THE PROTECTOR

A QUARTERLY NEWSLETTER

A MESSAGE FROM THE CHIEF:

THIS QUARTERLY NEWSLETTER IS PART OF THE PROTECTIVE DESIGN CENTER'S CONTINUING EFFORTS TO PROVIDE THE FEDERAL GOVERNMENT SECURITY COMMUNITY WITH INFORMATION RELATED TO PROTECTIVE DESIGN, ANTITERRORISM, PHYSICAL SECURITY, HARDENED STRUCTURES, AND ACCESS CONTROL.

PROTECTIVE DESIGN CENTER
SERVING THE NATION AND THE WORLD

AVAILABLE SUPPORT SERVICES

Planning	• Criteria Development • AT Plan Development • Contingency Plan Development
Design	• IED Mitigation and Casualty Prediction • Blast Analysis and Protective Design • Design of Hardened Structures • Blast Resistant Window Design • Access Control Point (ACP) Design • Active Shooter Design & Assessments • Chemical/Biological Protection & Design • SCIF and E3 Facility Design
Review and Assess	• Energy System Protection & Continuity • Risk and Vulnerability Assessments • Infrastructure Assessments • UFC Compliance Reviews/Assessments • Analysis of Hardened Structures • Mailroom Compliance Assessments • Blower Door (Building Leakage) Testing
Training	• Security Engineering Training • Access Control Point Training • Blast Design Training

IMPROVISED EXPLOSIVE DEVICE (IED) CASUALTY AND INJURY PREDICTION

GENERAL INFORMATION

- The Boston Marathon bombing has again made it clear that the United States is not immune to the use of improvised explosive devices (IEDs) as a means of inflicting terror that results in severe bodily injury and death.
- Many Federal agencies consider IEDs to be the most likely threat to the U.S.
- IEDs are particularly insidious because they are relatively easily made from mostly common consumer materials without much risk of detection, are easily transported, can be disguised or hidden, and can even be concealed under the clothing or in a backpack of a suicidal attacker.
- Locations that can be considered prime optimal targets for the use of IEDs include dining halls; air, bus, train, and ferry terminals; parade grounds; conference facilities; air shows; and sporting events, among others where there are large crowds of people densely packed.
- Terrorists can increase the numbers of serious injuries and deaths, beyond the initial blast wave, by including fragmentation or detonating the device near a location where debris, such as flying glass, will be produced.

CONCERNS AND CONSIDERATIONS

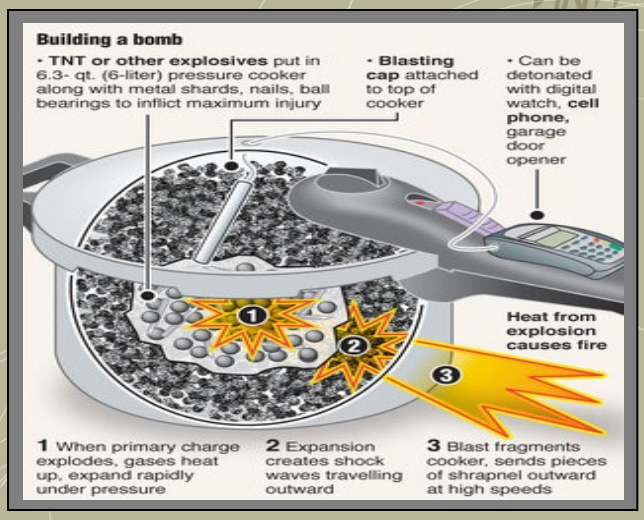
- The general randomness of crowds can make it difficult to predict how many people are in a given area (i.e., population density).
- Explosive size, fragment type (e.g., ball bearings, nuts, bolts, nails, etc.), population density, and the location and elevation of the IED relative to the human core all influence the number of serious injuries and casualties.
- Traditional blast effects prediction software does a good job of predicting building damage and potential for human injury and death from an explosive device that has been placed on the exterior of a building. They do not do quite as good a job of predicting human injury and death from an explosive device that has been placed in an open area amongst a crowd of people.
- A U.S. ally has developed a software package that accurately predicts IED casualties and injuries, based on formulas and other information provided by the Protective Design Center. Access to this software is strictly controlled, but the Protective Design Center is allowed to use it to support government agencies because of contributions made to the development of the software.

(continued on next page)

IMPROVISED EXPLOSIVE DEVICE (IED) CASUALTY AND INJURY PREDICTION

(continued from previous page)

A number of factors contribute to the extent that human injury and casualties are likely from an IED. While air blast can be lethal, it is fragmentation that is likely to result in the greatest numbers of injuries and casualties. Fragmentation can result from materials (e.g., ball bearings, nuts, bolts, nails, etc.) that were added to the IED, the casing/container in which the IED is placed, or debris (i.e., materials near the IED that are propelled by the blast wave, such as glass from broken windows or doors). The image to the right shows fragments having been added to an IED placed in a pressure cooker. Traditional blast effects modeling software does a good job of predicting building damage that results from blast pressures and does an acceptable job of predicting casualties under that scenario, but it does not as accurately predict casualties for crowds in open areas and it does not properly account for the impacts of fragmentation. The ability to properly model the effects of an IED in a crowd at a specific location allows for strategic planning with respect to defining clear zones, no standing areas, trash container locations, etc.



A discussion and slideshow on IED casualty and injury prediction can be found at: https://pdc.usace.army.mil/newsletter/.

For questions or assistance regarding use of software to predict IED casualties and injuries, please contact:

Mr. Kelvin Chan, 402-995-2378, kelvin.t.chan@usace.army.mil or Mr. Bill Seipel, 402-995-2375, william.f.seipel@usace.army.mil

INFRASTRUCTURE VULNERABILITY ASSESSMENTS

Next to direct attacks on U.S. citizens, there is generally no argument that infrastructure assets are a primary target for terrorists. Among the most likely targets are bridges and tunnels, ports and transportation terminals, electrical distribution systems, communications systems, and water supply systems. Protection and mitigation plans can range from contingency plans to limited-term expedient, which are quickly implemented based on intelligence information or a credible threat, to permanent, which provide long term, full-time protection. The Protective Design Center has supported efforts to protect nearly every type of infrastructure since its inception in 1985 Read more…

IMPROVISED EXPLOSIVE DEVICE (IED) AWARENESS

Improvised explosive devices (IEDs) can be disguised as something innocuous, hidden in trash cans or vegetation, or even concealed under the clothing or in a backpack of a suicidal terrorist. While it nearly impossible to completely mitigate this threat, there are a number of actions that can be taken to reduce exposure and minimize the impacts of IEDs. The photograph to the right illustrates how awareness may have helped minimize the impacts of the Boston Marathon bombings. Simple IED awareness training will greatly enhance the protection of personnel. Read more w/video…

ARMY ACP STANDARD DESIGN

The Protective Design Center in conjunction with the Army Center of Standardization for Access Control Points has developed the Army Access Control Point (ACP) Standard Design. This document is a supplement to the Army ACP Standard Criteria and is a requirement for any Installation or base under the jurisdiction of the Army Center of Standardization for ACPs (see Applicability on page two of the Army ACP Standard Criteria). It was developed to help ACP designers meet the requirements of the Army ACP Standard Criteria and follows the new guidelines set forth in the criteria for Functional Gross Area requirements, rather than the Building requirements listed in older criteria. This allows Installations to build ACPs that better meet their operational procedures and allows better use of available real-estate.

Where are the Army ACP Standard Criteria & Standard Design?

Both can be found on the Protective Design Center's web page at https://pdc.usace.army.mil/library/drawings/acp/.

The main changes from the 2009 Standards to the 2012 Standards are:

- **Reduction in the size of Threat Vehicle** - The PDC completed a study to validate the threat vehicle used for the moving vehicle threat. The results of the study indicated that a large passenger car is a better representation of a actual threat, so the 2012 ACP Standards now use this vehicle as the minimum base-line threat. Installations can increase the size of the threat vehicle based on installation location, level of protection, and threat factors.

- **Building Requirements now Functional Gross Area Requirements** – The 2009 Standards listed several Buildings (Gatehouse, Search Office, Visitor Control Center, and Overwatch) that were required based on operational use of the ACP. The 2012 Standards have gone to a Functional Gross Area Requirement for the Visitor Control Center, Search Area, Pedestrian Guard Booth, Command and Control, and Overwatch. Example: A Gatehouse Building was required in the 2009 Standards, but in the 2012 Standards, a Command and Control (C&C) Functional area is required, instead. The C&C Function was located in the Gatehouse, and it still can be, but the 2012 Standards also allows for the combining of two or more of these Functional Gross Areas into a single building. The only exception to the combining of Functional Gross Areas is the Vehicle ID Check Guard Booths; these are still required to be stand-alone booths and not combined into any other Functional Area.

What about the Army ACP Standard Drawings?

Due to an increase in the number of drawings, it is no longer feasible for hard copies to be included in the Army ACP Standard Design. ***Electronic copies of the drawings can be found on the COS for ACP Web Page at http://mrsi.usace.army.mil/cos/Omaha/SitePages/acp.aspx under the Standard Design Category. Both two dimensional drawings and BIM models are available for most buildings.***

The following drawings & BIM models can be found on the COS Web Page:

- Army ACP Standard Design Drawings
- 3, 6 & 9 Processor VCCs
- Gatehouse
- Guard Booth and Overwatch
- Canopy

Enlisting the support of experts during programming, design, selection, and commissioning could significantly reduce construction and operational expenses, limit overall liability exposure, and minimize ACP/ECF downtime.

The Protective Design Center provides an **Access Control Point/Entry Control Facility Training Course** that is intended for an interdisciplinary group including engineering planners and designers, as well as provost marshal/security and law enforcement personnel, and is intended for civilian and military personnel involved in security or engineering support of security. **Read more…**

COURSE OUTLINE

- Introduction/Overview
- ACP/ECF Criteria/Standards
- ACP/ECF Planning
- Threat Scenarios/Performance Standards
- Active Barrier Control Systems/Commissioning
- Electronic Security Systems Overview
- Lighting and Power
- Geometric Design
- Traffic Engineering Study
- Sizing ACP Features/Threat Delay Time
- ACP/ECF Signage and Pavement Markings
- Speed Management Strategies
- Limited Use and Pedestrian ACP's/ECF's
- Estimation of Costs

Next Class Tentatively Scheduled for November 2013

SECURITY ENGINEERING CLASSES

UPCOMING CLASSES

Contracted:

- 29 July – 2 August 2013 – USARPAC (Ft. Shafter, HI)*

  * Army gets priority placement; non-Army pays tuition if seats are still available

Open Enrollment:

- February 2014 – Open class at Fort Belvoir
- August 2014 – Open class at Fort Belvoir

To schedule a class, contact the Training Coordinator:

Ann Mittelsdorf, 402-995-2930, ann.m.mittelsdorf@usace.army.mil

To register for a class, contact the Registrar:

Katherine Barnett, 402-995-2393, katherine.d.barnett@usace.army.mil

Management:

Mr. Curt Betts, Chief, PDC 402-995-2376

Mr. Steve Carter, Chief, Security Engineering 402-995-2359

E: curt.p.betts@usace.army.mil

A: U.S. Army Corps of Engineers, Omaha District
ATTN: CENWO-ED-S (Mr. Curt Betts)
1616 Capitol Avenue, Suite 9000
Omaha, NE 68102-9000

W: https://pdc.usace.army.mil

US Army Corps of Engineers
BUILDING STRONG®

Protective Design Center

CONTACT INFORMATION:

Structural Hardening, Blast Analysis & Protective Design:
Mr. Eric Martin 402-995-2391

Blast Resistant Window/Door Design and Analysis:
Mr. Bill Veys 402-995-2379

Vulnerability Assessments and AT Plan Development:
Mr. Thomas Schuberth 402-995-2374

Infrastructure Assessments:
Mr. Bryan Cisar 402-995-2362

Access Control Point Design, Review, & Commissioning:
Mr. Brian Erickson 402-995-2394

Chemical/Biological Protection Design:
Mr. Ken Christenson 402-995-2361

Criteria Development:
Mr. Curt Betts 402-995-2359

Blower Door (Building Leakage) Testing:
Mr. Don Dittus 402-995-2364

SCIF and E3 Facility Design & Energy System Protection:
Mr. John Benefiel 402-995-2396