Enhancing Campus Safety Through Planning and Design: Recommendations for the University of Manitoba Fort Garry Campus

By

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ABSTRACT

This practicum examines fear of crime within campus physical environments at the University of Manitoba Fort Garry campus, to develop planning and design recommendations that might contribute to campus safety. The study explores the relationship between planning and crime prevention, including a comprehensive literature review of place-based crime prevention theories; the documentation of selected universities' crime prevention planning and design principles including University of Minnesota -Twin Cities, Carleton University and University of British Columbia – Vancouver Campus. Seven planning recommendations and seven design recommendations are outlined in the concluding chapter. The study suggests that constant users, natural surveillance, mixed uses, high prospect and low refuge, are key design attributes that are relevant to reducing the fear of crime in campus physical environments. The study also suggests that more awareness about the issue of crime prevention. and information sharing amongst key stakeholders, can help make better decisions on crime prevention planning.

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DEDICATION

To my late father, Samuel Nkole Bwalya, who showed me the value of education and perseverance. You will forever be my inspiration.

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CHAPTER 1: INTRODUCTION

1.1 Preamble

Planners have the responsibility to help create cities and communities that are "safe, healthy, and secure" (Canadian Institute of Planners, 2011, para. 2). Today, planners continue to use master plans as one of their tools for creating environments that are safe and sustainable. Universities and colleges are examples of communities that prepare master plans to guide future development of their campuses. Typically, a university master plan addresses future campus development in terms of: land use, the movement of people and automobiles, the built environment, and any other aspect of planning that is considered to be of importance for the future of campus development. However, Burns (2001) notes that recently some campuses have been expanding at a rapid rate leading to "an incoherent muddle of buildings, parking lots, 'landscrapes', streets, and paths" (p.8), and if not appropriately guided, this may compromise various aspects of sustainability, including safety (Kenney, Dumont, Kenney, 2005, p.117).

1.2 Problem Statement

University and college campuses are similar to urban centres in that they have people interacting within physical environments. But, just like cities, crime and the fear of crime is of concern on campuses (Fisher & Nasar, 1992; Jennings, Gover & Pudrzynskas, 2007; Smith & Fossey, 1995; Siegel, 1994;). This suggests a real need to better address campus safety. Crime and fear of crime affects the quality of life of those that call campuses 'home' (Fisher & Nasar, 1992, p.35). Should institutional leaders choose not to address the issue of personal safety on campus, there is a possibility that campus users may begin to avoid certain areas within the campus physical environment out of fear for their own personal safety; and in some cases, they may choose to completely avoid the campus as a whole. However, various studies and certain

theories suggest that effective planning and design practices can increase personal safety, and hence improve the quality of life and experience of places (Schneider & Kitchen, 2002; Shaftoe, 2005).

1.3 Purpose of the Study

This practicum seeks to inform institutional leaders, and the planners and designers who work with them, of the opportunities to better address the challenge of creating safer campus. With a focus on the University of Manitoba Fort Garry (UM-FG) campus, this study aims to achieve the following objectives:

- Explore the relationship between planning and crime prevention;
- Investigate users' safety concerns at the Fort Garry campus;
- Explore planning and design principles that might contribute to crime prevention at the Fort Garry campus;
- Formulate crime prevention planning and design recommendations for the Fort Garry campus.

The University of Manitoba is the largest university in Manitoba, and the Fort Garry campus is the largest of the university's two campuses. It is located approximately 13 kilometers south of Winnipeg's downtown. Currently, the Security Services department manages and coordinates issues pertaining to safety and security at the Fort Garry campus. However, safety could be addressed through planning and design, and as a result, supplement and or complement the current efforts initiated by the Security Services department. This study intends to further these efforts through a review of crime prevention theories and studies, key informant interviews, and a survey questionnaire.

1.4 Research Questions

With the above objectives in mind, this practicum investigates three questions concerning the roles that planning and design of the physical environment could play in better addressing safety at the Fort Garry campus.

1. What are the safety concerns common to student users of university campuses?
2. What planning and design principles might be used to reduce the fear of crime in campus environments, and enhance campus safety?
3. What challenges and barriers do planners face in their effort to address the fear of crime through planning and design, and how might these be overcome?

1.5 Scope of the Study

Crime prevention in general is too broad a topic to thoroughly address in a single study. Consequently, the scope of this study has been limited to focus on: the fear of crime; place-based crime prevention theories; planning models; and crime prevention practices within campus physical environments. The primary focus of this study is to develop some planning and design recommendations that might better address the safety concerns of students at the University of Manitoba's Fort Garry campus.

1.6 Research Methods

The study includes a literature review on the fear of crime, place-based crime prevention theories, and planning approaches aimed at addressing the issue of safety within campus physical environments. The literature review constitutes one means of pursuing the research questions posed above (Section 1.4). This study also applies a combination of qualitative and quantitative research methods to gain a better understanding of student safety concerns at the Fort Garry

campus. Using a survey questionnaire, the study investigates where students at the University of Manitoba Fort Garry campus feel safe or unsafe, why they feel safe or unsafe in these particular areas and, what changes may be merited to reduce safety concerns, and achieve a greater sense of safety.

In addition, key informant interviews were conducted to investigate the opportunities, challenges and barriers associated with reducing fear of crime through planning and design at the Fort Garry campus.

1.7 Theoretical Approaches

This study features reviews and analyses of four place-based crime prevention theories: Jane Jacobs (1961) 'Eyes on the Streets'; Oscar Newman's (1972) *Defensible Space*; Ray C. Jeffery's (1971) concept of *Crime Prevention through Environmental Design (CPTED)* (as expanded upon by Timothy D. Crowe (2000); and Ronald V. Clarke's (1997) *Situational Crime Prevention*. New Urbanism (NU) is also reviewed, as it has been suggested by a number of design professionals that some of the design principles that NU proposes could address the issue of crime in urban environments (Schneider & Kitchen, 2002, p.91). New Urbanism is generally supportive of design principles that create neighbourhoods that are walkable, and mixed in terms of uses, and these principles appear to support some of the arguments put forward by Jane Jacobs (1961) and Oscar Newman (1972) concerning safety.

1.8 Importance of the Study

This practicum identifies and examines safety concerns at the University of Manitoba's Fort Garry campus. The knowledge and understanding gained has been applied to formulate planning and design recommendations that might be pursued by the appropriate U of M campus stakeholders, in this case, including: the Campus Planning Office, Physical Plant, the Security

Services Department, Central Administration - and the planners and urban designers that work with them. The study aims to improve campus physical environments, and improve planning and design principles for future campus developments. This study is not only about crime prevention; it also seeks to make the campus better in a number of other ways. It is concerned with the promotion of an attractive campus environment that meets a full set of planning objectives around safety and livability.

The study also draws on two planning models – physical and regulatory - to provide a framework for investigating how planners and designers could better play their roles in helping to create safer campus physical environments.

1.9 Assumptions and Limitations

The study assumes that a relationship exists between the nature of built environments, and the fear of crime - and crime itself, and that this relationship is evident in the planning and design of the University of Manitoba Fort Garry campus.

The study limits the research to the experience of students at the University of Manitoba. However, it is acknowledged that there are others that also use the campus on any given day and year, potentially with their own safety concerns. Planning and design recommendations that might create a safer campus physical environment are identified. Implementation consideration will fall to various campus stakeholders. In addition, some of the recommendations identified could be applied in other settings that may have safety concerns similar to the ones identified through this study.

1.10 Outline of the Chapters

Following this Introduction, Chapter Two presents a literature review that explores and summarizes the theories on crime prevention through environmental design, and their importance

to creating a safer campus environment. There is also a consideration of practice, in general, around crime prevention and the physical environment. Chapter Three focuses on precedents, featuring three other campus contexts: University of Minnesota (twin cities); Carleton University (Ottawa); and University of British Columbia (Vancouver). Chapter Four presents the research methods in greater detail – the survey questionnaire and key informant interviews. This is followed in Chapter Five by an examination of the Fort Garry campus physical environment from a 'planning and design' for safety perspective. Finally, Chapter Six discusses opportunities to create a safer campus, with related general conclusions and specific recommendations.

CHAPTER 2: CRIME PREVENTION THROUGH PLANNING AND DESIGN - THEORY AND PRACTICE

This chapter presents a review of the literature on the fear of crime, and the relationship between crime and the physical environment, by investigating place-based crime prevention theories developed by theorists Jane Jacobs (1961), Oscar Newman (1972) Ray C. Jeffery (1971) and Ronald V. Clarke (1997). The relevant design principles of New Urbanism are also reviewed since they have been noted as being promising in addressing the issue of crime in urban environments (Schneider & Kitchen, 2002). The featured theories and urban design trends have been deemed relevant to establishing a theoretical base for exploring and developing planning and design recommendations that might reduce crime and fear of crime. This chapter also examines the roles planning, and planners, could play in creating safer campus physical environments, by applying physical and regulatory planning models of planning. The following chapter will focus on the practice associated with three selected precedents – other universities that are addressing the issue of safety through their campus plan.

2.1 Fear of Crime

Fear of crime affects how people choose to move through their physical environments, and how they choose to interact within their social environments (Lab, 2000; Wekerle & Whitzman, 1995). Certain crime prevention programs initiated in various cities have been in response to an increase in fear of crime, rather than to an increase in actual crime (Lab, 2000, Schneider & Kitchen, 2007).

There is a debate in the literature over the definition and measurement of fear of crime (Lab, 2000). Ferraro (1995) defines fear:

> As an emotional response of dread or anxiety to crime or symbols that a person associates with crime. This definition implies that some recognition of potential danger, what we may call perceived risk, is necessary to evoke fear (p.8).

However, Sacco (2005) identifies three dimensions of fear of crime that researchers mainly investigate: cognitive, affective, and behavioural (p.125). The cognitive dimension of fear of crime focuses on individuals' belief that they are likely to become a victim of crime. However, this perceived risk can be contrasted, for example, with actual crime reports to determine if an individuals' belief is right or wrong (Sacco, 2005, p.25). The affective dimension of fear of crime relates to how people feel about crime. Unlike the cognitive dimension, the affective dimension cannot really engage whether what a person feels is right or wrong (Sacco, 2005, p.26).

The behavioural dimension, which is considered most applicable for this study, addresses the actions people take in response to crime, or their perceived risk (Sacco, 2005, p.127). Lab (2000) suggests that response to fear varies with each person. For example, one may choose not to walk at night on a particular street because of a past attack, whereas someone else may choose to completely avoid that street at all times. Individuals respond to fear of crime through behavioural measures, such as the one mentioned above. Kohm (2009) suggests that the behavioural dimension "reflects the true consequences of fear" (p.4). In a similar vein, Wekerle and Whitzman (1995) have noted the likely consequences of fear of crime in a city: "fewer people use the streets; city services may not be used by the people who need them; stores in downtown centres may lose customers; and employers have a more limited pool of employees" (p. 4).

While it is apparent that defining and measuring fear of crime is rather difficult, this study investigates the behavioural aspect (rather than cognitive or affective) of fear of crime

within campus physical environments. This approach enables qualitative inquiry that provides comparatively solid responses to questions about the impact of fear of crime (Kohm, 2009, p.4).

2.2 Theories: Crime Prevention and the Physical Environment

In the second half of the 20th century urban theorists such as Jane Jacobs (1961) and Oscar Newman (1972) introduced new theories based on their observations of existing urban centres that were proving to be successful in regards to safety and housing. Today, much of the work done by planners and urban designers regarding safety, is still seemingly influenced by the ideas and arguments presented by Jacobs and Newman.

2.2.1 Eyes on the Streets

Jane Jacobs was one of the first urban writers to address personal safety and its relationship to urban design in her book *The Death and Life of Great American Cities*. The book critiques "the principles and aims that have shaped modern, orthodox city planning and rebuilding" (p.3). Jacobs observed what occurred in cities during her life, in particular how people behaved in urban spaces, while also examining how people interacted with cities. She focused her observation on cities such as New York City, Los Angeles, Boston and Chicago. She observed that the way in which people perceive the city depends on the streets and sidewalks. She determined from her observations that, for a city street to qualify as being safe, involves three main qualities:

1. *Clear Demarcation*
   First, there must be a clear demarcation between what is public space and what is private space. Public and private spaces cannot ooze into each other as they do typically in suburban settings or projects (Jacobs, 1961, p.35).

2. *Eyes Upon the Street*
   Second, there must be eyes upon the street, eyes belonging to those we might call the natural proprietors of the street. The buildings on a street equipped to handle strangers and to insure the safety of both residents and strangers, must be oriented

> to the street. They cannot turn their backs or blank sides on it and leave it blind (Jacobs, 1961, p.35).

3. *Constant Users*
   > And third, the sidewalk must have users on it fairly continuously, both to add to the number of effective eyes on the street and to induce the people in buildings along the street to watch the sidewalks in sufficient numbers (Jacobs, 1961, p.35).

However, Jacobs recognized that to achieve continuous use of the street, and a high number of eyes on street, people would need to have a reason to be on these streets. Hence she suggested that along the sidewalks, stores and other public uses should be added (p.36), and she encouraged the mixing of uses to allow for continuous use of the sidewalks, throughout the day and night (p.144). The mixing of uses in certain types of developments, such as combining residential and commercial, can help foster the three main qualities that Jacobs speaks of as creating safer streets and sidewalks.

2.2.2 Defensible Space

Architect Oscar Newman, author of *Defensible Space* (1972), also studied the prevalence of crime, focusing on residential areas. Defensible space, as defined by Newman (1972):

> Is a surrogate term for the range of mechanisms – real and symbolic barriers, strongly defined areas of influence, and improved opportunities for surveillance – that combine to bring an environment under control of its residents (p.3).

Over a three-year period Newman conducted a study on housing developments in major cities across America. The New York City public housing project provided the most detailed analysis in linking the built environment to crime, fear of crime, and individual behaviour. Newman concluded that the design and layout of the existing housing developments were creating an opportunity for crime to occur (p.2). Through this study, Newman discovered that relationships exist among crime, the fear of crime, individual behaviour and the built environment. Newman argued that if buildings were positioned in a way to foster a “defensible space”, the residents

were more likely to take ownership of their space and, therefore, create a safer and liveable place. He also suggested that if buildings were positioned in a manner that provided residents with a better line of sight in which to view their surroundings from their homes, then crime was reduced. Newman observed:

> Surveillance has a demonstrable effect in reducing irrational fears and anxieties in inhabitants. This may have some self-fulfilling attributes in that residents, feeling that an area is secure, will make more frequent use of it and so further improve its security by providing the safety which comes with intensive use (Newman 1972, p.78).

Newman's theory focuses on three elements of physical design that can be applied individually or in combination in any effort to create a defensible space:

1. *Territoriality*
   The capacity of the physical environment to create perceived zones of territorial influence.

2. *Natural Surveillance*
   The capacity of physical design to provide natural surveillance opportunities for residents and their agents

3. *Image and Milieu*
   The capacity of design to influence the perception of a project's uniqueness (Newman, 1972, pp. 51, 78, 102).

Newman's work supports Jacobs' argument as regards the need to have a clear demarcation between public and private space, that residents of a community should feel that they have ownership of their physical surroundings, and that they are able to engage naturally in surveillance of their surroundings.

2.2.3 Crime Prevention through Environmental Design (CPTED)

In 1971, Ray C. Jeffery, coined the term *Crime Prevention through Environmental Design* (CPTED), and wrote a book with the same title. Jeffery focused on how offenders behave within the built environments and argued that "if we are to build a man-environment model, or

an environment-organism-environment model, we must have a psychological model of behaviour" (1977, p.186). Jeffery's original CPTED concept did not receive much attention in the 1970s as it was considered too broad.

Later, Timothy Crowe, a criminologist and author, expanded on Jeffery's concept. It suggests that crime and the fear of crime may be reduced by creating physical environments that affect the behaviour of people using these environments, in particular potential offenders (Crowe, 2000, pp.34-35). Based on Newman's defensible space theory, the three design concepts in CPTED are access control, surveillance and territorial reinforcement (Crowe, 2000, p.36). *Access control* is a design concept that limits access to potential offenders and Crowe (2000) classifies the strategies as: "organized (e.g., guards), mechanical (e.g., locks), and natural (e.g., spatial definition)" (p.36).

Surveillance is a design concept that facilitates the rightful owners of a space observing people that appear to be suspicious. A result is that potential offenders will avoid these spaces, because they sense a potential risk of being noticed and Crowe (2000) classifies the strategies as: "organized (e.g., police patrol), mechanical (e.g., lighting), and natural (e.g., windows)" (p.37).

Territorial reinforcement is a physical design concept that creates a sense of a territorial zone for the genuine users of space. Once again, potential offenders perceive these zones as risky for them. The combination of access control and surveillance can help to reinforce a sense of territoriality for genuine users, "(e.g., more security awareness, reporting, reacting) and promote greater perception of risk by offenders" (Crowe, 2000,p.37).

Nine major CPTED strategies are identified and elaborated as follows:

1. *"Provide clear border definition of controlled space"*(Crowe, 2000, p.126): This strategy involves defining borders with fences, shrubbery, signs and color definition. Ownership

of space can be established by the use of environmental cues that will affect the behaviour of users and displace users that are not supposed to be there.

2. *"Provide clearly marked transitional zones"* (Crowe, 2000, p.126): Involves clear demarcation as to when one transits different zones, such as from public to private. The user of space must be able to determine that they have transited into another zone that may be under control by the legitimate owners of the space.
3. *"Relocation of gathering areas"* (Crowe, 2000, p.126): suggests the need to locate gathering areas in locations that have some form of natural surveillance and access control. "Gathering areas on campuses may be placed in positions that are out of view of undesired users to decrease the magnetic effect, or attraction" (Crowe, 2000, p.126).
4. *"Place safe activities in unsafe locations"* (Crowe, 2000, p.126): involves placing safe activities in reasonable locations. Safe activities according to Crowe (2000) are those activities that have users that display "controlling behaviours (e.g., staring)" (p.126) which make abnormal users feel they are being noticed if they intend to offend.
5. *"Place unsafe activities in safe locations"* (Crowe, 2000, p.126): involves placing activities that are unsafe near places where there is plentiful natural surveillance and high access control so the users feel safe.
6. *"Redesignate the use of space to provide natural barriers"* (Crowe, 2000, p.126): involves separating conflicting activities that "may be disruptive or fear producing" (Crowe, 2000, p.126). This can be achieved by natural barriers such as distance between the spaces and use of other materials that may function as a natural barrier.
7. *"Improve scheduling of space"* (Crowe, 2000, p.126): suggests that improved scheduling of space can result in a reduction of risk among users and increase the perception of risk

for abnormal users. The scheduling of space helps to create an environment where it is possible to have control over the behaviour among users.

8. *"Redesign or revamp space to increase the perception of natural surveillance"* (Crowe, 2000, p.127): suggests redesigning space "to increase the perception of natural surveillance" (Crowe, 2000, p.127). It is more effective to create spaces that have natural surveillance through natural techniques such as windows and clear lines of sight, to make a user feel like they are being observed, than to use "mechanical or organized (e.g. guards) methods" (Crowe 2000, p. 227).
9. *"Overcome distance and isolation"* (Crowe, 2000, p.127): suggests that an effective design alongside good communication helps one to perceive that they have "immediate access to help" (Crowe, 20000, p.127).

According to its advocates, CPTED has two values; "First, it recognizes that the physical environment can be manipulated to produce behavioral effects that will reduce the fear and incidence of crime while improving quality of life" (Peel CPTED Advisory Committee, 2002, p.2). Secondly, "providing a conceptual framework, derived from this insight, serves to develop and ensure a better designed property" (Peel CPTED Advisory Committee, 2002, p.2). As such, CPTED involves identifying what conditions in the built environment are creating opportunities for crime, and it is assumed that if these conditions are addressed the fear and the incidence of crime will reduce. CPTED critiques have argued that changes to the physical environment could potentially reduce crime and the fear of crime, but there is no certainty that the changes will create the physical environment that a community envisions (Lab, 2000, p.40).

In addressing the fear of crime within campus physical environments, it is worthwhile noting Fisher and Nasar's (1992) study - *Fear of Crime in Relation to Three Exterior Site*

Features: Prospect, Refuge, and Escape – that investigated "fear of crime in relation to exterior site features on a college campus " (p. 35). Fisher and Nasar (1992) studied how the physical design of a campus has an impact on prospect, refuge, and escape. *Prospect* refers to the ability for one to clearly observe their surroundings. Areas with a high prospect usually make one feel safer in that given site. *Refuge* relates to the presence or absence of hidden spots, in which potential offenders can easily hide themselves from a potential victim. Finally, *escape* refers to the ability of both the offenders and victims to escape. Findings of the study suggested that spaces that are perceived as safe for a user are ones that have *low refuge* and *high prospect,* and spaces perceived as unsafe are those that have *high refuge* and *low prospect*. High prospect and low refuge facilitates natural surveillance, and the theories reviewed have suggested that natural surveillance is a quality of a safe design.(Lab, 2000, p. 34).

2.2.4 Situational Crime Prevention

Situational Crime Prevention, a term developed by architect Ronald V. Clarke (1997) refers to the preventative approach that relies on reducing the opportunity for any type of crime, occurring in any kind of setting (Clarke, 1997). In defining situational crime prevention Clarke (1997) states:

> Situational prevention comprises opportunity-reducing measures that (1) are directed at highly specific forms of crime, (2) involve the management, design or manipulation of the immediate environment in as systematic and permanent way as possible, (3) make crime more difficult and risky, or less rewarding and excusable as judged by a wide range of offenders (Clarke, 1997, p. 4).

Situational crime prevention is based on two related crime opportunity theories: rational choice and routine activity. Rational choice theory (Cornish & Clarke, 1986) follows the assumption that opportunistic offenders are free to make choices to commit a crime and that the offence is made in response to immediate circumstances. In addition, the motivation of the criminal to

offend is seen as dependent on the calculation of cost and benefits.

Routine activity theory argues that changes in the numbers of "suitable targets" for crime, or in the numbers of "capable guardians" against crime can lead to more or less crime occurring (Cohen & Felson, 1979). Fisher and Nasar (1992) observed through their study on Ohio State University campus: "campuses tend to have easy access, free movement at all hours, and the diversity that allows offenders to remain unnoticed, all of which contribute to a lack of guardianship" (p.36).

2.2.5 New Urbanism

Emerging in the late-twentieth century, New Urbanism (NU) developed in response to the poor urban conditions that existed as a result of post-modernism and also in support of the recent need of urban centres to promote sustainability (Schneider & Kitchen, 2007). New Urbanism promotes high-density developments, transit-oriented neighbourhoods (TOD), pedestrian-friendly, mixed-use residential development, and diversity in housing. It is claimed that such design principles will reduce crime and increase opportunities for surveillance, encourage social interaction and promote a sense of community (CNU, 2001). Plater-Zyberk (1993) states that: "We believe that the physical structure of our environment can be managed and that controlling it is the key to solving numerous problems confronting government today-traffic congestion, pollution, financial depiction, social , and yes, even crime" (p. 12).

The Charter of New Urbanism (CNU, 2001) states that "the revitalisation of urban places depends on safety and security". However, the Charter has been criticised because it does not specifically address crime (Cozen, 2008, p.432). While it has been suggested that permeability of community layouts and mixed uses can generate natural surveillance (Schneider & Kitchen, 2007, p.52), there is no empirical evidence of such (Cozens, 2008; Schneider & Kitchen, 2007),

however a number of communities and government policies have chosen to adopt some of the principles of NU to promote sustainability (Cozen, 2008, p. 430).

Permeability can be achieved by applying gridiron street layouts that promote more interaction between residents and strangers without vehicular movement. Then mixing land uses "helps reclaim streets and encourages pedestrianism" (Schneider & Kitchen, 2007, p. 46) that in turn increases the number of 'eyes on the street' that Jacobs (1961) supported. Kenney, Dumont and Kenney (2005) suggest the mixing of uses within campus physical environments "improves both the reality and perception of campus safety by activating campus districts around the schedules and patterns of campus activities throughout the entire day" (p.132). They further suggest placing these uses close enough to each other so users can easily move from one place to another, and hence the campus will "achieve the community interaction that institutions would like" (Kenney, Dumont & Kenney, 2005, p. 122), and could further promote safety. Many of the arguments that Kenney et al (2005) put forward lie parallel to the arguments that NU presents regarding crime.

There is some debate in the literature (Schneider & Kitchen, 2002)as regards permeability versus restricting or limiting access to campus to only the legitimate users, such as, the students and staff. Limiting access could amount to what is commonly termed as a gated community. This could be an option for a university campus. However, the question would arise as to whether this would be a complete solution to preventing crime, because potential offenders can still be within the campus boundaries or community. The New Urbanism design concept of permeability is argued to promote interaction amongst users (Schneider & Kitchen, 2007, p.47) Depending where a university campus is located, a university administration may consider

making the campus part of the neighbourhood it lies within, and promote people interaction through permeability, in turn, creating an 'eyes upon the street' effect.

2.2.6 Summary

The theory literature review has helped to establish the main qualities of a safe physical environment. Although many of the theory and design concepts studied are based on observation and studies on cities in general, they can still be applied in the context of campus settings, to the extent that university campuses are like cities in themselves.

The pioneering work of Jacobs (1961) and Newman (1972) suggests that the physical design and layout of space must provide 'eyes upon the street' or 'natural surveillance', which in turn creates a sense of ownership of a space. The need for constant usage also helps to create more effective eyes upon the street. It is assumed that this is can be achieved through a mixing of uses and high-density developments to promote walkable neighborhoods – design principles that New Urbanism promotes and supports.

From a theory perspective, the five attributes of physical environments that seem particularly relevant to crime prevention in campus physical environments are: natural surveillance, constant users, mixed uses, high prospect and low refuge. Specific strategies meriting particular consideration are those enumerated by Crowe (2000).

2.3 Practice: Crime Prevention and the Physical Environment

While it may appear to be a challenge for planners to directly create physical environments that are safer (Kitchen, 2002; Wekerle & Whitzman, 1995), indirect opportunities exist through effective planning and design of the built environment. Wekerle and Whitzman (1995) suggest setting the following goals when planning for safer urban environments:

> There must be an awareness of the issues by people with authority, and commitment that these people with power have a positive role to play in mitigating crime and fear in urban environments.
>
> Processes must be created whereby existing urban environments are improved, and new urban environments planned with safety in mind.
>
> Mutual learning must be set in place, whereby evaluation of these improvements is continually taking place, and ideas are examined and modified (Wekerle & Whitzman, 1995, p.17).

In theory, and in practice, planners can play a role in the process, through the 'planning process' itself, including such questioning as: "what characteristics in the situations where planning takes place affect planning outcomes?" (Alexander, 1992, p.8), or what particular planning model can be applied to achieve a desired outcome. Commonly, models of the planning process require an understanding of what a community or group of people wants to do, and how it will be done (Litman, 2011, p.3). Furthermore, effective planning calls for a planning process that reflects the following principles:

- *Comprehensive* – all significant options and impacts are considered.
- *Efficien*t – the process should not waste time or money.
- *Inclusiv*e – people affected by the plan have opportunities to be involved.
- *Informative* – results are understood by stakeholders (i.e. the people affected by a decision).
- *Integrated* – individual short-term decisions should support strategic, long-term goals.
- *Logical* – each step leads to the next.
- *Transparent* – everybody involved understands how the process operates (Litman, 2011, p.4).

Theories on place-based crime prevention suggests that the concern for crime and fear can be addressed through interventions in the physical environment. Building on this premise, this study reflects a substantive and instrumental approach to planning. Substantive planning models are distinguished by the "different types of planning activity, such as physical, economic, transportation, and health planning and the like" (Alexander, 1992, p.94). The substantive model

of physical planning is adopted here because of the study's focus on physical environments. Physical planning deals with the built environment and the uses of land at various scales, ranging from cities to regions. Physical planning includes urban (site) design and land-use planning. Urban design focuses on the form that built environments take, whereas land-use planning is concerned with how land is arranged and used (Alexander, 1992, pp.94-95).

However, the substantive model only identifies the characteristics in relation to which the planning will take place. The more important questions for this study then becomes: How can safety be addressed through 'physical' planning? How can planners influence an outcome that equates to a safer campus environment? Since the objective here is to create a safer campus physical environment, the instrumental model of regulatory planning is also applied. An instrumental planning model "focuses on the variation in planning objectives and the tools employed to achieve them" (Alexander, 1992, p.98). Master plans, site plans, design guidance and various forms of zoning are some of the tools that may be employed to regulate physical planning outcomes.

In theory, both physical and regulatory planning provide an opportunity for planners to help create safer campus built environments. Regardless of the future form of a campus plan, as far as personal safety is concerned, theory suggests that the basic premise should remain the same: effective campus plans should contain policies, and promote principles and practices, which contribute to the prevention of fear of crime and crime itself, on campus. Conventionally, it may be noted, planners have played a role in regulatory planning by guiding, recommending and regulating how land is used, and by efforts to influence the form of the built environment. Planners can in theory contribute by designing campus built environments (buildings, open spaces, street layouts and 'street' furniture) that make crime less likely to occur, and render fear

reduced - applying some of the design principles and strategies presented by the theories on place-based crime prevention.

From the above discussion, we can begin to understand, in theory, how planning and planners could play a role in creating safer campus environments. The following chapter focuses on relevant practice precedents that may also have applicability, through adaptation, in the Fort Garry Campus context.

CHAPTER 3: CAMPUS PLANNING AND DESIGN - PRECEDENTS

3.1 Introduction

This chapter reviews how three other universities have addressed the issue of safety within their campus physical environments. Before delving into these precedents the general method - or practice - of campus design is considered to help develop a basic understanding, and to establish what aspects particularly contribute to prevention of crime and the fear of crime.

Dober (1992) describes campus design as:

> The art of campus planning, the culminating act of those processes and procedures that give form, content, meaning, and delight to the physical environment serving higher education (p.3).

It is rather difficult to set a single standard as to how campuses should be designed, because institutions of higher education tend to vary in a number of things, such as purpose, goals, needs, mission, size, location, and history. All of these, and other related circumstances, are factored into the design of a campus (Dober, 1992, p.4). So the challenge for planning becomes, not only to address the issue of safety within campus physical environments, but to do so with other design determinants in mind, thus making the design process complex (Dober, 1992, p.4). However, Dober (1992) advocates a campus design approach that "combines aspects of traditional town planning and urban design techniques, contemporary participatory planning, and the ecological and visual heritage of landscape architecture" (p.4). This study also adopts this approach. Dober (1992) identifies the chief components of campus design as being the "buildings, landscape and circulation systems" (p.4), and that, "campus design utilizes these components in placemaking and placemarking" (p.4). Placemaking involves envisioning the future for the overall campus, while placemarking involves the detailing of the built

environment, which includes architecture, landscape architecture, and engineering (Dober, 1992, p.229).

Based on Dober's understanding of the chief design components in the process of placemaking - buildings, landscapes and circulation systems - the following sections examine how three selected universities address the issue of safety in their physical environment. The purpose of this is to provide context for the overall study and to provide insight into the opportunities or potential for the U of M Fort Garry campus.

The three campuses sampled are the University of Minnesota Twin Cities (UMTC) campus, Carleton University (CU) campus, and the University of British Columbia (UBC) Vancouver campus. The study assumes that weather affects users' movements within campus. Consequently, the University of Minnesota Twin Cities was selected because it has a somewhat similar climate to the U of M Fort Garry campus. Carleton University was selected because of its five-kilometer stretch of underground tunnels; although the Fort Garry campus underground tunnels vary in length, it is definitely a feature shared in common with Carleton University. And finally, the UBC Vancouver campus was selected because of its size; it covers a larger area of land and enrolls a large number of students. It facilitates consideration of how a large campus addresses the issues of safety. In addition, and probably of greater importance, there is consideration of UBC's recent practice of preparing safety reports and conducting safety audits, serving as resources for Campus Planning and Development when developing or updating the campus master plan. All three universities studied had data readily available through their campus master plans posted on their university web-sites.

3.2 University of Minnesota - Twin Cities

Adopted March 2009, the University of Minnesota Twin Cities Campus Master Plan (2009) is designed to work as a framework for guiding future campus developments. Eleven foundational principles are presented to express the Plan's goals and values, and safety is considered as one of them (p.8); specifically, the plan intends to "foster a safer, secure, and accessible campus environment" (p.8).

The UMTC Campus Master Plan (2009) seeks to address the issue of safety through various planning and design methods, which include a "mix of land uses, landscaping, wayfinding, and the configuration and detailed design of individual buildings and open spaces" (p.21). Concerns for safety during the night-time are addressed through design recommendation to improve the lighting in open spaces and along passageways - to increase visibility. Passageways are to be designed to accommodate various modes of vehicular and pedestrian transportation to promote constant usage - a design attribute considered to create a real and perceived safe environment. The Plan seeks to give pedestrian movement the highest priority (p.21).

The UMTC recognizes the need for a safe and secure campus environment for both the campus and the surrounding community, according to the following guidelines:

- *Promote community building and awareness*
  Promote community building and awareness among multiple stakeholders who live, work, visit, or own property in key neighbourhoods adjacent to the university and ensure strong communication linkages with the University.

- *Encourage collaboration*
  Expand community policing strategies and collaboration with other jurisdictions to provide crime prevention and enforcement resources that address issues such as property crime, nuisance noise infractions and other critical livability issues.

- *Apply CPTED strategies*
  Incorporate crime prevention through environmental design (CPTED) principles in planning (University of Minnesota, 2009, p.29).

The plan further recommends applying the following principles to pedestrian environments to promote safety and accessibility:

Promote natural surveillance and increase artificial surveillance

- Avoid the creation of isolated dead end spaces, or sunken or elevated plazas out of direct view of passers by.

- Increase the number of centrally monitored security cameras in highly traveled places on campus.

- Ensure ground floor visibility from buildings, allowing for a casual means of surveillance of outdoor activity.

- Create unobstructed views, without landscape plantings in a zone between 2' and 6' above grade (University of Minnesota, 2009, p.41).

Encourage mixed use and better street furniture to enable constant users

- Locate mixed uses such as retail or support services in buildings to extend the hours of activity next to public areas where market demand can support such uses.

- Provide diverse and abundant places to sit (University of Minnesota, 2009, p.41).

Improved lighting systems for better visibility

- Use multipurpose lighting scaled for pedestrians and vehicles.

- Create a clearly designated system of well-lit and secure after-dark walking routes (University of Minnesota, 2009, p.41).

Overall, the UMTC Campus Master Plan has made an effort to address the issue of safety within campus physical environments by developing guidelines and principles that could possibly create a safer and accessible campus environment. Based on the above, it is evident that the plan intends to promote the following particular qualities of a safe campus physical environment: natural surveillance, constant users and mixed land uses.

3.3 Carleton University

Carleton University is situated on 62 hectares of land just south of Ottawa's city centre. Somewhat similar to the Fort Garry campus, it has five kilometers of underground tunnels that connect all the buildings on campus (Carleton University, 2011). In general, the tunnels are completely enclosed spaces that have openings at each end for egress. This study assumes that users tend to fear moving through them, as they feel no one is watching them. For that reason, this study focuses on how Carleton University addresses the issue of safety within the tunnels, to the extent that this is a concern.

At Carleton University, safety is a key planning principle; it takes into consideration that buildings, landscape and lighting have a role to play in terms of safety. The Plan suggests that if buildings, landscape and lighting are designed and managed in a certain way, they might help promote personal safety on campus (duToit Allsopp Hillier, 2010, p.30). The plan further states that, "enhancing safety sets up a virtuous circle: the safer the campus feels, the more it is occupied, the safer it becomes" (duToit Allsopp Hillier, 2010, p.30).

A 'Planning Base' document was prepared to document information gathered from a campus planning process that included consultation and participation from various stakeholders. The information gathered was used to help develop the 2010 Carleton University Campus Master Plan. The Planning Base document presented results of a survey that investigated what people liked, what people disliked and what they would like to see changed at Carleton University. It was discovered that people actually liked the tunnels or found them to be rather useful, but had concerns mainly with the aesthetics and lighting within them (duToit Allsopp Hillier, 2009, p.5). To address this concern, the Campus Plan states the need for improved lighting within the tunnels (duToit Allsopp Hillier, 2010, pp.28, 52). Another safety concern identified through the

planning process was a lack of emergency stations around the campus (duToit Allsopp Hillier, 2009, p.5), which the Campus Plan does not really address or engage.

Overall, the Carleton University Campus Plan acknowledges the need for safety; however, it does not provide any specific guidelines as to how exactly buildings and landscapes will be arranged to promote safety within the campus physical environments. It is worth noting that an architectural firm prepared the Campus Plan; architecture is a design profession that focuses on the details of the built environment, and not so much on the layout of buildings and intervening spaces or connections.

3.4 University of British Columbia - Vancouver

The University of British Columbia (UBC) Vancouver campus is one of the largest in Canada (University of British Columbia, 2009, p.5). In addition:

- The Vancouver campus' total built floor space is over 14 million square feet.
- In the 2007 - 2008 calendar year, 37,580 students (full time equivalent) plus 2,770 faculty and 9,200 staff, resulted in a total campus population of just over 49,560.
- With 8,535 beds, the University has the largest student residential community on a single campus in Canada, housing just over 29 percent of full time undergraduate, and 24 percent of graduate students on campus (University of British Columbia, 2009, p.5).

In July of 2000, the Office of the Personal Security Coordinator for UBC initiated a Personal Security Mapping Project. The purpose of the project was to gather data that could be used to improve the campus physical environment, to hopefully reduce crime and fear, and to further incorporate the information into future campus developments - to help design campus physical environments that feel safer (Office of the Personal Security Coordinator, 2000, p.1).

Survey mapping was used as a research tool as it is useful in terms of gathering information about people's ideas about a topic - such as crime and fear - and then presenting the data graphically (Office of the Personal Security Coordinator, 2000, p.1).

The project used two non-probability samples - snowball and convenience samples. Of the 1,500 surveys that were distributed, 746 were returned as complete. The final responses received comprised respondents belonging to the following groups of people: 34 faculty, 174 staff, 444 undergraduate students, 79 graduate students and 15 others (Office of the Personal Security Coordinator, 2000, p.2).

The survey participants were asked to draw onto a UBC campus map the areas where they felt comfortable, areas where they had fears, and, with the use of arrows, to indicate their regular travel paths around campus (Office of the Personal Security Coordinator, 2000, p.1).

From the survey, it was discovered that common concerns with areas of fear were associated with inadequate lighting and infrequent patrolling of the campus, leading to a sense of isolation. Areas of comfort were identified as being areas that are well lit and with constant users, which in turn eliminated the sense of isolation and reduced the levels of fear (Office of the Personal Security Coordinator, 2000, p.7).

The Personal Security Mapping Project report concluded that the main concern, for campus users who identified areas of fear on campus, was lighting. As a result, as part of the Safer Campus Plan, a number of lighting upgrades were completed. According to the report, it is stated that the information gathered would be passed on "to key stakeholders on campus dealing with safety, security and safer campus planning issues "(Office of the Personal Security Coordinator, 2000, p.14).

In 2010 a new UBC Vancouver Campus Plan was adopted. It was developed through a six-phase process comprising technical studies and consultation with students, residents, alumni, and other stakeholders. The plan is designed to provide a framework for the campus's future development (University of British Columbia, 2010a).

The Campus Plan is made up of the following three documents:

- Part 1: Campus Plan Synopsis - an overview of the plan strategies, policies and implementation actions
- Part 2: Campus Plan - policies with their context, protocols, reference maps and campus growth assumptions
- Part 3: Design Guidelines - architecture, landscape and infrastructure design requirements for new capital projects, renovations and activities associated with operations and maintenance (UBC Vancouver Campus, 2010b, p.8).

Within the Plan, policies pertaining to existing and future campus development are organized under the following five categories - each addressing the aspect of safety directly or indirectly: Sustainability; Campus Land Use, Public Realm and Open Space; Movement and Circulation; Infrastructure and Utilities; and Campus Character (UBC Vancouver Campus, 2010b, p.8). However, this study looks at the policies and guidelines that *directly* address the issue of safety within the campus physical environments.

The UBC Vancouver Campus Plan (2010b) states that "a safe, interesting and vibrant campus encourages people to linger, socialize and develop lasting relationships" (p.21). Consequently, *Policy 17* of the Campus Plan provides for mixed-use hubs that would permit a number of certain types of uses, but especially those that would "foster social interaction and provide needed support services within a short walk of all academic precincts" (p.23) - a safe design attribute that Jane Jacobs referred to as "constant users" (Jacobs, 1961, p.35).

It has been recognized through the personal security-mapping project that inadequate

lighting appears to be a concern for people's safety. *Policy 32* provides for lighting on campus to be improved, especially in areas that are inadequately lit during the night-time and for other special areas on campus, such as the ceremonial walkways (University of British Columbia, 2010b, p.36).

Policy 41 provides for design guidelines that should be followed by all new facilities, renovations, additions and public realm improvements - to help improve how the campus built form develops, ensuring cohesive regulated development (University of British Columbia, 2010b, p.43). With regards to safety, the UBC Vancouver Campus Plan states that the design guidelines are to be "consistent with the principles of Crime Prevention through Environmental Design, including natural surveillance and territorial reinforcement that reduce crime and make people feel safe" (University of British Columbia, 2010b, p.7).

Overall, many of the Plan's design principles are grounded in the principles of sustainability (University of British Columbia, 2010a, p.5), or urban design principles that are well supported by New Urbanism proponents. This would include principles of smart growth: compact and strategic development patterns, transit-oriented developments, preserved open space, and mixed uses that promote constant users or natural surveillance (University of British Columbia, 2010b, p.6). It is evident that the UBC Vancouver campus plan directly or indirectly addresses the issue of safety within campus physical environments.

The above three precedents have been reviewed based on their campus plan. However, it is also worth noting York University's effort in raising awareness about the issue of crime on campus. York University's Department of Security, Parking & Transportation has made the effort to keep the public informed about crime and crime prevention on their campus. Currently

they have a website specifically designed to campaign for safety awareness on campus. In addition, they have a safety website - www.yorku.ca/safety - which "outlines all the services available under the headings: "Know It", "Use it", "Own it". On that page, under "Own It", there is a link to the METRAC (Metropolitan Action Committee on Violence Against Women and Children) Safety Audit. On the Safety Audit page, you can find the "Recommendations Matrix" which lists all 101 recommendations and their current status" (York University, 2011, p.2). Further details can be found at http://www.yorku.ca/safety/audit/.

Below is a summary table comparing the university campus plans reviewed. The criteria used for comparing the plans are based on the literature review. The design principles - natural surveillance and constant users - are identified as having been considered in all three plans.

Table 1: Summary Table of University Campus Plans Reviewed

Criteria	University of Minnesota: Twin Cities	Carleton University	University of British Columbia: Vancouver Campus
Natural Surveillance	✔	✔	✔
Constant Users	✔	✔	✔
Mixed Users	✔		✔
Clear Design	✔		✔
Crime Data Availability			✔
Communication		✔	✔
Participatory		✔	✔

3.5 Implications for the Study

Based on the literature review of crime prevention and the physical environment, there are a number of planning and design principles that campuses may employ in an effort to create a safer campus. All three campus plan/design precedents examined in this chapter have noted safety as an important aspect of their campus physical environment. The need to address it becomes especially important when it is discovered, through consultation with relevant stakeholders, that safety improvements are required - such as was the case for the University of British Columbia Vancouver campus and Carleton University campus. Therefore, the first step required in a planning process is to recognize the users' safety concerns, and then, to deal with them directly through planning or design improvements.

Chapters 5 and 6 examine the safety concerns at the UM Fort Garry campus - especially how safety can be improved through planning and design, those key stakeholders who would or should be involved, and the projected challenges – all informed in part by the three precedents examined in the present chapter.

CHAPTER 4: RESEARCH METHODS

4.1 Methodology

The literature review has established both the theoretical framework for the study and its direction. It suggested that a relationship exists between the perceived fear of crime and the built environment. Zeisel (2006) notes that, "asking questions in interviews and questionnaires is suited to such environment-behavior topics as perception" (Zeisel, 2006, p.158), and Kohm (2009) notes that, "survey questionnaires can elicit responses about an individual's personal risk assessment" (p.4). Consequently, a survey questionnaire and key informant interviews were selected as methods for gathering data on perceptions of personal safety, and for views of the design and planning of the Fort Garry campus.

4.2 Sampling Strategy

It would have been preferred – ideally - to have had a research sample representative of all campus users, to achieve results that could be generalized. However, time and access was a limitation, and as a result a convenient sample was chosen that was representative of only University of Manitoba graduate students. This sampling strategy has its strengths. Firstly, it made the study manageable and feasible. Secondly, the graduate students are part of the largest group of people that attend the university on a regular basis. It may be speculated that graduate students would be likely to identify safety concerns within the campus physical environment, as they would be interacting within these environments more often than a visitor would. The study was unable to achieve participation from certain groups of people that use the campus because of university regulations and policies. Because of the weaknesses of a convenience sample approach, the findings cannot be considered to be fully representative of the experience of other

users of the campus, such as undergraduate students, faculty, administrative staff and other regular users.

The study was considered to involve some potential risks for some participants. There was the likelihood that one or more participants could be victims of past crime; therefore, an approval from the University of Manitoba's Joint-Faculty Research Ethics Board (JFREB) was required before field research could commence (See Appendix A).

4.3 Survey

A survey questionnaire (See Appendix D) to investigate safety concerns at the Fort Garry campus was prepared and distributed to graduate students via email. The strengths of the survey questionnaire approach are exhibited in terms of both the potential to contact large numbers of people quickly and to standardize the questions (Mertens & McLaughlin, 2004, p.83). The questionnaire was designed to investigate perceptions of the most unsafe or safe locations on campus, as identified by the survey respondents, and to also identify the characteristics of the built environment that contribute to an area being perceived as unsafe or safe. The disadvantage in using a survey is that if the questions are not worded correctly, one may receive responses that are biased (Mertens & McLaughlin, 2004, p.83). In addition, because the questions are standardized, it is possible to miss out on information that may be appropriate and of importance to the study.

4.4 Key Informant Interviews

When a University of Manitoba unit at the Fort Garry campus is considering a significant renovation project or new construction, the first point of contact would be with Physical Plant's Architectural and Engineering Services. To develop a better knowledge and understanding of the University of Manitoba's design requirements, a key informant interview was conducted with a

member of staff from the Architectural Services unit of Physical Plant. The purpose of the interview was to explore some of the opportunities, challenges, and barriers that might exist - in any effort to address the issue of safety on campus through planning and design.

A second interview was conducted with two members of staff from the University of Manitoba Security Services Department. The purpose of this interview was to once again explore some of the opportunities, challenges, and barriers that may exist in any effort to address the issue of safety at the Fort Garry campus.

All interviews were conducted face-to-face. Email was used to contact participants and set up an appointment, for an interview that was convenient for the participant and the researcher. The emails mainly reflected discussions arising from this study, and its intended purpose.

Security Services and Architectural Services have other employees, working under those interviewed, that may have also contributed to the study. There may therefore be some weakness in the key informant interview strategy, if it failed to select 'appropriate' key informants. The study may have missed some useful information that may have been heard from others with other expertise in the area of crime prevention. Again, this makes it rather difficult to generalize results to a larger population.

4.5 Research Instruments

A semi-structured interview guide was prepared for both interviews. The tool contained a list of open-ended questions relevant to campus safety, design and planning. (See Appendix B and Appendix C). One of the strengths of interviews is the researcher's ability to use probing to receive more details in response to a line of questioning (Zeisel, 1984). Probing was useful in prompting the interview participants to think more about how planning and design could address

safety concerns, as it triggered some discussion on what interview participants identified as safety concerns on campus.

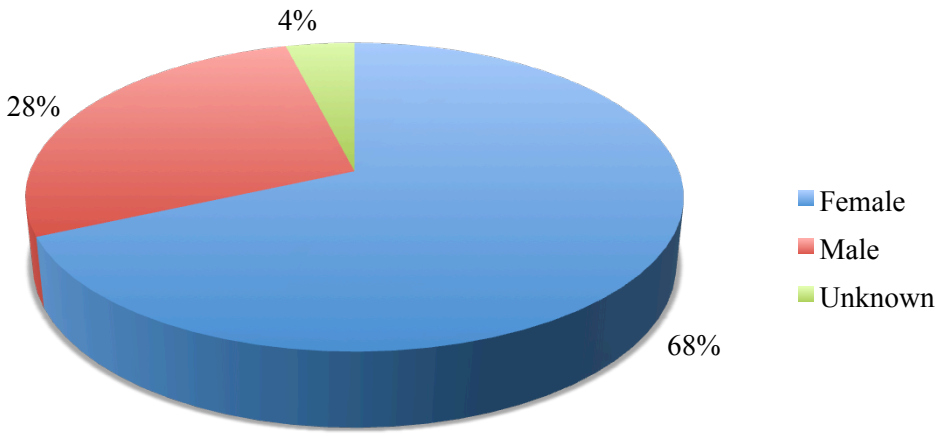
For the survey, a web questionnaire (see Appendix D) was prepared and pre-tested. The questionnaire consisted of five closed-ended questions, and three open-ended questions. 'Closed-ended' reflects questions for which the researcher provides a defined list of possible responses (for example, male or female). This produces mainly quantitative data. 'Open-ended' reflects questions for which the researcher does not provide the respondent with a set answer from which to choose, for example, 'why do you feel unsafe?' Instead, the respondents provide an answer to a question in their own words. The responses produce qualitative data which, when further analyzed, can produce quantitative data; for example, a certain number *(quantity)* of people can state they feel unsafe because of lighting *(quality)*.

The questionnaire comprised three sections. The first section required a respondent to provide consent, in an effort to address any concerns regarding research ethics. Once the respondent gave consent, they then proceeded to the second section of the questionnaire. The second section focused on demographic data with questions regarding the respondent's gender, level of study in school, and whether a respondent lived on-campus or off-campus. The last section of the questionnaire required respondents to review a map of the Fort Garry campus, and to indicate which locations on campus they felt were unsafe - and to provide details as to why they felt unsafe in those locations. Respondents were then asked to suggest what changes could make the chosen locations feel safer. The last question asked respondents to state which specific locations felt safe, and why.

An email invitation to complete the questionnaire was mailed out to all graduate students - the selected sample - in late November of 2009, using the University of Manitoba Graduate

Student Association (GSA) mailing list. A web link to the questionnaire was included in the email, and was publicly available via the Internet for a two-week period. Responses were received from 198 graduate students, out of a possible approximately 3,333 graduate students, giving a response rate of approximately 5.94 %. A total of 3,333 graduate students (Office of Institutional Analysis [OIA], 2009) were reported as enrolled for the 2009 fall term at the University of Manitoba. From the total, 57% were reported as female, and 43% as male (OIA, 2009). However, this survey received responses that were 68% representative of the female graduate student population and 28% representative of the male graduate student population (See Chart 1 below). But the responses are not representative of the actual graduate student population in terms of the ratio of males to female.

Chart 1: Survey Responses - Gender



4.6 Data Analysis

Data gathered from both the survey and interviews were analyzed by using a simple "coding" process (Strauss & Corbin, 1990). Common themes were identified, and then explored in the context of the theoretical framework of the study.

4.7 Summary

The survey and interviews helped inform the study by providing information on the current safety concerns at the Fort Garry campus. The interviews in particular provided an opportunity to gather relevant information on the university's current status regarding campus planning and design, and safety, and also an opportunity to communicate with relevant stakeholders that are likely to play a key role in the planning process as suggested by the planning models applied. In addition, the survey and interviews helped to formulate planning and design recommendations that could lead to improved campus environments, as presented in Chapter Six.

CHAPTER 5: OPPORTUNITIES TO CREATE A SAFER UM-FG CAMPUS

5.1 Background

Established in 1877, the University of Manitoba has two campuses, Fort Garry and Bannatyne. The Fort Garry campus, the main focus of this study, is located approximately 13 kilometers south of downtown Winnipeg, adjacent to the Red River on 274 hectares of land, with over 60

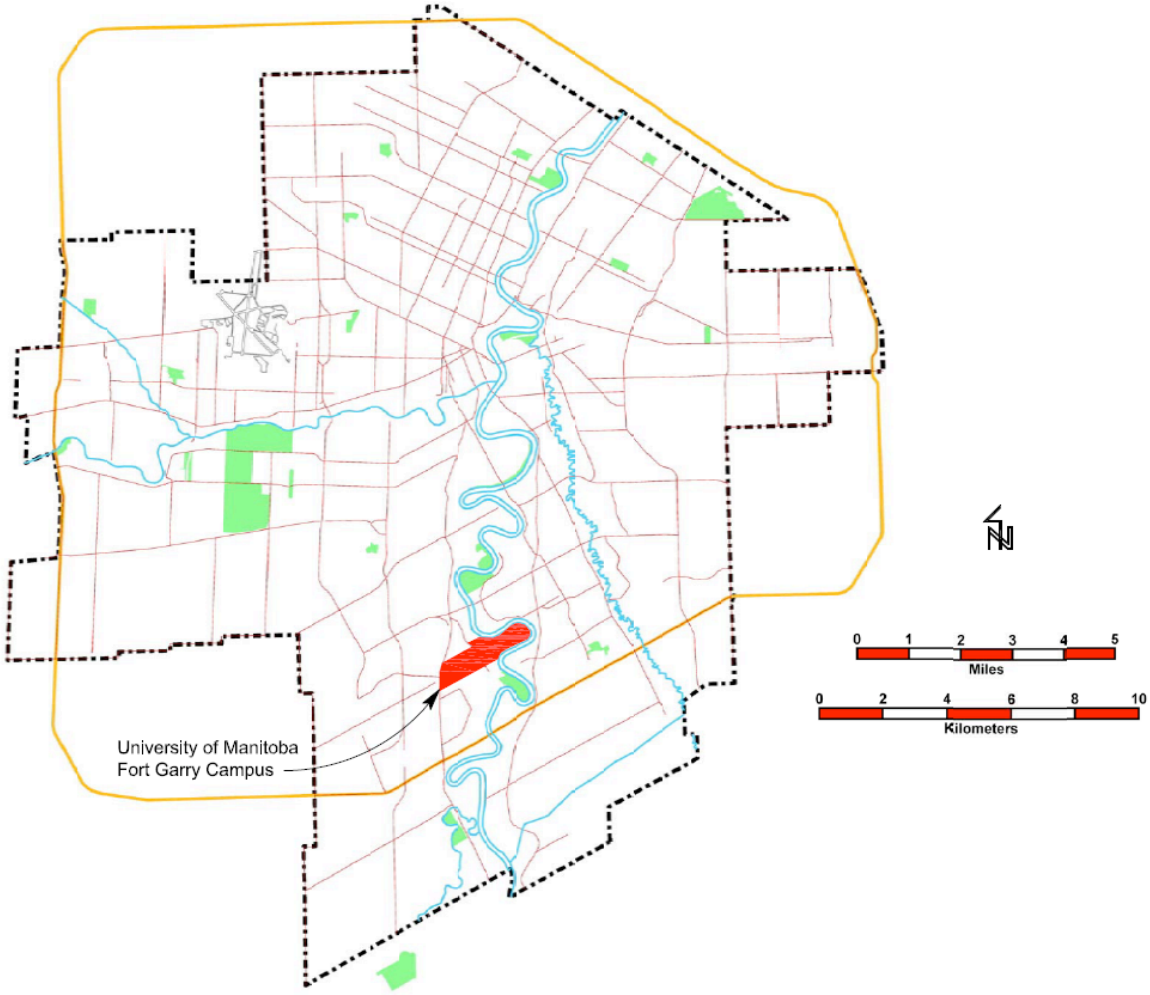


Figure 1: University of Manitoba Fort Garry Campus Location Map (Map Credit: Alex Wozlowski)

major buildings, and a pedestrian mall (Information Technology & Services, 2011), as well as 6,400 parking spaces (Parking Services, 2011). Residential neighbourhoods (Montcalm, Waverley Heights, Fairfield Park, and Fort Richmond) surround the campus, with the Red River on the northeast, and the former Southwood Golf Course (Montcalm) bordering the northwest edge of the campus.

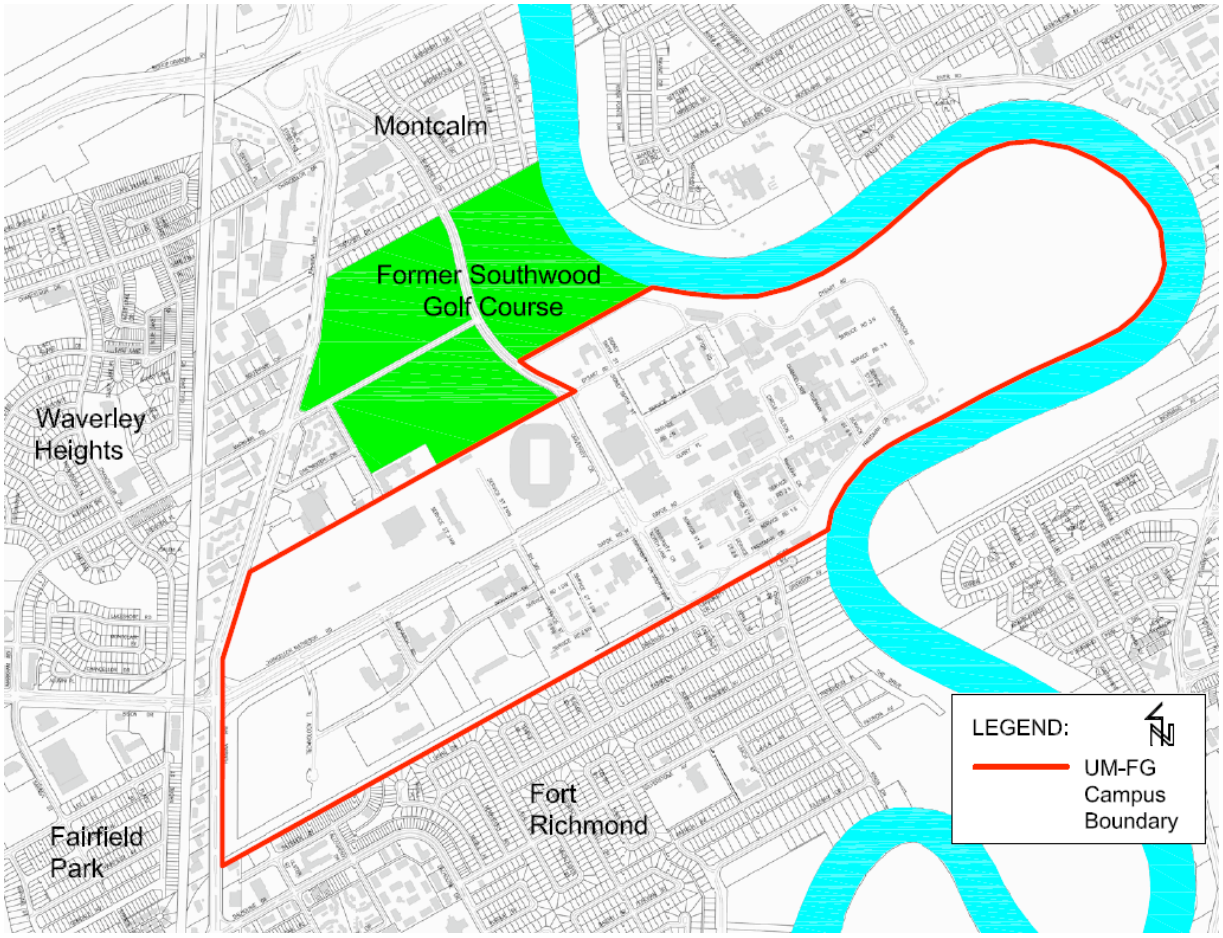


Figure 2: UM-FG Campus Boundaries and Adjacent Neighbourhoods (Image Credit: Alex Wozlowski)

In recent years the Forty Garry campus has undergone a number of campus developments including: the new 360-bed Pembina Hall student residence; the new Art Research Technology (ART) Lab; and the expansion of the Wallace Building to accommodate the Canada Excellence

Research Chair (CERC) in Arctic Geomicrobiology and Climate Change (Information Services and Technology, 2011). All these developments needed to consider the aspect of safety and security in their layout and design.

5.2 Current Status

At present, the University of Manitoba Security Services department is responsible for managing and coordinating issues pertaining to safety and security at the Fort Garry campus. The department conducts regular reviews of the current safety initiatives and examines future initiatives in an effort to ensure quality service provision. To date, the department has implemented a number of safety initiatives, such as: the code blue emergency telephones; the emergency red phones; and the closed circuit television (CCTV) cameras - all in an effort to improve safety and security on campus (Security Services, 2011). It is therefore evident that the use of CPTED *mechanical* strategies is probably the department's main approach to preventing crime and increasing security on campus.

The Security Services department has led many of the safety initiatives, while others have involved greater consultation with various student groups and engagement with the Environmental Health and Safety Office (Security Services, 2011). However, among the several initiatives and programs that the department is associated with, the one program that addresses safety from a design perspective is the CPTED (Crime Prevention through Environmental Design) program. It offers a trained member (trained by the Winnipeg Police Service) of the Security Services department to perform a safety evaluation of an area or building on campus, and follows through with a set of recommendations intended to reduce opportunities for crime. Individuals or groups that request this service receive a report, outlining the findings of the safety

audit, and any recommendations deemed necessary (Security Services, 2011). If there are no requests submitted, then a safety audit will not be conducted.

Physical Plant is responsible for the planning and design work at the Fort Garry campus. In 2003 a University of Manitoba Campus Plan was prepared "to serve as a framework for growth, addressing future physical development including programmatic, functional, spatial and formal issues" (Campus Planning and Design Office, 2003, p.4). The Plan documents the history of the university and its development. Safety is specifically addressed in Section 3.8 of the Plan, and is considered to be one of the eleven guiding principles for the Plan. The principles in the plan are "used as performance criteria in developing the physical design of the campus" (Campus Planning and Design Office, 2003, p. 15). According to the Plan:

> Safety attributes in the design of the campus support an attitude of mindfulness toward others. Safety supports and ensures the long-term use of the campus by attracting more individuals and on an on-going basis. Increased use by more people also supports a safer environment, combining in a synergetic relationship in which each supports the other (Campus Planning and Design Office, 2003, p.23).

The plan acknowledges the need to address safety within the campus design and planning context. However, the Campus Plan does not provide detailed planning and design principles that could guide campus development towards creating a safer and secure campus. The Plan only states that, "safety is enhanced through appropriate day-lighting, lighting, surface treatments and signage" (Campus Planning and Design Office, 2009, p.23). The Plan contains a section on planning and design elements, that mainly describes the physical structure or form of the Fort Garry campus, but there is no specific section dedicated to describing how the planning and design elements will be arranged in an effort to promote safety. Overall, the Campus Plan is quite conceptual and does not necessarily reflect the planning and design principles that could guide campus development towards a safer physical environment.

5.3 Analysis

Given the above information on the University of Manitoba's current position regarding safety and campus design, and with regard for the theory and precedent literature examined earlier (Chapters 2 and 3 respectively), this study now features an analysis of the data gathered from the UM survey and interviews - to draw conclusions and develop recommendations.

5.4 Survey Responses

The mapping section of the questionnaire identified areas that respondents perceived to be 'unsafe' or 'safe'. The responses suggest that levels of fear are concentrated within the area of the parking lots located on the periphery of the campus, in particular, the Q and B Lots.

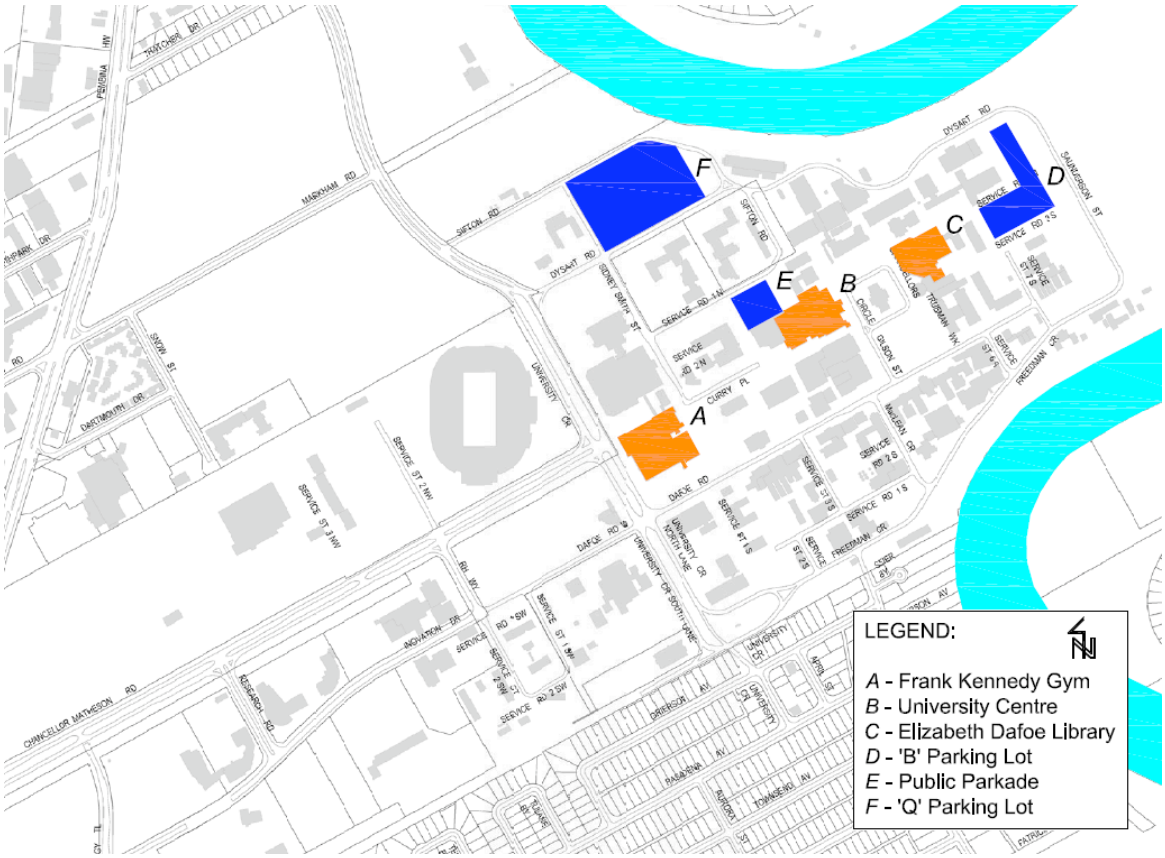
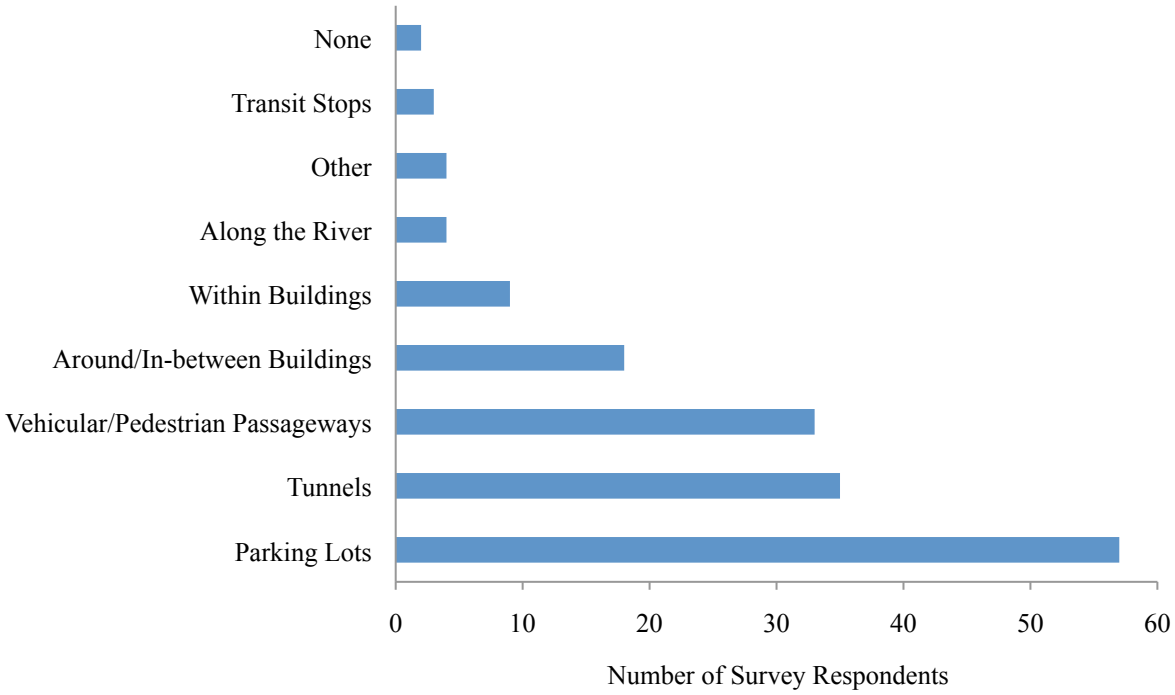


Figure 3: Common Areas of Fear and of Comfort (Image Credit: Alex Wozlowski)

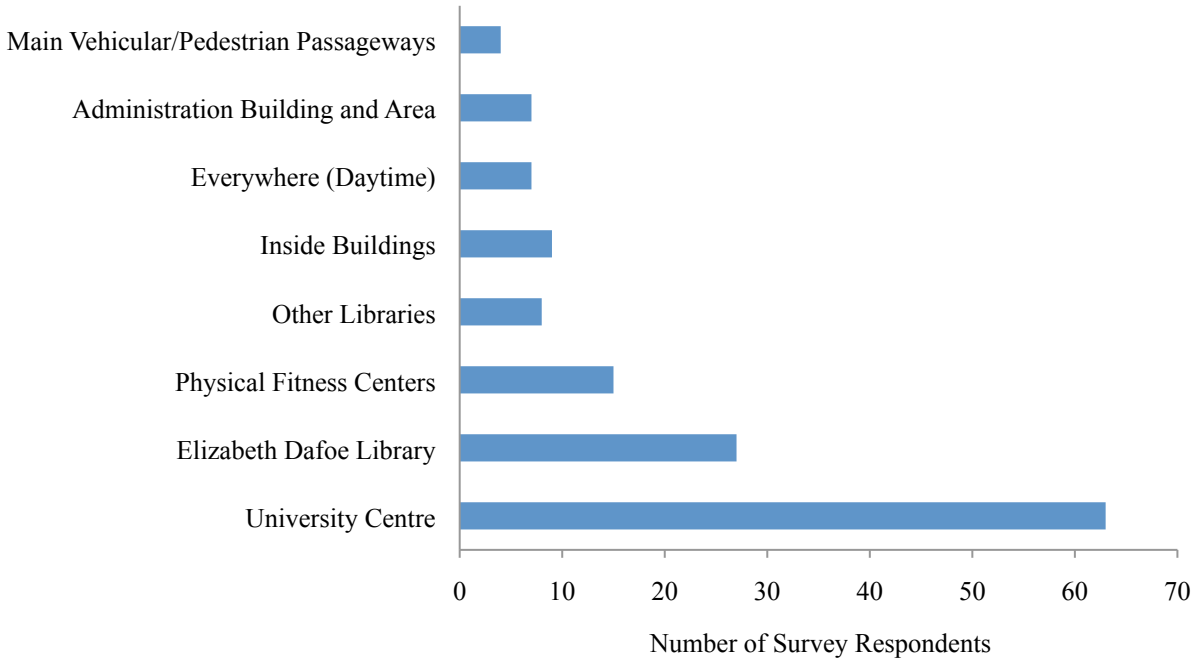
(Figure 3). Not located on the periphery of campus, but also showing concentrated levels of fear, is the Parkade in the centre of the university campus (Figure 3). Two other areas on campus reported frequently as areas of fear are: the underground tunnels and some walkways, roads and streets (categorized as vehicular/pedestrian passageways). See Chart 2 below for overall survey responses on *areas of fear* at the Fort Garry campus.

Chart 2: Responses - Areas of Fear



The survey suggests that *areas of comfort*, or locations perceived to be safe, are concentrated around the University Centre and the Elizabeth Dafoe Library (See Chart 3 and Figure 3). Both these locations are located within the surrounding area of the Chancellor's Circle.

Chart 3: Responses - Areas of Comfort



The following sections present the survey responses in detail and discuss the common themes identified.

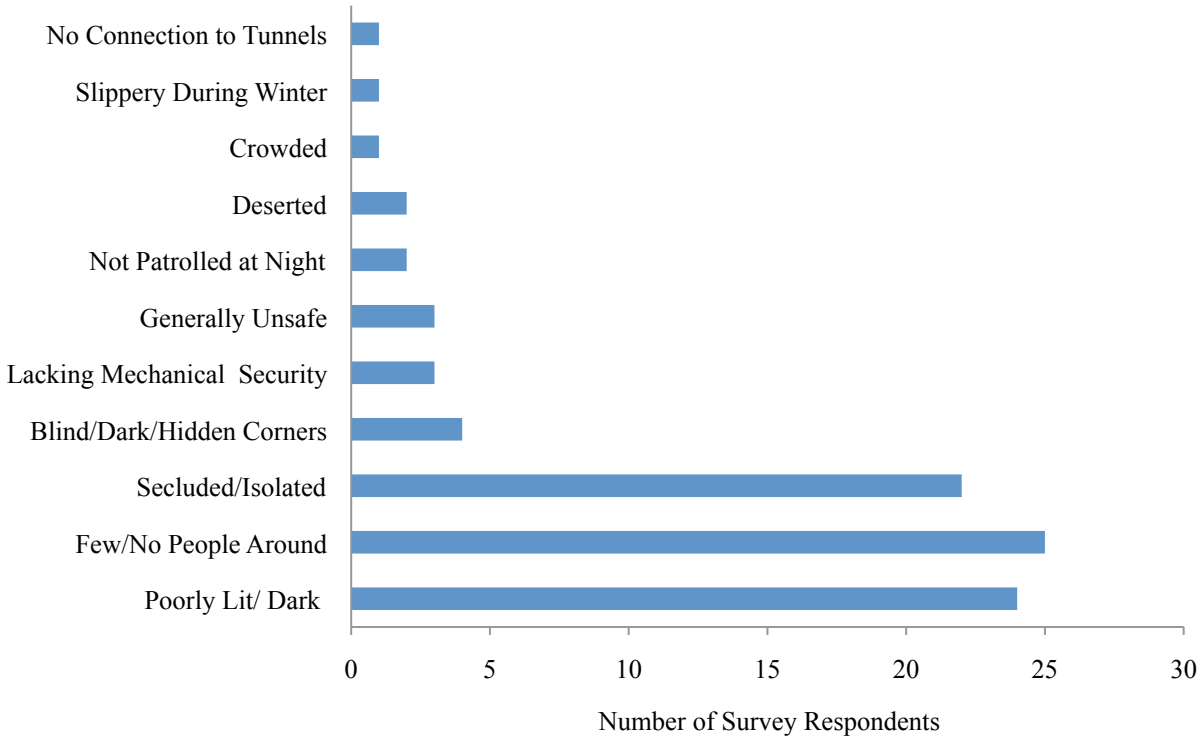
5.5 Areas Perceived as Unsafe

Three specific areas stand out on Chart 2, indicating concentrated levels of fear on campus. Fifty-Seven (29%) survey respondents reported parking lots as an area of fear on campus. In particular, **Q lot, B lot** and the **Parkade** (Figure 3) were specifically noted in some of the survey responses that mentioned parking lots. Reasons why parking lots were perceived to be unsafe focused on inadequate lighting and the limited number of people using them, especially at night (See Chart 4).

Q lot is reserved for student parking and is located on the northern edge of the campus, away from the centre of the university. Thirty percent (30%) of the survey respondents that reported parking lots as an area of fear on campus specified Q lot. Respondents indicated that

this parking lot is an area of risk due to a lack of constant pedestrian traffic and insufficient lighting. A common comments thread was that it is fairly isolated after dark and, moreover, the physical siting on campus adds to its isolation.

Chart 4: Parking Lots - Why they are perceived as unsafe



B Lot is reserved for staff parking, but after 4:30 pm the lot is available to students. B lot is located behind the Elizabeth Dafoe Library, affording students and others users of the library a shorter distance to walk to their car, after leaving the library or other buildings located in close proximity to B lot. Twenty-six percent (26%) of the survey respondents reporting parking lots as an area of fear on campus, noted B lot. Participants that cited B lot as unsafe commonly noted their reasons as a lack of lighting, and the lot becoming fairly isolated at night.

Figure 4: View of Q Lot

Figure 5: View of B Lot

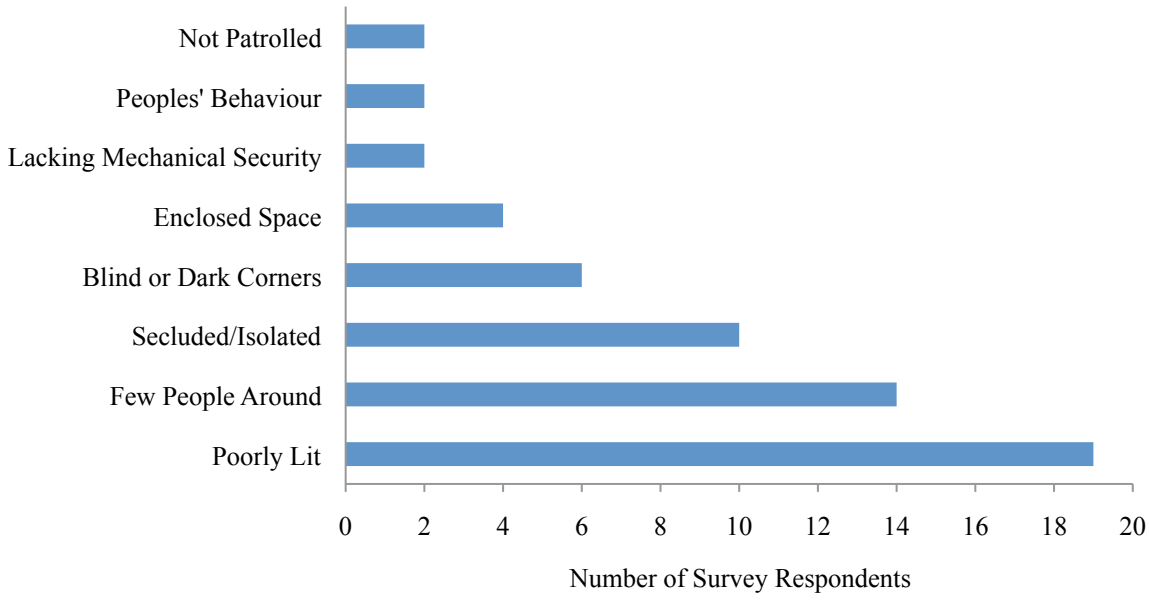
The **Parkade** is designed to provide parking for the public, but sometimes students park there as well. Twenty-three percent (23%) of the survey respondents that reported parking lots as an area of fear on campus, specified the Parkade. The lack of constant pedestrian traffic, especially at night, was commonly reported as reasons for the parkade being perceived as unsafe. This is probably a result of the design. The parkade is a multi-storey building strictly designated for parking; therefore the building is more likely to have people only parking their cars there, rather than people also passing through on their way to their intended destinations. The parkade does not have any other uses to realise the idea of mixed use (that consequently promotes more constant usage).

In general, parking lots on campus are designed as large open spaces covered in asphalt. While they may appear to be easy to observe - seeming as they are open (See Figure 4 and 5), they lack natural surveillance due to a lack of constant users. In addition, it was observed that there are no buildings in close proximity to the parking lots to facilitate the "eyes on the street" effect, and this is the case for 'B' and 'Q' Lots. People just park their cars in those spaces and proceed to spaces where they use - such as classrooms, libraries and the University Centre.

When the parking lots do have cars parked, users are left to meander through the parked cars to reach their intended destination, creating 'low prospect' for the user as they cannot clearly see in-between parked cars. The parked cars block the lines of sight for users – as survey participants indicated - and in turn offer potential offenders a place to hide behind vehicles creating 'high refuge' for them to easily follow their victims. Ideally, a safe design should have a 'high prospect' for the user to view their surrounding areas, 'low refuge' for offenders to hide away easily, and escape options for potential victims (Fisher & Nasar, 1992, p. 40).

The **Underground Tunnels** (See Appendix E) were the second most cited areas of fear on campus (See Chart 2). Thirty-five (18%) survey respondents cited the tunnels as an area of fear. The underground tunnels are commonly used by students and other users to the campus when the weather turns cold or wet; however, not all buildings are linked by the tunnels. Based on the responses from survey participants, not every section of the tunnels is perceived to be unsafe, but commonly, reasons cited for the tunnels being of particular concern are: inadequate lighting, feelings of isolation due to a lack of constant users at different times of the day and, many blind corners leading to poor visibility.

Chart 5: Tunnels - Why they are perceived as unsafe



Tunnels are design as enclosed and winding spaces, creating 'low prospect' for the user to see what is happening around a corner, and potential offenders have 'high refuge' for them to hide around these same corners. In turn this makes a user feel very unsafe because they feel they have nowhere to escape if they were to be attacked.

As discussed earlier in the literature review, there should be constant users in an area – at any given time - to make it feel safe and user-friendly. From personal on-site observation during busy times of day, this level of use was easily met. However away from peak-usage periods, with the lack of eyes or natural surveillance, the tunnels can make users feel unsafe. This is especially the case during off-peak hours such as evenings and weekends. Some of the comments received about the tunnels from participants were:

> *The tunnels make me nervous because they are windy enclosed areas.*
>
> *Tunnels have few people late at night.*
>
> *I am not sure of the exact tunnel, but there is one that is dark, long and without much traffic. Not sure what you would do if you met an attacker there.*
>
> *There is little safety protection in the tunnels and parking lots especially in the evenings and on weekends.*
>
> *Tunnels between Dafoe Library and Human Ecology building, the tunnel at this point is small, and is not well lit.*
>
> *Underground tunnels – an enclosed space that feels creepy.*

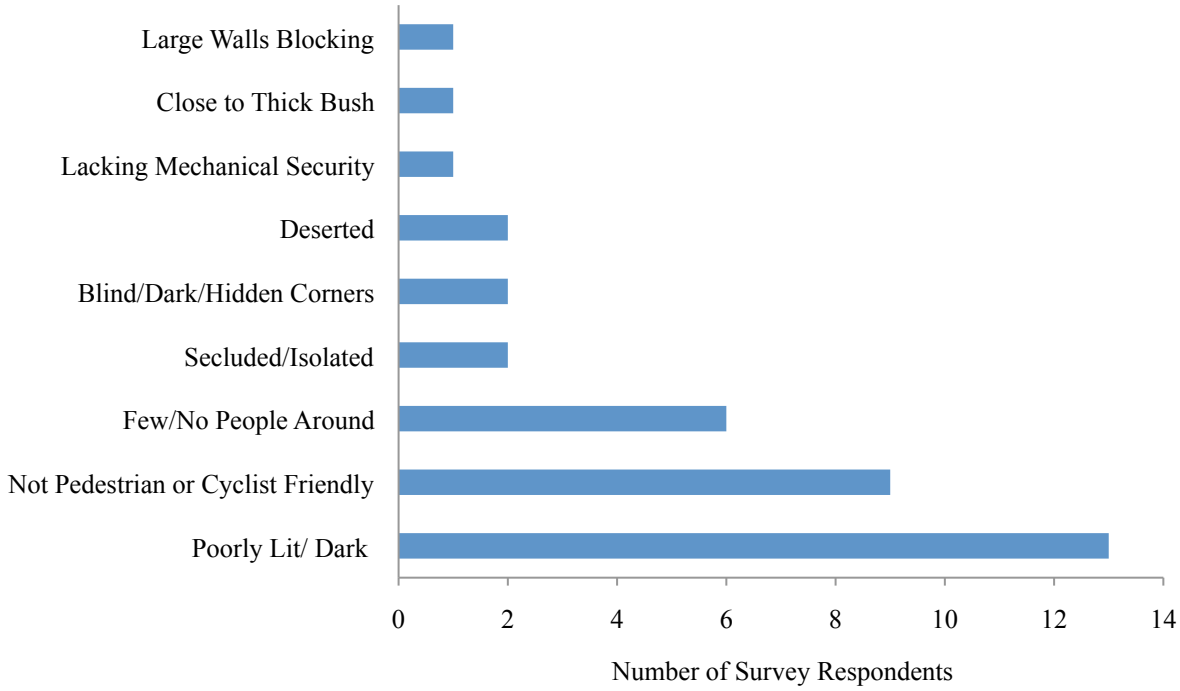
Pedestrian walkways and vehicular routes were the third most-cited areas of fear on campus . All of these areas are cited as being poorly lit, with rarely many people around, as the main reasons for safety concerns.

As the term ‘safety’ was not exhaustively defined in the questionnaire, safety concerns regarding cyclist and pedestrian access on main campus roads were reported as areas of fear on campus - an issue separate from the fear of crime, but important to note. Some respondents feared being hit by a speeding automobile and indicated that the roads on campus were not designed with the pedestrian or cyclist in mind. Another road safety issue was the signage for automobile traffic. One questionnaire respondent stated:

When the traffic turning left onto University Crescent from Chancellor Matheson has a green, drivers don't know whether or not to stop for pedestrian traffic that is crossing the street (who are given a 'walk' signal). The speed of cars is too fast on Chancellor Matheson Road.

A clear campus design could address pedestrian and cyclist concern for safety on campus roads. By creating a well-defined campus design, pedestrians and cyclists could have safer movement on campus. 'Well-defined' would mean a clear separation between access for vehicles and access for pedestrians or cyclists, which would include well-designed paved sidewalks.

Chart 6: Vehicular/Pedestrian Passageways - Why they are perceived as unsafe



Some respondents also stated feeling unsafe when using the walkways in between large buildings at night: because they are poorly lit, people cannot see around a building or a corner, and occasionally there are not a lot of people around (See Chart 7).

Overall, the findings suggest that the most frequent concerns with areas of fear focus on inadequate lighting, and a lack of constant users or activity - leading to a sense of isolation. The

location or siting of these areas in relation to the overall university also contributes to an area being isolated, such as the case of the parking lots located on the periphery of campus.

Figure 6: View of Public Parking Lot/Parkade

Figure 7: View of Tunnel Connecting Elizabeth Dafoe Library to the University College

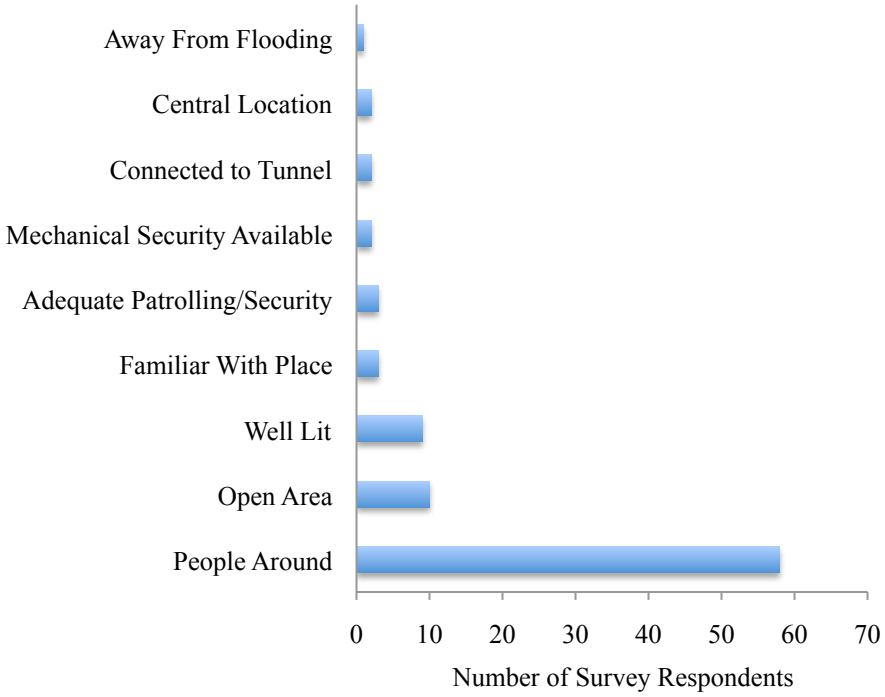
5.6 Areas perceived as Safe

The areas of comfort, or areas respondents perceived to be 'safe', were also identified through the questionnaire (See Chart 3). The information obtained from this section of the

questionnaire helps to identify the characteristics of places perceived as safe, and provides insights into how these characteristics can be replicated in future Fort Garry campus developments and site upgrades.

University Centre was the most cited area of comfort. It elicited 63 responses, representing 32% of the total survey respondents. The reasons cited for University Centre being the key area of comfort on campus are that the area is well lit and, most of all, that the place usually has people around (See Chart 8).

Chart 7: University Centre - Why it is perceived as safe



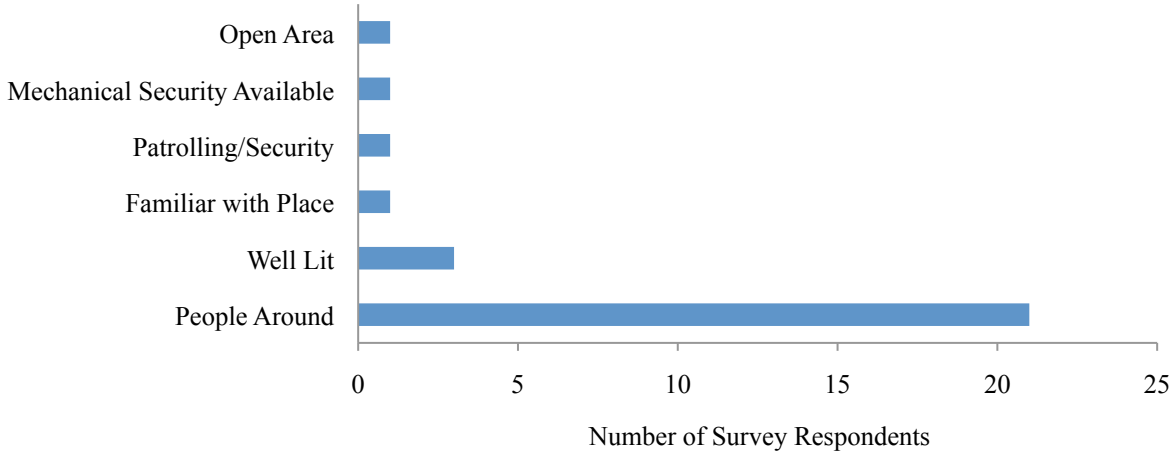
Some of the comments received about the University Centre from participants were:

> *It's well lit and there is activity even after hours.*
>
> *It is central with large open spaces and lots of people.*
>
> *Lots of people around all day right until late at night, so if help was needed there would likely be people around.*

They are both [University Centre and Elizabeth Dafoe Library] busy - lots of other people around, lots of staff around too. For the most part, they have open spaces so you can see for a distance. They are open late, so even at night there are other people around.

Elizabeth Dafoe Library was the second most cited area of comfort**.** Many respondents indicated the inside of the Elizabeth Dafoe Library as an area of comfort because it is well lit, well-populated with constant users, and has people around at all times during the day and evening.

Chart 8: Elizabeth Dafoe Library - Why it is perceived as safe



During a regular school day a large number of people, mainly students, use the University Centre and the Elizabeth Dafoe Library. Numerous seating features are placed throughout the two sites to allow people a place to take a break, eat lunch or study holdings between classes. This encourages constant users and 'eyes on the street'. As a result, campus users are likely to feel safer in such areas.

The University Centre and the Elizabeth Dafoe Library provide good circulation for pedestrian traffic with numerous pedestrian routes. They have a high prospect due to their large open floor design. The generally open plan for both sites provides excellent line of sight for the

users. There is low refuge for potential offenders to hide behind parts of the structure, and the openness also provides escape for users if confronted by an offender.

Physical Fitness Centres such as the gym were the third most-cited area of comfort. Such centres appear to be an area or environment that most students are familiar with. The level of familiarity with an area increases both the level of comfort and awareness. The fitness centres, especially the Frank Kennedy Gym, are cited as being often well-populated, with continuous activity for most parts of the day.

Overall, areas of comfort are cited as being well-lit, and well-populated, which eliminates or decreases levels of fear. Being well-populated is one quality of a safer physical environment that Jane Jacobs and Oscar Newman referred to in terms of 'eyes on the street', or natural surveillance, which is achieved through constant users. Being well-lit (adequate lighting) can be identified as a CPTED strategy that facilitates mechanical surveillance, for the legitimate users of a space to observe suspicious persons. Other CPTED strategies such as organized surveillance - for example, the patrolling done by the Security Services department - was also identified through the survey as reasons why participants perceived a particular area as being safe.

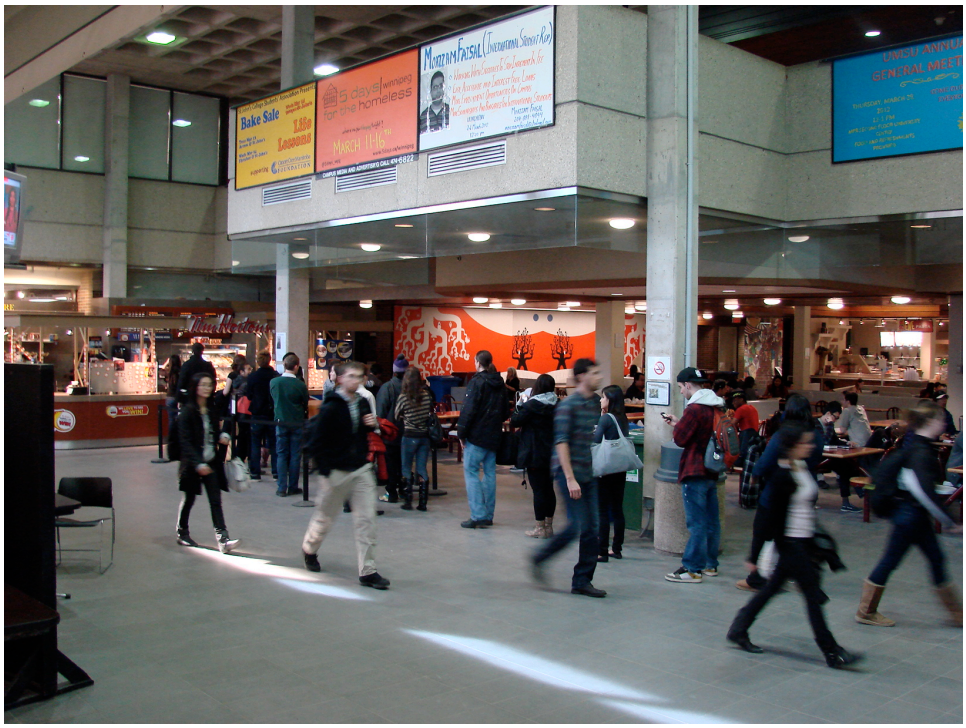


Figure 8: View of Main Floor University Centre

Figure 9: View of Main Floor Elizabeth Dafoe Library

5.5 Interview Responses

The interviews were carried out to help inform the research question: *What are the challenges and barriers to reducing fear of crime through planning and design, and how might these be overcome?* Respondents were asked a question related to the University's position on crime prevention and design to obtain a sense of their knowledge and expertise as well as a genuine assessment of current affairs at the university.

Generally crime prevention through planning and design was not a new topic to interview participants. However, there was some confusion around what defines or constitutes 'safety'. Safety is one of the key design factors considered at the Fort Garry campus. But as one participant stated, "*safety includes life safety and code compliance, personal safety for occupants and site users as well as constructional safety*". So a clear understanding was made at the beginning of all interviews that the interview discussions were framed around 'security' if the study was to address crime prevention planning, but this did not limit the discussion of general campus 'safety'.

Through the interviews it was discovered that personal safety and security is considered in each renovation and new construction project by the designers and by the consultants that the university engages. Particular issue addressed are as follows:

- Space planning and configuration
- Adequate lighting
- Visibility into stairwells (Apotex Centre at the Smart park)
- The lack of connection with tunnels in-between various building (e.g. between the Architecture 2 building and Frank Kennedy Centre)
- Card access to control access by unauthorized persons
- Red phones
- Code blue stations
- Security camera systems
- Personal alarm buttons
- Design review by campus security

It was noted that the University currently has no specific 'security design guidelines' that 'packages' all of the above requirements. Design guidance on security matters is provided on a project-by-project basis. Examples were provided on off-campus projects such as the Norrie Centre on Selkirk Avenue - a project that was specifically mandated to reference Newman's theory on 'defensible space' as guidance, given the local environment context. The project is situated in the North End area of Winnipeg. This area is generally reported to have a higher incidence of crime, and a higher perception of crime.

When asked about safety concerns observed on campus, it was stated by an interview respondent that one of the key issues was lighting and security within building stairwells. In terms of lighting, campus authorities have chosen a certain type of orange lighting that does not illuminate a given area very effectively. This type of lighting was apparently selected because it was believed to be a much more efficient lighting system, in terms of cost and energy required.

With regard to safety concerns in the stairwells, it has been assumed by Physical Plant that attacks on a person are more likely to occur in stairwells. Physical Plant therefore encourages the use of glass walls to promote natural surveillance.

Currently, the Security Services department participates in the initial or conceptual stage of the planning and design process. One interview participant suggested that the Security Services department should participate in <u>all</u> stages of the planning and design processes since "*space configuration can contribute significantly to personal safety".* The participant further highlighted that what was presented on design drawings was not necessarily what resulted as the end-product, in terms of safety and security. What was meant was that safety and security concerns would generally be noticed <u>after</u> the building was actually constructed and assessed. This is one reason why the interview participants suggested that Security Services should

participate in all stages of the design process, to avoid such situations. For example, the new Welcome Centre at the Fort Garry campus has large window openings. It provides good inside viewing for those outside, and plenty natural lighting for those inside, but it also limits the privacy of indoor users.

When asked how safety and security could be addressed through planning and design, it was noted that firstly, and most important, was the need to build public awareness on the need for crime prevention. So far, the Security Services department provides regular presentations on their CPTED program, distributes pamphlets on their programs and initiatives, and informs the general campus public on their currently available services. In addition, an advisory committee has been set up that has representatives from each different group on campus, such as the students (UMSU), faculty, support staff, etc. The committee's objective is to address safety concerns on campus. Interview respondents suggested that everyone on campus should be involved in addressing the issues of campus safety because they are key stakeholders.

When asked about the challenges and barriers to addressing the issue of safety through planning and design, it was recognized - as with most parameters imposed on the design of a building - that there is a cost involved. If safety and security concepts can be integrated at the earliest design stage, then this could overcome the challenge of future re-design and operation or maintenance costs. For the security component of design, it is recognised that the University is faced with the costs of the hardware and the related design costs. There is also the possibility of a conflict at times between the need for security and other key needs of the university.

An interview respondent suggested that one of the barriers to addressing safety through campus planning and design is the lack of knowledge of some groups on campus as regards the issue of crime prevention. As stated earlier, there is the need to break that barrier by building

public awareness. Attempts have been made by Security Services to provide an online survey asking questions pertaining to campus safety; to date [February, 2010] they have only received 18 responses. Their questions include:

- Are you aware that Security Services operate 24 hours a day, 365 days a year?
- How safe do you feel walking alone on campus during the day?
- How safe do you feel walking alone on campus at night?
- What changes, if any, would you like to see to improve safety and security on campus
- In your opinion, what is the number one safety and security concern on campus?
- Should more closed circuit televisions (CCTV) be installed on campus in public areas (i.e. parking lots, walkways, etc)?
- What areas on campus do you feel require the greatest attention in terms of safety and security? (Personal Communication, February 2, 2010)

When survey participants were asked; *what areas on campus do you feel require the greatest attention in terms of safety and security?* from the 18 responses received, 44% chose the tunnel systems, 22% chose parking lots, 17% chose social events on campus, 11% grounds and walkways, and 6% chose buildings and class rooms. This seems to be in line with the findings of this study. Campus users have safety and security concerns with the tunnels and parking lots.

It was noted that when seeking to address safety and security on campus, the key stakeholders involved would include: Physical Plant, Environmental Health and Safety Operations, and Security Services.

Overall, the interviews suggested that there are some opportunities to better address campus safety through planning and design, such as improving the lighting systems in parking lots and the underground tunnels. This effort would require good communication and collaboration among the relevant key stakeholders as well as improved design guidelines. Good communications and collaboration would help key stakeholders to be informed about the current safety concerns on campus, and thus help them to be in a better position to address these

concerns. In addition, regular updates on data regarding campus safety could help in identifying what changes or upgrades are required, within the campus physical environment, to enhance campus safety.

Taking these safety concerns, barriers and challenges into consideration, the following chapter presents some recommendations for the Fort Garry Campus, to create a campus that is safer or perceived as safer. This would help improve any campus users' experience, especially female students who have - by their response to the survey part of this study - showed more concern for their safety.

CHAPTER 6: PLANNING, DESIGN AND SAFETY AT THE UM-FG CAMPUS

6.1 Conclusions

The most frequently mentioned issues for UM-FG campus users who identified areas of fear on campus are lighting, and a lack of constant users. Not frequently mentioned, but equally important to note as a result of this study are: a lack of pedestrian and cyclist facilities on some campus roads, and poor wheelchair access to some buildings on campus - such as the Elizabeth Dafoe Library. There is a need to create campus spaces that encourage constant users in order to have the 'eyes on the streets' effect. It has been identified through the study that campus users feel safe where there are constant users and good lighting. Open and well-lit spaces, such as University Centre, should be encouraged. Spaces that are poorly lit with few users, such as the tunnels, should be discouraged, and avoided in future campus development.

Based on the findings of this study, there are a number of opportunities to create a safe and secure campus environment. Building especially on the survey questionnaire and key informant interview data, a number of recommendations have been developed.

The findings relate to the three research questions identified in Chapter One:

1. What are the safety concerns common to users of university campuses?
2. What planning and urban design principles might be used to reduce the fear of crime in campus environments, and enhance campus safety?
3. What challenges and barriers do planners face in their effort to address the fear of crime through planning and design, and how might these be overcome?

Question One was addressed primarily by the questionnaire and the interviews. Question Two was informed by the entire study. Question Three was addressed through the literature review on practice/precedents and key informant interviews with members of staff from the University of Manitoba Physical Plant and Security Services Departments.

To achieve planning objectives such as creating a safer campus environment the University administration needs to be more detailed and informed as regards data on current safety issues on campus. This will require improved coordination with relevant stakeholders such as the students, faculty, support staff, and staff in the security services and physical plant departments. A more collaborative approach to crime prevention planning and design is desirable, leading to a safer campus environment and an enhanced quality of life for campus users.

6.2 Recommendations

The following recommendations provide further direction for the key stakeholders involved with crime prevention at the University of Manitoba Fort Garry campus. The recommendations are organized in two sets; planning and design. The planning recommendations relate to the allocation of readily available resources on campus that may be utilized to address the issue of safety on campus - a planning objective. These resources are, for the most part, the physical environment, planning tools, and people.

The design recommendations relate to the physical environment of the campus, including roads, buildings, etc. In addition, the recommendations target departments that would play a key role in ensuring implementation.

6.3 Planning Recommendations:

1. **Communicating the problem to appropriate authorities:** It was noted through the interviews that other departments on campus that could have authority to make decisions regarding crime prevention, appeared to be unaware or uninformed on some of the issues regarding this topic. For that reason, it is recommended that safety concerns are identified and communicated to the appropriate authorities for action. Security Services, Physical Plant, Parking Services, and the Campus Planning Office have been identified as key authorities**.** With their powers, these authorities can "have a positive role in mitigating crime and fear" (Wekerle &Whitzman, 1995, p.17) within campus physical environments. Security Services should take on the responsibility to communicate the issues to the other above-mentioned authorities and the public.

2. **Raising public awareness:** As suggested by an interview respondent, students, staff, and the public, should also be informed about crime prevention in an effort to protect themselves on and off campus. Available information should include:
    - Updated campus security statistics;
    - Preventative measures to protect oneself and one's property against crime/vandalism should be available and provided;
    - Resources available to advise on how to prevent crime and reduce opportunities for crime

    The above-mentioned information, when available, helps campus users to be aware of existing types of crimes that are occurring on campus, and how best they can be handled.

The University of Manitoba can learn from York University as noted in Chapter Three of this practicum. York University goes as far as documenting a Weekly Security Incident Log (WSIL) that is circulated electronically as an "effort to provide information about incidents occurring on campus to promote awareness and provide pro-active crime prevention information to reduce the opportunity of crime" (Security Services, 2012). The Crime Prevention Office is in charge of preparing these reports. York University also has an online survey that asks questions of the public and campus users on whether they think the information Security Services provides on crime is adequate – all in an effort to keep the campus users informed and aware of the issues.

3. **Engage the Public:** U of M Security Services suggested the importance of engaging the public, as they ultimately are the campus end users. It is important that members of the public attending or visiting the university have a sense that they are able to make a difference while being willing to invest their time and energy in the area of crime prevention. Campus users need to be part of the planning processes that lead to improved and new campus physical environments, planned more consciously with safety in mind. Part of the planning process should include updated information on safety concerns on campus. The survey questionnaire proved to be a good tool, not only to engage the public, but - in addition - to providing campus users with an opportunity to express safety concerns on campus. Responses received from survey questionnaires should be documented for the public to review and for the purpose of making changes to the physical environment or updating the campus master plan, as was noted in the case of UBC and Carleton University in Chapter Three. If the sole purpose of the survey

questionnaire is to simply gather information, then this defeats the purpose of the exercise – to enhance security and improve safety.

4. **Encourage information sharing between key stakeholders**: As stated earlier, there appears to be a lack of awareness about some issues regarding crime prevention on campus. Building awareness has been suggested. In addition, the university should encourage information sharing or working in partnership among the different departments. Successful crime prevention planning requires leadership and cooperation between key stakeholders, including the University administration, Security Services, Physical Plant, students, and staff. The success of other university crime prevention planning is in large part due to partnerships and idea exchange. As reviewed in the literature, through information sharing, the Office of the Personal Security Coordinator at UBC provided Campus Planning and Development with updated information on safety concerns on campus. The information gathered was acknowledged as a useful resource to improve existing developments and plan better future developments (Office of the Personal Security Coordinator, 2000).

5. **Reduce automobile dependency:** Current campus users have a great concern for their safety in parking lots, especially the lots located on the perimeter of campus. The U of M is in the process of implementing a Sustainability Strategy that includes a transportation demand management strategy in an effort to reduce car dependency, therefore reducing the need for car parking spaces on campus. The draft version of the document envisions, "A campus that provides sustainable and accessible transportation options to students,

staff, faculty, and the university community" (Sustainability Committee, 2011, p. 14). To achieve this vision goals defined are as follows:

- Increase efficiency (e.g. energy, time, materials, and space) of transportation systems on campus.
- Increase the number of faculty, students, and staff using alternative transportation to commute to and from campus. (Sustainability Committee, 2011, pp. 14, 15).

6. **Perform regular data updates:** Since the university is a moving population with new students coming while others are leaving, the safety concerns may change over time. Therefore, relevant data needs to be current to better address the concerns at the present time. There are a number of data sources that can be used - such as census data, police statistics, victimization surveys, self-report surveys and campus safety audits. Security Services can expand and improve their current CPTED program by involving students and faculty/staff in performing their own safety audits. This should be done on a regular basis and the results should then be available to Physical Plant in order to help develop the design criteria for future campus developments, and in preparation for the campus plan review. For example, in 1998 the University of Saskatchewan President's Advisory Committee on Personal Safety conducted a safety audit of the campus. The audit identified a parking lot Z as an area with higher crime than average. To address the problem, CPTED principles were applied that included: adding more and stronger lights to increase lighting throughout the lot; and changes to the landscape to improve sightlines. As a result, crime in this parking lot reduced and the design concepts applied were considered in future developments (University of Saskatchewan, 2012).

7. **Detail responsibilities of appropriate authorities:** Sharing information and partnering would be better achieved when there is clarity on the roles and responsibilities of each department involved in addressing campus safety and security. It is important to know who needs to take the necessary action. The University should develop an organizational chart of all significant departments with pertinent input into designing a safer campus environment. These departments should then be provided with their roles and responsibilities with regard to campus safety. For example, Simon Fraser University has identified the Campus Security department as the appropriate authority regarding safety and security, and note in their design guidelines for buildings: "Campus Security is the authority to guide the determination of an appropriate security plan for the building and the appropriate level and type of security measures to apply" (Simon Fraser University, 2011, p.35).

The following table presents proposed responsibilities for the identified departments that can contribute to creating a safer campus environment.

Table 2: Roles and Responsibilities of Departments

Department	**Roles and Responsibilities**
Security Office	• Promoting safety awareness • Updating security statistics • Updating university website on various resources for various crimes, such as sexual assault, residential safety, robbery and other crimes to cause harm to a person. • Prepare regular safety reports to provide to relevant authorities and for public circulation • Develop and update a campus safety plan • Provide information sessions on preventative measures • Perform regular safety audit.

Physical Plant	• Develop safer design guidelines and update every 5 years • Ensure safer design guidelines are applied to improved and new developments • Be part of the approval process on new campus developments to ensure safety design principles are applied where necessary • Perform maintenance checks on buildings to ensure safe and secure measure are met
Campus Planning Office	• Facilitate planning processes that lead to a safer campus environment • Engage the public • Facilitate collaboration amongst relevant key stakeholders • Research on compatible uses within campus built environment • Provide input towards creating safer design guidelines
Parking Services	• Perform regular maintenance of existing lots and report any upgrades on lighting to Physical Plant.

6.4 Design Recommendations

8. **Improve lighting system:** From the survey, it was identified that lighting was a common concern for survey participants. For that reason, the campus needs a number of lighting upgrades as part of a safer campus plan. A cross-check needs to be conducted by Physical Plant to identify whether or not lighting upgrades include installing directional lighting in unlit alcoves, pedestrian walk paths, corridors and areas obstructed by buildings. There needs to be a switch from the orange lighting to a better lighting system to provide brighter and more effective lighting.

9. **Animate and secure underground tunnels:** The tunnels were frequently mentioned as an area of fear as per the survey response. Reasons stated included: they have few people around at certain hours, and people can not see clearly around the corners. It is therefore recommended that tunnel locations that users perceive to be unsafe must be equipped

with mirrors so that individuals can see around the corners. Surveillance cameras should be provided in areas where natural surveillance is not possible. There should be alternative options, other than using the underground pathways, at ground level, for night-time use. Alternatives should be designed to be for all-weather use. Since the tunnels are a common safety concern, the university should consider introducing uses within them that promote constant usage, such as small cafes - as suggested by questionnaire participants.

10. **Improve pedestrian and cyclist access:** Some survey participants feared being hit by a car as they walk or cycle on the side of the streets on campus. It is recommended that key pedestrian and cyclist corridors to and within the University precinct need to be given higher priority in terms of lighting (brighter light fixtures), road space (wider sidewalks, re-paving), signal priority (traffic light changes automatically when pedestrian activated), traffic calming (bump-outs and traffic circles) to make walking quicker, safer and more convenient.

11. **Increase sightlines**: A common concern in relation to the places that were cited as unsafe appeared to involve a design with a low prospect - creating low visibility for a user - and a high refuge - creating spaces for potential offenders to hide themselves away from potential victims. The University should discourage future developments that create such barriers along pathways (i.e. designs affording high refuge and low prospect). In situations where such conditions already exist, Physical Plant needs to place hardware, such as mirrors to see around corners. Good lighting should also be provided.

12. **Increase/improve access to emergency services**: The survey responses suggested a lack of mechanical crime prevention strategies such as: emergency phones, closed circuit televisions and code blue stations. Therefore, it is recommended that an inventory of all existing emergency phone and code blue station locations should be completed; problematic ones should be removed and replaced with new ones. All phones and code blue stations should be placed in well-lit active areas where possible, so that they do not create an entrapment spot. The areas also need to be signed so that users know where they may find an emergency service.

13. **Promote mixed use:** The literature review and survey responses suggested that mixed use facilitates constant users, as is the case for the University Centre that has various uses within it. Some survey responses did suggest that the university needs to introduce more facilities and services that are available for longer hours – such as cafes and other entertaining services - especially in locations that are otherwise inactive, to help facilitate constant use. To begin, a study should be conducted on compatible campus land uses. Good land use can create a safer and more sustainable campus. The core area of campus can have higher development densities for classrooms, administration space, residential buildings and support services (e.g. grocery stores). This should include building on parking lots that users commonly fear, or in other open space in the core area, to create an 'urban village' feel. This will require working closely with students and faculty, as well as with university planning and design staff, to revise the current campus plan, and make it more relevant and enforceable in terms of crime prevention. .

14. **Develop Design Guidelines:** From the interview with physical plant's architectural services it was noted that the university currently does not have guidelines that address crime prevention specifically. Detailed design guidelines should be developed. There must be an understanding that not all design guidelines can be met due to a variety of reasons, as noted in Chapter 3 (regarding other factors to consider when planning and designing a campus). However certain elements should be considered and applied (See Appendix F for details), which would include:
    - Siting of the buildings in relation to entry points, parking lots, and walkways.
    - Encourage landscaping that promotes "high prospect" and "low refuge".
    - Place unsafe activities (such as restrooms and ATMs) in or near safe locations (such as reception areas and university social centers).
    - Encourage the use of high visible entry points to promote natural surveillance and natural access control. Wherever impossible, the use of mechanical strategies should be applied – such as cameras and access cards (Security Management Online, 2005. *See Appendix F for details*).

    The intention of guidelines is not to make strict rules so that other items may be compromised, but to develop awareness for designers and users of campus spaces. The process of developing the design guidelines should involve participation from all campus users, including students, staff and university administration.

6.5 Implications for Planning Practice

The web questionnaire proved to be a successful tool for gathering information from students on campus. This could be used more as a quick low-cost tool for planners, particularly when dealing with tech-savvy, internet-connected populations.

Another implication for planning practice is the need to have a greater linkage between crime prevention and physical environments. Although widely recognized as important in planning literature, professional practice lags in effecting the necessary linkages to create safer and secure communities.

6.6 Directions for Further Study

There are a few areas on Fort Garry campus where it appears that the aspect of safety has not been effectively considered in the design process - in particular the tunnels and the parking lots. There are also many other good examples of environments that are safe and appear to have considered personal safety in their design, for example the University Centre with its mix of uses. Not all spaces are poorly designed. Nonetheless, if all safety concerns had been addressed this study would not have been necessary. Further such study of the Fort Garry campus is merited, particularly with respect to: the design and layout of parking lots, and the tunnels. Fort Garry campus user groups should be involved in such further study.

Further research into the causes and effects of crime should be conducted in order to gain a full understanding of a safe environment. This study has focused on the layout and design aspects of the physical environment with respect to safety. However, site planning and design alone cannot create a safe environment. Other areas for research should include social aspects, the history of the criminal activity, and the various types of crime committed.

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APPENDIX A: Certificate of Approval from Joint-Faculty Research Ethics Board

29 October 2009

TO: **Bwale C. Bwalya**
Principal Investigator

FROM: **Wayne Taylor, Chair**
Joint-Faculty Research Ethics Board (JFREB)

Re: **Protocol #J2009:125**
"Enhancing Campus Safety through Planning and Design: Recommendations for the U of M's Fort Garry Campus"

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement**.** This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note:

- if you have funds pending human ethics approval, the auditor requires that you submit a copy of this Approval Certificate to Eveline Saurette in the Office of Research Services, (e-mail eveline_saurette@umanitoba.ca, or fax 261-0325), including the Sponsor name, before your account can be opened.

- if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

The Research Ethics Board requests a final report for your study (available at: http://umanitoba.ca/research/ors/ethics/ors_ethics_human_REB_forms_guidelines.html**) in order to be in compliance with Tri-Council Guidelines.**

APPENDIX B: Interview Guide - Physical Plant Department

1. What is your role with Physical Plant?
2. What safety concerns/issues have you observed on campus?
3. Does Physical Plant address the issue of personal safety through campus design? If yes, then how? If no, then how do you think safety might be addressed through design?
4. Do you have any specific design guidelines that developers follow, and is the issue of safety addressed within the guidelines? (Can I get a copy?)
5. At what stage in a design process do you think safety should be addressed, and why that stage (consultation, design review)?
6. To what extent do you think the campus plan should address campus safety?
7. What are the likely challenges and barriers with addressing the issue of safety through campus planning and design?
8. Are there any opportunities to enhance campus safety through planning/campus design?
9. Who should be the key players in addressing safety on campus, and why them?
10. What role could physical plant play in addressing campus safety?
11. Any other information you would like to add with regard to this matter?

APPENDIX C: Interview Guide - Security Services Department

1. What is your role in Security Services?
2. What safety concerns have you observed on campus?
3. How do you address personal safety in campus physical environments?
4. How do you think safety could be better addressed through planning and/or design?
5. At what stage in a design process do you think safety should be addressed, and how (consultation, design review)?
6. What are the likely challenges and barriers in achieving safety through planning and design?
7. Who should be the key players in addressing campus safety, and why them?
8. Any other information you would like to add with regard to this matter?

APPENDIX D: Web Questionnaire

Research Project Title: **Enhancing Campus Safety through Planning and Design: Recommendations for the University of Manitoba's Fort Garry Campus.**

Researcher: **Bwale Bwalya**

Before proceeding to the survey, please read the following consent form and indicate whether you are willing to participate.

This consent form is only part of the process of informed consent. It should give you a basic idea of what the research is about and what your participation will involve. If you would like more information, please feel free to contact the researcher at the email address or phone number provided below. Please take the time to read this carefully.

By selecting "I agree" below, you are consenting to participate in the study " Enhancing Campus Safety through Planning and Design: Recommendations for the University of Manitoba's Fort Garry Campus" which is being conducted by Bwale Bwalya, a graduate student at the University of Manitoba. This study has been approved by the Joint Faculty Research Ethics Board, and is a requirement of the Faculty of Architecture. The overall objective of this study is to explore and recommend good planning and design strategies that may enhance campus safety. Completing this survey will allow you to communicate your perceptions and concerns about personal safety on campus, referring to crime that typically occurs on the Fort Garry campus. Your participation should take **approximately 15 minutes**. Please note; you will not be provided with any form of remuneration as a result of your participation. By clicking "I agree" below, you are only agreeing to participate in the present survey.

There is some risk to this research. If you may have been a victim of crime, participation may cause distress. Should this be the case, you are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. In addition, you may choose to access counselling services at the Fort Garry Campus: 474 University Centre, or you may call them at the following number, (204) 474 – 8592. If you choose to proceed and participate, please understand that, once again, you do not have to answer any questions that make you uncomfortable or that you just don't want to answer. I will not ask you for your name or email address as part of the survey, and you will stay anonymous throughout the study. All personal information will be kept in the strictest of confidence, and all data will be kept under lock and key.
The results of this study will help develop planning and design recommendations that may reduce fear, limit the opportunities for crime, and enhance campus safety. The results will also be aggregated and complied into a short summary document that will be made publicly available. If you are interested in reading about the results of the study, please contact Bwale Bwalya at the following e-mail address: bwalebwalya@hotmail.com.

If you have any questions about the research, please contact Bwale Bwalya (204.475.5425) or Michael Dudley (204. 982.1145) at the numbers provided, or at their respective email addresses, umbwalyb@cc.umanitoba.ca and m.dudley@uwinnipeg.ca. If you have any concerns about this

study, please contact Margaret Bowman at the Human Ethics Secretariat at the University of Manitoba at Margaret_Bowman@umanitoba.ca, or at (204) 474-7122.

By clicking "I agree", you are indicating that you understand to your satisfaction the information regarding participation in the research project and agree to participate. You are free to withdraw from this study at any time and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

Agree (continue with survey) Disagree

Circle each of the following:

1. Male Female

2. Undergraduate Graduate: Master Graduate: PhD

3. On-campus housing Off-campus housing

4. Name the locations that are in your opinion **most unsafe** 1._____

2. _____

5. Why do you consider the locations unsafe?

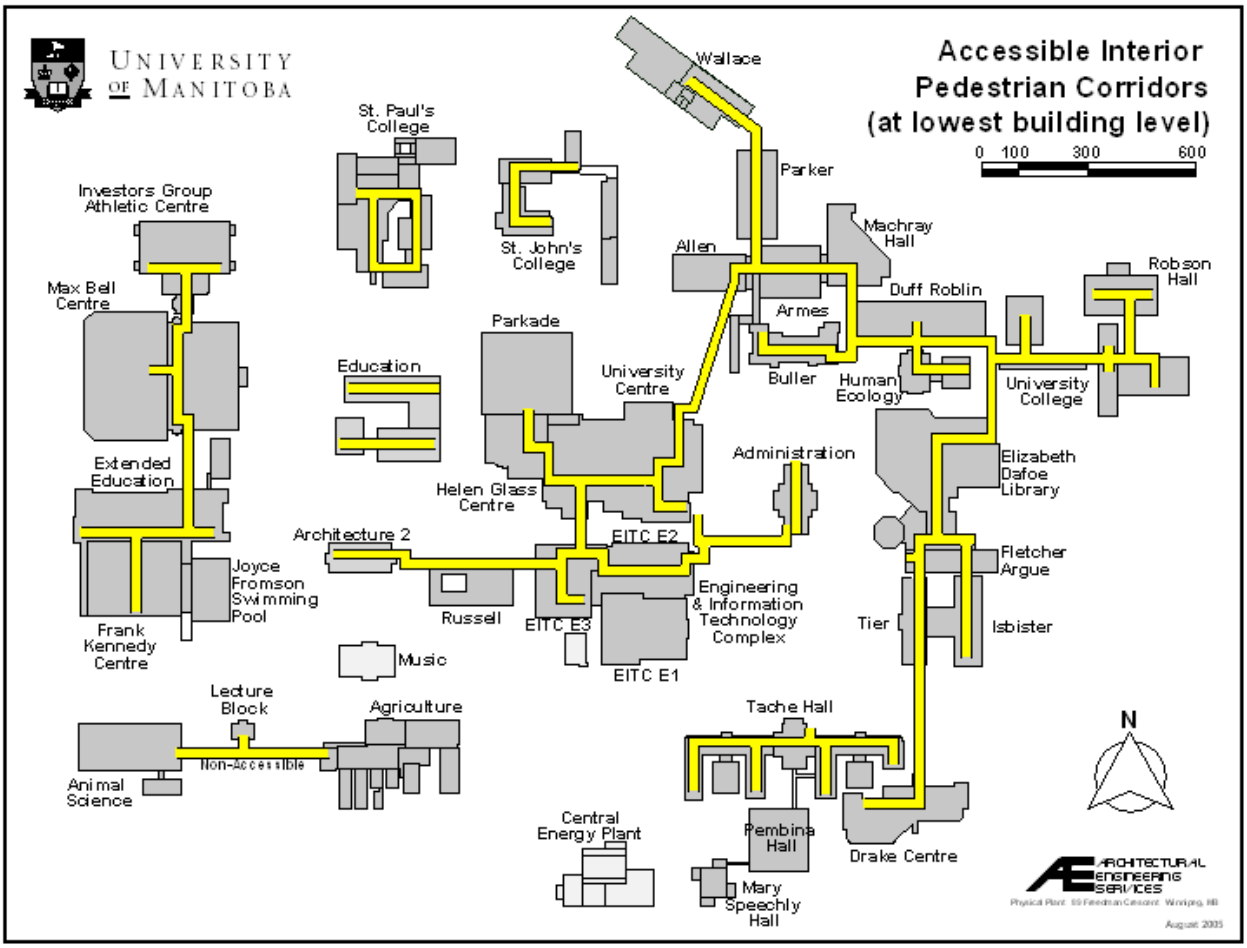
6. What would you change to make them safer?

7. Name the locations that are in your opinion **most safe** 1. _____

2. _____

8. Why do you consider the locations safe?

APPENDIX E: Map of UM-FG Campus Tunnels



Source: Disability Services [University of Manitoba]. http://umanitoba.ca/student/resource/disability_services/pdf/Tunnel_Access.pdf. Retrieved January 31, 2012.

APPENDIX F: Elements of Campus Security Design Guidelines

Source: Security Management Online, 2005. www.securitymanagement.com/library/campussecurity_keller0805.pdf. Retrieved on January 31, 2012.

Security Management Online
July 25, 2005

ELEMENTS OF CAMPUS SECURITY DESIGN GUIDELINES

The following is a summary of the principle security-related issues that should be addressed in a campus design manual:

- *Introductory Issues*

  The introductory issues should include a discussion of what the manual is to include and how the document should be used by the Architect and other design professionals involved with the project. It should address the organization of the manual, and illustrate what are the expected results at each stage in the design process. Of particular relevancy is the Owner's expectation as to what submittal documents are to be offered at each stage and an expectation that each phase submittal will include a text description as to how the architect achieved certain objectives.

  The "Agreement Between the Owner and Architect" should indicate a responsibility to ensure compliance with these or any other institutionally-generated design standards or guidelines or provide reasoning in advance why compliance cannot be accomplished. In addition, the architect or the facilities department should ensure that the campus protection agency has been provided with submittal for review and comment at each stage of the design process.

  - Situations Requiring Added Protective Measures

    The guidelines and standards contained in the document represent minimum requirements for all new buildings projects at the University. There may be circumstances however, where the nature of the building activities or occupants warrant additional protection measures. Design professionals should be cautioned to sensitive to such situations, some of the more common of which are listed as follows:

    - Where extensive after hours operations are expected, particularly involving students;
    - Where large amounts of cash or other valuable items are maintained;
    - Where clinical operations or patient treatments are to be conducted;
    - Where prisoners or psychiatric patients are treated, counseled or housed;
    - Where disciplinary counseling or other confrontational encounters are expected;
    - Where animal care or research facilities are involved;
    - Where select agents or chemical/biological materials are maintained;
    - Where required by insurance carriers;
    - Where required by regulatory agencies governing the activity intended to take place in the completed structure;
    - Where security "best practices" typical for buildings of the planned type are higher than the base security standards.

- *Crime Prevention Though Environmental Design (CPTED)*

Environmental design guidelines are based upon the theory that, "the proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime, and an improvement in the quality of life." Guidelines in this category are intended to provide challenge to the design professional in the application of architectural strategies. They are intended to maximize opportunities for natural surveillance; to increase a sense of territorial control and identification of space; and to enhance natural access control. As previously noted, environmental design security provisions are immensely preferable to more traditional security approaches because they are intended to fulfill the two-fold purpose of providing security while also increasing the level of comfort and functionality of the space.

Environmental Design Guidelines are intended to be used during the programming and schematic design phase, since these directives tend to affect site planning, use of space and the positioning of major building components. They are general in their nature and intended to permit the design professional a substantial degree of latitude in how the objectives are accomplished.

Topics to include under this issue are:

- Building Site: How the building, and its entry points are positioned relative to parking lots, walkways and adjacencies to other facilities, including those that may create problems for the new structure (i.e. location relative to a public housing facility).
- Landscaping: The concept of "safe landscape" design should be addressed in both objective form and with specific references to the manual's landscaping sections to follow, including type of plant materials, their placement, density and height. Design standards for landscaping and plant growth should minimize areas of concealing cover for a potential attacker and maximize observation of areas by occupants and passing patrol personnel.
- Areas of Concealment: Eliminate publicly accessible interior and exterior areas of concealment. Areas of concealment include building alcoves, areas beneath stairwells, ornamental architectural features and dense shrubbery that could permit concealment. Particularly noteworthy are those areas that are close to entry doors and windows that offer concealment of an intruder while attempting a burglarious entry.
- Fencing and Barriers: Fencing and similar "breachable" barriers (i.e. plant materials) may be used to provide a physical barrier to unauthorized access or as mechanism to define and demark limits of exterior space. Exterior fencing, such as ornamental wrought iron fencing, can also be used to channel or direct persons to appropriate walkways or building entry points.
- Exterior Access To Above Grade Entry Points: The building, its landscaping and proximity to other structures should be such that it is not possible to access upper less protected floors or a roof. This may not be possible in some locations where the building must be placed adjacent to another structure. If this is the case, then additional protections for the upper floors becomes necessary.
- Way-finding: Wayfinding is an important element of both interior and exterior design. Simply put, it should be easy to locate the structure, the particular entrances to be used (and not used) and the specific destination space within the building. This issue takes on even greater significance when the building to be designed has multiple occupant types (i.e. open to both members of the institution and the public) or has diverse uses (i.e. offices and classrooms). Wayfinding is a function of proper locationing of space and entry features, and visual cues such as symbolic architectural features and directional signage.

- Blast/Biochemical Attack Resistance: Although not exactly an environmental design issue, the ability of a building to withstand the detonation of an explosive device or resist an intentional biochemical attack by a terrorist organization or individual is clearly an issue which impacts the structure in significant ways involving many design disciplines. Clearly, there are few buildings on a college campus that would necessitate such measures; but they do exist. Common among such facilities risk are research buildings, particularly if the research is controversial or involves defense-related grants and contracts. Other buildings housing special offices or even VIP's (including foreign dignitaries) may also be at risk for such attacks.

  The design standard must indicate a requirement for such features when certain specific threats are found to exist. The "tools" available for this vary from exterior bollards and crash barricades, to special protections for glass curtain walls and special hardening or weakening of interior and/or exterior wall surfaces. In some cases, government standards may exist for specific type of facilities. In any event, there should be a designated person within the institution (or outside the institution) to determine if such a threat exists and assist in defining what measures should be implemented to first prevent such incidents and second to mitigate the damage caused by an explosive or biochemical incident.

- Perimeter Entry Points: The location and position of perimeter entry points are important to the issue of natural surveillance and natural access control. Highly visible entry points promote their own use by legitimate users of the building and are easily surveilable by security or public safety personnel. Conversely, there may be potential entry points that -- because of their location in a concealed area -- should *not* be used. In such cases, it is desirable to use architectural and/or electronic mechanisms to essentially eliminate these doors from use except during an emergency.

- Safe and Unsafe Areas and Activities: Place unsafe activities (such as restrooms, ATM'S, etc) in or near safe locations (such as lobby desks, reception areas, active building lobbies) to bring along the natural surveillance and to increase the perception of safety for normal users as well offenders. Safe activities serve as magnets for normal users who exhibit challenging or controlling behaviors (e.g. staring) that tell other normal users that they are safe, and that tell abnormal users that they are at greater risk of scrutiny or apprehension.

- Common-Use or Shared Space: Within a building there are a number of areas that are shared or common spaces that are used by many departments. In office buildings this may include conference rooms, copy centers, break rooms. Lab facilities could require common chemical storage rooms, animal resource areas or glass washing areas. In such cases, these common or shared spaces should be positioned within the structure in a way that provides a common entry, without the need to enter another individual assigned space. For example, to access a common conference room shared among several different departments, the entrant should not be required to enter the space of an adjacent department.

- After Hours Operations: If the building will house offices or spaces with differing operating hours, the design should permit the areas independently secured. This objective is not accomplished by locks on office doors; rather it is satisfied by arranging space to permit entire sections of the building to be closed or isolated. For example, in a structure containing offices that close after 5:00PM and classrooms that remain open until 10:00PM, the offices could be located at one end of the building. The office section of the building could be locked at 5:00PM while the remaining portions of the building remain open. Where a 24hour computer lab is required, the lab could be located on the perimeter of the building, where entry could be achieved directly at grade; and after hours, one or more doors into the lab from remaining portions of the building would lock, thereby allowing the lab to function autonomously.

One caution is in order: If a space is to be separated and run autonomously from other parts of the structure, restrooms -- and in some cases, vending areas and other support facilities -- must be essentially duplicated in the section allowed to remain open.

- Specific Areas Concern: Specific security provisions should be developed and specified for certain areas. These areas should be the subject of specific focus since the strategies for protection are fairly well established among crime prevention practitioners. The list below is indicative of some of the more common areas found in a campus environment:
  - Parking Lots
  - Bicycle Parking
  - Building Lobby Space
  - Elevators
  - Stairs Systems
  - Vending Areas
  - Building Restrooms
  - High Risk Classrooms (with significant AV Support)
  - Computer Labs
  - AV Storage Spaces
  - Retail Space
  - Cash Handling Areas
  - Precious Metal Storage
  - Chemical Storage
  - Music Practice Rooms and Similar Spaces
  - Laundry Rooms
  - Study Rooms

❑ *Specific Design Issues*

The strategies in this category tend to be more specific in nature-- relating primarily to locating and configuration of certain specific elements or components of a project. These guidelines assist in the design effort by indicating certain "standard" security provisions (i.e. duress alarms in reception areas and restrooms, designating electrically controlled doors, door type selection, etc.) and defining options which the Architect may employ to satisfy the security objective. Minimum security provisions applicable to all risk situations should be defined; however, certain higher risk situations will require levels of security that may not be articulated in the document. Where such conditions exist, the campus protection agency or outside consultant should provide additional requirements.

General Design Directives are intended to be reviewed and incorporated into the design process primarily as the project moves into the design development stage and during the early construction document phase. The guidelines in this section should be developed around a standard method such as the 16 Division "MasterFormat™" specification produced by the Construction Specifications Institute. This method permits the architect and his design team an easy method to determine any security requirements within each design discipline.