



Geo Products is intent on using its state-of-the-art technology to produce geocells that reduce the carbon footprint of conventional building processes and mitigate the environmental impact of human activities. EnviroGrid® geocell is manufactured for numerous applications including load support for unpaved and paved roads, railways, ports, heavy-duty pavements, container yards, and basal embankments stabilization. It can also be used to reinforce retaining structures, free-standing structures, and fascia walls, as well as stabilize slopes, channels, and provide geomembrane protection. When designing many of these applications, the conventional solution has been to use well-graded, quality aggregate to strengthen the base in order to create a solid foundation. Unfortunately, using processed stones creates environmental and economic problems. Aggregate mines, where these materials are processed, degrade air quality, contaminate groundwater, increase traffic and carbon emissions. In addition, fuel, labor and maintenance costs to mine and transport the rock to a project site are usually the largest costs associated with development.

Fortunately, geocells can reduce both the overall project cost as well as greatly reduce the environmental impact by eliminating the need to use well-graded aggregate material. Geocells are a three-dimensional compartmentalized polymeric structure that have discrete cells. Once installed and expanded, they can be filled with soil, aggregate, concrete, pulverized debris, recycled asphalt pavement, or other locally-available infill material. The versatility of geocells allows local material to be utilized instead of needing processed stone aggregate. Not only can locally available, lesser-quality material be used, but thinner layers with geocell can be used to achieve the same performance as thicker layers of well graded aggregate. Geocells will increase the bearing capacity of nearly any material that is placed in it. This performance increase results in the use of less material, which equates to cost savings and less environmental impact.

For example, if a 1000 ft long and 10 ft wide access road required 24 inches of well graded aggregate to be used as the base, then approximately 1,200 tons of aggregate would be needed. That would equate to approximately 85 dump truck loads of aggregate. If geocell was employed in this same road scenario, then only 300 tons of aggregate, or 21 dump trucks, would be needed. This example assumes that well-graded aggregate stone would be used in both options. However that is not necessary because local materials could be able to be used, which is another cost saving feature. Also, by reducing the amount of base material needed, less material would be hauled off-site, minimizing the cost and environmental impacts even further.



*Example of reduction in number of dump trucks needed for a project*



Geogrids have been used for similar applications to reduce the amount of aggregate needed. However, geogrids must use well-graded, processed aggregate in order to perform. Additionally, oftentimes multiple layers of geogrid are needed to achieve the same performance as geocell. This difference is due to geogrids being a 2-dimensional product, unlike the 3-dimensional geocell.

By utilizing local or recycled material as well as using significantly less material than traditional construction methods, geocells should be considered on every project, as the cost and environmental savings are extremely beneficial. A 75% reduction in raw material not only saves on fuel and labor cost, but also keeps that material from needing to be mined and processed in the first place, thereby reducing pollution. Utilizing geocells will reduce hauling efforts, which in turn, will reduce fuel and labor costs, as well as emissions.