StrataWeb®

STRATA

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The three dimensional confinement solution system

StrataWeb® is a unique versatile lightweight but strong three-dimensional cellular confinement system, generically known as geocells. It is used as foundation reinforcement for enhancing load carrying characteristics of weak soils and also as erosion protection for slopes.

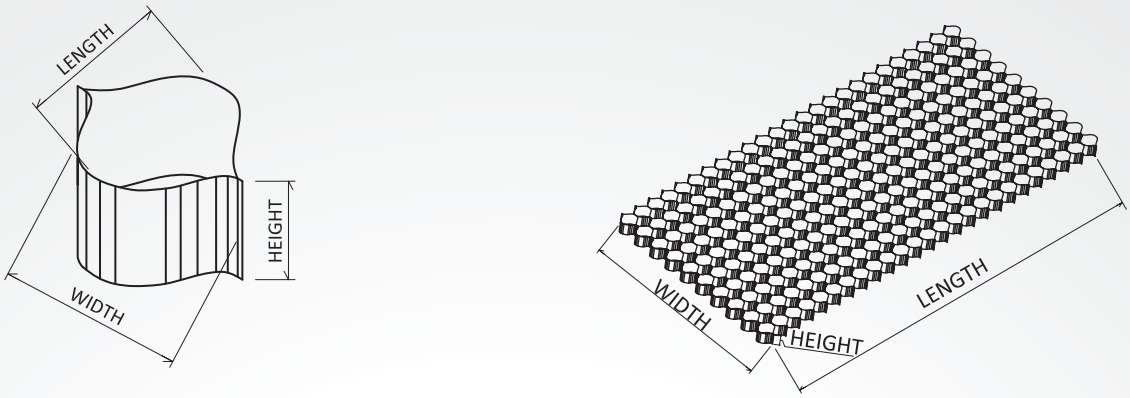


Fig. 1: StrataWeb® single cell and panel nomenclature; strips are along width

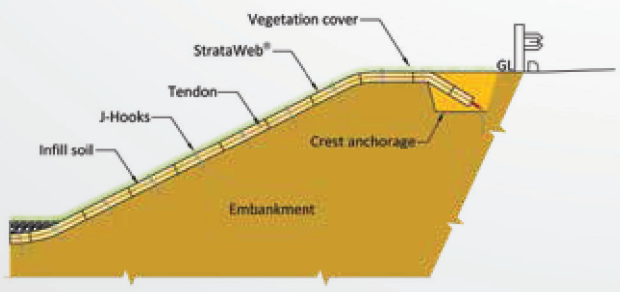
Highlights

- It spreads imposed loads and enhances load carrying capacities of weak subgrades
- The cellular profile confines the infill and prevents spreading of the material and erosion
- It can be rapidly installed as compared to conventional solutions
- Collapses into a flat pile of straps which is easily and economically transported
- Once placed, the system requires marginal maintenance, if any over long time intervals; this reduces life cycle costs
- Using locally available infill material for an engineered solution with StrataWeb® can bring down the overall solution cost
- StrataWeb® helps fostering green solutions for slopes and reduces carbon footprint by minimizing logistics

Technical details

Slope erosion control

StrataWeb® prevents slope soil erosion of embankments and dressed natural slopes. The panels are laid over the slope to be protected and anchored by spikes along the slope and or anchor trench at the crest. StrataWeb® panels are held together by StrataCord® tendons and StrataLock® clips. StrataWeb® cells may be either filled with soil that can be vegetated, or lean concrete.



Schematic diagram for slope erosion control

Geocells have been advocated for embankment slope protection by the Ministry of Road Transport and Highways specifications "Specifications for Road and Bridge Works" (Fifth Revision) and IRC 56, "Recommended practices for treatment of embankments and roadside slopes for erosion control". StrataWeb® fit the bill!

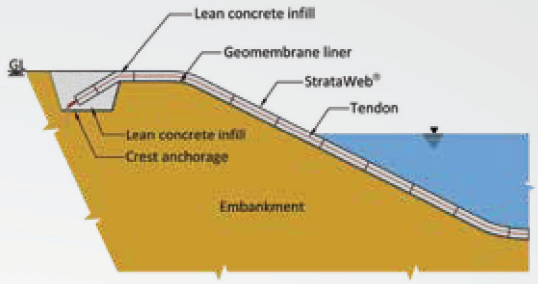
A StrataWeb® cover has definite advantages over the conventional slow-paced stone pitching requiring skilled masons, or vegetated mats which require post-construction fostering. It is rather difficult to adopt these conventional systems on steep slopes.

Geomembrane protection on slope

Artificial water bodies such as canals and reservoirs are rendered impervious by geomembrane liners. Liners need to be protected against damage due to natural causes, fauna and human intervention. In such cases, a cover of StrataWeb® proves to be a better protection system as compared to convention systems such as plain concrete cover or concrete tiles or soil, etc. StrataWeb® can be laid even on slopes steeper than 1H:1V over non-textured geomembrane.

Spikes cannot be used with geomembranes to anchor StrataWeb® into position. The geocells are held in position with StrataCord® tendons anchored at the crest in a trench or mound. In the case of steeper slopes, StrataGrid™ is laid over the geomembrane with the machine direction along the dip of the slope. StrataWeb® is laid over StrataGrid™ and fastened to the geogrid with ties. StrataWeb® is also held in position with the help of StrataCord® with the help of StrataFast® clips. Individual panels of StrataWeb® are interconnected by StrataLock® clips and StrataCord® tendons. StrataCord® and StrataGrid™ which carry the main loads from StrataWeb® are anchored at the crest within an anchor mound or trench.

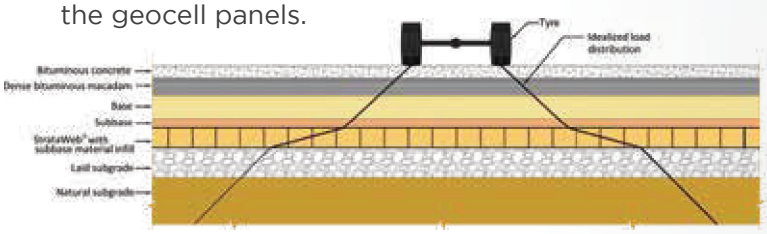
In these applications, cells of StrataWeb® are generally infilled with lean M15 concrete. In case of landfill covers over geomembranes on outer slopes, infill of vegetated soil is preferred to give a green appearance.



Schematic diagram for geomembrane protection on slope

Vertical load bearing

The three dimensional structure of StrataWeb® confines the infilled soil and restrains lateral deformation. The tendency of the infill to spread laterally on load application is restricted by the high tensile strength of geocell walls. When normal load is applied on the geocell system, horizontal stresses developed along the walls of the geocell system increase the interface friction between the textured wall and soil infill. The horizontal stresses are effectively transferred to the adjoining cells which in turn increase frictional resistance in the vertical direction progressively within the cells. This effectively increases the rigidity of the three dimensional geocell membrane, which effectively spreads the imposed normal load over a wider area. Such spread reduces the stresses at the interface with the soil below the geocell panels.



Schematic diagram for load bearing

Sectors and applications

- Highways and roads: embankment slope protection
- Paved and unpaved roads: national and state highways; service roads; urban roads; road rehabilitation
- Ports: access roads over coastal marshes; container yards, platforms and truck terminals; quay-side structures
- Landfills: access roads; protective green capping over geomembranes
- Railway permanent ways: ballast and sub ballast confinement; basal reinforcement for embankments
- Defence solutions: desert paths; bunker/ hanger camouflage systems; blast-proof walls; anti-tank barriers
- Canals and reservoirs: canal and reservoir linings.
- Mines, oil and gas, energy and industrial projects: heavy haul roads; laydown areas for heavy equipment; supports for heavy crane movement and outriggers; raw-water reservoir linings; ash and mine tailings dykes; slope erosion protection; coal-stacking yards; pipeline support structures; tank and tank-pad foundations; wind energy generator foundation protection; loading/ unloading terminals and depots; grade slabs
- Townships/ SEZs: construction access roads; parking lots; paved roads. landscaping; slope protection
- Emergency solutions: rapid access roads; flood protection; slope protection and other disaster management applications; rapid mobilization systems

About us

Strata Geosystems is a leader in the geosynthetics market across the globe. It was established in 2004, in partnership with Strata Systems Inc., a subsidiary of the US based textile veteran, Glen Raven. Strata provides end-to-end solutions for soil reinforcement challenges including supply, design, and construction with our world renowned StrataGrid™ (geogrid) and StrataWeb® (geocells). In addition to the ISO and CE mark, the testing for our products is conducted in GAI-LAP accredited labs across the U.S., U.K., and India. We are also a proud member of the International Geotechnical Society (IGS) promoting advancements in geosynthetics.

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