

WBDG

WHOLE BUILDING DESIGN GUIDE

Balancing Security & Sustainability Goals to Achieve High Performance Buildings

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Washington, DC
www.SBICouncil.org

Federal Facilities Council Physical Security & Hazard Mitigation Committee

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What Is a High Performance Building?

Energy Policy Act, Section 914. Building Standards

- A building that integrates & optimizes all major high-performance building attributes, including energy efficiency, durability, life-cycle performance, and occupant productivity.

Energy Independence & Security Act of 2007, Title IV,
Energy Savings in Buildings and Industry, Section 401,
Definitions

- A building that integrates and optimizes on a life cycle basis all major high performance attributes, including energy conservation, environment, safety, sustainability, durability, accessibility, cost-benefit, productivity, sustainability, functionality, and operational considerations.

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High-Performance Buildings

- Achieve long-term value and performance
- Are enduring assets in their communities
- Support and enhance human performance
- Reduce operating costs
- Are safe, secure, accessible
- Protect the environment
- Are the result of using a whole building approach

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What are we getting now?

- Building codes are minimum
- One attribute is prominent while others are overlooked or trivialized
- Low Occupant satisfaction
- Lawsuits
- Premature failures of materials & systems
- Value of investment decreases while costs of operations & maintenance increase

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Rating Systems

How do you measure the performance of your building?
Who can you trust with confidence to certify critical aspects of your building?

- Green Buildings
 - LEED
 - Green Globes
 - Energy Star
- Building Security
 - PLUS/BSC
- Others



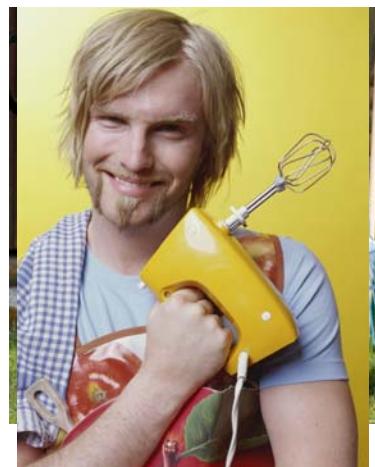
Also Professional Accreditations: AIA, PE, CEM, LEED AP, BSCP, Bd Cert NCE, etc.

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To Do a Job Well It Takes the Right Tools

- Building a Home
- Planting a Garden
- Baking a Cake
- If You are planning, designing, constructing, operating or maintaining a building ...



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The Whole Building Design Guide (WBDG) as a Tool

Your Complete Internet Resource to Integrated, 'Whole Building', Design Information and Tools.

The WBDG condenses the vast amount of Web-based data on building design, products, & systems into usable, up-to-date information.



Single Point Access!

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What is Whole Building Design?

- It is an **Integrated Design Approach** and a
- **Integrated Team Process** to achieve high-performance buildings



Premise: All building systems are interdependent

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'Whole Building' Approach



NREL Solar Laboratory
Golden, CO

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- Materials, systems, and assemblies reviewed from many different perspectives
- Building components, sub-systems and materials are interdependent, can impact the total performance of the whole, and can perform 'double duty'



Integrated Project Team



Mark O. Hatfield U.S. Courthouse
Portland, OR

- Comprehensive Stakeholder involvement throughout the building's life cycle
- Evaluation for cost, quality-of-life, future flexibility, energy efficiency, overall environmental impact, productivity, creativity, and how the occupants will be enlivened



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Applying the Integrated Team Process



Who needs to be at the table at the outset of your project to ensure an integrated team process?

- Architect
- Landscape Architect
- Owner, Client, Tenants
- Engineers
- Programmers
- Interior Designer
- Contractor
- Specialists (Security, Telecom, Acoustics)
- Community Members or Other Stakeholders
- Operations and Maintenance Personnel
- Others???? (Real Estate Buyer)

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Building Siting Issues

- Solar Access*
- Security (Standoff Distance, CPTED)
- Stormwater Management
- Public Transportation
- Occupant Amenities
- Compatible Functions
- Disaster Avoidance



*Building orientation for passive solar heating, daylighting, natural ventilation, views, and potential impacts of future development.

*[Real Estate Purchaser **must** be informed!!!]*

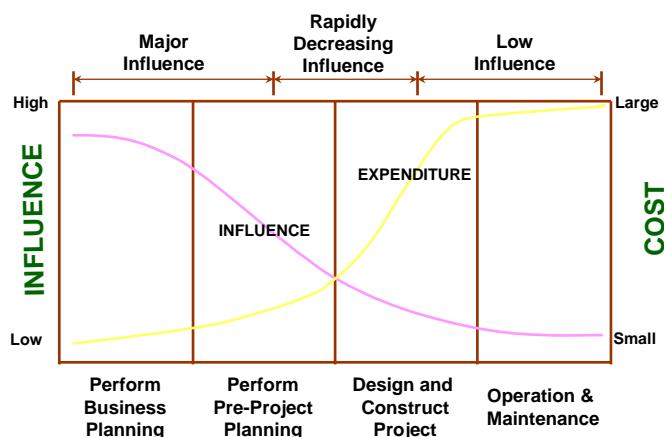
Note: Applies to Selecting an Existing Building, as well!

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Cost / Influence Over the Quality of a Project

Influence early for optimal design outcome and reduced life-cycle cost.



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WBDG Goal

WBDG
WHOLE BUILDING DESIGN GUIDE

... to provide centralized access and use of facility information in a knowledge based management environment, from a 'whole building' perspective.

WBDG Building Type Page on Research Laboratory

w/ direct links to: Govt. Lab; Vivarium; Therapeutic Envi. RP; Sustainable Lab Design RP; Security & Safety in Labs RP, etc.

CCB Documents

VA Research Laboratory Des. Guide
NIH Design Policy and Guidelines
HHS Biosafety in Microbiological and Biomedical Laboratories

NGS

ISEA Z358.1—Emergency Eyewash and Shower Equipment
ANSI/AIHA—Z9.5 for Laboratory Ventilation
NFPA 45—Fire Protection for Laboratories using Chemical

w/ DIRECT LINKS to Other Resources & Pubs.

Labs21
Design and Planning of Research and Clinical Laboratory Facilities



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The WBDG is the Gateway to Up-To-Date Information on Integrated 'Whole Building' Design Techniques and Technologies. The WBDG is designed to support the integrated design approach during the planning and programming phases. [Read more](#)

Design Guidance **Project Management** **Operations & Maintenance** **Documents & References** **Tools** **Continuing Education** **BIM** **Applied Research**

The Whole Building Design Approach
The goal of 'Whole Building' Design is to create a successful high-performance building. To achieve that goal, we must apply the integrated design approach and the integrated team approach to the project during the planning and program phases. [Read more](#)

Services
 [Construction Criteria Base](#)

Popular Links

- [Unified Facilities Criteria](#)
- [Unified Facilities Guide Specification \(UFGS\)](#)
- [Construction Waste Management Database](#)
- [Building Envelope Design Guide](#)
- [Executive Order 13423 Technical Guidance](#)
- [Federal Green Construction Guide for Specifiers](#)
- [Mechanical Insulation Design Guide](#)
- [Resource Pages](#)

Periodicals
 [JBM Journal of Building Information Modeling](#)
Fall 2008:
The BIM Balancing Act: Tilt the Scales in Your Favor
[Download and/or subscribe](#)

 [JBED Journal of Building Enclosure Design](#)
Summer/Fall 2008:
The Best of the BEST1 Conference: Experts Meet in Minneapolis to Discuss Building for Energy Efficiency and Durability at the Crossroads
[Download and/or subscribe](#)

WB DG Focus
Applied Research

New and Updated Pages

- [Educational Facilities \(05-14-2009\)](#)
- [Operations & Maintenance \(01-10-2009\)](#)
- [National BIM Standard™ \(12-03-2008\)](#)
- [Therapeutic Environments \(12-03-2008\)](#)
- [Life-Cycle Cost Analysis \(LCCA\) \(12-03-2008\)](#)

News and Events

Call for Abstracts
Present your research and technology applications that are relevant to Energy, Environment, and Security at the 2009 International Summit. [Read more](#)

Planning & Creating the Patient Room of the Future
Attend this health facility-related event on creating the patient-centered room to enhance patient safety, comfort and outcomes. Conference will be held March 25-27, 2009 in Dallas, Texas. [Read more \(PDF\)](#)

COBE Challenge
buildingSMART alliance™ is sponsoring the COBE Challenge at the [National Facilities Management & Technology Conference](#) in March 2009. COBE is currently the topic of [Bob Wisniewski's FMFT Blog](#). [Read more](#)

FEDCon® '08 Presentations
The National Institute of Building Sciences presented FEDCon® '08 on December 9, 2008 at the Washington Convention Center in Washington, DC. FEDCon was co-located with AEC-510 Fall and Ecobuild® Fall conference and exhibition. [Presentations](#)

More News and Events
 [Add WBDG/COB RSS Feed](#)

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Design Objectives

- Accessible
- Aesthetic
- Cost-Effective
- Functional/Operational
- Historic Preservation
- Productive
- Secure/Safe
- Sustainable





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on Integrated "Whole Building" Design
Techniques and Technologies

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Secure/Safe Branch

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- [Air Decontamination](#)

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- [- Plan for Fire Protection](#)
- [- Ensure Occupant Safety and Health](#)
- [- Resist Natural Hazards](#)
- [- Provide Security for Building Occupants and Assets](#)
- [Sustainable](#)

Products & Systems

Secure / Safe

by the WBDG Safe Committee
Last updated: 07-07-2005

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Provide Security for Building Occupants and Assets

by the WBDG Safe Committee
Last updated: 07-24-2008

Overview

The bombings at New York City's World Trade Center, Oklahoma City's Alfred P. Murrah Federal Office Building, and Atlanta's Centennial Park, shook the nation, and made Americans aware of the need for better ways to protect occupants, assets, and buildings from human aggressors (e.g. disgruntled employees, criminals, vandals, and terrorists).

A Department of Justice study called "Vulnerability Assessment of Federal Facilities", conducted in response to a Presidential directive and issued one day after the 19 April 1995 Oklahoma City bombing, produced recommended minimum standards for security at federal facilities. It divided federal sites into five security levels ranging from Level 1 (minimum security needs) to Level 5 (maximum). The study listed recommendations for upgrading federal building



Security measures such as setbacks, bollards, protective glazing, and other measures were incorporated into the design of the new Oklahoma City Federal Building, located north of where the former Alfred P. Murrah Federal Building once stood. (Designed by Ross Barney + Jankowski Architects and Atkins Benham)

RELATED RESOURCE PAGES

- [Air Decontamination](#)
- [Balancing Security/Safety and Sustainability Objectives](#)
- [Designing Buildings to Resist Explosive Threats](#)
- [Facility Performance Evaluation \(FPE\)](#)
- [Glazing Hazard Mitigation](#)

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VBDG SERVICES

- [Construction Criteria Base](#)

Sustainability- and Security/Safety-Related Pages in WBDG

- Achieving Sustainable Site Design through Low Impact Development
- Air Barrier Systems in Buildings
- Air Decontamination
- Balancing Security/Safety & Sustainability Objectives
- Building Integrated Photovoltaics
- Cost Impact of the ISC Security Criteria
- Daylighting
- Designing Buildings to Resist Explosive Threats
- Distributed Energy Resources
- Electric Lighting Controls
- Energy Efficient Lighting
- Blast Safety of the Building Envelope
- CBR Safety of the Building Envelope
- Glazing Hazard Mitigation
- High-Performance HVAC
- Mold and Moisture Dynamics
- Retrofitting Buildings to Resist Explosive Threats
- Security and Safety in Laboratories
- Sun Control and Shading Devices
- Sustainable Laboratory Design
- Sustainable O&M Practices
- Threat/Vulnerability Assessments and Risk Analysis
- Water Conservation
- Windows and Glazing



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WHOLE BUILDING DESIGN GUIDE

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[Home](#) > UFC/ISC Security Design Criteria Overview and Comparison

UFC/ISC Security Design Criteria Overview and Comparison

by Joseph L. Smith, PSP and Dan E. Kelley
Applied Research Associates, Inc.
Last updated: 03-31-2009

Introduction

In an effort to minimize the likelihood of mass casualties from terrorist attacks, two similar, yet distinct, sets of criteria have been established by different branches of the federal government to guide owners and responsible parties in the implementation of suitable measures that appropriately balance facility construction and use with improved [safety and security](#) of the facility occupants.

The federal government has implemented the [Interagency Security Committee \(ISC\) Security Design Criteria](#). The ISC Security Design Criteria was developed to ensure that security issues are addressed during the planning, design, and construction of all new [Federal Courthouses](#), new [Federal Office Buildings](#), and major renovations. This federal criteria has been extended to also cover leased facilities.

Similarly, the Department of Defense (DoD) has implemented antiterrorism security requirements to meet its specific needs. Contained within the [Unified Facilities Criteria \(UFC\)](#) and [Unified Facilities Guide Specification \(UFGS\)](#) are the 4-xxx series of security engineering UFC that deal with antiterrorism and physical security. In general, the [UFC](#) and [UFGS](#) criteria are designed for use by the three services and other DoD agencies. The [UFC](#) documents establish procedures to be used for the design, construction, operation, maintenance, and modernization of all DoD facilities. The [UFCs](#) are comprehensive and address all major aspects of facility construction and operation.

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- [Emerging Issues](#)
- [Relevant Codes and Standards](#)
- [Additional Resources](#)

RELATED RESOURCE PAGES

- [Achieving Sustainable Site Design through Low Impact Development Practices](#)
- [Aesthetic Challenges](#)
- [Aesthetic Opportunities](#)
- [Air Decontamination](#)
- [Balancing Security/Safety and Sustainability Objectives](#)

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[Home](#) > [Tools](#) > [Listing by Agency Use](#) > LEED-DoD Antiterrorism Standards Tool

LEED®-DoD Antiterrorism Standards Tool

Introduction Application
How To Use This Tool Relevant Codes & Standards
General Issues Additional Resources

Legend

- complementary requirements
- Conflicting and complementary requirements
- Conflicting requirements
- Not conflicting or complementary, but have related considerations

Download
UFC 4-010-01
DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS

LEED® Credit

	Antiterrorism Standard	Standards 12-22 ->
Sustainable Sites		
SS-P1 Erosion & Sedimentation Control	■	■
SS-1 Site Selection	■	■
SS-2 Development Density	■	■
SS-3 Brownfield Redevelopment	■	■
SS-4.1 Alternative Transportation, Public Transportation Access	■	
SS-4.2 Alternative Transportation, Bicycle Storage & Changing Rooms	■	■
SS-4.3 Alternative Transportation, Alternative Fuel Vehicles	■	■
SS-4.4 Alternative Transportation, Parking Capacity	■	■
SS-5.1 Reduced Site Disturbance, Protect or Restore	■	■
Open Scores		

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 [Construction Criteria Base](#)

Impact of WBDG as a Tool

In 2008, WBDG had 2,400,000 visitors
[average of 250,000 visitors a month]

For 2009 – averaging 300,000 v/m

And 20,800,000 downloads
[1.7 million pdf downloads a month]

For 2009 – averaging 2.1 million d/m



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Interaction Between Security/Safety & Sustainability Objectives

- These objectives appear in every Federal project to varying degrees
- Conflicting requirements lead to compromises and tradeoffs
- Synergies can be found when considered early in the project development process

SITE

WATER

ENERGY

MATERIALS IEQ

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Site Tradeoffs

A facility's risk can be increased and security can be compromised by:

- siting it in an urban area to protect greenfields and preserve habitat and natural resources;
- locating carpool/vanpool parking and bike racks nearby to promote alternative transportation;
- constructing under-building parking to minimize habitat disturbance; and
- installing covered walkways and landscaping to reduce heat islands and control erosion.

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Site Tradeoffs

On the other hand, security measures such as

- building setbacks, or standoff distances, to create protective building perimeters and to restrict access;
- installing barriers (e.g., bollards, reinforced planters, and site furnishings) to withstand assaults by moving vehicles; and
- locating parking areas in remote areas and/or eliminating under-building parking areas to minimize blast effects from potential vehicle bombs

usually result in increased development of open space, habitat disturbance, and possibly erosion.

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Site Synergies

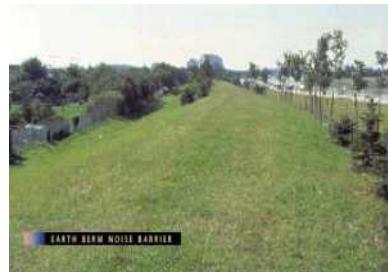


- Landscaping elements such as retention ponds and berms can be used to control erosion, manage stormwater, and reduce heat islands while also serving as physical barriers to control access to a building and to deflect the effects of a blast.
- Crime Prevention Through Environmental Design (CPTED) is a strategy that uses natural access control, natural surveillance, and territoriality & boundary definition to reduce the opportunities & fear of predatory stranger to stranger crime & improve the quality of life.
- Early coordination of sustainable site design with CPTED is critical to avoid conflicts between the two strategies.

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Site Considerations Security, Sustainability, Acoustics



Earth berms w/low-growth, drought tolerant plants

Consider sound walls made of recycled content material to achieve noise control and sustainable development goals

Provide noise barriers that can also comply with sustainable development principles and can meet security requirements for standoff distance from buildings



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RESOURCE PAGES
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Achieving Sustainable Site Design through Low Impact Development Practices
Acoustic Comfort
Aesthetic Challenges
Aesthetic Opportunities
Air Barrier Systems in Buildings
Air Decontamination
Archaeological Site Considerations
Assessment Tools for Accessibility
Balancing Security/Safety & Sustainability Objectives
Blast Safety of the Building Envelope
Building Integrated Photovoltaics (BIPV)
Changing Nature of Organizations, Work, and Workplace
Chemical/Biological/Radiation (CBR) Safety of the Building Envelope
Construction Operations
Building Information Exchange

[Home](#) > Balancing Security/Safety and Sustainability Objectives

Balancing Security/Safety and Sustainability Objectives

by Richard Paradis and Bambi Tran
Steven Winter Associates, Inc.
Revised by Richard Paradis, P.E.
Last updated: 03-31-2009

Introduction

Since the early 1990s, **sustainability** has become an increasing priority for facilities projects. However, since the terrorist attacks of September 11, 2001 building owners and occupants are paying more attention to facility **security** and **safety** issues. On the surface, it may appear that secure/safe design has little relationship to sustainable design. Yet, security and safety measures, such as those for anti-terrorism, must be considered within a total project context, including impacts on occupants and the environment, regardless of the level of protection deemed appropriate. Further, today's security design is based on a multi-hazard approach, that is, looking at the impact of all hazards on a project: natural, criminal, terrorist, and accidental.

This Resource Page aims to provide designers with an understanding of the interaction between security/safety and sustainability objectives by emphasizing the 'whole building' or integrated design process, identifying areas of synergy and potential conflicts between sustainable and security/safety approaches, and highlighting sustainability opportunities within certain security/safety strategies. With this information in hand, the project team can define and understand the interrelationships between the project's needs and achieve balanced design solutions that will minimize environmental impacts as well as ensure the health, safety, security, and comfort of building occupants.

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RELATED RESOURCE PAGES

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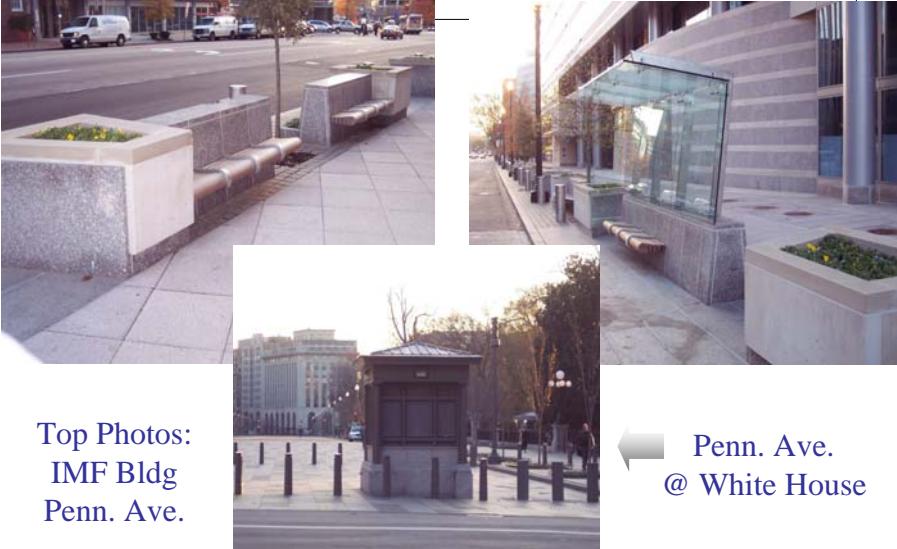
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Physical Barriers – Secure & Aesthetic

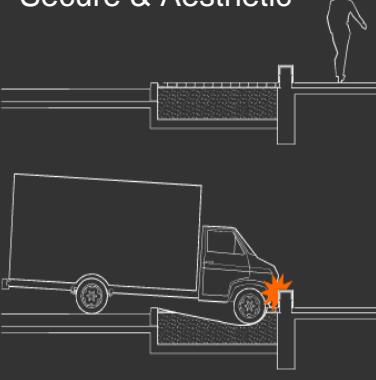


Top Photos:
IMF Bldg
Penn. Ave.

**Penn. Ave.
@ White House**

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Secure & Aesthetic



TIGER TRAP™

Designed to reduce the impact of security on public space, this innovative vehicle arrest system utilizes a subgrade compressible material that lowers the elevation of an attacking vehicle and a low wall that then halts the lowered vehicle.

The subgrade compressible material allows the rear wall to be as low as a bench or even completely below grade.

The compressible material combined with a decorative covering surface supports pedestrian loads, but fails under the weight of a vehicle.

US PATENT PROTECTED

© 2007 ROCK TWELVE




Tiger Traps, Ha-has, and NoGos protect without a visually overwhelming security presence



Security Design Strategies

- Security Issues must be addressed in concert with other design objectives and integrated into the overall building design early in the process to ensure a high-performance building [and site] with effective security.

Multi-Hazard Design

**Look at impact of all hazards on project:
Natural, Criminal, Terrorist, Accidental**



Site Security's Importance in the Integrated Design Process

- Access roads, Parking, Vehicle barriers, Emergency vehicle access, Loading dock ramps
- Standoff Distance
- Perimeter & Building Entrance lighting
- Landscaping
- Balance with Project's Accessibility & Sustainability Requirements

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Passive Survivability

The ability of a building to provide shelter during or after a major disaster event without electric power.

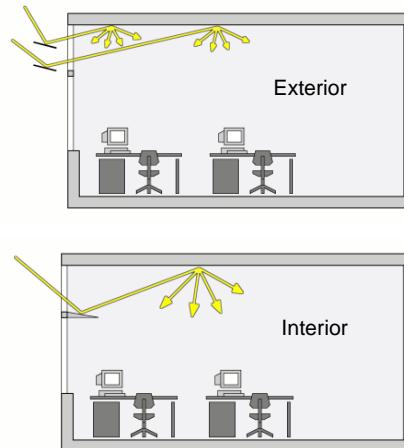
- Highly efficient thermal envelope
- Natural ventilation
- Overhangs (sun shades)
- Daylighting (light shelves)
- On-site potable water storage
- Renewable energy (PV, wind) (optional)

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Light Shelves / Shading Devices

- When blast or snow loading are concerns, consider interior light shelves.
- Otherwise, light shelves & shading devices must be hardened.



From Schorsch

Steven Winter Associates
Sustainable Buildings Industry Council



Security Lighting

- Design to minimize light pollution / light trespass
- Use energy-efficient lamps & ballasts
- Employ shielded or full cutoff luminaires
- Results: increased visibility, reduced glare & minimum impact on the night sky
- For further energy savings, consider parking lot occupancy sensors

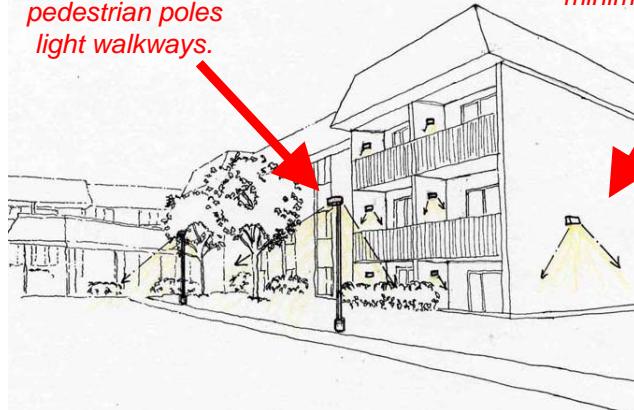
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Exterior Lighting Example

The use of cut-off wall sconces and area lights and downlighting on the façade (rather than uplighting) minimizes light pollution.

Pole mounted pedestrian poles light walkways.



From: UFC 3-530-01, Design: Interior & Exterior Lighting & Controls

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Crime Prevention Through Environmental Design (CPTED)

"The proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime, and an improvement of the quality of life."

CPTED as defined by the National Crime Prevention Institute

Strategy: Design security into the architecture!

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Crime Prevention Through Environmental Design (CPTED)

There are four overlapping CPTED strategies.

1. *Natural Surveillance*
2. *Territorial Reinforcement*
3. *Natural Access Control*
4. *Target Hardening*



Employ CPTED as a process to reduce architectural vulnerability.

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Green Walls & CPTED

- Vertical Gardens called “Vegitecture” can defeat natural surveillance
- If being considered for your project, be sure green walls do not block site lines or provide hiding places



Patrick Blanc's green wall
on the Hotel du Département
in Hauts-de-Seine, France

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Signage

- Include aesthetic signage that directs people to authorized locations on site & in buildings, but ...
- Don't tell them more than they need to know!



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Sustainable by the WBDG Sustainable Committee Last updated: 10-13-2008

Overview

Building construction and operation have an enormous direct and indirect impact on the environment. As illustrated in the figure below, buildings not only use resources such as energy and raw materials, they also generate waste and potentially harmful atmospheric emissions. As economy and population continue to expand, designers and builders face a unique challenge to meet demands for new and renovated facilities that are [accessible](#), [secure](#), [healthy](#), and [productive](#) while minimizing their impact on the environment.

In the United States, buildings account for:

Category	Percentage
Total Energy Use	39%
Total Water Consumption	12%
Total Electricity Consumption	68%
Carbon Dioxide Emissions	38%

Source: EPA, 2004

RELATED RESOURCE PAGES

- [Aesthetic Challenges](#)
- [Aesthetic Opportunities](#)
- [Balancing Security/Safety and Sustainability Objectives](#)
- [Construction Waste Management](#)
- [Facility Performance Evaluation \(FPE\)](#)

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WBDG SERVICES

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LEVEL 3 - SUSTAINABLE

Recent answers to this challenge call for an [integrated, synergistic approach](#) that considers all phases of the facility life cycle. This "sustainable" approach supports the following WBDG Sustainable Design Objectives:

- Optimize Site Potential
- Optimize Energy Use
- Protect and Conserve Water
- Use Environmentally Preferable Products
- Enhance Indoor Environmental Quality (IEQ)
- Optimize Operational and Maintenance Practices

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DESIGN GUIDANCE

Building Types Space Types Design Disciplines **Design Objectives**

Accessible Aesthetics Cost-Effective Functional / Operational Historic Preservation Productive Secure / Safe Sustainable

- Optimize Site Potential
- Optimize Energy Use
- Protect and Conserve Water

SUSTAINABLE LEVEL 4 – Optimize Site / Existing Building Potential

Optimize Site Potential
by the WBDG Sustainable Committee
Last updated: 06-03-2009

Overview

Creating sustainable buildings starts with proper site selection. The location of a building affects a wide range of environmental factors—as well as other factors such as **security** and **accessibility**—like the energy consumed by occupants for commuting, the impact on local ecosystems, and the extent to which existing structures and infrastructures are utilized. If possible, locate buildings in areas of existing development and consider renovating existing buildings and historic properties. It is imperative that Federal agencies maximize the restorative impact of site design and building infrastructure while meeting the project's other requirements.

Sustainable site planning should consist of a [whole system approach](#) that seeks to:

- Minimize development of open space by the selection of disturbed land, farmlands, or building retrofits;
- Control erosion through improved landscaping practices;
- Reduce heat islands using landscaping, building design methods, and habitat disturbance;
- Restore the health of degraded sites by creating habitat for indigenous species using native plants and closed-loop water systems;



Green roofs can effectively absorb most rainfall events, reverse the urban heat island effect, and provide wildlife habitat.

WITHIN THIS PAGE

- [Overview](#)
- [Recommendations](#)
- [Emerging Issues](#)
- [Relevant Codes and Standards](#)
- [Major Resources](#)

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- [Achieving Sustainable Site Design through Low Impact Development Practices](#)
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- [Assessment Tools for Accessibility](#)
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Window Glazing Analysis Response and Design (WINGARD)

WGA developed a state-of-the-art method to analyze and predict the behavior of window glass under blast loads. This method, entitled Window Glazing Analysis Response and Design (WINGARD), is the first technique available for the prediction of glass hazards and has become a national standard used by many agencies. WINGARD leverages early research performed by other agencies to develop a critically needed tool to fulfill Presidential directives and GSA protection goals.

This software supports GSA's goals of providing increased protection to employees and visitors in space owned or leased by the Federal government in response to the GSA Glass Fragment Retention for Windows Program. This program is working to upgrade windows to mitigate the hazards from flying glass caused by high winds, explosions, or other sources of window failure. To support this effort, GSA's developed WINGARD, a state-of-the-art method to analyze and predict the behavior of window glass under blast loads. The WINGARD computer program has facilitated the protection of people with cost-effective solutions while helping to preserve the architecture that is so vital to buildings in the GSA inventory.

WINGARD PE
Windows Protection Evaluation

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Federal Mandates

Construction Criteria Base (CCB)
a service of the Whole Building Design Guide

Construction Criteria Base (CCB) is an extensive electronic library of construction guide specifications, manuals, standards and many other essential criteria documents. Published and updated continuously, CCB contains the complete unabridged, approved, current electronic equivalents of over 10,000 documents direct from [participating federal agencies](#). CCB is the most effective tool available for finding and using current, approved U.S. construction criteria. Documents are available as Adobe® PDF files and some documents are also furnished by agencies in word-processing formats or in the SPECSINTACT specification processing program used by the Army, NAVFAC and NASA. Documents are organized first into Libraries, then by Source and Category.

For document inquiries or additional information, please contact us either by phone at 877-CCB-5667 or by email at cbsupport@nibs.org.

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- Executive Order 13423 Technical Guidance

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Industry Organizations

Executive Order 13423 Technical Guidance for Implementing the Five Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings

Introduction

As directed in [EO 13423](#), the Interagency Sustainability Working Group has developed this technical guidance to assist agencies in meeting EO goals and statutory requirements. This technical guidance includes clarification of requirements; related mandates; additional recommendations and considerations; and resources for implementation, including model contract and specification language per the [Federal Green Construction Guide for Specifiers](#).

The ISWG shall review the *Guiding Principles* and Technical Guidance periodically for updates and to consider adopting additional principles or goals addressing issues such as conservation plantings, integrated pest management, deconstruction, and siting.

To begin, select a topic:

CORE GUIDANCE TOPICS

Integrated Design
Commissioning
Energy Efficiency
Measurement & Verification
Indoor Water Conservation
Outdoor Water Conservation
Stormwater Run-off Mitigation
Ventilation & Thermal Comfort

SUPPORTING GUIDANCE

General Information
Renewable Energy & Green Power
Operations & Maintenance
Chemicals of Concern
Interior Noise
Sustainable Sites/Smart Growth
Creative Funding Strategies & Lifecycle Costing (LCC)

E.O. 13423 Technical Guidance Five Guiding Principles

The five Guiding Principles address:

- Employing integrated design;
- Optimizing energy performance;
- Protecting and conserving water;
- Enhancing indoor environmental quality; and
- Reducing the environmental impact of materials.

To build from this and other accomplishments and to pave the way for future success, the President signed **Executive Order 13423 "Strengthening Federal Environmental, Energy and Transportation Management"** on January 24, 2007.

In the area of sustainable design and high performance buildings, **the new EO makes mandatory the five Guiding Principles of the MOU for all new construction and major renovations** and sets an aggressive goal for applying these practices to existing capital assets over the next decade.

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Design Guidance Project Management Operations & Maintenance Documents & References Tools **Continuing Education** BIM Applied Research

[Home](#) > Continuing Education

Continuing Education

Welcome to the WBDG continuing education system. The WBDG contains a wealth of information and is your gateway to up-to-date information on integrated 'Whole Building' Design Techniques and Technologies. The courses featured offer an introduction to whole building design concepts as well as more specific applications for design objectives, building types and operations and maintenance.

The content in the WBDG has been developed by top experts in the fields of architecture, engineering, planning, and facility management, among others. So you can be assured that the information is up to date and relevant and will inspire you to engage in the process of whole building design contributing to the stock of America's building.

Distance education is a great and very convenient way for architecture, engineering, and building design professionals to gain valuable knowledge about whole building design while earning continuing education credits. As a registered CES provider, the WBDG CES system is a source of AIA Continuing Education System learning units for registered architects. AIA members will receive their learning units and certificate of completion upon passing the course tests and completing an evaluation form and filling out an affidavit. Other building design professionals will receive a certificate of completion for approval and processing with their professional membership organization upon passing the course test and completing an evaluation form and filling out an affidavit.

[Enroll now](#) or [log in](#) to begin taking a class with the WBDG Continuing Education System.

COURSES

WBDG01 THE INTEGRATED DESIGN PROCESS
This course will introduce you to the concepts of whole building design and the elements of an integrated design process

Done  Internet 

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Psychosocial Value of Space
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Planning and Conducting Integrated Design (ID) Charettes

by Joel Ann Todd, Environmental Consultant, and Gail Lindsey, FAIA, Principal, Design Harmony
Last updated: 05-22-2008

Introduction

Process is critical to successful, balanced designs; and a key step in the design process is an integrated design charrette. In this Resource Page, a *charrette* is defined as an intensive workshop in which various stakeholders and experts are brought together to address a particular design issue, from a single building to an entire campus, installation, or park. The term can also be applied to shorter, focused project team meetings, project planning meetings, brainstorming sessions, and extensive community visioning events.



Left: Participants in the charrette work groups discuss the project's environmental priorities using the LEED® Green Building Rating System. Charette for Southface New Office Building. (Photo by Paul Torellini) And Right: Charrette work groups work at round tables in a large meeting room—note the flip chart pages taped to the walls. San Francisco Maritime National Historic Park Greening Charette. (Photo by Joel Todd)

A charrette can be the mechanism that starts the communication process among the

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Avoid conflict of choosing between Sustainable & Security* Goals

- Dollars are tight
- Regulations, laws, mandates, directives must be met

How to decide which way to go?

- Employ a single design strategy to achieve multiple design goals
- Use the integrated 'whole building' design approach

See WBDG.org: [Balancing Security/Safety & Sustainability Objectives](#)

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Sustainable Site Design

The main objectives of sustainable design are:

- to avoid resource depletion of energy, water, and raw materials;
- prevent environmental degradation caused by facilities and infrastructure throughout their life cycle;
- Restore the site to predevelopment conditions;
- and create built environments that are livable, comfortable, safe, and productive.

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Creating Sustainable Buildings Starts with Proper Site Selection

- Before deciding to build new, consider the reuse or rehabilitation of an existing building.
- The location, orientation, and landscaping of a building affect the local ecosystems, transportation methods, and energy use.

Beyond the patch of ground the building sits on, effective Sustainable Design considers the impact of the building on the campus/military base, the surrounding community, and the region.

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Goals of Sustainable Site Planning

Employing the 'whole systems approach'

- Minimize development of open space by the selection of disturbed land, brownfields, or building retrofits;
- Control erosion through improved landscaping practices;
- Reduce heat islands using landscaping and building design methods;
- Minimize habitat disturbance;

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Goals of Sustainable Site Planning

Employing the 'whole systems approach'

- Restore the health of degraded sites by improving habitat for indigenous species through native plants and closed-loop water systems;
- Incorporate transportation solutions along with site plans that acknowledge the need for bicycle parking, carpool staging, and proximity to mass transit. Encourage alternatives to traditional commuting; and
- Consider site security concurrently with sustainable site issues. Location of access roads, parking, vehicle barriers, and perimeter lighting, etc. are key issues that must be addressed.

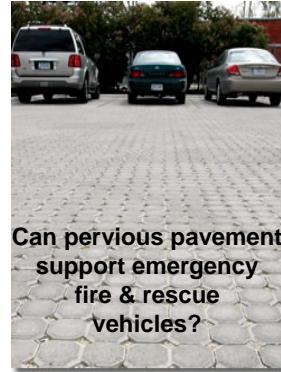
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Sustainable Site Design Considerations

“Low Impact Development” -- Water / stormwater management strategies:

- Storm Water Runoff Distribution
- Hardscape Materials and Curbs
- Recycling Rainwater and Runoff
- Predevelopment Hydrology



Source: Millennium Energy

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Site Security Design

The next generation of design excellence

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LEARNING OBJECTIVES



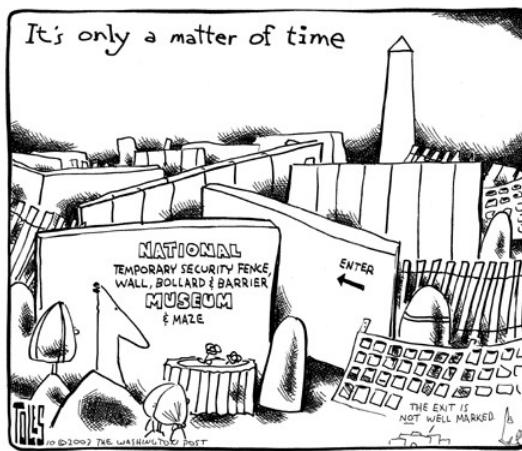
- Understand the overall intent and focus of the *Site Security Design Guide*
- Describe the intent of the Vision and Hallmarks of effective site security
- Identify resources within the *Guide* to support effective site security design

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Introduction to GSA Site Security Design Strategies



Public Space Aesthetics – Function - Viability



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Introduction to GSA Site Security Design Strategies



Vision & Hallmarks

Only by integrating security throughout the design process can the Project Team strike a responsible balance between consideration of risk, available resources, and appropriate mitigation measures.



1. **Strategic Reduction of Risk**
Priorities. Choices. Flexibility. Realism.
2. **Comprehensive Site Design**
Multifaceted Opportunities. Community.
3. **Collaborative Participation**
Multi-Disciplinary. Internal/External.
4. **Long-Term Strategy**
Opportunistic Implementation. Vision.

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Introduction to GSA Site Security Design Strategies



Balancing Objectives

Only by integrating security throughout the design process can the Project Team strike a responsible balance between consideration of risk, available resources, and appropriate mitigation measures.

To strike a successful balance, creating public buildings that attain both security and openness, designers must consider the following:

- Carefully design a site for its daily functions
- Incorporate security elements as seamlessly as possible
- Allow for adjustments in protection in response to varying levels of threat

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Introduction to GSA Site Security Design Strategies



Comprehensive Site Design

This ensures a consistent approach, whether the plan is implemented in one or many stages.

The result is a thoughtful, holistic solution.

- Develop an approach for the entire property that enhances both security and daily use
- Create a design palette and program of security and site elements
- Maximize multipurpose features that accomplish a security purpose and provide a visual & use amenity
- Offer windows of opportunity to coordinate with public works, neighboring projects, and future GSA investment
- Achieve wider goals for the property



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Introduction to GSA Site Security Design Strategies



ISC Security-Decision Making Process

This flow chart illustrates the main inputs and outputs in the security decision-making process, as outlined by the Interagency Security Committee.

These outputs serve as the basis for additional analyses by the Project Team and the subsequent design of protective measures.



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Introduction to GSA Site Security Design Strategies



SSDG – WBDG Resource Pages

- Effective Site Security Design
- The Site Security Design Process
- Site Security – A Physical Security Specialist's View
- Site Security – A Landscape Architect's View
- Case Study



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Introduction to GSA Site Security Design Strategies



Early Security Measures – Moats



Built by Sir John Delamere in 1373. Supposedly modeled on the Bastille, Nunney Castle has one of the deepest moats in England

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Why Did Moats Disappear?

Answer: Medieval War Engines



Trebuchets
And
Mangonel
at
Middelaldercentret
Denmark

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Defense Intelligence Analysis Center Bolling AFB, Washington, DC



- Integrates security & sustainable features
- Bio-retention pond – AT setback & reduces storm water runoff
- Force protection wall – local stone & earth berm

Moats Are Making A Comeback!

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Let's check out the WBDG!

*Be sure to visit
the site when
you start your next project!*

www.wbdg.org

