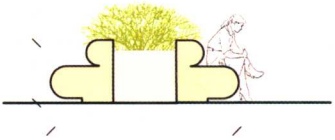

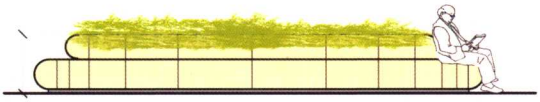

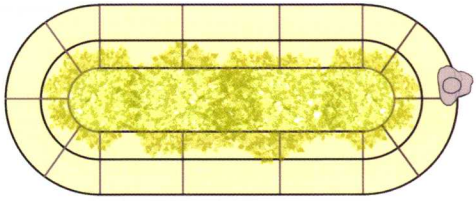

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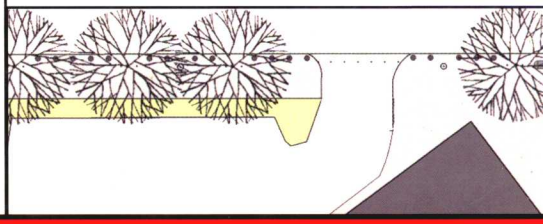
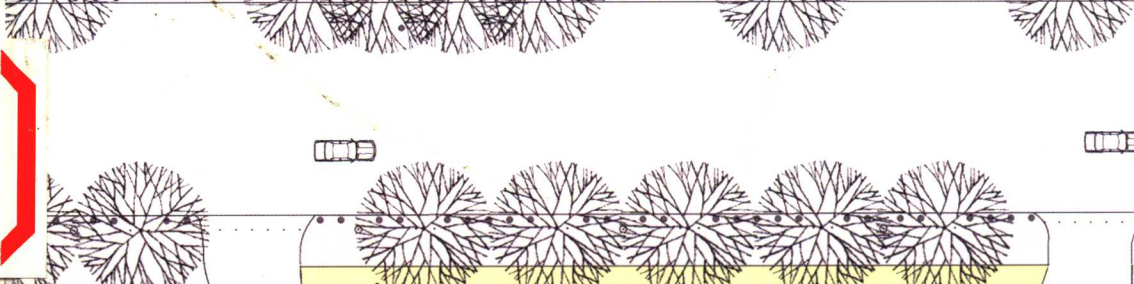


SECURITY AND SITE DESIGN

A Landscape Architectural Approach to Analysis, Assessment, and Design Implementation



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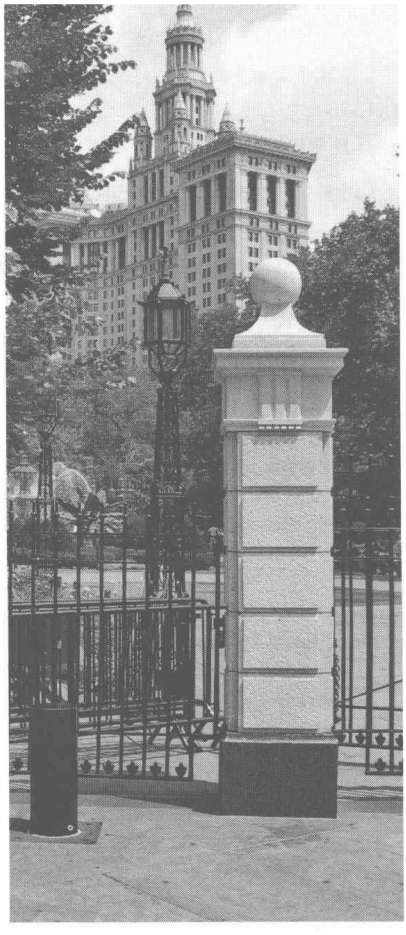

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Published simultaneously in Canada

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Library of Congress Cataloging-in-Publication Data:

Hopper, Leonard J.
Security and site design : a landscape architectural approach to analysis, assessment, and design implementation / Leonard J. Hopper, Martha J. Droge.
p. cm.
Includes bibliographical references.
ISBN 0-471-65583-X (cloth : alk. paper)
1. Building sites--United States--Planning. 2. Public buildings--Security measures--United States. 3. Terrorism--United States--Prevention. 4. Landscape architecture. I. Droge, Martha J. II. Title.
NA2540.5.H67 2005
711'.1--dc22

2004025689

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

Acknowledgments

The authors appreciate the support and assistance of the many people who participated in the creation of *Security and Site Design*.

We would like to particularly acknowledge the generosity of the National Capital Planning Commission for allowing the reprint of text and images from the *National Capital Urban Design and Security Plan*, with special thanks for help from Patricia E. Gallagher, AICP, Executive Director, Elizabeth Miller, ASLA, Lisa N. MacSpadden, Stephen Staudigl, and Paul Jutton.

The General Services Administration (GSA) very generously gave permission to present informative images and text. Our thanks go to Frank V. Giblin, AICP, Urban Development/Good Neighbor Program in the Office of the Chief Architect at GSA. We are also grateful to Todd Bressi, author of *Before the Jersey Barrier: Public Access and Public Safety in Federal Buildings*, which describes the Hanley Federal Building and U.S. Courthouse, Syracuse, New York, for permission to reprint his work.

We thank The American Institute of Architects, which graciously allowed us to reproduce material from their highly regarded publication, *Security Planning and Design: A Guide for Architects and Building Design Professionals*.

We also thank John Nicolaus, ASLA, Scott Redding, ASLA, and the HLA Group for sharing their innovative security design approach and site elements for the California State House in Sacramento, as well as George Vellonakis for sharing his insight and stories, which provided such wonderful background into the process and design of the revitalized government center of New York City, City Hall Park.

Finally, we extend our gratitude to John Wiley & Sons, Inc., and in particular Margaret Cummins, Senior Editor; Rosanne Koneval, Senior Editorial Assistant; and Donna Conte, Senior Production Editor, for their guidance and support throughout the project.

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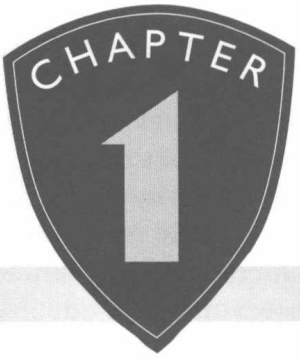

Security Site Design

HISTORY

Designers throughout history have included protection and security as part of their work. This included protection against the elements as well as security against those that would do them harm. Early on, site selection considered geographic features like rivers, mountains, canyons, and other natural barriers to enhance security. Security design thinking evolved into building man-made barriers like walls, fences, and moats for protection against unwanted outsiders. Such security measures were directed toward keeping intruders out, keeping them at a safe distance where they could inflict little damage, or slowing their advancement to give defenders time to respond. The physical elements of protection, nat-

ural and man-made, gave defenders a tactical edge over those seeking to do them harm.

Security design is not very different today. The primary objectives remain the same. Even the simplest of fences defines property and, however easy to circumvent, clearly shows that the trespasser is in violation of the owner's basic rights. The design of these perimeter barriers can escalate along with any associated threat. However, just about any perimeter defense can be circumvented. There will always remain some degree of risk because of physical, budget, or personnel limitations. The objective is to match an appropriate barrier with a reasonably anticipated threat.

Vigilance that is responsive to accurate assessments of actual and likely threats results in a proper level of physical and psychological precautions being taken. When threats are exaggerated or unlikely scenarios are magnified—as when, for example, broad media attention focuses on one target and overstates its importance to the general public—there can be serious repercussions. The quality of our daily lives suffers and our actions are guided by unrealistic fears. The balance between openness and the restriction of our freedom of movement, access to public buildings, and connection with our government is upset. The limited personnel and financial resources that we have to direct toward security design may be spent in ways that are less than effective and take away resources from more necessary security needs. We must exercise a rational approach to finding a balance between those that put security concerns above all others and those that argue that openness in our society must be a priority.

Finding this balance is a fundamental task in the process of security design development. The basis for a creative security design solution must be an accurate risk assessment. Security setbacks must be carefully considered for their impacts on the architectural character of the surrounding community. The elements used between the building and perimeter become critically important components in order to incorporate the security design response with the architectural context of the area. The design will provide a strong connection to the street and architectural character of the adjacent properties, as well as establish a secure perimeter. It creates a situation where those seeking to overcome the barrier look overtly obvious by the means they must carry out to break through the perimeter. Moreover, the extended time needed to defeat the perimeter security will delay

would-be attackers, such that other responses can be focused on stopping them.

The range of potential threat has been broadened by scientific and technological advancement. The availability of this knowledge and accessibility of materials to carry out violent acts have added to the sophistication of the terrorist arsenal. Today, biological, radiological, and cyber terrorism have been added to the list of potential threats. These same advancements have provided enhanced security measures in our built environment to counter these new threats. The defender and terrorist are constantly engaged in the effort to be one step ahead and gain a tactical advantage.

The response to terrorist threat must be multifaceted, comprehensive, and coordinated in order to address a problem of this magnitude. Therefore, it is extremely important that the landscape architect know the anticipated threats based on thorough analysis of the threat, the site, and its context. A good security design will be based on an accurate collection of data that is responsive to the unique situations of each site rather than a prescriptive, one-size-fits-all approach that attempts to impose a predetermined design solution. Furthermore, landscape architects must actively collaborate with other professionals involved in a security design response to employ the strategies and materials available to create designs that meet the client's security and programmatic needs.

CONTEXT IN TODAY'S SECURITY-CONSCIOUS ENVIRONMENT

"Life as we know it will never be the same after 9/11." We have heard that expression so many times, yet the impact of that day continues to affect the social, psychological, economic and physical fabric of this country and the world. As design professionals, we need to recognize and respect this change in the environment in which we live and respond to these changes in the work that we do.

The attacks on 9/11 were not without precedent, though never of the magnitude and coordination witnessed that tragic day. The attacks on U.S. embassies and facilities abroad since the 1980s were, in retrospect, preludes to 9/11 in the sense that American assets were no longer safe from foreign terrorist

groups. The first bombing of the World Trade Center in New York and the bombing of the Alfred P. Murrah federal building in Oklahoma City showed that both foreign- and U.S.-born terrorists were at work in ways most Americans had not imagined.

As a coordinated effort to hijack commercial airliners unfolded, there was a lack of clear communications between those who first realized something was terribly wrong and those who would need to respond. Our air defense system, once notified, scrambled jet fighters that would not be in a position to intercept the hijacked planes but could only arrive after they had already completed their missions of destruction and death. In the hours that followed the attack, we found our emergency response systems lacked necessary coordination and redundancy to respond to an event of this magnitude. Although we paid an extraordinarily high price that day, our nation learned a great deal about threats that confront us. We recognized that mistakes were made and began instituting changes as we moved ahead into what is a very different world. As a nation, we discovered that we are not immune from the devastating terrorist strikes that we were accustomed to reading about in other parts of the world. Just as the physical design of U.S. compounds overseas responded to the need for heightened security, we now need to focus that same level of effort to safeguard our citizens and national symbols on U.S. soil.

It is now imperative that security be a critical overlay in every major public or private design project currently being considered, and existing facilities and sites must be retrofitted to enhance security. As design professionals, we are uniquely positioned to contribute to America's safety and well being, responding to the war on terror by redesigning our domestic battlegrounds, to give us the tactical edge while taking advantage away from those seeking to do us harm.

ISSUES

> Architecture is inescapably a political art, and it reports faithfully for ages to come what the political values of a particular age were. Surely ours must be openness and fearlessness in the face of those who hide in the darkness. Precaution. Yes. Sequester. No.
>
> SENATOR DANIEL PATRICK MOYNIHAN

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The immediate physical response to the attacks of 9/11 was to use just about anything heavy or strong enough to stop vehicles dead in their tracks or keep them from violating standoff zones. The most common temporary element used was probably precast jersey barriers (used for traffic control on roadways), followed closely by large precast planters known as *bunker pots* (actual potted plants seemed optional). This spectrum broadened to include precast drainage structures and dry-well rings (materials intended to be buried in the ground) installed along the perimeter and major paths in highly visible areas around our government institutions in Washington, D.C. See Figures 1-1, 1-2, and 1-3, for example.

Street closings utilizing temporary jersey barriers were employed to restrict vehicular traffic accessibility to potential high-profile targets. Often, large security vehicles with drivers were used to function as sliding gates to allow the passing of emergency or other authorized vehicles through openings between the barricades. The lack of a coordinated approach to these closings resulted in an increase in traffic congestion, a compromising of emergency services access, and disruption of pedestrian movement. One of the most notable streets affected

Figure 1-1
Jersey barriers and police barricades installed to provide temporary perimeter security. Courtesy of the National Capital Planning Commission.

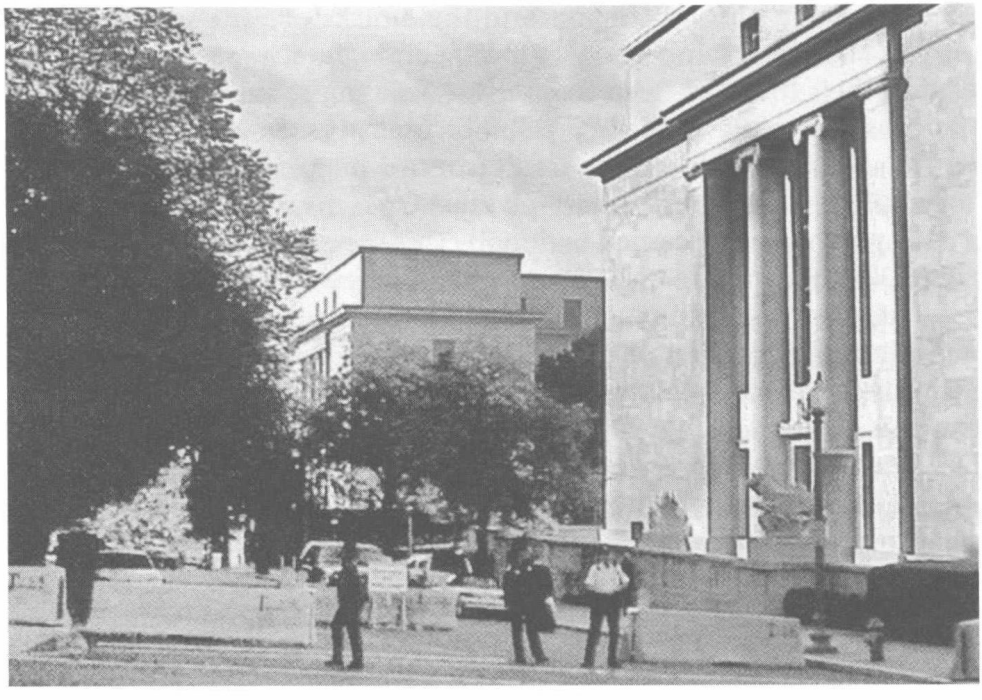

Figure 1-2
Temporary barriers require additional security personnel to help make them effective. Security personnel have to be taken from their routine patrols and responsibilities. Courtesy of the National Capital Planning Commission.

Figure 1-3
Access to the Capitol is controlled by vehicular barriers, along with portions of a highway barrier in front of the guard booth, "bunker pots," and precast concrete drainage structures on the sidewalks. Courtesy of the National Capital Planning Commission.

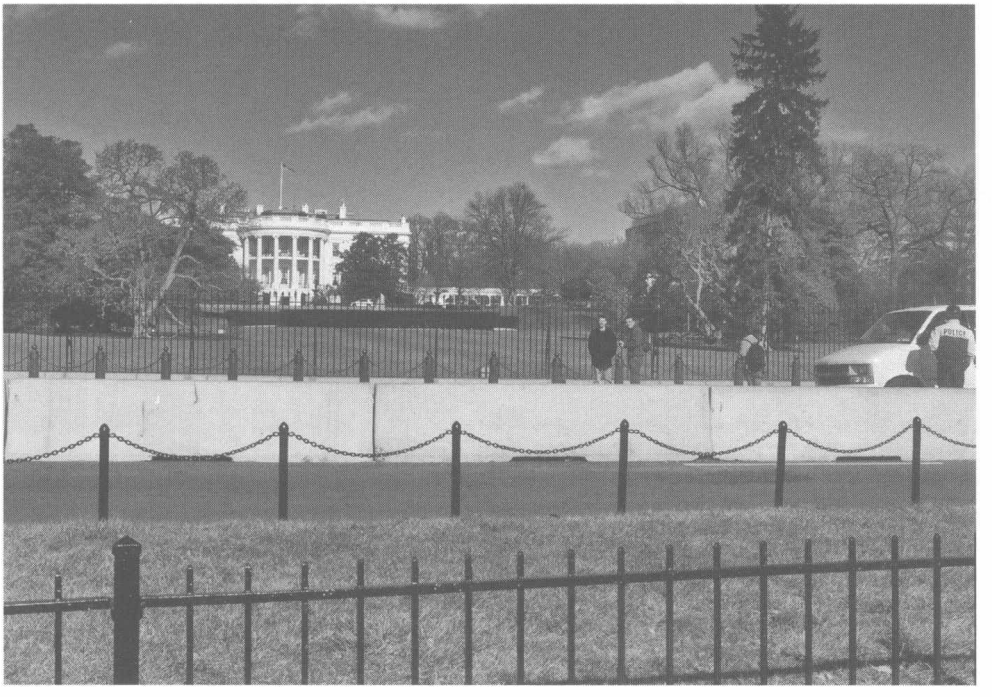

Figure 1-4
Layers of redundant security barriers in front of the White House. Courtesy of American Society of Landscape Architects.

was Pennsylvania Avenue, which was closed in front of the White House. There now is general agreement that Pennsylvania Avenue should remain closed and the area transformed into a pedestrian promenade fitting of its symbolic and historical significance. In most respects, this will be an improvement over the proliferation of temporary barriers that have sprung up in this area.

Many observers reacted negatively to the aesthetic and psychological impact of widespread deployment of precast concrete *anything* sprinkled throughout our most valued landscapes. This got the attention of not just designers but government officials, who realized security measures taken to protect our people and institutions must not inflict damage to our physical, historical, and cultural heritage. Security cannot be achieved by sacrificing the very values and qualities that we seek to protect. Figure 1-4 illustrates the extensive barrier system erected around the White House.

Deploying the quickest and cheapest means of protection when heightened security first arises is understandable, but the

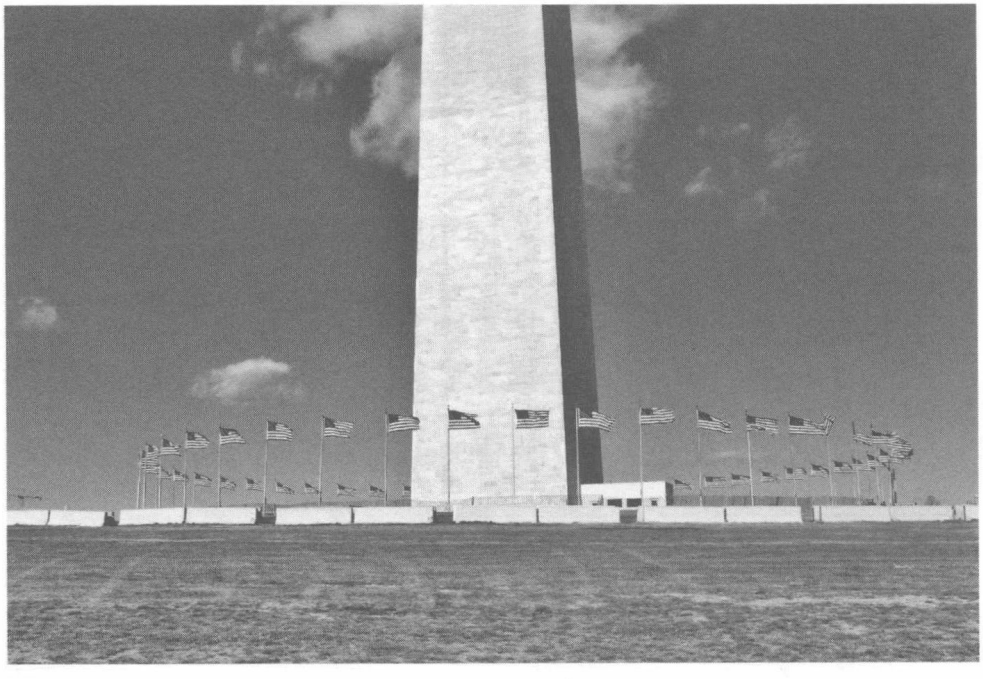

Figure 1-5
The Washington Monument became the "poster child" of temporary barriers that became long-term fixtures, remaining in place for over a decade. Courtesy of American Society of Landscape Architects.

likelihood of these temporary measures becoming permanent should concern us all. Knee-jerk responses can actually increase the perception of threat and instill fear, rather than promote a secure feeling. A measure of terrorist success is if we all become terrified. In addition, erected barriers greatly affect the way people interact with their institutions, government, and each other. Figure 1-5 highlights the barriers surrounding the Washington Monument that, while offering protection, also diminish the view of the obelisk rising from the ground to the sky.

The tendency to default to an extreme fortress-like design response must be avoided. A parallel can be drawn to the American criticism of the Soviet public architecture during the Cold War years. During this time, our nation was critical of the lack of openness of Soviet government buildings and embassies, and the perception that secretive discussions and decisions that were hidden from other nations, as well as the Soviet people, were architecturally manifested in these fortress-like structures. We need to be sensitive that if we move too far toward this architecture of high walls, imposing building facades, restriction

of public access, and intimidating security checkpoints, we will be gravitating towards an architectural symbolism that we found so inherently objectionable just a few years ago.

The immediate responses to heightened security come at a high price: the price of temporary physical improvements, increased personnel and overtime costs, and the psychological impact on our citizens. It is imperative that we integrate security measures in our designs for new construction (or the retrofitting of existing facilities) in a way both effective and flexible to varying levels of threat. This can be achieved using familiar site elements while providing effective security in a seamless, transparent manner.

It is possible to have good urban design principles employed—creating beautifully rich streetscapes and public urban plazas—in an approach that also addresses the need for enhanced security. These objectives need not be mutually exclusive. The direct and indirect costs of employing temporary barriers and security measures and maintaining them over time can be reinvested in a coordinated and comprehensive approach utilizing good, permanent security design. Over the long term, this will prove to be a cost-effective approach in dollars as well as to protect and express the democratic ideals that serve as the very foundation of this country's existence. The premise that our government is "for the people, and by the people" cannot be underestimated or sacrificed in the name of security. Instead, it must challenge us to come up with creative design responses that meet the needs for enhanced security as well as reinforce our nation's fundamental civic values.

DAWN OF A NEW SITE DESIGN ERA

A number of reports were issued during the 1990s and early twenty-first century in response to attacks on United States interests at home and abroad. Many of the reports generated were initiated at the federal level, but the criteria and guidelines developed are certainly applicable at the state/local and public/private levels. The reports acknowledge that terrorist attacks can take many forms, but the overwhelming threat—accounting for more than half of incidences—is from bomb-laden vehicles. This type of attack (for which stand-off zones

were created) is thought of as the easiest way to cause extensive damage, loss of life, and possible progressive collapse of the structure being attacked. The emphasis on creating secure setbacks is one of the primary responses required in order to enhance security of a potential target.

The most referenced and useful reports issued through 2004 are as follows:

- *Urban Design Guidelines for Physical Perimeter Entrance Security: An Overlay to the Master Plan for the Federal Triangle,* issued by the General Services Administration (GSA), published by Sorg and Associates in Washington, D.C. May not be available to the general public; for more information, contact Sorg and Associates at (202) 393-6445.
- *Designing for Security in the Nation's Capital,* issued by the National Capital Planning Commission's (NCPC) Interagency Security Task Force, November 1, 2001.
- *The National Capital Urban Design and Security Plan,* October 2002, issued by the National Capital Planning Commission's (NCPC) Interagency Security Task Force, October 2002.
- *Security Planning and Design: A Guide to Architects and Building Design Professionals,* copyright 2004 by the American Institute of Architects. Published by John Wiley & Sons, Inc., Hoboken, NJ.

In addition to the resources noted above, the Federal Emergency Management Agency (FEMA) is creating a series of reference manuals called the Risk Management Series. The publications are directed at man-made disasters. The objective of the series is to reduce physical damage to structural and nonstructural components of buildings and their related infrastructure, and to reduce resultant casualties during conventional bomb attacks, as well as during attacks using chemical, biological, and radiological agents. Publication 430, *Primer for Incorporating Building Security Components in Architectural Design,* due out in 2005, will provide guidelines for providing security against physical attack through perimeter, site, and building design. It will be a companion volume to FEMA 426, *Reference Manual to Mitigate Potential Terrorist Attacks Against Buildings,* which provides basic guidance for site and building security design. FEMA 430, however, will focus on site and building design in more detail and with particular reference to achieving acceptable security with minimum

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