



LEADER IN GEOSYNTHETIC SOLUTIONS

PROTECTIVE SOLUTIONS THAT TRANSFORM INFRASTRUCTURE





Products that transform infrastructure

Growth and development of any economy heavily relies on its core infrastructure. SKAPS has made its objective to protect this infrastructure by a wide array of Geosynthetic product line, chiefly constituted of Geotextiles, Geonets and Drainage Geocomposites which are highly recommended for employment in a diverse variety of applications ranging from roads, railways, ground construction, hydraulic works, canals, dams, erosion control, landfills, water proofing systems, tunnels, mining, agriculture and many more. SKAPS Industries exercises utmost precision and strengthens quality control parameters in order to protect critically engineered designs. We understand that our commitment to protect does not only keep infrastructure intact but also keeps millions of dreams alive.





SKAPS GEOTEXTILE APPLICATIONS FOR TRANSPORT ENGINEERING



Asphalt Overlay Fabric :

The primary function of nonwoven geotextile being used as asphalt overlay along with saturated asphalt cement between pavements is to act as membrane. This membrane effect prevents penetration of surface water and acts as stress relief interlayer.

SKAPS PRODUCTS :

Selection between woven and nonwoven geotextile depends upon

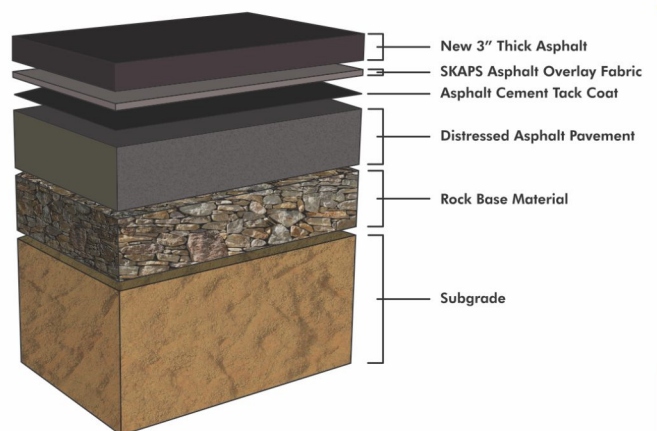
- Site soil properties
- Possible installation damage
- Availability and cost of material

SKAPS PRODUCTS

Survivability Condition	Nonwoven Geotextile
High	GC140
Low	GC130

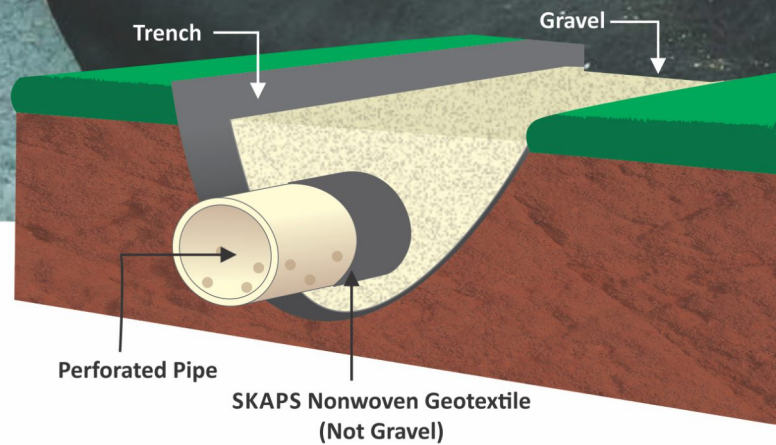
ADVANTAGES :

- Reduces reflective cracking and subsequently maintenance cost
- Aids in pavement flexibility
- Easy to install



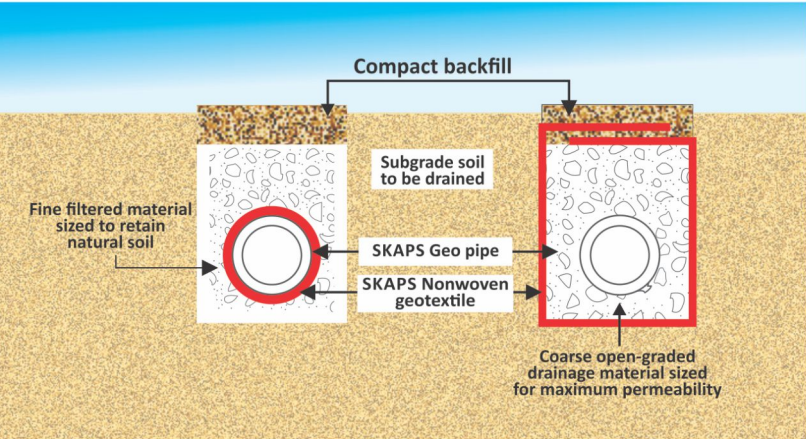


NONWOVEN GEOTEXTILE FOR SUBSURFACE DRAINAGE APPLICATION



The geotextile in this application is placed against soil to allow long term passage of water to flow through subsurface drainage system retaining in-situ soil. This primary function of geotextile in drainage is termed as filtration.

Three dimensional structure of nonwoven geotextile allows flow of water to pass through the plane of geotextile. This in-plane flow capacity can be termed as drainage.



SKAPS PRODUCTS	
Survivability Condition	Nonwoven
High	GT180, GT175
Medium	GT160, GT170
Low	GT142

ADVANTAGES

- Replaces expensive well-graded sand and gravel with less expensive non-graded mix
- Provides long term performance with less clogging and maintenance
- Easy to install



SKAPS GEOTEXTILE APPLICATIONS FOR TRANSPORT ENGINEERING



Separation and Stabilization :

The primary function of geotextile road and rail transportation system is to prevent intermixing of subgrade soil into subbase ballast. Separation function is effective for unsaturated soil. For saturated soils, the geotextile provides stabilization which is combinational function of separation, filtration and reinforcement.

SKAPS PRODUCTS :

Selection between woven and nonwoven geotextile depends upon

- Site soil properties
- Possible installation damage
- Availability and cost of material

SKAPS PRODUCTS

Survivability Condition	Woven	Nonwoven
High	SW315	GT180
Medium	W250	GT160
Low	SW200 / W180	GT142

ADVANTAGES :

- Lowers project cost leading from reduced aggregate thickness
- Maintains integrity and increases long term performance of pavement system
- Resistive to alkaline and acidic conditions
- Easy to install

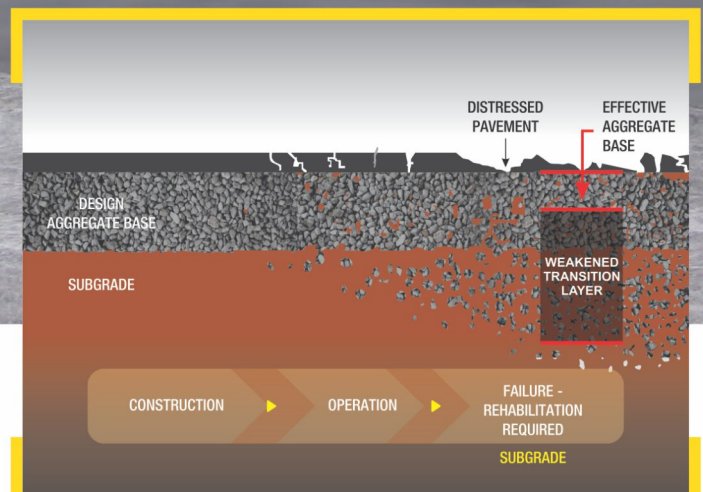


Fig. 1 Cross Section of Pavement without Separation Geotextile

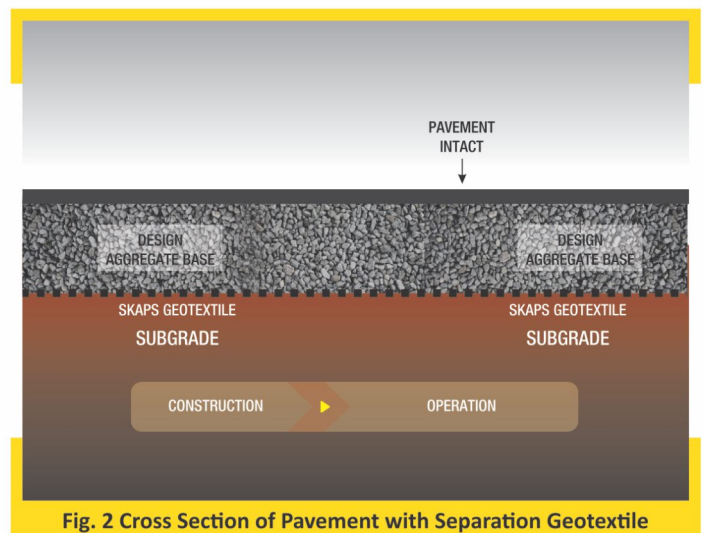
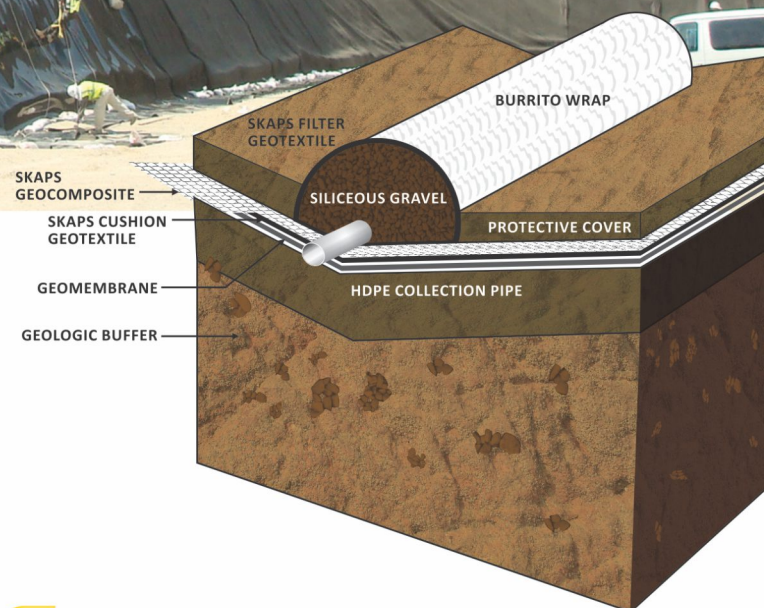


Fig. 2 Cross Section of Pavement with Separation Geotextile

SKAPS GEOTEXTILES IN LANDFILLS



Cushion to Lining System :

Environmental regulations mandate most of the modern solid and hazardous waste landfills, reservoirs and lagoons to incorporate geomembranes for liquid containment. High quality SKAPS nonwoven geotextiles play integral part in this lining system to protect any kind of damage to highly susceptible liners during construction and operational phase. These nonwoven geotextiles are deployed above, below or both sides of the low permeable geomembranes as a cushion to protect the geomembranes against damage from drainage stones or alternate media during construction, to protect against isolated protusions in the subgrade, and also to protect against damage caused due to dumping of waste during operational phase of the landfills.

SKAPS nonwoven geotextiles weighing from 10 oz/sq yard to 32 oz/sq yard (GE110 to GE320) are specifically designed as cushion to waste containment lining system and meets GRI GT12 standards.

Filtration and Drainage System :

SKAPS nonwoven geotextiles provide excellent performance as filter when used with natural drainage media, geonet or geopipe. The geotextile filters solids (soil and waste) and allows liquid (rain water or leachate) to efficiently drain through designed drainage system.

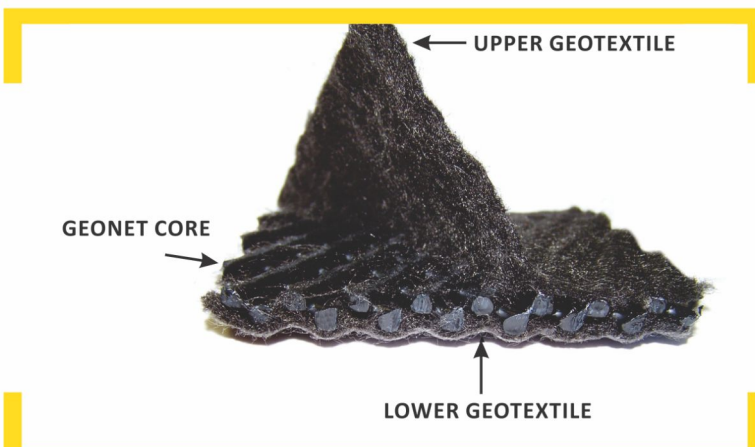
SKAPS nonwoven geotextiles weighing from 4 oz/sq yard (GE140) to 10 oz/sq yard (GE110) are specifically designed as filtration/drainage geotextile.



SKAPS GEOCOMPOSITES



SKAPS TN 330 GEONET



GEONET CORE

UPPER GEOTEXTILE

LOWER GEOTEXTILE

SKAPS GEOCOMPOSITE TN 330-2-6

SKAPS geocomposites are prefabricated drainage products consisting of three dimensional bi-planar geonet core with either one or both sides bonded to a geotextile. SKAPS manufactures geonets in thicknesses ranging from 4mm to 9mm and these are heat laminated on one or both sides with geotextiles ranging from 120gsm to 680gsm depending upon the customer's requirement and the design specifications of the subject landfill. SKAPS geocomposites are manufactured in a variety of widths depending on the customer requirements. The drainage core provides lateral drainage of fluids in all directions whereas the geotextiles function as a filter media and prevent the surrounding fill from clogging the drainage core.

LANDFILL FILLING



Waste

SKAPS
Geocomposite

Geomembrane
(Primary Liner)

SKAPS
Geocomposite

Geomembrane
(Secondary Liner)

Clay

Most modern MSW or hazardous waste landfills are typically double lined systems consisting of a Leachate Collection & Removal System (LCRS) and a Leak Detection System (LDS).

SKAPS geocomposites offer excellent long term flow under heavy compressive loads and limit the head within the drainage layer when used as a part of the leachate collection and removal system. SKAPS geocomposites and geonets offer rapid detection of leaks in the overlying lining systems by offering high transmissivity under rigorous system conditions and provide a reliable and accurate action leakage rate.

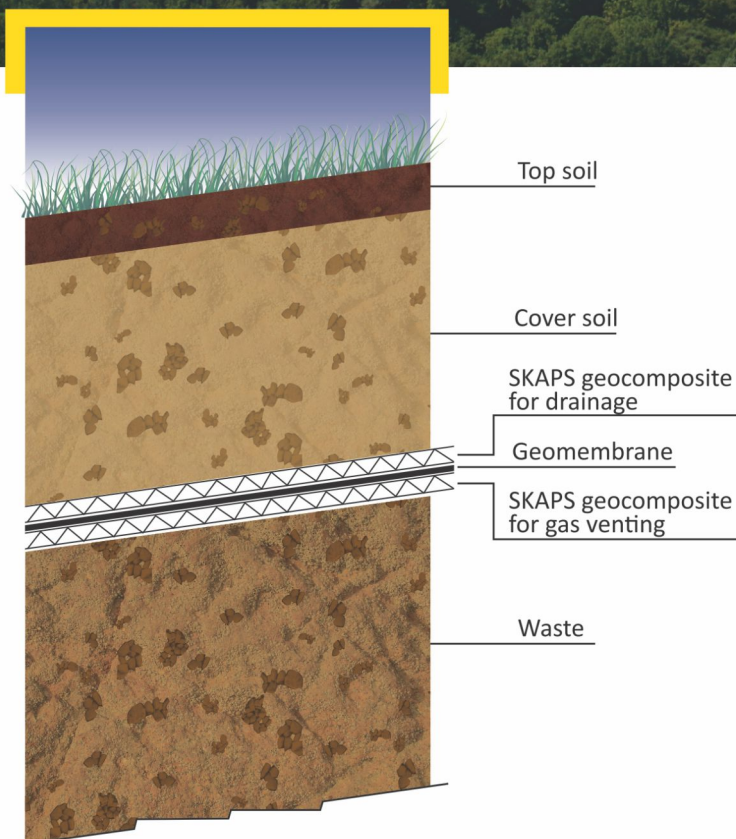
Creep Reduction Factors

Product	Normal Load	% Retained Thickness	RF _{CR} @ 10000 hours
TN220	15000	61.56	1.870
TN270	5000	94.80	1.025
	10000	90.30	1.027
	15000	78.37	1.230
	20000	78.37	1.230
TN 330	15000	88.90	1.057
	20000	85.60	1.135
	25000	80.70	1.288
	30000	67.60	1.323

Note : Creep reduction factor calculated using relevant portions of GRI Standard GC8



LANDFILL CAPPING



A typical cover system is made of soils and synthetic materials to eliminate infiltration and it must address common concerns like slope stability and long term degradation. MSW landfills typically also have a landfill gas venting system which often uses drainage geocomposites as a part of gas collection system.

SKAPS high flow drainage geocomposites provide high flow characteristics in both machine and cross machine directions and are the solution for surface water collection and removal systems for landfill caps as well as for landfill gas venting. The ability to allow flow in all directions is critical due to the irregular surfaces caused by settlement and construction.



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