

Review

This accessible book on physical security will be useful to both engineers new to the subject and those more experienced seeking a reference document, say **Andrew Morrison** and **Giles Prosser**.

Structural Design for Physical Security

Editors: Peggy Van Eepoel and Sharon M. Gallant

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THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)

has published an update to its guidance on implementing physical security within structural building design, which is now over 20 years old. The new Manual of Practice provides an overview of the typical design considerations encountered in new construction and renovation of facilities for physical security. The constant change in threat tactics and types has led to the need for physical security designs that account for these new considerations and anticipate the environment of the future, with flexibility and adaptability being priorities.

Chapters 1 and 2 present physical security concepts along with the range of typically encountered threats, the physical loads and effects, and the associated building vulnerabilities and risks. The threats covered include blast, forced entry and ballistic attack.

Chapters 3 to 7 discuss the potential effects of these threats on a wide range of structural and non-structural systems and components. They present methods to analyse and design for these effects. The concept of resilience is discussed in these chapters, an important overarching principle of which physical security is a key element.

The remaining chapters cover the particular challenges associated with assessing and upgrading existing structures, along with advice on how to apply physical security to large bridge structures, closing with guidance on the important topics of blast, forced entry, ballistic and crash testing, presenting key questions to ask if you are developing a test programme and processes to go through to ensure the programme provides maximum benefit. References to test standards include US and ISO/UK standards. The subjects of disproportionate and progress collapse are discussed within. A useful overview of explosion investigation is also provided, although UK readers will need to seek alternative guidance on the nuances of the UK court procedures compared to those described.

This manual is a broad and comprehensive overview of the extensive array of considerations that designers and engineers involved in physical security should be aware of, and it provides many examples and tips to help the reader understand the applicability to their own projects, including reference to past attacks.

The extreme nature of blast loading and other physical effects, such as forced entry and ballistic attack, means that loads are very severe and the structural demands intense, with non-linear behaviour and acceptance of damage being fundamental. The highly complex topics of loading and response are discussed in a clear, easy-to-understand manner with illustrative examples and diagrams.

The book includes extensive discussion of analysis and design of components, particularly for blast, where static, dynamic and empirical methods are presented, along with limitations of methods and key considerations.

In addition to technical guidance, there is plenty of advice to the engineer responsible for physical security on how to handle these requirements throughout the project. The importance of early engagement with the design team and remaining involved during the construction stage is highlighted within the manual.

The manual is written from a US perspective, but this sits comfortably because the majority of published historical guidance on these topics has emanated from the USA, building on the legacy of military research and intense homeland security considerations, particularly over the last 20 years. However, readers should be aware of the significant body of physical security guidance available through the UK Centre for the Protection of National Infrastructure (CPNI) and the extensive UK design experience which is accessible through the Register of Security Engineers and Specialists (RSES). This highlights the importance of using suitably qualified engineers for this type of work, a point underlined by the ASCE manual.

The manual covers a wide range of considerations well, but physical security is a constantly evolving subject area and inevitably there are gaps in the manual. However, the principles which apply are clearly stated and this would steer readers in the right direction on any topic likely to be encountered.

Overall, the style of the book makes it accessible to engineers new to the subject, while also providing experienced engineers with a thorough reference document, together with numerous links to publications providing more detailed technical information.

Andrew Morrison

Andrew started his career in building structural design before choosing to specialise in dynamic loading, including seismic, blast and impact. He has made extensive use of US and UK guidance on handling these challenging design topics.

Giles Prosser

Giles has worked in physical security design throughout his career. This experience has covered the range of considerations from threat and vulnerability risk assessments through to various types of analysis and detailed design of structural and non-structural components.

