

CHAPTER

6

**REVIEW OF SECURITY IN
SCHOOL DESIGN IN IRELAND**

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Abstract: This paper presents a review of security requirements for Ireland's schools. It describes the factors contributing to security-related problems in schools, and the most prevalent types of security threats. The review identifies four areas to be addressed: organisation, security procedures, building security and site security. Factors influencing building security (such as building access, structural elements and materials, roof design, monitoring and lighting) and site security (such as location and surroundings, site layout and landscaping) are discussed in detail. The review's security strategy and recommendations are also presented.

Introduction

The Department of Education and Science's Planning and Building Unit is responsible for 3 284 primary school buildings and 750 secondary school buildings and funding capital projects in tertiary institutions in the Republic of Ireland. The unit has 90 administrative staff and 27 technical and professional personnel.

In response to increasing acts of vandalism, theft and general misuse of school buildings in the Republic of Ireland, the unit – in consultation with the Garda Síochána National Crime Prevention Office, the school insurance industry, the security sector and school authorities – conducted a study to identify the current security requirements of the built environment. The results of this project were encouraging and will influence the design of future school building projects.

Identifying the issues

To make an initial assessment of the security challenges facing schools, a review of existing literature (see Bibliography) and statistical data was conducted, in addition to an analysis of the site-specific experiences and knowledge of the Planning and Building Unit's technical staff.

This review attributed the security problems faced by schools to the following factors:

- Schools can represent authority to people who have difficulty accepting authority.
- The value of education is not always fully accepted.
- Schools are unoccupied for long periods.
- Schools may be located in isolated areas.
- Poor building design can create security problems.
- Schools in urban areas usually face greater challenges than those in rural locations.

The review also identified – in descending order of occurrence – the four most prevalent types of security threats.

- *Malicious glass breakage.* Malicious glass breakage is one of the biggest problems faced by school authorities. Normally, these incidents are not reported to insurance

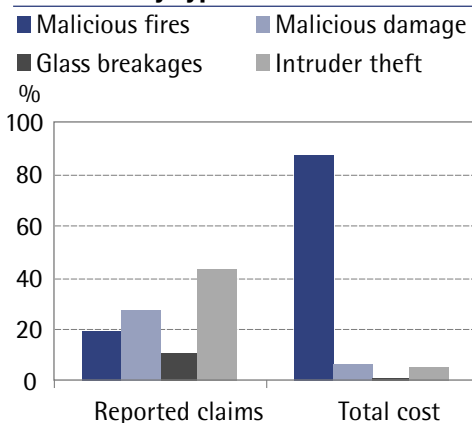
companies as insurance only covers damage that occurs as part of a fire or break-in. Malicious glass breakage tends to occur at night.

- *Intruder theft.* Intruder theft comprises a large part of claims to insurance companies. These incidents usually occur on summer evenings, as intruders do not require artificial light to inspect the building, and target areas are clearly visible through the windows.
- *Malicious damage.*
- *Arson.* While arson represents the biggest single loss event, it is not widespread. Most incidents occur during the summer holidays and between November and mid-January.

Figure 6.1 presents the number and cost of reported claims to insurance companies: malicious fires represent 19% of reported claims but only 87% of the cost of claims, while intruder theft represents 43% of reported claims but only 5% of the total cost of claims.

Soaring insurance costs are currently putting a strain on school funds. Building and contents insurance represents approximately 50% of the cost of a school policy (Ecclesiastical Insurance Company, 1992). Unfortunately for security pro-active schools and fortunately for schools with few security concerns, the insurance industry calculates the cost of policies on a blanket basis, meaning that the risk is divided evenly over all schools. Thus, schools with enhanced security systems are not rewarded. As the element of risk is removed when buildings are better designed and have enhanced security systems, some recognition should be awarded by insurance companies to promote security in schools. This area is under review by some insurers.

Figure 6.1. Number of reported claims and cost of claims in schools, by type of incident



Addressing the issues

Following the review, the Planning and Building Unit identified four areas to be addressed: organisation, security procedures, building security and site security.

Organisation

This area involves school administrators. Their role is to co-operate with local police crime prevention units, to establish emergency management procedures, and to make students and parents aware of these procedures. Without good management procedures, state-of-the-art security systems or designs are ineffective.

Security procedures

Security procedures should include identifying those responsible for school security and establishing plans and operational systems to be used in the school's daily operations. When routine procedures are in place, it is easier to notice abnormal events or incidents and to respond to them in a more efficient and controlled manner.

Building security

The planning of a school building should be conducive to students' intellectual, creative, physical and social activities. The school should provide a lively and welcoming environment that is not over-powering, impersonal or institutional and that can accommodate a range of activities (Department of Education and Science Ireland, 2004). It is important that school security solutions do not dilute any of these goals. Security should be considered as an integral part of the design process, from the preliminary planning stages to final construction, for constructing new schools, refurbishing existing schools and adding temporary accommodation, and for operational and maintenance plans. Many school security problems result from building designs that did not consider modern-day security issues.

The issue of building security focuses on the built environment, which is threatened from both inside and outside the school by vandalism, including glass breakage and graffiti, theft and burglary and arson, as described above. The review identified seven factors that influence building security:

- *Building access.* The number of building access points should be minimised due to fire hazard regulations and operational requirements. Screening of all visitors should take place at a main entrance point, which has unrestricted views from the office area, an audio connection and remote-release electronic locks.
- *Structural elements and materials.* To minimise breakage, the use of slate or tiles (which can be easily damaged) on vertical facades should be avoided; special vandal-proof glass should be used when the risk of glass breakage is particularly high. Careful consideration must also be given to replacement of window glazing, which represents a considerable proportion of a school's annual budget (most insurance companies do not provide coverage for glazing). While large 2 x 3 m glazing panels may look attractive on the first floor of a building, they are also an appealing target for stone throwers. Smaller glazed units are easier and less expensive to replace. To minimise fire damage, consideration must be given to the structural containment of the fire; unless multiple fires are started simultaneously in different compartments, schools should be able to operate in temporary classrooms with minimal disruption.
- *Building configuration.* The most secure building type is generally rectangular with no recesses or alcoves. As this uninteresting building design is rarely used, designers must ensure that recessed doorways do not create vulnerable areas and that covered areas can be secured. Similarly, drainpipes should be routed externally because of the long-term maintenance issues and the consequences of failure if routed internally, although

they should not present climbing opportunities. Single-storey schools tend to be more prone to vandalism compared to two-storey schools, although adjacent positioning of schools should be avoided.

- *Roof design.* Preventing access to roofs, for example by constructing deep overhanging eaves, can eliminate many security problems.
- *Electronic security systems.* Security systems – such as intruder alarms, fire alarms, electronic door locks, security lighting and closed-circuit television (CCTV) – can act as a deterrent to intruders, detect their presence, and assist in identifying and prosecuting them. Not all schools however require the same level of electronic security systems.
- *Monitoring.* While all alarms are equipped with external audible sounders, these devices are not always effective in schools. The installation of a remote signalling device, which is monitored by an external alarm monitoring company, is more useful.
- *Lighting.* While building security lighting can be effective, it can cause problems if incorrectly designed or installed. Good quality lighting that focuses on the building façade and includes time switches with photoelectric cells and passive infrared detectors can act as a deterrent.

Site security

The review identified five factors that influence site security:

- *Location and surroundings.* Theoretically, a school located in a densely populated area that is unoccupied at night, weekends and holiday periods presents a higher risk than a school located in a suburb or rural area. In reality, schools are situated in the community they serve, and the availability of sites is often limited by factors such as poor town planning. Ideally, a school site should not be isolated and should be overseen by the local community.
- *Site boundary.* An effective site boundary is a critical component of school security and can relieve pressure from other areas. Although it is difficult to construct a perimeter that is physically impenetrable, socially acceptable and affordable, an appropriate site boundary should:
 - Be well-defined, prevent casual intrusion and make deliberate intrusion difficult and conspicuous.
 - Prevent access from inside and outside the site, so that it is as difficult for intruders to break in as to break out. Locks on gates should be located out of sight to deter vandalism.
 - Incorporate a symbolic barrier at road entrances to indicate private school grounds.
 - Not impede visual surveillance of the site, for example by using high walls instead of railing-type fences.

- *Site layout.* School buildings should be located in view of surrounding properties and roadways, and school car parks situated within sight of the school.
- *Landscaping.* Marking the territory of the school using fences, landscape-type trenches and low-lying shrubs or hedges can prevent human intrusions and vehicle access. An open area located inside the perimeter can also prevent scaling and concealment.
- *Site lighting.* When designing site lighting, it is important to provide adequate lighting to assist intruder detection, but at the same time to avoid floodlighting areas, which can actually help intruders, create shadows that offer cover and present a nuisance for neighbours. Lighting should include time switches with photoelectric cells and passive infrared detectors.

Security strategy

The emerging security strategy following the review includes at present:

- Security must be considered as an integral part of the design process. The Planning and Building Unit should provide clear guidance on design, materials and methods of school security enhancement that are effective, affordable and acceptable to all stakeholders. A security design strategy will be developed in co-operation with each school that considers the school's own particular and unique requirements. These design guidelines will focus on three areas:
 - *Site security*, such as site selection, design of the site boundary, use of symbolic barriers, use of landscaping and sterile areas, and planning of site amenities and way finding.
 - *Building security*, such as external façade design of buildings, building access, roof design, structural elements and materials, glazing design, building configuration, enhanced fire compartmentation, adequate levels of electronic security systems and external security lighting.
 - *Security auditing*, such as auditing of designs and completed installations.
- A security risk analysis should be undertaken for each new project to establish the risks to which a school may be exposed, how security has been used in the design process and a selection of appropriate security technologies.
- As part of the basic design brief, each school should have main door electronic access, an intruder alarm, automatic fire detection alarm, entrance CCTV and external security lighting.
- In schools experiencing high levels of vandalism or other security problems, external CCTV and lighting levels may be considered following a detailed review.
- A security audit system should be established and implemented in the design stage.

- A security audit system using post-occupancy evaluation should be established and implemented.
- A mechanism should be created to review and monitor the effectiveness of this policy and associated measures in individual schools.
- The unit should work with the insurance industry to promote and reward good design and the use of enhanced security systems.
- School Authorities should promote security management guidelines.

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