ENGINEERING

ATWEB

Introduction

Geocell

ATWEB unit is a unique confinement system of heavy duty polymeric strip welded ultrasonically formed into a honeycomb structure. It is used in its expanded form filled with soil or concrete, depending on design equipements or project specifications.

Geocell firstly introduced by U.S Army corps of Engineers in 1975 to find out the solution for building roads over soft soil. It has been infered from the research that soil confinement system worked better than conventional crushedstone section sand it can provide a faster construction technique to access roads over soft ground in any weather condition.

ATWEB filled with infill material is equivalent to about twice the thickness of unreinforced gravel bases and is more effective in reducing lateral spreading of the fill under loading than the conventional reinforced bases. The hydraulic propertise are influenced by the type and compactionof the filling material. Folded into an accordion shape for easy transportation & construction.

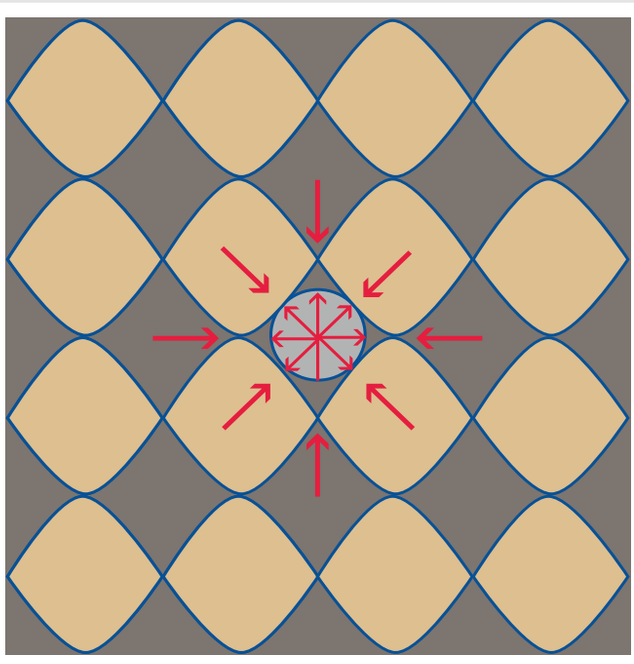
The ATWEB unit is expanded on site and filled with a ball as material such as sand, stone, all soil types, much or other materials. The three-dimensional cellular design allows for custom si es, configuration and adaptability to a variety of terrains. It can also offer an excellence environment for vegetation.

WORKING MECHANISM

ATWEB when filled with infill material forms a composite confined system having enhanced mechanical and geotechnical properties. With subjected loads, soil contained in the cell tries to spread laterally but movement is restricted by the confinement of cell walls that make the whole system still in a case of load support application.

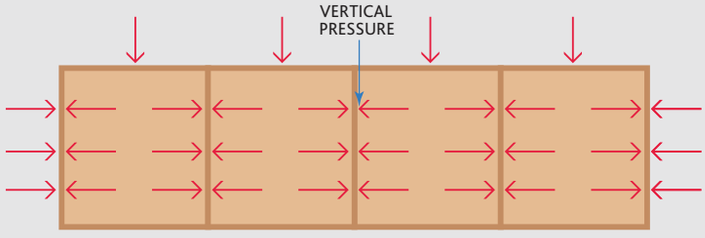
The confinement effect is based on major 3 mechanisms which are active earth pressure within loaded cell, passive earth pressure in the adjacent cells and hoop stresses in the cell walls. This improves the shear strength of the confined soil which does the following functions:

- Creates a stiff mattress or slab to distribute the load over wider area.
- Reduces punching of soft soil.
- Increase shear resistance and bearing capacity.
- Decrease deformation.

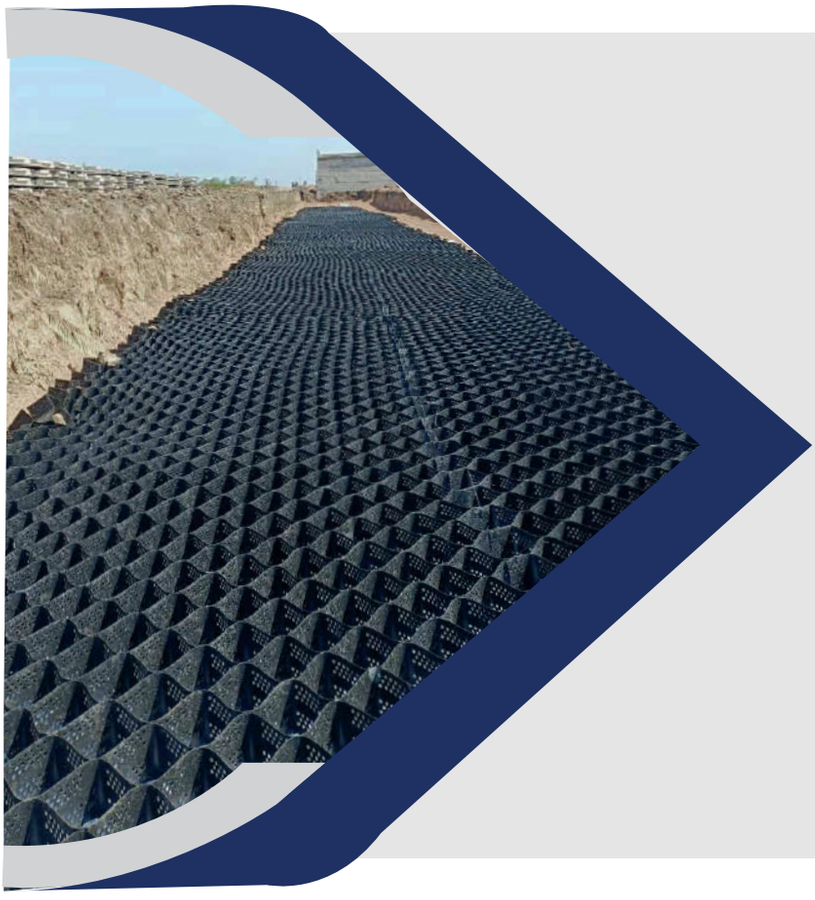


Plan view of expanded dimension

ATWEB is perforated to drain out the excess pore water hence it performs dual functions of confinement cum reinforcement and drainage. Sometimes, non-woven geotextile is also laid beneath it to separate the dissimilar materials over soft ground.



Cross sectional view of expanded dimension



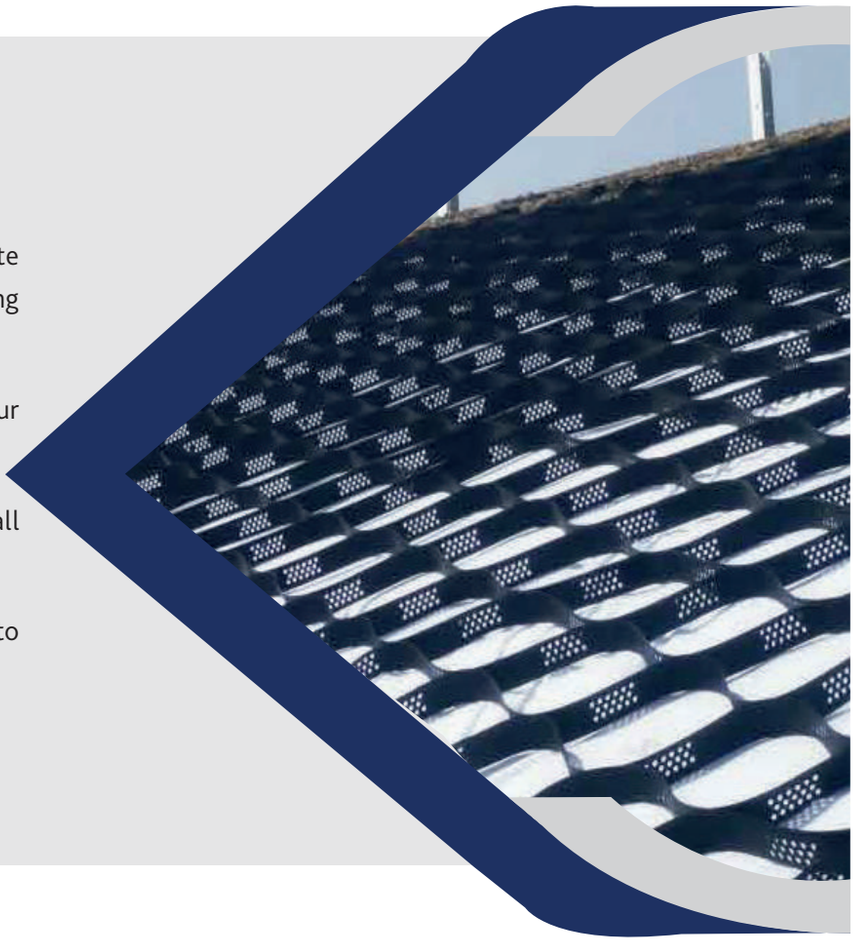
ATWEB

It is made up of ultrasonically welded high density polyethylene strips which forms a honeycomb structure in its expanded form. Infill material used in its cell can be soil or concrete based on project requirements.

It is used as foundation reinforcement for improvement in load bearing capacities of weak soils and also as erosion control barrier or slopes and ground surfaces.

WHY ATWEB ?

- We have most advanced fully automated state of the art ultrasonic welded manufacturing machine.
- We use best quality of raw material for all our products.
- Complete testing laboratory to adhere all standards worldwide.
- We deliver top quality products and services to our customers all over the world.
- Varying cell size & weld spacing.

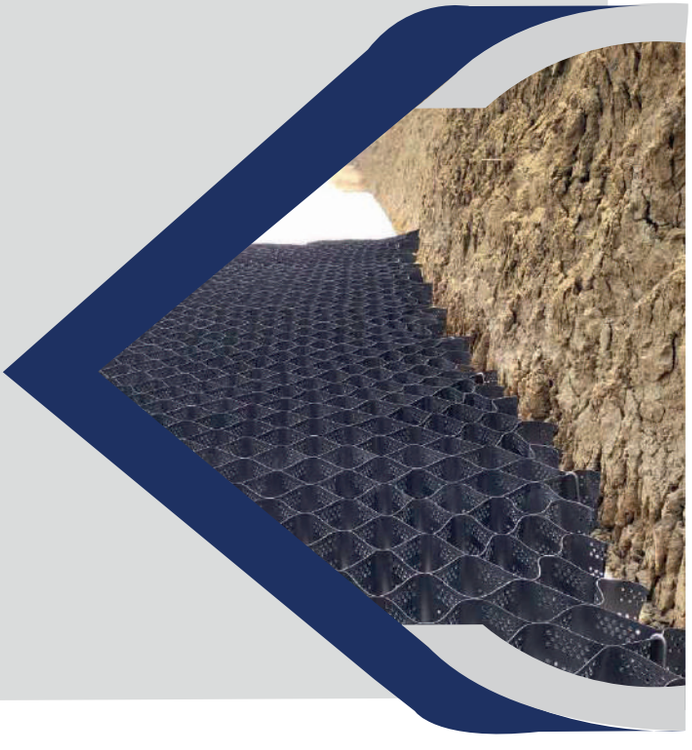


BENEFITS OF ATWEB

- It is easy to cut in any size without damage and provides reinforcement to steep slopes.
- Based on the project requirements, it can be vegetated for aesthetic appearance or left with lean concrete.
- These are effective solutions for ground improvement over soft ground.
- With the provision of geocell in pavement, its thickness can be reduced or its design life can be Increased thereby reducing the cost of project.
- Easily movable as flat strips welded and reduces the carbon footprint by minimizing logistics.
- This is the one and only geosynthetic product that comes along with third dimension that is having its significant properties.
- No skilled labour is required and can be laid in any weather condition.
- Infill used in it can be non-cohesive or recycled locally available material.

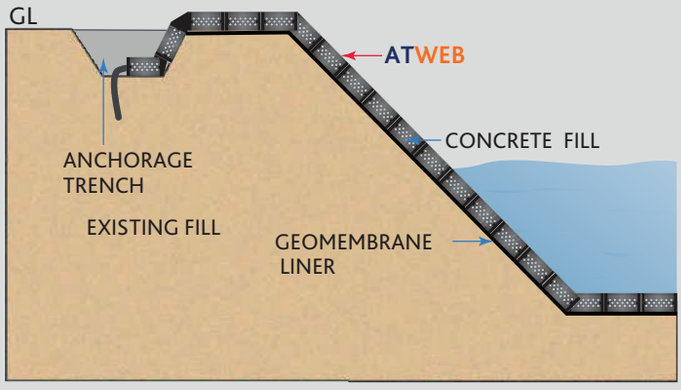
APPLICATION

- Vegetative slope confinement/ erosion control.
- Road and pavement reinforcement.
- Protective stabilization of steep slope surfaces.
- Protective linings of channels and hydraulic structures.
- Static and dynamic load support on weak subgrade soils.
- Earth retention for banks and slopes earth wall
- Reservoir and landfill protection.
- Multilayered earth retaining and water retaining gravity structures



CHANNEL PROTECTION

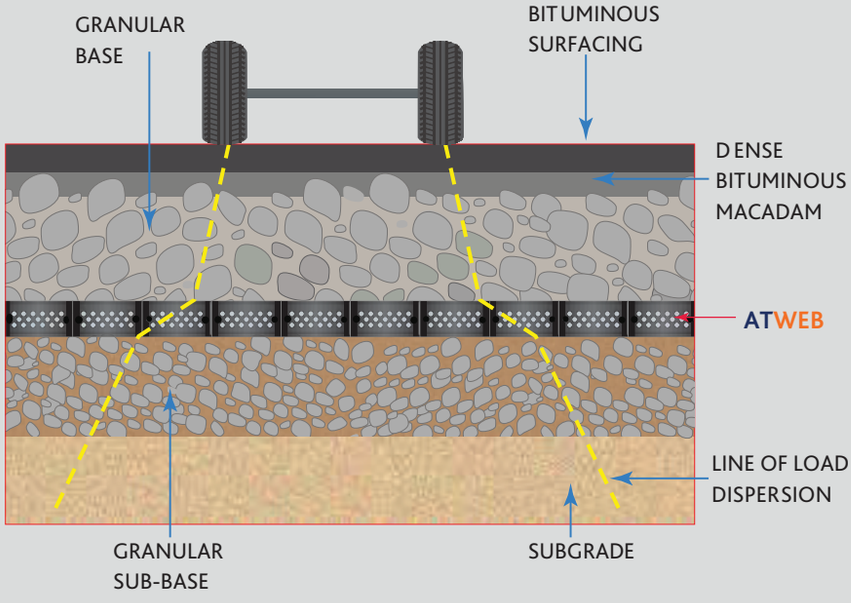
ATWEB filled with concrete can be used to protect geomembrane lining in canals and reservoirs. Required concrete depth is maintained with no chances for over pours or under pours. This is more ideal solution for severe hydraulic conditions rather than preformed concrete systems. In channel protection, multiple infill material can be used on the same panel based on flows. Bottom can be filled with concrete to acomodate higher velocities and then can be transited to soil showing natural vegetation at the top.



LOAD SUPPORT

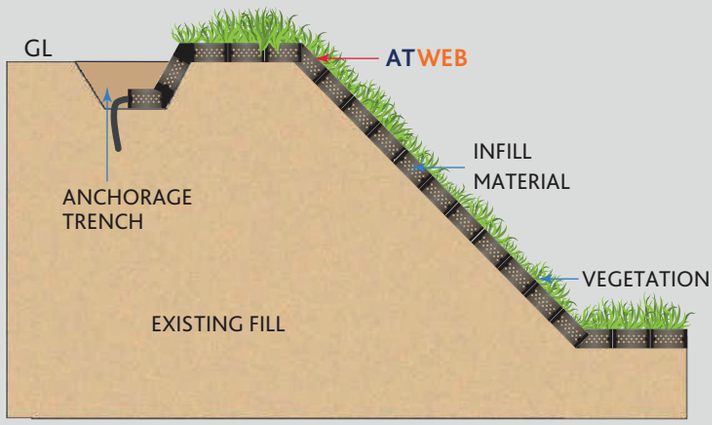
Pavements are subjected to fatigue and rutting when subjected to vertical pressures. This either demands the increased thickness of pavement or reduce the life of pavement ultimately pose a risk to human life.

Provision of **ATWEB** within pavement layer solves both problems and also minimizes the project cost. **ATWEB** filled with soil enhances the strength of pavement and reduces settlements and formation of reflective crack and pot-holes.



SLOPE PROTECTION

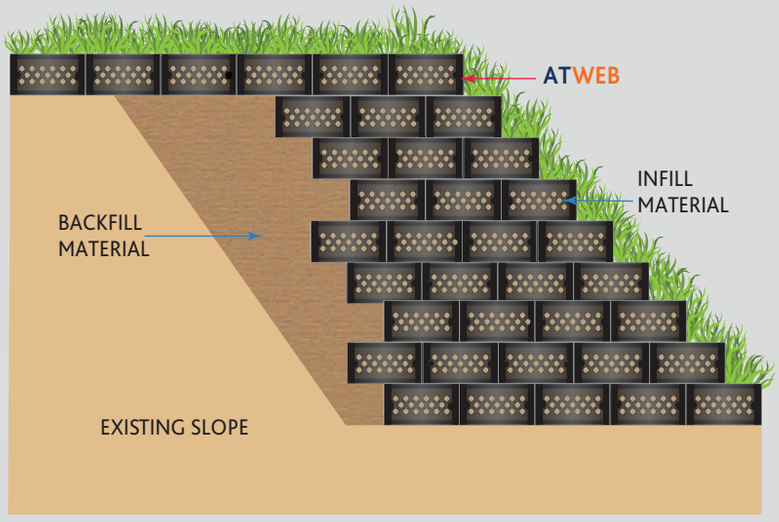
ATWEB with local soil or granular material shall be placed on cut or fill slope to hold top cover soil and allow vegetation to grow. Compared to riprap system which is costly for client and poses handling problems for labour,cellular confinement is better, economical and can be used in any weather conditions. Protection of slope over wing wall in RS wall in partial height RS walls, wing walls are constructed to join structure along the carriageway and longitudinal walls along the road. **ATWEB** filled with concrete can be laid above wing wall for the slope protection over it.

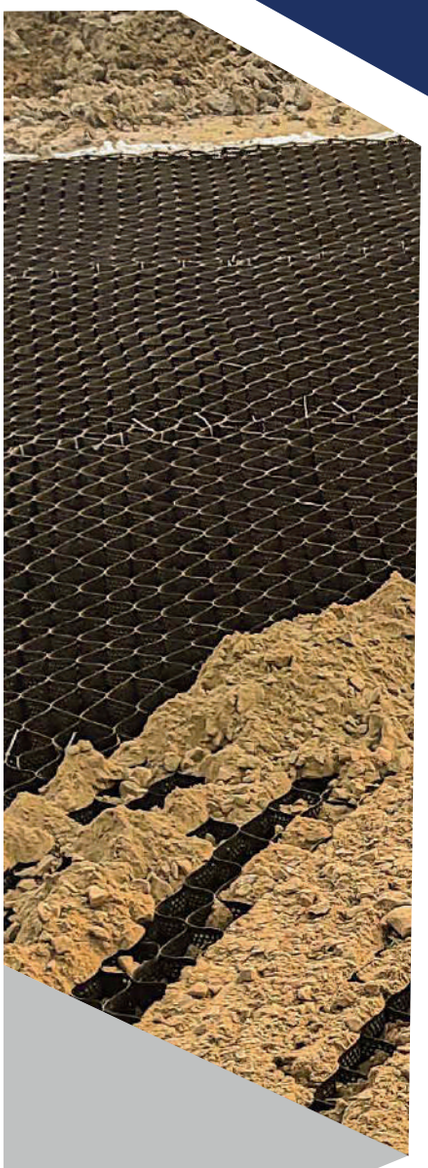


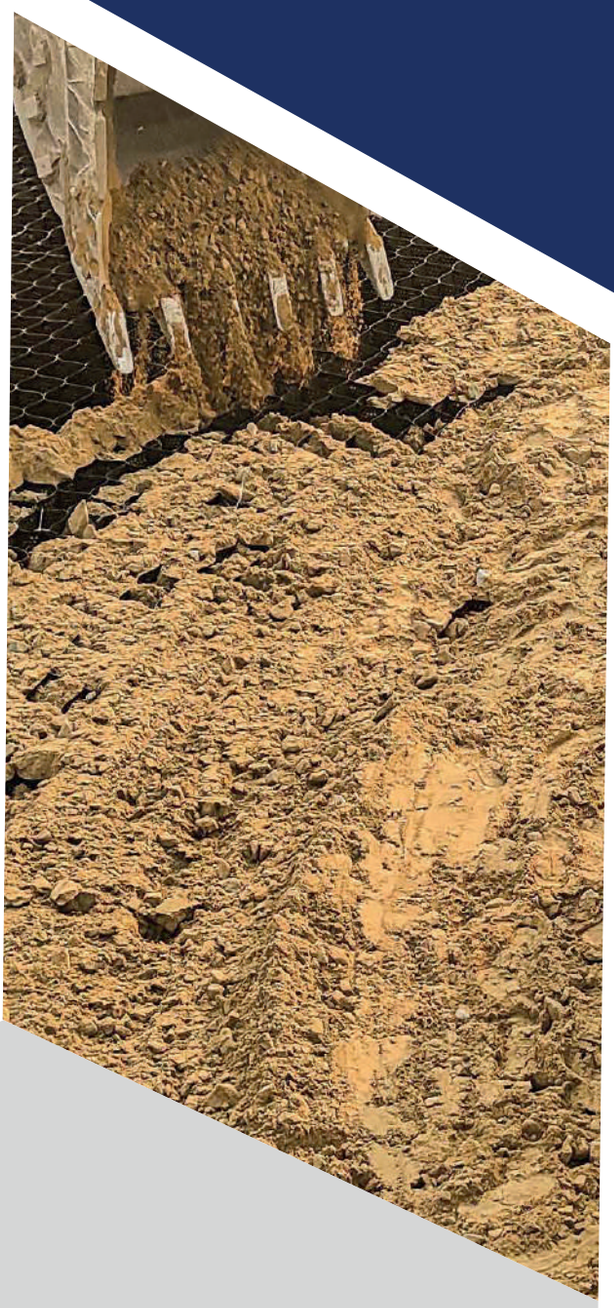
EARTH RETENTION

There are various systems to retain earth such as retaining wall, gravity wall, RS wall etc. Other application is with **ATWEB.**

ATWEB filled with granular soll also contributes in retaining backfill material in the same manner as conventional gravity wall does. It is further ensured that hydrostatic pressure are dissipated through perforations provided in geocell. After laying onto the slope the exposed surfaces of **ATWEB** can be vegetated for aesthetic appearance.







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