THE PROTECTOR
Quarterly Newsletter

PROTECTIVE DESIGN CENTER
SERVING THE NATION AND THE WORLD

AVAILABLE SUPPORT SERVICES

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Design and Review	• 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
Assessments	• 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

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.

Curt Betts, Chief Protective Design Center

NAVIGATING THE SCIF PROJECT MAZE

Designing and constructing a SCIF (Sensitive Compartmented Information Facility) that can be successfully accredited and ready to use can be a very daunting proposition. Having a proper understanding of and the ability to navigate through all of the SCIF criteria, including Intelligence Community Standard (ISC) 705-1 *Physical and Technical Standards for Sensitive Compartmented Information Facilities,* is critical to the success of a SCIF project. .

SCIF design and construction must follow a process that ensures that all the proper documents are created and that all required security measures are addressed. A plan that ensures the proper implementation of, and compliance with, SCIF criteria is critical for successful planning, design, and installation. This plan must encompass the entire SCIF project process. There are multiple ways that the tasks associated with a SCIF project can be organized; a brief one is presented below:

Definition of needs and requirements - A fully defined set of customer needs and facility requirements that address customer mission, facility features, and SCI/SAP processes, is required to drive the project in the proper direction.

Project management - Develop a Project Management Plan (PMP) that addresses threat definition and ensures that mitigation is incorporated into the design. The PMP needs to establish processes that ensure that the design carefully considers threats to the mission and the facility, pairs those with mitigations to eliminate the threats, and incorporates any unique requirements for the SCIF.

Criteria processes and documentation - Carefully implement the ISC 705-1 criteria into the SCIF project and develop the required documentation that supports the project. Abiding by all of the requirements provided by the suite of ISC 705 criteria will pave the way to successful accreditation.

Design to criteria and threat - Ensure that the design properly implements threat mitigation measures and the criteria requirements by having the design reviewed by SCIF criteria and design experts. A proper design will ensure criteria compliance and the subsequent successful implementation of mitigating and security measures in the construction phase.

Construction and security - Ensure that threat mitigation features are constructed properly and that the appropriate level of site security is established. The construction methods used and the security that is enacted at this stage will likely determine whether the SCIF project is a success and the SCIF becomes accredited.

Testing and accreditation - Verify that mitigating measures perform as intended. Testing will reveal any deficiencies in the performance of the SCIF or it will pave the way for eventual accreditation. Once performance is deemed adequate, pursue official accreditation of the SCIF from the accrediting official. DIA and NSA are the most likely for DoD projects.

Operational management, vacancy plan, & eventual disposal - To maintain accreditation, post construction occupation requires ongoing SCIF operations. Short term vacancies are allowed if the access controls are kept in place during vacancy. Failure to maintain proper documentation and/or lapses in occupancy or access control will result in the loss of accreditation. Reaccreditation is time-consuming and expensive.

To achieve success, it is extremely important to enlist the support of individuals that are not only knowledgeable when it comes to the criteria, but also have experience in the actual design of SCIFs. Failing to do so will result in delays and added costs.

Work with SCIF experts to avoid pitfalls that may jeopardize mission success!

EMERGING TECHNOLOGY: CROSS-LAMINATED TIMBER

Cross-laminated timber is a relatively new product in North America. However, architectural and engineering (AE) firms in Europe and Australia have successfully used cross-laminated timber in the construction of mid and high rise residential facilities. Their success has many in North America, including Federal agencies, wondering about potential applications for this new material.

Cross-laminated timber is an engineered wood product that is constructed of individual dimensional lumber pressure-glued in laminations with the wood grain for each layer placed perpendicular to the adjacent layer(s). See the illustration located to the right. The wood panel that results from cross-lamination can be between 4 and 10 inches (nominal) in thickness and up to 30 feet in length.

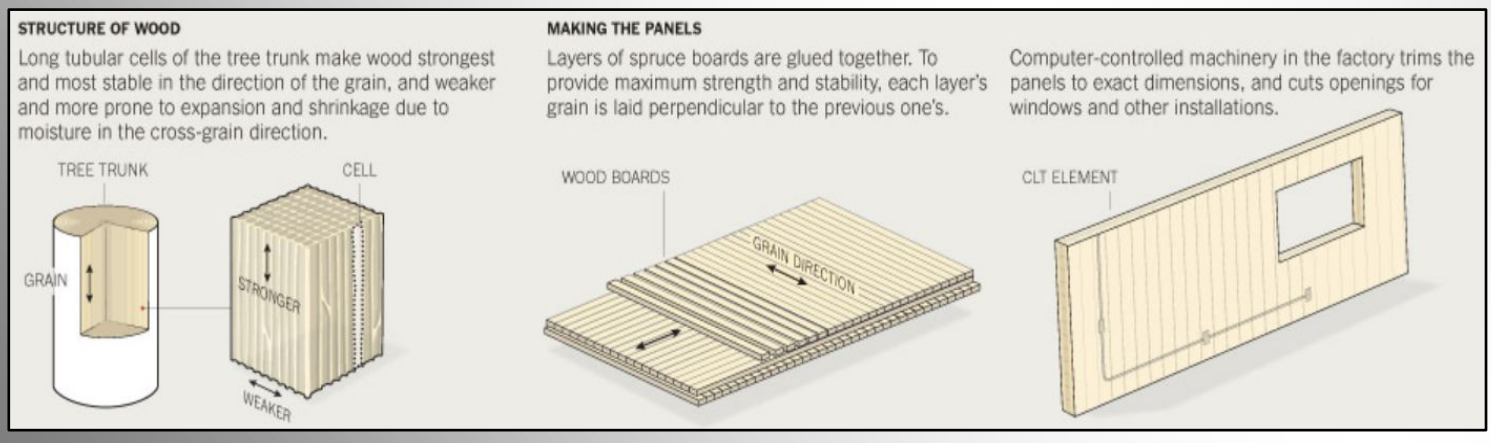
Cross-laminated timber panels are pre-fabricated at the factory and computer controlled machinery trims the panels to exact dimensions and cut openings for windows, doors, plumbing, and ventilation, greatly reducing construction time and cost. The graphic at the bottom of the page illustrates the pre-fabrication process. Floors and walls constructed of cross-laminated timber can be lifted into place with a mobile crane and joined together using metal brackets and screws. This can reduce the amount and type of construction equipment required on-site. For example, an apartment building in London was constructed in about two-thirds of the time that it would have taken to construct the building using steel or concrete.

U.S organizations that govern structural design with timber products have just recently begun to develop universal standards and design guidance for cross-laminated timber and how it should be connected. Some early analysis tends to indicate that cross-laminated timber can achieve load-bearing capacities that are approaching, perhaps even matching, those of steel, concrete, and masonry. This product has been proven to be stout enough to construct 9 and 10 story buildings in Europe and Australia. This analysis and some of these construction successes have some Federal agencies wondering about the potential use of this material to resist blast effects and progressive collapse. The Protective Design Center has contracted for the testing of cross-laminated timber panels to determine its strength and material capabilities in an attempt to establish if the product has value for that purpose, as well as others.

CONCLUSIONS

Cross-laminated timber appears to have some promise with regard to general building construction and perhaps even for specific applications, such as with blast resistance; however, since the product is relatively new in North America, there are not any well-established/accepted standards and design guidance. The testing being contracted by the Protective Design Center, as well as efforts underway by others, will hopefully result in data that will provide more definitive answers with respect to use of cross-laminated timber.

If future test data establishes that cross-laminated timber panels have the strength and material characteristics that they are purported to have and they reduce construction time and expense, can be prefabricated in factories without concern for the outside weather, have burn-resistant properties, are easy to install and attach, and are aesthetically pleasing, they may be a very viable choice, over concrete and steel, in some applications, perhaps even many.



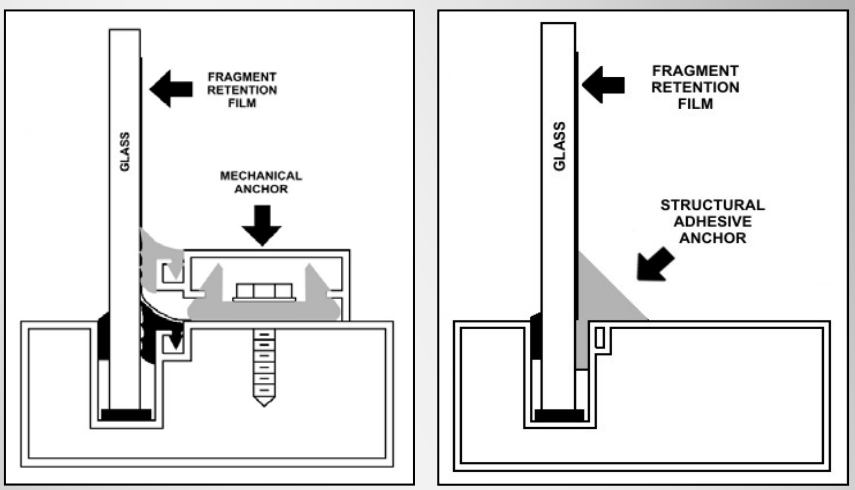
A discussion of PDC capabilities regarding the analysis of hardened structures can be found at: https://pdc.usace.army.mil/newsletter.

For questions or assistance regarding construction materials, blast resistance, or progressive collapse, please contact:

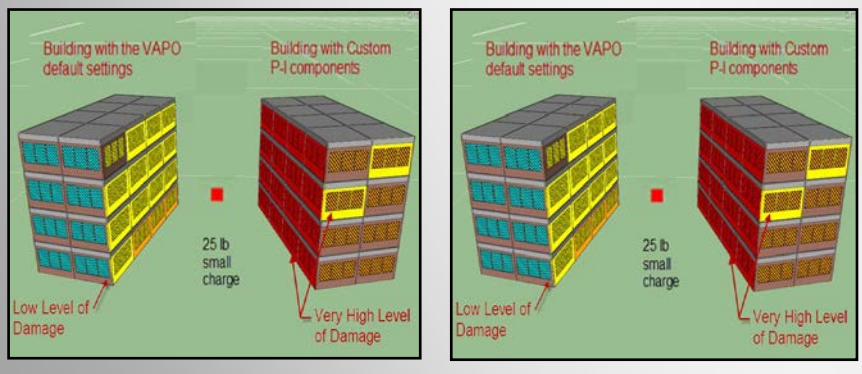
Dr. Tim Kreitinger, 402-995-2390, timothy.kreitinger@usace.army.mil or Mr. Kelvin Chan, 402-995-2378, kelvin.t.chan@usace.army.mil

DID YOU KNOW…

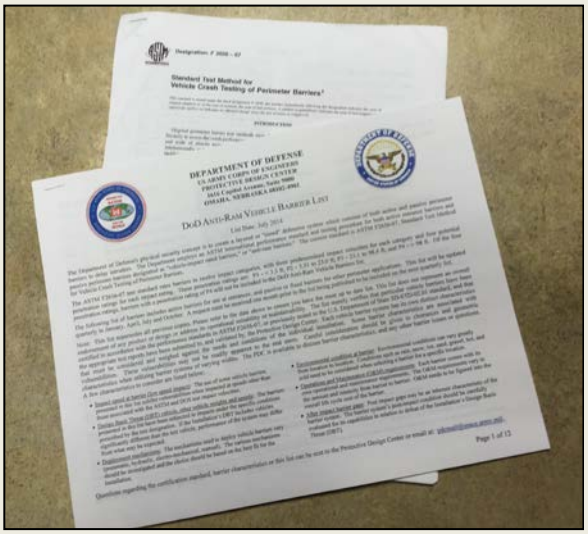
… that **installing fragment retention film** on insulating glass unit (i.e. "double pane") windows without a means of attaching the film to the window frame does not provide the level of protection that you may be assuming it provides? Initially, the film will provide some hazard mitigation by reducing the number of glass fragments generated from the inner pane. However, without the attachment, the entire inner pane is likely to leave the window frame as a unit allowing a multitude of glass fragments from the broken outer pane to enter the space with the potential to cause lethal hazards. The only reliable way to prevent the pane and fragments from encroaching on inhabited space is to install the fragment retention film on the inner pane and use a means (e.g. mechanical or adhesive) to anchor the film to the window frame as recommended by the manufacturer.



…that **minimum conventional construction standoff distances** in UFC 4-010-01 are based on construction materials commonly used in conventional construction? If a building is constructed of materials that can withstand the blast effects associated with the detonation of an explosive device better than conventional construction, then the required standoff distance can be reduced. Likewise, if a building is constructed of materials that are less resistant to blast pressures than conventional construction, than the required standoff distance may be required to be greater. Windows tend to be the weakest link on the building perimeter. A relatively inexpensive blast analysis will help establish if various construction elements are capable of withstanding the blast pressures associated with the detonation of an explosive device. An upfront blast analysis may save hundreds of thousands, maybe even millions, of dollars in expense to attain unnecessary standoff, harden the building, or replace windows.



…that enlisting the support of **antiterrorism/force protection criteria and design professionals** early and frequently during planning and design will help you avoid costly and perhaps unnecessary building and site improvements; improper selection, application, or installation of protective measures; a false sense of security; and potentially mission impacting delays!



DoD Anti-Ram Vehicle Barrier List

The 2012 Army Standard for Access Control Points criteria requires that all active and passive barriers that are installed at an Access Control Point be selected from the DoD Anti-Ram Vehicle Barrier List. The DoD Barrier List is a list of tested Barriers that is maintained by the Protective Design Center (PDC). It is available for DoD and public use and can be found on the PDC's web site.

While Army ACPs are required to use barriers on this list, the list is also a good source of information for non-Army projects that utilize either active or passive barriers. If used correctly, the list will ensure that the project utilizes barriers capable of mitigating the energy of the threat vehicle.

The current test method for barriers is established by ASTM F 2656-07 *Standard Test Method for Vehicle Crash Testing of Perimeter Barriers*.

The following are typical Test Method Designations:

State Department Standard

15,000 lb Truck
K-4 (30 mph)
K-8 (40 mph)
K-12 (50 mph)

ASTM F 2656-07

2430 lb Car	5070 lb Pick-up
C40 (40 mph)	PU40 (40 mph)
C50 (50 mph)	PU50 (50 mph)
C60 (60 mph)	PU60 (60 mph)

15,000 lb Truck	65,000 lb Truck
M30 (30 mph)	H30 (30 mph)
M40 (40 mph)	H40 (40 mph)
M50 (50 mph)	H50 (50 mph)

The DOD Anti-Ram Vehicle Barrier List is located on the PDC web site at: https://pdc.usace.army.mil.

For assistance or questions regarding ACP design, barrier certification, or barrier applications contact Mr. Brian Erickson at (402) 995-2394 or Ms. Ann Mittelsdorf at (402) 995-2930.

To schedule a class, contact the Training Coordinator:

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

Please allow 60 days advance notice for scheduling classes within CONUS and 90 days for OCONUS

To register for a class, contact the Registrar:

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

SECURITY ENGINEERING CLASS

UPCOMING CLASSES

Contracted:

- 9-13 February 2015 – HQDA (Fort Belvoir)*
- 4-8 May 2015 – USARPAC (Schofield Barracks, Oahu)*
- 8-12 June 2015 – HQDA (Fort Belvoir)*

* Agency personnel get priority placement; non-agency personnel attend at agency's discretion and pay tuition if seats are still available

Open Enrollment:

- 20-24 April 2015 – Open class (Fort Belvoir)
- 17-21 August 2015 – Open class (Fort Belvoir)

TRAINING UNDER DEVELOPMENT

- Access/Entry Control Planning & Design
- Blast Resistant Structural Design
- Blast Resistant Windows Design

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US Army Corps of Engineers
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DoD Anti-Ram Vehicle Barrier List:
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Automated Vehicle Barrier (AVB) Commissioning:
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Mr. Ken Christenson 402-995-2361

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