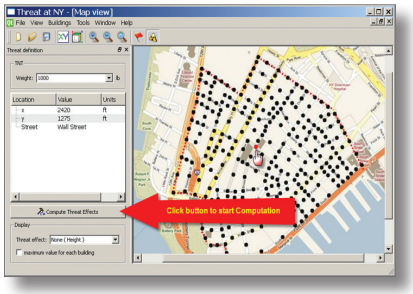
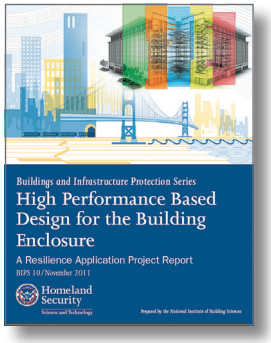
BIPS 09: The Urban Blast Tool

The Urban Blast Tool (UBT) quantifies the effects of blasts in urban environments, including the influence of buildings on blast pressures propagating from explosions located in urban settings. The tool also quantifies the potential for these blast pressures to damage primary structural members of buildings and accounts for the sensitivity of several common building design types to progressive collapse due to damage of key support members. In addition, the tool evaluates the likelihood that blast pressures may damage building equipment needed for Emergency Evacuation, Rescue and Recovery operations. The current version of the UBT was completed for the New York City Financial District. Current and upcoming versions of the UBT are For Official Use Only and are classified as Secret.



BIPS 10: High Performance Based Design for the Building Enclosure



This report provides background on the Owner Performance Requirement (OPR) Tool. The OPR Tool allows owners to analyze a range of high performance requirements (safety, security, energy conservation, environmental sustainability, durability, continuity of operations and cost benefit) to meet their business requirements or mission. The OPR Tool allows those planning new and retrofitting existing buildings to set requirements, view results, understand interactions and costs, and develop an analysis-based plan for the design team. Currently, a new version of the OPR Tool for building structures and mechanical systems is being prepared. BIPS 10 and the OPR Tool are available to the public on the DHS website.

BUILDING AND INFRASTRUCTURE PUBLICATIONS AND TOOLS

The High Performance and Integrated Design Program (HP&IDR) was created by the U.S. Department of Homeland Security (DHS) Science & Technology Directorate (S&T) to improve the security and resilience of our Nation's buildings and infrastructure. The program's overall goal is to better prepare buildings and infrastructure to recover from manmade and natural disaster events such as explosive blasts; releases of chemical, biological, and radiological (CBR) agents; floods; hurricanes; earthquakes, and fires. The program is supported by three primary paradigms:

1. It is possible to provide a built environment that has the highest level of performance and resiliency in a comprehensive and cost effective manner;
2. All facets of the process, from design to operation, must be integrated; and
3. Through high performance and integrated design, infrastructure can achieve resilience from a disruptive event.

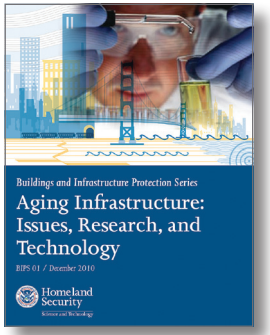
For more information, please visit
http://WWW.DHS.GOV/BIPS
or email, Mila Kennett at
bips@dhs.gov

CUTTING EDGE RISK AND RESILIENCY TOOLS

Building and Infrastructure Publications (BIPS)

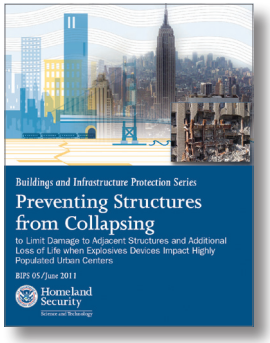
Homeland Security
Science and Technology

BIPS 01: Aging Infrastructure: Issues, Research, and Technology



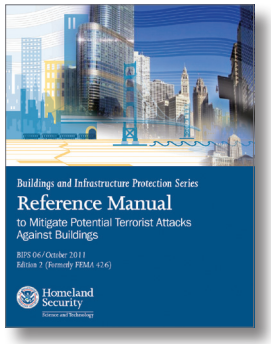
This publication reproduces most of the papers delivered at the Aging Infrastructure Workshop, held at Columbia University in New York City on July 21-23, 2009. The purpose of the publication is to support the Department of Homeland Security Science and Technology Directorate's goal of accelerating the delivery and understanding of enhanced technology that addresses the challenges of aging infrastructure. The primary focus of this document is transportation infrastructure.

BIPS 05: Preventing Structures from Collapsing



This technical report documents the development of the Urban Blast Tool (UBT) for the Manhattan Financial District (see BIPS 09). The report describes the technical considerations and studies performed to evaluate the influence of the urban landscape and environmental factors on the propagation of blast pressures in the development of the UBT. This publication includes the first systematic analytical studies to evaluate the functionality of building mechanical equipment following an explosive event.

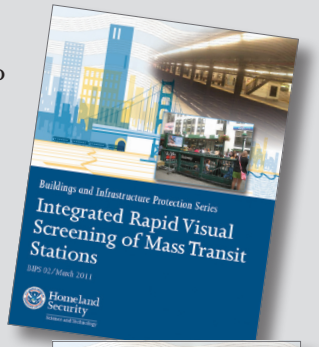
BIPS 06: Reference Manual to Mitigate Potential Terrorist Attacks Against Buildings



This manual is a revised and expanded version of FEMA 426. BIPS 06 provides an updated version of risk assessment techniques, a new concept on infrastructure resiliency, and identifies new protective measures and emerging technologies to protect the built environment. The objective of this manual is to reduce physical damage to structural and non-structural components of buildings and related infrastructure, and also to reduce resultant casualties during conventional bomb attacks, as well as attacks using chemical, biological, and radiological agents.

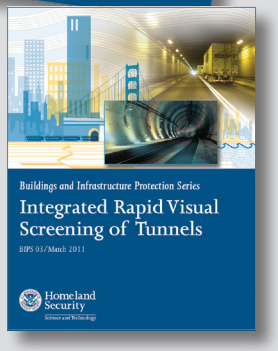
INTEGRATED RAPID VISUAL SCREENING SERIES

The Integrated Rapid Visual Screening (IRVS) Tools are quick and simple applications designed to determine initial or relative risk and resilience for buildings and infrastructure that can be observed during a rapid visual inspection. The knowledge for calculating both risk and resilience is embedded in the software tool. Risk is based primarily in target attractiveness (for manmade hazards). Electronic copies of the IRVS manuals and software are available for the public and can be accessed on the DHS website.



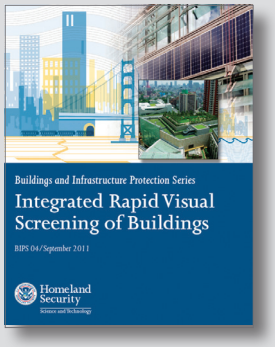
BIPS 02: Integrated Rapid Visual Screening of Mass Transit Stations

Addresses heavy rail, light rail, commuter rail, trolleys, and buses. Interactions between various transit station attributes are accounted for using pre-assigned weights, interaction logic, and context-based algorithms founded on engineering knowledge and tool validations.



BIPS 03: Integrated Rapid Visual Screening of Tunnels

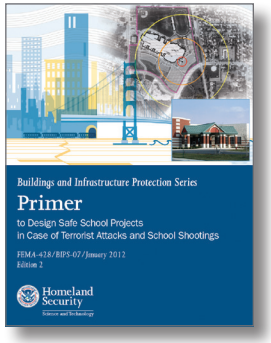
Addresses features such as passageways through or under an obstruction, a city, mountains, rivers or harbors. The primary purpose of the IRVS of Tunnels is to rank the risk in a group of tunnels in a transportation system or region. The methodology allows the assessor to evaluate the risk of a terrorist attack or selected natural disaster (fire or flooding) and to determine the resiliency (the ability to recover from such an event) of the tunnel.



BIPS 04: Integrated Rapid Visual Screening of Buildings

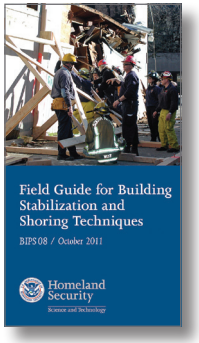
Designed to quantify the risk and resilience of a single building or a group of buildings to manmade and selected natural hazards capable of causing catastrophic losses in fatalities, injuries, damages or business interruption. The IRVS of Buildings covers 15 building types and addresses 20 hazardous events: blast (external/internal); intrusions; external chemical, biological, and radiological releases (from 100, 300 and 1,000 feet); earthquakes (ground shaking and ground failure); floods (still water and velocity surge); wind (hurricane, tornado, and other wind events); landslide (from rainfall and earthquakes); and fire (from earthquakes, blast, or arson).

BIPS 07: Primer to Design Safe School Projects in Case of Terrorist Attacks and School Shootings



This manual is a revised and expanded version of FEMA 428. BIPS 07 provides the design community and school administrators with the basic principles and techniques to design a school that is safe from potential physical attacks and, at the same time, offers an aesthetically pleasing design that is functional and meets the needs of the students, staff, administration, and general public. This second edition focuses on the threats posed by physical attacks on a school by terrorists or targeted shootings.

BIPS 08: Field Guide for Building Stabilization and Shoring Techniques



This Field Guide is prepared to assist first responders and structural engineers in their rescue operations after a building is damaged by a disaster event. Stabilization of damaged structures is an integral part of building collapse rescue operations. The Field Guide is a field reference for vertical shoring, lateral shoring, and in-situ rapid strengthening and/or repair of damaged building components. This guide refines and expands on the information provided in the existing US&R Structures Specialist Field Operations Guide.