HYDROEX
Sustainable Solution

Stormwater Management System

For Sustainable Green Urbanization

Save Rain, Save Life

Sustainability – Durability – Go Green

We, at Hydroex International principally focused on developing product with environment friendly principal, with less carbon footprint, usage of recycled Polypropylene material, manufacturing of durability and sustainable products for long design and operational life. Our factory is Certified ZERO Emission Unit and also Pollution Control Certified factory. Our products are Green Certified by Govt of India Certified Agencies. Our Raw material is sourced from Single Vendor for consistent material with Green Certified Unit. We are proud to be part of developing, manufacturing and supplying a Green Product which has huge impact on Ecology, mainly restoring and preserving of natural resources and re-using it for human well-being. Our Research and Development wing through their analytical and research program always thrives in to develop Environment friendly products with sustainability, durability and Green products as their main principal & policy. It is our obligation as a company to regularly improve our Quality System and continue taking care of our Ecological and Social requirements.

Health, Safety and Environmental

We, at Hydroex International are proud of our record as a good quality supplier as well as our fulfillment of all regulatory requirements for Safety, Health and Environmental regulations. All our personnel as well as our contracted manufacturing facilities MUST follow every need required by law as well as our company policy & philosophy in these three issues.

Our manufacturer, Vikas Industries, India, has been assessed and ISO 45001:2018 accredited for Occupational Health and Safety Management System by URS, UKAS, and IAF.

As a company we are particularly concerned with environmental issues, therefore we focus on manufacturing our products using quality recycled plastics, saving energy, preventing pollution but overall reducing the use of natural resources.

Our well drawn policy statement and best practice principal in safety, health and environment are a must with all of our people or associates and as part of our day-to-day operations.

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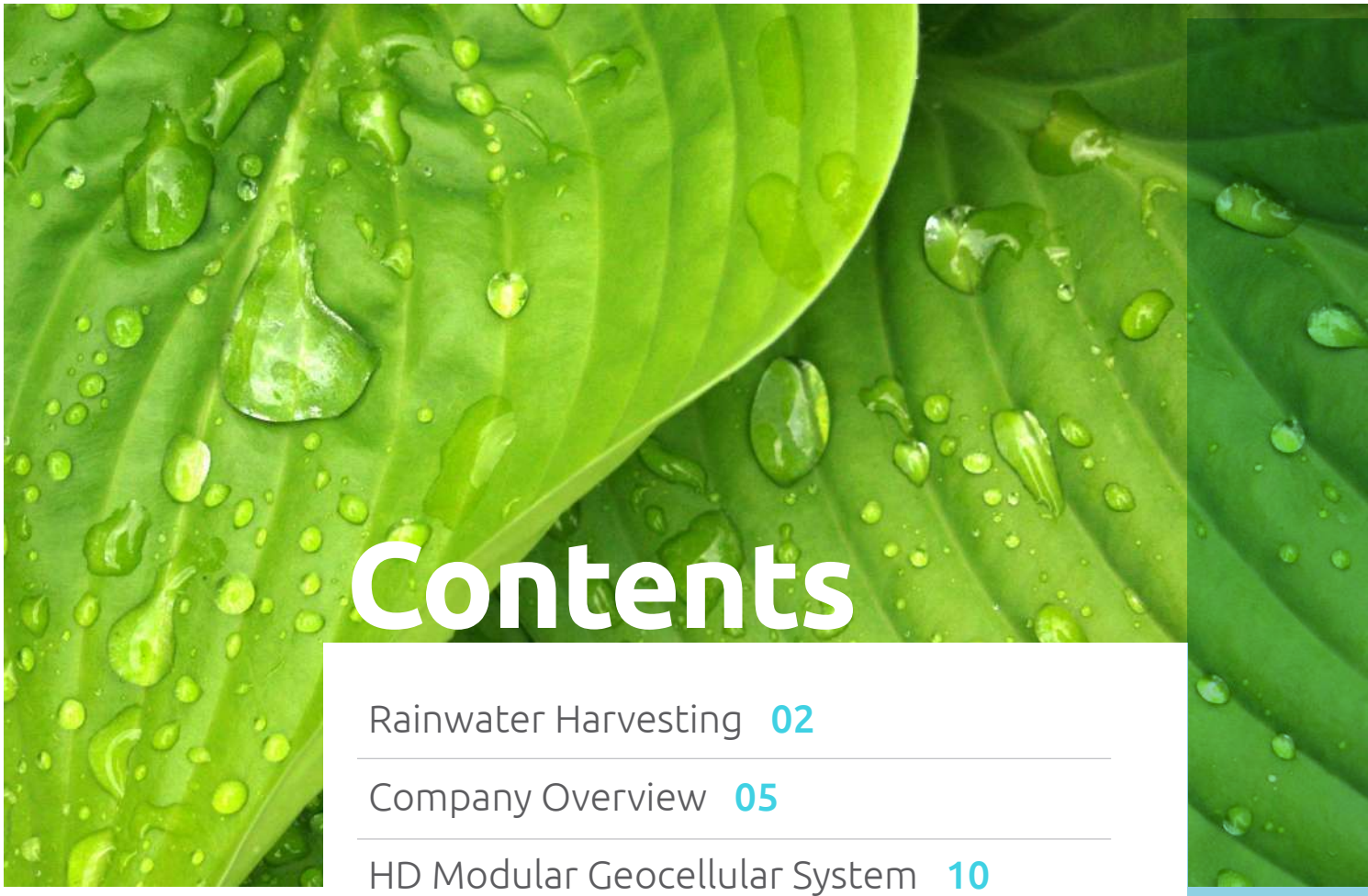


Contents

01 Introduction

Rainwater **Harvesting**

An Assurance to Eco-system & Human Well-being

Rainfall – Ecosystem – Human Wellbeing

Water, a critical and perpetual natural resource is essential for the health of every species on earth, socio-economic prosperity of a country, food production, and environment (Boretti & Rosa 2019). Despite the fact that water covers 70% of the earth's surface, having proper access to water supply has become a multifaceted issue for nations throughout the world (Khatri et al. 2014). It is predicted that by 2025 the number of people suffering from scarcity of water will reach three billion (Hanjra & Qureshi 2010). Rainwater harvesting (RWH), among others, can be an appropriate solution as it has many advantages for user as well as for governments and the environment (Che-Ani et al. 2009).

Availability and quality of water determines ecosystem productivity, both for agricultural and natural systems. There is an increasing demand on water resources for development whilst maintaining healthy ecosystems, which has put water resources under pressure. Ecosystems suffer when rain and soil water become scarce due to changes from wet to dry seasons, or during seasonal droughts, climate change etc. Climate change will affect rainfall and increase evaporation, which will put increasing pressures on our ecosystem’s services. At the same time, development by a growing population will affect our ecosystems as we increase our demands for services, including reliable and clean water.

Rainwater Harvesting System (RWHS) has a huge potential as an alternative strategy to cope with water scarcity.

RWHS becomes economically feasible when certain steps and risk assessment procedures are implemented when designing and maintaining this system.

Drinking water sufficiency is possible if a sustainable drinking water supply system is established via RWHS.

Rainwater harvesting is the collective term for a wide variety of interventions to use rainfall through collection and storage, either in soil or in man-made dams, Underground Tanks or Containers bridging dry spells and droughts. The effect is increased retention of water in the landscape, enabling management and use of water for multiple purposes. Rainwater harvesting will continue to be an adaptation strategy for people living with high rainfall variability, both for domestic supply and to enhance crops, livestock, other forms of agriculture and SUD System.

Rainwater harvesting creates synergies by upgrading rainfed agriculture and enhancing productive landscapes. Mitigating floods and reducing pressures on water resources around urban areas with Sustainable Urban Drainage Schemes.

Rainwater harvesting offers a wide range of benefits, including enhanced soil infiltration, water recharge for distant sources, flexible end uses, community development, ecosystem services, improved water availability, reduced soil erosion, food security, economic benefits, social welfare, water security, ecosystem preservation, health and hygiene improvements, income generation, environmental conservation, cost-efficiency, urban water security, community empowerment, enhanced education, gender equality promotion, child and maternal health improvements, support for environmental sustainability, groundwater recharge, sustainable water management, agricultural development, ecosystem preservation, water conservation, cost-effectiveness, resilience to climate change, reduced flooding, community empowerment, increased water availability, improved land management, enhanced agricultural productivity, ecosystem sustainability, community livelihood improvements, environmental protection, social benefits, improved water supply, reduced soil erosion and flooding, groundwater recharge, increased biodiversity, energy efficiency, human well-being enhancement, community cohesion, decentralized water supply, cost-effective investment, and adaptation to climate change.

Rainwater Harvesting System – Infiltration & Detention

Hydroex has developed, marketed and installed thousands of cubic meters of 3rd generation Polypropylene Geocellular Rack system underground application in early year 2000 onwards. At the turn of the year 2016, our technical team mainly with acquired knowledge from our projects mostly in Middle East and as well as by research and development program, developed a robust full proof 4th Generation High Performance Structural HD unit with Virgin & Recycled Polypropene materials in full compliance of CIRIA guidelines. The HD Units have undergone extensive and vigorous tests in Third Party Independent Labs as well as on the ground in different application areas and environment for many years. The long-term tests and their findings guarantee that the design life of our unit is more than 50 years and above. HD Geocellular System can be used as a stand-alone solution for individual projects or as part of Sustainable Urban Drainage (SUD) schemes.

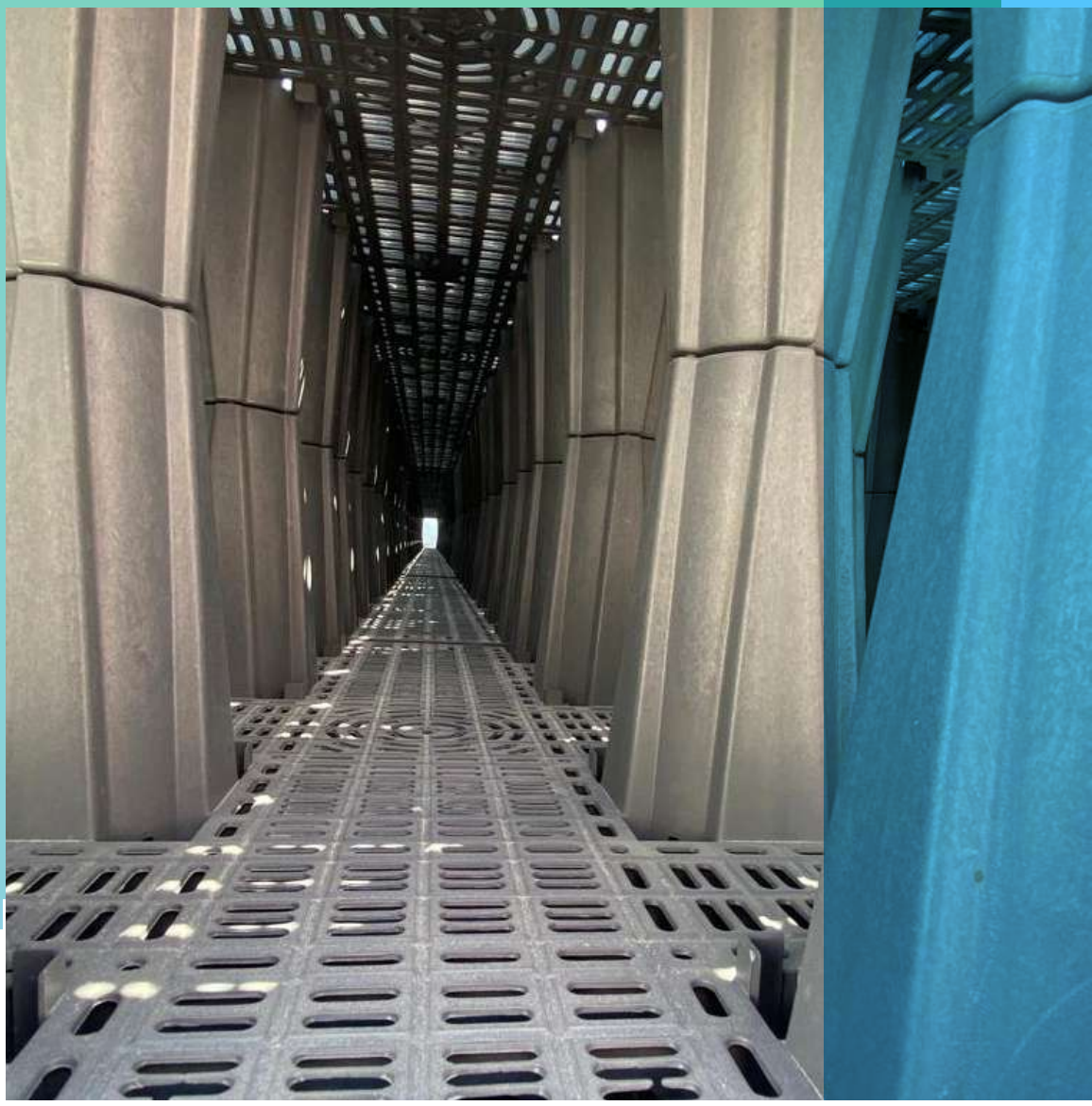
The characteristics of our unit include only a two-component system and one-way snap fitting, making it easy to install. Units are interconnected with Structural Bespoke Connectors, Top Surface Protector for vertical loading protection from puncturing, and Side Lattice for peripheral application from lateral load protection and distribution. Polypropylene: The raw material is procured from a single source to maintain the consistency of the physical and chemical properties of the material. Superior Surface areas for quicker infiltration: void area of 95> i.e. 125 liters of holding capacity per unit.

Less excavation: backfill by native ground sieved material, hassle-free installation: less labour intensive, maintenance-free, robust, and heavy-duty units with long durability. Virgin or Recycled Polypropylene adds to sustainability and has less environmental impact.

ciria

Compliant

02 Company **Overview**



Hydroex was formed in partnership with Vikas Industries – a pioneer of plastic manufacturing industries in India from 1967. The partnership was established with Vikas Industries India, making it the sole and exclusive manufacturer of Polypropylene Geocellular products and accessories. Hydroex International, with branches in various regions, holds exclusive rights for the development, promotion, and sales of these products In its capacity as a primary partner, Hydroex engages itself in all operational and marketing activities including managing global markets and investing in Market Research and development to co-develop products and services with Vikas Industries.

Hydroex has experience and expertise in Projects spanning more than two decades in several countries, in various application areas and environmental conditions.

Hydroex products have undergone long and short-term extensive testing regimes in Third Party Independent Laboratories following CIRIA guidelines thereby making our HD Geocellular unit unique as they have been time-tested on the ground as well as in laboratories around the globe in varied conditions.

Renowned clients have chosen our products and successfully installed and operationalized it in their projects. The clients are mostly Government Authorities, Nodal Bodies, Water Management Authorities, Traffic & Transport Management Bodies, Port & Airport Authorities, Army & Military, Municipality -Flood Management, Sports Authorities etc.

Project Engineers and Consultants from different countries have evaluated our products and accepted them to be incorporated and integrated into their respective projects.

Our Valued Engineers & Consultants

AECOM PARSONS KEO Halcrow CDM Smith listen. think. deliver. WSP

WorleyParsons resources & energy ITALCONSULT HILL Hill International Royal HaskoningDHV Enhancing Society Together

egis AEB dar Louis Berger Dorsch Gruppe Dorsch International Consultants

Many Engineers have visited our production facility and have shared their satisfaction in their reports. Several important suggestions on value addition to make our product/system more effective and distinctive have been received from Project Consultants and Engineers.

Our strong commitment to high-quality products is demonstrated by our procurement approach, which includes sourcing raw materials from a single source to ensure consistent quality and cooperating with globally recognized supplier like **Reliance Industries.**

Our production facility is well-equipped with state-of-the-art machinery, equipment, along with testing facilities which are regularly being audited and accredited by International authorities like **British Standard Institute (BSI) for Quality Management - ISO 9001-2015, as well as CE Compliance & Certification etc.**

ISO 9001:2015 by
British Standard Institute (BSI)

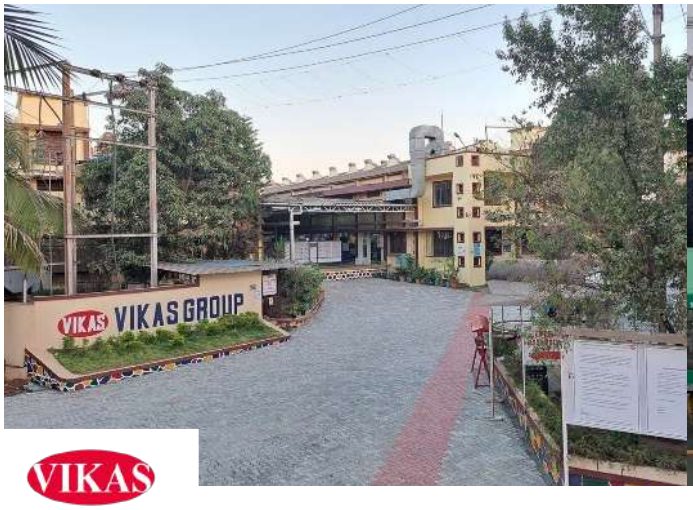
Compliant

Hydroex has partnered with Independent Engineering Firms and Experts worldwide to provide comprehensive Structural Design Reports, Geotechnical Studies, Project Evaluations and Structural Evaluations of our units, on project-to-project basis on distinct contractual and commercial agreements.

**SHIRLEY CONSULTING ENGINEERS
PTY. LTD - AUSTRALIA**

GERMANY

Manufacturing



Vikas Industries is one of the leading manufacturer and supplier of Plastic Molds and Molded Articles. Its array of services includes Injection Molding, Gas Injection Molding, Product Development, Mold manufacturing, large scale productions, Assembly jobs and development of injection molding techniques.

Today, Vikas Industries is a multi-location manufacturing enterprise with its head office situated in Mumbai and state of the art modern manufacturing facilities at Mumbai, Shahapur (Thane), Atgaon (Thane), Shirwal (Pune).
The manufacturing facilities are equipped with large numbers of Injection Moulding Machines, ranging from 80 tons to 650 tons. The flagship works at Shahapur is centrally located between the two prime cities Mumbai and Nashik, a two hours' drive of 80 kilometers to either city.

Vikas Industries - Shahapur manufacturing unit is where the Hydroex Geocellular Units & Geocells are manufactured exclusively, is certified and compliant in accordance with the following standards:

ISO 9001:2015 by
British Standard Institute (BSI)

Post molding operations like ultrasonic welding, screen printing, spray painting, assembly of components, shrink wrapping, special packaging requirements and component testing can be carried out in-house at almost all plants.

The organization's human capital is a blend of technocrats, which is taking huge strides under able leadership of experienced professionals in the Plastic Industry. The organization is patronized by many prestigious & reputed organizations like: Godrej (Appliances), Videocon (Television), Sharp (Television), V.I.P (Luggage), Brite (Consumer & Household), TATA Motors Automobiles), Ford (Automobiles) Walmart Products (USA) just to name a few.

MADE IN INDIA

Godrej
VIDEOCON
Experience Change
SHARP
V.I.P
TATA
OTIS
Supreme
People who know plastics best
Brite
gsk
GlaxoSmithKline
Ford
Mahindra
Walmart
Johnson&Johnson
Hindustan Unilever Limited

Certificates & Accreditations

bsi.

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that:

Vikas Industries
Plot no. 2 & 4, Gat no. 318 B
Near Mumbai-Nashik Highway
Village- Lahe, Taluka - Sahapur
Thane 421 603
Maharashtra
India

Holds Certificate No: **FM 795530**

and operates a Quality Management System which complies with the requirements of ISO 9001:2015 for the following scope:

The Design and Manufacture of storm water attenuation and infiltration tanks constructed using modular polypropylene geocellular units as part of sustainable drainage, rainwater harvesting system and other plastics products.

For and on behalf of BSI:

Theuns Kotze, Managing Director Assurance - EMEA

Original Registration Date: 2023-10-04
Latest Revision Date: 2023-10-04

Effective Date: 2023-10-04
Expiry Date: 2026-10-03

Page: 1 of 1

...making excellence a habit.

Certificate of Registration

Vikas Group of Industries

Vikas Industries, Plot No. 2 & 4, Gat No. 318-B, Bhasta Road, Near Mumbai-Nashik Highway, Village-Lahe, Taluka-Shahapur, Dist. Thane, Maharashtra, 421603, India

ISO 9001:2015

Manufacture, Supply and Export of Plastic Moulded Parts, Articles, Assemblies and Sub-Assemblies

Certificate of Registration

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Vikas Industries, Plot No. 2 & 4, Gat No. 318-B, Bhasta Road, Near Mumbai-Nashik Highway, Village-Lahe, Taluka-Shahapur, Dist. Thane, Maharashtra, 421603, India

ISO 45001:2018

Manufacture, Supply and Export of Plastic Moulded Parts, Articles and Assemblies, Sub-Assemblies

Certificate of Registration

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ISO 9001:2015

Manufacture, Supply and Export of Plastic Moulded Parts, Articles, Assemblies and Sub-Assemblies

Certificate of Registration

Vikas Group of Industries

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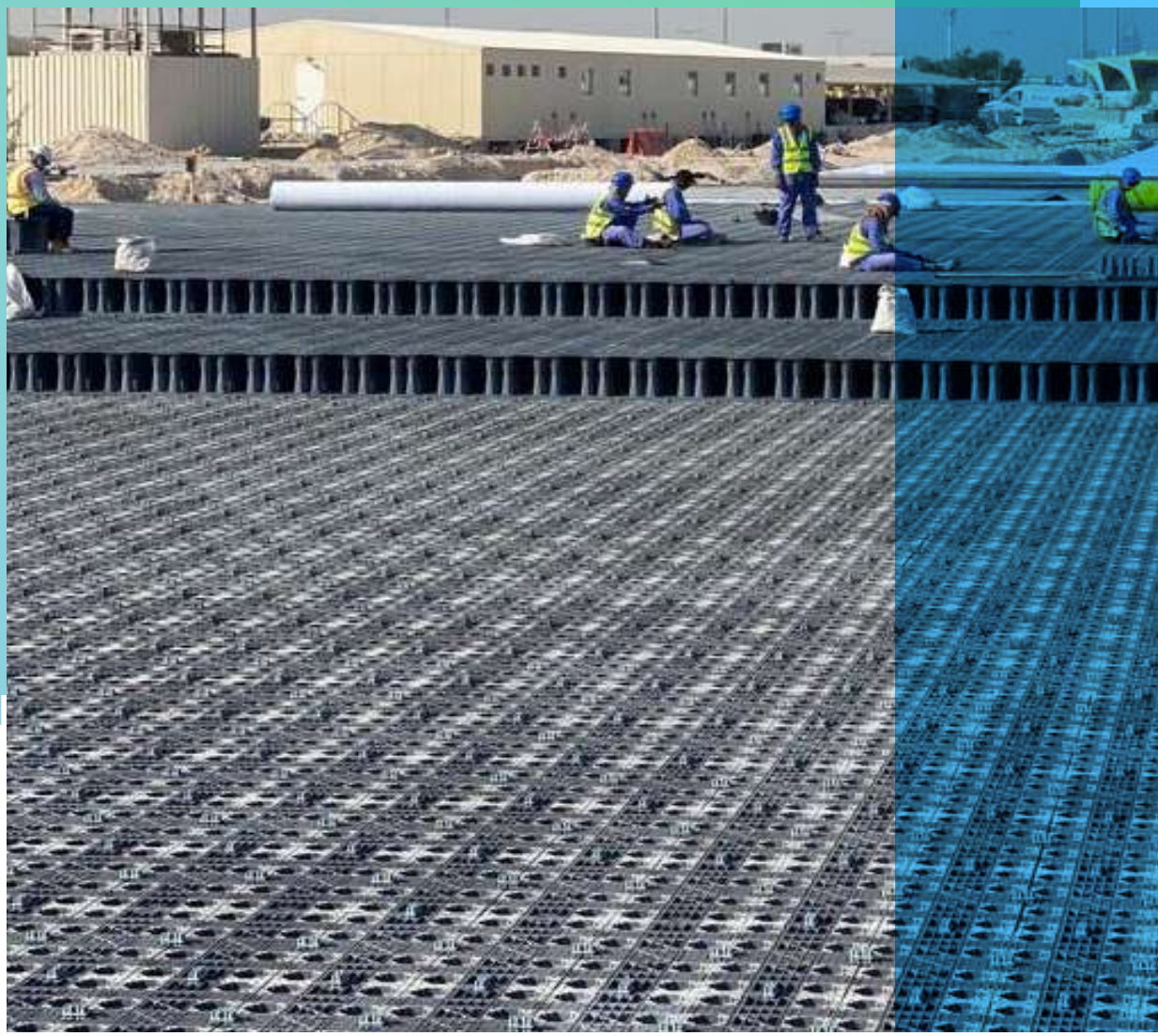
ISO 14001:2015

Manufacture, Supply and Export of Plastic Moulded Parts, Articles and Assemblies, Sub-Assemblies

03 HD Modular **Geocellular System**

For Sustainable Green Urbanization



HD Modular Geocellular System

HD Modular Geocellular structures are a form of attenuation and infiltration system designed to store excess water in circumstances where heavy rainfall or snowmelt runoff water, means that the volume of water flowing usually in gravity from a site is too high to go immediately into off-site/network drainage. Water that is 'rejected' from the outfall flows back up the system and into the geocellular structure, where it is stored until the allowable discharge rate from site permits the stormwater to join the off-site network or water body

Climate Change - Rain Fall – Flood Risk – Sustainable Urban Drainage Scheme Solution – Infiltration / Attenuation by Geocellular Modular System

Geocellular systems can be used to control and manage rainwater surface water runoff either as a SOAKWAY/ INFILTRATION or as an ATTENUATION/ STORAGE TANK in a Standalone Project application or for a Sustainable Urban Drainage Scheme (SUD). In the SUD scheme, the Geocellular System is the most cost-effective, rapid construction, and environment-friendly, less footprint with higher capacity of a water take-off and holding compared to the conventional system, less labour and machinery involvement is the most feasible and accepted solution for flood risk in urban areas. Quicker hydraulic intake capacity and greater flood water retention potentiality minimize the flooding and ponding of public areas and allow ample time for municipality engineers to release the excess flood water into the national grid as per their system capacity. The two-component modular nature of HD Geocellular System gives lots of convenience to designers to fit into small spaces, offering flexibility over length, width, and depth that allows engineers to easily construct configurations to match a specific site.

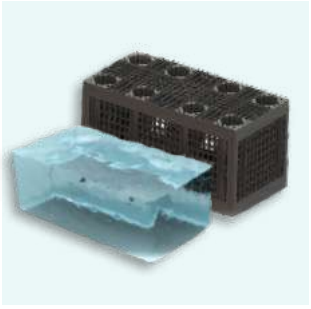
HD Modular Geocellular Units are robust and can be designed under severe application conditions and heavy load carrying capacity. With a long-term test regime under Independent Laboratory and CIRIA Guidelines, the best findings and results endorse its design life to be more than 50 years which in turn is a unique credential to Durability & Sustainability of HD Modular Geocellular Units.

HD Modular Geocellular Units:

- used as attenuation or soak away tanks in general being designed to suit heavy or extra heavy traffic-bearing and non-traffic-bearing areas as safety factors and future expansion or change of characteristics of usage of land area being considered as a possibility.
- offers a space-saving, two-part stackable design with snap locking system and a heavy-duty traffic load carrying capacity. It's quicker and easier to install and is made of Virgin or Recycled Polypropylene.

Advantages of Geocellular Unit over Conventional System

Traditional aggregate 30% Void ratio



Hd modular geocellular ≥95% Void ratio

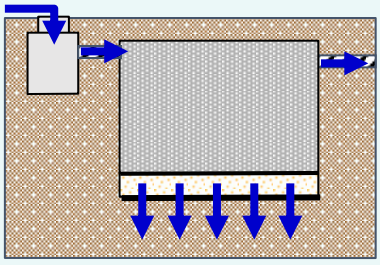
Soakaway crates act as a more advanced form of an old-fashioned ditch or pit, traditionally filled with gravel and used as a place for storm water and excess surface water to soak into.

The geocellular units are manufactured to act as underground reservoir or tanks to collect the storm water from persistent rain and to be reused or maintain under SUD Schemes.

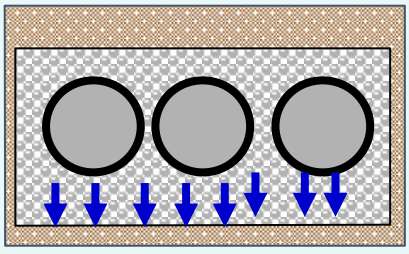
Evolution / Comparison of Drain Field Design

Tank Module Systems supersedes the traditional gravel and pipe-based systems by far. The roads and utilities system provides a void space ratio of over 95% compared to 30% in typical gravel and pipe-based systems.

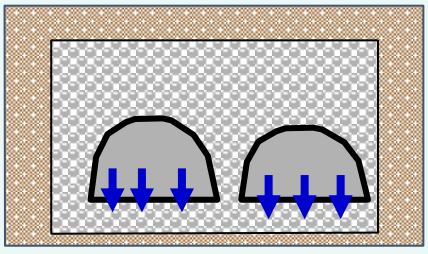
Consequently, the plastic Geocellular system offers a smaller footprint for the same storage volume, significantly saving the amount of excavation, soil transport, importing clean aggregate and thus reducing earthworks related installation costs, less labour and causes minimum site disruption.



Drainage Stone Bed
Excavation filled with Drainage Stone 30- 40% Void Space for Water Storage Inefficient – But It Worked

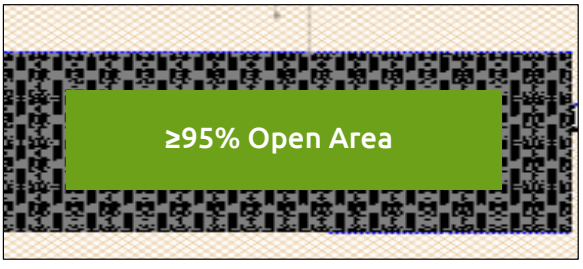


Pipe & Stone Filled Bed
Pipe Creates Additional Void Area Heavy use of stone (60-70%) to fill corners



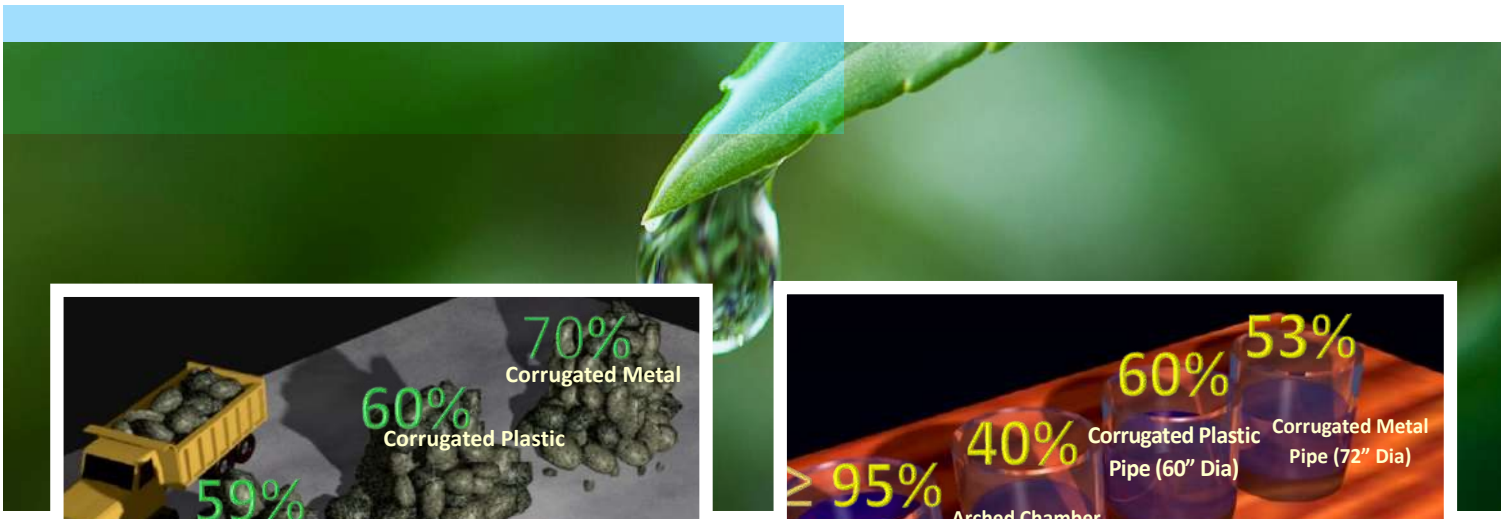
Plastic Arch & Stone Filled Bed
Squares off bottom corners to increase efficiency Stone still required (59%) to fill corners and provide structural support

Instead of filling the excavation with stones...



Hydroex Modular Geocellular System

minimize environmental impacts and make better use of land by excavating smaller storage areas or store more water in any given excavated area.



Less stones...

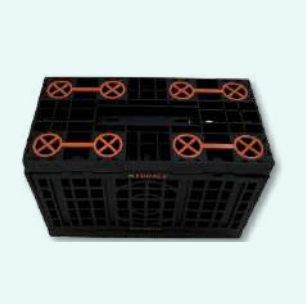
More space for water...

HD Modular Geocellular Unit

Hydroex developed, marketed, and installed thousands of cubic meters of 3rd generation Polypropylene Geocellular Rack system underground application in the early years of 2000 onwards. At the turn of 2015 our technical team with acquired knowledge from our projects mostly in the Middle East as well as by research and development program introduced a robust, flexible, durable 4th Generation High-Performance Structural HD unit with Virgin Polypropylene as per EN17152-1 Standard or by Recycled material in full compliance with CIRIA guidelines.

The HD Modular Geocellular Units have undergone extensive and vigorous test schedules in Third Party Independent Labs as well as on the ground for many years. The long-term test and their findings guarantee that the design life of our units are more than 50 years. HD Geocellular System can be used as a stand-alone solution for individual projects or a part of Sustainable Urban Drainage (SUD) Schemes.

Hydroex Geocellular units are manufactured and compliant with International Standards and guidance of CIRIA.



The characteristics of our Unit are easy to install with only two component system and one-way snap fitting. Units are interconnected with Structural Bespoke Connectors, Top surface protector for vertical loading protection from puncturing. Side Lattice for peripheral application from lateral load protection and distribution. Polypropylene - Raw material procured from a Single source to maintain consistency of physical and chemical properties of the material. Superior Surface areas for quicker infiltration – the void area of 95 ≥ i.e. 119 liters of holding capacity per unit.

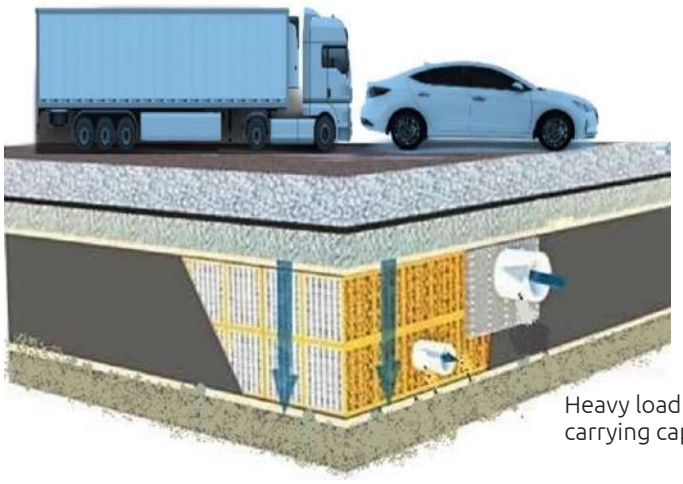
Hydroex Modular Geocellular Unit is designed to provide retention, attenuation and infiltration. Its superior surface area and heavy load capacity makes it ideal to manage water run-off at a variety of depths in different areas of applications.

- Principal Material – Recycle or Virgin Polypropylene as per DIN EN17152-1 Standard
- Superior surface area for quicker infiltration ≥95%
- Less excavation - Less Labor
- Hassle-free installation
- Maintenance free for Life
- Durable and Sustainable
- Robust design for high load-carrying capacity
- No Environmental Impact - 100% Recyclable at the end of Operational & Service life

Product indentification & load bearing capacity

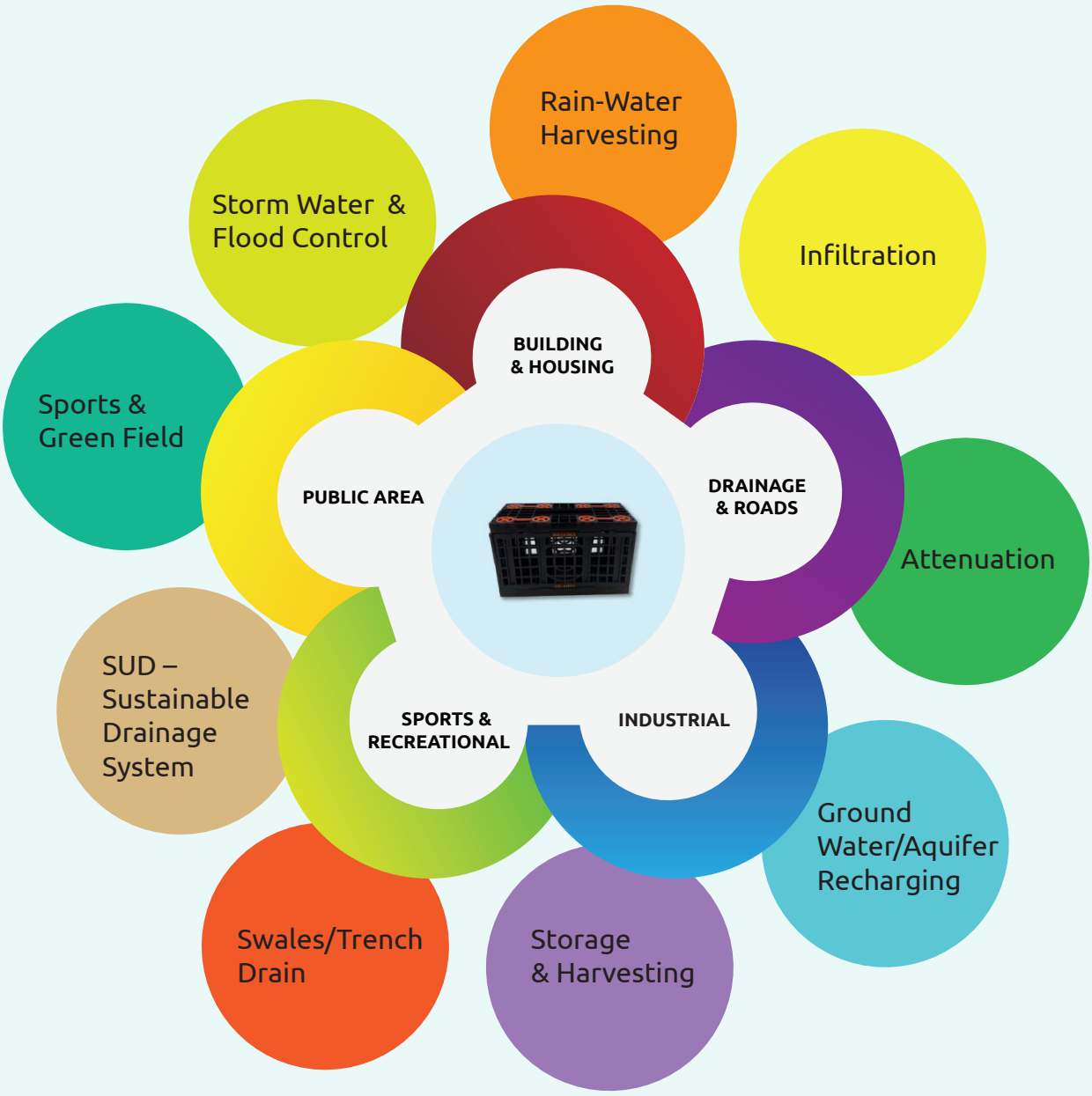
Product Code	Load Bearing	Capacity
HD–R60 / V60	≥60 Tons/m²	Vertical
HD–R40 / V40	≥40 Tons/m²	Vertical
HD–R60 / V60 HD-R40 / V40	≥20 Tons/m²	Lateral

Note: R- Recycle PP & V- Virgin PP



Heavy load carrying capacity

Purpose Of Usage – HD Geocellular System



Application of HD Geocellular System

01 Residential

Housing , Villas, Accommodation
Hotels, Hostels, Camps
Condominium , Housing Society

02 Public Works

Hospitals / Health Centres
Schools , Flood Control, Reservoirs
Fire Dept. Civil Defence, Swale
Parking Garages

03 Sports & Recreational

Sports Fields
Landmarks
Parks & Fountains
Clubs,

04 Food & Beverage

Restaurants
Food processing
Wineries & Breweries

05 Industrial

Manufacturing Facilities
Oil & Gas Industry
Parking Garages

06 Transportation / Defence

Airport – Airside & Terminals
Ports & Docks
Metro/Train Stations
Roads & Infrastructure
Bus Depots

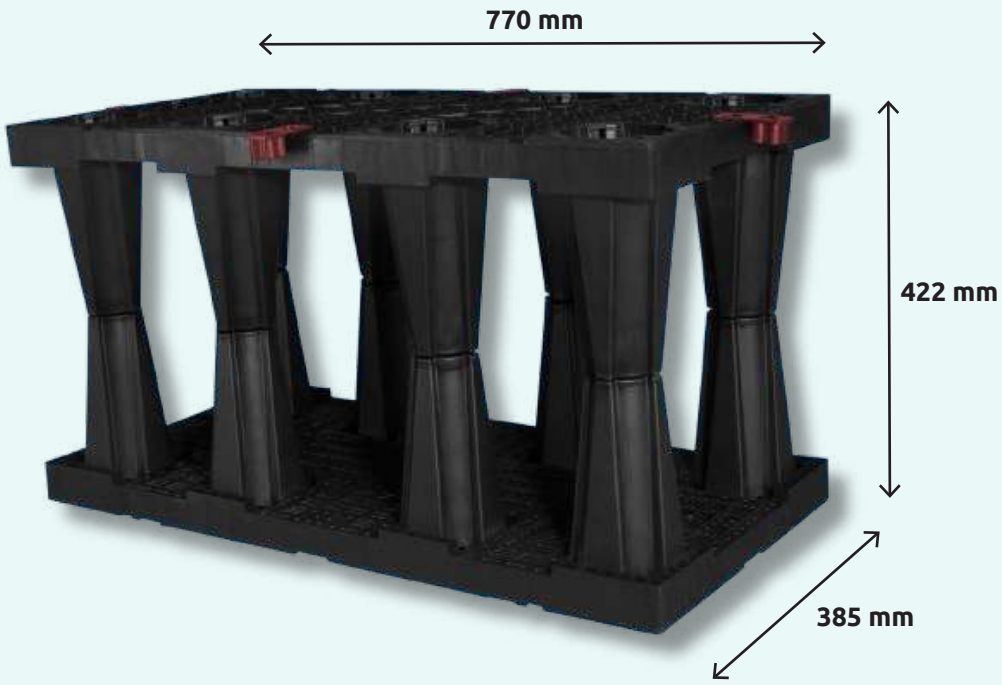
07 Commercial

Retail & Offices
Parking Lots
Parking Garages
Distribution Centres

08 Greenfield & Agriculture

Parks & Green Areas
Agricultural Fields
Water Retention for Recycling
Aquifer & Ground water Recharging

Dimension of HD Geocellular units



Tank Units	Size in Feet	Size in Inches	Size in Millimeters
HydroexHD–Single Tank	1.38’ x 1.26’ x 2.53’	16.61’ x 15.16’ x 30.31’	422mm x 385mm x 770mm
Hydroex HD –Double Tank	2.77’ x 1.26’ x 2.53’	33.23’ x 15.16’ x 30.31’	844mm x 385mm x 770mm
Hydroex HD –Triple Tank	4.15’ x 1.26’ x 2.53’	49.84’ x 15.16’ x 30.31’	1266mm x 385mm x 770mm
Hydroex HD –Quad Tank	5.54’ x 1.26’ x 2.53’	66.46’ x 15.16’ x 30.31’	1688mm x 385mm x 770mm
Hydroex HD –Penta Tank	6.29’ x 1.26’ x 2.53’	83.06’ x 15.16’ x 30.31’	2110mm x 385mm x 770mm

Performance – Reliability – Durability & Sustainability

With this high storage volume, Hydroex Modular Geocellular Unit stores three times as much water as gravel swales or piping for highly efficient water management system.

≥ 95% Void Ratio

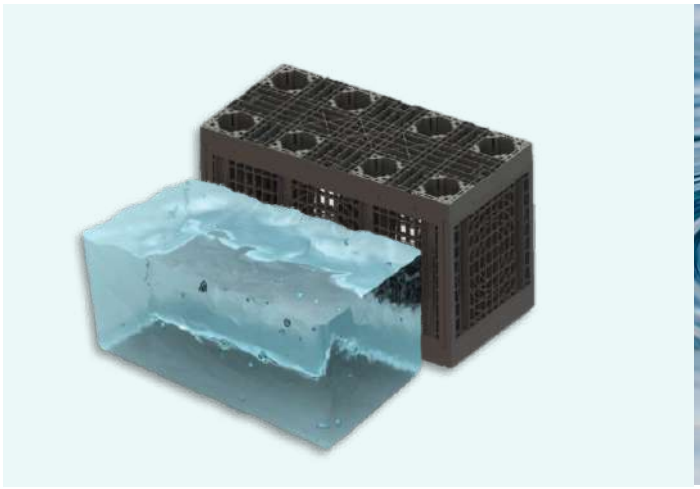
Maintenance Free

50 years of Design life

Durable & Sustainable

GREEN Product & LEED Contributor

CIRIA & International Standard Compliant

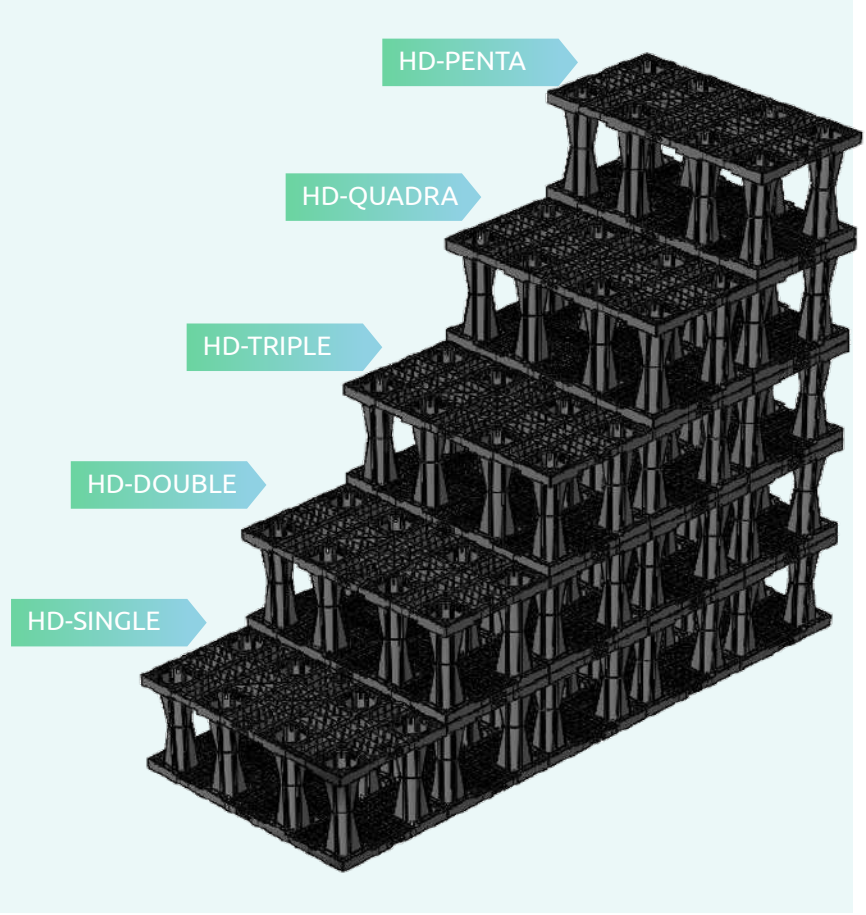


- Suitable for Retention/Attenuation, Infiltration & Filtration System
- 50 years of Design life and Maintenance free
- Can be Recycled at the end of Operational & Service life
- Manufactured by Recycled or Virgin Polypropylene as per EN17152-1 Standard
- Less Environmental Impact – GREEN Product Certified & LEED Contributor

Tank Units	Total Gross Volume		Total Gross Volume	
	Cubic Feet	Cubic Meter	Liters	Gallons
Hydroex HD Single Tank	4.42	0.1251	125.10	33.04
Hydroex HD Double Tank	8.84	0.2502	250.20	66.09
Hydroex HD Triple Tank	13.26	0.3753	375.30	99.14
Hydroex HD Quad Tank	17.68	0.5004	500.40	132.19
Hydroex HD Penta Tank	22.10	0.6255	625.50	165.23

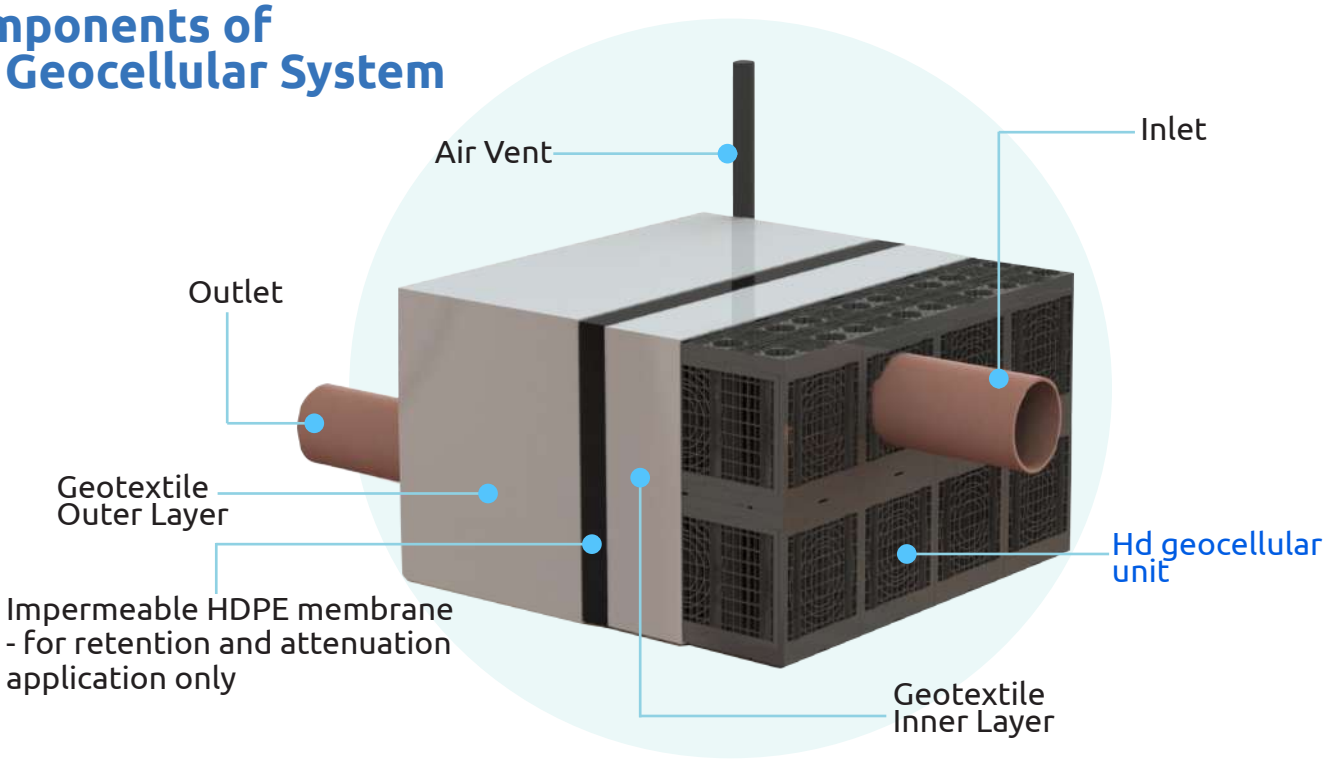
100% recyclable at the end of its service life

System Benefits



- ≥95% Void Space = Smaller Footprint for Water Storage
- Less disturbance of the site
- Smaller excavations
- Avoid underground utilities
- Infiltration & Reduced Runoff Improves Water Quality
- Retrofit / Reclaim Valuable Real Estate by Eliminating Ponds and Ditches
- Installation is Extremely Simple and Fast, Preventing Construction Delays
- 8 HD Geocellular Units equals to 1 cubic meter
- Eliminates Environmental Concerns
- Eliminates Liability Concerns
- Can be installed beneath Trafficked or Non-trafficked areas (as its being proven by Long Terms Lab Results & Structural Design Analysis)
- Capable of managing high-flow events like flooding etc & in large footprint areas.
- Lightweight, easy to install, and structurally robust for Heavy Application Scope

Components of HD Geocellular System



Components of HD Geocellular Unit

Top Surface Protector

Top Module

Small Side
Wall Lattice

Small Side
Wall Lattice

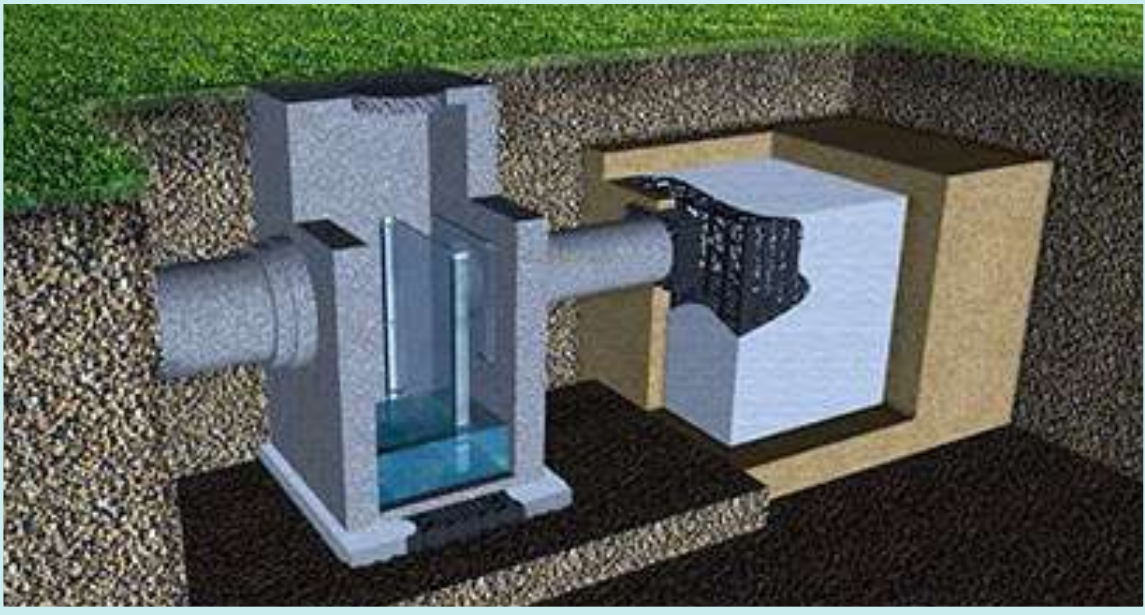
Base Module

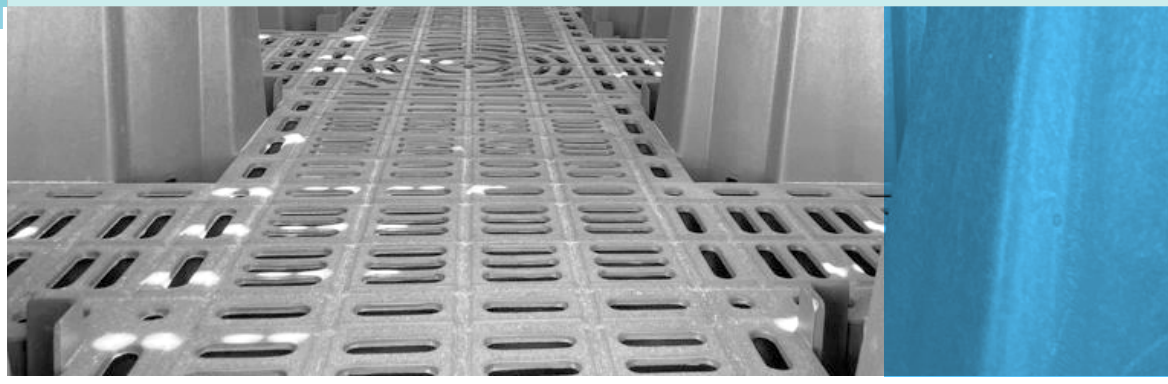
Bespoke Multi
Block Connector

Single Block
Connector

Large Side Wall Lattice

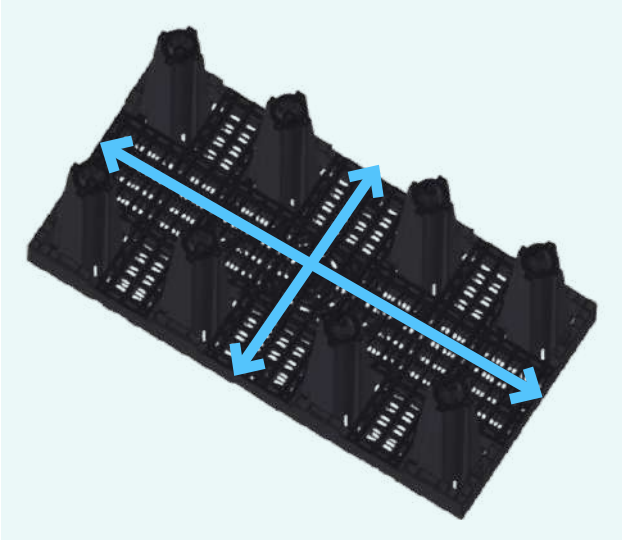
04 Components & **Accessories**

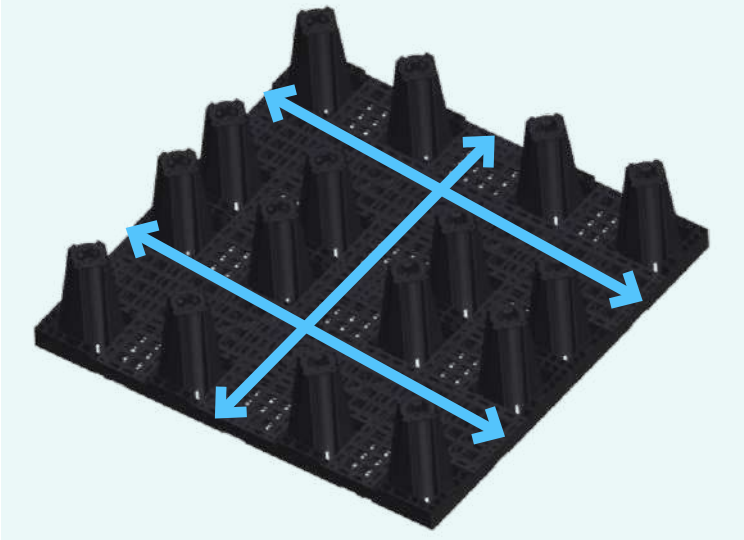




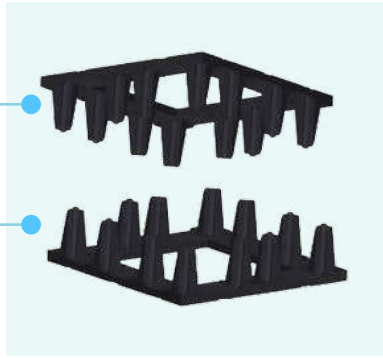
HD Geocellular Unit Inspection & Maintenance Shaft

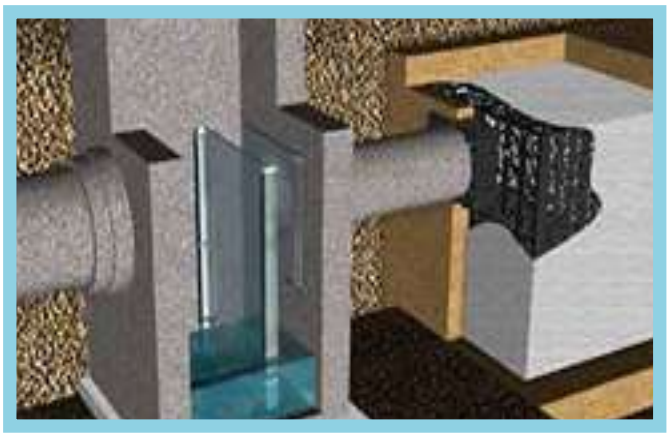
HD Modular Geocellular has been designed for 100% viewing access by CCTV Camera for inspection purposes. The Camera can access in any direction/axis without any hindrance.





HD Geocellular Tanks are designed with **Inspection & Maintenance Shaft** (OPTIONAL) in modular form. The Shaft 600mm dia Clear Opening at the Centre base for accessibility of Mechanical & Electronic devices only. Inspection and Maintenance can be done through the shaft by the end user as desired.





HD Filter and Separator

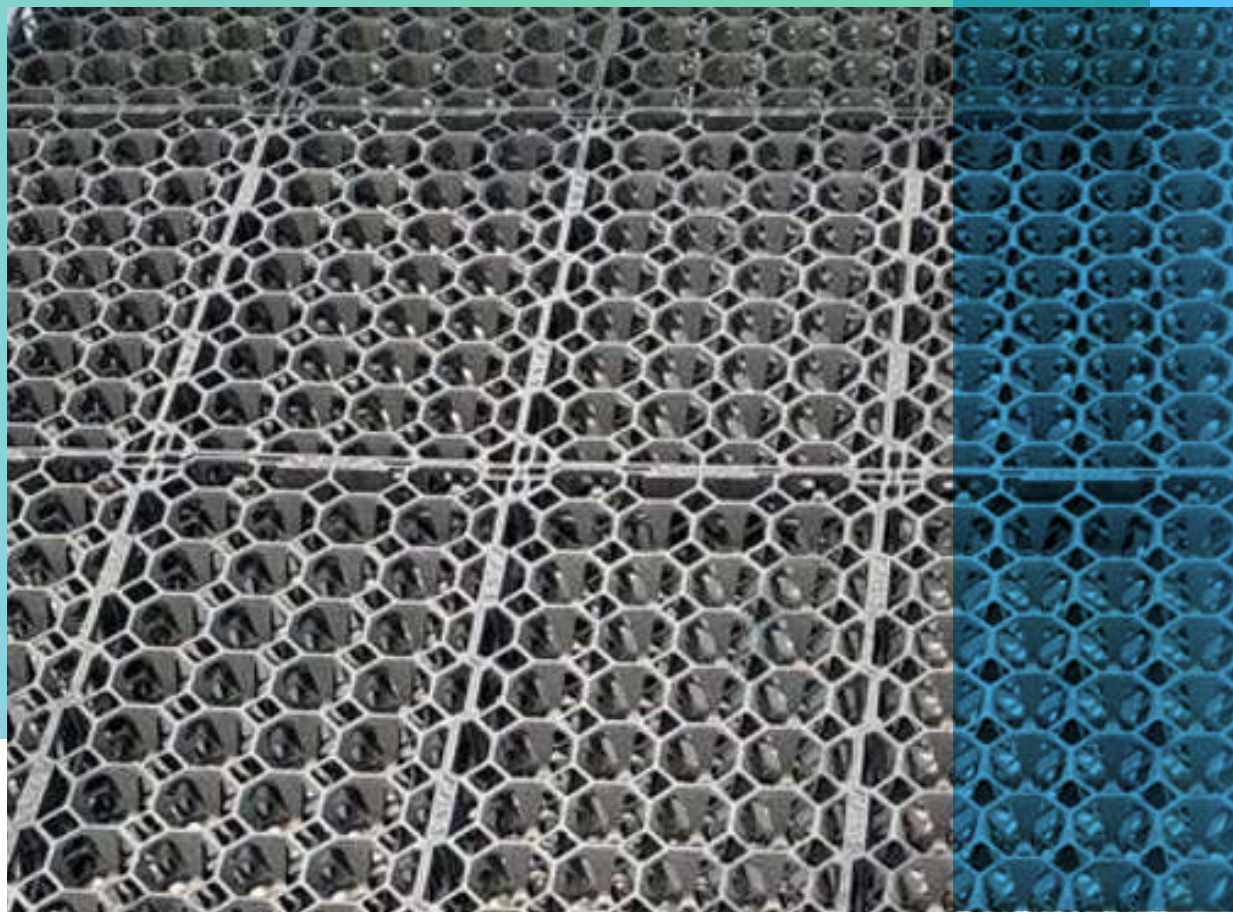
HD Modular Geocellular System has focused over the years on supplying Modular Tanks and Drainage Cells, in keeping with “turnkey” needs for developers and government.

We are now able to supply our new Separator screens to be installed ‘in situ” build manholes, before water reaches our Modular Tanks.

System Benefits:

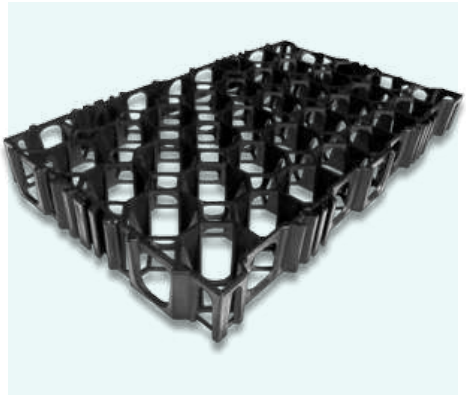
- Cost effective filtration system.
- We can now supply a complete system of STAINLESS-STEEL screens to standard size or as specified by Engineers and Architects.
- The separator does just that, it separates gross pollution or trash from the water entering to the Modular tanks.
- It filtrates gross pollution or trash to 1000 2000 microns.
- A secondary STAINLESS STEEL mesh screen filters water to 500 - 1000 microns at the entry point before water reaches the Modular Tank.
- Only “dust like” particles smaller than 500 1000 micron will be entering the Modular Tank therefore the water in the Modular Tank i s very clean of gross pollutant or trash.
- These STAINLESS-STEEL screens are supplied in many sizes for domestic and commercial needs.
- The manhole is built “in situ” therefore it is easy and simple to install with Hydroex supplying only the screens and STAINLESS-STEEL runners for them.
- Easily removable screens to be clean as required.

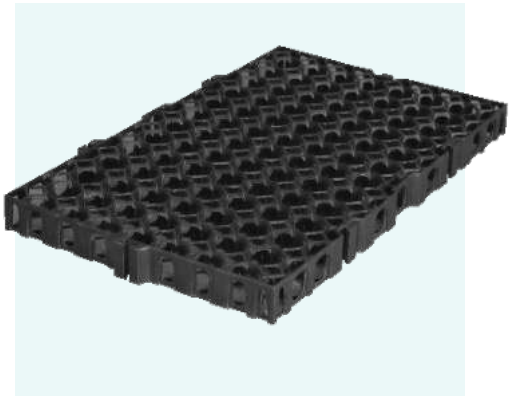
05 HD Versatile **Drainage Cell**



HD Drainage Cell Unit

Hydroex Drainage Cell Unit or Grass / Gravel Porous Pavers Drainage Cell is a plastic cell structure designed for the creation of permeable grass/ gravel areas subject to pedestrian and vehicular traffic, it is lightweight, easy to install and with excellent high strength interlocking system.





- Polypropylene Material
- Superior compressive load bearing capacity
- Sizes in 25mm / 30mm / & 50mm

The cell structure provides high load bearing capacity and real containment of soil mix / gravel to create a permeable surface, due to its unique three-dimensional design, it can withstand heavy traffic for parking lots without traditional problems associated with permeable paving such as overheating and compaction of the root zone.

The system can be used for storage, dispersion of cold or heat, reducing hydrostatic pressure for high water table and for filtration of rainwater as well as filled grass or gravel as porous pavers.

Application Areas:

HD Drainage Cell System provides the ideal answer for sub-soil drainage applications that enable the creation of a successful Roof Garden without the worry of the usual issues related to cracking or leaking. The drainage cells offer a uniform surface and an internal void space for efficient drainage of extra water. They come with a special Diamond Cup construction that allows passive irrigation water retention and aids in creating a high-water table in the soil above profile so that vegetation can thrive during protracted dry seasons.

The Drainage Cell that we provide is a thin, incredibly sturdy drainage panel that is prepared to be covered in geotextile fabric for both vertical and horizontal drainage applications, including:

- Driveways
- Roof Decks
- Linear Drainage for underground structures
- Tunnel Drainage
- Podium gardens and planter boxes
- Landfills Drains (Leachate Collection & Gas)
- Landscape French spouts
- Sports venue Keeping Subsoil Drainage the Foundations' Walls
- Subfloors
- Highway and Road Edge Drains
- Gas dispersion and biofilters
- System of underdrains for high groundwater levels

System Benefits:

- Very high compressive load bearing capacity.
- Drainage Cell allows for three dimensional vertical & horizontal root growth.
- Maintains actual void size for effective drainage & root growth after backfill & compaction.
- Cells can easily be cut to required size.
- Easy to store and install and comes in pre-clipped panels of 1.00 X 1.20 panels.
- Environmentally friendly, made from selected Recycled Polypropylene.
- Also available in Virgin Material if required.
- Light weight and easy to install, no need for heavy machinery or skilled labour.
- Creates permeable surface and reduces heat or cold.
- Reduces Stormwater runoff rate if used as permeable grass or gravel pavers.
- Complies with Water Sensitive Urban Design.

25mm (1.0") Drainage Cell Specification Sheet

	Standard Used	Metric	Imperial
Width		500mm	1,64'
Length		600mm	1,97'
Height		25mm	1.0'
Surface Area		50 to 70% void	
Material		100% recycled polypropylene	
Biological & Chemical Resistance		Unaffected by moulds and algae, soil-bourne chemicals, bacteria and bitumen	
Service Temperature		-30°C to 120°C	-22°F to 248°F
Compressive Strength/ Ultimate Load	ASTM D1621	±205.56t/m2	±306.80 psi
Flow Rate per unit width	ASTM D4716	> 120 Lt/min	>31.70 gals/min

Note: There may be + - load variations in load test.

30mm (1.80") Drainage Cell Specification Sheet

	Standard Used	Metric	Imperial
Width		300mm	1'
Length		500mm	1,64'
Height		30mm	1.80''
Surface Area		90 to 95% void	
Material		100% recycled polypropylene	
Biological & Chemical Resistance		Unaffected by moulds and algae, soil-bourne chemicals, bacteria and bitumen	
Service Temperature		-30°C to 120°C	-22°F to 248°F
Compressive Strength/ Ultimate Load	ASTM D1621	±121.21t/m2	±172.40 psi
Flow Rate per unit width	ASTM D4716	> 120 Lt/min	>31.70 gals/min

Note: There may be + - load variations in load test.

Dimension Chart of HD Geocell 50 mm

	Standard Used	Imperial	Metric
Size of One Piece		1.64 ft²	0.150 m²
Height		2 in	50 mm
Width		12 in	300 mm
Length		1.64 ft	500 mm
Void Storage Area		80%	80%
Material		Recycled Polypropylene	
Biological & Chemical Resistance		Unaffected by Molds, algae, soil-borne chemicals, bacteria & bitumen	
Compressive Strength-Maximum Load	ASTM D1621	348.42 psi± 5%	244.97 t/m2± 5%
Flow Rate per Unit Width	ASTM D4716	>224.00 gals/min	>848 Lt/min
Compressive Strength Filled with Sand *[Product must have maximum deformation of <25%]*	Area	Load	Compressive Strength
	84.56 in²	54,554.73 mm²	510,000 lbs

Installation Method Statement:

1. Place paver units (Drainage cell) onto the prepared well consolidated bedding layer. The ground conditions must be suitably firm, flat and level.
2. Connect the pavers units together (the large panel size supplied in pre-clipped format makes installation quick and easy for unskilled labour).
3. Pavers unit can be cut using a hand or power saw to fit around obstructions and curves.
4. In Case of multi layers installation. After placing the first layer of (Drainage cell), place the second layer of paver units (50 mm Drainage directly above the first year.
5. The two layers of (50 mm Drainage cell) can be secured and combining using cable-ties. This is purely aesthetic and a 'housekeeping' measure and provides little, if no, structural or performance benefit.
6. Place and fix soil nailing in the ground tightly secure every 2 metres at the corner of the two layers of the (50 mm Drainage cell) so that it doesn't move during backfill and compaction process.
7. Fill the pavers units to the top of the cells with the specified angular aggregate. Top up cells with aggregate as necessary.

HD Geocellular System Installation Checklist

Installation Checklist & ITP

Project name:	Inspection by
Excavation of Working Surface	
1.Main contractor or groundworks sub-contractor to have set out, dug and prepared the sub-base area to the required plan dimensions and level	Contractor, Supervising Consultant.
2.check the tank dimensions (length , width , height) as per the drawing	
GROUND PREPARATION	
1. Excavate trench with min 400 mm around the HD Tank structure. Level the ground & clean the area	Contractor, Supervising Consultant.
2. Compact the area beneath the Tank to engineered specs, screed the surface	
3. Remove all stones, lumps, debris and sharp objects from sub-base	
4. Place 50mm sand on sub-base and level it	
INDIVIDUAL TANK ASSEMBLY	
5. Follow assembly instructions for specified size of Tanks. (Provided)	Contractor Foreman.
6. Do not use any broken Parts/Boxes.	
INSTALLATION	
7. Lay Geotextile fabric (for infiltiration) or HDPE Memberane (for Attenuation) with enough fabric to fully cover Tanks with 150mm - 200mm overlap of seams	Contractor, Supervising Consultant.
8. Placing of the HD modules is to commence with the orientation of the modules as per the issued drawing and in relation to the physical setting out/lines as surveyed	Contractor, Supervising Consultant.
9 .Fix Side Lattices & HD Block Connectors	Contractor.
10. Wrap Geotextile fabric/HDPE Memberane around the Tanks & secure with HDPE tape Minimum 150 mm overlap	Contractor, Supervising Consultant.
INLET/OUTLET PIPE CONNECTION – (Connect Pipes, if any, before Backfilling)	
INLET/OUTLET and VENT PIPE CONNECTION	Contractor, Supervising Consultant.
11. Any inlet/outlets and vents should be installed 'flush' (or 'butted-up)' to the tanks and be at 90O to the structure.	
12. Cut and secure Geotextile fabric around the pipe with 50mm Drainage Cells cut to correct pipe diameter.	
13. Place & secure the cut layer of 50mm Drainage Cells - insert pipe, abutting the side of Tank.	
14. Cut & secure Geotextile fabric to the pipe with boot, ties and HDPE tape to prevent sand/fill from entering Tank.	

Project name:	Inspection by
BACKFILL - AROUND THE TANK STRUCTURE	
15. 200 mm maximum height of backfill drop from tractor scoop	Contractor, Supervising Consultant.
16. Drop specified backfil layers around the perimeter of the Tank in 150-200 mm depths & Compact backfill material using water to aid the compaction process.	
17. Place plywood sheet upright between Tank & backfill to protect Tank side, Geotextile from compaction plate	
BACKFILL TO COVER OF STRUCTURE	
18.Geotextile is placed over the Top of the Module/Tank tightly secure it	Contractor, Supervising Consultant.
19.Place 100 mm sand.	
20. Over the 100 mm uniformly spreader and watered sand, place gravel for next 400mm (200 mm + 200 mm) separately and spread it uniformly. The material needs to be placed carefully (NOT TO BE DROPPED FROM HEIGHT). This shall be placed uniformly in strips or sections across the width of the excavation. After spreading it uniformly Use a Pedestrian Operated roller (dead weight – i.e. no vibratory roller) to give required compaction for every 200mm SEPARATELY. This process should be carried out carefully and slowly.	
21. Over the 400 mm well spreader and compacted gravel next backfill layers can be built up with native soil where the maximum height of backfill drop from excavators or tipped/placed 'short' and pushed out in 150 to 200mm layers. This process in nominally 150-200mm (after compaction) lifts or layers can be built up with native solil, every 150-200 lift needs to be watered and then rolled to get the right compaction it requires to proceed further. The rolling should be by Pedestrian Operated roller only (dead weight – i.e. no vibratory roller).	
22 . Mark perimeter of Tank with caution/barricade tape to keep out heavy equipment	
23. Install all remaining backfill as described above or as specified by Engineer/Landscape Architect	
NOTE: Secure the area of application with barriers/ropes during the entire scope of work. Prohibit all vehicular traffic.	

HD DOES NOT accept liability for incorrect installation.

Material Safety Data Sheet (MSDS)

PRODUCT IDENTIFICATION:
Hydroex Polypropylene Modular Geocellular Unit
a)HD-V60
b)HD-V40

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Tradename : Polypropylene
Supplier : Vikas Industries
Synonym : Polypropylene, Copolymer
This MSDS covers all prime Copolymer polypropylene grades. This MSDS also covers experimental grades which are Copolymers
Name : Polypropylene
Chemical Family : Polymer
Manufacturer : Various

SECTION 2: COMPOSITION AND INFORMATION ON INGREDIENTS

Name : Polypropylene HIPP
Exposure Limits : Not Available
Contains Additives and Stabilizers

SECTION 3: HAZARDS IDENTIFICATION

Physical State and Appearance: Solid in plates or cells
Emergency Overview: None
Routes of Entry : None
Eyes : None
Skin : None
Inhalation : Negligible at room temperature
Ingestion : No effects are expected for ingestion of small amounts. May be a choking hazard.

Potential Acute Health Effects:
•**Carcinogenic Effects:** Polypropylene is not a known carcinogen. Classified NONE by NTP, NONE by OSHA, 3 (Not classifiable for humans) by IARC.
•**Mutagenic Effects:** Not available.
•**Teratogenic Effects:** Not Available

Medical Conditions Aggravated by Overexposure:
There is no known effect from chronic exposure to this product. Repeated or prolonged exposure is not known to aggravate any medical condition.

Overexposure/Signs/Symptoms: No information available.

SECTION 4: FIRST AID MEASURES

Eye Contact: Rinse with water for a few minutes. Seek medical attention if necessary.
Inhalation: Allow the victim to rest in a well-ventilated area.
Ingestion: No first aid procedures are needed.
Notes to Physician: Not available.

SECTION 5: FIRE FIGHTING MEASURES

Flammability of the Product: May be combustible at high temperature.
Auto-ignition Temperature: Not available
Flash Points: Not available
Flammable Limits: Not available
Products of Combustion: Carbon oxides (CO and CO2) and soot.

Fire Hazards in Presence of Various Substances: No specific information is available regarding the flammability of this product in presence of various materials.

Explosion Hazards in Presence of Various Substances:
• Risks of explosion of the product in presence of mechanical impact. Not expected.
• Risk of explosion from dust accumulation of this product is possible.
Fire Fighting Media and Instructions:
• **SMALL FIRE:** Use DRY chemicals, CO2, water spray, halon, or foam.
• **LARGE FIRE**: Use water spray, fog, or foam. DO NOT use water jet.
Protective Clothing (Fire): Wear MSHA/NIOSH approved self-contained breathing apparatus or equivalent and full protective gear.
Special Remarks on Fire Hazards: Fire may produce irritating gases and dense smoke.
Special Remarks on Explosion Hazards: Processing or material handling equipment may generate dust of sufficiently small particle size.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Small Spill and Leak: Not possible.
Large Spill and Leak: Not possible.

SECTION 7: HANDLING AND STORAGE

Handling: In solid pieces, bundles, or pallet.
Storage: Keep in a cool ventilated place not exposed to direct sun light. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

Material Safety Data Sheet (MSDS)

Skin Contact: Polymer: NO known EFFECT on skin contact, rinse with water for a few minutes.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls: None

Personal Protection:

Eyes None.

Body No special protective clothing is required.

Respiratory Ventilation is normally required when handling this product at high temperatures. Wear ap propriate respirator when ventilation is inadequate.

Hands None.

Feet Normal protective shoes.

Personal Protection in Case of a Large Spill: None

Product Name: Polypropylene

Exposure Limits: Not available.

Consult local authorities for acceptable exposure limits.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance:	Solid in injected plates or cells
Molecular Weight:	Not available
Molecular Formula:	(C3H6)
pH (1% Soln/Water):	Not applicable
Boiling/Condensation Point:	Not applicable
Melting/Freezing Point:	120 to 170°C (248 to 338°F)
Critical Temperature:	Not available
Specific Gravity:	0.91 to 0.97 (Water=1)
Vapor Pressure:	Not available
Vapor Density:	Not available
Odour Threshold:	Not available
Evaporation Rate:	Not available
VOC:	Not available
Viscosity:	Not available
LogK:	Not available
Iconicity (in Water):	Not available
Dispersion Properties:	Not available
Solubility in Water:	Insoluble water
Physical Chemical Comments:	No additional remark

SECTION 10: STABILITY AND REACTIVITY

Stability and Reactivity: The product is stable. Avoid teperatures above 300 degree C (570F).

Conditions of Instability: No additional remarks

Incompatibility with Various Substances: Incompatible or reactive with fluorine gas, oxidizing agents (nitric acid and perchloric acid), free halogens, benzene, petroleum ether, gasoline and lubricating oils, and aromatic and chlorinated hydro-carbons.

Hazardous Decomposition Products: Hazardous decomposition products are carbon monoxide & carbon dioxide.

Hazardous Polymerization: No.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicity to Animals: Not available

Chronic Effects on Humans: CARCINOGENIC EFFECTS: Classified NONE by NTP, NONE by OSHA. 3 (Not classifiable for humans.) by IARC.

Other Toxic Effects on Humans: Not considered to be dangerous to humans, according to our database.

Special Remarks on Toxicity to Animals: No additional remark

Special Remarks on Chronic Effects on Humans: No additional remark.

Special Remarks on Other Toxic Effects on Humans: No additional remark.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity : Not available

BOD5 and COD : Not available

Biodegradable/OECD: Not available

Mobility : Not available

Toxicity of the Products of Biodegradation: Not available

Special Remarks on the Products of Biodegradation: No additional remark.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Information: Transfer to an approved disposal area in ac cordance with federal, state, and local regulations.

Waste Stream: Not available.

Consult your local or regional authorities.

SECTION 14: TRANSPORT INFORMATION

(for bulk shipments, non-bulk shipments may differ)

DOT Classification for Bulk Shipments (non-bulk shipments may differ): Not a DOT controlled material (United States).

DOT Proper Shipping Name: Not applicable

UN Number: Not applicable

Packing Group: Not applicable

USCG Proper Shipping Name: Polypropylene

Marine Pollutant: Not listed

Hazardous Substances Reportable Quantity: Not listed

Material Safety Data Sheet (MSDS)

SECTION 15: REGULATORY INFORMATION

HCS Classification: This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. Federal Regulations: TSCA inventory: All components are listed or exempted.

SARA 301/302/303

- No chemicals in this product are listed as extremely hazardous substances in 40 CFR 355, Emergency Planning and Notification (Appendix A to Part 355).

SARA 304

- No chemicals in this product require reporting under the requirement of 40 CFR 355
- Emergency Planning and Notification (SARA extremely hazardous substances listed in Appendix A to Part 355 or CERCLA hazardous substances listed in Table 302.4 of 40 CFR Part 302).

SARA 313

This product contains no chemicals in excess of the applicable de minimis concentration that are subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372 (Table 372.65).

SARA 311/312

This product is not a “Hazardous Chemical” as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200, and as such does not require reporting under the requirements of 40 CFR 370, Hazardous Chemical Reporting: Community Right-To-Know. Specific state and local regulations should be consulted to determine if there are any additional requirements. Because many states and localities have added requirements or incorporated the Federal contents in their own forms, Tier I & II forms should be obtained from the State Emergency Response Commission (SERC).

Clean water act (CWA) 307: No products were found.

Clean water act (CWA) 311: No products were found.

Clean air act (CAA) 112 accidental release prevention: No products were found.

Clean air act (CAA) 112 regulated flammable substances: No products were found. Clean air act (CAA) 112 regulated toxic substances: No products were found.

International Regulations

WHMIS (Canada): Not controlled under WHMIS (Canada).

CEPA DSL: Polypropylene

EINECS: Not available.

DSCL (EEC): Not controlled under DSCL (Europe).

International Lists: No products were found.

State Regulations: No products were found

Special Provisions for Transport: Not applicable

TDG Classification: Not controlled under TDG (Canada).

ADR/RID Classification: Not controlled under ADR (Europe).

IMO/IMDG Classification: Not controlled under IMDG.

ICAO/IATA Classification: Not controlled under IATA

California prop. 65: There are no Proposition 65 chemicals present in our polypropylene resins at levels that would require a warning under the California Safe Drinking Water and Toxic Enforcement Act.

SECTION 16: OTHER INFORMATION: NONE

Notice to Reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

07 Test Reports **Summary**

1. VERTICAL COMPRESSIVE STRENGTH LOAD @ 23°C ≥ 600 (kn/m²)

Product	Testing Laboratories	Test Report Ref. No.
HD-V60	Arab Center for Engineering Studies (ACES-Qatar)	ACES-VLT23-HDV60-100 ACES-VLT23-HDV60-101 ACES-VLT23-HDV60-102
HD-V60	Qatar Engineering Laboratories WLL (QEL-Qatar)	QEL-VLT23-HDV60-100 QEL-VLT23-HDV60-101 QEL-VLT23-HDV60-102
HD-V60	Ministry of Micro, Small & Medium Enterprises, Government of India (MSME-INDIA)	MSME-VLT23-HDV60-100 MSME-VLT23-HDV60-101 MSME-VLT23-HDV60-102
HD-V60	Exova (India)	EX-VLT23-HDV60-100 EX-VLT23-HDV60-101

2. VERTICAL COMPRESSIVE STRENGTH LOAD @ 40°C ≥ 440 (kn/m²)

Product	Testing Laboratories	Test Report Ref. No.
HD-V60	Arab Center for Engineering Studies (ACES-Qatar)	ACES-VLT40-HDV60-200 ACES-VLT40-HDV60-201 ACES-VLT40-HDV60-202
HD-V60	Ministry of Micro, Small & Medium Enterprises, Government of India (MSME-INDIA)	MSME-VLT40-HDV60-200 MSME-VLT40-HDV60-201 MSME-VLT40-HDV60-202
HD-V60	Exova (India)	EX-VLT40-HDV60-200

3. LATERAL COMPRESSIVE STRENGTH LOAD @ 23°C ≥ 55 (kn/m²)

Product	Testing Laboratories	Test Report Ref. No.
HD-V60	Qatar Engineering Laboratories WLL (QEL-Qatar)	QEL-LLT23-HDV60-300 QEL-LLT23-HDV60-301 QEL-LLT23-HDV60-302
HD-V60	Ministry of Micro, Small & Medium Enterprises, Government of India (MSME-INDIA)	MSME-LLT23-HDV60-300 MSME-LLT23-HDV60-301
HD-V60	Exova Chemicals & Trading We Understand Chemistry Exova (India)	EX-LLT23-HDV60-300 EX-LLT23-HDV60-301

4. LATERAL COMPRESSIVE STRENGTH LOAD @ 40°C ≥ 28 (kn/m²)

Product	Testing Laboratories	Test Report Ref. No.
HD-V60	Ministry of Micro, Small & Medium Enterprises, Government of India (MSME-INDIA)	MSME-VLT40-HDV60-400 MSME-VLT40-HDV60-401 MSME-VLT40-HDV60-402
HD-V60	Exova Chemicals & Trading We Understand Chemistry Exova (India)	EX-LLT40-HDV60-400 EX-LLT40-HDV60-401

5. COMBINED LOADING TEST

Product	Testing Laboratories	Test Report Ref. No.
HD-V60	AQUA LAB Aqua Lab Pvt., Ltd. (India)	AQUA-COMBINED TEST-HDV60-500

6. CREEP TEST

As per the Creep Test calculated data referring to CIRIA guidelines standards, the minimum design life of HD geocellular tank ≥ 50 years.

Product	Testing Laboratories	Test Report Ref. No.
HD-V60	Ministry of Micro, Small & Medium Enterprises, Government of India (MSME-INDIA)	MSME-CREEP-HDV60-60001

7. DEFLECTION TEST

Product	Testing Laboratories	Test Report Ref. No.
HD-V60	MCS Mechatronic (India	MCS-DEFL-HDV60-700
HD-V60	Spectro – SSA Labs Pvt., Ltd. (India)	SSA-DEFL-HDV60-7001

8. VERTICAL COMPRESSIVE STRENGTH LOAD @ 23°C ≥ 400 (kn/m²)

Product	Testing Laboratories	Test Report Ref. No.
HD-V40	Tarmac-Soil & Material Testing Laboratory LLC (Dubai, UAE)	TAR-V&LT23-HDV40-100 TAR-V&LT23-HDV40-101 TAR-V&LT23-HDV40-102 TAR-V&LT23-HDV40-103
HD-V40	Ministry of Micro, Small & Medium Enterprises, Government of India (MSME-INDIA)	MSME-VT23-HDV40-100 MSME-VT23-HDV40-101 MSME-VT23-HDV40-102

9. VERTICAL COMPRESSIVE STRENGTH LOAD @ 40°C ≥ 300 (kn/m²)

Product	Testing Laboratories	Test Report Ref. No.
HD-V40	Ministry of Micro, Small & Medium Enterprises, Government of India (MSME-INDIA)	MSME-VT40-HDV40-200

10. LATERAL COMPRESSIVE STRENGTH LOAD @ 23°C ≥ 55 (kn/m²)

Product	Testing Laboratories	Test Report Ref. No.
HD-V40	Tarmac-Soil & Material Testing Laboratory LLC (Dubai, UAE)	TAR-V&LT23-HDV40-100 TAR-V&LT23-HDV40-101 TAR-V&LT23-HDV40-102 TAR-V&LT23-HDV40-103

11. LATERAL COMPRESSIVE STRENGTH LOAD @ 23°C ≥ 55 (kn/m²)

Product	Testing Laboratories	Test Report Ref. No.
HD-V40	Ministry of Micro, Small & Medium Enterprises, Government of India (MSME-INDIA)	MSME-VT23-HDV40-300 MSME-VT23-HDV40-301 MSME-VT23-HDV40-302

12. LATERAL COMPRESSIVE STRENGTH LOAD @ 40°C ≥ 28 (kn/m²)

Product	Testing Laboratories	Test Report Ref. No.
HD-V40	Ministry of Micro, Small & Medium Enterprises, Government of India (MSME-INDIA)	MSME-LT40-HDV40-400

13. POLYPROPYLENE RAW MATERIAL TEST

Product	Testing Laboratories	Test Report Ref. No.
HD-V40	SGS India Pvt. Ltd.	SGS-RAW-T-HD100

NOTE- For detailed Test Report, please contact Hydroex representative with Test Ref Number.

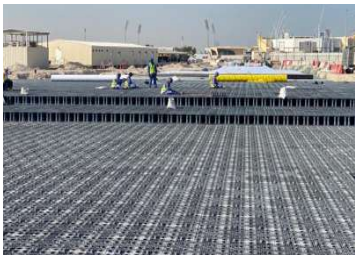
08 Projects

Project Category:

Exhibition & Greenfields Area

Project Name:

Construction & Fit Outs for Doha Expo 2022-23



Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Stormwater Infiltration & Attenuation Structural System for Landscaping, Sports, and Exhibition areas

Tank Volume Requirement:

Total of 9 tanks with total volume of 11000 cu. meters

Project Status:

Successfully completed

CLIENT: Ashghal – Qatar Deserves The Best

CONSULTANT: dar

CONTRACTOR: Tadmur Contracting

Project Category:

Traffic & Transportation

Project Name:

Construction of Bus Depot

Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Stormwater infiltration and attenuation structural system for landscaping and servicing areas.

Tank Volume Requirement:

total of 4 tanks with total volume of 1700 cu. meters

Project Status:

Successfully completed

CLIENT: Ashghal – Qatar Deserves The Best

CONSULTANT: AECOM

CONTRACTOR: Altaweeq Contracting

Project Category:

Traffic & Transportation

Project Name:

Construction of Bus Depot




Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

HD Geocellular System was installed for stormwater infiltration and soakaway purposes.

Tank Volume Requirement:

Total of 8 tanks with total volume of 4400 cu. meters

Project Status:

Successfully completed

CLIENT:	CONSULTANT:	CONTRACTOR:
Qatar Deserves The Best	AECOM	Redco International

Project Category:

Military-Hangars and Camps

Project Name:

Maintenance Hangar for Armed Forces




Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Stormwater infiltration for hangars and apron landside areas

Tank Volume Requirement:

Total of 33 tanks with total volume of 4500 cu. meters

Project Status:

Successfully completed

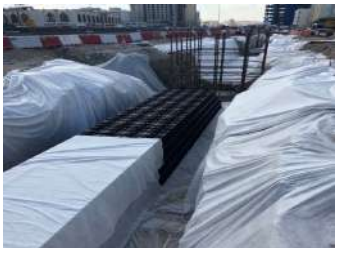
CLIENT:	CONSULTANT:	CONTRACTOR:
Military		Redco International

Project Category:

Road & Infrastructure

Project Name:

Road & Infrastructure A Ring Road



Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Storm water infiltration structural system as swales for Sustainable Urban Drainage(SUD)

Tank Volume Requirement:

Total volume of 2000 cu. meters

Project Status:

Successfully completed

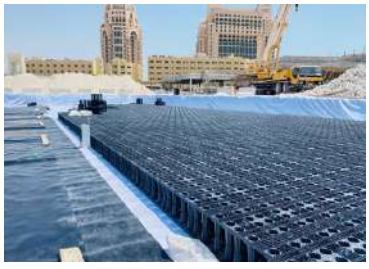
CLIENT:	CONSULTANT:	CONTRACTOR:
ASHGHAL Qatar Deserves The Best	ITALCONSULT	BOOM CONSTRUCTION COMPANY

Project Category:

Commercial Buildings & Hotels

Project name:

F&B District at Intercontinental Hotel



Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Storm water attenuation structural system for landscaping and outdoor entertainment areas

Tank Volume Requirement:

Total volume of 3000 cub. mtrs

Project Status:

Successfully completed

CLIENT:	CONSULTANT:	CONTRACTOR:
GULFHOTELS CO.	dar	MAN ENTERPRISE

Project Category:

Ports & Infrastructure

Project name:

New Port Project




Product Used:

HD Geocellular System with Virgin Polypropylene materialss

Scope of Work:

Stormwater infiltration and groundwater recharge scheme in Hard / Soft Landscaping areas , Large Car Parking areas , Heavy Loading and Truck Parking areas

Tank Volume Requirement:

Total volume of 18000 cub. mtrs

50mm Drainage Cells:

Total square meters of 10,815 sq. meters

Project Status:

Successfully completed

CLIENT: مشروع الميناء الجديد NEW PORT PROJECT

CONSULTANT: AECOM, WorleyParsons resources & energy, Royal HaskoningDHV Enhancing Society Together

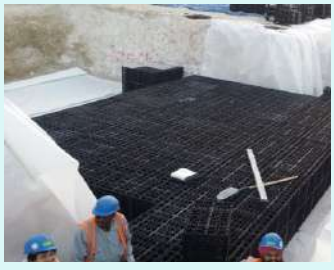
CONTRACTOR: SINOHYDRO

Project Category:

Hospitals & Health Centers

Project Name:

Wakra Hospital & Integrated Health Center

Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Stormwater infiltration structural system for landscaping & walkway areas for flood control.

Tank Volume Requirement:

total volume of 5,555 cu. meters

Project Status:

Successfully completed

CLIENT: المكتب الهندسي الخاص Private Engineering Office

CONSULTANT: dar al-handasah shair and partners, غرناطة GHARNATA

CONTRACTOR: midmac مدماك

Project Category:

Military-Hangars and Camps

Project Name:

Army Signal Corps- New Camps Project

Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Stormwater infiltration structural system for Bio-Swales

Tank Volume Requirement:

Total volume of 2000 cu. meters

Project Status:

Successfully completed

CLIENT:	CONSULTANT:	CONTRACTOR:
QATAR ARMED FORCES	QATAR EMIRI CORPS OF ENGINEERS (Q.E.C.E)	BAHADIR CONSTRUCTION

Project Category:

Infrastructure

Project Name:

Qatar Economic Zone(QEZ)- Construction of Roads & Infrastructure

Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Stormwater infiltration structural system for landscaping areas & walkway areas

Tank Volume Requirement:

Total volume of 10,000 cu. meters

50mm Drainage Cells:

Total square meters of 110,000 sq. meters

Project Status:

Successfully completed

CLIENT:	CONSULTANT:	CONTRACTOR:
manateq; ASHGHAL Qatar Deserves The Best	egis	HLG LEIGHTON CONTRACTING

Project Category:

Railway and Metro Networks

Project Name:

Qatar Rail Project - Red Line South Elevated, Green Line Underground Metro, and Gold Line Underground Metro




Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Storm water infiltration structural system rainwater drainage collection pits from overhead metro ramps

Tank Volume Requirement:

Total volume of 4,630 cu. meters

50mm Drainage Cells:

total square meters of 1,370 sq. meters

Project Status:

Successfully completed

CLIENT: RAIL الريل

CONSULTANT: Louis Berger, HILL, Hill International, egis

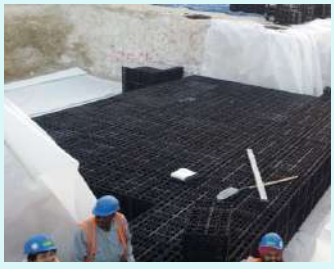
CONTRACTOR: FYAP, HBK, DORA, ALYSJ

Project Category:

Educational Institutions & Sports Field

Project Name:

ACS Doha International School, Al Kheesa Campus, Qatar

Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Storm water infiltration structural system for play areas & walkway areas

TankVolume Requirement:

Total volume of 1,420 cu. meters

50mm Drainage Cells:

Total square meters of 6,200 sq. meters

Project Status:

Successfully completed

CLIENT: ACS International School Doha

CONSULTANT: CEG International

CONTRACTOR: Al Jaber Trading & Contracting Co. W.L.L.

Project Category:

Parks & Greenfields

Project Name:

Doha Parks Beautification Project for FIFA World Cup 2022

Product Used:

HD Geocellular System with Virgin Polypropylene materials

Scope of Work:

Stormwater infiltration & rainwater harvesting for landscaping and walkway areas.
Rainwater harvesting system was introduced for irrigation purposes.

Tank Volume Requirement:

Total volume of 2,200 cu. meters

Project Status:

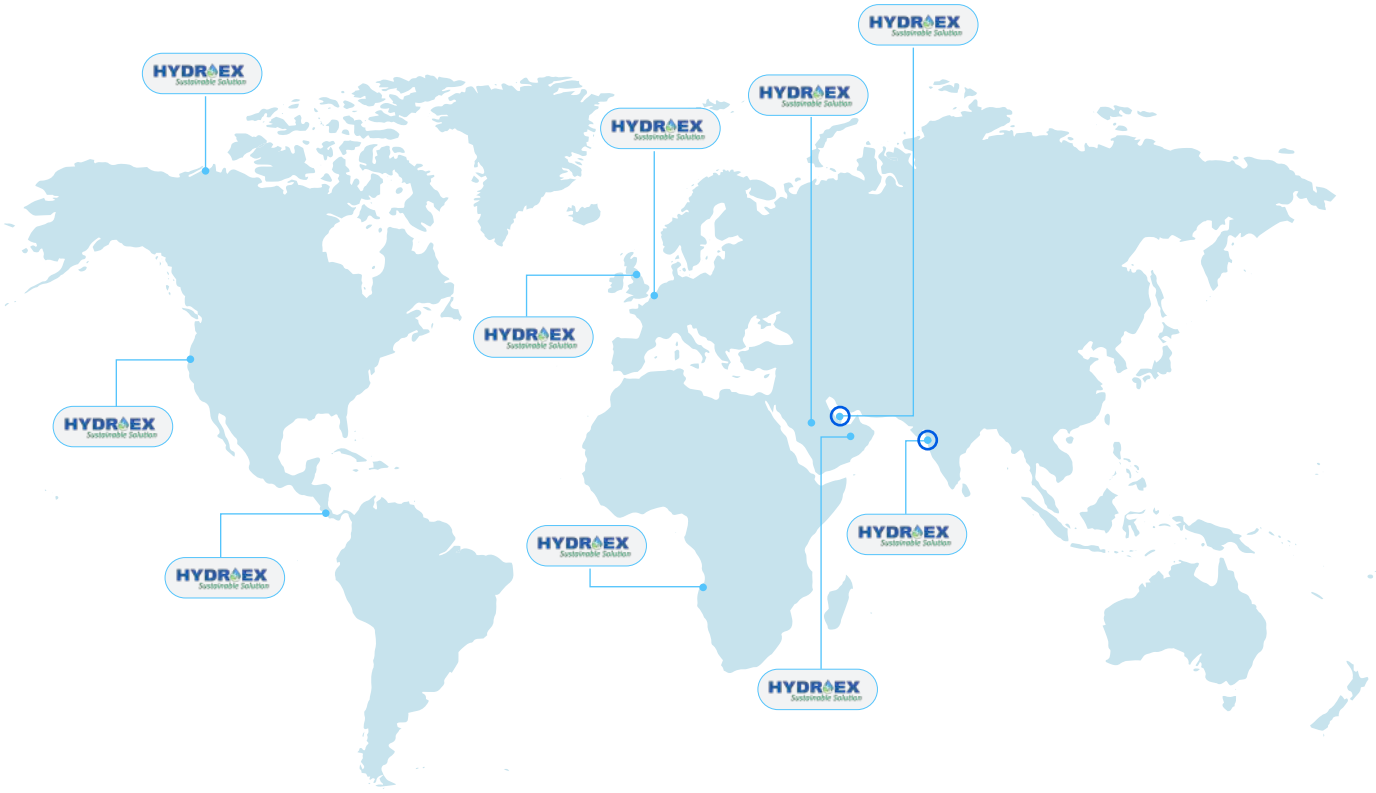
Successfully completed

CLIENT:	CONSULTANT:	CONTRACTOR:
Qatar Deserves The Best	PARSONS, CDM Smith, fd consult, erga, ITALCONSULT	LANDWORX Trading & Contracting, BOOMCONSTRUCTION COMPANY, Nakheel LANDSCAPES, BOOM GENERAL CONTRACTORS

Note

Brave to save the wave !

Ronak Banerjee
Age: 10
Hampton Prep School UK



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Sustainable Solution

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