

# 1 SAFETY ISSUES AND CONCERNS

One of the most important issues that the design professional must consider is the personal safety of the individuals that will be using and occupying the space in the future. A number of different elements must be reviewed and seriously considered to ensure that the design provides a safe and comfortable environment.

All planning and design development within the University must acknowledge the need to enhance the users' sense of personal safety and reduce design features which provide opportunities for intimidation, threat or assault. To assist consultants in the development of physical strategies which enhance personal safety, the University has amassed several important and relevant resources which should be consulted. The first 2 documents are attached for reference in Appendix One A and One B, and the last three are available upon request.

- .1 the Campus Safety Audit Procedures;
- .2 the City of Toronto Guidelines for Designing Safer Places; May 1997
- .3 City standards for underground parking garages;
- .4 the Green Spaces, Safer Places report;
- .5 a slide library of designs that work to enhance safety.

In particular, consultants should pay attention to the following features.

## 1.2 Lighting and Visibility

In the design of lighting systems and in the selection of lighting fixtures, the electrical designer shall ensure that the lighting levels that will be provided meet the minimum requirements outlined in the Illumination Task Force Recommendations as noted below. In addition, the light fixtures shall be placed so as to eliminate entrapment spots and shall provide a uniform level of lighting minimizing the contrast between light and shadow. Light fixtures which can withstand vandalism and which can be easily maintained shall be provided. Perimeter wall surfaces should be light in colour, which would improve visibility in interior public spaces.

### Areas of special attention:

- .1 **Washrooms**
  - .1 There must be at least two lighting fixtures, of which one should be on at all times and connected to emergency power.
  - .2 The light switches for the washroom must be controlled. The switches shall either be secure key switches or shall be located within a locked controlled location. They may also be located in an electrical panel, however the breakers or the panel should be locked. This would prevent a person from closing the lights when someone else is still within the washroom.
  - .3 Natural light should be provided if at all possible.
  - .4 Motion sensors shall not be used to control the lighting.
- .2 **Stair Lighting**
  - .1 General Lighting in stairways shall be connected to emergency power if

provided.

**.3 Parking Areas (Surface and Underground)**

- .1 Lighting levels must be adequate to avoid contrast between light and shadow, to eliminate entrapment spots.
- .2 Perimeter wall surfaces shall be light coloured so as to provide maximum reflection.
- .3 The lighting level in underground parking garages shall be a minimum of 5 foot candles.
- .4 Some lighting fixtures in underground parking garages shall be connected to emergency power.

**.4 Pathways**

- .1 Lighting levels must be adequate to allow an individual to see and identify a person 50 feet ahead.
- .2 Lighting levels shall be adequate to provide minimum contrast between light and shadow.
- .3 Lighting levels shall be maintained along a pathway so that promise of safety at the beginning of the path is maintained along its length.
- .4 Temporary lighting shall be provided on hoarding around construction sites.
- .5 The designer shall consider providing low level lighting within the shrubbery and landscaping.

**1.2 Illumination Task Force Recommendations**

The complexities of our university are well known to us. It is impossible to come up with a lighting level standard for each type of room. The following recommendations are based on a practical approach to major types of groupings of occupied rooms.

**.1 Rooms where reading and writing is required.**

These areas are as follows:

Tutorial Rooms, Offices, Lecture Halls, Libraries and Laboratories should be grouped together. (There are some exceptions - like some Laser Rooms needing very minimal lighting, and most of the computer terminal rooms needing less than an office environment.)

**Recommendation for these areas: 50 - 75 foot-candle**

**.2 Rooms where reading is not required**

Common areas, corridors, stairways, washrooms, elevators, lobbies, lecture rooms are less illuminated due to the fact that no reading or writing is taking place. (There are places where bulletin boards are displayed in corridors but these areas could be "spot lit").

**Recommendation for these areas: 10 - 20 foot-candle**

**.3 Sport facilities**

Sport facilities need to be specifically designed and will not be part of this general lighting standard.

**.4 Residences**

Lighting in residences is a very subjective issue, requiring specific design. However corridors, washrooms and stairways shall comply with the general lighting standard.

**1.3 Sightlines**

All university buildings and surrounding areas must be designed so as to maximize lines of sight ahead, behind and to the sides. Consultants should utilize barrier materials which are visually permeable and use reflective surface at corners to improve visibility. Design shall maximize clear glazing in areas such as stairwells, elevator lobbies and entrances to offices and work areas. Landscape material should be selected and located so as not to impede long views. Building exterior design and placement should maximize overlook and casual surveillance of public spaces.

**Areas of special attention:**

**.1 Corridors**

- .1 Hidden recesses in corridors shall be eliminated.
- .2 In curved or angled corridors, mirrors or mirrored surfaces should be provided to allow a view further ahead.
- .3 Wheelchair ramps are to be as open and transparent as possible. The sides of ramps shall not be constructed of a solid material. A transparent material or pickets providing views through and beyond the ramp shall be used. If the ramp is placed adjacent to a solid wall, the other side is to be transparent.

**.2 Reception or Reference Areas**

- .1 Reception or reference areas shall not be isolated from other offices or areas. Sight lines shall be provided between reception areas and surrounding spaces providing casual surveillance.

**.3 Computer laboratories (and other labs)**

- .1 In computer laboratories and other areas, it is important to be able to see into these spaces from the corridor, giving people passing by an unobstructed sight line into the spaces and vice versa. In an internal work station configuration, glass shall be provided in doors and in glazing panels beside doorways.
- .2 The designer must find solutions which provide proper sight lines, and minimize noise and provide adequate acoustic privacy.

**.4 Library stacks**

- .1 Stacks must be arranged so as to avoid people becoming trapped in the stack area.
- .2 There must be an ability to see around edges and through stacks.
- .3 Entrapment areas must be avoided and proper sight lines maintained.
- .4 Moveable stacks must be designed so as to avoid people becoming trapped between them.

**.5 Laundry rooms**

- .1 Laundry rooms shall be located adjacent to high activity areas such as stores,

lounges, recreation rooms etc. There shall be windows located in the walls, so that the other occupants and people passing by can see into the space, providing casual surveillance.

**.6 Service areas**

- .1 As with laundry rooms, service areas, typically low traffic areas, shall be located adjacent to high volume, high traffic areas so that the people occupying that space are not completely isolated.

**1.4 Entrapment and Movement Predictors**

- .1** Areas of entrapment are to be avoided. Such areas are single entrance/exit offices in areas of low traffic or vulnerable areas such as where student counselling takes place or areas where researchers work at night or during off hours. Other potential areas of entrapment are: unlit recesses, corners or alcoves; small structures (sheds, storage areas) which are unlit or unlocked. Washrooms which are located in low activity areas can be entrapment areas, especially if the entrance configuration is complicated and communication to a corridor is difficult. Single use washrooms are better choices. Quadrangles and courtyards must be so designed so that there are no entrapment areas.
- .2** A designer should incorporate clear glass panels in all doors to stair wells, corridors and entrances. All unnecessary corners, planters, walls and fences which could produce entrapment spots shall be eliminated. In enclosed public spaces, columns, rather than shear walls, should be used as structural members. Alternative pedestrian routes, multiple exits and choices in direction should be provided wherever possible.
- .3** Structures which create entrapment spots shall be avoided. These include: fixtures which line up flush with wall, abut walls directly (such as library stacks or locker rows) or create dead ends. In any area where entrapment is an issue, consideration must be given to communication needs, particularly for emergency assistance.
- .4** Pathways which force users to go past entrapment areas shall be avoided. Paths shall be designed to allow users several alternate means of movement and a means of escape.

**Areas of special attention:**

**.1 Corridors**

- .1 Corridors with unlit recess shall be avoided. Long corridors should have midway exit possibilities. There should be a choice for exiting or going back.

**.2 External paths**

- .1 External paths shall be designed and located to avoid entrapment areas. Appropriate signage should be located so as to identify a choice in direction or route, and where each will lead.

**.3 Edges of Buildings**

- .1 Recesses and unlit areas shall be avoided. Reflective surfaces should be provided at corners where appropriate. Proper lighting shall be provided to avoid dark entrapment areas.

**.4 Construction zones with hoarding**

- .1 On construction sites, entrapment areas are created by hoarding which is not or cannot be properly secured. As well, inadequately signed or inappropriately signed sites can create entrapment areas. For example, when a construction area interferes with a well travelled path (formal or informal), a safe and usable alternate path must be clearly indicated and properly lit. Proper lighting must be provided on hoarding.

#### **.5 Underpasses**

- .1 Underpasses should be avoided. However, where underpasses are required, they should be wide, well lit and provide an opportunity for a change in direction.

### **1.4 Isolation**

- .1 Isolated activities and those which occur during off hours, such as laundry facilities, shall be located next to high volume, randomly attended activities such as lounges, T.V. rooms etc.
- .2 In areas of low pedestrian traffic, clear, concise and highly visible signage should be used. Clear directions to the nearest communication device must be given. Wherever it is deemed necessary, alert stations (emergency telephones) should be used to aid in emergency situations. Surface parking lots located behind or beside buildings must have sightlines to nearby assistance within the building.
- .3 Clear, concise, diagrammatic building plans should be provided inside the building entrance identifying the location of washrooms, telephones, reception areas, public spaces, cafeterias and lecture halls. Sufficient information, identifying the nearest staffed area or exit should be provided at major decision points within the building.

### **1.5 Access Control**

- .1 The issue of access control is extremely critical on campuses. A number of buildings are occupied during normal working hours and are locked for the evening and during the night. However, in a large number of buildings, classes are held late into the evenings, and in some cases students work in libraries late into the night. Some of the items to be considered should include:
  - .1 Access control needs to be designed in a way that permits staff to maintain a separation between public, semi-public and private areas.
  - .2 A system shall have wide flexibility and the ability to accommodate immediate change, at relatively low cost.
  - .3 Main entrances should be designed to be barrier free and easily used by all.
  - .4 Special attention regarding access control shall be given to libraries, student residences and academic buildings used after normal building hours.
  - .5 Systems shall be designed for the long term and not become obsolete shortly after installation.
  - .6 The main lobby and entrance shall open onto a properly staffed reception / office area allowing casual surveillance of the entrance to the building.

### **1.6 Communication**

- .1 The need to communicate and to be able to call for assistance in cases of emergency is

extremely important. A means of communication shall be provided in areas of greatest vulnerability where confrontation may potentially occur such as:

- .1 cash collection locations;
  - .2 library fine counters;
  - .3 reception counter areas;
  - .4 parking kiosk;
  - .5 other areas where confrontational discussions may occur.
- .2** A number of design options could be considered, a final system selection being dictated by the specific situation following discussions with the clients / University representative during the design phase. Some of the design options include:
- .1 providing an alert button at the library counter;
  - .2 providing an alert button at a porters station in residences;
  - .3 providing a network communication system through the computer local area network. A distress call could be punched in on the computer and come up on screens in adjacent offices;
  - .4 providing emergency phones in problematic areas or isolated areas and connecting to the Campus Police;
  - .5 providing a public address system in buildings to facilitate internal building communication;
  - .6 maintaining clear sightlines between these areas and adjacent offices.

### **1.7 Activity Generators / Activity Mix**

- .1** As noted in other sections, low activity areas should not be isolated but shall be located near or adjacent to high activity areas, e.g. laundry rooms adjacent to common rooms.
- .2** In planning of a project, the concept of locating high risk or low volume activities next to high volume activities, should be implemented. This should be considered in the following situations:
- .3** Within academic buildings, administrative staff should be located close to academic offices.
- .4** There are situations where the office areas and reception areas are far removed from the main doors or entrances to the building. This allows for anyone to enter the building at anytime and leaves the reception area in a very isolated situation. This should be avoided.
- .5** Child care facilities are sometimes situated in isolated locations. They should be located within high activity buildings.
- .6** Special attention shall be paid to the location of pathways, entrances and exits for people with mobility difficulties.

END OF SECTION