisingly, considering BC Transit Security statistics, the RCMP reported that the atom around Scott Road station actually had the lowest number of property incidents of the three atoms of study in Surrey. The atom with the greatest number of offences of the three studied was the one located in the area of Gateway and Surrey Central stations. This statistic may indicate that the incidents that take place near Gateway or Surrey Central do not get reported to BC Transit Security but are reported directly to the RCMP.

Port Moody Police Department

Although beyond the scope of the current line, Port Moody Police were also asked to report data for the areas surrounding proposed station locations. They too, reported atom level data for two atoms in the municipality.

For these two atoms, 78% of reported activity was Property related, 17% Persons related, and 5% Other related. These two atoms currently account for 21.5% of Port Moody’s overall Property crime and 21% of overall Persons crime.

Coquitlam RCMP Detachment

Although beyond the scope of the current line, the Coquitlam RCMP were also asked to report data for the areas surrounding proposed station locations.

Statistical material has been received from the Coquitlam RCMP. They were able to report tabular atom-level data for all atoms in the municipality. Additionally, an atom boundary map was provided for reference. However, given the significant variation in the Coquitlam route options as of the writing of this report, this material would be best suited for the purposes of further analysis as required.
Findings

1. Feedback obtained from community members at several public consultations confirmed a number of research findings related to fear of crime.
   - Public is fearful of property crime and drugs being brought into their neighbourhoods.
   - There is high fear associated with SkyTrain stations at night.
   - There is a commonly-held perception that turnstile system options would address incidents of crime both on the system and in outlying communities near stations.
   - Proximity of stations to local schools and residential areas is a major concern.
   - There is a general lack of visible staff members at the stations and on trains. Many members of the public felt that increased staffing would increase overall ridership levels.

2. BC Transit statistics indicate a relatively low volume of incidents per boarding. 43% of all incidents recorded classified under a miscellaneous category of Other Criminal Code offences. Property offences accounted for 21% of all incidents, with assaults accounting for 13% of all incidents.

3. Policing agencies are inconsistent in their methods of data collection, retrieval, and reporting. This makes detailed comparative analysis of current or historical crime trends in relation to SkyTrain difficult.

4. While there is a certain amount of public fear of crime on and around the SkyTrain system, this fear is not substantiated by the statistical information gathered. From all accounts, the SkyTrain is quite safe for its users.

5. The public is most fearful of nuisance behaviour near transit nodes such as Loitering, Unsavory Persons and Street People. These social nuisance behaviors get transposed into a perceived threat against a person’s physical safety. It should be noted that these fears apply to many public places, not just to the transit system. SkyTrain specific concerns include property crime and drug use.

6. Jurisdictional police data, particularly from Vancouver, Burnaby, and New Westminster, indicate that primary concentrations of crime activity occur away from the SkyTrain system, in downtown cores or along major road networks. Downtown cores typically support numerous other crime facilitators making it difficult to separate the influence of SkyTrain on crime from the influences of these other contributing factors.

7. Research has shown that where there has been an initial increase in criminal activity after the introduction of rapid transit to a community, rates of crime typically level off once the community adjusts to the new environment.

Notes

1. Source: Vancouver Safer City Task Force, 1993
2. Source: Vancouver Safer City Task Force, 1993
3. Buckley, 1996
6. Each of the policing agencies as well as BC Transit Security were asked for statistical crime information aggregated by year (ex: 1998 to date, 1997) for as many years as possible consisting of:
   - “Pin” maps showing crime within a 500m radius of existing & proposed SkyTrain stations, separated by crime type (Violent Crime, Property Crime, Other Crime). A list of potential new station locations was provided.
   - An overall map or visual representation of crime distribution within their community.
   - Data tables in digital form for the data represented in the maps. For this analysis, the only data required was an address and crime type, which would permit overlay of the crime data with other relevant data in a GIS program. If the Police service could not release addresses for reasons of privacy, data already geocoded was also accepted.
   - An example of the end product of this data would be: one map showing Violent Crime within 500m of existing and proposed stations; one map showing Property Crime within 500m of existing and proposed stations; one map showing Other Crime within 500m of existing and proposed stations; and one map showing the general distribution of all crimes for the year for the entire community for a total of four maps per year. This would provide the required “geographical” analysis.
Many Police agencies do not represent their crime data in mapped format at an address level. In general, each municipality is divided into policing zones, which are further subdivided in “atoms”. An atom (referred to as a “precinct” in U.S. literature) is a small geographical area that has some significance to the organization, usually by virtue of resource allocation, historical problem areas, etc.

Atom boundaries are not the same as census tract or community planning area boundaries and are not consistent in their size or shape so it becomes increasingly difficult to perform accurate analysis of crime data in relation to demographic and land use information. Only two of the agencies (Vancouver and Burnaby) contacted, therefore, were able to fully comply with the request for radius information. Burnaby’s tabular data, however, was aggregated by atom, not radii. The remaining agencies provided the information according to the atom or atoms surrounding a given existing or proposed station.

The Vancouver Police Department has been a leader in Geographical Crime Analysis in the GVRD. It was able to provide tabular and mapped data, by month, from 1995 through June 1998. Due to the close proximity of stations in the downtown core of Vancouver and the overlap created by a 500m radius, the Vancouver Police Department provided their data for a 250m radius instead. They also provided contour maps by year and crime type, which show an overall general distribution of crime in the city.

The Burnaby RCMP Detachment also has limited GIS capability and provided data from 1996 through 1998 in tabular and mapped format. The Tabular data was aggregated by Atom in the same manner as all of the other agencies (except Vancouver which was able to base tabular data on the centroid boundaries). The Burnaby RCMP also provided a pin map representation of the overall crime distribution in their community. Burnaby was the only agency contacted that provided geocoded information in digital form that could be used to overlay crime data with other pertinent information. Subsequently, this information can be used for future study purposes as required.

The New Westminster Police Service has always been eager to assist with projects that impact their community. They have recently transformed the methods they use to collect and record incident data. Prior to 1998, all of their data was purged and automatically passed on to provincial and federal agencies. As a result, they were able to provide only current year statistics in tabular format. However, we were able to obtain GIS maps of calls for service in a one-month period in 1998. The tabular information that was provided was broken down by atom for those atoms surrounding existing and proposed SkyTrain station locations. An atom boundary reference map was also provided.

Neither Surrey nor Coquitlam RCMP currently has the ability to use GIS technology for crime analysis of crime data. Both of these detachments, however, were eager to assist in any way they could with the data they had available. As a result, Surrey RCMP provided tabular data for the atoms surrounding existing Surrey SkyTrain stations for the period 1996 and 1997. Coquitlam RCMP was able to provide tabular atom-level data for all policing districts in Coquitlam. An atom boundary reference map was also provided.

Port Moody Police were also only able to provide atom level data for the atoms surrounding proposed station locations. An atom boundary reference map was also provided.

8. Source: BC Transit Safer City Task Force SkyTrain Station Safety Audit

In preparing this report, SRG approached several agencies in search of local studies and research material relating to the safety and security of the existing SkyTrain system. British Columbia Transit Corporation (BC Transit), SkyTrain, municipal governments, and policing agencies throughout the GVRD were consulted and written documentation or materials were requested to address specific safety and security considerations within the stations, on station properties, and on the trains themselves.

The information has been used to study observations and security and safety enhancements that have already taken place, to understand which of those measures were successful and which were not, to help identify the nature of station areas which are perceived to be more or less fear inducing than others, and to isolate characteristics which would make them so.

The majority of the documented information came from research conducted by various BC Transit bodies as well as from the Vancouver Safer City Task Force. In addition, local academic research studies were collected, field observations were undertaken, and materials were obtained that addressed local issues related to SkyTrain security. Additionally, interviews and focus group meetings were held with BC Transit Security and SkyTrain personnel to gain a more complete understanding of how previous recommendations were implemented and their relative successes or failures.

### Current Security Systems and Operations

Clearly, attempts have been made in several areas to continually upgrade security and safety measures in station environments and on the trains. To fully understand the current state of physical and operational security, a brief overview of the current overall security infrastructure is important.

**Physical Security**

**Fare Payment**

SkyTrain operates on a proof of payment fare system and has no barriers or controlled access for station entry. This allows unimpeded access and patron flow to station platform and trains on the basis that proof of payment is required to be carried at all times while in the Fare-Paid Zones. Fare-Paid Zones are clearly marked using signage, but are not separated by any physical barriers. Any pre-purchased BC Transit fare media...
including transfers or monthly passes is appropriate for presentation and single trip media or day passes can be purchased using cash from the automated ticket vending machines (TVM's) located at the station entrances.

CCTV System

The SkyTrain system is equipped with an extensive CCTV system that is monitored, controlled, and recorded at SkyTrain Operations Centre by Control Operators. 447 cameras are currently in operation throughout the 20 stations and the Operations Centre. This system has been upgraded several times since the system went into service in 1986. Among the upgrades was the removal of an obsolete switch system, the addition of 150 cameras, replacement of all out-dated tube-type cameras with modern CCD technology, and introduction of video logging multiplex system which allows for continuous recording of 211 cameras. SkyTrain made the choice of keeping black & white cameras due to their performance in low and variable lighting conditions.

All cameras are recorded in interval cycles at the Operations Centre. However, only a two-hour time window is provided before these tapes are recorded over. Also, only manual capability exists for continual spot recording of a particular image when an alarm is generated.

Emergency Duress Alarm System

SkyTrain currently operates an emergency communications system. There are 2 emergency telephones located on each station platform within the designated waiting area. Additionally, there is one phone located at each end of the platform at the blue light station (although signage is not clear). On each train car, there are 2 passenger intercom panels as well as a silent alarm strip that runs the length of each side of each vehicle. The emergency telephone, as mentioned, is located in an emergency cabinet. Inside this cabinet, there is also a button that will stop the train in an event of an emergency. The cabinet itself is tied to an alarm that will generate a signal to the Control Centre if simply opened. This provides an opportunity for the operator to investigate the incident even if the emergency phone is not used.

When the silent alarm strip is activated on the train, Control Operators can “dial-in” to that vehicle to listen to whatever might be occurring. People on board the vehicle have no indication they are being monitored and such monitoring typically continues until a staff member can attend the train. A flashing light on the outside of the train will signal which car the call was initiated from.

The passenger intercoms allow two-way voice communications between the train car and the Control Operator. This can be particularly effective if a medical emergency occurs.

Communications System

The primary method of communications between SkyTrain and BC Transit Security staff is through the use of two-way hand-held radios. Cellular phones are not used by SkyTrain Attendants (STA’s), partially due to the limited cellular reception capabilities within the stations. According to SkyTrain Control Centre, there are a sufficient number of radio signal repeaters throughout the system and, as a result, few “dead spots” exist in radio transmissions.

Operational Security

A review of staffing on other transit systems (Section 5) sends a clear message that the public welcomes the presence of uniformed transit and security staff. What
differentiates the Canadian and American systems is the volume of staff, the empowerment of that staff and, in the case of some American systems, the armed response capabilities of that staff.

One of the weaknesses of the existing SkyTrain system, both from the perspective of combating active crime and dealing with fare evasion, is the enforcement limitation placed on SkyTrain attendants (STA’s) and on SkyTrain Security personnel.

BC Transit Security Special Provincial Constables have the authority to arrest and detain offenders, with the intention of turning them over to jurisdictional police. Currently, jurisdictional police departments collectively have an opinion on increasing authority for the special transit constables, some rejecting the notion.

BC Transit Security Special Provincial Constables pro-actively enforce fare evasion regulations on a regularly scheduled basis. Enforcement usually occurs through on-board inspection, where the constables and fare inspectors board the trains and request proof of payment from each passenger. Currently, those who are found to be evading fare on the trains are issued a fine of $46.00 under the BC Transit Act, a provincial statute. In industry standard terms, this penalty is minimal and BC Transit Security are recommending the fine be raised to $150.00, comparable to fines in other Canadian cities. Although there is no zero tolerance policy in effect, Special Provincial Constables are encouraged to be firm with these penalties. The BC Transit Act and accompanying regulations do give the constables the power to refuse service to a passenger. BC Transit Security issued approximately 12,000 violations for fare-related offences in 1998.

SkyTrain Attendants are not authorized to issue fare violations, although they do request to see proof of payment, both on the trains and at the entrances to the platforms. Those without proof of payment are asked to return to the ticket vending machines (TVM) to purchase the correct fare. It is not the STA’s responsibility, nor are they mandated, to do more than advise customers on fare procedures. They are encouraged to take a persuasive approach rather than be confrontational. Each month, there are about 750,000 fare inspections documented at stations and on-board trains (100,000 on the trains).

While this approach relies on the good intentions of the travelling public, it leaves the system relatively vulnerable to habitual evaders who know they have little to fear from staff without enforcement authority.

**Fare Evasion Statistics**

BC Transit’s Fare Audit Survey estimates SkyTrain’s revenue loss rate due to fare evasion was 5.49% for the period between October 1997 and August 1998, up from 4.67% in the previous year. The system average rate (including SkyTrain, Bus, and SeaBus) for these two periods was 1.81% and 1.90%. Although the loss incurred by an individual incident is negligible, the aggregate effect can be substantial.

Figures available from the most recent Fare Audit Survey (October 1997 to August 1998) quantify the lost revenue for SkyTrain as $1.76 million. System-wide impact for fare evasion over the same period is quantified as $3.21 million. Although the total revenue loss is significant, the revenue loss rates indicated for this period are within the North American industry average for fare evasion.

**Staffing Levels**

By virtue of the automated system, SkyTrain operates without on-board attendants or operators. There is no current intention to staff the trains throughout all hours of operation. To do so would require a significant increase in human resources and thus tremendous increases in operating capital.

There are between 22 and 26 STA’s on duty at all times. The evening shift may operate in pairs, each pair responsible for 2 stations. Two other 2 person teams ride on the trains. STA’s are also trained in, and responsible for, first response first aid. Each person is responsible for a station even though they may team up during evening hours between two stations.

BC Transit Security has provided increased staffing levels during the evening hours. They currently have a minimum of 6 constables servicing the system during these evening hours. SkyTrain stations are large and staff members are expected to randomly circulate throughout. Considering this, it is quite reasonable to assume, and does commonly occur, that a passenger completes an entire trip without seeing a staff member.
CCTV and Alarm Monitoring

A team of 4 control operators staff the SkyTrain Control Centre, only one operator is actually designated to managing all communications and general station monitoring, including the surveillance of the 447 CCTV cameras in operation. Although the current infrastructure is appropriate for responding to alarms that are generated, the system is not equipped or staffed to engage in proactive security monitoring. Moreover, it is difficult to rely on the system for investigation purposes as recording capability only allows for two-hour tape-over, which severely limits the time window that may be necessary to retrieve a tape.

Incident Response

Currently, initial response to these alarms is provided by station SkyTrain Attendants. Dispatching occurs by SkyTrain Control Operators. If it is determined by the STA or the Control Operator that further assistance is required, BC Transit Security, or another appropriate agency, is dispatched to attend. Unless a disturbance is clearly visible, either by observing the platform camera images or by the STA on-site, the alarm is cleared and reset by SkyTrain Attendants without the knowledge of BC Transit Security. SkyTrain audits of responses to these alarms indicate that staff provide a response within 5 minutes (immediately or at the next station) for 84% of the alarms received. Due to current staffing levels, however, during non-peak periods of operation, it would be entirely possible for a train to travel 3 stations before an attendant is on the scene. In the case of incidents more serious in nature, the jurisdictional police are called to attend and work in cooperation with BC Transit Security, who act as a support agency to the jurisdictional police.

Studies and Reports

City of Vancouver Safer City Task Force

In 1992, the City of Vancouver Safer City Task Force was formed. This body produced a report that identified clear directives for improvements in the safety and security of the transit system. The report addresses safety and security issues both at SkyTrain stations and at major bus exchanges. SkyTrain stations between Waterfront in Vancouver and Scott Road in Surrey were reviewed during night time hours and audited based on a checklist including:

1. overall impressions
2. lighting
3. signage
4. sightlines
5. isolation – eye distance
6. isolation – ear distance
7. movement predictors
8. possible assault sites
9. escape routes
10. nearby land uses
11. maintenance
12. factors that make the place more human
13. overall design

The committee identified several physical security deficiencies and made recommendations based on lighting, signage, property maintenance, and general safety and security features, as well as several training and policy considerations.

Some of the most relevant observations with relation to the SkyTrain system were as follows:

Lighting was found to be somewhat better at SkyTrain stations than at outdoor transit stops, but was still insufficient at a number of stations:

- Lighting issues varied from station to station and were relatively inconsistent. (e.g. Some were observed to have satisfactory lighting levels, the distribution of light was seen to be uneven. Others may have displayed good indoor lighting, but poor outdoor lighting levels)
- Very few stations were seen to be well lit throughout.
- Those that were particularly poor in more than one area or aspect were Burrard, Waterfront, Columbia Street, Edmonds, Granville, Main Street, New Westminster, and Royal Oak.
• Those that were most satisfactory were 22nd Street, Joyce, Metrotown, and Scott Road (interior).

Scott Road Station Platform

SkyTrain has made lighting improvements periodically over the years, both inside stations and in the areas immediately adjacent to the stations. On some occasions, they have also worked with municipalities to improve street lighting on nearby streets and lanes. Although station lighting was built to existing code requirements of the day, lighting issues continue to be a concern. Retrofits are routinely being performed to improve lighting and eliminate deficiencies at the stations. Extreme care should be taken to establish effective lighting in new stations to include documented concerns.

The following general observations were made about signage at the SkyTrain stations:

• Most stations were found to have insufficient street identification and directional signs inside the stations.

• The height of signage, in many stations, is not appropriate for disabled persons in wheelchairs. In many cases, it was too high to be effectively observed.

• Signs in general were often found to be insufficient in size to assist the visually impaired.

• Signage is limited.

• Emergency signage was found to be generally unclear.

SkyTrain has modified most signage to remove the deterrence that was indicated for use of emergency telephones as some customers were afraid to use the emergency communications even when they had a real need to do so. Physically disabled customers are actively encouraged to use the phones to meet any special need they might have during their journey. In addition to signage improvements, SkyTrain has also revised the Passenger Safety and Security brochure to provide greater emphasis on the safety and security features that are available. These brochures are available on every car and are restocked daily, as required, when the trains go through cleaning.

The following general observations were made about visual sightlines in and around SkyTrain stations:

• The ability of passengers to enjoy clear sightlines varied from station to station.

• Many stations exhibited numerous examples of blind corners and hiding places near stairwells, sharp corners, walls, and bushes. The only stations in which these problems were not observed were Scott Road (inside), Metrotown, and Main Street.

• Poor lighting contributed to unclear sightlines.

• Security mirrors were a useful tool that could be used at many of the stations to enhance visibility.

SkyTrain has taken steps to barricade blind and void areas that could be used as hiding places and have attempted to remove or trim shrubbery that could also be used for covert activity (e.g. New Westminster station). Most of the problem areas that remain are products of the design of the stations and are, therefore, difficult to address. New designs should carefully reviewed to avoid unnecessary refuge areas.

The following observations were made about isolation of station areas:

• Security telephones and emergency systems decreased the feeling of isolation

• Security personnel were not present at many of the SkyTrain Stations.
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• Stations were felt to be more isolated if assistance was not within sight or earshot.

Due to the operating budget available to SkyTrain, it is not currently possible to staff each station at all times. As identified above, several steps have been taken to implement appropriate security technology to enhance safety levels at the stations and on the trains. While there is not always an attendant on the platforms, the platform areas are equipped with an extensive CCTV system that is monitored, controlled, and recorded at SkyTrain Operation Centre by Control Operators. However, the cameras are primarily monitored for operational purposes (track status, obstructions, etc.) and are used to respond to safety and security issues only when an alarm is generated.

There was a problem with vandalism of payphones at SkyTrain stations and other public installations, but this has largely been eliminated with the installation of the new Millennium card-reading payphones.

Example of Poor Sightlines and an Entrapment Space

It was observed that several SkyTrain stations were laid out in such a way that passengers’ movements could be too easily anticipated, and were therefore found to have movement predictors. Limited pedestrian routes and too many hiding places created predictor paths where passengers could be vulnerable to attack. Where this can create security flaws, limited routes can also be seen as an enhancement from a transit design perspective, as passengers are more clearly directed in and out of the stations. Adequate surveillance and prospect combined with movement predictors can maximize the positive effects from both perspectives.

Some of the most meaningful recommendations in that report that immediately followed from these observations were found from pages 20-23, and included the following initiatives:

1. Install security mirrors to enable passengers to see around corners, in stairwells, and in other hidden areas.
   - Mirrors were budgeted for at eight stations.
2. Create a “designated waiting area” on SkyTrain platforms close to emergency services or an emergency station in order to increase real and perceived safety.
   - Designated waiting areas were introduced at all stations.
3. Set minimum lighting standards for stations in order to improve sightlines and safety factors.
   - Increased overall lighting standards for transit stations have been implemented throughout the system, and have had the most noticeable effect at the Scott Road Station.
4. Develop clearer information signs for emergency services in SkyTrain.
   - Signage was enhanced at all stations.
5. Review planning policies for future SkyTrain locations to ensure that the design process takes into account safety concerns from a variety of perspectives, including citizen involvement.
   - This action was initiated, along with others, as part of a Transit Advisory Outreach process.
6. Ensure that there are emergency assistance systems accessible at bus stops locations in order to increase real and perceived safety.
   - Implemented at Scott Road Park and Ride only.

Recommendations that were not carried out at the time of this study are as follows:
1 Install outside surveillance cameras at SkyTrain stations.
   - Additional staffing enhancements were recommended in their place.
2 Install additional lighting fixtures, where necessary, to ensure adequate lighting, independent of adjacent private lighting sources, in walkways near stations.
   - Although numerous lighting issues were identified, additional fixtures were installed only for a few select stations and primarily in relation to the designated waiting areas and the bus loops at those stations.

BC Transit Safer City Task Force

Following this report, BC Transit formed its own Safer City Task Force Committee to formulate action on the recommendations that were presented in the above report. This group generated a report that added additional information on the recommendations, assessed budgetary requirements, and identified the feasibility of specific recommendations. The primary mandate of this group was to ensure that each recommendation made by the Safer City Task Force was acted upon, either through implementation, additional research, deferral, or elimination. Thirteen of the thirty recommendations made in the BC Transit Safer City Task Force report were found to be consistent with those made in BC Transit’s Operational Safeguard report from 1993.

Overall, the committee acknowledged in its report that a majority of safety and security deficiencies that were identified could be corrected through the elimination of isolation/entrapment areas and the implementation of CPTED, or similar, principles, the provision of adequate lighting and signage, ensuring unimpeded sightlines, and the installation of emergency communications systems.

Many of the observations made in the original City of Vancouver Safer City Task Force report were problematic to correct with retrofit features because they were due to the physical design of the stations themselves. Poor sightlines, feelings of isolation, and the existence of predictor paths are the most difficult issues to address because these are integral to the original design. These issues were approached instead through initiatives such as lighting improvements, the addition of mirrors, improved signage, and the creation of designated waiting areas.

Follow-up

A focus group meeting was held between SRG and members of BC Transit Security, during our study process, to review the Safer City initiatives and to make determinations on the relative success or failure of those that had been undertaken.

The overall opinions of the effectiveness of some of the main initiatives to date are identified below:
Signage

Significant improvements were made to signage throughout the system, especially identifying security or emergency services. Transit Security employees felt these improvements have been relatively successful but that further improvements should be made (e.g. Fare-Paid Zones should be more clearly defined at some stations with larger signage).

Designated Waiting Areas (DWA’s)

Designated passenger waiting areas were implemented at all SkyTrain Stations following the audit. According to staff, these areas have been effective in most cases. Staff find that passengers use them as they are located in an area of the platform that creates a natural congregation point.

Lighting

Despite several lighting improvements that were made, BC Transit Security Staff identified ongoing deficiencies in lighting quality in isolated areas at many of the stations. Stations without independent adjacent lighting sources appeared to be most problematic, and those that were of particular concern were those that are below grade or split grade stations, such as Waterfront, Burrard, Stadium, and Columbia.

Security Mirrors

Mirrors were added to several of the stations (including Waterfront, Burrard, Granville, Stadium, Broadway, 29th Ave., Patterson, and New Westminster) to increase sightlines and provide better visibility around blind corners. For the most part, BC Transit Security staff feel that these have been useful.

Findings

After a cursory review by SRG of the existing state of security systems and operations of the SkyTrain system, the following conclusions were drawn:

1. Fare evasion audits estimated revenue loss due to fare evasion on SkyTrain as being $1.76 million from October 1997 to August 1998 compared to $3.21 million system-wide. Enforcement is difficult, at best, due to the limited numbers of security staff available, and also to the relatively small penalty for infractions.
2. Jurisdictional limitations make it difficult to enforce fare payment and also make it difficult to apprehend or eject troublesome, abusive or dangerous individuals. Jurisdictional police have their own load of calls for service and transit infractions receive differential response based on the severity of the incident.
3. Although there is a comprehensive and updated CCTV system throughout the SkyTrain system for operations, several limitations exist that restrict the ability of the system to be used effectively for security purposes.
4. The SkyTrain Control Centre does not currently have full time dedicated security monitoring of the CCTV system.
5. The existing emergency duress alarm systems on the platforms and on the trains are effective and appropriate, however these systems are generally limited to specific areas on the station platforms and in the train cars.
6. Existing security communications systems appear to be adequate for their applications. Two-way hand-held radios are the primary communications devices used.
7. Current staffing levels of BC Transit Security and SkyTrain Attendants do not make it possible for each station to be staffed at all times. Current staff complements make it possible for passengers to complete an entire trip without seeing a staff member. Research indicates that consistently visible staff at stations reduces public fear and can lead to increased ridership levels.
8. Despite improvements, ongoing concerns were expressed with respect to lighting levels. Specific stations were cited as being of particular concern.

Notes

1. City of Vancouver, 1992
2. BC Transit, 1994a; 1994b
3. BC Transit, 1994b
4. Statistics provided by BC Transit from a source of the American Public Transit Administration and Canadian Urban Transit Association Statistics
Section 5: Learning from Other Rapid Transit Systems

A look at various transit systems across North America and in Europe reveals many similarities and also many differences in approaches to crime and security. This section examines security and safety related discussions held with representatives from each of the various systems that were studied, including those in Calgary, Toronto, Washington, DC, Atlanta, Portland, Dallas, San Francisco, and London, England. Statistical analysis is not possible as much of the information provided by these systems is anecdotal.

Overview

Solutions to the problem of crime and incivilities on rapid transit come at varying levels, from increased illumination and adequate signage to an overhaul of security staffing.

In a decade of environmental awareness, transit seems an obvious choice. Potential riders, however, will not compromise perceived safety. Many systems gauge part of their success on the level of choice riders (those with vehicles who opt for transit). Crime-reduced systems are not only necessary for an enhanced quality of life, but for transit as a business -- its insurance of success and revenue generation.

It must be kept in mind that fear has a monetary impact on transit systems. It is interesting, but not surprising, to note that some cities reported a higher level of fear among non-riders than riders. Human nature is to fear the unknown so those people with no experience of the transit system would have an image of it largely drawn from predominantly negative accounts, both anecdotal and media reported.

Perceptions of personal safety weigh heavily in the decision of patrons when they elect or decline to ride mass transit vehicles. It is, therefore, necessary, not only to protect passengers from injury and other abuse, but to sustain, enhance and promote perceptions of personal safety and comfort among the general ridership. Crime rates differ slightly between rail systems and the surrounding areas. Crimes against person remain fairly constant on the whole. Offences do not vary with the level of grade at which the stop is located. Though there is an increase in fear, more crime does not occur at underground stations. Assaults/drug trafficking offences tend to occur at stations situated near bars, malls and other attractor nodes. As is seen in the lower mainland, behaviour already present in adjacent neighbourhoods is simply mirrored on the system.

Crimes against person appear to be low in all but the most problematic stations found in North America. There have been some incidences of patrons being pushed onto the rail, though most violent crime involves theft/robbery. Assaults do occur but data suggests that this is often a result of intoxicated patrons and is usually not a random crime. Fear, however, is of concern as many riders overestimate the level and seriousness of crime.

Generally, American systems tend to rely on staffing methods to reduce fear and crime. Canadian systems appear to utilize design approaches, rather than increasing staffing and security personnel numbers.

Design

CPTED has been incorporated in the design of recently built stations, especially in Washington, DC and San Francisco, where regular system extensions are taking place. It is apparent that transit security professionals (police, private companies) are at least familiar with CPTED and implement the practice to the best of their knowledge. Practitioners have voiced concern that security/police involvement often does not come early enough in the design phase. To its credit, Toronto Metro Rail has all players involved as early as possible in the development process. Community Response Unit and Toronto Metro Police are included at the 10%, 30%, 60%, 75%, 90%, and 100% stages of the design review process.
Some systems, either in the newer stations or as retrofit, are target hardening to combat graffiti and vandalism. Scratchiti (etchings on glass) costs an exorbitant amount of money to repair or replace. Toronto Transit Commission has been faced with a $2 million cost to replace 10,000 pieces of damaged glass. A popular method to reduce this problem is the placement of a plastic laminate on windows as it allows for ease of repair at a lower cost. Porcelain enamel panels and tiles are used in Calgary (and in Vancouver at the Burrard and Granville SkyTrain stations) to aid in the removal of graffiti. The higher initial cost is offset by its maintainability.

All systems use CCTV to varying degrees. Some utilize the technology strictly as a deterrent and apprehension tool as the cameras roll tape, but are not monitored. Others have cameras monitored by a central area, as is the case with SkyTrain, that also receives emergency telephone calls and has the ability to dispatch appropriate personnel. All systems studied have emergency communications devices on both platform and trains. In addition to panic phones and CCTV, multiple exits are another design feature necessary for alleviating fear and increasing safety. Patrons need to feel as though they are not trapped on platforms and have options upon exiting a train. Giving a rider the ability to avoid an unwanted situation, (e.g. by not having to walk past the panhandler) greatly empowers him or her and reduces anxiety.

The type of station environment itself affects fear of crime among passengers and influences perceptions of actual crime levels within the stations. In general, the station-type that has the most potential for fear of crime is the underground station, although actual crime statistics do not support an increased risk of crime in these station environments. No matter what kind of station environment is required for each station location, effective design techniques can be used to enhance safety and reduce fear. Whether a station is built 25 meters below grade or 10 meters above, generous use of open spaces, good lighting, clear sightlines and an optimal number of access and egress routes will be effective in reducing fear levels, no matter what the environment.

**Security Personnel**

All systems have both uniformed and plain clothed security whose primary focus is assuring patrons and alleviating fear. Riders want to see security, and for many rail systems, client concerns are paramount. Whether or not this type of resource is the most cost effective in reducing crime, the uniformed presence does ease patrons’ minds and increases choice ridership. Canada has not yet developed a police-reliant mentality like the United States, so budget allocation for policing has been limited.

One transit authority states that it is difficult to allocate funds to address perceptions of crime versus the reality of crime. “It is important to recognize that public tolerance for a lack of protection is limited...”

Some authorities are encumbered with poorly designed stations, long-established archaic policing practices and bureaucratic hierarchies that impede innovation and change. An understanding of policing practice is necessary to ensure success. Often frontline workers are not informed of the philosophy behind the actions:

...Transit officers take action on every observable rule violation, a practice he called ‘taking care of the small stuff so the big stuff doesn't follow’... officers may dislike writing citations for minor violations as much as bus and subway patrons resent receiving them. However, the officers understood that their duty of protecting passengers and promoting perceptions of safety and comfort relied on challenging all violators of the law. Remarkably, many regular riders applauded this effort of zero tolerance then and now.

**Broken Windows**

Incidents of vandalism and graffiti have been high on all transit lines, usually occurring both on board the train and on the outside of the cars. Such actions serve to raise some of the young perpetrators’ self-esteem, by allowing everyone to see their names and work circulating around the city. At the same time, this graffiti has negative impacts on the travelling public who connect graffiti with more serious crimes and maintenance problems. This type of crime also generates fear in riders. Transit authorities have identified graffiti and vandalism as stepping stone for future and more serious crimes.

The Washington Metro Transit Police force (Washington DC), as an example, subscribes to George Kelling’s “Broken Windows” Theory. Advocating quick removal of graffiti, repair of vandalism and little tolerance for broken transit bylaws, encourages an environment free of infractions that are more serious. Tackling incivilities of a minor
nature has the effect of portraying a caring, crime free system. It has been demonstrated that the public equates litter, vandalism and general disrepair with crime, and therefore fears such areas.

Examples of this theory in action include:

• New York’s removal of trains from the system as soon as vandalism is detected. By removing this artwork from view, the perpetrator is unable to have his or her work noticed by others
• Toronto’s issuance of by-law tickets for smoking and loitering
• Portland’s combating the problem of urination in elevators
• London’s specially designated “no drink” trains to reduce public drunkenness on railways

This seemingly tough approach is a relatively simple way to reduce fear without employing an excessive amount of armed officers.

Some systems approach these problems on a case by case or station to station basis. In Portland, loitering, for example, may be tolerated in some areas but at stops near high schools, it is forbidden. The need to prohibit congregation by youth is fuelled by a desire to discourage drug trafficking, prostitution and graffiti often associated with that age group.

SkyTrain has a zero tolerance attitude to graffiti and trains have been pulled from service for graffiti removal. Modifications are required around some stations, for example at Burrard Station, to discourage skateboarding and the damage it causes to benches and planters. The area around the station, however, is Vancouver Park Board property, and the responsibility for its repair and modification belongs to VPB.

Station Locations

Types of crime vary between stations and trains and surrounding properties, such as park and rides and storage yards. The stations are more likely to have panhandlers, beggars, transients, drug addicts, robberies, assault, pickpockets and prostitution, as well as fare evaders. On the other hand, occurrences on the trains themselves are more likely to be related to vandalism, graffiti, and the recently popularized etching, or *scratchiti* (refers primarily to scratching graffiti on glass). For the surrounding areas, such as park and rides and rail yards, the crimes tend to include vandalism, auto theft and in some cases, assaults.

Literature suggests that it is difficult to tell where the crime originated...was crime overflowing from the station or was crime influencing the station from the surrounding area? As each station has a different surrounding environment, this is a difficult question to answer. In the case of the Port Authority Transit Station in New York, for example, it is the crime and potential offenders coming in from Times Square, for warmth, shelter and a place to do illegal business which is seen as the cause of station crime.

Many cities report stops near high schools as being particularly problematic because of the aforementioned issues which involve students. Criminals know their target groups and will actively seek out these areas. It is imperative that any stops placed in areas where youth congregate are proactively researched and thoroughly policed to deter a hotbed of unwanted activity.

There is some discrepancy as to the desired location of stops in various areas. Calgary reports increased problems with the transit end points, or termini, both of which are situated in mixed-use areas. Other systems, however, recommend that transit stations should lie in such areas as the increased surveillance reduces crime and incivilities. Shops open late add an additional set of eyes on the street. Fear is often higher at these stops due to the sparse presence of users and feeling of isolation. Conversely, in San Francisco, land value around light rail transit areas has increased dramatically for both residential and commercial developments.

Commuter Parking Lots

In many cities, Park and Ride facilities are characterized by large, multi-layered lots, which allow for blind spots and therefore increased crime. Crimes in such lots include prostitution, car theft, theft from vehicles and drug selling. Many such lots have been taken over by the criminals and legitimate users are afraid to leave their cars in the lot.

Often parking lots are without security, surveillance, or boundaries, such as fencing. Mancini and Jain (1987) stated that there are three conditions that contribute to crime in station lots; isolation; lighting; and level of authorities, especially when it comes to outer transit property such as car parks. With car parks, there is often isolation from public...
view, which limits the potential for surveillance by onlookers. The lack of lighting or inadequate lighting has been seen by police and criminologists to be a contributing factor to increased crime rates. Also, the level of police authorities and activities directly affects crime. If there is no authority present then the opportunity for crime is much greater.

Park and Ride facilities were seen as extremely problematic on every system. Response to this epidemic ranges from none, (it is not the responsibility of the rail system), to patrols and parking attendants. A representative from one system feels it may be necessary to charge for parking in order to fund an attendant to reduce the theft problems.

Some recommendations for a reduction of incidents in commuter lots include:

- Parking lots placed in areas easily seen by surrounding buildings and houses
- Fenced lots
- Low vegetation to allow informal surveillance from the street
- No pathways intersecting the lot
- Attendants and patrols are definitely desirable though costly

In the GVRD, park and ride lots are characterized by large, ground level lots. According to Barclay et al. (1996), these commuter parking lots were seen as crime ridden. Increasing patrols and lighting levels enhanced the security and surveillance potential, which helped to reduce incidents and fear during the period of increased patrol.

Fare Evasion

Fare evaders have been a problem in almost all transit systems, causing serious losses in revenues. Annual revenue lost to fare evasion can easily amount to millions of dollars and can greatly affect the overall operating budget of the system.

The most common forms of fare evasion with honour-based systems of payment (e.g. SkyTrain) include simply not purchasing a ticket, posting insufficient fare, using fare media for illegal round trips, presenting expired fare media, and presenting fraud or counterfeit fare media. However, a number of these methods are also common to bus systems as well.

In those systems where controlled access exists, fare evasion can be minimized, but not eliminated. Methods include turnstile vaulting, the use of slugs in the turnstiles, or paying less than the full amount. Turnstile vaulting has led to an increased level of fear, as it is a good indicator of deep-seated disorder and gives the public the impression that there is little control over lawbreakers. New York and London have both had serious problems with fare evasion. In London, the use of slugs was the problem and in New York, it was the use of slugs, turnstile vaulting, and double entry (where one person squeezes through the turnstile with a legitimate rider).

Community and Employee Involvement

Many transit authorities feel that the key to transit success lies in the inclusion of the public in the decision-making process. By encouraging participation, transit hands partial ‘ownership’ of the sites to the community. Residents who have had a say, a hand and voice in the process, take pride in, and responsibility for, the area. This simple principle not only reduces fear but also incivilities, crime and general deterioration. A potentially lackadaisical attitude of “not my problem or concern” is converted into quick reporting and little tolerance of decay.

This inclusion holds true for employees as well. Key players are left out to the detriment of the project.

Summary

Transit systems, like the cities they serve, will never be crime free. Such a Utopia is unattainable in metropolitan areas where transit stations are gathering points for communities. Stations absorb surrounding crime, crime that is generally present at the outset. Where people from different walks of life, with varying opinions, attitudes and life experience cross paths, there will always be challenges to a peaceful existence. One practitioner summed up the issue of crime and incivilities on transit quite appropriately. He challenged the finger pointing often directed at mass transit and questioned to what extent transit is the problem, and to what extent it is the excuse.
A detailed examination of each system follows. Data was gathered anecdotally from professionals in the area of safety and security. Police, security (management and practicing), property developers and transit officials were interviewed by telephone with supplemental reports, studies and statistics forwarded and examined.

System by System Review

**Washington, DC (WMATA - Washington Metro Area Transit Authority)**

Washington Metro Area Transit Authority (WMATA) rapid transit system is a well-established, well-designed transit system that has been in operation since 1952 and continues to add extensions to its line regularly. The system currently operates on 103 miles of track with 84 stations to serve the 1.5 million daily riders.

The mission statement of the Washington Metro system is the protection of patrons and operating personnel, protection of Metro property and of revenues generated by the system. Metro services three different states (D.C., Maryland and Virginia) which encompass numerous counties, each with its own set of laws and by-laws. Due to this, WMATA felt the need to have standardized transit by-laws that would be enforceable everywhere in the tri-state area.

These by-laws are fashioned after the “Broken Windows” theory and even minor incivilities are not tolerated. The by-laws are strict and infractions are often not a high priority with the local police departments. They are however, aggressively enforced by transit police with warrants being issued and followed up on.

The police force is comprised of 298 uniformed and plain-clothes members who enforce ordinances and regulations of both the state and transit authority. Originally run in a paramilitary fashion, it is evolving into a community policing oriented organization. The job of transit cop is a career as opposed to a job that is a stepping stone to another career goal. One document insisted that 500 people are screened for each position.

Transit police are organized in similar fashion to local departments with a mountain bike and motorcycle unit, foot patrol, dedicated auto theft unit, under cover drug team and canine unit. Both transit police and other rail employees are trained in the basics of bomb detection. On average, one member is assigned on foot to patrol 3+ stations including platforms, mezzanines, parking lots and trains. In addition to transit police, each station is equipped with an attendant booth and staffed with a station attendant to monitor activities and provide customer service.

Coupled with their policing approach is innovative architectural design. Underground stations have high, vaulted ceilings and openness about them. Arches are used instead of columns for support, as they do not impede sightlines. Spacious, pleasant environments are desired (although some stations are viewed by some as too dark). This is a relatively new, functionally designed modern system, believed to be unencumbered by design characteristics that aid and abet crime.

To this system, change is the key. Crime and incivilities are not static, therefore nor are the prevention measures. Architects and engineers studied systems world wide for safety and security and incorporated the best designs at that time.
Learning from Other Rapid Transit Systems

CCTV cameras are found on trains and platforms and all are monitored. However, these images are not recorded for investigation purposes. A concerted effort to reduce niches and dark spaces was made in the station design process. Panic alarms and telephones communicate directly with the transit operator who directs the concern to the appropriate agency (police, fire or ambulance). Serious, life-threatening calls can go directly to the police dispatcher. Trains are equipped with silent alarms that also trip an exterior, flashing light on the outside of the car. Operators and police share two-way radios.

Though trains could be fully automated, feedback from riders has demonstrated that they prefer the presence of a driver. Though driving, stopping and starting are computerized, drivers are present to close doors, deal with emergencies and make announcements on arrival and departure.

Fare is dealt with in one way, through magnetically encoded swipe cards. The smart cards are purchased outside the stations’ fare-paid zones and can carry as little as one fare amount on them. No access to or exit from platforms is gained without a valid card. Electronic turnstiles open once a valid card is inserted. Lost cards can be deactivated and new cards reissued.

Crimes against persons do occur and usually take the form of armed robberies. Purse snatching occurs primarily on paths from transit in residential areas. Drug trafficking does exist, as the system is a conduit between three states. Undercover operations are carried out when necessary. Prostitution is found at bus stops and not at rail stations. Pickpockets are prevalent particularly in busy stations. Loitering is a problem with youth at times when school is out. Juvenile patrols are made during these times and loiterers are asked to move along. Few problems result as youth catch the next train or leave the area. Vandalism and graffiti seem to be associated with this age group. Metro has strict policies for reporting and repair of damage. Authorities stay on top of the problem and graffiti is removed within hours of detection.

Problems are not based on the grade of the station but are correlated with the level of activity in it. Surprisingly, with its strict approach to incivilities, panhandling is tolerated at the stations in Washington. Transients are permitted to not only loiter, but to approach riders providing it occurs outside the station itself. Aggressiveness is forbidden and those who harass patrons are removed.

Theft from and of auto is problematic in commuter parking lots and attention to this is a secondary yet essential function. All 40 lots and 4 garages are toll. The use by 37,200 autos funds the attendants in the morning and at night and patrols by transit police are made sporadically. Lots are fenced in and lighting levels have recently been upgraded.

Washington Metro authorities have indicated that although ridership has increased, incidences of crime (especially crimes against persons) have decreased. Fear of crime is targeted as it weighs heavily on one's decision to ride the rail system. Perceptions of safety are promoted through public relations campaigns and visual presence of police.
Washington Metro authorities believe that a number of things contribute to the success of this system. A good reputation for extreme safety is paramount. Liaison with the courts is done to ensure that public violation of by-laws and fare evasions are prosecuted to the fullest extent. Warrants are actively sought by transit police. A zero tolerance approach is necessary to prevent little problems from becoming larger ones.

Environmental criminology is important in design of station and police members have a basic understanding of CPTED. Change and training are essential. Advice to other agencies includes good initial design of stations that deter crime and inhibit fear. Security and design should not be discounted. Security of stations should be professional and like design, one gets what one pays for. Washington Metro advises other transit systems to reduce, as much as possible, their expectations that security issues will be handled by local police departments. They stress self-reliance and point out that problems experienced on transit systems are rarely a high priority with jurisdictional police whose own resources are spread thin.

Rumored to be one of the safest systems in the world, this system appears to encompass both good management style and innovative use of architectural design.

**Toronto (TTC - Toronto Metro Rail)**

Toronto Metro Rail is a system that has been in operation since 1954, with the most recent extension completed in 1995. It consists of 69 stations with a 5km expansion scheduled for 2004. The system services approximately 1.2 million passengers per day, operates on a 24-hour schedule, and is driver operated.

There is extensive information on crime and incivilities collected by corporate security for Toronto Metro. The basic philosophy of the security department is one shared by New York Subway. The “Broken Windows” approach attempts to take a proactive stance to crime and fear by targeting incivilities. By-laws such as smoking and loitering are addressed aggressively for fear that these activities lead to greater incidences of crime and apprehension on the part of legitimate users.

This system is policed by Community Response Unit, a team of 57 sworn, uniformed and plain clothed special constables equipped with batons, handcuffs, body armour and pepper foam. All are CPTED trained. Of the 57 members, 40 operate in the field. Security has just approved the implementation of 10 additional members.

Toronto appears to suffer the gamut of crimes and each one is dealt with on a case by case basis. Sources from TTC were able to provide a broad overview of incident statistics that occur on their system, however accuracy of these numbers and reporting methods are unknown and should be judged accordingly.

TTC reports the following numbers of reported crimes:

- 1996 – 1,070 thefts (primarily pickpockets and purse snatching)
- 1996 - 436 thefts from autos
- 1997 – decline to 918 thefts
- 1997 – decline to 294 theft from autos
- 1997 – 84 sexual assaults (encompasses sexual and unwanted touching)
Learning from Other Rapid Transit Systems

There are 23 commuter parking lots in and around some of the stations. Though the transit authority is not technically responsible for the safety and security of them, they have worked in conjunction with the local police department conducting surveillance and sting operations. This may account for the 33% reduction in thefts from 1996 to 1997.

There have been 5 incidences of people being pushed off of platforms. One suspect was mentally unstable and remained on scene. Indecent acts in washrooms also occur and are dealt with as swiftly as possible.

There is a great deal of youth loitering and gang related activity including robbery, assault and theft. This occurs around stations near high schools that, in turn, are targeted more rigorously by constables. Additionally, graffiti and vandalism is high. One TTC employee reports that 10,000 pieces of glass need to be replaced because of scratchiti, at a cost of $2 million. One constable documents damage and enters this information into a database. This is done to enable quick removal as well as aiding in prosecution of offenders.

Under the umbrella of Security, there is also an Operator Assault Task Force. The purpose of this group is to address assaults against employees including janitors, ticket takers and constables. A review of the event is done with recommendations and counselling offered. All front line workers receive security procedures training and compliance to these guidelines is reviewed. For example, employees are instructed to avoid interfering in domestic situations due to the level of danger associated with them. If such intervention does occur, actions and policies are reviewed on a case by case basis.

Additionally, there is a Corporate Recognition Program that acknowledges voluntary acts of heroism by both the public and paid employees.

Station design is constantly being retrofitted with new measures to address problems. Designated waiting areas have been designed to encourage safety and reduce fear in riders. Each area is equipped with benches, increased lighting, emergency telephones, and CCTV cameras monitored by station collectors' booths. Stations are also equipped with parabolic mirrors to reduce blind corners. Designers and landscapers are well aware of the need to maintain vegetation and this is never a problem. Security has input at all phases of station design in the review process, including landscaping.

Trains are equipped with passenger assistance phones that alert the driver who directs the call to security where the problem will be investigated at the next stop. A light flashes on the car that signalled the disturbance in order to notify security of the origin of the incident. It is then ascertained whether it is a medical or police emergency. Toronto removed warning signs from phones that indicated that improper use would result in monetary fine or imprisonment. It was felt that many legitimate problems were never reported due to fear of repercussions. Signage at these points now reads “penalty for misuse”.

Pamphlets and leaflets are available on trains to educate riders on how to obtain help. Security does liaise with the media on crime related issues. For this, Toronto Metro is thankful as information comes directly from the source and the issue is adequately addressed without instilling unnecessary fear. Security audits of public perception are done regularly. One recent audit demonstrated that women feared riding transit after 2200 hrs. Though there is not an increase in incidents at night and the fear is generally unfounded, the apprehension is real and therefore, needs to be addressed.
Learning from Other Rapid Transit Systems

Toronto Metro believes more funds need to be made available for a more prominent uniformed presence as well as public education. Part of the success of this system is the proactive stance that corporate security takes. Public awareness is paramount.

Recommendations for other systems include investment in a highly trained team of staff. Training needs to encompass CPTED principles, proactive approaches and technology.

Calgary (C-Train)

The Calgary LRT is a driver operated, above grade rail system consisting of 31 transit stops along its route. The system was built in four phases and was completed in 1981. It services approximately 91,000 passengers per day, operating a schedule of approximately 20 hours per day.

Protective Services appears to be the main form of crime prevention. This is a group of 28 uniformed and 4 plain clothed special transit constables whose jurisdiction includes the trains, buses and platforms. They do not have the power of arrest and cannot enforce criminal code infractions but ensure adherence to transit by-laws. This integrated transit system runs 24 hours, 7 days a week and Protective Services does the same. Members work out of a central location and are fully mobile.

In 1997, 13,000 summons were issued for by-law infractions. For the year of 1998, up until August, 8400 summons were issued, of which 6400 were for fare evasion. This transit authority uses an honour system of fare collection which is supported by fare inspection to deal with fare evasion. The penalty for violation is a $150 fine.

Calgary transit authorities claim few incidents of crime and incivilities, which one subject attributes to enforcement and another to design. In 1998, there were 20 reported incidents of crimes against person system wide, including buses. This system deals on an ongoing basis with drunks and has few problems with panhandling and prostitution (there have been however, some complaints of harassment of young girls by pimps). Drug dealing is rarely seen or reported. Plain-clothes officers occasionally witness such incidents, but as it is a criminal code offence any information is passed on to Calgary Police Service.

Loitering is a problem, particularly after school. To counter this, there is an overlap in shifts of the transit constables and platforms are “blitzed” with uniformed presence. Youths are simply not allowed to hang around and compliance is the norm.

Theft from auto and theft of auto is a problem as it is in most Canadian urban centres. Transit has done what it can but resources are limited and vehicle safety is not the highest of priorities. The Canadian Corps of Commissionaires has been utilized in an attempt to alleviate the problem. Three mobile units operate 5 days a week patrolling the lots. Additionally, 20 Calgary Transit Employees who are on disability, make up a “Vandalism Awareness Team” and they too, patrol the lots between 0730 and 1230 hrs.

There are over 200 cameras on the platforms and trains and all are monitored and taped. Help phones are also present in both places and are monitored by an operator at the CCTV site. Surveillance is also enhanced by the presence of concession stands at the stations. Though it is hoped that the vendors will make money, reality is that they struggle to break even. Transit offers attractive financial considerations to offset this in exchange for an additional set of eyes on the site.
Fear is reportedly not an issue. A survey conducted of riders showed that most riders are not fearful of riding transit yet there is a small minority who are vocal about their fear concerns.

The termini are the largest and most problematic of stations with both ends of the line terminating in mixed use areas, one by a shopping mall. The transit authority, however, encourages stops located in mixed-use areas.

Graffiti is minimal at Calgary transit stops. The design engineer has incorporated CPTED into every facet of the stations. The subject believes that target hardening, ownership and surveillance are imperative. Graffiti and vandalism-resistant material, including porcelain enamel panel and tiles, and textured stainless steel, was used. The last stop designed was described as “a really classy place that deterred disrespect and abuse”. Designers went the extra mile putting in decorative features such as granite walls and stainless steel lattice handrails.

Community groups were consulted and included in the design process. A budget and recommendations for landscaping were handed down. An urban landscaper facilitated workshops and discussion groups resulting in beautiful landscaping that the community had pride in and took ownership of.

All stops have 2 exit points, high lighting, are well maintained and have no hidden niches. These simple features go a long way in reducing fear in users.

Atlanta (MARTA-Metro Atlanta Rapid Transit Authority)

The MARTA system in Atlanta, Georgia is a driver operated system consisting of 36 stations and a total of 182 miles of rail. Its last rail extension was completed in 1996, the system services approximately 107,000 passengers daily, and operates 20 hours per day.

As with most American systems that were reviewed, MARTA relies heavily on their security department for crime prevention. The force consists of 300 uniformed, plain clothed and special operations response teams (for acts of terrorism). Members are armed and have full powers of arrest.

Fare evasion is present, though expressed to be not terribly problematic for the MARTA police. Turnstiles are used to gain access to platforms after tokens are purchased from vending machines.

It is believed by staff that the most important aspect of security is the presence of uniformed members to reduce crime and alleviate fear. MARTA listens to its patrons’ concerns that indicate a desire for human, as opposed to technological, crime prevention methods. Therefore, after 1500hrs, there is an officer on every train.

Crime rates vary by location and are not based on the grade of the platform. Park and ride sites are found at some locations but are handled by the state and are not a concern of MARTA.

Design of stations appears to be of less importance due to the presence of uniformed members. Platforms are equipped with unmonitored, 24 hour recording CCTV cameras. It was mentioned that CCTV cameras were not found on trains due to the presence of the police. Panic alarms are found on both the platforms and trains. Vegetation surrounding stations is kept low and maintained to inhibit any criminal activity. A lighting survey is currently being undertaken with the aim of improving illumination in and around the system. Stations are designed by engineers with MARTA advising on security issues. Police members have some CPTED training.

In summary, it is believed that the most important aspect of security is to listen to the patrons. In this case, riders wanted to see uniformed members doing patrols. Improvements to this system were not discussed as it was deemed a management issue.

Portland (TRI-MET)

The rapid transit system in Portland utilizes driver-operated, two-car trains on a track that spans 33 miles. The system was just recently completed, in 1998, over 2 phases of development. The system serves 60,000 passengers daily, and operates various schedules spanning 24 hours per day.

This transit system uses the honour system of fare collection and has both uniformed and plain clothed roving fare inspectors. Fare evasion is reportedly less than 5 percent. Detailed sweeps are not done, however, when conducting fare inspections.
Local police are contracted specifically for the rail system. There is both uniformed and plain clothed presence. In addition, a community advocacy group, paid for by transit, rides the rail. This presence enforces transit use by legitimate users, increases safety and reduces fear. This program originated as a group of people with concerns and evolved into an active advocacy group.

The subject reports that crime along rails is hard to track as statistics are lumped in with other areas. It is stated, anecdotally, that serious crime does not increase near the rail, however property crime (such as vandalism and auto-related theft) is higher.

Park and ride facilities do not exist in the inner city. The lack of car parks (there are 3800 spots available) appears to be a bone of contention with riders. Reportedly, the lots are a “virtual shopping centre” for thieves and one solution may be to incorporate pay parking in order to fund an attendant and security.

Crimes against persons are low, though there have been a very small number of cases of riders being followed, one murder, and a sexual assault. Loitering is a problem in the stops near high schools. Graffiti, vandalism and scratchiti are related to that issue. Resistant materials, such as plastic laminate on windows, are used so that removal is possible and less expensive. Incivilities, such as urination in elevators, are also problematic.

Police target hotspots at rail stations, however Portland appears to have more problems with their bus system than with rail. Drug trafficking at city bus stops is frequently reported yet little, if any, is seen on the rail system.

Fear is greater amongst non-riders than riders. One staff member believes that to allay patron fears, more money needs to be spent on visible security. The problem is that it is difficult to justify spending money on a perception versus a reality of crime.

The subject believes that the system is successful due to the number and composition of riders. Use by choice riders (those that have a car but opt for transit) is increasing. Riders in the upper socio-economic classes appear to choose rail over buses. The crime rate is not increasing with the expansion of the rail system and major problems appear to occur in lower socio-economic neighbourhoods.

Earlier police involvement in the design of the station should have occurred. This would have helped to decrease the amount of retrofit necessary with some of the stations. Good community relations are necessary in order to have the public on board.

**Dallas (DART-Dallas Area Rapid Transit)**

Completed in May 1997, this rapid transit system features 20 stations over a 20-mile track that spans 13 different cities. The system serves approximately 40,000 passengers daily, operating 19 hours per day.

This system appears to be comparatively trouble free. A representative of the transit authority attributes this lack of problems to a heavy, authoritative presence. DART employs its own police force whose members carry firearms and have powers of arrest. There are over 100 uniformed and plain clothed members.

Primary method of payment is through a vending machine honour system. Fare evasion is reported as low (% unknown) with heavy police presence cited as the cause. The fine for fare evasion is $85 accompanied by removal from the train.

Numbers of reported crimes against persons is insignificant, prostitution and drug trafficking are apparently non-existent and the city enforces a zero tolerance approach to panhandling. Loitering by teenagers appears to be the most prominent issue. Another city subscribing to the “Broken Windows” approach, Dallas takes a proactive stance on graffiti and any damage is rectified immediately. Protective spray is used on surfaces to ensure easy removal. According to staff, there is no vandalism on trains themselves.

None of the downtown stations have park and ride facilities and with the remaining thirteen of twenty stops, there is a level of theft from and of vehicles. In the more problematic lots (those with over 900 spots), private security conducts patrols until the thefts diminish. When the problem returns, so do the patrols. This appears, however, to be somewhat of a Band-Aid solution.

There are no CCTV systems at any of the sites or on the trains. A transit representative informs that there is a uniformed member on every train which alleviates the need for cameras. Trains are equipped with panic telephones that signal the driver on the train who in turn notifies the transit police. A light flashes on the top of the rail car indicating
Learning from Other Rapid Transit Systems

the location of the problem. Because of problems experienced in other cities, doors to railcars no longer stay locked at cessation of movement. The unlocking of doors allows for escape if necessary.

Lighting has never been adjusted and has proven adequate. The only retrofitting necessary in any of the stations was to allow access for those with disabilities.

A visible presence is believed to be 99% of the battle with crime and incivilities for this system.

San Francisco (BART-Bay Area Rapid Transit)

The Bay Area Rapid Transit (BART) is a 25-year old rapid transit system that has had recent extensions to it within the past 4 years. The system operates on 90 miles of track length with 39 stations to service the 275,000 daily patrons, operating 20 hours per day.

This is primarily an automated system with drivers present on every train. Turnstiles are used as the primary method of fare collection. There is currently a plan to extend the system to the San Francisco International Airport with 4 new stations by the year 2001.

The system uses people as its primary crime prevention method and has its own police agency. The transit authority believes the most effective way to deter crime is to focus on life at the station with attention being paid to stops in mixed-use areas. It is imperative to situate stops in an area of residential housing, retail and light commercial.

Recent expansion into Alomena County (eastern part of Bay area) raised fears with area residents. The amount and degree of crime was overestimated and consequently this stop was overstuffed. A recent article in one local paper quoted the Bart Police Chief saying that he had a lot of members sitting around doing nothing and that the problems were fewer than previously anticipated.

BART police department is composed of 120 members who are fully sworn, armed peace officers whose primary function is patrolling the station. The Chief of Police reports directly to BART general manager. Police members are paid by the transit system, which is funded through taxes and is widely accepted by BART district residents. Anxiety about new stations and attendant problems recently motivated the building of a 'zone command facility'. This 2500 square-foot facility was paid for by a developer who built ninety-six units of affordable housing in the area. The concern of area residents was paramount in this decision.

It appears as though the most prevalent incidents along the system are property crimes. Increases in incidents from May 1997 through to March 1998 prompted the implementation of an additional presence at each station. Uniformed Community Service Attendants (CSA) patrol the park and ride areas in an attempt to reduce theft from and of auto. Through their visible presence they also serve as additional eyes on the station and reduce fear in riders. Lighting was increased to 3 times its original illumination levels and emergency call boxes were installed. An escort program uses volunteers and paid city employees to walk riders to their vehicles at night. The system also employs a person to provide general assistance to riders. This transit booth attendant's primary function is for information. The strategic placement of the booth increases formal surveillance on the platform and stairs.
Learning from Other Rapid Transit Systems

BART subscribes to the Broken Window theory and the transit authority believes that rules must be swift, enforceable and “have teeth”. Special legislation is necessary for rail systems and both fines and restitution are desirable. Strong crime prevention and an absence of incivilities is needed to keep riders feeling safe. The subjects believe that good public relations is the key to the success of the system.

London, England (OTS PRISM RAIL)

The OTS Prism Rail System in London, England is a driver-operated transit system that spans 42 miles of track with 27 stations along its route. It was completed in the 1950’s and currently services 30,000 passengers daily, operating 21.5 hours daily.

This system uses ticket barriers (turnstiles) and revenue collectors for payment from riders. The Crime Prevention Officer believes these methods to be very effective and cites fare evasion as low (% unknown). Double fare fines or by-law charges of ‘intent to
Learning from Other Rapid Transit Systems

Comparison of Security Features Between Systems Examined and SkyTrain

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* Based on anecdotal information provided by officials from each transit system. Recent changes or information withheld is not included.

defraud railways’ are imposed for those neglecting to pay. There are uniformed guards on the train whose duties include not only security but fare review as well.

This system employs 24 uniformed and plain clothed transportation officers with powers of arrest and armed with batons. Requests have been made for part time officers and permission to use pepper foam.

Many sites do have park and ride facilities nearby that are patrolled by private companies. Black and white cameras, that will soon be upgraded to colour, are focused on the lots.

Inebriated riders appear to be the biggest problem facing London transit. Groups of teens and football fans cause problems and instill fear in other riders. To combat this problem, transit has incorporated dry and drink trains. Though public consumption of alcohol is allowed, transit has designated some trains as alcohol free. This allows the apprehension of liquor and expulsion of rider from the system. Riders opting for a safer train may choose cars indicated as drink free.

Vandalism is also a concern. Seats are torn out of the train and thrown out the window. Transit has installed louver type windows so that nothing can be discarded out of the train. Scratchies is also a problem and has yet to be addressed.

Station design includes emergency phones located on the trains and platforms. Emergency braking systems to stop the train are also available. Unmonitored CCTV cameras have been installed on the platforms with upgrades to colour cameras forthcoming. The subject mentioned that the security cameras would soon be monitored. Improved lighting was necessary to facilitate the use of the cameras.

The Crime Prevention Officer’s main concern seemed to be with the pleasure riders versus those who rely on the system to get to and from work. Safety was deemed a priority for leisure travellers, as it is believed that the safer the system appears, the higher the increase in choice riders.

The subject believes the key to a secure system relies on the presence of a good, well trained staff. Authoritative presence is necessary to appease riders as well as to reduce crime and incivilities.

Findings

1. The liberal application of CPTED design principles in station planning and retrofit is common among transit authorities internationally. When new station environments are designed, transit police are consulted and CPTED principles are applied.
2 Fear levels related to the different station environments underground, at grade, and elevated are significant despite the lack of variation in actual crime levels between these station types.

3 Most transit administrators indicate that, to a large degree, the safety of their system depends on the extensive use of highly visible and highly trained security personnel throughout the transit system.

4 Application of the Broken Windows theory is widely used to address physical and social incivilities associated with problem areas at and near stations.

5 The proximity of transit stations to high schools is a common concern for most transit officials. Problems associated with such locations usually comes in the form of truancy, loitering, graffiti, and drug trafficking. Additional law enforcement measures are usually required at these locations.

6 Crimes at commuter parking lots are common concerns and are highly problematic for all transit officials surveyed. Auto crime, prostitution, and liquor act offenses are common on these sites. Transit officials endorse the use of CPTED design and enhanced security patrol levels to combat these issues.

7 Community and employee involvement at all stages in transit system development has been a major advantage for most transit authorities. These processes empower the community and staff members to take part in the overall planning process and enable them to embrace the security measures are implemented.

Notes
1. Taborn 1998:15
2. Taborn 1998
6. Gips, 1995; La Vigne, 1996; Leo, 1996; Poyner, 1992b; Schulz, 1996; Sloan-Howitt and Kelling, 1996; and van Andel, 1992
7. Felson, 1996
8. Poyner, 1992a; Felson, 1996
9. Schulz, 1996; Barclay et al., 1996
10. DesChamps, Brantingham, and Brantingham, 1991
12. Weidner, 1996; Ekblom, 1995; Clarke, 1996; St. John, 1995
13. Weidner, 1996
15. Photos from this Section have been derived from Internet sources.
Learning from Other Rapid Transit Systems
Section 6: Ideas for Station Planning and Design

February 1999

Approaching the planning stages for crime prevention at SkyTrain stations can be extremely complex, at best. Decisions to incorporate specific design principles and more specifically, recommended design guidelines, in rapid transit station environments requires technical and budgetary agreement and support by a variety of agencies: BC Transit, municipal governments, the community, etc.

For a new system being built, it is recommended that a combination of technology, visible staff, application of CPTED design principles, and strict rules about the maintenance of stations be incorporated to ensure the perceived and real safety of passengers.

Physical Design Elements

As identified throughout this report, the physical design of station environments plays a key role in reducing station-level crime and plays a key role in the perception and reality of safety. Of primary importance to physical design of stations is the concept of Crime Prevention through Environmental Design (CPTED). This principle should be a driving force behind station design initiatives for crime prevention.

CPTED (Crime Prevention Through Environmental Design)

CPTED is a form of target hardening by manipulating the environment to minimize opportunity and motivation to commit crimes by increasing the risk of being caught, or making the crime more difficult to commit.1 CPTED works best if it is implemented in the building phase, but can also be successfully incorporated in older buildings. The Washington Metro and the Paris Metro are both excellent examples of how CPTED can be incorporated right from the design stage, whereas Toronto’s rail is an excellent example of how CPTED can be brought into an older facility.

It should be kept in mind that even the most stringent adherence to CPTED design guidelines will be minimally effective if not supported, adopted and maintained by the various other agencies, including municipal governments and boards, jurisdictional police and community groups. Additionally they must be applied under the correct circumstances or they will not meet the desired objectives. The primary purpose of applying these techniques is to facilitate the positive use of the environment to enhance the safety and security of the property. Much of this can be done naturally, using basic CPTED design techniques. However, without proper ongoing site maintenance, system staffing and enforcement, surrounding land use initiatives, and community involvement, CPTED benefits will be reduced in SkyTrain station environments.

Careful consideration should be given to urban fit into the community, and each station area should be designed according to site specific conditions and community fit. This concept implies “variety” rather than “standardization” of design, and can weigh heavily on the community’s decision to adopt ownership of and care for the property.2 That sense of ownership will result in a lower level of fear and increased ridership.

Detailed CPTED design guidelines are outlined in the following section.

Site Planning

Each property or site plan will require specific study on an independent basis to determine the overall requirements towards achieving effective CPTED results. Consideration must be given to surrounding land uses, existing dynamics, and the nature of the station type, be it underground, at grade, elevated or split grade. All of these factors will have an impact on the way CPTED concepts are utilized and on the property that is available to incorporate the design principles. The following are general considerations to be given to the overall design of station sites.
Ideas for Station Planning and Design
Site Layout/Transportation Integration

Overall site layout will depend somewhat upon the nature of the station location and the surrounding amenities that are adjacent. It is understood that many of the stations will have a “kiss and ride” associated with them. Additionally, some will also have an integrated bus loop. In order to maintain an appropriate level of passenger safety, integration with other transit modes should be made easily available and located close to the station entrance for enhanced surveillance potential and passenger safety. Likewise, “kiss and ride” proximity should be adjacent to the station entrance for added safety. Designated passenger waiting areas should also be considered for these areas, to facilitate the safer transfer between modes of transportation. Edmonds station is a good example of an efficient integration of bus loop and “kiss and ride”.

User Separation

Primarily, planners should consider area users and land users. User pathways and frequencies of travel should be studied and future natural pathways anticipated. Wherever possible, separation of potentially conflicting user groups should occur. Different levels of spatial separation can define public, semi-public, semi-private and private areas. Of particular interest in the transit environment is the separation between public and semi-public spaces (transit property) and between semi-public and semi-private spaces (station fare-paid zones). Natural spatial barriers, such as landscaping, elevation differences, and signage can be effectively used to define areas of separation where required. Although in some environments a reasonable mix of users should be considered, other environments create a sense of fear when different user groups are forced to share the same space. These decisions should be made relative to land use variables that exist in the community.

User Pathways and Approaches

Numerous safety concerns stem from improperly designed pathways surrounding station environments. Naturally formed pedestrian paths are often created surrounding newly constructed stations due to natural travel of pedestrians to and from the stations. These paths should be anticipated and planned for in advance to avoid fear and safety concerns. Additionally, specific care should be given when designing station approaches so as to avoid predictability (i.e. provide numerous route options). For all pedestrian pathways, maintain appropriate well-balanced lighting levels, ensure paths are wide and mitigate against confining areas. Provide landscaping that does not impede sightlines or prospect, or restricts natural surveillance.
Commuter Parking Lots

Commuter lots should be designed with consideration given to both personal safety and the protection of passenger property. As noted in the statistical research, Scott Road station recorded the highest level of BC Transit-recorded incidents (i.e., theft of auto, theft from auto). This figure is largely related to the large commuter parking lot at this station. Common occurrences in commuter lots in the GVRD are related primarily to property crime and other criminal code offences. Wherever possible, these lots should be designed such that they can be observed from the passenger loading platforms. The presence of emergency phones on the platforms makes reporting of visible commuter lot crime much more efficient. This concept can be naturally incorporated into elevated station environments. Wherever there are adjacent nearby streets, landscaping should facilitate inward visibility by passing vehicles. Configurations of parking stalls and rows should facilitate this visibility and should enable effective police patrol and general surveillance. Vehicle and pedestrian access points should be kept to a minimum to reduce offenders’ perceptions of easy escape. As with all station environments, lighting is a critical component for personal safety and reduction of fear, as well as reduced risk of incidents.

Station Planning

However unique each station should be in terms of overall design, landscaping and aesthetics, there are a number of key elements that should be constant throughout the entire system. These are primarily items that maintain a certain level of functional, operational, safety, security and accessibility standards. As examples, these may include the following:

- Platform characteristics
- Waste receptacles
- Lighting levels and fixtures
- Signage
- Elevators, stairs, and escalators
- Emergency services
- Fare collection devices

In general, station entrance areas should be set out with good surveillance capability from adjacent land uses. It should be ensured that surrounding land uses provide an attractive setting and invite the type of clientele that would provide capable guardianship over the area. Ideally, a service or retail outlet should be located on station property or immediately adjacent to station property.
Underground Stations

The underground station environment is one type of station that has clearly been identified, by the public, as inducing a level of fear. One researcher\(^5\) found that system users actually suffer from a greater risk of victimization above ground than they do in underground station environments. Throughout the research, however, results have been mixed. Whether or not the statistical evidence supports the actual risk involved with these types of station environment, it is critical that efforts are made to reduce the fear that seems to be associated with it.

The traditional column support or transverse beam construction for underground stations has taken a sideline to column-free clear span construction in recent years.\(^6\) This type of station environment makes use of wide open spaces with limited areas of refuge and provides the user with broad, clear sightlines and a good sense of control over the environment. This station design is said to significantly reduce fear levels. Washington, D.C. uses this type of construction in spectacular fashion and, along with its strict policing policies, is deemed to be one of the most crime-free rapid transit systems in the world.\(^7\)

Additionally, it is often easier to control opportunity for criminals to commit crime in an underground station environment. With a confined set of access points, it is always easier to control the perimeter with physical security measures (e.g. CCTV cameras, barriers, etc.). Although there is clearly potential for feelings of entrapment on the part of passengers, this feeling will also carry over to the criminals who feel as though they have little opportunity for escape. Once again, however, research is mixed about the true risks of victimization with respect to this type of station environment.

Although the challenge is greater in this type of space, there is significant potential to enhance the overall feeling of passenger safety through the effective use of CPTED design principles. Use of wide hallways, stairwells and escalator guideways with minimal use of sharp corners throughout the underground passageways will contribute to the overall feeling of comfort for the user. Elevators of transparent material construction should be used wherever possible. Being able to anticipate oncoming threats through clear sightlines is one of the keys to reducing fear.
Ideas for Station Planning and Design
Elevated Stations

Elevated station environments, although not nearly as fear inducing as the underground station, are still segregated from street level interaction and have limited numbers of access points. The difference in reduced fear levels stems from the fact that the users seem to have an increased sense of prospect than in the underground stations. Additionally, the elevation will clearly have an effect on the control that the users feel over their surrounding environment. Through providing good visual sightlines and reducing the use of wide impeding structural columns, good visual control can be maintained.

Because the environment allows for it, wherever possible the use of transparent materials should be used around the perimeter of the station platform for good inward and outward visual surveillance capability. Protective film can be used and peeled off should scratchiti occur. As with underground stations, elevators should be clear of visual obstruction through the use of transparent materials. Clear lines of definition should be used to separate fare-paid zones from other public spaces. If psychological barriers are used, such as signage or clearly defined entrance ways, and enforcement methods are exercised to enforce these barriers, undesirable people and behaviour will be reduced.

At Grade Stations

Those stations that are built at grade have different dynamics that impact upon them. These station areas, if not properly controlled through CPTED principles or physical security techniques, can invite numerous unwanted activities. As with the elevated station areas, it should be ensured that those at grade show clear definitions of fare-paid zones. However, these stations should maintain restricted numbers of access points due to the increased likelihood of influences from the surrounding area invading the space.
Crossover bridges/overpasses, where required to transfer passengers to the other side of the tracks, should be designed so that they provide wide passage and have ample sightline distances. If structurally possible and economically feasible, more than one overpass should be constructed to ensure that there are adequate escape routes available to passengers should they feel threatened.

Findings

1. Potential crime issues anticipated as a result of the extension of SkyTrain can be avoided, to some degree, through planning and designing stations with security aspects integral to the design. This forward-looking action will result in minimal crime impact around the majority of the proposed new SkyTrain stations when the system is fully implemented.

Notes

1. Needle, 1997; McKay, 1996
2. Allen, 1993
3. Action Assessment Group, 1995
4. Allen, 1993
5. Nancy La Vigne, 1996
6. Allen, 1993
7. La Vigne, 1996
Section 7: Conclusions and Solutions

February 1999

It is clear from our observations and initial statistical analyses, that we have found no absolute direct causal relationship between transit and crime. The issues that lead to any such relationship between SkyTrain and crime are extremely complex and are not supported in any existing research. Although historical localized crime data was limited for this study, the patterns that develop from those that were available do not support the hypothesis that rapid transit, on its own, has generated crime increases.

The results of this local assessment, and research, give us clear indication that, although crimes in some areas of the GVRD could loosely align themselves around existing SkyTrain stations, not all crime “hot spots” are located in relation to these areas. Additionally, statistical evidence has been inconclusive in showing us that the presence of SkyTrain has had a direct effect on rates of crime. If this were the case, we would see similar crime patterns developing surrounding all existing stations. Factors that contribute to higher risk environments should be understood and considered when planning for station design and implementing crime prevention strategies.

Neighbourhood Impact and Risk Considerations

A blanket prediction for crime impact around any one type of station location is very difficult to determine. In our assessment, there are no constants. The background research conducted indicates significant differences in results between studies. Crime issues experienced at different locations will vary based on land use patterns, demographics, social cohesiveness, and existing crime environments – just to name a few. Buckley (1996) categorized stations in a two-classification system – residential and commercial. We find this classification scheme to be too general in nature which results in inconsistent and inconclusive findings. Each neighbourhood must be looked at on an individual level to determine how modified user schedules and patterns would react with the social and physical environment.

Further consideration must be given to other social and geographic factors, that when combined, will lend clues to the potential for crime surrounding a given rapid transit site. Although on their own, these factors do not drive crime, there are certain combinations of higher-risk elements that could result in more criminal activity.

Land Use Patterns

It is important to keep in mind that geographic locations of criminal activities are, in many cases, shaped by the locations of activity nodes, the formation of user pathways, and the definition of edges between different land use types. Each type of land use will develop different patterns of general activity within the spaces that surround them. It is important to differentiate between “zoning” areas and actual “land use” because in many cases, these terms differ. A zoning area is a more general term and can be defined as an area that is legislated to be used for a specific purpose, whereas land use can be seen as being more descriptive about how the land is actually being used and relates somewhat more to the relationship between the physical and social environments.

Variation can be seen in the types of users, differentials in activity levels and characteristics, and variations between times of day or night when an area becomes particularly active or abandoned. Simplistic examples of such variations in land use that may generate different types of activity patterns may be areas defined as commercial, residential, and park spaces. Each of these land uses will attract different types of people for different purposes, at different times of the day or days of the week. Commercial areas may be characterized as being most active during weekday periods, whereas parks and residential areas may be more active during the weekend days and in the evenings when children are out of school and parents are home from work. In many commercial
Conclusions and Solutions

areas, businesses close during the evening and night-time hours, allowing the surrounding area to be used for other purposes. As a result, these, and other, types of land use designations will present very different user dynamics that are dependent largely upon the nature of the services and amenities that are available to the various users. Similarly, these areas will also offer different opportunities for crime. As user patterns change, criminal opportunities may shift from one type of crime or target to another, or from one geographical area to another.

Edges are relative lines of definition between these different land use areas. Every land use will have an edge that surrounds it and separates it from another. In some cases, these edges may be very clearly defined, such as is the case when a high-density residential development borders an adjacent park or wooded area. In other examples, however, these edges may be defined by major roads that cross between two different types of land uses. In these cases, the roadway may have been used as a logical dividing line for the separation of land use zoning areas. These edges help to define territorial areas, that is, areas that user groups will claim and use as their own. Territoriality can create social conflict and also generate fear.

Existing Crime/User Patterns

Crime patterns and activities that pre-exist in an area play a major contributing role in shaping the nature of emerging crime patterns as new environmental influences are added. The addition of a SkyTrain station will influence the crime dynamics of an area, but not nearly as much as do pre-existing patterns. In most cases, new crime trends will build on previously established behavioral patterns. In order to understand the true extent of how these influence a given community, each station environment must be studied independently based on existing crime patterns.

An assessment of risk in a particular area must also be considered through the study of existing crime statistics in the surrounding neighbourhood. If there is already an established crime problem developed within the area, it is unlikely that implementing SkyTrain, or any single element, will mitigate against the problem, unless significant land use changes are implemented as well.

By studying the existing patterns of pedestrian use within the area and by predicting how these might change with the addition of another activity node like SkyTrain, further conclusions can be drawn. The impact that such a transit node can have on individuals’ routine activities and the geometry of criminal activity can cause dramatic changes in the way in which the users of the area utilize their physical environment.

Existing and/or Projected Demographics

Population densities, income levels, housing tenure, and age distribution all contribute to the social environment. In communities where there are social pressures, such as poverty, high population densities, and high levels of rental tenancy as opposed to home ownership, there may be a greater potential for negative impact related to low level crimes and nuisance behaviour, such as drug activity and social incivilities. Special care needs to be taken to assess these areas of higher risk and implement mitigation strategies to reduce crime impact when new SkyTrain stations are introduced.

Future Zoning/Development/Land Use Intentions

Urban planners, developers, architects, landscape architects, and building inspectors are all key in shaping the physical environment. It is well established that rapid transit spurs development. Municipalities and developers must ensure that new zoning changes, development permits, and building permits are carefully reviewed and that they fit with the overall objectives in the areas surrounding the SkyTrain stations. These individuals have the power to influence positive change. If structures and land uses are designed to make passers-by feel more comfortable, members of the community will retain control over the neighbourhood and be able to provide eyes on the street.

By studying existing land use characteristics, we are able to make some relative determinations about expected crime patterns that would result from the addition of a rapid transit station. Some general conclusions are as follows:

• By placing stations in environments where there is no clear control over who has ownership of the surrounding territory, existing crime and incivilities may be perpetuated and simply extended to the station areas.
Conclusions and Solutions

Report Recommendations

Environmental criminology theory supports the general notion that introducing new transit systems into a community may have an effect on crime in that community. However, analysis of statistical research of crime trends in the GVRD does not support the premise that SkyTrain has increased crime levels in any community into which it has been introduced. In fact, some communities have seen a decrease in crime rates since the introduction of the service. It should be noted, however, that transit is only one of many factors that affect crime rates in areas. Of those factors, land use has a significant impact upon crime trends. Crime around transit nodes will often reflect the level of crime in the surrounding neighbourhood. Crime Prevention Through Environmental Design (CPTED) can be very valuable in the mitigation and prevention of crime.

It is clear from the information collected for this report that prevention of crime and solutions to its occurrence require a concerted effort by RTPO, BC Transit, BC Transit Security, SkyTrain, jurisdictional police, community groups and the community at large. Transit is just part of an overall urban infrastructure and, as such, is vulnerable to the same problems that plague urban centres and public places the world over. Because it is an integrated system, however, the opportunities to prevent crime and mitigate its effects are much greater than they are in the overall urban environment.

The following are recommendations to the various groups and agencies who must work together to ensure a safe and security transit system.

To Rapid Transit Project 2000

The following recommendations are to be considered by Rapid Transit Project 2000 as mitigating measures to increase public confidence and safety and security, through the design and construction of the new rapid transit extension:

1. Continue to actively involve the community and transit employees in the design of station environments. It is imperative that there is acceptance of the designs that are being put forward for construction and that the designs of the station fit into the community image.

2. Incorporate CPTED principles and concepts (as outlined within the proposed guidelines for station and property design, as contained further in the report) into station and property designs wherever structurally possible and economically feasible to reduce the risk, and fear, of crime. Ensure that especially underground stations are designed with the primary objective of reducing fear.

3. Retain a CPTED or Urban Crime consultant during the station design phase to participate in the station design process and to study local environmental influences on station safety and security. Each station area will present different user dynamics and should be studied independently. When there are concerns associated with station location and crime impact, ensure that there is further study undertaken to consider the risk factors and determine the most appropriate pro-active crime prevention measures.

4. Ensure that a detailed security master plan is undertaken in the design process to ensure that the most effective security systems, policies and procedures, and protocols are used in the new stations and on the new system. This would include a detailed review and integration of existing security systems and new technology.

5. Begin to gather community interest by initiating safety programs with community groups that organize them to develop safety audits of their own community neighbourhoods. This will assist in the pro-active design of prevention measures and mitigation techniques.

6. Ensure a minimum standard is maintained for security lighting levels to limit future required lighting upgrades. Consult with a security lighting engineer for further detail on standard requirements.

• Too many variations in user patterns and land uses along edges of planning or zoning areas can be problematic as they bring a variety of users and user groups into potential conflict.

• Those areas with positive land uses surrounding them, or intended developments for positive land uses, are likely to maintain a high degree of care and reduced fear levels.
Conclusions and Solutions

To BC Transit/GVTA/SkyTrain

Once the new system extension becomes operational, several considerations will have to be made by the GVTA to maintain a high level of safety and security on the system and to minimize fear. The following recommendations outline possible steps to achieve these objectives:

1. Patrol and attempt to maintain full territorial control of all of transit property, not just the platform areas. Apply techniques of the broken window theory to remove incivilities and ‘clean up’ existing problem areas.

2. Continue to ensure that station areas are regularly maintained to a high standard. Many other rapid transit systems identified this shortfall as contributing to a fear problem.

3. Ensure regular fare inspections continue to be conducted and that largely a zero-tolerance attitude towards fare-evaders and non-compliance of transit station regulations and rules of conduct. This will require a fare compliance cost/benefit study to address technology options, and cost/benefits of alternative strategies (i.e., increasing staffing).

4. Ensure the riding public is familiar with the SkyTrain rules of conduct policy and determine how far BC Transit Security can go in ejecting people from the system for contravening the policy.

5. Provide increased staff visibility and surveillance of stations, especially in the afternoon and at night when higher risk of incident exists. Consider enhancing the use of the BC Transit Special Constables to provide more effective enforcement coverage.

6. Provide good information about train frequencies for passengers (i.e. posted schedules – easy to read). Make use of a clear LED display showing time until arrival of the next train outside the station so that approaching passengers can wait in a more visible location outside the station until the train is about to arrive. This will reduce the window of opportunity for offenders seeking available targets and will increase the comfort level of passengers.

7. Ensure that appropriate lighting levels are achieved and maintained at all stations including common approaches. This will enhance safety and comfort of passengers as well as reduce fear levels. This includes cleanliness of light fixtures for maximum lighting levels.

8. Conduct a detailed review of existing CCTV surveillance systems. BC Transit Security does not currently use the CCTV network for security surveillance. There are 447 CCTV cameras currently in use and monitoring those cameras would require additional, trained, staff. There should be a review of the operational CCTV systems to determine how dedicated security monitoring can be integrated into the system. The existing system should be reviewed to ensure that the most effective technology is being used.

9. Consider extending the application of emergency duress alarm systems to include areas other than the trains and platforms. Some such emergency stations have been utilized at specific station locations, but further integration would maximize the safety of system users.

10. Consideration should be given to providing dedicated office space to jurisdictional police within new station environments. This office space could be used on an ad hoc basis, and shared with the BC Transit Special Provincial Constables.

To Municipal Governments

1. Establish positive pro-active planning and development strategies for neighbourhoods that are near SkyTrain stations. These programs and planning processes should be developed early, and implementation of ideas and strategies should begin incorporation into the physical environment before operation begins on the new SkyTrain extensions. Land use changes should be considered and initiated prior to this time also.

2. Ensure that applications for re-zoning and development permits are carefully reviewed by city planning departments for appropriate land use considerations. If necessary, consult the services of a qualified CPTED consultant or Urban Crime designer to assist in the approval process for controversial development applications. It would be advisable to retain a CPTED specialist to sit on the development permit board on an ongoing basis.
3 Consider the implementation of a CPTED review as a component of the building permit application process to ensure that appropriate consideration has been given to CPTED principles in structural design.

4 Begin co-operative working groups with municipal departments and agencies as well as with local community members and business groups to work towards positive community cohesiveness.

Working with Police

Policing techniques and resources available in a given area will have an effect on the crime activities. If there is an opportunity for proactive enforcement, crime prevention programs, and participation in community efforts to maintain socially healthy environments, crime opportunities are reduced. If police are forced into reactive policing because of increased demand, reduced resources, or a combination of several factors, then proactive opportunities to reduce crime are not nearly as effective.

1 Use targeted policing techniques for potential problem station areas, or those that would be anticipated to consist of heavy use at specific times of day or night (i.e., high schools between 3 - 4 PM).

2 Establish community policing offices in neighbourhoods where visibility and close proximity would help alleviate fear and criminal activity. Cooperative efforts with property owners near stations should be pursued to facilitate this land use objective.

3 Each proposed station location area should be the subject of a crime analysis by both jurisdictional police and RTPO.

To Local Property Owners/Residents

1 Use landscaping techniques to reduce opportunity for graffiti on blank walls in highly travelled areas.

2 Provide clean, well maintained and well managed grounds within public travel area on your property. Offenders will generally target properties that appear to be less cared for.

3 Encourage oversight by guardians in residential areas where there are common areas for parking garages, laundry, stairs, elevators and mailboxes. These guardians help to reduce fear.

4 Use lighting to increase visibility in high fear areas.

5 Encourage natural travel paths that divert outsiders around your property.

6 Organize a Neighbourhood Watch group through cooperation from local police department. This program encourages neighbours to look out for one another and provide general surveillance of the neighbourhood.

Proposed Guidelines for Station and Property Design

These suggestions are meant to be guidelines, not rules. Each site must be examined at a micro level to ensure optimum application of these crime prevention measures. Some recommendations will not be applicable; others may need to be applied in conjunction with other measures. A look beyond the scope of the station site is necessary: adjacent land use, hours of operation and users must be included. Eradication of crime and incivilities is impossible but with close scrutiny of relevant factors and proper application of these techniques, unwanted behaviour can be reduced. Key principles of CPTED and guidelines for their implementation follow.

Surveillance

To provide reasonable surveillance, the following points should be considered:

1 Windows and other visual paths onto areas of concern will reduce unwanted behaviour and give legitimate users a feeling of safety. The eyes on the street mentality should be encouraged at all areas of the site including stairwells, parking lots and platforms.

2 If concession stands, coffee shops or newspaper vendors are present at the station ensure good positioning for surveillance onto busy or potentially isolated areas.

(Current SkyTrain policy does not allow for concessions in stations.)
Platform ceilings that are high and vaulted give a feeling of openness and safety, especially in underground stations.

Where necessary, stations and waiting areas should be in open spaces with informal surveillance by surrounding areas.

A variety of uses at stations and in adjacent areas increases the presence of people at different times of the day and night. It may be necessary to restrict incompatible uses that will inevitably cause conflict.

Encourage use of space as a police substation or Community Crime Prevention Office.

Street activity and eating areas around stations decrease abandonment and increase observation livability and vitality of the station. One must be careful to balance legitimate use without encouraging unwanted loitering.

Lanes and rears of stations should not be ignored. Encouraging use in these areas will reduce unwanted behaviour from migrating here.

**Sightlines**

Unobstructed views of surrounding areas are important. Consider the following:

1. During initial design, avoid dark niches and blind corners when situating dumpsters, benches and vending machines. Large pillars will also hamper an unimpeded view and should be avoided where possible. Where specific design cannot be avoided, install sight aids such as parabolic mirrors.

2. Transparent materials along narrow walkways, walls and handrails will increase sightlines when such structures are imperative to the building.

3. Recessed doorways may also provide hiding spots for offenders and alcove reduction should be kept in mind.

4. Posters and advertisements should not impede sightlines or surveillance.

5. Landscaping should be kept well maintained so as not to impede sightlines. One guideline is the 7&3 rule, which advises that branches should be no lower than 7 feet and shrubbery no higher than 3 feet.

6. Sightlines need to be planned with consideration of those with disabilities and should be at both a standing and sitting perspective.

**Territoriality**

It may also be necessary to keep people in designated spaces and out of restricted areas.

1. Gates, landscaping, fences and signs are barriers that announce that an area is not publicly accessible.

2. Where possible avoid walling off an entire area as it increases fear and takes ownership away from the street.
3 In areas where loitering will be discouraged, such as around stations near schools, structures can be designed to make sitting uncomfortable. Planters for example, can be taller than waist height, have sloping or in extreme circumstances, jagged tops.

4 Elevation of certain areas (designated waiting area for example) give users a sense of empowerment over the environment and increase feelings of safety.

5 Shop owners should be encouraged to view some of the space as theirs as it increases the concept of ownership of the area. Abandoned or unclaimed “no man's land” implies lack of caring and draws vandals.

6 Maintenance is of paramount concern in reducing fear and discouraging damage to property. Vandalism and graffiti should be removed as soon as detected.

**Access and Egress**

This should be approached carefully with both safety and fare evasion in mind. Fortress-like stations will increase fear and can hamper safe exit in case of an emergency.

1 Platforms should have at least two exits. Riders should not be trapped if one entrance/exit is blocked. Feelings of entrapment are especially prevalent in underground stations.

2 Side-loading platform stations need to ensure the widest waiting area possible.

3 Stairs and walkways should also be as wide as possible to allow people to pass one another.

**Landscaping**

Landscaping plays an important role in interpretation of the environment, and influences how one feels in a particular setting. Its impact can be either positive or negative. Landscaping defines different spaces. It can create barriers, induce fear by impeding sightlines and be used as a screen for illegal activities. Each station must be looked at individually to determine how vegetation will affect it. Though touched on in other sections, additional things to keep in mind include:

1 Graffiti on the sides of stations can be reduced with climbing plants such as ivy. Fast growing and adaptable, it reduces the vulnerability of open walls that would otherwise be havens for vandalism.

2 Large, overgrown hedges along pedestrian walkways to and from station may provide hiding spots for both people and contraband. Species of plants should be chosen carefully to reduce this risk. Thorny, low-lying shrubs can help.

3 Landscaping increases the livability of an environment. Community groups and residents should be encouraged to participate in this aspect of design. This inclusion in the design process promotes ownership of the area and ensures the station fits in well with the community.

**Pathways**

Pathways control the movements of people and should be designed carefully. Predictable pedestrian routes can increase crimes against persons. Limited options increase fear and potential for victimization.

1 Special consideration should be given to routes that will be used at night; lighting, multiple exits, and unrestricted sightlines need to be examined.

2 Paving materials can be used to discourage use of an area. For example, unit pavers with a rough surface and bevelled edges make it difficult to skateboard and roller blade but may also impede use by people with disabilities.
Conclusions and Solutions

3 Because different groups of people are using the same space, a choice of pathways is preferable. This choice reduces conflict and fear among the more vulnerable groups.

Lighting

Adequate lighting can be successful in reducing fear of crime and some types of actual crime. These levels will vary depending on the environment and their application. Both lighting levels and distribution should be appropriate for the operational requirements of their use and the area they are monitoring. One must be extremely careful with lighting an area as it may actually increase certain types of crime. It is important to keep in mind that lighting may promote a false feeling of security.

1 Lighting should be kept as even as possible and should not cast shadows. The use of numerous low wattage lights prevents shadow casting better than a few high wattage lights.

2 Fixtures must be protected against tampering.

3 Sidewalks and pedestrian pathways should be lit with pedestrian, versus street level, lighting.

Commuter Parking Lots

In many jurisdictions, Park and Ride facilities are extremely challenging due to the high incidence of theft from and theft of autos. To help reduce the numbers of calls for service where commuter lots are necessary, a combination of strategies may be needed:

1 Parking lots should be placed in areas seen by surrounding buildings and houses.

2 Lots should be fenced to decrease foot traffic through parking lots. Easy access and egress allows potential offenders to “scope out” the number of targets available. Multiple exit points also increase susceptibility to crime.

3 Vegetation around lots should be kept low to increase surveillance by passers-by.

4 Overhead pedestrian walkways should not be situated overtop of parking lots as research has shown that thieves use this ability to alert others to oncoming security, police or car owners.

5 Illumination should be high (with consideration to neighbours) to reduce shadows in lots. Though increased lighting does not necessarily reduce thefts in parking lots (as most crimes occur during daylight and increased lighting allows the thief to see what he or she is doing) it does reduce fear among legitimate users.

6 Parking attendants and regular patrols of lots are encouraged. Cooperation between BC Transit, local police, ICBC and community volunteers will create programs that will reduce this problematic area.

7 Locating 911 phones on station platforms that overlook commuter lots will encourage system users to immediately report such crime.

Target Hardening

In certain areas it may be worth the extra effort and cost to use materials that will reduce the time and cost of replacement should an area become damaged.

1 Protective film can be peeled off windows should scratchiti occur.

2 Graffiti resistant paint and other materials are available for walls, railings, trains, garbage cans etc.

3 Rough surfaces make felt pen and spray paint marking difficult.

4 Damage or vandalism to property owned by other agencies (BC Tel, Hydro, The Sun and Province) should be reported to them as soon as possible to ensure repair.

5 Blank areas can be covered with vertical landscaping, murals or artwork.

6 Proper design can also reduce damage done by skateboarding. Long continuous planters and handrails are often victims of “skateboard rash”. Jagged designs or a variety of materials can be used to reduce this problem.

7 Avoid canopying an area where loitering should be avoided.

8 Security technology such as CCTV, panic telephones and buttons may be necessary at some stations. Each site must be carefully scrutinized to ensure that the best technology for the site is used and that placement is optimal.
9 Warning signs prohibiting misuse of emergency telephones and buttons should be worded carefully so as not to deter legitimate use. Some riders hesitate to use this feature for fear that they will be prosecuted.

In addition to these design recommendations, proper maintenance of the site and training of staff cannot be emphasized enough. An understanding of key concepts of CPTED and the importance of maintenance and enforcement of transit rules is imperative to the success of crime and fear reduction.

Future Study Suggestions
Throughout the study process, areas were identified where further study would be valuable to the implementation of specific recommendations or considerations. The following identifies recommended areas of future research:

1. More effective and consistent statistical data collection methods by police departments, especially to maintain consistencies between jurisdictions.

2. A time-series analysis study would be useful to understand crime impact when a new station is built.

3. A special study related to ticket barriers and turnstiles, fare collection and/or payment methods, and fare evasion should be conducted to provide a cost-benefit analysis related to the SkyTrain system.

4. Cost-benefit analysis of additional uniformed personnel at stations and on cars.

5. Cost-benefit analysis of continual monitoring of CCTV system.

6. A special study on the enforcement of provincial and federal statues related to undesirable and illegal behavior on the SkyTrain cars, the station platforms, and surrounding property should be considered. Policing on a system that crosses several jurisdictional boundaries should remain consistent. Variances in differential response to calls for service or threshold levels in investigations can adversely affect the system.

Notes
1. Brantingham and Brantingham, 1993
2. Brantingham and Brantingham, 1993
3. Egby, 1989; Callow, 1992; Pucher and Hirschman, 1993; Goodale, 1998
4. Clarke et al., 1996
5. Clarke et al., 1996
6. Primary source: Brantingham, 1996
Conclusions and Solutions
February 1999

Primary References


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Statistical Analysis References


"Selected Characteristics for Component Census Subdivisions of the Census Metropolitan Area, 1986 Census - 20% Sample Data” Statistics Canada.


"A Graphical Overview of Crime and the Administration of Criminal Justice in Canada” Statistics Canada - Cat No. 85F0018XPE.


"Greater Vancouver rapid Transit Retail and Commercial Baseline Study” 1998, Harris Hudema Consulting Group Limited.

"Greater Vancouver’s Land Use: 1979 - 1996” 1997, Strategic Planning Department, Greater Vancouver Regional District.


"Safer City Task Force Final Report” 1993, City of Vancouver.
February 1999

The following notations represent a sample of common concerns and queries presented by Open House attendees to SRG consultants at various Open Houses we have attended to date. These thoughts and ideas in no way represent the opinions of SRG Security Resource Group Inc. or its consultants. They are strictly comments that have been brought forward for our consideration.

Vancouver - Segment 1 - Open House #1
VCC to Highway 1
Monday, September 28, 1998
4:00pm – 8:00pm
Italian Cultural Centre (Grandview and Slocan)

Commercial & Broadway
1 Reduce harassment in station areas
2 Walkway from one line to the other must have shops and other attractors that draw pedestrians
3 Crime prevention office should be on site – also a request for an attendant to patrol the station areas
4 Groups hanging around the station feed the perception of crime.
5 There are no consumer services available in the area (i.e. Coffee shops, etc.)
   - Must be people-friendly
   - Earls/Red Robin-style restaurant might be good.
6 B & E’s will increase in the residential areas

Clark/Glen Drive – VCC Station
1 Panhandlers and drug needles are concerns
2 Crime in the area brings anger
3 VCC surrounded on three sides by apartments
   - There is a lot of car theft in the area

Nanaimo Station
1 General concern about safety and crime in area

Grandview station
1 General concern over crime

Overall
1 General concerns regarding crime and potential increases in crime surrounding stations
2 How can rent be kept down to keep commerce viable at Broadway and Commercial

New Westminster - Segment 7 – Open House #2
Woodlands to Braid
Wednesday, September 30, 1998
4:00pm – 8:00pm
Keary Centre
Appendix A - Open House Notes

General
1 Some residents felt that open enclosures below grade (trenches) would attract vandalism inside them.
2 Visually impaired and handicapped access to stations should be considered for safety.
3 Crime and safety concerns were expressed about underground stations and whether or not there was more potential for crime here or in above ground stations. There is a general feeling that these stations are more isolated and vulnerable.
4 Designated waiting areas for stations near the bus-loops are desired with better surveillance of bus loops near these stations (e.g. New West Station).
5 Public would like to see graphic examples of security approaches.
6 Look at implementing community police offices or administrative offices within the stations.
7 Concern about spill-over activity from Columbia and New West Stations.
8 Above ground stations are preferred for safety reasons.

Woodlands – Fraserview Sector
1 Concern expressed that the presence of SkyTrain would cause the area between McBride and Richmond Street to become “ghetto-ized” and run-down.
2 There was word that the local bus service may be discontinued to Richmond Street area – this may cause a fear and safety concerns if residents are forced to walk to Woodlands station.
3 Requests for police action such as foot patrol, bike patrol, and vehicle enforcement.

Sapperton – Braid Sector
1 Security concerns surrounding proximity of local daycare to the Sapperton Station.

Overall
1 More concern surrounding view obstruction, noise, and property values than about crime concerns.
2 Tunnel was widely preferred to trench or elevated options for reduced impact on view, noise, and crime. Tunnel the whole way along Fraserview is preferred to some tunnel, some trench.
3 Most attendees were against Braid Street station option because they felt that there was not the ridership to support it and that it would just create a desolate stations that will attract criminal opportunity.

New Westminster - Segment 7 – Open House #3
Woodlands to Braid
Tuesday, October 27, 1998
4:00pm – 8:00pm
Centennial Lodge – Queens Park

General Security, Safety, and Crime Concerns
1 Will not ride the train at night because of safety concerns.
2 Barriers should be added between public areas and the train platforms to reduce potential fare evasion and separate legitimate users from outside influences.
3 If we are building a station in a community, what is the RTPO going to do about issues such as lighting in the surrounding areas such as pedestrian pathways.

Crime Concerns relating to Route Options
1 If there is going to be a long passenger ramp from the street to the platform at the Keary Street station, there should be CCTV monitoring in place on the ramp to enhance safety of passengers.
Appendix A - Open House Notes

Overall Impressions
1 There appeared to be more concern still about view obstruction and noise than there was about crime issues.
2 People were offering constructive solutions rather than just presenting problems.

Coquitlam – Segment 6 – Open House #2
Lougheed Mall to Braid
Thursday, October 1, 1998
4:00pm – 8:00pm
Alderson Elementary School

General Security, Safety, and Crime Concerns
1 Opinions were strong that crime will increase in station areas.
2 Several concerns were expressed about loitering and littering in and around the SkyTrain stations.
3 Feeling that policing issues and the quality of life for residents is not being considered in this process.
   • One member of the community admitted that there appears to be a lot of anger about policing, but little of it is to do with SkyTrain.
4 Continual concerns relating to crime increases in residential areas were fielded. Residents are insistent upon the fact the crime will increase in the residential areas.
5 Concern about proximity of stations to schools was a repeated topic of discussion. Protection of the children was of prime importance. Further research should be done on this topic area.

Crime Concerns relating to Route Options
1 Questions were brought forth as to the purpose of a station in the area of Tupper/Woolridge. Some feel that there is no ridership to support this station and that it will just cause problems.
2 General consensus that after 6:00pm, and throughout the evening, there will be no legitimate users at the stations and that the surrounding areas will suffer from increased property crime (especially at Tupper/Woolridge locations).
3 One individual expressed concern about an existing presence of drug activity on Tupper and Sherwood just off of Blue Mountain and are concerned that this problem will skyrocket if a station goes there.
4 Recommendation to shut down the Tupper station after certain evening hours to reduce crime potential.
5 Concern that Tupper Avenue will become a parking lot for SkyTrain users.

Overall Impressions
1 Attendees complained that ideas and thoughts presented at previous open houses were not being displayed on criteria boards.
2 Many people felt that the public consult process was a smoke screen and that the RTPO has no interest in considering the feelings of residents.
3 Crime concerns were relatively high on the agenda of attendees, however it seemed as though this concern was overshadowed by the opinions that the interests of the residents were not being considered by the RTPO or the Provincial Government.
4 Most residents were happy that there was no station planned for Lougheed Hwy. They felt that the further away from the residents, the better.
   • A few residents expressed a need for a station along Lougheed however for better access.

Coquitlam – Segment 6 – Open House #3
Braid to Lougheed Mall
Wednesday, October 29, 1998
4:00pm – 8:00pm
Alderson Elementary School
Appendix A - Open House Notes

General Security, Safety, and Crime Concerns
1 Concern about school children at middle schools and possible drugs and truancy when SkyTrain is up and operational.

Crime Concerns relating to Route Options
1 Preferred route option was announced. Most people were happy and had few crime issues because it was discovered that there would be no SkyTrain station in the area.

Overall Impressions
1 People appeared to be pleased with the preferred route.

Coquitlam Extension (Eastern Segment) – Open House #1
Lougheed Mall, Port Moody, Coquitlam Town Centre
Tuesday, October 6, 1998
4:00pm – 8:00pm
Gleneagle Secondary School

General Security, Safety, and Crime Concerns
1 Widespread concern about findings of Jennifer Buckley’s MA Thesis and the figures that say that 49% of all crime in Vancouver takes place within a 750m radius from a SkyTrain station.
2 Public are looking for answers as to how much crime changes with the addition of a Rapid Transit station.
3 Attendees feel that more police personnel are required to address the crime impact that will result from SkyTrain and that the existing municipal budget does not facilitate the possibility of this.
4 Positive long-term urban planning should be conducted to facilitate more positive land uses surrounding areas where SkyTrain will exist.
5 SkyTrain should have at least one attendant present at every station to address safety concerns (especially those near schools, such as Guildford).
6 General concerns were expressed that the public does not feel safe on SkyTrain at night.
7 There was a common feeling that the presence of SkyTrain will bring the drug problem from New Westminster to Coquitlam Centre area.
8 A few attendees felt that crime needs to be addressed on a larger scale and that it is not really the responsibility of the Rapid Transit Project.

Crime Concerns relating to Route Options
1 Strong opposition was shown towards the Green route option (Guildford Way), and especially the existence of the proposed Guildford Station for a number of reasons:
   • This option will bring all types of crime to the Guildford area.
   • There are 3 schools in close proximity to this line and there is widespread fear that the children will be threatened by both crime and safety issues.
   • A station at Guildford will bring undesirables to the community.
   • Gangs, pimps, and drug dealers will infiltrate the schools in search of students to recruit or sell to.
   • Most people drive or are driven down the hill from their homes and will not likely walk to the SkyTrain due to the excessive grade of the hillside. In other words, the station will either require a park and ride or it will not be used by residents.
   • Once again, concern regarding residential property crimes were mentioned.
2 A station at Guildford should be equipped with a community policing station at the design level.
3 Many people felt that the options that travel along the Barnet or the CP Rail line will be better because they are further away from the schools and residential areas.
4 A few attendees felt that a station in the area of Guildford would better service the community than one on the Barnet Hwy. There were also safety concerns expressed relating to pedestrians crossing the Barnet and isolation of SkyTrain users being away from other people.

Overall Impressions

1 The community does not appear to support the Guildford Way route or the Guildford Station for numerous crime and security related concerns. Of those who expressed their opinion, proximity to schools is the largest single concern.

2 In general, the route option that travels along the Barnet did not seem to affect the attendees in a negative way and they were most accepting of these options.

Coquitlam Extension (Central Segment) – Open House #1

Lougheed Mall, Port Moody, Coquitlam Town Centre
Wednesday, October 7, 1998
4:00pm – 8:00pm
Port Moody Middle School

General Security, Safety, and Crime Concerns

1 Residents and community members are concerned about safety in general.

2 SkyTrain station proximity to schools was an issue.

3 Drug transport between communities will be facilitated by enabling traffickers to use the SkyTrain and stations for activities. Some were fearful that the New Westminster problem will move into Port Moody/Coquitlam areas.

4 Turnstiles in stations (ensuring proper payment methods) may prevent more broad-based criminal opportunity and misuse of the SkyTrain for other purposes.

5 Localized station design are important, including accessibility to seniors and handicapped, etc.

- General feeling of comfort is of primary importance on this level.

6 Existence of SkyTrain will facilitate outsiders to come into Port Moody to carry out their crimes.

- Many residents admit that crime will happen whether or not SkyTrain is in operation, but that we do not want to encourage outsiders to come here.

7 Localized security concerns re: SkyTrain and station areas:

- Security on trains is a concern
- Security in the parking areas
- Welfare of vehicle left unattended in the parking areas

Crime Concerns relating to Route Options

1 Not many concerns were expressed about the various route options and their crime impact within Port Moody.

2 There was, however, significant opposition to the Yellow Route along St. John's for various reasons as well as crime:

- Proximity to schools
- Appearances
- Congestion

3 Opposition existed surrounding the Miller Ravine option, especially because of environmental issues.

4 In general, attendees thought the Blue or Red Options were more acceptable as they avoided schools throughout the whole segment of the route.

5 Continued opposition to the Guildford Route Alignment and Station was expressed at this Open House. No new issues were raised, but repeated concerns emerged surrounding the school proximity and student safety.

Overall Impressions

1 Residents were more concerned about property values, land acquisitions, and the effects of tunnelling than they were about the impact on crime within Port Moody.
Appendix A - Open House Notes

2 General crime concerns were raised about the existence of SkyTrain, but few specific concerns relating to the route alignment and crime were expressed.
3 There was a general acceptance that SkyTrain is on its way, and residents were looking for answers about how it will impact them.
4 Again, the Blue or Red options appeared to be preferable to most attendees.

Coquitlam Extension (Western Segment) – Open House #1
Lougheed Mall, Port Moody, Coquitlam Town Centre
Wednesday, October 8, 1998
4:00pm – 8:00pm
Banting Middle School

General Security, Safety, and Crime Concerns
1 Turnstiles should be considered as a station design option to reduce the criminal element.
2 Women’s perspective for safety and crime issues should be used – some feel that there is not enough focus on women’s concerns and their safety.
3 Stations in general should be above ground for safety considerations
4 Every trains should be staffed with an attendant for enhanced safety and security.
5 Stations should be located where they can be self-policed by area users.
6 Security on the trains is a major concern (what do passengers do when they are between stations?)
7 Many attendees said that they would not use the SkyTrain at night for safety issues.
8 If the system is not made to be comfortable for everyone (i.e. safe, free from fear) it will not be used and crime on the system will increase.

Crime Concerns relating to Route Options
1 Numerous crime-related concerns emerged regarding the Burquitlam Plaza station. There are already identified crime concerns in this Plaza and residents feel that these activities will only increase with the addition of SkyTrain.
2 There was more concern expressed at this Open House than those previous that the drug activity from New Westminster is likely to migrate to the Burquitlam Area. This appears to be partly because community members acknowledge that there may already be a problem.
3 There was expressed concern that because there is only a 20 minute walking distance between Lougheed Mall and Burquitlam Plaza, the entire area between the two intended stations would become a crime corridor.
4 A new community police station is opening in Burquitlam Plaza. Attendees believe that this was initiated by the local police to address crime problems that will result from the planned SkyTrain station. Residents would like to see a community police station within the SkyTrain station.
5 Many attendees assumed that crime would increase at Lougheed Mall and most were accepting of this perceived increase, however, the concern surrounded the spreading of this crime to Burquitlam.
6 Burquitlam is a lower income pocket in the Coquitlam area and there is already drug activity and graffiti concerns.
7 Proximity to schools was brought up again as residents feel that their children will be subject to drug solicitation and recruitment of prostitutes.
8 Specific concern was expressed regarding the influence of pay phones on crime. It was recommended that surveillance of payphones be considered.
9 Concerns about parking congestion in the Plaza parking lot were expressed and the spill-over effecting surrounding streets. Residents feel that this will bring and increase in auto crime to their neighbourhoods.
Overall Impressions
1 Residents are convinced that crime will increase within the Burquitlam Plaza if a SkyTrain Station were to be constructed here.
2 Residents identified an already established growing crime problem in the area.
3 Based on the opinions of the attendees, there appeared to be a general negative opinion of Rapid Transit coming to this area.

Burnaby - Segment 2,3,4 – Open House #2
Open House #2
Boundary to Lougheed Mall Approach
Wednesday, October 14, 1998
4:00pm – 8:00pm
Bill Copeland Sports Centre

General Security, Safety, and Crime Concerns
1 More concerns were expressed about crime shifting into residential communities along Lougheed Highway.

Crime Concerns relating to Route Options
1 Some people were concerned about station alignment relative to local schools. Even though the station would be on the opposite side of Lougheed Hwy., some feel that this would impact on the safety of the schools.

Overall Impressions
1 There was little opposition from a crime and security perspective to the route options presented.
2 Most people felt that SkyTrain presence was a good thing because it enhanced the lacking transit system in the Lougheed corridor.

Burnaby - Segment 5
Lougheed Mall
Thursday, October 22, 1998
4:00pm – 8:00pm
Cameron Elementary School

General Security, Safety, and Crime Concerns
1 Some feel that small stores in the vicinity of the SkyTrain stations will enhance surveillance.
2 An automated system generates fear and crime concerns because there are no drivers on them.
3 Station attendants are more important to many people than train attendants for safety.
4 Concerns about increased crime being brought into the community.
5 Concerns about personal security while using the system.
6 Feeling that residential B&E’s will increase because we are allowing more outsiders to become aware of the neighbourhoods they were not previously aware of.
7 Opinions that drugs will be brought in from New West were common, however most attendees admitted that there are already drug issues around Lougheed Mall.
8 General concern was expressed by one attendee that the guideway itself may attract the criminal element and wanted to be sure that we were considering this possibility.

Crime Concerns relating to Route Options
1 For the most part, attendees preferred the elevated stations as opposed to the underground option (Option A) from a crime and safety perspective.
2 Option B had the most opposition as it forced people to have to walk further from the mall to get to. From a safety standpoint, people felt that they would be more at risk because of isolation.
3 One attendee preferred the underground station as it reduced the likelihood that youths would loiter in the station (it would force them to loiter on street level).
Appendix A - Open House Notes

4 Some felt that the Bell station was not necessary and that it would simply cause problems. The feeling was that if the area were more highly populated, it would not be a concern. But because it is near the ravine, there are safety considerations presented.

Overall Impressions

1 Some attendees expressed that they felt much better about the crime issues because they know that we are addressing their issues. They feel that although it is likely that crime may go up in their respective area, they are comfortable that the RTPO is doing the best they can to minimize this risk.

2 Many people appeared to be willing to accept the SkyTrain from a crime impact standpoint. Most people had constructive comments to make and understood the complexities involved.

3 It was mentioned on numerous occasions that SRG should be in touch with community groups, police, planners, school administrators, and residents so that they can assist in the design process for the station.