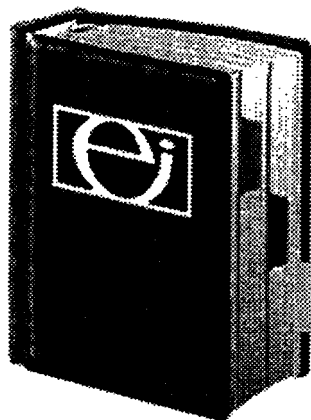




SPECIAL REPORT



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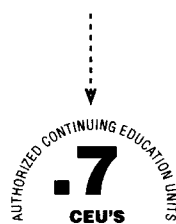
AMERICAN SOCIETY OF CIVIL ENGINEERS

Defensive Design Techniques

Chicago, IL ♦ October 16, 1997

Washington, DC ♦ November 6, 1997

♦ Learn practical methods for enhancing the protection of buildings against explosive attack.



Defensive Design Techniques

PURPOSE AND BACKGROUND

Designing buildings to mitigate the effects of explosive attack is fast becoming a discipline that is required for high risk government and private sector projects. During the past decade, with the growth of terrorism directed towards governmental facilities, structural hardening has expanded from the military arena into the design of civilian commercial facilities. This seminar is intended to acquaint architects and engineers with the basics of this discipline and provide practical solutions for combating the explosive threat.

Though there is little that can be done to stop a determined attacker, there are features that can be incorporated into the design of buildings to enhance their ability to resist the effects of an explosive attack. The primary objective of these measures is to save lives by reducing the chances of catastrophic collapse. Both the architect and the engineer play a vital role in this effort: the architect by making it more difficult for the intruder to reach the intended target; and the structural engineer by limiting the structural damage in the event of an explosion.

The emphasis of the course is on cost-effective methods that minimize the impact on the architectural integrity of buildings and their structural systems. Implementation of such measures early in the design process can result in a building that provide the occupants with a modest level of protection without creating a bunker. Wherever possible, conventional building design technologies are recommended, including state-of-the-art technologies for reducing the glass hazard.

In addition to addressing no-nonsense ways of enhancing security, this course also provides the background needed for the architect or engineer to better understand the rationale behind the recommendations. Background topics discussed include a discussion of the terrorist threat and a case history of the structural damage to the Alfred P. Murrah Building in Oklahoma City. Both architectural issues and structural engineering design and analysis techniques are addressed. For the architect, ways to optimize the site plan, building configuration, access control design and internal layout are discussed. For the structural engineer, simple analytical methods are outlined in detail to enable the designer to determine explosive loads and perform dynamic structural analysis.

SEMINAR BENEFITS

Learn how to:

- ❖ Enhance the protection of a building without creating a bunker
- ❖ Reduce the progressive collapse hazard
- ❖ Perform non-linear dynamic design calculations quickly and easily
- ❖ Protect building occupants against the hazard of flying glass
 - Learn more about the structural damage caused to the Murrah building in Oklahoma City
 - Hear about latest requirements for designing buildings against explosive attack

WHO SHOULD ATTEND

Architects and engineers responsible for the design of government and high profile buildings.

SEMINAR INSTRUCTORS

EVE E. HINMAN, Eng.Sc.D., P.E., *Hinman Consulting Engineers, San Francisco, CA*, specializes in the design and analysis of structures to mitigate the effects of explosions. Dr. Hinman is responsible for investigating the damage to structures caused by explosions and for providing recommendations for the design of buildings to mitigate the effects of terrorist attack. In this capacity, she was able to gain access to the site of the Alfred P. Murrah Building in Oklahoma City after the bombing where she documented the structural damage. Dr. Hinman holds a doctorate in Engineering Mechanics from Columbia University, and a B.S. and M.S. in structural engineering, also from Columbia. Prior to joining Failure Analysis she worked for Weidlinger Associates in New York City where she was responsible for the development and implementation of the structural criteria document used by the US Department of State in the protective design of US embassies abroad. She has presented papers and lectured internationally in the area of the effects of explosions on structures and is a member of ASCE, ACI and SEAONC.

DENNIS S. MIYOSHI, Ph.D., (Seminar Guest Lecturer) *is Director, Security Systems and Technology Center, Sandia National Laboratories*. Dr. Miyoshi has been employed at Sandia National Laboratories, a prime contractor to the Department of Energy, since 1969. He holds a B.S. in physics from Stanford University and a Ph.D. in Experimental Physics from Cornell University. He is presently Director of the Center for Security Systems and Technology, an organization of over 140 security staff experienced in systems analysis, security technologies, and systems integration and implementation. His current interests include applying security concepts and technologies developed for the Department of Energy to the security problems of our citizens, including mitigation of terrorism, crime, fraud, and theft.

OTHER ASCE SEMINARS:

LRFD for Engineered Wood Construction

November 6-7, 1997 Chicago, IL
February 5-6, 1998 Seattle, WA

Structural Condition Assessment of Existing Structures

September 17-18, 1997 Washington, DC
September 25-26, 1997 Las Vegas, NV

Seismic Design & Performance of Building Structures

January 29-30, 1998 Charleston, SC
March 26-27, 1998 Memphis, TN

Wind Loads for Buildings & Other Structures

October 16-17, 1997 Corpus Christi, TX
November 13-14, 1997 Seattle, WA
December 5-6, 1997 Las Vegas, NV
January 22-23, 1998 Atlanta, GA

Call 1-800-548-2723 for additional information on these seminars or to request an ASCE Continuing Education calendar.

REGISTRATION INFORMATION

ENROLLMENT: Phone, fax or mail your registration. ASCE member fee is \$345. Non-member fee is \$395. *Registration fee must be paid in advance.* We accept credit cards, checks, and purchase orders (paperwork required). Make check payable to "ASCE Continuing Education." See registration form for additional information.

CONFIRMATION LETTER: Registrations are confirmed in writing within 10 days. If not confirmed, please call.

TIME: 8:30am – 4:30pm. Registration begins at 8:00am.

CERTIFICATES: Earn 0.7 Continuing Education Units (CEUs) or 7 Professional Development Hours (PDHs).

TEAM DISCOUNTS: Send three or more people from one organization and receive a 10% discount off each enrollment fee. Larger discounts will be negotiated for larger groups.

RENTAL CARS: ASCE has negotiated special rates with Hertz, the official car rental company for ASCE Continuing Education. A brochure with instructions will be enclosed with confirmation letter.

DISCOUNTED MEMBERSHIP OFFER: Sign up as a non-member and receive a membership package which includes a coupon towards ASCE Membership. Coupon valid for the difference between the member and non-member registration fee.

INSTRUCTOR SUBSTITUTION: ASCE reserves the right to substitute an equally qualified instructor should unforeseen circumstances require.

CANCELLATIONS: Cancellations made less than 10 working days prior to the seminar are subject to a \$50 cancellation fee. No refund to those who cancel less than 3 business days prior to the seminar. If insufficient enrollment necessitates canceling the seminar all tuition will be refunded. ASCE is not responsible for non-refundable airfare.

HOTEL ACCOMMODATIONS: Please make your reservations early. ASCE negotiates discounted rates that are subject to cut off dates. Accommodations are not included in your registration fee.

LOCATIONS/ACCOMMODATIONS:**Chicago, IL ♦ October 16, 1997**

Ramada Plaza Hotel O'Hare, 6600 N. Mannheim Rd., Rosemont, IL 60018
847-827-5131 *ASCE Hotel Rate \$119**

Washington, DC ♦ November 6, 1997

The Latham Hotel, 3000 M Street NW, Washington, DC 20007-3701
202-726-5000 *ASCE Hotel Rate \$124**

** Rates subject to cut-off dates*

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SUMMARY OUTLINE:

Defensive Design Techniques

THE TERRORIST THREAT

EXPLOSIVE EFFECTS ON BUILDINGS

CASE HISTORY — THE OKLAHOMA CITY BOMBING

DESIGN PHILOSOPHY

EXPLOSIVE THREAT DEFINITION

WEAPONS EFFECTS

ARCHITECTURAL CONSIDERATIONS

- SITE PLAN
- ACCESS CONTROL
- BUILDING CONFIGURATION
- WINDOW DESIGN
- INTERNAL LAYOUT

STRUCTURAL INTEGRITY

LOADS ON STRUCTURES

DYNAMIC STRUCTURAL ANALYSIS

EXAMPLE PROBLEMS

- EXTERIOR WALL
- FLOOR SYSTEM
- TYPICAL WINDOW

INJURY PREDICTIONS

INTEGRATED SECURITY DESIGN





Defensive Design Techniques

ASCE MEMBER # _____ PE: ☐ Yes ☐ No Ph.D.: ☐ Yes ☐ No

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EIS INFOBOOK

MULTI-ARCHITECTURE SOLUTIONS

A Special Report

January, 1997

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Who uses the Emergency Information System™ (EIS) ?

The Emergency Information System™ (EIS) is used by thousands of public and private agencies — of all sizes and concerns — across the United States and around the world. The other side of this page shows the Pennsylvania Emergency Management Agency's operations center in Harrisburg, PA. Thanks to the Agency's innovative leadership and its implementation of EIS, this is one of the Nation's most technologically sophisticated and effective emergency management facilities. There, more than 80 microcomputers are linked together on a Local Area Network. Five large-screen projectors instantly display detailed computer maps interacting with lists, messages, and other critical data. The heart of this information center is its EIS computer and communications software, which is used to communicate data by satellite and phone with 70 other sites throughout Pennsylvania, as well as with neighboring states and private companies.

Your government or corporate emergency operations center may not be as large as Pennsylvania's, but you can use the same EIS software on your desktop computer, on a portable computer in a vehicle, or on a network. EIS can grow with your program and help it grow, too. Here are just a few EIS applications:

Emergency Management

- Message Log
- Shelter Management
- Evacuation Planning
- Damage Assessment
- Hazard Analysis
- Special Emergency Needs
- Resource Management

Military Installations

- MSCA
- Regulatory Compliance
- Mobilization Planning
- Equipment Deployment
- Human Resource Management
- Briefing and Analysis
- Situation Reporting

Federal

- Federal Response Plan
- EST/ESF Coordination
- Situation Assessment
- Natural Disaster Planning/Response
- Executive and Shift Briefing
- Infrastructure Recovery

Chemical Companies

- Chemical Inventory
- Plume Dispersion Modeling
- SARA Title III Reporting
- Worker Right-to-Know Training
- Environmental Monitoring
- Material Safety Data Sheets

Fire

- Facility Pre-Plans
- Inspection Procedures
- Standard Operating Procedures
- Automated Run Cards
- Simulations and Exercises
- Training Records and Reports

Public Works/Utilities

- Sewer Locations
- Vehicle Deployment
- Contract Management
- Utility Route Monitoring
- Garbage Collection Routing
- Inspection Tracking

Environmental Resources

- Clean Air Act Amendments Compliance
- Spill Protection
- Wetlands Management
- Land Use Planning
- Zoning and Permitting
- Impact Analyses

Law Enforcement

- Crime Analysis
- Deployment Analysis
- Situation Monitoring
- Equipment Tracking
- Traffic and Crowd Control
- Drug Enforcement

Security

- Sports, Parades, Events
- Large Crowd Control
- Counter-Terrorism Planning
- Public Relations Operations
- Sensors and Detectors
- Product Tampering Response

For further information, please contact: EIS International (A Division of Research Alternatives, Inc.)
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