

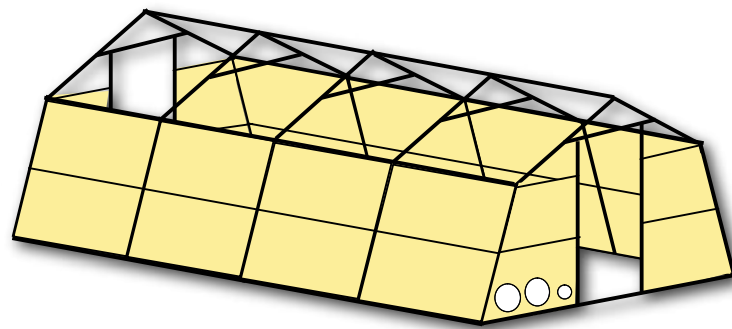


MODULAR BALLISTIC PROTECTION SYSTEM (MBPS)

BACKGROUND:

The Modular Ballistic Protection System (MBPS) will protect troops in mobile tent camp environments from fragmentation threats. These threats have become prevalent in some hostile areas, so enhanced defense against them is a top priority. It is the goal of this program to provide Soldiers with a rapidly deployable, low cost, reusable armor alternative in situations where more time and labor-intensive protection is infeasible.

Natick Soldier Research, Development & Engineering Center (NSRDEC) is working in partnership with the Advanced Engineered Wood Composites (AEWC) Center at the University of Maine to develop the MBPS.



DESIGN PARAMETERS:

Balancing threat, capabilities, cost, and deployment were essential in establishing the design for the MBPS. Ultimately, the following design parameters were established:

- **Cost:** \$22 per square foot
- **Weight:** 2.5-4.0 lbs per square foot
- **Overpressure:** Capable of withstanding specified blast overpressures
- **Fragmentation:** Provides specified fragmentation protection and meets NIJ level IIIA firearm specifications
- **Deployment:** Installed in a 32-foot shelter in one hour with four personnel

GOALS:

The goal is to provide a ballistic protection system that:

- Can withstand fragmentation and blast overpressure;
- Utilizes high strength panels that attach directly to standard tent frames without modification or special tools;
- Causes no signature issues; does not allow belligerents to identify high value targets;
- Can be rapidly installed in standard military shelters;
- Is lightweight, reusable and easily portable;
- Can integrate seamlessly into fabric shelters.



**PANEL ATTACHMENT SYSTEM
DETAIL**



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FIRST GENERATION PROTOTYPE:

- Integrated into 16'×16' tent frame
- 5 lb/ft² panels
- Complete shell concept
- Bolted connections

SECOND GENERATION PROTOTYPE:

- Integrated into 32'×20' TEMPER tent frame
- ~4 lb/ft² panels
- More advanced, high-strength composite “sandwich” panels
- Sidewall protection including doorways
- Unique strap connections allow for blast load survivability as well as quick and easy installation
- A 32' module can be installed by a team of four in 60 minutes

BLAST OVERPRESSURE TESTING:

- Performed at Tyndall Air Force Base, Feb 06 and April 06
- The MBPS was able to withstand blasts as close as 21'
- No failure occurred in the shelter structure, anchoring, or panels themselves

RIGHT CIRCULAR CYLINDER (RCC) TESTING:

- The MBPS panel was tested against 2, 4, 16, and 64 grain projectiles
- V50 velocities were recorded for each grain size
- The MBPS panels met all established requirements

POINT OF CONTACT:

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MBPS REQUIRES NO SPECIAL TRAINING OR TOOLS FOR INSTALLATION.

IT IS DESIGNED TO BE INSTALLED IN 60 MINUTES BY 4 SOLDIERS.



INTERIOR OF SLIDING SHELTER DOOR



BLAST TESTING



RCC TESTING

