



Risk Management Series

Incremental Protection for Existing Commercial Buildings from Terrorist Attack

Providing Protection to People and Buildings

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FEMA

RISK MANAGEMENT SERIES

Incremental Protection
for Existing Commercial
Buildings from Terrorist
Attack

PROVIDING PROTECTION TO PEOPLE AND BUILDINGS



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BACKGROUND

The Federal Emergency Management Agency (FEMA) developed FEMA 459, *Incremental Protection for Existing Commercial Buildings from Terrorist Attack*, to provide guidance to owners of existing commercial buildings and their architects and engineers on security and operational enhancements to address vulnerabilities to explosive blasts and chemical, biological, and radiological hazards. It also addresses how to integrate these enhancements into the ongoing building maintenance and capital improvement programs. These enhancements are intended to mitigate or eliminate long-term risk to people and property.

FEMA's Risk Management Series publications addressing security risks are based on two core documents: FEMA 426, *Reference Manual to Mitigate Potential Terrorist Attacks Against buildings*, and FEMA 452, *Risk Assessment: A How-To Guide to Mitigate Potential Terrorist Attacks Against Buildings*. FEMA 426 provides guidance to the building science community of architects and engineers on reducing physical damage caused by terrorist assaults to buildings, related infrastructure, and people. FEMA 452 outlines methods for identifying the critical assets and functions within buildings, determining the potential threats to those assets, and assessing the building's vulnerabilities to those threats. This assessment of risks facilitates hazard mitigation decision-making. Specifically, the document addresses methods for reducing physical damage to structural and non-structural components of buildings and related infrastructure and reducing resultant casualties during conventional bomb attacks, as well as attacks involving chemical, biological, and radiological agents.

FEMA 459 can be used in conjunction with FEMA 452. This manual presents an integrated, incremental rehabilitation approach to implementing the outcomes of a risk assessment completed in accordance with FEMA 452, *Risk Assessment: A How-To Guide to Mitigate Potential Terrorist Attacks Against Building*. This approach is intended to minimize disruption to building operations and control costs for existing commercial buildings.

The integrated incremental approach to risk reduction in buildings was initially developed in relation to seismic risk and was first articulated in

FEMA's Risk Management Series in the widely disseminated FEMA 395, *Incremental Seismic Rehabilitation of School Buildings (K–12)*, published in June 2003. In 2004 and 2005, FEMA also published *Incremental Seismic Rehabilitation* manuals (FEMA 396-400) for hospitals, office buildings, multifamily apartments, retail buildings, and hotels and motels.

OBJECTIVE AND SCOPE

This manual outlines an approach to incremental security enhancement in four types of existing commercial buildings: office buildings, retail buildings, multifamily apartment buildings, and hotel and motel buildings. It addresses both physical and operational enhancements that reduce building vulnerabilities to blasts and chemical, biological, and radiological attacks, within the constraints of the existing site conditions and building configurations.

The information contained in this document is:

- Not mandatory
- Not applicable to all buildings
- Not applicable when it interferes with other hazards such as fire

However, the manual presents incremental approaches that can be implemented over time to decrease the vulnerability of buildings to terrorist threats. Many of the recommendations can be implemented quickly and cost-effectively.

LIMITATIONS

This approach to incremental security enhancement applies to commercial buildings in urban or semi-urban areas. This approach **does not** apply to exceptionally high-risk iconic buildings of symbolic value. Examples of such buildings include the tallest buildings in a city, high rise buildings with a distinctive shape recognizable in the city skyline, and diplomatic buildings, such as embassies. Security enhancement in this class of buildings should be based on detailed engineering analysis and design.

INTENDED AUDIENCE

This manual addresses the specific needs and practices of commercial building owners, and guides building owners and managers through a process that will reduce the risks to their buildings from terrorist attacks. It is intended for use by both technical and non-technical audiences, including:

- Building Owners
- Facility Managers
- Risk Managers
- Security Consultants
- Design Professionals

CONTENT AND ORGANIZATION

This manual provides building owners and their design consultants with guidance on developing a program of incremental security enhancements that can be implemented over a period of time.

Chapter 1 provides an overview of integrated incremental rehabilitation of buildings, potential terrorist threats to buildings, the mitigation of the risks of terrorist attacks, special issues related to security in existing commercial buildings, a process for integrating incremental mitigation into the normal facility management process, and a step-by step approach to implementation of an incremental enhancement program. It is intended for building owners and their risk managers and facility managers.

Chapter 2 describes the relationship between this manual and FEMA 452 and includes a list of terrorism risk reduction measures. It also discusses the implementation of an integrated incremental program and links (in the form of matrices) specific physical and operational enhancement measures to normal maintenance and capital improvement programs associated with commercial buildings. It is intended for risk managers, facility managers, and design professionals.

Chapter 3 discusses blast threats to buildings and physical enhancements that reduce the vulnerability to blasts. It is intended for design professionals and their blast consultants.

Chapter 4 discusses chemical, biological, and radiological threats to buildings and physical and operational enhancements that reduce the vulnerability to these threats. It is intended for design professionals and their CBR consultants.

Chapter 5 discusses operational security measures that reduce commercial building vulnerabilities to terrorist threats. It is intended for design professionals and security personnel.

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