



Gimme Shelter

Advanced Shelters Designed to Be Efficient and Safe for Soldiers



Natick, MA (Army Research Lab) -- Army engineers design military shelters for soldiers, aircraft, and equipment. These shelters offer protection from weather, sand, harmful chemical and biological agents, and from fragments. They are made to be easy to set up and to provide lighting while maintaining security. These shelters protect soldiers and give them a sense of comfort and protection in unsafe places.

"It's wonderful to be able to develop a technology and have it used in the field and know that we are helping our soldiers."

Claudia Quigley, mechanical engineer

Framework

Middle School

Standards

- NSES - F.iv.2 ➤ Risks are associated with occupational hazards.
- STL - 2.N ➤ Systems thinking involves how parts relate.
- STL - 20.F ➤ Designs for structures are selected.
- STL - 20.H ➤ Some structures are temporary.
- STL - 20.I ➤ Buildings contain subsystems.

Content Illustrated

- Examples of different shelter shapes.



Content



Life Science

- Our homes are shelters that protect us from harsh weather.

Technology

- Military tents contain technologies to improve their functioning. They have energy-efficient LED lighting and flexible photovoltaic panels that turn sunlight into electricity.
- Air beams are inflatable composite structures. They use a high-strength textile inflated like an innertube but with a higher internal air pressure. They are inflated to about 80 PSI with a compressor.
- Army tents are “invisible” at night because they don’t glow like regular camping tents. Nor can they be detected with night vision goggles.
- Ballistic E-glass is a type of fiberglass panel used on the inside of military tents as protection from blast effects.

Engineering

- Military shelters must protect soldiers from weather effects, chemical agents, biological agents, and explosions.
- Shelters are modeled using computers and tested in the lab.

Math

- Units - PSI = pounds per square inch.

Guiding Questions

- What are the important factors to consider in making a military shelter?

Suggested Activities

To think about as you watch:

- Construct a model shelter using different materials.

Keywords

air-beam structure
ballistics
fiberglass
LED
night-vision goggles
panel
photovoltaic
PSI
textile

- *Gimme Shelter* can be found online at www.ndep.us/Gimme-Shelter. Visit www.ndep.us/LabTV for a list of process skills modeled in webisodes.