

# Hardened Commercial and Industrial Applications



Advanced Survival Technology offers highly specific engineering expertise for any commercial or Industrial application. Commercial structures face differing levels of risk associated with CBRN threat, climate change and natural events, accidents or intentional (criminal or terrorist) events. The development of effective and efficient client/project-specific mitigation strategies requires the use of Risk Assessment. Risk is a combination of credible threats, vulnerability and consequence. Certain geographical areas have particular risk factors that affect facility capability need and placement such as population density,

presence of critical infrastructure, location in a high terrorist threat or high natural disaster areas and military base/complex proximity.

Advanced Survival Technology employs the latest defense and approved sensory and filtering equipment to protect commercial and government buildings.

## The CBRN Threat Mitigation and Assessments

Counter-terrorism experts within the DHS, CDC, and NIOSH are vexed by commercial and public building vulnerability. An office building has a high concentration of human life encapsulated in a small space; an ideal target for today's merciless terrorist. The experts repeatedly identify the HVAC system as the most likely distribution point for a toxic attack.



Advanced Survival Technology works with only industry leading and proven technologies to provide the most accurate Threat Assessments and Advanced Protection Systems against CBRN threats. From Metropolitan Commercial Development Projects to PetroChemical and Nuclear Power Plant Threat Mitigation needs, we have the most advanced and cost effective solution on the market. Contact your local A.S.T. office to review your commercial application requirements.



## Structural Hardening of Buildings and Structures

Innovative structural solutions are needed to harden and fortify new or existing commercial structures to accommodate client priorities. Advanced Survival Technology has the required experience to design, engineer, and manage the construction of these specialized projects, offering complete turn-key services.

The Advanced Survival Technology's Engineering Team provides the following building "hardening" services to meet your damage mitigation expectations:

- **Blast mitigation design and construction for new or existing commercial buildings**
- **Analysis of structural building elements**
- **Site and building assessments of a commercial building from a wide variety of experts**
- **Security and Site Threat Assessment, including building "hardening" recommendations**



### Building "Hardening" Process:

The Advanced Survival Technology Team provides a detailed survey to determine and record current structural integrity, barriers, detection systems, operations, logistics, security requirements, roads, landscaping, and other features.

This initial site survey information must be integrated and coupled with the appropriate structural "Hardening" design and planning to provide the necessary client specific level of protection (see chart below) for critical asset protection. [Levels of Protection for Commercial Buildings:](#)

Level of Protection	Potential Structural Damage	Potential Injury
<b>Below Standard</b>	Severely damaged. Frame collapse/massive destruction. Little left standing	Majority of personnel suffer fatalities
<b>Very Low</b>	Heavily damaged. Onset of structural collapse: Major deformation of primary and secondary structural members, but progressive collapse unlikely. Collapse of non-structural elements	Majority of personnel suffer serious injuries. There are likely to be a limited number (10% to 25% fatalities)
<b>Low</b>	Damages - unrepairable. Major deformation of non-structural elements and secondary structural members and minor deformation of primary structural members, but progressive collapse unlikely	Majority of personnel suffer injuries. There may be a few (<10%) fatalities
<b>Medium</b>	Damaged-repairable. Minor deformations of non- structural elements and secondary structural members with no permanent deformation in primary structural members	Some minor injuries but fatalities are unlikely
<b>High</b>	Superficially damaged. No permanent deformation of primary and secondary structural members and non-structural elements	Only superficial injuries are likely

## Features

### High Speed Detection and Shut Down in Seconds

- Critically providing detection-to-HVAC shutdown in seconds.

### Elimination of False Positives

- Redundant design coupled with proprietary firmware and software algorithms generate a 99.7% confidence level.

### Broad Spectrum Sensing

- Providing radiological library of up to 120 isotopes and a huge chemical spectrum offering the most reliable sensing available today.

### Automated Response

- Eliminating human intervention for HVAC shutdown. Robust Design, Field-proven Technology – Built for the harsh building environment using base technologies which have been in use every day for decades.

### Flexible, Modular "Plug and Play" Design

- Creating a backbone detection system that is simple to install into any architecture, and inexpensive to maintain and upgrade.

### 24/7/365 Remote Monitoring

- Providing first responders with useful real time data to expedite a safe building rescue.

### Multi-level Security Protection

- Multi-key access and continuous real-time monitoring insure that your system is up and operating accurately.

### Developed by Experts

- Created by building infrastructure professionals and experts in nuclear and chemical detection.

### UL 508A Compliant

- UL 508A Compliant SAFETY Act Designated Technology

# Fortified and Self-Sustainable Commercial and Land/Community Development

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## The Advanced Defender Building System



Advanced Survival Technology is proud to announce a new partnership with Defender Technologies to bring an incredible new patented building technology system to the public and private sectors. We are proud to present the Advanced Defender Building Technology System, offering endless multi-hazard protection capabilities and applications to meet any residential, commercial, industrial, government, or military need.

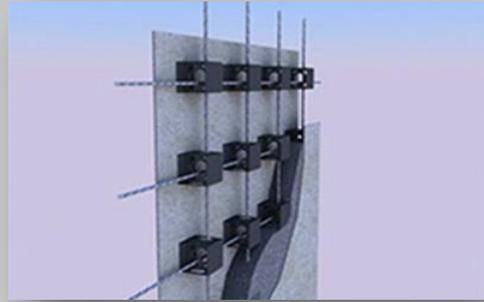
This building system is focused on protective and resilient construction and self-sustaining residential, commercial, and community developments. Builders and Land Developers are encouraged to contact Advanced Survival Technology, to participate in our vision for the development of resilient and protective structures as we progress into an ambiguous future for severe weather and planetary risk threats.

This patented building system is available anywhere in the world, and offers innovative technology that enables the development for structurally engineered applications to withstand hurricane and tornado force winds up to 200 mph, resistance to earthquakes (up to 7.0 on the Richter scale), flying projectiles, mold, fire, carpenter ants, mud slides, and flood/water damage. This building system provides the necessary hazard mitigation for survivability, sustainability, protection, and green energy savings, as well as the added benefits of shorter construction time, labor costs, and possible insurance savings (contact us for more information on whether these insurance savings are available in your area.)

Since the start of the 21st Century, this building technology has been utilized globally to construct over 60,000 units in more than 15 countries with 30,000 additional units scheduled for completion by the end of 2013. While no technology can be rendered "indestructible", our Advanced Defender Building System comes as close as any affordably priced structure can be, and is the wave of the future in the building industry!

## Advantages of the Defender Tech Building System:

- 4-inch (thicker on multi-storied or ballistic/blast resistant structures) concrete reinforced on 16-inch centers with vertical/horizontal steel reinforcement bars.
- 4000 p.s.i. concrete custom-poured to spec on-site (not pre-fabricated or shipped in)
- Tested to withstand 1800 degree Farenheight direct flame for over two hours with no loss of structural integrity - (inquire about our new patented firebreak system)
- Residential, Commercial, Industrial, Government/Military, FEMA, HUD, and Community Development Applications
- Engineered to withstand 200 mph winds
- Exponentially stronger than wood-frame
- Tested to withstand light ballistics (can be engineered and tested to provide heavier ballistic/blast protection needs) to include 9 mm, .45 cal, and M-16. (Bullets did NOT penetrate or compromise the structure, photos available demonstrating these test results at 80 feet)
- Designed to withstand earthquakes
- "Green Construction" (uses up to 75% less trees in construction)
- Extremely Energy Efficient (estimated to use 40% less energy than traditional stick-built)
- Acoustically superior
- Designed to exceed IBHS Fortified Gold Standard which typically carries on a 40%-60% discount on insurance premiums (contact us for more information in your area)
- Does not absorb water (unlike concrete block)
  - Resists Mold
  - Impervious to Termites and Ants
  - Does Not Rot



Over 60,000 units in 15 nations have been built using this system that is incorporated into our Advanced Defender Building Systems. Known as, DefenderWall™, this system's components have been tested and proven to be the new innovative way to construct structures with protection, resiliency, and sustainability. Best of all, DefenderWall™ systems saves lives and saves on energy costs (green building). Here are a few residential projects that have been constructed utilizing this phenomenal building technology:



Advanced Defender Building Systems can be utilized for residential and commercial construction, and in addition, provides significant construction opportunities with government building applications, such as HUD Housing Developments, FEMA, Defense and State departments, just to name a few. This system can also be utilized for the construction of retaining walls, blast/ballistic resistant structures, in addition to the obvious building of safe homes in tornado alley and hurricane-prone areas.

*We can also incorporate EMP/HEMP mitigation strategies as well as our new Advanced FireBreak Systems that can be remotely activated to protect your structure and surrounding parameters (up to 150 feet). You will find designated sections in this brochure that discuss these additional threat mitigation options.*

## Building Green – Stronger, Safe, Smarter

Our innovative Advanced Defender Building Technology enables our clients to build structures engineered to withstand hurricane and tornado force winds up to 200 mph.

These structures also resist termites, water damage, earthquakes (up to 7.0 on the Richter scale), mold, fire, carpenter ants, mudslides, and fire (also offering additional FireBreak and EMP (Electro-magnetic Pulse) Protection options found in the lower portions of this brochure.)

### Compare

- | DefenderWall™                | vs | Wood Frame Built                         |
|------------------------------|----|--|
| 1. Resists High Winds        |    | Decimated by Hurricanes & Tornadoes      |
| 2. Resists Fire              |    | Is Fuel for Fire                         |
| 3. Resists Flood Damage      |    | Powerless Against Floods & Water         |
| 4. Resists Earthquakes       |    | Offers No Protection Against Earthquakes |
| 5. Resists Termites          |    | Is Food for Pests                        |
| 6. Resists Mold & Mildew     |    | Mold & Mildew Destroy Wood               |
| 7. Resists Projectiles       |    | Walls Are Mostly Hollow, No Protection   |
| 8. Resists Mudslides         |    | Mudslides Decimate Wood Homes            |
| 9. Resists Carpenter Ants    |    | Carpenter Ants Feed on Wood              |
| 10. Environmentally Friendly |    | Destroys Trees, Consumes More Energy     |

**Which Would You Prefer?**

## Advanced Firebreak Technology System

Our amazing Advanced Firebreak Technology System, is brought to you directly from our partners, Colorado Firebreak, offering ideal wildfire protection for residential, commercial, and community development projects and any other structural application needs.

## Customized Wildfire Protection to Defend Your Home

Colorado Firebreak has developed a revolutionary high-tech wildfire mitigation system to guard homes from the destruction of wildfire.

These customized wild land fire defense solutions include sophisticated systems that will protect both your home and the trees and vegetation that surround it. Colorado Firebreak also provides simple do-it-yourself fire retardant spray options that offer effective, but more limited defense.



More than 600 Colorado homes were destroyed by wildfire last year. These homeowners lost valuable assets and irreplaceable mementos. Colorado Firebreak has the wildfire protection systems you need in a wildfire disaster. Colorado Firebreak designs and builds customized systems to deliver fire retardant sprays in the event of a wildfire. We engineer and install fully-automated wildfire mitigation systems that become operational when sensors detect the UV wavelengths unique to fires. Colorado Firebreak also sells the FireIce Home Defense Unit. In combination, these options create a customized

firebreak for your home, outbuildings, and the surrounding trees and property. You decide the level of protection you desire.

## Defend Your Home with Our Fire Retardant Delivery Systems

For most homes, Colorado Firebreak recommends our mid-range wildfire protection system, designed to protect your home and an area 50-feet around it. It includes wildfire detection sensors that wirelessly signal the control panel to activate Stage One.



Stage One, FireIce powder is combined with water pumped from an underground storage tank. This creates the FireIce protective gel, a revolutionary fire retardant product used by many professional firefighting organizations to stop fires fast. Multiple fire suppression lines installed on the home deliver the FireIce gel so that it covers the home. As the fire nears, the control panel activates Stage Two.

In Stage Two, fire suppression lines in the tree canopy at the perimeter of the home spray water on all trees. The microclimate that Stage Two creates lowers temperatures and raises humidity, producing a natural firebreak around

the home. Because Stage Two applies water to the area 50-100 feet around the home, it can protect valuable vehicles, outbuildings and trees.

The Colorado Firebreak system is fully self-contained, including an isolated water tank and power sources. Depending upon the system chosen, it is activated either manually or automatically and relies on either electrical or gas power generation. The system is customized to your home and property's environment, and to the area you want to protect.

### **The FireIce Home Defense Unit**

For the homeowner who wants a do-it-yourself fire retardant system, Colorado Firebreak recommends the FireIce Home Defense Unit. Using the same FireIce gel that our automated systems use, the Home Defense Unit is designed to deliver fire retardant through a powerful sprayer on wheels. It includes enough FireIce to cover a home up to 2,500 sq. ft. Additional buckets of FireIce® may be purchased as needed.



### **FireIce gel is:**

- Environmentally friendly and non-toxic. It is safe for plants, wildlife, pets, and children.
- Non-corrosive and cleans up easily. Just rinse with water to wash it off.
- Long-lasting and effective. It does not break down over time and consistently outperforms the best Class A foams.
- FireIce is designed to protect structures in heat as high as 2000 degrees Fahrenheit.

### **Request a Wildfire Mitigation Consultation Today!**

The team at Colorado Firebreak knew that wildfire mitigation solutions that focus only on the home offer inadequate protection. Their goal was to engineer and construct a system that would protect the home and create a firebreak around it.

Our team has extensive experience with high-pressure water systems, fire science, threat evaluation, and fire systems engineering, and this specialized knowledge and skill allowed us to create a unique wildfire protection system. The system's innovative design not only covers the home in a fire retardant gel spray, but hydrates the trees and vegetation around the home producing a micro-climate that lowers air temperatures, raises humidity, and acts as a natural firebreak.

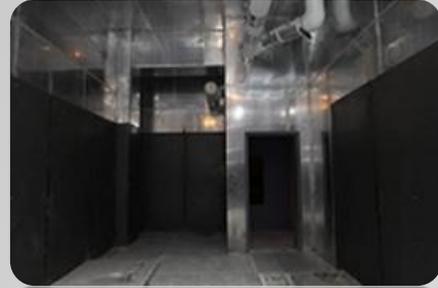
There is no system that offers your home 100% guaranteed protection from wildfire. But, by combining a Colorado Firebreak system with standard wildfire protection advice like clearing flammable debris and thinning vegetation, you can mitigate the risk to your home from a wildfire threat. Learn how you can defend your home in the event of a wildfire. Colorado Firebreak delivers the fire retardant products and systems to provide a customized wildfire mitigation solution. Our team can construct a high-tech system that creates a firebreak around your home or a larger perimeter of your property.

Let us meet with you and inspect the unique challenges presented by your home and property. Our team will develop a customized plan to mitigate the risk to your family's home in a wildfire disaster.

## EMP/HEMP Mitigation Products and Services

Advanced Survival Technology is dedicated to the analysis, design, fabrication and installation of specialized shielding, components and systems to mitigate the harmful effects of Electromagnetic Pulse and Geomagnetic Storms on buildings, vehicles, and structures world-wide. Our Team of highly skilled professional engineers, project managers, and fabricators have worked on military, government, and private projects world-wide.

Due to varying worldwide conditions, the need now exists for uniform and effective hardening, hardness verification and hardness maintenance of command and control centers, critical communications, data and computer centers, and intelligence systems that require 100% operations during and after an EMP/HEMP or Geo-Magnetic Storm (GMS) event. In critical time-urgent applications where momentary upsets are mission-aborting, the hardening requirements include stringent facility shielding, point-of-entry (POE) protection and special protective measures.

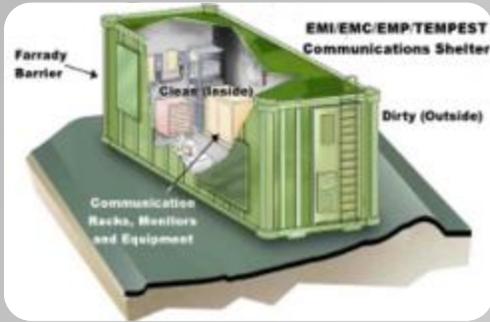


Advanced Survival Technology can provide comprehensive and effective hardening, hardening verification and hardness surveillance of bomb shelters, buildings, facilities, hardened shelters, command/control centers, data processing centers and business continuity centers against the damaging effects of Electromagnetic Pulse (EMP), HEMP, GMS, or transportable High-Powered Microwave (HPM) weapons. The function of these facilities supporting critical time-urgent applications requires network interoperability and effective physical protections, electromagnetic shielding, point of entry (POE) protection, and related special protective measures. At EMP Engineering we offer cost effective solutions and full manufacturing capabilities for most any type of HEMP/EMP/GMS mitigated facility along with full hardened shelter design/build services. We are dedicated to the design and implementation of robust, hardened CBRN and EMP measures – including specialized shielding / mitigation, components and sub-systems, to prevent the harmful effects of intentional or unintentional Electromagnetic Pulses and Geomagnetic Storms.

### Our services include (but are not limited to):

- Professionally Designed and Engineered HEMP/EMP/GMS Mitigation Solutions
- Custom HEMP Shielding Fabrication, Installation, and Project Management
- HEMP Verification Testing, Hardening, Hardening Assurance, Maintenance, and Remote Surveillance
- Custom designs for Electromagnetic Compatibility (EMC), Electromagnetic Interference (EMI), Nuclear and Lightning Electromagnetic Pulse (EMP), and TEMPEST solutions
- Electromagnetic pulse (EMP) Solutions that integrate with Architectural, Structural, Electrical, and Mechanical Engineering services to create a secured and safe shelter / bunker environment
- Full Service Professional Architectural, Engineering Solutions and Products for Hardened Facilities including CBRE (chemical, biological, radiological, explosive) Filters, Structural Engineering, Blast Engineering, and Electrical/Mechanical Engineering
- Engineering Solutions to keep your designed environment effective against evolving threats now and in the future
- All designs and projects are HEMP hardened per MIL-STD-188-125-2
- Portable, custom designed HEMP Resistant Electrical Generators, Communications Centers, and Data Centers fabricated in ISO shipping containers at 10', 20', 30' and 40 foot lengths. These can be ballistic/blast hardened with CRBN Air-Filtration systems. Custom evaluations, installation, and commissioning services included.
- Custom HEMP Shielded Rooms and Faraday Enclosures designed, built to any size, and installed

Creating a protective electromagnetic-threat facility shield requires an electromagnetic barrier with additional special protective measures that incorporate electrically continuous housings that substantially reduce the coupling of EMP electric and magnetic fields into the protected area. The electromagnetic barrier shall consist of the Facility HEMP Shield and protective devices for all POE's. Additionally, reliability, maintainability, safety and human engineering, testability, configuration management and corrosion control all need to be incorporated to the HEMP protection system design.



To accomplish this goal, a Client specific Vulnerability identification/Hardness Program overview and criticality assessment must be conducted that incorporates design, engineering, fabrication, installation and ongoing effectiveness testing activities to achieve the following:

- Provide an electromagnetic threat- protected facility or system design based upon verifiable performance specifications against identified threats that ideally suits the requirements of our clients.
- Provides a means of verifying achieved hardness levels through a cost-effective program of testing and analysis.
- Develop a maintenance/surveillance program during the procurement phase that supports the Client's operational and life cycle HEMP hardness requirements.
- Based on the anticipated threat, facility location and Client's protection program establishes the HEMP configuration baseline consisting of documentation of the physical characteristics of the HEMP protection system, subsystem and baseline performance data.

### Services

- HEMP Hardening Design and Engineering
- HEMP Hardened Systems Integration
- HEMP Project Management
- HEMP Quality Assurance
- HEMP System Testing
- HEMP Education, Training, and Consultation

### Sectors

- Departments/Ministries of Defense
- Power Grid Operators
- Civil/Critical Infrastructure Operators
- Oil Companies/Oil Infrastructure
- Residential/Commercial/Industrial Hardening
- VIP and Government Continuity
- Aircraft Operators and Aviation Facilities
- Electronics Manufacturers

Advanced Survival Technology understands EMP hardening, design, and integration of life-safety systems that must work during and after a HEMP/EMP attack, such as power systems, CBRN air-filtration systems, water systems, communications systems, sensor systems. Work with the experts when your life and continuity depends on performance. We have the experience to understand your needs, and the knowledge to meet them.