exeed

GEOTEXTILE

www.exeedgeotextile.ae

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“STATE OF THE ART EUROPEAN PRODUCTION EQUIPMENT ”

# COMPANY INTRODUCTION

**Exeed Geotextile** is a subsidiary of Exeed Industries, the industrial arm of National Holding. **Exeed Industries** is a leading Abu Dhabi based group focused on building materials and construction related industries with operations spread across UAE and the wider MENA region.

Set up and commissioned in 2009, **Exeed Geotextile** remains the only manufacturer of Polypropylene and Polyester needle punched nonwoven Geotextiles and Polypropylene staple fibers in the UAE.

Located in Industrial City of Abu Dhabi (ICAD 1), the **Exeed Geotextile** factory boasts:

**State of the Art** European production equipment

More than **85 qualified employees** are dedicated to fulfilling the needs of our valued customers

A maximum production capacity of **6,000 t/a geotextiles**

A maximum production capacity of **12,000 t/a of staple fibers**

In-house testing **laboratory**

**OSHAD** certified

**ISO 9001** certified

**Product approvals** of major governmental bodies, consultants and contractors obtained

# GEOTEXTILES: WHAT & WHY?

> THE INNOVATION OF GEOTEXTILES IS CONSIDERED THE MOST COST EFFECTIVE SOLUTION ACROSS THE WORLD TO OVERCOME GEOTECHNICAL PROBLEMS OF THE DEMANDING CONSTRUCTION SITE.

In general it is quite difficult to work with different types of soil structures and conditions on construction sites. In order to overcome difficulties such as, the replacement of non-suitable soil or creating an expensive deep foundation, Geotextiles provide the ideal solution for ground modification or improvement.

Geotextiles are a strong Geosynthetic fabric used in civil engineering construction projects (such as road or dam building) that stabilizes loose soil and prevents erosion. Geotextiles are used with foundation, soil, rock, earth, or any other geotechnical engineering-related material as an integral part of engineering projects, structures and systems worldwide.

GEOSYNTHETICS

**GEOTEXTILES** | **GEOGRIDS** | **GEOMEMBRANES**

GEOCOMPOSITES

The discipline of Geosynthetics are a breakthrough in civil engineering which consists of three main categories, **Geotextiles, Geogrids and Geomembranes.**

## Geosynthetics are defined by six distinct functions.

As the below table illustrates, Geotextiles are the superior product of the Geosynthics family and is the only one that can be utilised in performing all six functions very effectively (depending on the application, they can perform one or more functions simultaneously).

| FUNCTION | GEOTEXTILE | GEOGRID | GEOMEMBRANE |
|---|---|---|---|
| SEPARATION | ✓ | | |
| FILTRATION | ✓ | | |
| REINFORCEMENT | ✓ | ✓ | |
| TRANSMISSIVITY | ✓ | | |
| MOISTURE BARRIER | ✓ | | ✓ |
| STRESS ABSORPTION | ✓ | | |

Geotextiles have been proven to surpass other ground modification materials in terms of cost effectiveness and versatility. This fact has helped expand their range of applications to encompass most areas of civil, geotechnical, environmental, coastal, and hydraulic engineering.

PRIME
GEOTEXTILE

# EXEED GEOTEXTILE PRODUCTS & BENEFITS

> THE RANGE OF TECHNICAL EXPERTISE AND SUPPORT FROM EXEED GEOTEXTILE STARTS FROM THE RAW MATERIAL STAGE AND RIGHT THROUGH TO DESIGN AND IMPLEMENTATION PHASES.

- **PRIME GEOTEXTILE POLYPROPYLENE NEEDLE PUNCHED NON-WOVEN GEOTEXTILES**
- **PRIME TECH POLYESTER NEEDLE PUNCHED NON-WOVEN GEOTEXTILES**

We produce wide range of Polypropylene & Polyester based needle punched nonwoven geotextile products.

We offer **thermal bonded** & **non thermal bonded** geotextile products

Exeed Geotextile range of products **90 to 1200 Grams per square meter**

Geotextiles are available in **raw white, black & grey color**

We offer products up to **6 meter wide** & **length up to 200 meter** per roll

Highest grade **shrink wrap packing** of the geotextile roll ensures **damage free product** at our esteemed customer's doorsteps

Equipped to **tailor make** products to customers precise requirements

# • EXEED PP FIBER

- Exeed PP Fiber is a high-performance fiber made by the extrusion of virgin polypropylene
- Used for manufacturing geotextiles, industrial filter fabrics, carpets, floor coverings, fiberfill and construction fibers
- Well-balanced performance in terms of tensile properties
- Chemical resistance
- Thermal stability in terms of UV
- Excellent durability

| | | | |
|---|---|---|---|
| **DTEX**<br>**3.8** TO **15** | Cut lengths<br>**Customised lengths** | **Raw White & Black**<br>(Other colors will be available as per demand) | Bale weight<br>**up to 280 kgs** |

## Geotextiles are the most cost-effective tools for all geotechnical applications.

Due to their varied usage and vast range of properties, different geotextiles should be chosen using standard design methodologies in order to achieve optimal usage and application.

**Exeed Geotextile** operates according to the highest benchmark in the market, which is ensured through our in-house advanced testing laboratory of the products.

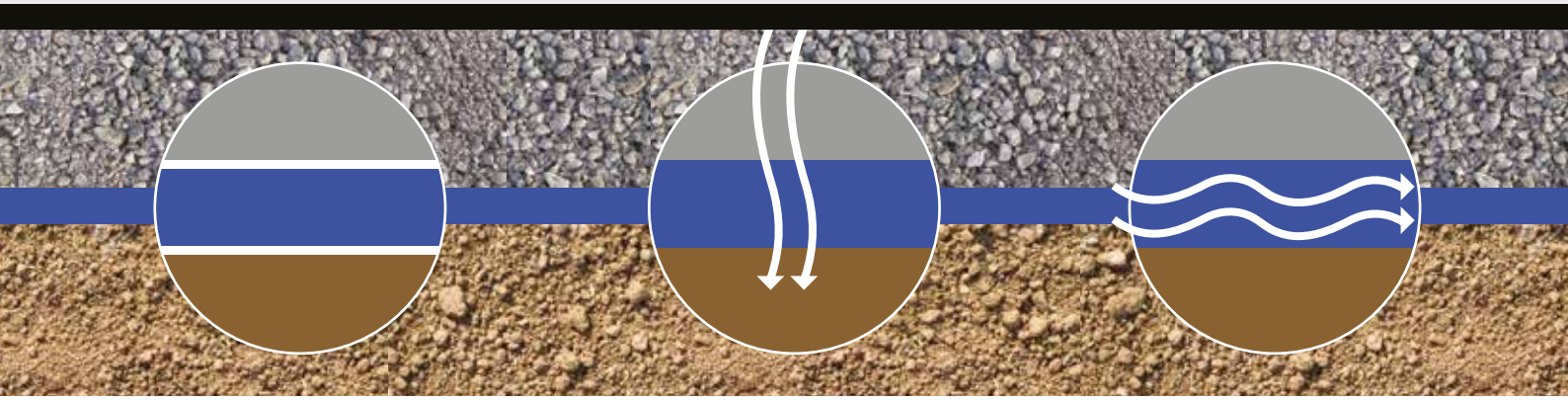
Our Geotextile products (under the brand name "**Prime Geotextile**") have been successfully delivered & installed in many projects in the UAE, GCC & other countries across the globe.

# GEOTEXTILE FUNCTIONS

Aggregate Base

Geotextile

Sub Soil



## SEPARATION

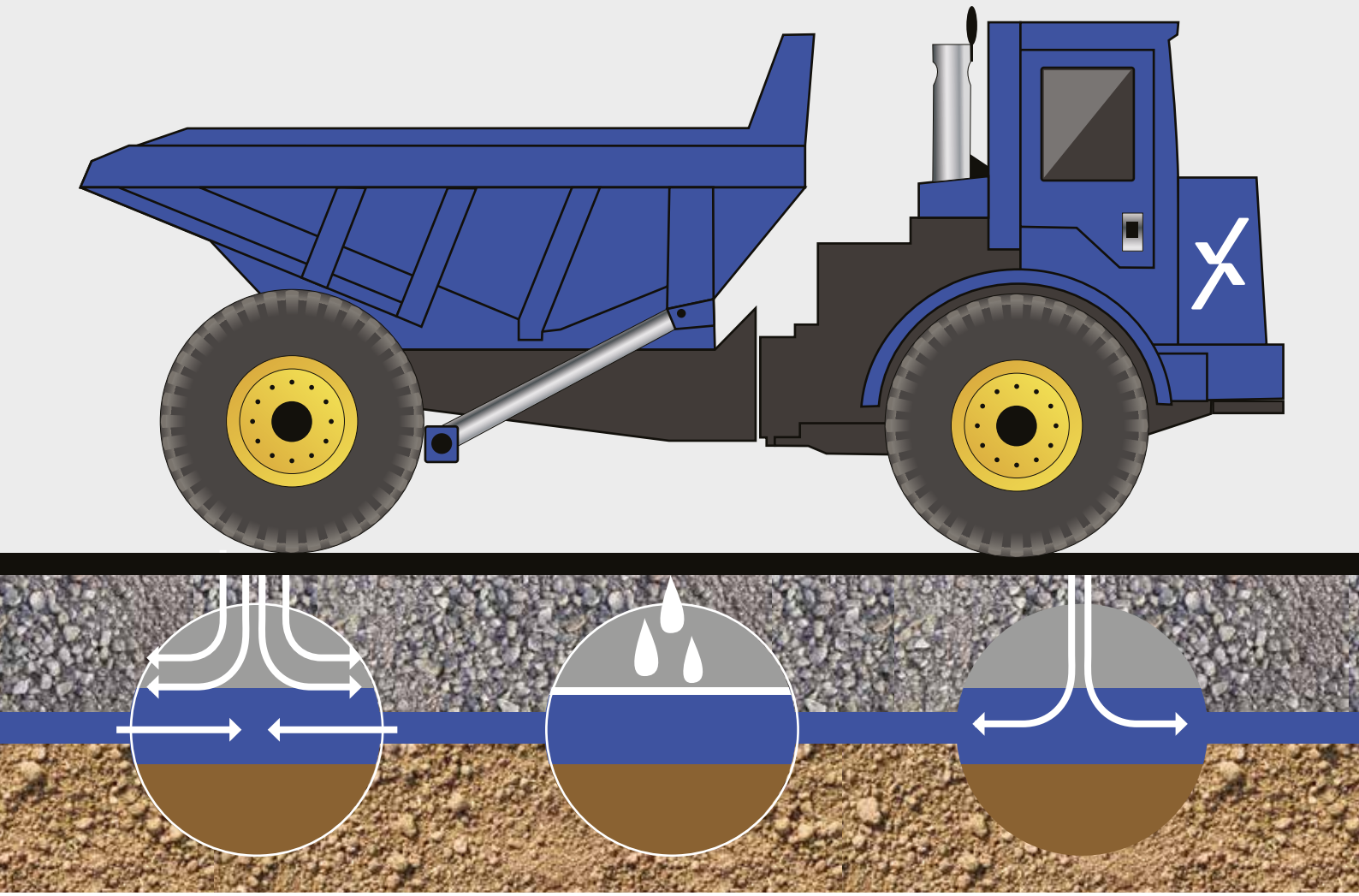
**Prime Geotextile** act as a separation layer. Separation function prevents mixing of the sub soil & aggregate. This in turn allows the geotextile to uphold and enhance the integrity and functionality of the said soil.

## FILTRATION

Filtration function of the geotextile material allow continuous liquid flow through the geotextile layer while it prevents migration of fine soil particles across the layer.

## TRANSMISSIVITY

This function is also known as drainage function. This function facilitates planer flow of liquid or water along the geotextile material.



## REINFORCEMENT

Reinforcement is the function of the geotextile when incorporated in the soil structure imparts structural stability.

## MOISTURE BARRIER

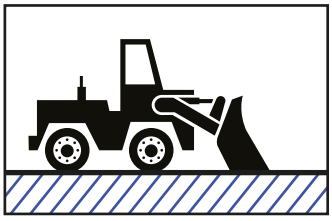
**Prime Geotextile** act as a moisture barrier when impregnated with asphalt or other compounds. Especially in road constructions it is useful function for repairing cracked pavements.

## STRESS ABSORPTION

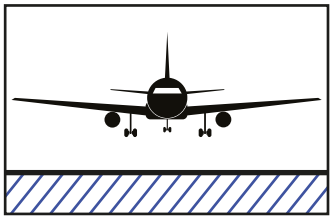
It is also known as Protection function. **Prime Geotextile** products imparts this function in the pavement overlay.

# APPLICATION AREAS

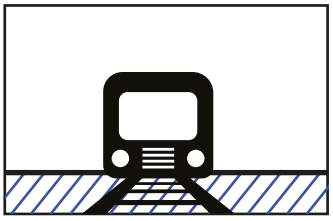
Geotextiles are extensively utilized in the following applications:



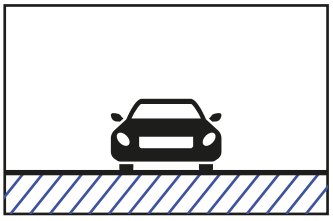
Road Construction & Repairs



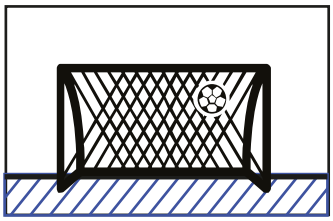
Paved Runways



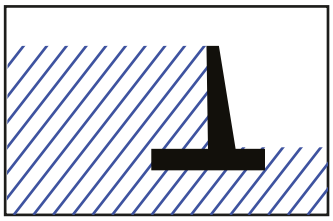
Rail Track Stabilization



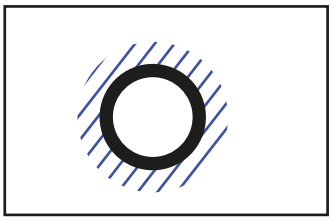
Pavement Overlays



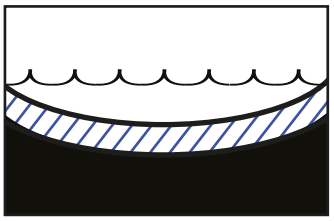
Landscaping & Sports Fields



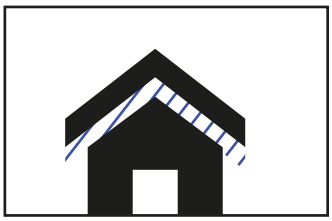
Drainage Systems



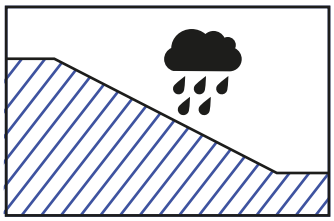
Pipe Lining & Foundation



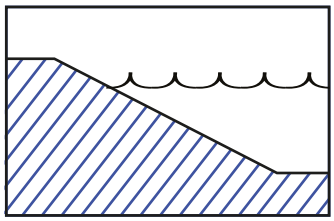
Canal, Pond & Reservoir Lining



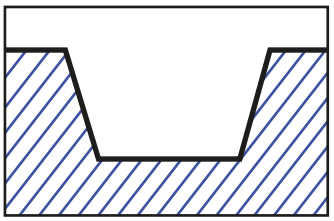
Roofing Systems



Erosion Control



Coastal Protection



Landfill systems

## ROAD AND RUNWAY CONSTRUCTION

**Exeed Geotextile** products, **Prime Geotextile** and **Prime Tech** help in maintaining the integrity of the designed structure through the functions of separation, filtration, transmissivity and reinforcement. They also allow usage of existing weak soils and open graded base materials. **Exeed Geotextile** products also distribute pavement loads and offer effective construction over weak surfaces and shallow water areas. Pavement life is also enhanced by the use of a **Exeed Geotextile**.

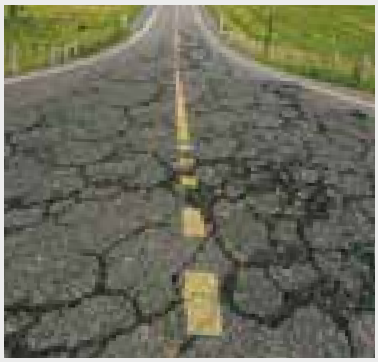
## ROAD STABILIZATION

**Prime Geotextile,** when placed between the base aggregate & sub-grade soil, significantly improves the pavement performance. The aggregate from the base course will break in to subgrade over period of time if a Geotextile layer is not incorporated. This phenomenon occurs in both soft subgrade and firm subgrade. The use of Geotextiles as a separation layer between subgrade interface & the base course increases pavement life & strengthens designed base course.

## ROAD REPAIR

**Prime Geotextile** is also helpful in the rehabilitation of distressed road surfaces and runways. Damaged pavements are often remedied by the application of a layer of asphalt concrete (called an overlay). **Prime Geotextile** products can be used as inter layers by placing them below or within the overlay. Some geosynthetics relieve stress while others are able to reinforce the overlay.
Asphalt impregnated **Prime Geotextile** products also act as moisture barriers, preventing moisture from entering through the cracks of the distressed pavement.


Without on the left and
with **Prime Geotextile** layer on the right.



Cracked road on the left and after 2 years
with **Prime Geotextile** layer on the right.

## STABILIZATON OF OVER SATURATED SUBGRADES

Drainage of water from pavements has always been a vital consideration in road design. The current methods of pavement design result in base courses that drain poorly. This problem has been magnified by the rise in the water table. Water rises up into the base course through a capillary action, resulting in the saturation of the base courses. This saturation alters the dynamics of vertical stress distribution and may allow transfer of traffic loads directly to subgrade soil, neutralizing the benefits of the structural layers. The end result is a rapid degeneration of the pavement's integrity.

A pavement layer that is saturated 10% of the time will have its service life reduced by as much as 50%. Therefore, eliminating the saturation of the base course is a right design objective. The American Association of State Highway and Transportation Officials (AASHTO) also recognizes the harmful effects of water in the pavement structure. While the drainage factor for excellent drainage can be 1.20, the drainage factor for poor drainage can fall as low as 0.60; it means that proper drainage doubles the design strength of pavement base and sub-base materials.

**"EXEED GEOTEXTILE PRODUCTS COULD BE THE SOLUTION IN THE MENTIONED CASES. IT FACILITATES AN OPEN AGGREGATE TO SIMULTANEOUSLY PERFORM DRAINAGE & ALSO WORK AS CAPILLARY BREAK THUS PREVENTING THE RISE OF GROUND WATER ."**

## RAILWAY TRACK CONSTRUCTION

Railroad engineering employs a system of rails and sleepers that rests on a layer of coarse gravel known as ballast. The ballast provides structural strength, alignment and noise insulation. Due to constant pumping action when trains pass over the rails, the ballast gets mixed up with the subsoil, resulting in the weakening of the base. This leads to a misalignment of the rails - which is dangerous. Using a suitable grade **Exeed Geotextile** product, acting primarily as a separation layer, the migration of soil into the ballast is prevented and the integrity and functioning qualities of the ballast are maintained, enabling safer and faster train travel.

*Refer Sketch A*

## PIPELINE FOUNDATION & PROTECTION

**Prime Geotextile** products have been found to provide a firm foundation along with aggregates for pipelines passing through soft and saturated subgrades.

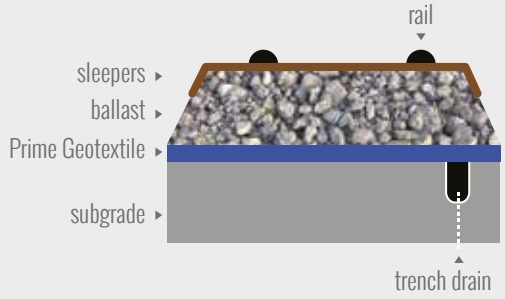
*Refer Sketch B*

## DRAINAGE & LOWERING OF GROUND WATER

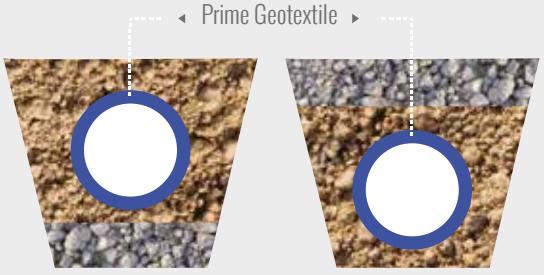
The gaps in the open-graded aggregate layer provide a lateral drainage layer for water and also break the capillary rise of ground water. A **Prime Geotextile** layer, through its separation and filtration functions, will preserve the integrity and functioning qualities of the aggregate drainage layer. Without a **Prime Geotextile** layer, fines and other deposits from the adjacent area migrate into these voids leading to their clogging and the subsequent failure of the system.

The usage of **Prime Geotextile** products in subsurface drainage has several advantages; the first being its ability to eliminate graded aggregate filters. Secondly, it allows for a simplified design and installation technique. Using **Prime Geotextile** in subsurface drainage is cost-effective and provides a permanent solution for lowering the ground water table.

*Refer Sketch C*




Sketch A
**Railway track construction**




Sketch B
**Pipeline foundation and buoyancy foundation**


Sketch C
**Lowering of ground water**

## PONDS & CANALS

In any application of geomembranes, including ponds, it is the increase of the puncture resistance of these impermeable membranes that becomes of paramount importance. Thick needle-punched non-woven **Prime Geotextile** provides a means to not only increase the puncture resistance, but also, by virtue of their transmissivity function, displace gasses or water from underneath the membranes. For canals, substructures that are in contact with soil are usually lined with waterproofing membranes to prevent entry of moisture. Sharp and abrasive backfill materials can all cause puncture damage to such membranes. A practical solution to this is the utilisation of **Prime Geotextile** to protect the membranes.

When concrete canals are constructed in areas with shallow ground water, the rise and fall of the water table may cause the soil beneath the concrete to migrate which leads to diminished support underneath the concrete, causing the failure of the structure.

**“PRIME GEOTEXTILE, WITH LATERAL TRANSMISSIVITY PROPERTIES, SERVE AS A SCOUR PROTECTION LAYER AND INCREASE THE LIFE AND PERFORMANCE OF THE CANALS.”**

## COASTAL PROTECTION

Revetments lined with stone slabs (or any other material) require filters underneath them in order to prevent the washing out of the protected soil fines by the water currents. Thick non-woven **Prime Geotextile** fares well when acting as a filter by allowing only water to pass through, and retaining soil particles - thus preventing soil erosion.

*Refer Sketch D*

## PAVEMENT OVERLAYS

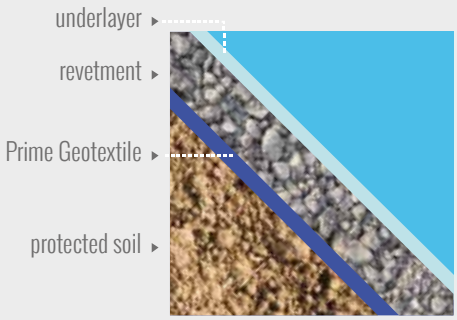
Reflective cracking is a major problem associated with asphalt concrete pavements.
The inclusion of a **Prime Geotextile** non-woven paving fabric interlayer system significantly improves the performance of asphalt concrete overlays. This performance enhancement is a result of both the waterproofing capabilities and the stress absorption capabilities of the paving fabric system.

The benefits of using a non-woven paving fabric interlayer system are:

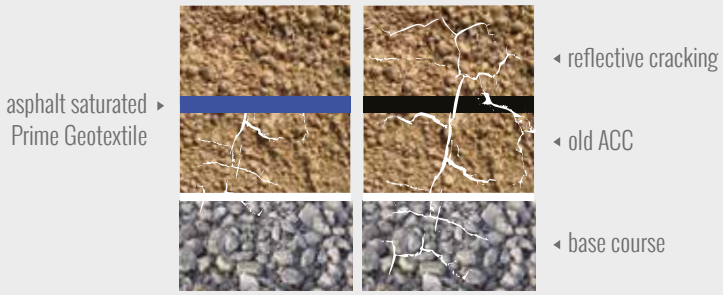
- **Prime Geotextile** impregnated with asphalt act as moisture barriers, preventing the seeping of moisture into the base course. The lower moisture contributes significantly to the load bearing capacity of the structural support layers.

- The paving fabric works as a stress absorbing membrane interlayer, preventing or hindering reflective cracking.

*Refer Sketch E*




Sketch D
**Coastal protection**




Sketch E
**Reflective pavement cracking**

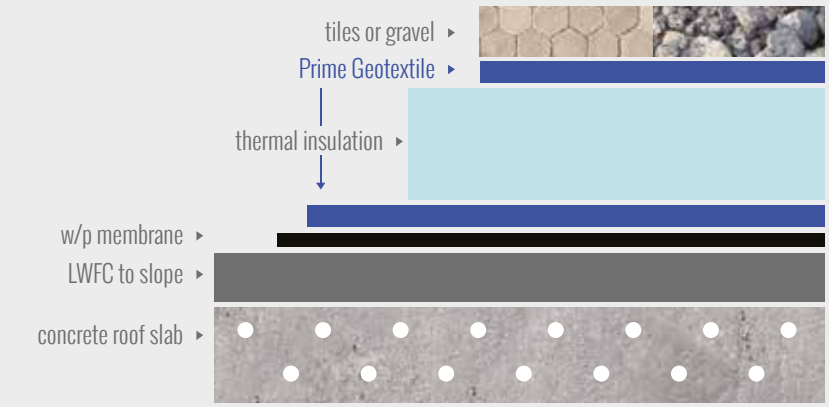
## INSTALLATION IN ROADS

- The paving operation itself proceeds without any major changes
- Compaction after laying
- Repair of cracked pavements

## ROOFING SYSTEMS

The upside down roofing and thermal insulation system is the most popular roofing system in the region. **Prime Geotextiles**, placed above the thermal insulation, protect it from puncture damage by any gravel or tile layer. They also prevent the migration of fines into the thermal mechanisms and allow any entrapped moisture or gasses to vent out.

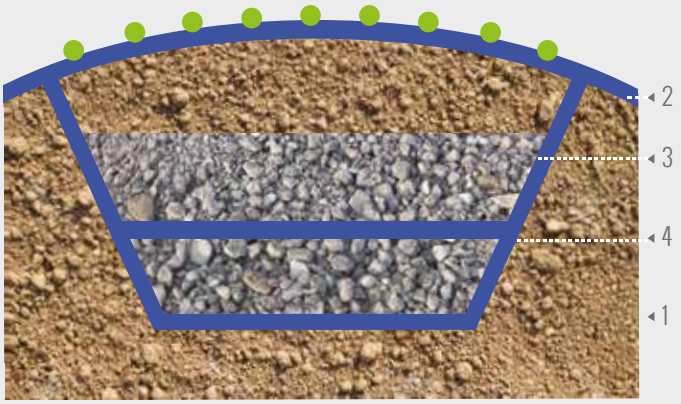
*Refer Sketch F*




Sketch F
**Prime Geotextile roofing protection**

## WASTE CONTAINMENT SYSTEMS

- **Prime Geotextile** products play a key role in any modern day waste containment system. The multi-faceted applications of **Prime Geotextile** products within this are as follows:
- Providing puncture protection for geomembranes *(see 1 in Sketch G)*
- Act as separators for topsoil layers *(see 2 in Sketch G)*
- Help in gas ventilation *(see 3 in Sketch G)*
- It acts as filter for aggregate drainage layers *(see 4 in Sketch G)*
- It acts as internal drainage layer *(see 3 in Sketch G)*




Sketch G
**Waste containment system**

> MODERN DESIGN METHODOLOGIES ARE NOW ABLE TO ESTABLISH THE REQUIRED PARAMETERS BASED UPON THE NATURE OF THE SITE AND ITS REQUIREMENTS.

# SELECTION CRITERIA

Applications of geotextiles do vary as they need to perform different functions. The selection of the appropriate geotextile is based upon the functional need of the end application. The first step is to identify the need and the primary function for which the geotextile is being incorporated in the design. Next, identifying the geotextile functions that govern this application. Finally, establishing the property requirements based upon site-specific conditions.

Modern design methodologies are now able to establish the required parameters based upon the nature of the site and its requirements. The consultants and contractors now have a wider and more comprehensive choice of materials to work with.

## PRIMARY FUNCTION - FILTRATION

### MECHANICAL PROPERTIES

Puncture strenght, thickness, dynamic puncture, weight per unit area

### HYDRAULIC PROPERTIES

Transmissivity

## PRIMARY FUNCTION - PROTECTION

### FUNCTIONAL PROPERTIES

Permeability, opening size, porosity

### SURVIVAL PROPERTIES

Puncture strength, bursting strength, dynamic strength, elongation

## CRITERION - FILTRATION

### RETENTION

Prevents migration of fine soilsCGP*:
Opening size 095 (geotextile)
B x d85 (soil)

### PERMEABILITY

Allows unimpeded flow of water normal to Geotextile plane CGP*: Permeability Geotextile Perm. 10 x Soil Perm

### SURVIVABILITY

Posseses sufficient mechanical properties to stand stresses CGP*: Puncture strength, burst strength and elongation

# PROJECT REFERENCES

Below are some of the prestigious names that **Exeed Geotextile** works closely with:

| S. NO | CONTRACTOR | CONSULTANT | PROJECT CONTRACT |
|---|---|---|---|
| 1 | NAEL BIN HARMAL HYDRO EXPORT EST. | HYDER CONSULTING MIDDLE EAST LIMITED | AL RAHA BEACH DEVELOPMENT / WP1714 |
| 2 | BIN HAFEEZ GEN. CONT. EST. | ACT/MUSANADA | IMPROVEMENT OF MAFRAQ TO AL GHWAIFAT BORDER POST HIGHWAY |
| 3 | SIX CONSTRUCT | HIGH POINT RENDEL | COMPLETION OF SHEIKH ZAYED BRIDGE CONTRACT 3 |
| 4 | GHANTOOT TRANSPORT & GEN. CONT. EST | SALFO AND ASSOCIATES | TRAFFIC ALLEVIATION PROJECTS IN ABU DHABI EMIRATES |
| 5 | NAEL BIN HARMAL HYDRO EXPORT EST. | PARSONS INTERNATIONAL LIMITED | PMC-2 PROJECT D WIDENING OF E-10 ABU DHABI AL SHAHAMA HIGHWAY |
| 6 | CHINA STATE CONSTRUCTION ENGINEERING CORPORATION | AEROPORT DE PARIS /JACOBS | ABU DHABI INTL AIRPORT TERMINAL 3 EXPANSION |
| 7 | AL JABER ENERGY SERVICES LLC | ZADCO | ZAKUM UPPER 750 PROJECT |
| 8 | SK ENGINEERING | TAKREER PROJECT/ADNOC | LANDFILL PROJECT PROTECTION (1000GSM) |
| 9 | NATIONAL MARINE DREDGING | | AL DABIYA PARK WATER |
| 10 | HYUNDAI | BECHTEL ENGINEERING | KHALIFA PORT PROJECT |
| 11 | DAEWOO ENGINEERING AND CONSTRUCTION | GUSAN | SHUWIHAT S3 INDEPENDENT POWER PROJECT |
| 12 | CHINA STATE CONSTRUCTION ENGINEERING CO. | | COMPLETION OF AL FALAH INTERCHANGE |
| 13 | DUTCO BALFOUR BEATTY | PARSONS OVERSEAS LIMITED | CITY WALK DEVELOPMENT |

# QUALITY POLICY

**Exeed Geotextile** is committed to providing quality products and services to its Stakeholders which accurately interprets their requirements and satisfies their expectations in an innovative, economic and efficient manner.

**Exeed Geotextile** will achieve these goals through the operation of an Integrated Management System. This addresses the following key issues developed in accordance with national & International Standards.

Establish the **Quality Objectives and Targets**

The **maximization** of Stakeholders satisfaction

Predictability of **performance**

**Strategic collaboration** with our Business Partners

**Continual improvement** of our processes and services

**Securing targeted opportunities** through preferred methods and proven practices

The development and care of **people**

# EHS POLICY

**Exeed Geotextile** is committed to operate in a safe and responsible manner to ensure the safety and health of our employees, our customers, visitors and the community surrounding our facility. We will continually work towards the identification and elimination of OSH risk & hazards pertaining to our operation, control of unsafe acts/ behaviors, exposures that may cause ill health and ensuring compliance with Abu Dhabi Occupational Safety and Health System Frame work "OSHAD-SF ", also committed to environmentally responsible operations as desired by Environment Agency Abu Dhabi "EAD" .

The organization establishes EHS objectives & targets to fulfill EHS policy and to continuously improve EHS management system

## Our set **EHS** objectives & targets are:

Exeed Geotextile's business activities comply with all legislations and regulations, as per Abu Dhabi Occupational Safety and Health System Frame work "OSHAD-SF" and Environment Agency Abu Dhabi "EAD"

Provision of on-going documented EHS education/training to raise the awareness and abilities of employees to perform their duties safely in a manner that promotes the health and well-being of the individual and the environment

Maintaining a work place that is incident free with high standards of environmental performance. All department heads are accountable for assuring the means to accomplish this goal and employees, including contractor employees, must contribute to this goal

Conducting business in a safe and healthful manner, which includes the prevention of injuries and illness, the control of hazardous material, and the protection of the environment. This will be accomplished through leadership and sustained commitment, and utilizing the best available technology/resources

Development and periodically reviewing of EHS procedures, including the risk register, to ensure appropriateness and relevant to updated legal requirements

Foster openness and dialog on EHS matters with our stakeholders both internal and external, communicating risk, performance and progress

Ensure continual improvement of EHS performance and periodic reviewing of EHS policy

Ensure establishment, measurement, assessment and reviewing of EHS target & goals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