JEN-HILL
INFRASTRUCTURE SOLUTIONS DELIVERED
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PROJECT PARTNERS
Lawn Butler
Presto Geosystems

THE HOBBIT HOUSE

GREEN ROOF | GEOCELLULAR SYSTEMS | SLOPE STABILIZATION

STABILIZING A STEEP, LIVING ROOF

THE CHALLENGE

The “Hobbit House” in Knoxville, Tennessee, is a one-of-a-kind residential build designed with a dome-shaped roof that blends seamlessly into the surrounding terrain. The project aimed to create a fully vegetated green roof that would enhance aesthetics, provide natural insulation, and support sustainable performance. However, the roof’s steep, rounded geometry created significant stabilization challenges.

Sloping sharply in all directions and approaching near-vertical angles in some areas, the surface made traditional green roof systems impractical. Soil erosion and material slippage were major concerns, and conventional stabilization methods lacked the flexibility and structural support required for such an irregular shape. The project demanded a lightweight, adaptable system capable of securely holding soil and vegetation across the entire roof surface.

GEOCELLS SECURE SOIL ON STEEP ROOF

THE SOLUTION

To meet these demands, the GEOWEB® Slope Protection System from Presto Geosystems, distributed by Jen-Hill Construction Materials, was selected for its ability to stabilize steep and irregular surfaces. The geocellular system forms a three-dimensional structure that confines soil, preventing erosion and movement even on extreme slopes.

Lawn Butler installed approximately 6,000 square feet of GEOWEB panels across the roof. The system was anchored using ATRA® Keys, tendons, and tendon clips to resist sliding forces and maintain long-term stability. This framework created a secure growing medium that supported sod installation and ensured the vegetated roof could establish successfully.

THE RESULTS

The completed green roof transformed the Hobbit House into a lush, eco-friendly structure that blends naturally into the landscape. The geocell system stabilized the soil, supported healthy vegetation, and eliminated erosion concerns, delivering both visual impact and functional performance. The project demonstrates how advanced geocellular solutions can enable sustainable, imaginative designs even on the most challenging surfaces.

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