Designed to rapidly remove the high volumes of water deposited in extreme rainfall events from the roof areas of today’s increasingly larger buildings, the Terrain HydroMax™ siphonic drainage system offers a complete and proven solution.

With ten times the flow capacity of a conventional gravity system and significantly faster water removal rates, Terrain HydroMax™ ‘sucks’ water from a roof to cope with downpours that would overwhelm a gravity system and is ideal for complex roof shapes.

Offering valuable total project cost savings of typically 20-45% over a conventional system, Terrain HydroMax™ can be factory prefabricated and gives important structural and space savings, with a reduced build programme.

Terrain HydroMax™ has a comprehensive range of roof drains for every flat and pitched roof membrane, from asphalt to bitumen to modern single ply membranes.

Ideal for commercial, industrial, sports, leisure, education and healthcare buildings, the roof drains are extremely compact and the range includes an inlet for the top deck of multi-storey car parks.

10 times the flow capacity of a conventional gravity system
Faster water removal rates
20-45% cost savings over a conventional gravity system
Reduces and simplifies underground drainage
Ideal for complex roof shapes
Structural and space saving
Accurate design software

Outstandingly accurate design software
Terrain HydroTechnic™ design software enables the designer working to BS 8490:2007 to achieve exceptionally accurate calculations which underpin the success of any engineered hydraulic siphonic drainage system. Independently tested by the world’s leading Hydraulic Research Centre in the UK, compliance with the performance requirements of BSEN 12056-3:2000, Terrain HydroTechnic™ produces calculations, factory ready drawings and bills of quantities.
The Terrain HydroMax™ system 'sucks' water from the roof, using a powerful hydraulic force created by water accelerating down the full height of the building to deliver far greater capacity and flow rates than a gravity system. In a gravity drainage system, pipework carries both air and water. The flow in gravity pipes is extremely inefficient because of the large core of air which enables the water to flow resulting in the need for larger pipes and more of them as well as extensive underground systems.

In the Terrain HydroMax™ system as rain falls, the roof drain prevents the ingress of air, rapidly purging it until the system is fully primed and running full bore. Water is transported in smaller diameter pipes to fewer, more convenient locations. The system responds quickly to rainfall changes, is self-cleaning, drains rapidly when rainfall ceases, and is designed to prevent blockage by leaves, twigs and other debris.

**How it works**

The Terrain HydroMax™ system air is purged from the pipe so that it runs 100% full of water, normally achieving 10 to 15 times higher flow rates.

**1. Gravity flow**
- Air carried above water

**2. Plug flow**
- Air pockets driven down pipe with water ‘plugs’ to ensure self-cleaning

**3. Bubble flow**
- Water fills pipe and carries bubbles in suspension

**4. Full bore flow**
- Water fills pipe with all air purged and excluded, delivering far greater capacity and flow rates

**Saving time and money**

**The 4 steps of water flow through a siphonic system**

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**Traditional Gravity Solution**
- 530 metres Pipework
- Diameters 160mm to 450mm

**Terrain HydroMax™**
- High performance roof drain
- Significant reduction in underground drainage, trenching, soil removal, treatment or backfill
- No drainage under building floor slab

**Terrain HydroMax™ Siphonic Scheme**
- 360 metres HDPE Pipework
- Diameters 56mm to 200mm
The Terrain HydroMax™ roof drain incorporates a one-piece inducer or air baffle plate, which becomes submerged in shallow water to exclude air. The height of the inducer above the body ensures the system primes rapidly with a minimum depth of water.

The inducer fins extend beyond the cover plate to restrict the formation of vortices by swirling water, which could entrain air. The fins also prevent blockage by debris and although the entire system is low maintenance, good housekeeping practice is recommended.

The roof drain is of a compact design and the system has over thirty different models available to cope with a range of roof types. The tailpipe below the roof drain is of relatively small diameter and in use, a series of tailpipes is connected to a horizontal collector or leader pipe below the roof.

Flow capacity
A 75mm roof drain can remove up to 25 litres of rainwater per second, whilst the 125mm drain can remove up to 100 litres of rainwater per second with certain piping configurations.

The piping system
The collector pipe is normally installed horizontally without slope at high level and runs to a convenient point where it drops to ground level with a transition break connection into the below-ground gravity drainage system or manhole chamber.

Terrain Pipework
Terrain Fuze pipes are manufactured in the UK to BS EN 1519-1:2000 and BBA certification. Fully welded to withstand negative pressures, they offer excellent performance and durability with high weather and corrosion resistance.

With a wide range of diameters and fittings for maximum design flexibility, they are lightweight with electro-welded joints for rapid and simple installation.

Pipe Configuration
One of the major benefits of a siphonic system is that horizontal pipe runs do not have to be installed with a gradient, minimising the space required to accommodate the system. This provides the designer with freedom to route the pipes to any location at high level, before dropping to ground level.
Failure to install pipework exactly as designed will be detrimental to the siphonic action.
The Terrian Hydromax siphonic rainwater system will be installed by trained and approved installers
to ensure that the pipework is installed exactly as designed.
Any change to the proposed pipe routing or to the calculated design can be checked and
confirmed quickly to prevent any delay to the installation.

A Proven Cost Effective Alternative to Traditional Drainage
Polypipe Gulf utilise an extensive resource of technical experts to provide the ultimate
and cost effective installed solution for major developments across the Middle East and
welcome the opportunity to demonstrate an alternative approach that can actually prove
less costly and more effective than traditional methods.
The point at which the Terrain Hydromax full bore siphonic rainwater system connects to the conventional gravity system is known as the siphonic (velocity) break.

It is an integral part of the design, the receiving pipe should be adequately sized to accept:
- Flow from Siphonic Downpipe (l/s)
- System flow velocity (m/s)

The above sketches detail typical siphonic break requirements:

(a) Roof drain with tail pipe branch connection
(b) Internal vertical connection
(c) Manhole connection

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