

Challenge Accepted.



MILITARY-GRADE PROTECTION FOR U.S. SOLDIERS

 **AVIENT** » CASE STUDY: EDWARDS DESIGN & FABRICATION INC.





SOLID FOUNDATIONS: SAFETY FIRST

THE CHALLENGE

Any military organization's top priority is protecting soldiers, and one necessary measure is critical battlefield defense from enemy fire and explosive events. Combat outposts require barriers and other structures that must be constructed quickly and efficiently in the field. However, concrete walls, sandbags, and other traditional ballistic structures are heavy, hard to move, and time-consuming to construct.

Enter the U.S. Army Corps of Engineers and Edwards Design and Fabrication, Inc.

Guided by their initiative to develop capabilities that provide additional protection for soldiers while reducing time and logistic requirements,¹ the U.S. Army Corps Engineers' Engineer Research and Development Center (ERDC) Survivability Engineering Branch enlisted the expertise of Edwards Design and Fabrication, an Alabama-based equipment fabricator for commercial and government research and development organizations. The goal of the collaboration was to create ballistic protection that is lightweight, portable, and can be constructed in hours rather than days. It also needed to allow soldiers to quickly deploy and establish positions of relative safety—even in remote locations.

THE SOLUTION

This coordinated effort resulted in the innovative Modular Protective System (MPS) portable structure, which incorporates an Edwards-designed collapsible truss framework and Avient's GlasArmor™ ballistic resistant composite panels. It's portable enough to be airlifted into remote sites and provides quick protection for troops with no additional equipment support needed.

GlasArmor panels made with fiber-reinforced polymer (FRP) composites provide excellent ballistic stopping power for the MPS while meeting the requirement of being lightweight and portable. They are constructed from layers of 0°/90° woven E-glass fiber reinforcements combined with a proprietary resin system in a continuous pultrusion manufacturing process. The composite material is 25% the weight of comparable steel structures, and also weighs significantly less than concrete, making them easily deployable in the field.

THE IMPACT

The MPS incorporates Avient's custom-formulated GlasArmor ballistic panels that meet Level 3 protection under Underwriters Laboratories (UL) 752 standards for ballistic resistance. Level 3 ensures protection against a .44 magnum lead semi-wadcutter gas-checked projectile. These panels successfully encapsulate the bullet, preventing harmful ricochets and providing additional safety to the warfighter.

Avient collaborated with Edwards to develop ballistic-resistant panels that were not only compatible with the required hardware but also met color requirements for better visual cover once deployed.

"Our combined expertise was key," said Jerry Edwards, treasurer and co-owner of Edwards Design & Fabrication, Inc. "With our hardware fabrication capabilities and Avient's knowledge of composite ballistic protection technology, we were able to create modular systems that reduce time and logistic requirements for our brave soldiers."

¹ <https://www.erdcd.usace.army.mil/Missions/Military-Engineering/Deployable-Force-Protection-Demo/>

To learn more about ballistic resistant solutions from Avient, visit [avient.com](https://www.avient.com) or [click to request a quote](#).