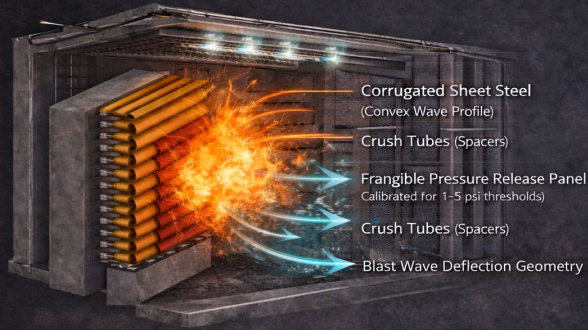


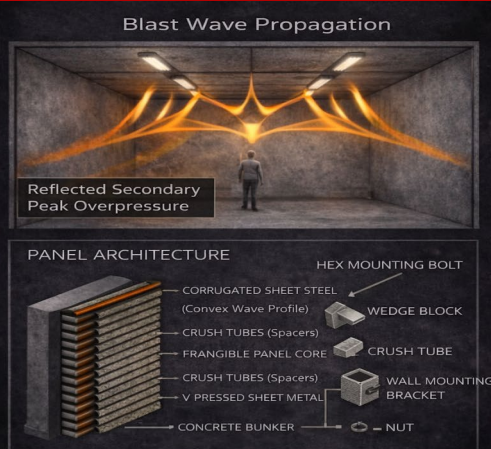
# Blast Overpressure and Neuroprotective Mitigation System (BONeMS)

REDUCING REFLECTED OVERPRESSURE • CONTROLLING IMPULSE • VENTING EXCESS PRESSURE



## PHYSICAL MECHANISMS

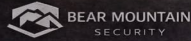
- WAVE DEFLECTION**  
Redirects Incident Blast
- ENERGY DISSIPATION**  
Deforms & Stretches Impulse
- PRESSURE RELEASE**  
Vents Excess Pressure
- REFLECTION REDUCTION**  
Disrupts Wave Coherence



## BLAST WAVE INTERACTION



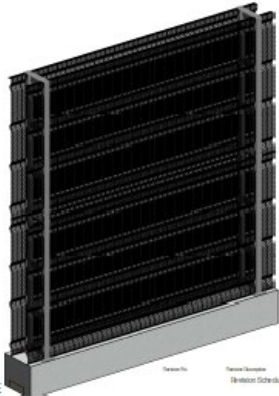
## SYSTEM COMPONENTS



**BONeMS**  
Reinforced Concrete Blast Test  
8.5 ft x 7 ft x 15 ft

MODULAR → RETROFIT • REUSABLE • TESTABLE • SAFETY-FOCUSED

4 Section  
1:10



2 3D ROCKET FENCE



**Bear Mountain Security**  
BONeMS Blast Overpressure Mitigation System  
Blast Overpressure Protection

# PROBLEM STATEMENT



BONeMS, Innovation & Performance

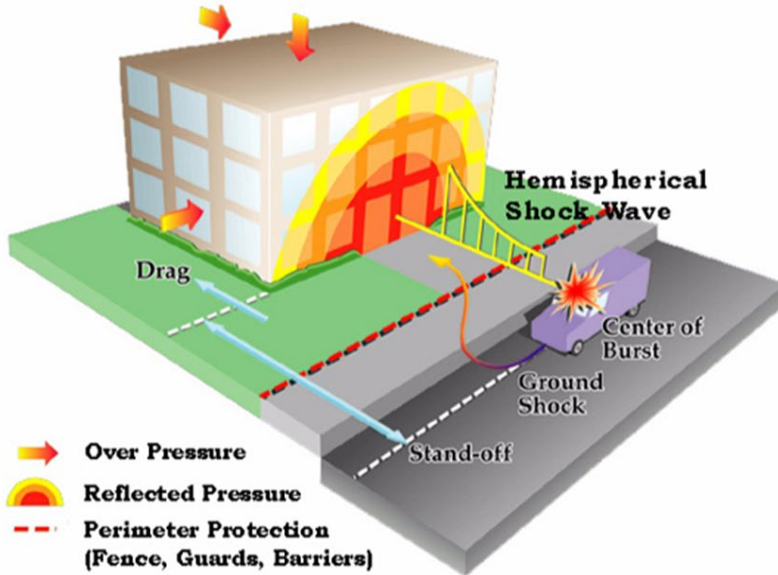
## BONeMS / Reduced PSI / Peak Pressure Time Reduction

Modular/Scalable/Reusable/Testable/Rapid Deployment

- Military training structures and enclosed bunkers can amplify blast overpressure.
- Reflected pressure waves increase risk of traumatic brain injury and other injuries.
- Concrete reflects large amount of blast energy.
- Current commercial solutions have poor internal pressure reduction.
- Capability gap for current retrofit systems.

### Modular retrofit solutions that:

- Reduce internal blast overpressure and impulse within enclosed or semi-enclosed structures.
- Maintain two usable exits (\*Example).
- Fits inside an 8.5 ft × 7 ft × 15 ft bunker test article (\*Example).
- Capable of addressing low-to-moderate overpressure (~1–5 psi range)
- Must not compromise structural integrity or safety of the enclosure



Vehicle Weapon Threat. Image Credit: FEMA 427, Primer for Design of Commercial Buildings to Mitigate Terrorist Attacks (2003)

# BONeMS DEPLOYMENT ADVANTAGES



BONeMS, Innovation & Performance

**BEAR MOUNTAIN SECURITY**

## BONeMS

Modular Retrofit Installation

**Primary Layer**

- Corrugated sheet steel (convex wave profile)

**Secondary Layer**

- Replaceable sacrificial components

**Frangible Pressure Release Panel**

- Calibrated vents (1-5 psi threshold)

**Airborne Debris Capture Deflection Grids**

- High-tensile steel grid panels

**Lightweight** compared to mass-based barriers

**Replaceable** sacrificial components

**Compatible** with multiple bunker geometries

**Maintains** operational exits and interior space

**Scalable** for larger training structures

## Blast Overpressure & Neuroprotective Mitigation System

### BONeMS Rapidly Deployable & Scalable

The system is designed for rapid, low-complexity installation using direct-to-concrete anchoring. Lightweight panels are positioned and secured with standard concrete anchors, eliminating the need for embedded hardware or complex substructures. Panels can be mounted and are mechanically fastened, allowing crews to install large wall sections quickly with basic tools. The result is a fast, scalable retrofit process with minimal downtime and immediate operational readiness.



### Rapid & Scalable Deployment

- Direct anchor mounting – Panels fastened straight to concrete with standard anchors.
- Modular panel placement – Panels set and secured into concrete.
- Rapid field install – Minimal tools, fast assembly, immediate readiness.

