

SOLAR FARM SITE ACCESS ROAD

Using the GEOWEB® Load Support System

Project Location: Brandywine, Maryland
Material Supplier: Colonial Construction Materials
Site Design Engineer: Becker Morgan Group, Inc.



When quarries are depleted of their desired resources and subsequently close, local and state stakeholders are frequently faced with the challenge of determining what to do with the resulting abandoned lands. Due to the nature of mining, land degradation can limit restoration and reclamation options, and safety or environmental concerns may restrict adaptive re-use options.

Luckily, in many cases these defunct facilities can contribute to renewable energy initiatives. Depending upon site-specific characteristics, an abandoned quarry could provide prime real estate for a community or utility-scale solar farm.

Such was the case when the residents of Brandywine, Maryland, seized the opportunity to redevelop a closed quarry site into a community solar farm. Community solar farms like Brandywine add value to degraded land while supporting local economies, promoting energy independence, and strengthening the power grid.

Challenges Faced by Solar Farm Developers

Often, poor soil conditions at solar sites necessitate a proactive approach to the construction and operation of solar farms. When designing and constructing solar sites, erosion control, stormwater management, and site access must be considered to ensure long-term project success.

Vanguard Energy required a site access solution to allow safe, long-term access for maintenance and emergency-vehicle access. While traffic would be infrequent, the roadway needed to support up to a 70,000-pound fire truck.

To achieve this, they decided to build a permeable site-access road utilizing a soil stabilization system that would adhere to permitting requirements and support the weight of heavy vehicles.



GEOWEB Permeable Roadway Provides Site Access Solution

Vanguard Energy reached out to Presto Geosystems and local material supplier, Colonial Construction Materials, to devise a solution that would meet their needs. They chose the GEOWEB® Load Support System with a vegetated infill to construct the permeable access road into the solar farm.





With the on-site support of Colonial Construction Materials, workers installed 39,000 square feet of the GEOWEB geocells over a non-woven geotextile to construct the unpaved road. Installers used the patented ATRA® Key connection device to connect the GEOWEB panels. Formulated to withstand weathering and oxidation, ATRA Keys will not corrode or degrade, even when exposed to harsh environmental conditions. Moreover, securing panels with the ATRA Key connection device is faster than using staples or zip ties, requires no tools, and offers protection against the primary modes of mechanical junction failure not covered by less-developed connection methods.



Once secured, the geocells were infilled with a mixture of on-site material, imported stone, and topsoil to build a vegetated roadway capable of supporting heavy vehicle loads. Referred to as “engineered fill,” the above-referenced blend was selected to support long-term vegetation. At sites where long-term vegetation is not required, the GEOWEB System can be infilled with clean sand or aggregate to create a cost-effective alternative to hard-surface pavements. One major advantage of eliminating hard-surface access roads is an overall reduction in impermeable surface area. Permeable surfaces reduce runoff and associated stormwater management requirements, resulting in significant savings in both up-front and long-term project costs.

BENEFITS OF GEOWEB SYSTEM For Vegetated Roadways

- Minimizes impact of differential and overall settlement even on low-strength subgrades.
- Increases effective structural number, reducing fill depth requirement by 50%.
- May allow the use of poor-quality granular fills in place of expensive imported materials.
- With permeable infill, the system reduces stormwater runoff and may reduce the need and costs for stormwater ponds.

