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ROADSTONE AQUAFLOW PERMEABLE PAVING

SUSTAINABLE URBAN DRAINAGE SYSTEM

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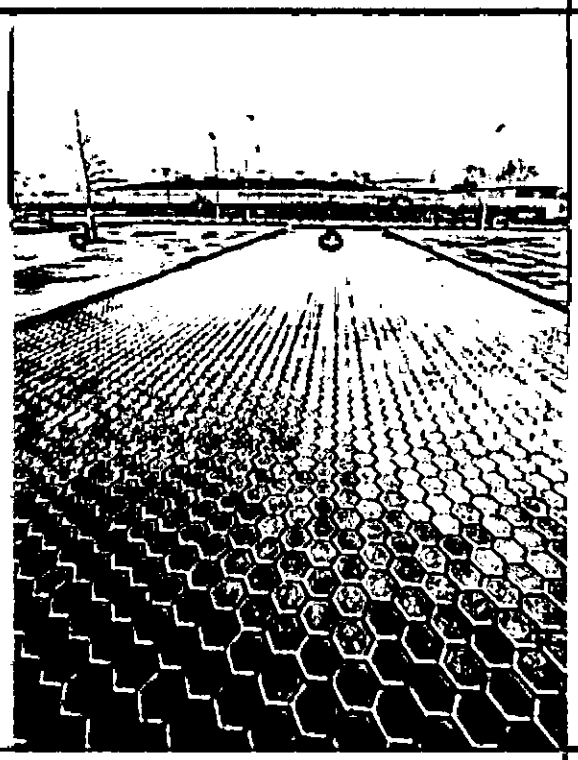
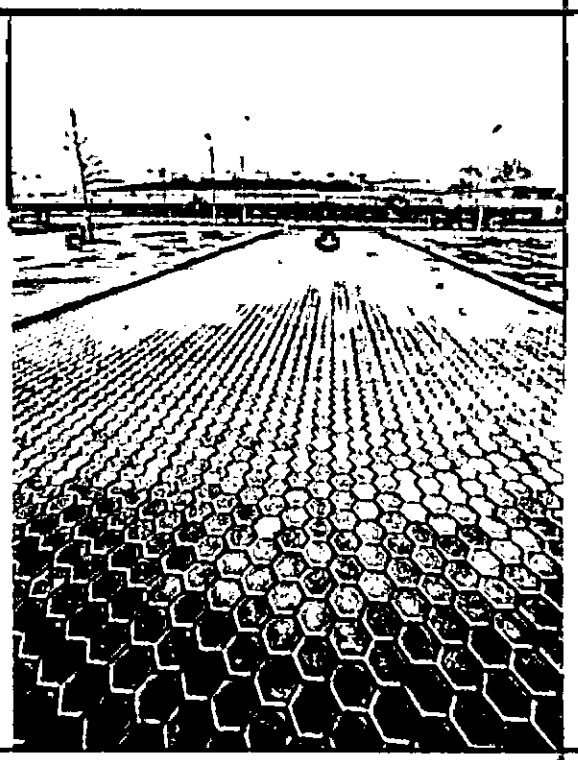




roadstone
What our nation's built on

Aquaflow®
Quality concrete paving products

Sustainable urban drainage system
Roadstone Aquaflow® permeable paving

The Problem
Increasing urbanisation and rapid run-off have put a tremendous strain on conventional storm water drainage systems. This has resulted in sewers and culverts becoming overloaded during periods of heavy rain and contamination of streams and rivers.

Heavy metals, hydrocarbons, rubber dust, silts and other detritus are all deposited on impermeable surfaces during dry weather. These are scoured off such surfaces during periods of heavy rain and transported at best into expensive treatment works, or directly into rivers and streams where they cause severe environmental damage.

The Solution – Source Control
Sustainable Urban Drainage Systems (SUDS) are increasingly being used to prevent run-off and flooding, and as a method of collecting and cleaning storm water.

The Roadstone Aquaflow urban drainage system allows heavy rain to infiltrate through a permeable concrete block paved surface into a unique sub-base before being released in a controlled manner into sewers or water courses.

If you require a CPD presentation please contact the Roadstone sales office at (01) 404 1200

Discharge rates in accordance with greenfield run-off can readily achieved if required. Alternatively if the underlying subgrade is suitable the water can be infiltrated directly into the sub-grade.

The water leaving the Roadstone Aquaflow system is cleaned by filtration and microbial action and can be used for secondary non-potable uses such as flushing toilets and watering soft landscaping.

A further advantage of the system is that roof water can be drained directly into the sub-base via a rodable sump, or if siphonically drained, through a dispersion chamber.

Suitability
Roadstone sustainable urban drainage systems and Aquaflow permeable paving products are suitable for use on: Car parks • Industrial estates • Retail centres • Pedestrian areas • Domestic drives • Motorway services • Airport service areas and aprons • Garages • Lorry parks and other heavy duty applications.

The Aquaflow system has been extensively developed over a number of years. Trials carried out by the Transport Research Laboratory at Crowthorne have proved that the sub-base design is suitable for over-run by Heavy Goods Vehicles and can be used on roads, lorry parks and industrial hard standing.

In 2005, the Greater Dublin Strategic Drainage Study finding where realised. Since then under the "New Development Policy - Technical Guidance Document", the following clause has been required for recent planning applications -

"All new developments shall incorporate SuDS facilities, unless the developer can demonstrate that SuDS is impractical due to site circumstances. Where SuDS cannot be provided, the developer shall provide alternative means of dealing with pollutants."

Roadstone Aquaflow provides a practical solution to the SuDS issue.

An Aquaflow surface has the capacity to deal with rainfall intensities approximately 90 times greater than that required by the regulations.

* Patents
The systems and products described in this brochure are covered by patents and patent applications in Great Britain and other countries see inside back cover for further information.

There are 4 basic systems designs *see below*. Each design can be tailored for infiltration or tanked according to requirements.

Infiltration
The system is underlaid with a pervious geotextile membrane (Inbitex*) and is suitable for use where it is proposed to infiltrate the water directly into a suitable sub-grade.

Tanked
The system is underlaid by an impervious plastic membrane (SC membrane) and is suitable for use where it is proposed to attenuate storm water before releasing it in a controlled manner, harvest the water for re-use or where difficult or contaminated sub-grades are encountered.

The type of membrane used and the method of sealing will depend upon the application. In some circumstances the membrane will require additional protection from puncturing and specialist advice should be obtained.

The impervious membrane restricts water entering the sub-grade, and preserves sub-grade structural integrity. This is very important where clay subgrades are encountered.

Laying course material and sub-base
Both the Tanked and Infiltration systems utilise the same laying course and sub-base materials.

Depth of sub-base can be varied to suit requirements of the engineer.

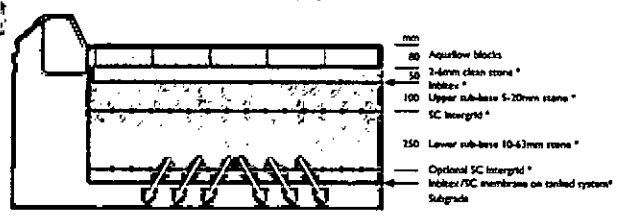
The sub-base stone must be crushed, possess well defined edges and be in accordance with the Los Angeles coefficient carried out to the requirements of EN 1097-2 1998 clause 5. Laying courses are available through select Roadstone locations.

Grading of lower sub-base stone

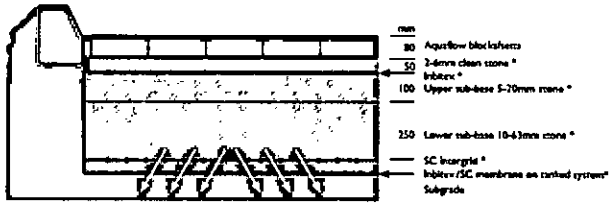
BS Sieve size	% passing
100mm	100
63mm	90-100
37.5mm	60-80
20mm	15-30
10mm	0-5

Inbitex* – thermally bonded nonwoven geotextile
Inbitex* has been specifically developed to optimise the cleansing of water entering the system. The various characteristics have been combined to create a unique geotextile that aids the development of the naturally occurring microbes, and offers them refuge during periods of drought.
For further information see page 14.

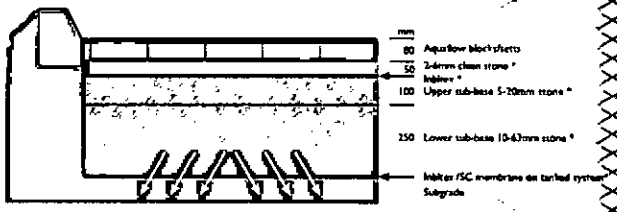
Typical Infiltration system
Areas subject to trafficking by HGV's



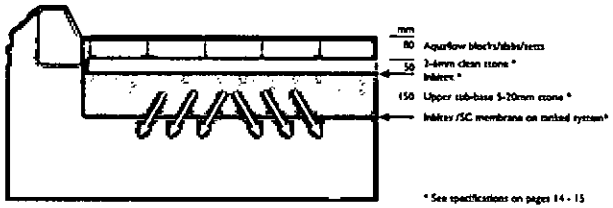
Typical Infiltration system with a sub-grade CBR of between 2-5%
Parking areas subject to trafficking by cars and vans only



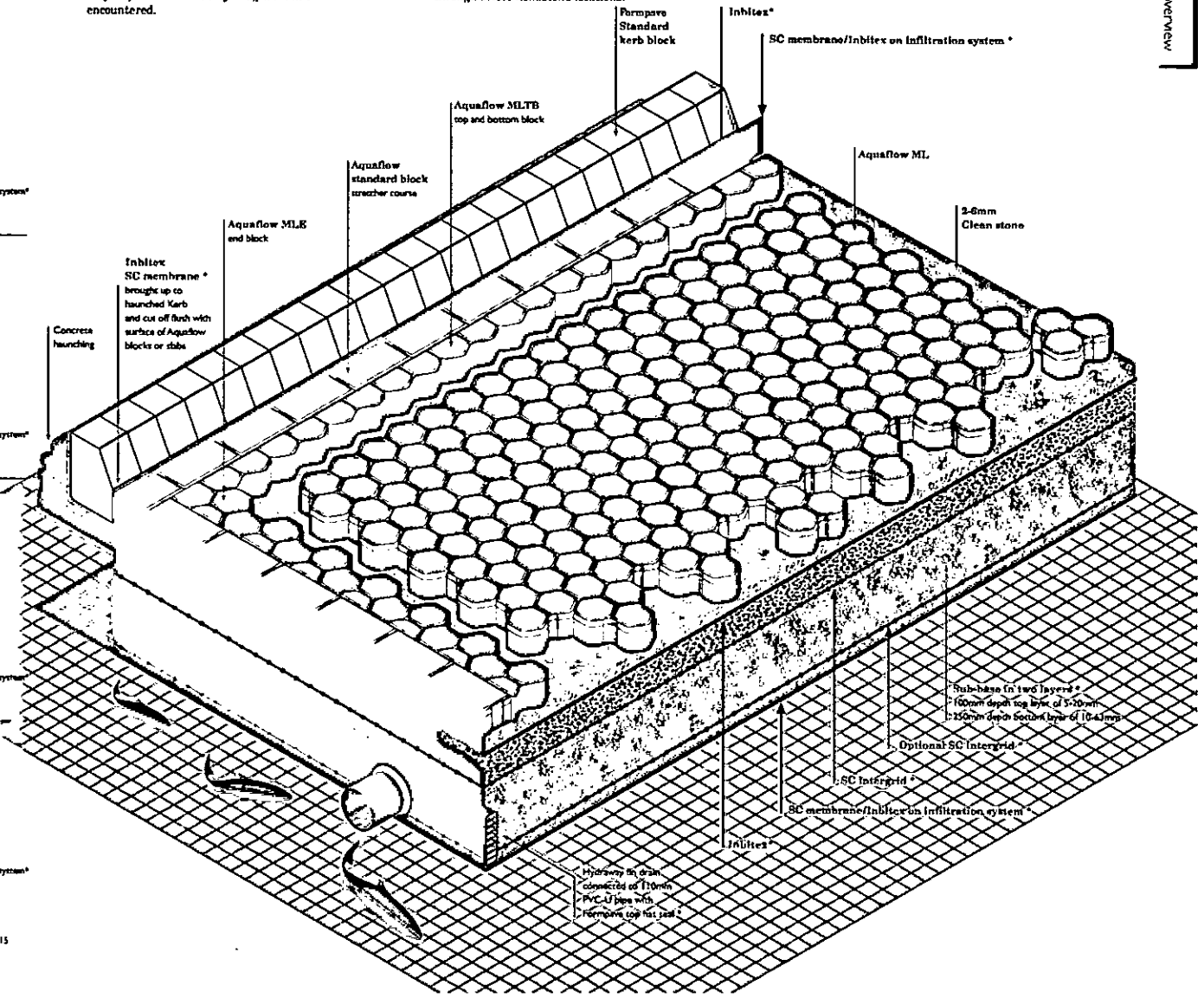
Typical Infiltration system with a sub-grade CBR of 5% or greater
Parking areas subject to trafficking by cars and vans only



Typical footpath construction
For Aquaflow



* See specifications on pages 14 - 15



The Aquaflow® range of permeable paving

A range of Aquaflow paving blocks to be used in conjunction with either lined or infiltration systems.

The current range of blocks are manufactured from concrete with a tensile splitting strength in accordance with BS EN 1338:2003.

All of the blocks and slabs provide drainage through vertical channels and will allow water through the surface at a rate of approximately 9000mm per hour (9000 litres per m² per hour) The Inbitex membrane beneath the laying course will allow approximately 4500 litres per m² per hour through and this figure should be used for design purposes.

The Aquaflow ML block system consists of an interlocking block with specialist top, bottom and edge blocks and has been specifically designed for heavy duty applications.

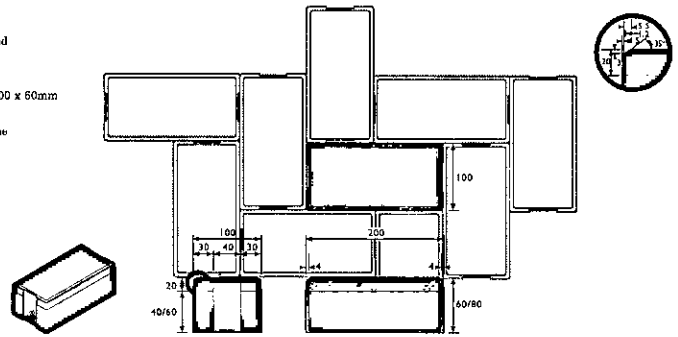
The blocks can be laid by hand or by machine. Where the blocks are machine laid modules of .65m² are laid in one pass. Laying rates of over 600m² per day have been readily achieved with a three man crew.

Aquaflow block®

For use on car parks, drives and moderately trafficked areas

Sizes
100 x 200 x 80mm and 100 x 200 x 60mm

Laying pattern
Must be laid in 90° herringbone



Aquasett®

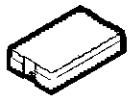
For use on footpaths and domestic drives

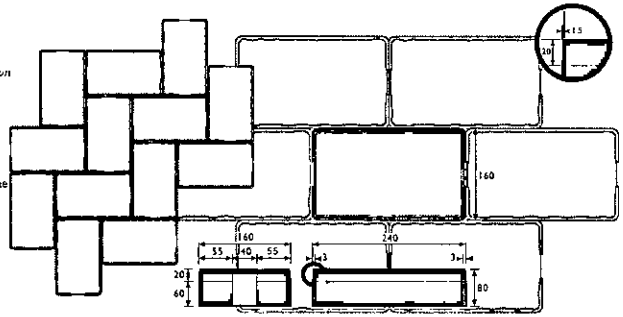
Colours and the Olden finish make the Aquasett appropriate for use in conservation areas or on projects where architectural heritage is a major consideration

Size
240 x 160 x 80mm

Laying pattern
Staggered stretcher bond or 90° herringbone

Colours*
Traditional, Vendage, Red-brindle and Pennant.



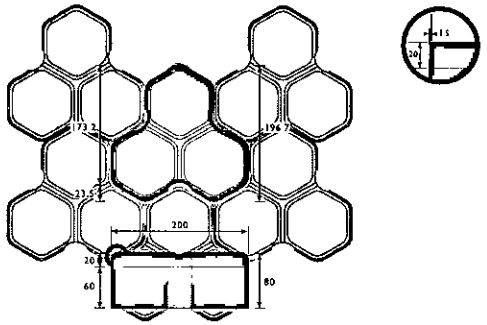


Aquaflow ML block®

For Roads and heavy duty use

Size
80mm

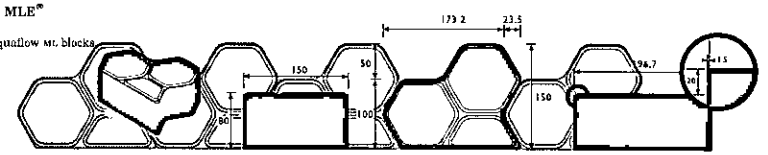
Laying pattern
Include stretcher course around edge in conjunction with MLE and MLTB



Aquaflow MLE®

End block
For use with Aquaflow ML blocks

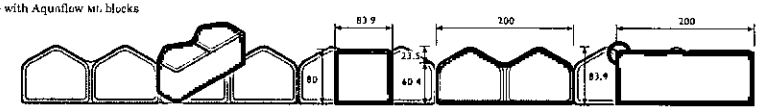
Size
80mm

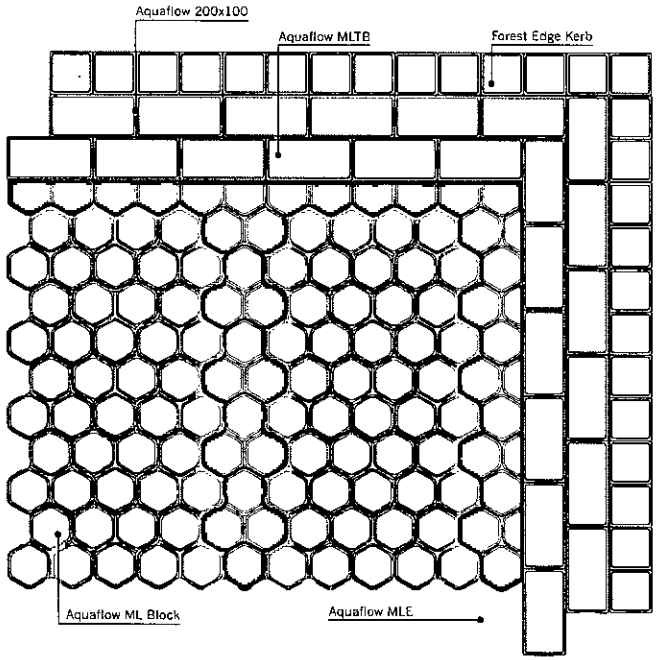


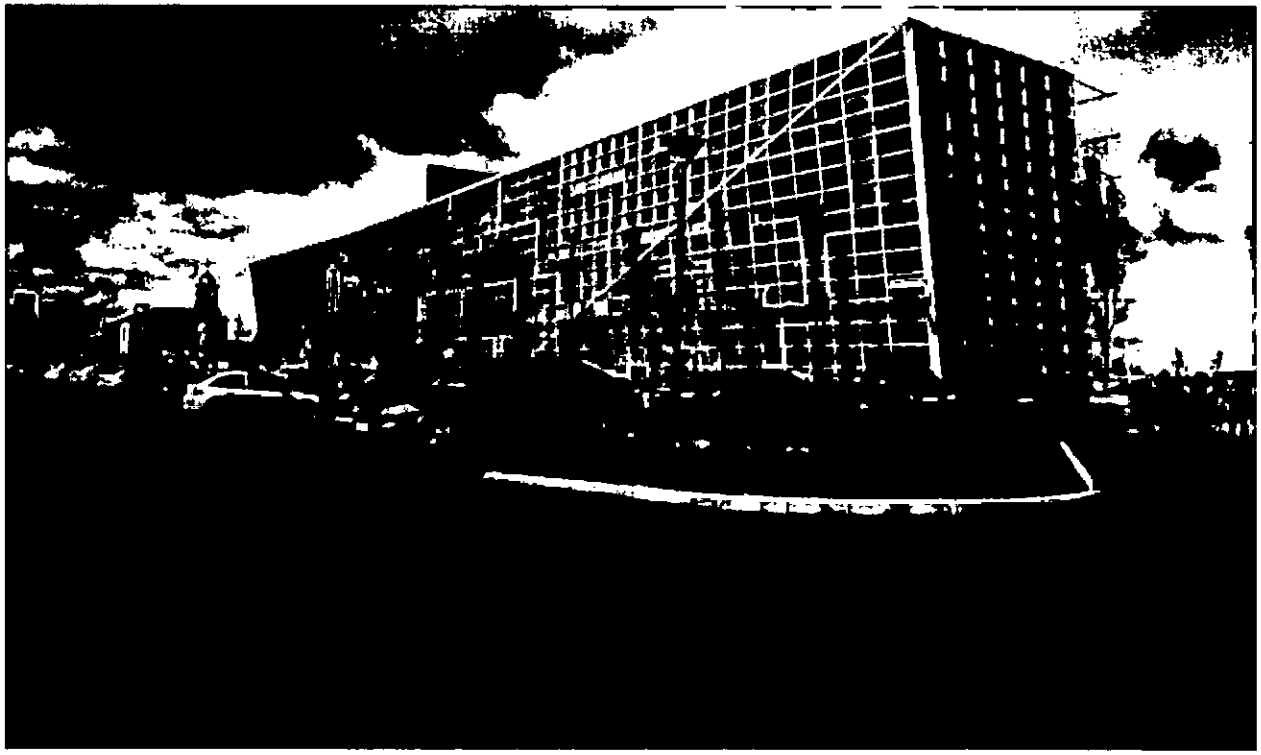
Aquaflow MLTB®

Top and bottom block
For use with Aquaflow ML blocks

Size
80mm







Aquaflow ML - Charcoal Grey

Lower Construction Costs
From experience it has been shown that total construction costs are lower than conventionally drained surfaces.

When using the Aquaflow system it is not necessary to incorporate the gullies, drainage pipes, drain runs, oil and silt traps and flow control mechanisms that are needed for traditional drainage.

When comparing relative costs it is important that all costs associated with traditional drainage are incorporated, e.g. gullies, channels, hydraulic controls, detention ponds, culverts etc.

It should be noted that the Aquaflow sub-base is open textured and therefore has a greater rate of spread than Highways Agency Type 1 sub-base.

Aquaflow specified sub-base stone weighs approximately 1.8 tonnes per m³.

Type 1 sub-base stone weighs approximately 2.2 tonnes per m³ (based on carboniferous limestone).

Control of run-off
Run off during periods of heavy rain is eliminated. Aquaflow products allow water to infiltrate through the surface of the system at a rate of approximately 9000mm per m² per hour.

Discharge Water
The compacted sub-base has a voids ratio of approximately 30% which allows storm water to be attenuated within the system and released in a controlled manner over a period of time.

Discharge rates in accordance with greenfield run-off can readily achieved if required. Where the underlying sub-grade is suitable, water can be infiltrated directly into the ground.

Infiltration can be considered even where the sub-grade would not be suitable under BRE Digest 365 criteria. The reservoir capacity of the sub-base allows water to be stored before slowly infiltrating over a period of time.

Approximately 30% of water entering the system is lost through evaporation and does not leave in the form of exit water.

Quality of discharge water
Analysis of exit water from the system has shown it to be as clean as the water discharged from a modern sewage works.

The layers of stone and geotextile act as a type of trickle filter. Organic matter, silt and loam is caught by the geotextile and held within the laying course. Heavy metals have an affinity to particulates; adhering to the surface of the organic matter and silt. They are therefore stabilised and retained within the sub-base.

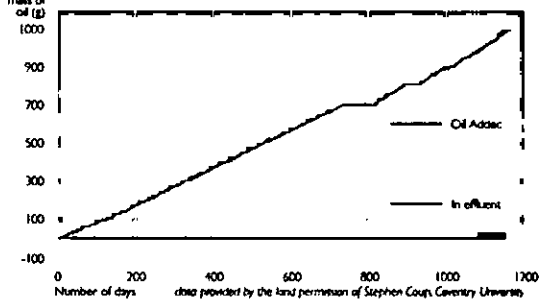
Hydrocarbons are digested within the sub-base by a population of naturally occurring microbes. Research undertaken at Coventry University on microbial growth has shown that the system is capable of degrading at least 70g of oil per m² per annum.

The UK Environment Agencies have confirmed that silt traps and oil interceptors are not required as the system catches silts and degrades oils.

An additional advantage is that water exiting the system has a pH of approximately 7.5. (UK rainfall has a ph of approximately 4.5)

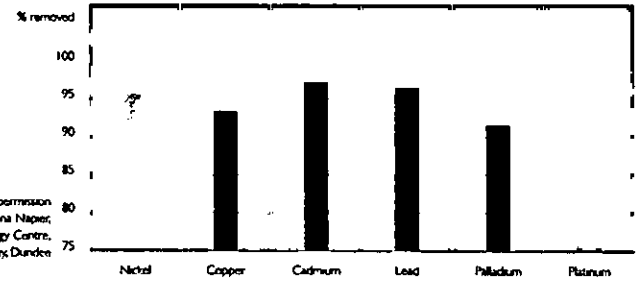
Aquaflow ML - Multi Colour

Cumulative applied and effluent oil

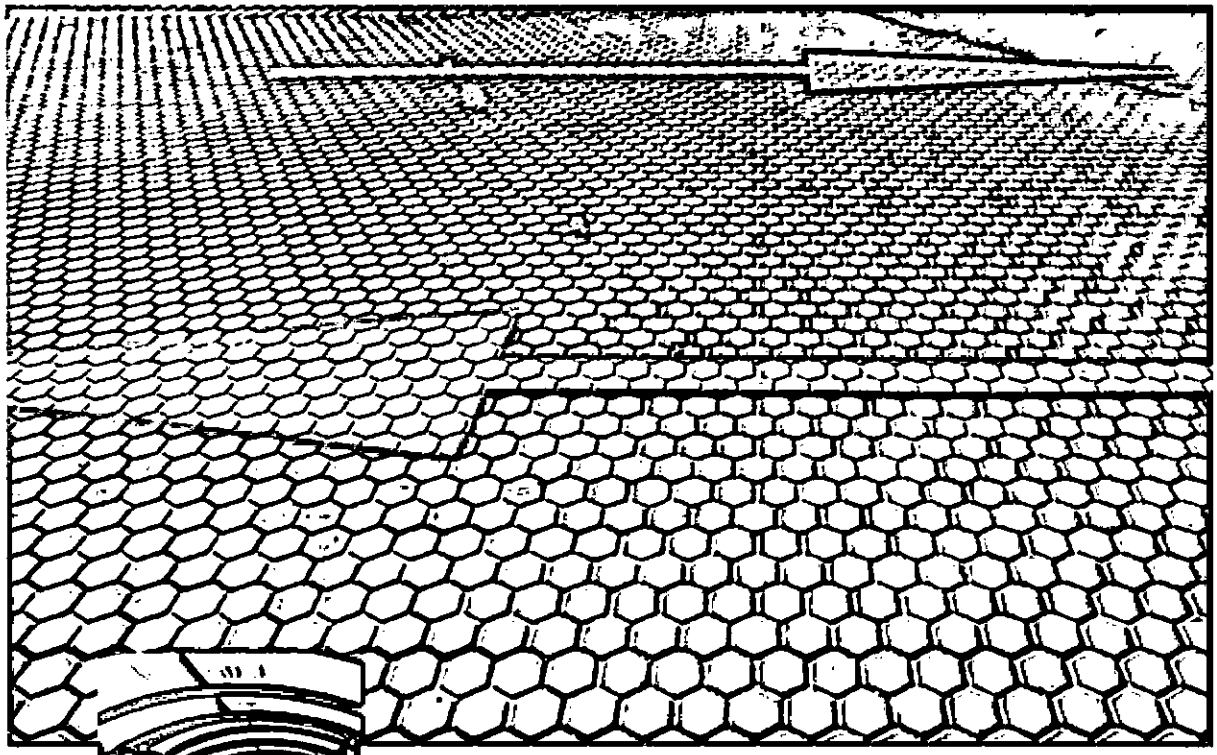


data provided by the kind permission of Stephen Coupe, Coventry University

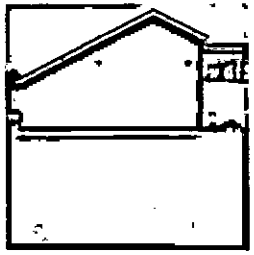
Percentage of Heavy Metals Removed



Data provided by the kind permission of Dr Chris Jefferies and Fiona Napier, Urban Water Technology Centre, University of Abertay, Dundee

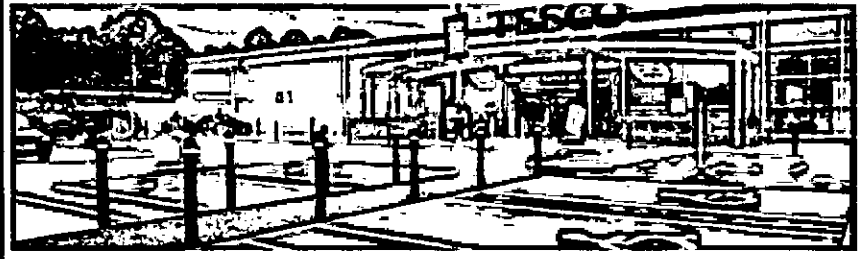


Aquaflow ML Charcoal Grey



Aquaflow Tan

Aquaflow ML - Multi Colour



Aquaflow Block Natural

Water harvesting and re-use

A number of sites are harvesting and re-using water directly from the system.

Youth hostels and schools are using the water for non-potable purposes such as flushing lavatories and a large garden centre is using this resource to water plants and soft landscapes. It has been found that water from the Aquaflow system is kinder to plants than tap water.

Roof water

Roof water can be discharged in to the sub-base. *See page 12 for design details.*

With gravity fed drainage it is recommended that the water is introduced into the sub-base by means of a sump with a manhole cover adjacent to the paved area. Any debris can be easily caught and cleared. The water is then dispersed within the system via a permavoid distribution tank.

Maintenance and performance

The surface has a design life equivalent to standard block paving. The surface blocks require simple routine maintenance – *see maintenance specification; inside back cover.*

Professor John Argue of the Urban Water Resources Centre at the University of South Australia has undertaken extensive research on the siltation of blocks and laying course.
His research assumed rainfall of 580mm per annum with a loading of 200 parts per million of silts. This is similar to the annual rainfall in Newark, Nottinghamshire, and the silt loading is what would be found in an established urban catchment. He concludad that after 35 years, surface permeability is approximately 20% of the 'as new' value.

Assuming a 'worse case scenario' where after say twenty five years, 90% of the surface permeability has been lost through silting. The permeability of the surface is still 9000mm x 10% or 900mm of water per hour per m² (900 litres per m²).
This would indicate that the surface permeability is still eighteen times what is required to deal with 50mm of rain in an hour.

Heavy duty use

Trials undertaken at the UK Transport Research Laboratory validated the sub-base design for heavy duty use.
It is recommended that this sub-base design is used wherever there is a possibility of over-run by heavy vehicles.

The heavy duty sub-base design comprises two separately graded layers of stone with an SC intergrid at the interface between the two layers (a further optional second SC intergrid may be installed lower down the sub-base at the engineers discretion).

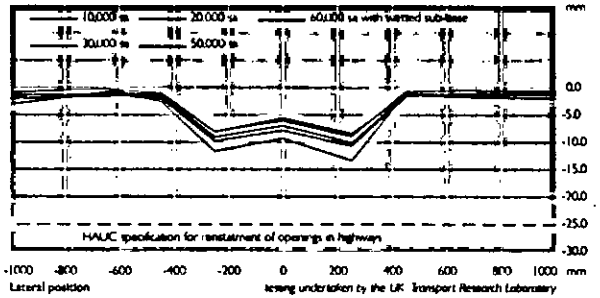
The standard details show a base layer of 250mm of 10-63 stone overlaid by a SC intergrid and a 100mm depth layer of 5-20 stone. The depth of the sub-base may be varied at the engineers discretion.

Design criteria

The sub-base has a reservoir capacity of approximately 30%. As a quick rule of thumb – 10m² of Aquaflow system with a depth of 350mm of sub-base will accommodate 1 cubic metre of water.

Where it is proposed to drain impermeable surfaces onto areas of Aquaflow it is recommended that a maximum ratio of 2:1 impermeable: Aquaflow is used.

Deformation due to trafficking



Design service
Roadstone offer a comprehensive free design service to suit individual site requirements.

The service offered by Roadstone's team of engineers includes technical and professional advice, preparation of draft proposals, and validation of client's own designs.

All designs are covered by our engineeers professional indemnity insurance, and benefit from the company's 14 years experience in designing permeable paving systems.

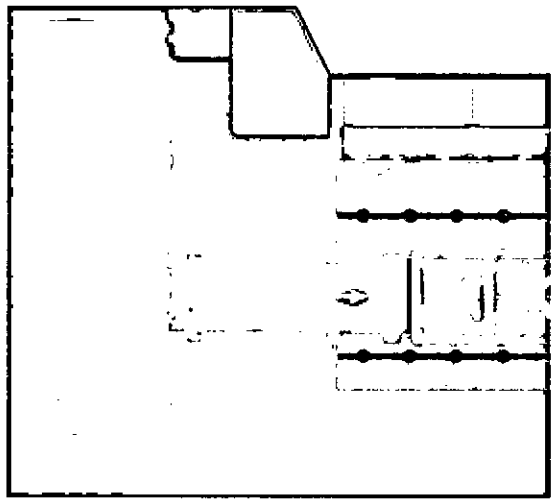
Every aspect of Aquaflow permeable paving system has been independently tested and verified - both in terms of pollution control properties and hydraulic and structural performance. During the past 14 years the Company has sponsored an ongoing programme of research and development into permeable paving systems at a number of academic and independent institutions including Coventry University, Edinburgh University, Abertay University, Delft University, HR Wallingford and TRL at Crowthorne.

Roadstone Aquaflow have always shared (and continue to share) the results of this research with the construction industry, and it is this approach that has established the Company as the world leader in permeable paving solutions.

The following information can be downloaded from the Roadstone website (www.roadstone.ie): Standard detail designs in 'AutoCAD' format and the specification documents in 'Word' format for laying, reinstatement and maintenance as shown on pages 14-15.

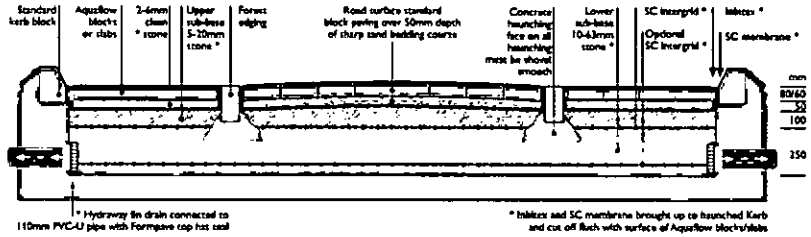
For more information please contact Roadstones design team on 01 4041200 or info@roadstone.ie

Aquaflow Block - Tan and Charcoal Grey

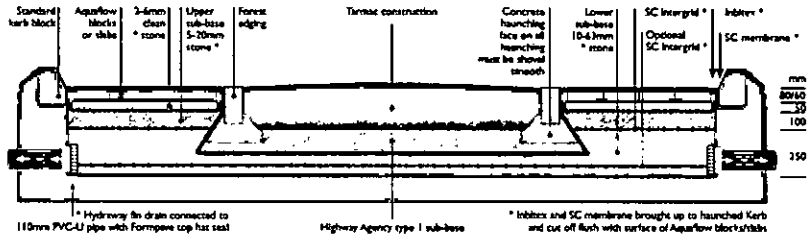


Aquaflow Block - Golden Brindle and Charcoal Grey

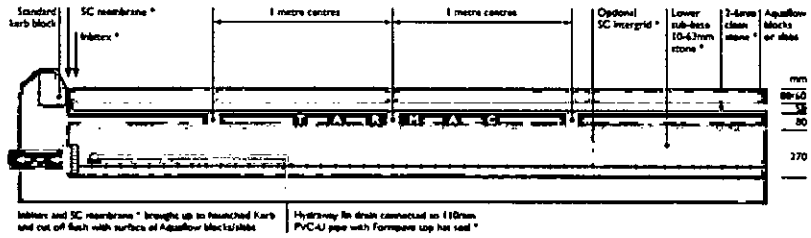
Aquaflow paving in conjunction with standard block paved road surfaces
Tanked system section Aquaflow pavement with undersealing membrane



Aquaflow paving in conjunction with tarmac road surfaces
Tanked system section Aquaflow pavement with undersealing membrane



Construction running surface
Tanked system section Aquaflow pavement with undersealing membrane



- Lay SC membrane, optional Intergrid, 270mm of sub-base and SC Intergrid
- Lay 80mm of dense base course Tarmac over sub-base (see specification)

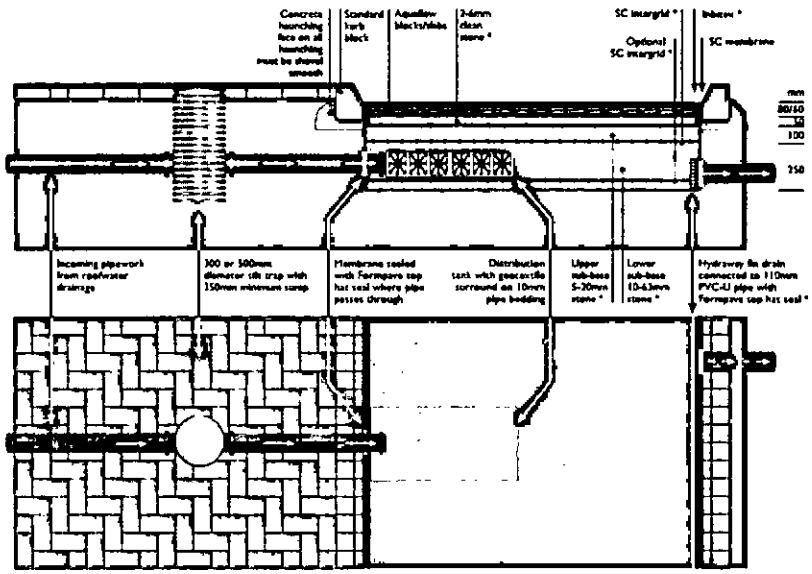
After building work is completed
- Clean tarmac surface
- Cut 20/50mm diameter holes at 1 metre centres through tarmac surface into sub-base
- Fill holes with 2-6mm clean stone
- Lay Inbitex, 50mm laying course and Aquaflow blocks or slabs

Illustrations on this page illustrate the tanked system. For the infiltration system replace SC membrane with Inbitex.

* See specifications

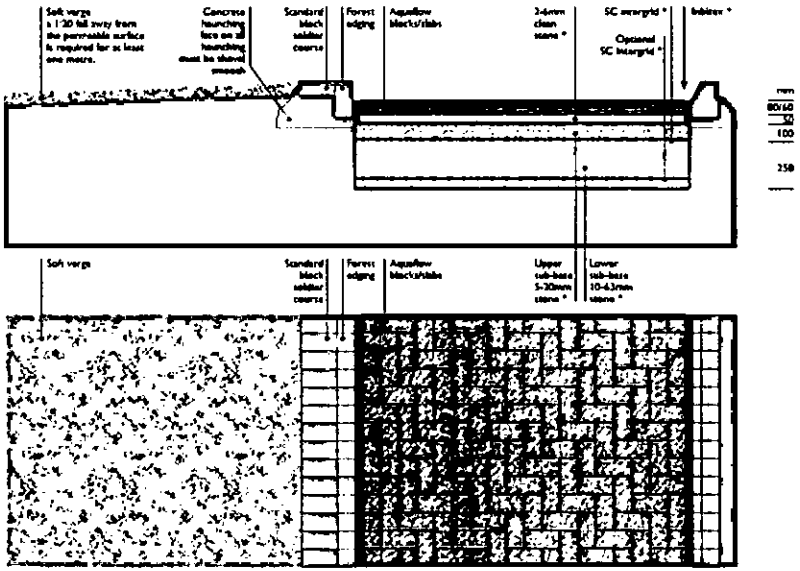
Down pipe drainage into tanked system

Aquaflow pavement with undersealing membrane



Soft landscaping and Aquaflow paving

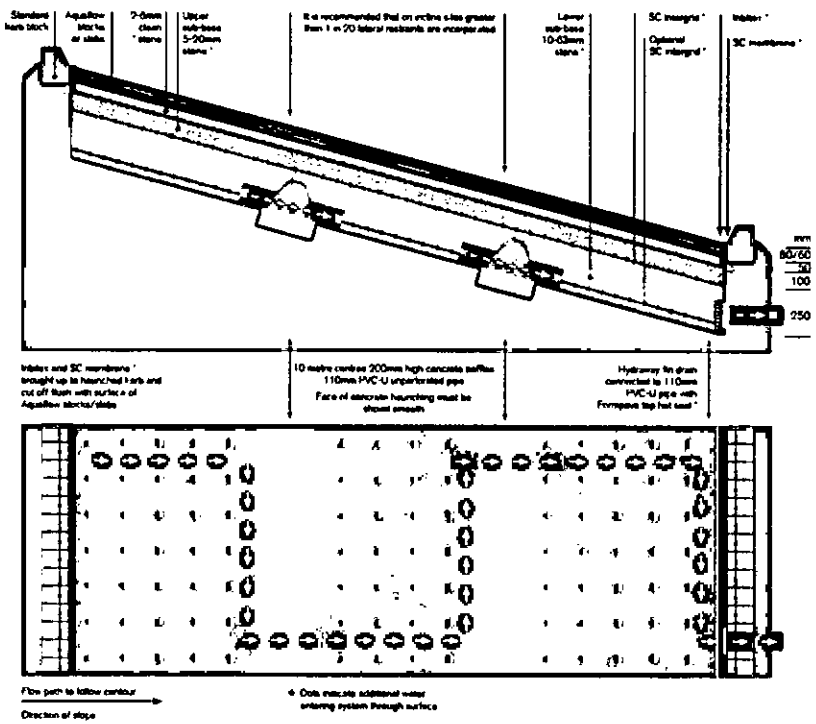
Recommended detail *Aquaflow blocks shown with tanked system*



* See specification

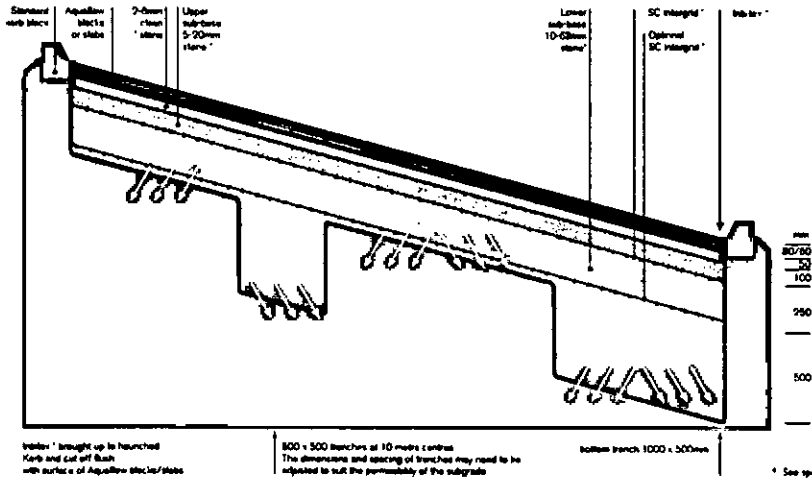
Sloping sites tanked system

Aquaflow pavement with undersealing membrane *also see plan*



Sloping sites infiltration system

Aquaflow pavement with no undersealing membrane



Q24 Sustainable urban drainage system

Standard contract documentation
To be read with preliminaries/general conditions

Q24 SUSTAINABLE URBAN DRAINAGE SYSTEM
Aquaflow paving
115 TYPE(S) OF PAVING
Permeable concrete block paving
Roadstone Dublin Ltd.,
Fortunestown,
Dublin 24.
Telephone: 01 4041200

Roadstone Provinces,
Paving Plant,
Goog,
Castleconnell,
Co Limerick
Telephone: 061 377217
www.roadstone.ie

Reference
Aquaflow, Aquaflow ML, MLE, MLTB,

Size
As per manufacturer's specification

Colours
Natural, Charcoal Grey, Tan, Terracotta, Golden Brindle

Setting out
Aquaflow block: 90° herringbone with double stretcher course around all perimeters.

Aquaflow ML: Include stretcher course around edge in conjunction with MLE and MLTB

Roadstone Kerbs
Standard kerb system or Forest Edging: both to be haunched with concrete.

Laying course*
50mm depth of 2-6mm. single size clean crushed stone to BS EN 13242: 2002.

Inbitex*†
As specification

Sub-base specification*
All granular sub-base material shall comprise crushed gravel, rock or concrete possessing well defined edges. It must be sound, clean, non friable and free from clay or other deleterious matter.

The material must be non plastic when tested in accordance with BS1377 Test No.4

* The crushed stone used for the laying course and sub-base must have a minimum 10% fines value of 150kN when tested in accordance with BS812 Part 111.

The selected test samples shall not be oven dried and should be soaked in water at room temperature for 48 hours before the test.

The 100mm deep upper layer of sub-base material should be graded 5mm-20mm to BS EN 13242: 2002.

Grading of lower layer of sub-base stone:

BS EN Sieve size	% passing
80mm	100
63mm	90-100
40mm	60-80
20mm	15-30
10mm	0-5

Depth of Sub-base
It is recommended that a sub-base depth of 350mm should be used. The depth of sub-base may be varied at the discretion of the Engineer. Alternatively 270mm of sub-base overlaid with 80mm of dense bitumen base course to Clause 903 of the Highways Agency Specification may be used.

Intergrid(s) †– SC Intergrid or other grid approved by the engineer.

Tarmac Running Course
To be 20mm dense base binder course manufactured with 100/150 grade bitumen to BS4987. The tarmac shall conform with the requirements of BS 4987.

Membrane †
Where methane or a high water table is present in the subgrade it will be necessary to use a heavy duty membrane and to weld the joints. The membrane should be protected against puncturing.

Fin drain †
Hydraway Fin Drain to BBA Number 95/85.

Seal † Aquaflow top hat seal

Subgrade (see details on page 2)
Where the structure is to be over-run by heavy vehicles the subgrade should have, or be improved to have, a CBR of at least 15%. Poor subgrades with low CBR's may be improved by incorporating a capping layer of cement, lime or bituminous bound materials. Alternatively granular materials in accordance with clause 613 of the Highways Agency specification may be used.

Inbitex*†

Inbitex*
Thermally bonded nonwoven geotextile

Inbitex has been specifically developed to optimise the cleansing of water entering the system. The various characteristics have been combined to create a unique geotextile that aids the development of the naturally occurring microbes, and offers them refuge during periods of drought.

Inbitex* specification

Mechanical properties	
Wide width strip tensile	EN ISO 10319
Mean peak strength	8.50kN/m
Elongation at peak strength	28%
CBR puncture resistance	EN ISO 12236
Mean peak strength	1575N
Trapezoidal tear resistance	ASTM D4533
Mean peak strength	325N
Hydraulic properties	
Pore size	EN ISO 12956
Mean AOS O_{90}	0.145mm
Water flow	EN ISO 11058
Mean flow VI_{H50} 10-3m.s-1 (l/m²s)	80
Water breakthrough	BS 6906: Part 3
Mean head	50mm
Air permeability	ISO 9237
Mean flow	2875 l/m².s
Typical physical properties	
Mass EN 965	130 g/m²
Roll width	4.5 & 1.5m
Roll length	100m

Construction

Laying generally
All construction work on pavements should be carried out following completion of general site works and **after topsoiling of adjacent areas** to prevent wash down of fine materials. Where a temporary running surface is required the construction should be in accordance with diagram on page 11.

Subgrade
Excavate to subgrade appropriate levels shown on site drawings to provide a minimum fall of 1:1000 to fin drain. Where it is proposed to infiltrate no falls are necessary.

The subgrade should be compacted with a vibrating plate or roller to the requirements of Clause 613 of the Highways Agency specification. Prior to compaction all soft areas should be removed and filled with suitable replacement material to provide a stable subgrade.

Kerbs/Edings
The paved areas must be firmly restrained. Where the pavement is designed for heavy use the concrete kerb haunching must extend to a minimum depth of 150mm below the base of the kerb.

The kerb/edging must extend with sufficient height above the haunching to accommodate the full laying course depth and block height.

SC Membrane Lay SC membrane taking care to overlap the joints by 300mm using double sided tape. Where methane or a high water table is present a specialist heavy duty membrane may be required and the joints should be welded. If it is proposed to drain by infiltration to the sub-grade, the SC membrane should be replaced with a geotextile to stop the ingress of subgrade material into the sub-base. The fin drain will not be required.

Sub-base
The lower layer of sub-base (10-63mm) should be placed in 2 separate layers, each layer being compacted with a vibrating roller or heavy duty vibrating plate to the requirements of Clause 802 of the Highways Agency specification. The final pass should be undertaken with no vibration. Compaction should continue until 97% of the compacted bulk density achievable under laboratory conditions has been reached. This can be measured with a nuclear density gauge. The specified 350mm depth of sub-base may be varied by the Engineer to suit site requirements.

SC Intergrid
Where required the Intergrid should be incorporated at the interface between the two layers of sub-base. The Intergrid should be laid on the sub-base and joints should be overlapped by 300mm.

The upper sub-base layer (5-20mm) should then be laid on top of the Intergrid and compacted as before.

A second intergrid can be incorporated underneath or within the sub-base at the engineers discretion. This should be laid in the same way as the first intergrid.

Inbitex*
Lay geotextile on top of the sub-base overlapping joints by 300mm. Inbitex should be brought up to the haunched kerb/edging and cut-off flush with the surface of the paving.

Laying course
Lay and screed to level approximately 50mm depth of 2-6mm single sized crushed stone to BS EN 13242: 2002. It is important that the final level of the 2-6mm stone is accurate as the stone will compact down much less than sand when the surface blocks are vibrated. The particle shape of the 2-6mm stone will also affect the degree of compaction. It is recommended that a small trial area should be laid prior to construction to determine the accuracy of final levels.

Block laying
It is advisable to pre-set the block level by 6mm to allow for the effects of settlement when laid against fixed edgings. The blocks and slabs must be tightly butt jointed ensuring that a good fit is achieved.

A single or double stretcher course of Aquaflow blocks must be used around the periphery of the paved areas and also at the edges of any separately restrained areas, such as tree pits.

It is recommended that lateral restraints (such as forest edging) should be installed in areas where vehicles turn and/or brake, such as bends and junctions and on large areas of paving. The lateral restraints should be properly constructed and haunched with concrete.

Where blocks need cutting, they should be cut to a tight fit and none are to be smaller than 30% of the unit block size. Where Aquaflow blocks are cut they must be cut across the 100mm and not the 200mm dimension. Blocks should be cut vertically and not undersecored. All block cutting should be carried out with a disc cutter.

Surface Finish
The blocks should be vibrated with a vibrating plate Type DVP75/22" or similar. Following the first pass with a vibrating plate, 3mm clean quartzite or gritstone should be applied to the surface and brushed in. Blocks should again be vibrated and any debris brushed off

Method of accessing services and reinstatement

General
It is important that access to services in or underneath the Aquaflow Sustainable urban drainage system is under-taken in a disciplined and progressive way.

Procedure
Uplift Aquaflow blocks 1m either side of the line of relevant underground services.

Take up the laying course stone and cut the underlying geotextile membrane along either side of the line of services and parallel with them. Dispose of the laying course stone and geotextile.

Excavate sub-base stone and place adjacent to the excavation on plastic membrane. The sub-base stone can be re-used.

Cut intergrid(s) in the same way as the geotextile and dispose of it.

Cut layer of geotextile or waterproof membrane at reduced level along the line of the services in the same way as the higher layer of geotextile and dispose of it.

Excavate material over and around services and put on plastic membrane ready for re-use.

Carry out repair on services.

Once repairs have been completed replace and fully compact the excavated material around the services.

Cut fresh geotextile or waterproof membrane to size allowing additional 300mm extra width either side of the remaining geotextile membrane. Tape new geotextile/membrane in place.

If a heavy duty welded waterproof membrane is installed due to a high water table or the presence of methane the replacement membrane will need to be rewelded to the existing membrane.

Replace the first 250mm depth of sub-base and thoroughly compact, cut and install fresh intergrid(s) allowing 300mm of extra width either side.

Spread and compact final 100mm depth of sub-base.

Cut fresh geotextile membrane to size again allowing 300mm overlap using double sided tape.

Lay and loose screed to level approximately 50mm depth of 6-2mm crushed stone to BS EN 13242: 2002.

Replace surface blocks, vibrate surface blocks to level and dress the surface with 2-4mm clean gritstone and vibrate again.

Brush off and dispose of any debris before final vibration.

Aquasett® Colours and Finishes

Alternative special colours and textures are available upon request.

While every care has been taken to reproduce the colour of the blocks in this document as accurately as possible, we cannot reproduce exact colours in print and recommend that you examine samples prior to laying of any paving.

1. Colour and finish variation
Roadstone products are manufactured from naturally occurring materials and consequently may show slight variations in finish and colour.

2. It is strongly recommended that products are taken from three or more packs and mixed during laying to minimise any colour variation.

3. All concrete products may suffer from efflorescence. This occurs naturally and will disappear with use. It is in no way detrimental to the performance of the product. *No responsibility can be accepted for this natural reaction.*

4. Finishes
Aquaflow blocks, Aquaflow ML, MLE and MLTB blocks manufactured with a standard finish.

Aquaflow kerb options
The range of kerb options together with the full range of Roadstone concrete paving products are illustrated in greater detail in the standard Roadstone paving manual available on request.

Forest Edge A substantial edge restraint. Available in two standard colours Natural and Charcoal Grey. Other colours available upon request.

Pack sizes and weights
All packs are palletised and shrink wrapped with the exception of the Aquaflow block which is Void packed.

80mm Aquaflow Block 10m² per pack, 500 blocks in 10 layers. Weight approximately 1.8 tonnes per pack.

80mm Aquasett 9.23m² per pack, 240 blocks in 10 layers. Weight approximately 1.65 tonnes per pack.

80mm Aquaflow ML Block 6.24m² per pack, 240 blocks in 8 layers. Weight approximately 1.11 tonnes per pack

80mm Aquaflow MLE Block 27.7 l/m per pack, 160 blocks in 8 layers. Weight approximately (mixed bale MLTB & MLE) 1.15 tonnes per pack

80mm Aquaflow MLTB Block 38.4 l/m per pack, 192 blocks in 8 layers. Weight approximately (mixed bale MLTB & MLE) 1.15 tonnes per pack

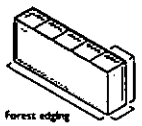

Charcoal


Terracotta


Golden Brindle


Natural


Multi


Forest edging

Aquaflow Sub Base Stone and Accessories

All of the required sub-base stone as described are available from select Roadstone locations through out Ireland.

Paving Block:

Roadstone Aquaflow Aquasett® Paving Block 240x160x80 in select colours, as manufactured by Roadstone to I.S. EN 1338:2003 and laid in accordance with BS 7533

Roadstone Aquaflow Block® 200x100x50 in select colours, as manufactured by Roadstone to I.S. EN 1338:2003 and laid in accordance with BS 7533

Roadstone Aquaflow ML Block® 200x196x60 (MLTB and MLE) in select colours, as manufactured by Roadstone to I.S. EN 1338:2003 and laid in accordance with BS 7533

Forest Edge Kerb:

Roadstone Aquaflow Concrete Forest Edge® Kerb 500x200x100 in select colours, as manufactured by Roadstone to I.S. EN 1338:2003 and laid in accordance with Roadstone Aquaflow details, haunched with concrete.

Aquaflow Permeable Stone:

Roadstone Aquaflow 10/63mm Permeable Stone Sub Base, which must be non plastic in accordance with BS 1377 – test 4, laid in depths according to the engineers design.

Roadstone Aquaflow 5/20mm Permeable Stone Sub Base, in accordance with BS EN 1342:2002, laid in depths according to the engineers design.

Roadstone Aquaflow 2/8mm Permeable Stone Laying Course, in accordance with BS EN 1342:2002, which should be angular and regular in particle shape, laid in depths according to the engineers design.

Accessories:

Inbitex, as supplied by Roadstone or WT Burdens, a unique thermally bonded nonwoven geotextile, laid with a 300mm overlap and in accordance with the manufactures instructions.

SC Intergrid, as supplied by Roadstone or WT Burdens, laid in select layers as designed, with a 300mm overlap and in accordance with the manufactures instructions

SC Membrane for used on tanked systems, as supplied by Roadstone or WT Burdens, with an appropriate sealing tape, laid with a 300mm overlap and in accordance with the manufactures instructions.

Fin Drains, Top Hat Seals and Permavoid Boxes, as supplied by Roadstone or WT Burdens installed in accordance with the Engineers layout and design, and in accordance with the manufactures instructions.

Aquaflow®
Quality concrete paving products