

# Technical Guidelines for Building Security

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# 1 Introduction

These guidelines provide pragmatic recommendations for the implementation of security procedures, physical protection concepts and security technology. The main objective of these guidelines is to minimize the possibility of mass casualties resulting from an attack on a building. This objective can usually be achieved through the implementation of moderate changes to the building's plans. These recommended changes will enable architects to design a protected building while continuing to carry out their architectural vision and avoiding the creation of fortress-like structures.

These guidelines were drawn up following a series of comprehensive threat and risk analysis studies that were carried out on several types of buildings in various cities. The studies were undertaken in order to study current construction techniques, security procedures, culture, constraints and practices in use today in different types of buildings in the world. The types of buildings reviewed included those that belong to the hospitality and retail industries, transportation infrastructure and government institutions.

The studies were also aimed at determining the construction methods and materials typically used in the world, and at identifying any other factors that may influence the development of physical protection guidelines.

The guidelines have been formed from the following key elements:

- ▶ **Best practices used in construction projects worldwide.**
- ▶ **Various international standards (or parts thereof).**
- ▶ **The results of extensive analysis of construction techniques and security procedures currently in used.**

These guidelines are based on the common assumption that comprehensive protection against every possible threat is cost prohibitive. The philosophy introduced in these guidelines is that appropriate protection can be provided for new development projects either at a reasonable cost or at no additional cost what so ever.

Building designs that employ factors to eliminate or limit the possibility of an attack, help reduce the need to employ hardening measures across the entire structure and/or in specific vulnerable areas.

When the possibility of an attack cannot be eliminated or limited, the guidelines will supply recommendations that are aimed at mitigating the casualty level. Full implementation of these guidelines will provide reasonable protection against terrorist threats.

This document provides appropriate and feasible measures which will establish a significant degree of protection against the threat of terrorist attacks to a new development project. While complete protection for **all potential threats for each and every individual** in the building is not always feasible and may be cost prohibitive, the objective of these guidelines is primarily to prevent catastrophic events that may result in mass fatalities. This can be met through prudent master planning, and through following design and construction practices which typically result in minimal constraints on the design and architecture. These guidelines enable the use of most conventional construction techniques with marginal impact on the total construction cost.

It is common knowledge that a well designed building requires relatively less maintenance and this rule can also be applied to security design. Implementation of these guidelines will have a positive effect on the building's day to day security operation and the respective cost. In addition, planning a building's security deployment during its preliminary design stage will minimise the inconvenience to the people who will use the building and may assist in future adjustments to the level of security employed in the building (e.g. the protection level may need to be increased as a result of a rise in the threat level)

Security, when not planned in advance, may be prohibitively expensive or complex to apply after the building has been constructed. It should be noted that retrofitting, when feasible, usually proves to be a significantly disruptive and expensive operation.

**The total cost of achieving the required level of protection for a new project if security is designed at the initial planning stages, is a fraction of the cost of implementing similar security measures after the project has been completed.**

The guidelines provide developers, engineers and architects with a new and innovative resource, for determining security-oriented design approaches to protecting buildings against terror threats. This is achieved by the introduction of a cohesive strategy that creates synergy between elements from the structural, technical and human resources domains.

**Protection is the result of implementing these guidelines. This includes the elimination and mitigation of defined threats.**

These guidelines address the following issues:

- ▶ **The major elements of a typical urban development project including the perimeter line, landscaping and the structural scheme itself.**
- ▶ **The underlying reasoning behind differing levels of protection.**
- ▶ **Concepts such as access management, system integration and communications which are all crucial to the protection of buildings and their occupants.**
- ▶ **The measures that should be implemented to reduce physical damage to structural and non-structural components of buildings and related infrastructure.**
- ▶ **The measures that should be implemented to reduce casualties resulting from conventional IED bomb attacks and other types of attacks.**

With the involvement of industry and technical experts, we have developed practical, feasible and usable security design guidelines that focus on the physical protection of a new development project whilst recognising that the core mission of a public development project is to equitably, efficiently and safely serve the public.

These guidelines may however, need to be supplemented where specific terrorist threats are identified, where more stringent local standards apply, where the functionality and the physical constraints are unique or where local commanders dictate additional measures.

The levels of protection provided by these guidelines establish a foundation for the rapid deployment of additional protective measures as threat levels increase. They do not assume nor recommend that maximum protection are required as a standard, and they suggest design considerations and ways of preparing the infrastructure for later implementation of higher levels of protection.

Although these guidelines are focused on new development projects, they may help in retrofitting existing buildings. Retrofitting is an expert field that requires professionals with knowledge of the wide variety of technical and structural solutions and with the ability to balance costs with expected benefits. It is highly recommended to follow these guidelines to retrofit projects where applicable.

If project constraints prohibit the full implementation of the relevant guidelines, it is up to the project developer or user of this guide to decide on the extent to which the various protective elements will be implemented, based on the location of the potential threats and subsequent analysis. Examples of this include:

- ▶ **Determining the level of blast load the protective windows are required to withstand in different sides of the building based on how close each wall is to a road.**
- ▶ **Determining which openings require forced entry protection based on their accessibility from ground level.**

It is highly recommended to use professional security consultants for this task.

**Note that the recommendations in these guidelines are:**

- ▶ **not mandatory**
- ▶ **not applicable to all buildings<sup>1</sup>**
- ▶ **need to be modified when they conflict with safety regulations**

**In today's security-minded environment, a well-protected building provides added value to the developers, owners, inhabitants, and the public, and demonstrates civic responsibility.**

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<sup>1</sup>As these are general guidelines which address generic scenarios, it is understood that different onsite constraints may conflict with specific recommendations. In this case, a specialist security engineer should be consulted.

## 1.1 Audience

These guidelines describe concepts and provide detailed information for security-oriented design. The target audience includes, but is not limited to:

- Architects
- Security System Designers
- Urban Construction Developers
- Structural Engineers
- Security Personnel
- Construction Project Managers

General information is also included to provide senior managerial staff and policy makers with an understanding of security concepts and to help emphasize the importance of physical design in matters of security. Technical information is also included for use by professional consultants in the relevant field. The guidelines may also be of importance to project managers, consultants, contractors, and any other people involved in the planning of a new development.

**When distributing this document, you are requested to keep in mind the potentially sensitive nature of the material and where possible limit its distribution to authorised or responsible individuals only.**

## 1.2 Exceptions

Whilst these guidelines are intended to relate to most types of buildings and institutions, there are a number of exceptions which will require specific additional analysis and review in order to determine their security requirements.

The following is a list of exceptions to the guidelines as of May 2006. This list will be reviewed and updated from time to time.

- Military assets
- Special government buildings with unique threat levels (e.g. Prime Minister Office and residence)
- Banks
- Prisons and other high-security facilities
- Commercial and national assets considered critical to the country
- Industrial installations such as power plants, chemical plants etc
- Architecturally unique designs

### 1.3 How to use the guidelines

