



# ACO RoadDrain®

Heavy-duty channel drainage system



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# Surface Water Management

## What is RoadDrain®?

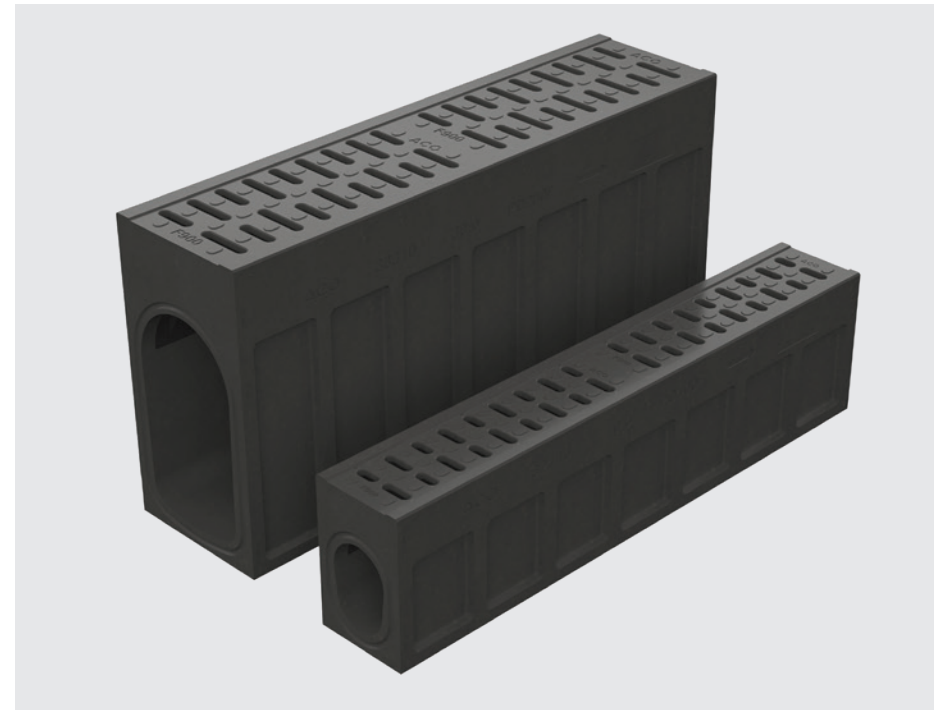
ACO RoadDrain® is a high-strength, monolithic channel system designed to deliver high performance drainage in areas subjected to dynamic wheel loads, such as motorways, ports, docks, and aircraft aprons.

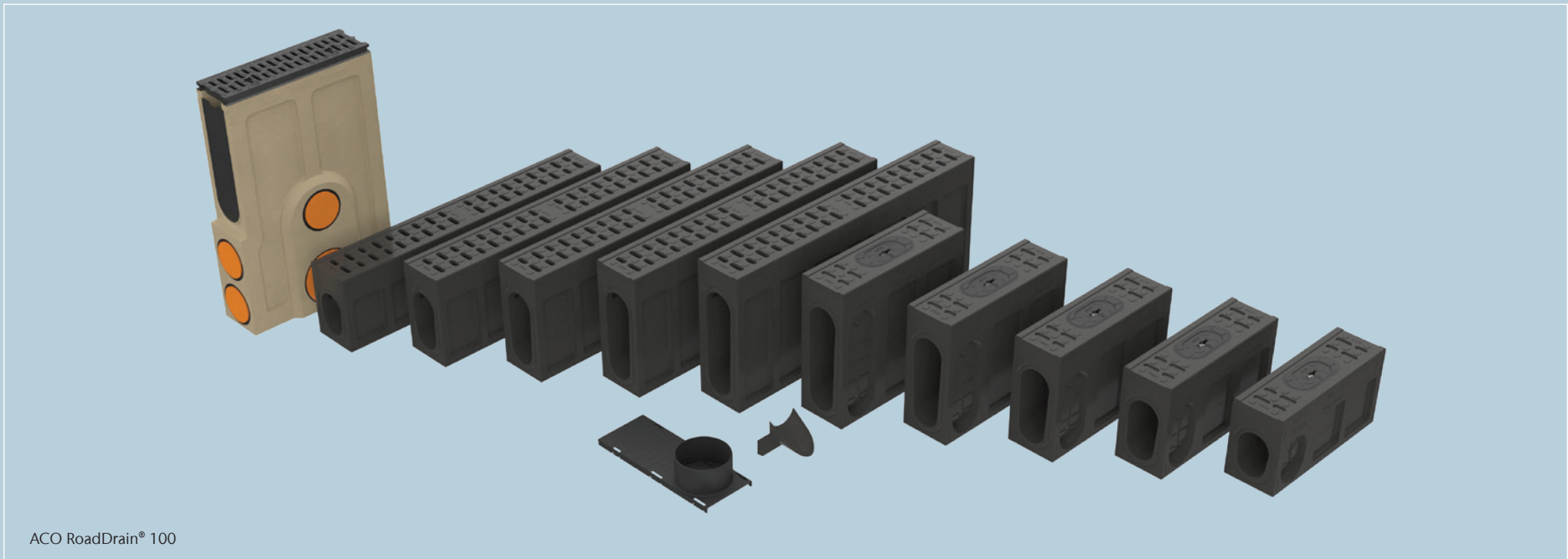
The channels are fully certified to BS EN 1433:2002 for applications D 400 to F 900 and, also meet the requirements of Highways Works Clause 517.

Manufactured from ACO's sustainable, high-strength polymer material, the system includes 1m channels and half-metre access units, available in a range of constant depths. This flexibility allows for both flat and stepped installations,

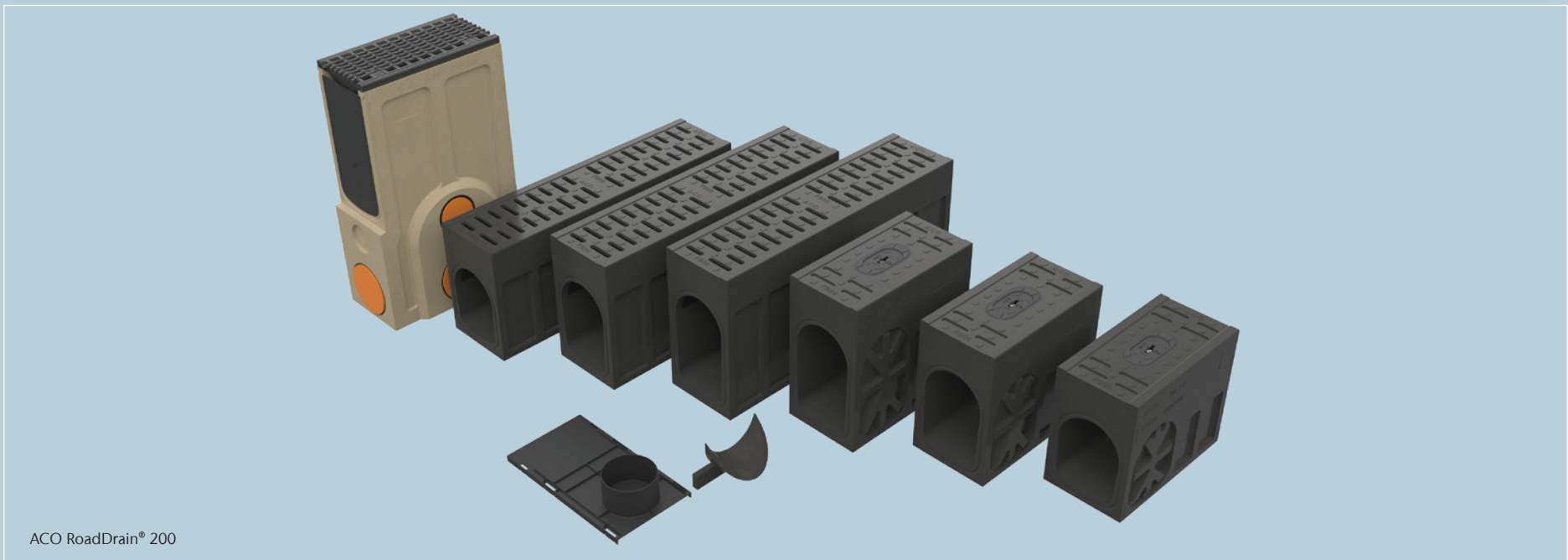
making the system ideal for highways, local authority projects, and commercial or industrial sites that require reliable surface water interception and drainage.

By keeping water closer to the surface, ACO RoadDrain® reduces reliance on costly underground pipe networks, delivering efficient drainage where it matters most.





ACO RoadDrain® 100



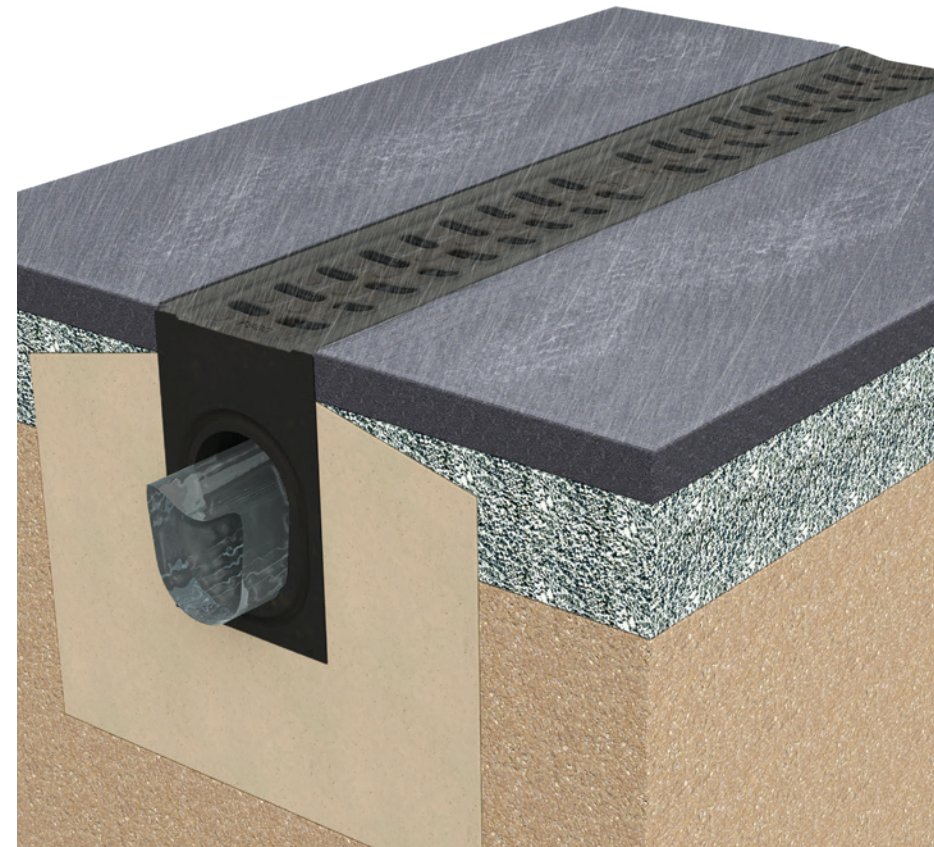
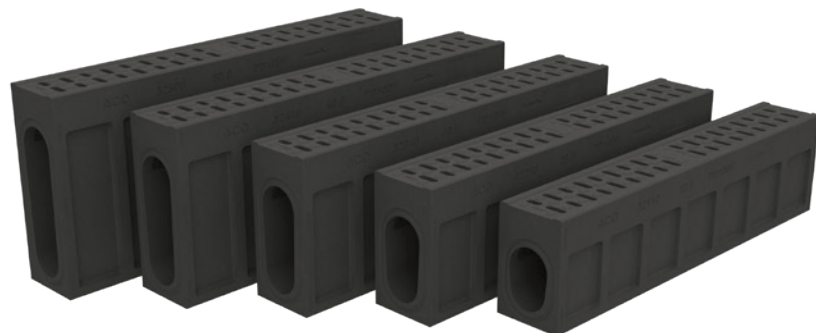
ACO RoadDrain® 200

# Why choose ACO RoadDrain®

ACO RoadDrain® is engineered for heavy-duty use across applications such as highways, airports, ports, and industrial sites. Its one-piece polymer concrete design offers exceptional strength and durability, up to four times stronger than traditional C20/25 concrete, making it ideal for areas exposed to dynamic wheel loads.

## Key Features

- **Fully certified:**  
Complies with BS EN 1433:2002 for Load Classes D 400 to F 900. It is UKCA and CE marked, and also carries the BSI Kitemark for assured quality and performance.
- **Durable & theft-resistant:**  
Monolithic design with integral inlets prevents theft.
- **One-piece construction:**  
No separate grating, simplifying specification and installation.
- **Resilient material:**  
Manufactured from polymer concrete which has resistance to dilute acids & alkalis, road salts, fuels, and oils. Also, maintains colour and integrity over time.
- **Low water absorption:**  
With just 0.01% absorption by weight, it supports watertight\* installations that protect surrounding soil and groundwater from contamination
- **Flexible installation options:**  
Available sump for underground drainage connection. Compatible with ACO KerbDrain® for seamless kerbside integration.
- **Complete accessory range:**  
Includes access units, sumps, multifunctional end caps, and step connectors for easy installation.



Access unit



Step connector



Multifunctional end caps



Sump

\* ACO RoadDrain channels are tested to ensure they meet the watertightness requirements specified in BS EN 1433. For more information, please refer to the watertightness note on page 16.

# ACO RoadDrain® features overview

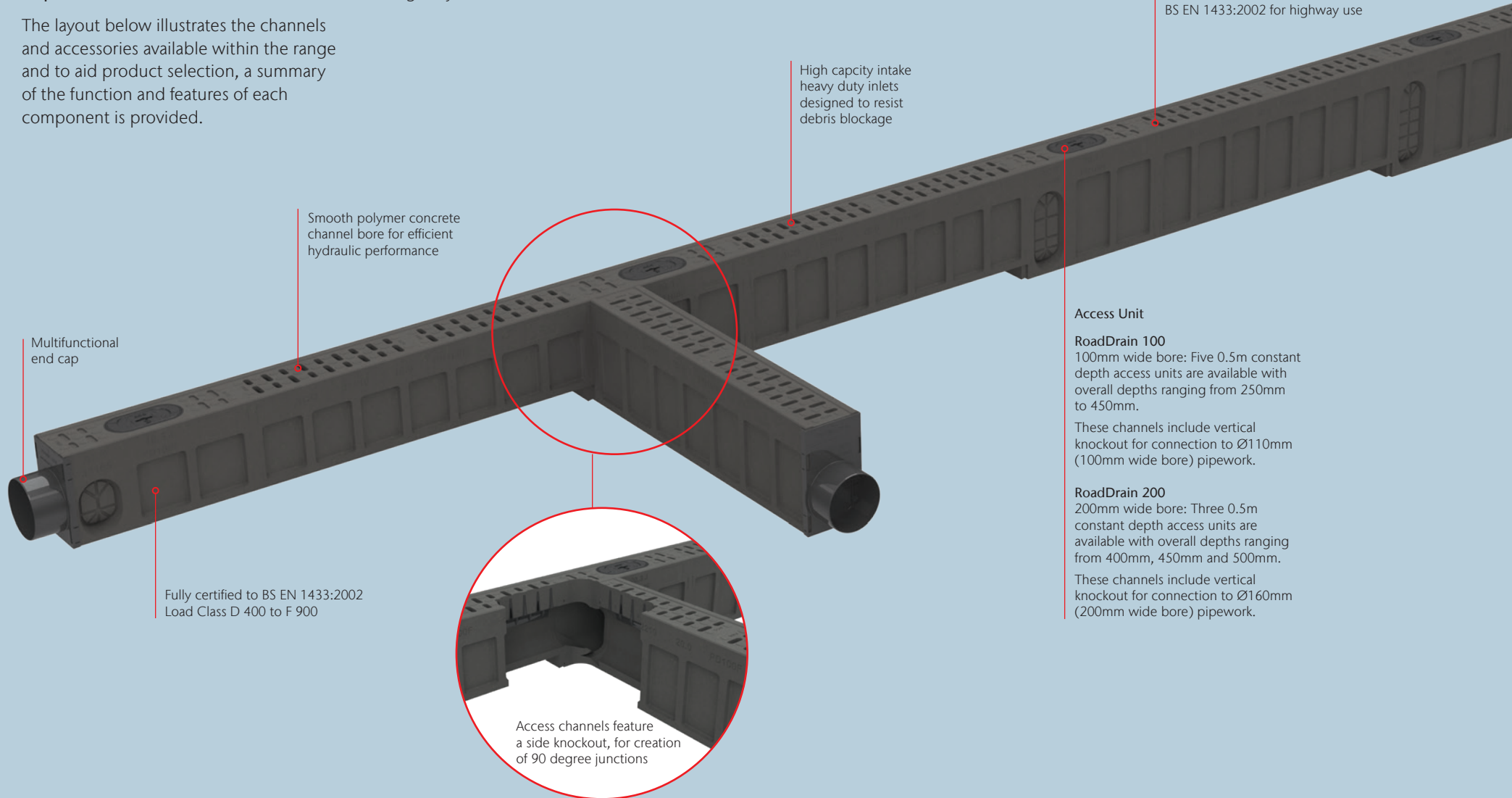
ACO RoadDrain® has a range of constant depth channels to suit drainage design requirements.

The layout below illustrates the channels and accessories available within the range and to aid product selection, a summary of the function and features of each component is provided.

These channels are monolithic making them suitable for public roads and carriageways.

Highways England Compliant, complies with Clause 517 SWH and is Kitemarked to BS EN 1433:2002 for highway use

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Multifunctional end cap

Smooth polymer concrete channel bore for efficient hydraulic performance

High capacity intake heavy duty inlets designed to resist debris blockage

## Access Unit

### RoadDrain 100

100mm wide bore: Five 0.5m constant depth access units are available with overall depths ranging from 250mm to 450mm.

These channels include vertical knockout for connection to Ø110mm (100mm wide bore) pipework.

### RoadDrain 200

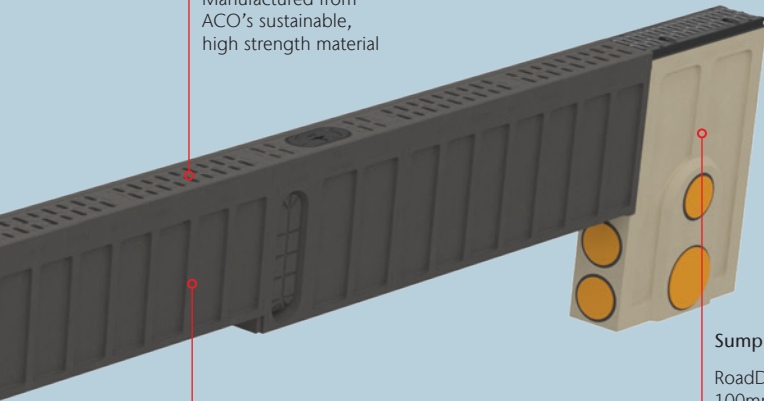
200mm wide bore: Three 0.5m constant depth access units are available with overall depths ranging from 400mm, 450mm and 500mm.

These channels include vertical knockout for connection to Ø160mm (200mm wide bore) pipework.

Fully certified to BS EN 1433:2002  
Load Class D 400 to F 900

Access channels feature a side knockout, for creation of 90 degree junctions

Manufactured from ACO's sustainable, high strength material



The channel design provides stability and anchors product into concrete surround

#### Sump Unit

RoadDrain 100  
100mm wide bore: one 0.5m sump for connection to all constant depth channels.

Outlet options for Ø110mm and Ø160mm pipes and foul air traps. Plastic silt bucket provided with each unit.

RoadDrain 200  
200mm wide bore: one 0.5m sump for connection to all constant depth channels.

Outlet options for Ø110mm, Ø160mm and Ø225mm pipes and foul air traps. Plastic silt bucket provided with each unit.

#### Load Classes



##### D 400

Public highways, parking areas for all types of vehicles, distribution yards



##### E 600

Industrial areas, heavy wheel loads, slow-moving HGV's and forklifts, service stations



##### F 900

Airport runways, very heavy industrial and military installations, service yards and lorry parks

## Benefits in concrete requirements and installation times

ACO RoadDrain® has been redesigned to offer significant benefits in concrete requirements and installation times.

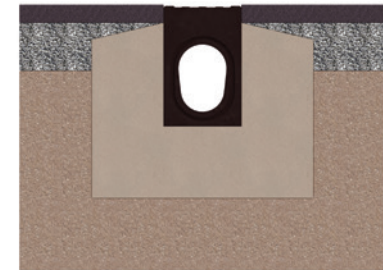
#### Reduced Concrete Requirements:

ACO RoadDrain® is designed to reduce installation costs, time, and environmental impact by requiring up to 32% less concrete. For example, when using the PD100F 10.0 channel, this translates to a saving of 151 kg of concrete per metre, without compromising on performance. The system still achieves Load Class F 900 with a reduced haunch of 150mm.

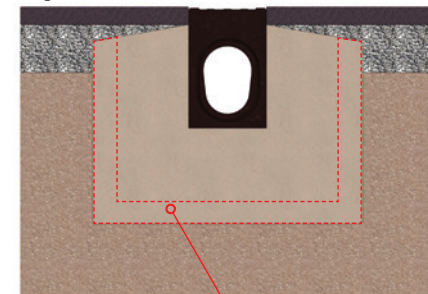
#### Improved Installation:

ACO RoadDrain® is now supplied in 1 metre lengths (previously 0.5 metres), making installation faster and more efficient for contractors. The longer channel sections are easier to level and require less time for sealing. Plus, the monolithic design eliminates the need to install separate grates along the entire run, saving time and reducing complexity on site.

New ACO RoadDrain®



Original ACO RoadDrain®

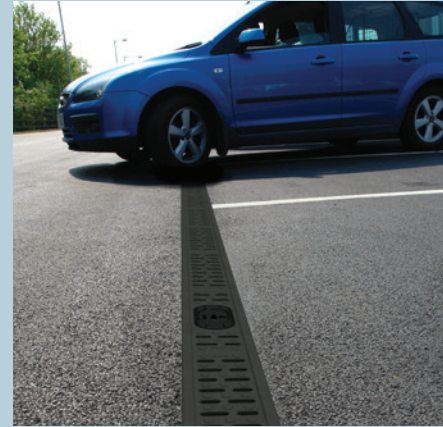


Concrete savings with ACO RoadDrain®

Part Number	Product Type	200mm Surround Concrete Weight	150mm Surround Concrete Weight	Reduction in Concrete in weight	Reduction in Concrete in %
		KG per m	KG per m	KG per m	KG per m
32110	RoadDrain PD100F 10,0 1m Channel	466	315	151	32.4%
32210	RoadDrain PD100F 20,0 1m Channel	516	353	163	31.5%
32310	RoadDrain PD100F 30,0 1m Channel	566	392	175	30.9%
32410	RoadDrain PD100F 40,0 1m Channel	617	430	187	30.3%
32500	RoadDrain PD100F 50,0 1m Channel	667	468	199	29.8%
32110	RoadDrain PD200F 10,0 1m Channel	680	477	203	29.9%
32210	RoadDrain PD200F 20,0 1m Channel	730	515	215	29.4%
32310	RoadDrain PD200F 30,0 1m Channel	780	553	227	29.1%

Concrete grade: C30/37

# A range of solutions with ACO RoadDrain®



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## T-Junctions

### PROBLEM:

Where side roads adjoin the main carriageway, flow of surface water along the gutter can be impeded or prevented leading to standing water and drainage issues. Surface water runoff from side roads entering the main carriageway can also be a hazard to road users.

### SOLUTION:

The ACO RoadDrain® range can combine with ACO KerbDrain® to effectively drain the road junction, providing continuous and effective interception and drainage of surface water flows across the junction.

## Across roads

### PROBLEM:

Channels which cross public carriageways are subjected to continual traffic. RoadDrain is a non-grated system and therefore is not restricted under DMRB HD33/06 Clause 6.17, which restricts the use of grated systems in these types of installations.

### SOLUTION:

ACO RoadDrain® units are monocast, they are a one-piece drainage channel providing long term security and robustness. Effective drainage of the carriageway is maintained and the risk of ponding is eliminated.

## Integrated design

### PROBLEM:

The refurbishment of Michaelwood Services required expanding and upgrading the car and lorry parking areas to accommodate more vehicles and improve traffic flow.

### SOLUTION:

ACO RoadDrain® was chosen to sit across the larger car parking areas to provide optimum removal of surface water. Its easy integration with ACO KerbDrain®, combined kerb and drainage, and the existing sewer connections, allowed an installation with minimal ground infrastructure disruption. This simplified the construction of the hardstanding and improved the integrity of the finished pavement.

## Environmental Protection

### PROBLEM:

The creation of a new loading yard and terminal to meet the demands of increasing port traffic required a drainage solution that could separate out clean from contaminated water, and meet the point loading demands from the cranes and other heavy traffic.

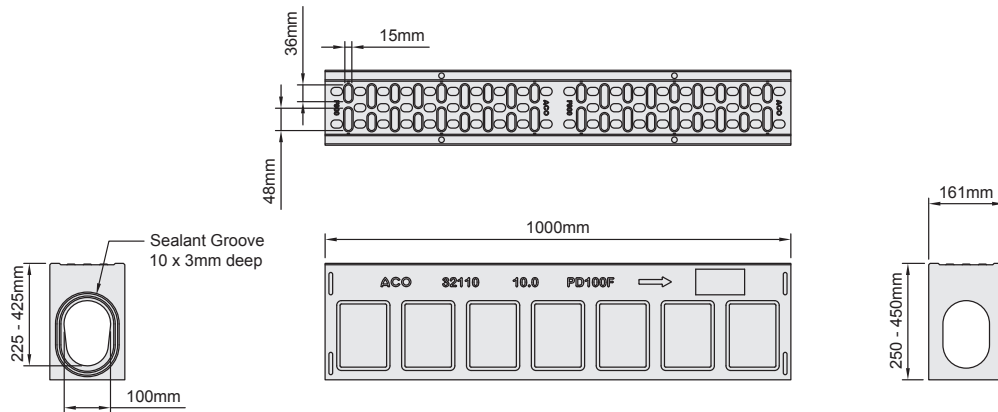
### SOLUTION:

ACO RoadDrain®'s robust monocast design was chosen for its ability to endure the turning forces of port cranes. To ensure compliance with Environmental Protection Agency regulations, an on-site wet test confirmed the system's sealing performance, preventing any contaminated liquids from entering the sea.

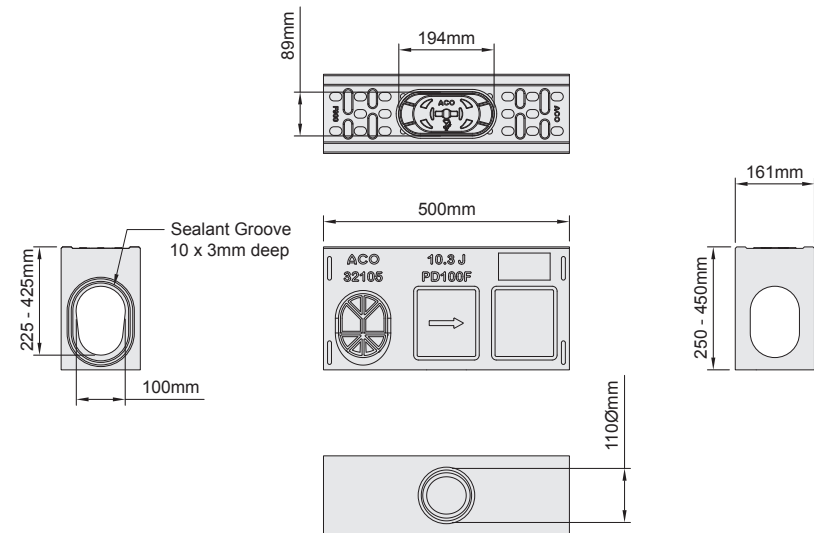
# ACO RoadDrain® 100 technical details

Product Code	Description	Length [mm]	Width [mm]	Depth [mm]	Invert Depth [mm]	Weight [kg]	Sump	End Cap	Step Connector
<b>1.0m Channels</b>									
32110	PD100F 10.0	1000	160	250	225	48.6	32901	32509	30123
32210	PD100F 20.0	1000	160	300	275	53.3	32901	32509	30123
32310	PD100F 30.0	1000	160	350	325	58.1	32901	32509	30123
32410	PD100F 40.0	1000	160	400	375	62.8	32901	32509	30123
32500	PD100F 50.0	1000	160	450	425	67.5	32901	32509	30123
<b>0.5m Access Channels</b>									
32105	PD100F 10.3J	500	160	250	225	25.5	32901	32509	30123
32205	PD100F 20.3J	500	160	300	275	27.8	32901	32509	30123
32305	PD100F 30.3J	500	160	350	325	30.2	32901	32509	30123
32405	PD100F 40.3J	500	160	400	375	32.6	32901	32509	30123
32505	PD100F 50.3J	500	160	450	425	35.0	32901	32509	30123

Channels



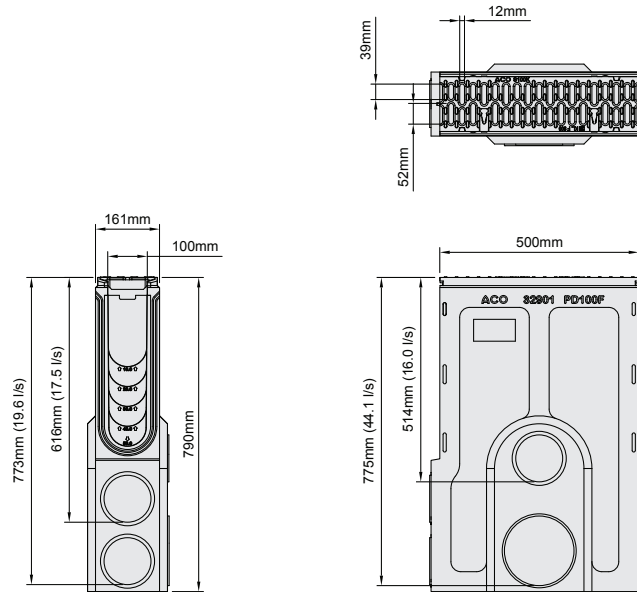
Access Channels



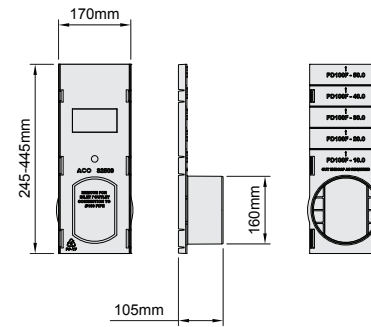
Product Code	Description	Length [mm]	Width Bore [mm]	Width [mm]	Depth [mm]	Weight
32901	RoadDrain PD100F sump unit	500	100	160	790	68.3
32509	PD100F multifunctional end cap	500	N/A	160	450	0.36
30123	PD100F 123 step connector	123	N/A	150	N/A	0.90

### Accessories

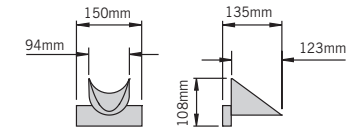
Sump Unit



Multifunctional End Cap



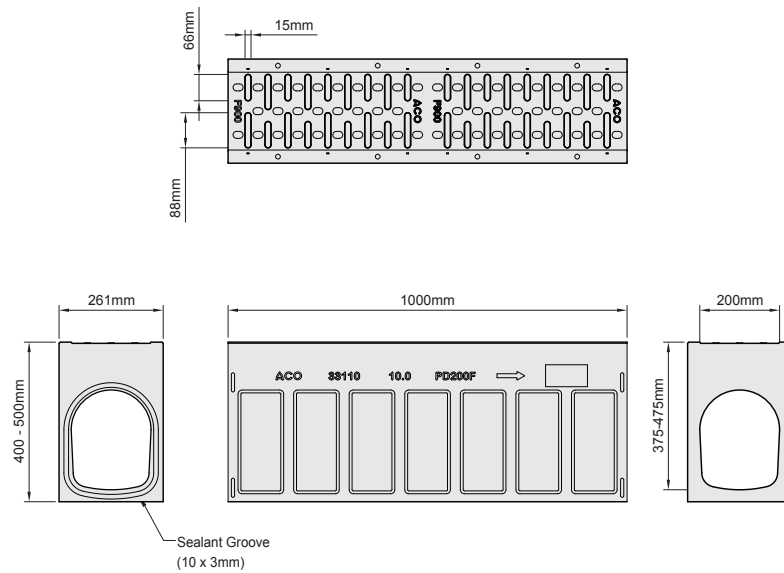
Step Connector



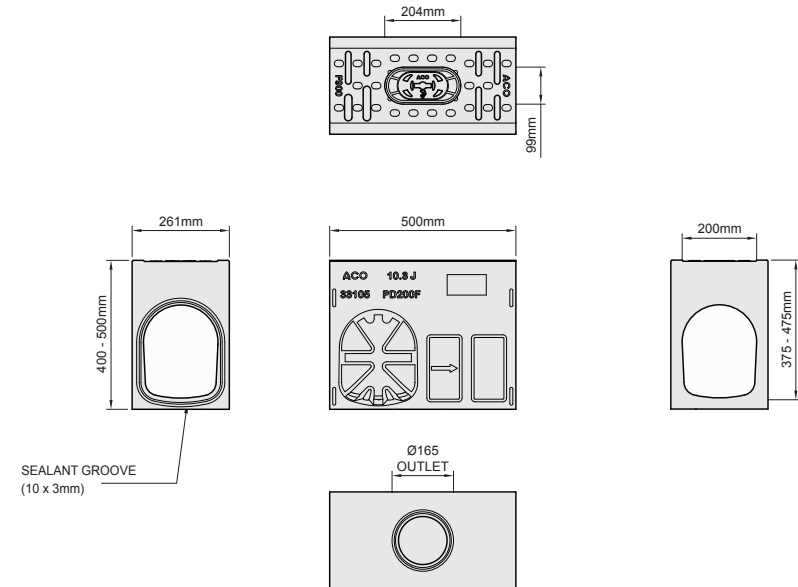
# ACO RoadDrain® 200 technical details

Product Code	Description	Length [mm]	Width [mm]	Depth [mm]	Invert Depth [mm]	Weight [kg]	Sump	End Cap	Step Connector
<b>1.0m Channels</b>									
33110	PD200F 10.0	1000	260	400	375	104.5	33901	33509	33123
33210	PD200F 20.0	1000	260	450	425	109.5	33901	33509	33123
33310	PD200F 30.0	1000	260	500	475	114.5	33901	33509	33123
<b>0.5m Access Channels</b>									
33105	PD200F 10.3J	500	260	400	375	60.3	33901	33509	33123
33205	PD200F 20.3J	500	260	450	425	62.6	33901	33509	33123
33305	PD200F 30.3J	500	260	500	64.9	33901	33509	33123	

Channels



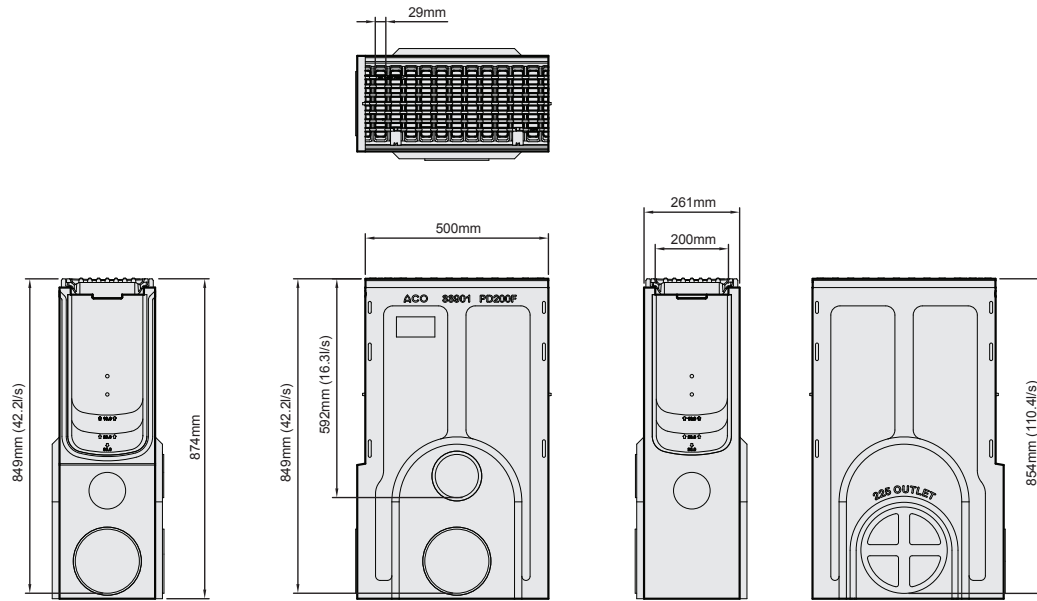
Access Channels



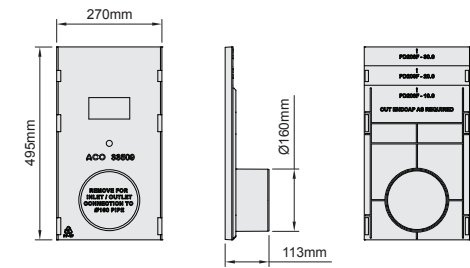
Product Code	Description	Length [mm]	Width Bore [mm]	Width [mm]	Depth [mm]	Weight
33901	RoadDrain PD200F sump unit	500	200	260	876	93.9
33509	PD200F multifunctional end cap	113	260	500	0.63	
33123	PD200F 123 step connector	130	N/A	260	150	0.90

**Accessories**

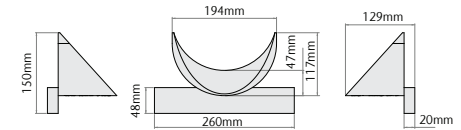
Sump Unit



Multifunctional End Cap



Step Connector



Product Code	Description	Length [mm]	Width Bore [mm]	Width [mm]	Depth [mm]	Invert Depth [kg]	Weight
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### Accessories

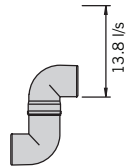
0056	820 Drain union PVC-U Ø110mm	100	100	110	-	-	0.1
0058	822 Drain union PVC-U Ø160mm	150	150	160	-	-	0.5
2640	920 Foul air trap PVC-U Ø110mm	-	100	110	-	390	0.5
2638	922 Foul air trap PVC-U Ø160mm	-	150	160	-	375	1.9
7931	940 Roddable foul air trap MDPE Ø110mm	-	100	110	-	480	0.6
7932	950 Roddable foul air trap MDPE Ø160mm	-	150	160	-	435	0.8



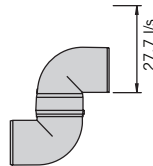
820 Drain union  
PVC-U Ø110mm



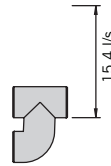
822 Drain union  
PVC-U Ø160mm



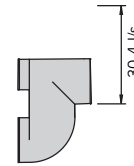
920 Foul air trap  
PVC-U Ø110mm



922 Foul air trap  
PVC-U Ø160mm



940 Roddable  
foul air trap  
MDPE Ø110mm



950 Roddable  
foul air trap  
MDPE Ø160mm

Product Code	Description	Weight
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### Accessories

32599	Polymer concrete repair kit	1kg†
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† Repair kit includes 0.5kg tin of natural colour polyester concrete repair resin, grey and black pigment, hardener paste, mixing instructions and material safety data sheets.

# Installation detail

## Load class

Installation recommendations shown are ACO minimum recommendations for BS EN 1433:2002 load class requirements.

## Ground conditions

The long term performance of a channel installation to sustain vertical and lateral loads depends upon

- A) ground conditions
- B) stability of the adjacent pavement and

C) a durable concrete bed and surround. The recommended installation detail may require the minimum dimensions to be revised to achieve site specific load class requirements (referred to in 1.0 above).

## Cutting and jointing

Mitre joints are formed by cutting the channels to the required angle and butting them together with appropriate sealant (e.g. Sikaflex 11FC or similar) or ACO Repair Kit. Where possible 90° joints and T's should be formed so that gratings do not have to be cut. Angles can be formed by connecting them using proprietary PVCu pipework attached to ACO inlet/outlet endcaps. For further details please contact ACO Design Services Team.

Note: For Load Classes higher than C 250, mitred joints are not recommended in vehicular areas.

## Isolation joints

The channel must be isolated from the surrounding environment. An isolation joint must be positioned up to 1500mm from the channel wall. Any dowel bars must be located no nearer than 150mm from the channel wall. Other isolation joints in surrounding slab must be continued through the channel. Additional crack control may be required to comply with specifier requirements.

## Installation into in-situ slab

Where a channel is to be installed into an existing concrete slab it is necessary to cut a suitably sized pocket in the slab. The channel will then need to be bedded in polymer modified mortar of 25mm minimum thickness (this may vary depending on the type of mortar used). Engineering advice may be necessary.

## Temporary installation

A channel installation is not complete until the final surfacing is laid. In any temporary condition, i.e. with the channel walls projecting above adjacent ground, site traffic should not cross channels. Loose boards, stone fill or cover plates will not protect the channel walls or grating. A temporary channel crossing should be formed by raising the ground level locally, to 3 - 6mm above top of channel, either side of a channel for a distance of 750 to 1000mm, to form ramps. Note that the channel load class should be adequate to carry the site traffic.

## Concrete surround dimensions

		Load Class		
		D 400	E 600	F 900
Minimum Dimensions (mm)	X	150	150	150
	Y	Full channel height (less Y2 where necessary)		
	Z	150	150	150
Maximum Dimensions (mm)	Y2	35	35	35
	Asphalt pavement only	Y3	70	70

## Block pavements

The channel must be supported laterally. Blocks laid directly against a channel must be laid as a soldier course and restrained from movement by bedding securely on the concrete haunch e.g. by using a polymer modified mortar for bed and perpendicular joints (e.g. RONAFIX mortar mix C or similar). Blocks or slabs bedded on sand remote from the channel should be set at a higher level to compensate for possible settlement of the paving in service.

## Grate locking system

Gratings should be securely fixed to the channel, where required, using an appropriate grate lock system (where available).

## Channel protection

Avoid contact between compaction equipment and top of ACO channel. The installer must ensure that the finished surface level lies above the top of the channel (by at least 3-6mm). Covering or protecting the channel, before concreting the haunch or laying blocks, removes the time and cost associated with cleaning the channel of cement material and embedded stones.

## Watertight installation to BS EN 1433:2002

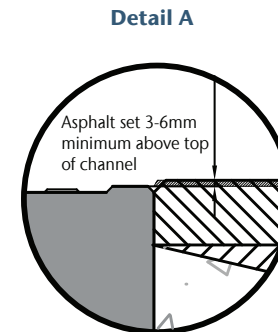
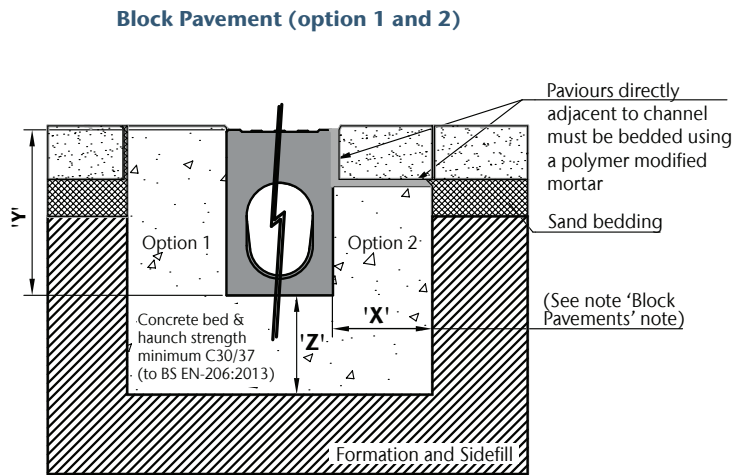
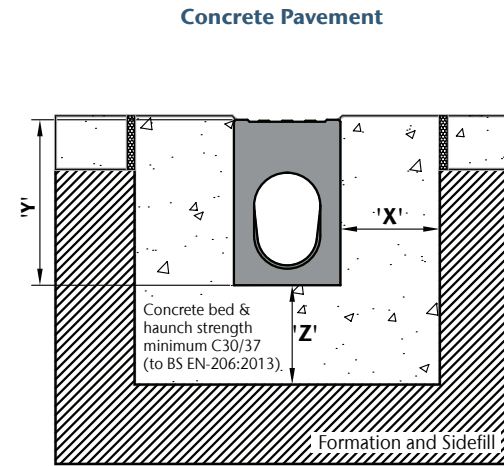
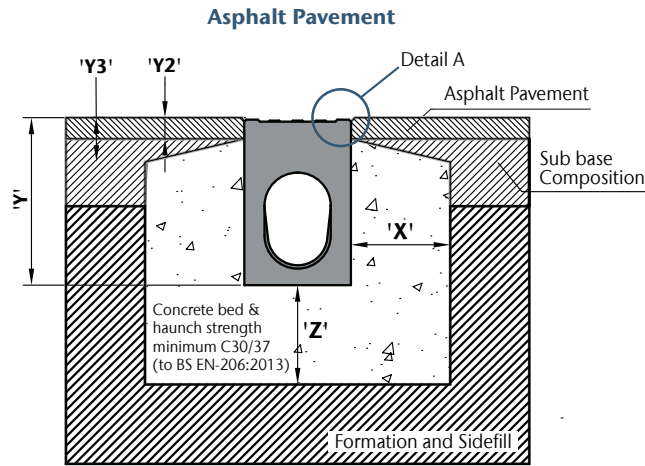
Where ACO channel joints/fittings and channel/pavement interfaces are to be sealed, an appropriate sealant should be used (e.g. Sikaflex 11FC or similar). Guidance on the necessary surface preparation and/or priming should be sought from the sealant manufacturer.

**For guidance a typical method of application follows:**

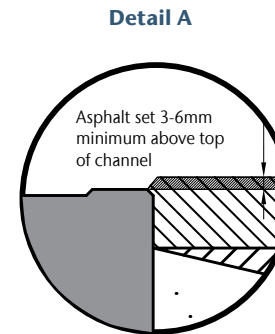
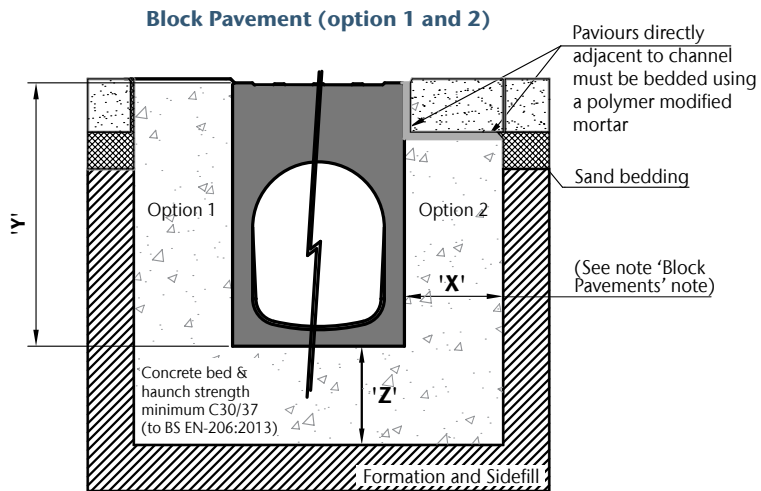
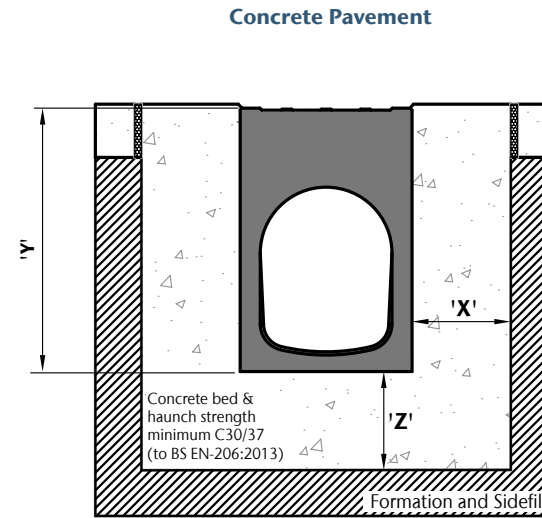
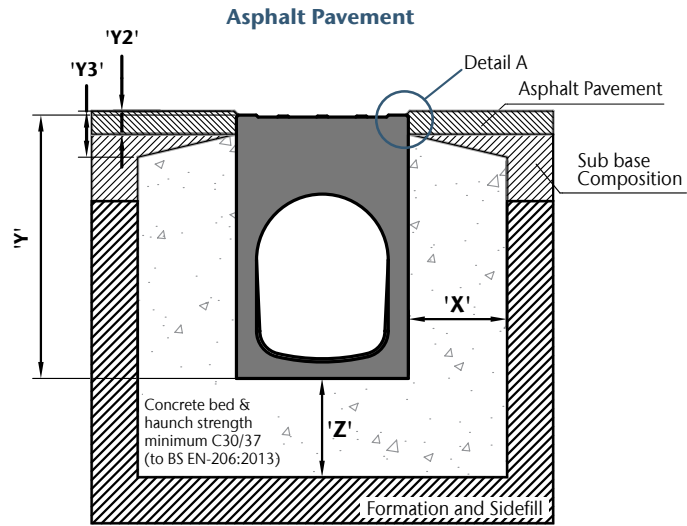
- The end faces of the channels are to be sound and free from dust, oil, and grease, with any loose material or dirt removed, e.g. by mechanical wire brush. No water drops should be evident.
- Using a standard cartridge gun, apply the sealant evenly and with no flaws. The detail on the ends of a channel varies from one product to another:
  - **Products with a basically flat face**  
Apply the sealant in a layer approximately 5mm thick to one face of the joint.
  - **Products with a sealing groove within the end face**  
Apply the sealant in a bead of approximately 10mm diameter into the sealing groove.
  - **Products with a sealing groove following the inside shape of the channel**  
Apply the sealant to the end face of the channel and to the sealant groove, such that when the joint is completed, the sealant will both cover the end face and fill the groove.
- The channel unit should be placed on the prepared concrete bedding and pressed against the previously placed channel unit. A sealed joint of approximately 1-2mm width should be formed between adjacent channel units.
- Excess sealant should be wiped from the inside face of the channel to leave a smooth finish.
- The sealant is to be left to cure for 24 hours, during which time the sealant should be kept as dry as possible.



# ACO RoadDrain<sup>®</sup> 100 installation detail



# ACO RoadDrain<sup>®</sup> 200 installation detail



# ACO QuAD Hydraulic Design Software

Try our free design tool

The free-to-use ACO QuAD Hydraulic Design software offers a high level of flexibility and choice, helping you efficiently and accurately design surface water management schemes. Use the tool to support your planning and specification of systems like ACO RoadDrain®, with confidence and ease.

**ACQ DESIGN**  
HYDRAULIC CHANNEL ANALYSIS

PROJECT NAME: "MARTIN TEST", RUN=2 "RUN 2", OPTION=A "OPTION A"

WILLIAM POKNER | LOGOUT  
CAN WE HELP? PROJECT LINKS

**DOMESTIC** PRODUCT RANGE  
**PEDESTRIAN** PRODUCT RANGE  
**HIGHWAYS** PRODUCT RANGE  
**MIXED USE** PRODUCT RANGE  
**INDUSTRIAL** PRODUCT RANGE  
**ATTENUATION** STORMBROCK  
**FLOW CONTROL** Q-BRAKE

**CATCHMENT INFORMATION**

Channel Length: 24.00 m  
Drainage Width & Area: 20.83 m, 500.00 m<sup>2</sup>  
Upstream/Downstream Area: 50.00 m<sup>2</sup>, 75.00 m<sup>2</sup>  
Channel Slope: 0.50 %  
Apply Advanced Catchment: **ADD / EDIT**

**DESIGN SPECIFICATION**

Load Class: F900  
Peak Velocity: 1.02 m/s  
Total Flow: 12.42 l/s  
Max. Flow: 12.42 l/s

**CHANNEL SIZE :- ROADRAIN**

Total Volume: 0.43 m<sup>3</sup>

**91% Full**

**CHANNEL DESIGN**

PD100P 20.1 (24.00m)

**CHANNEL STATUS**

**DESIGN COMPLETE**  
You have successfully completed your design.

**RESILIENCE** **SURFACE STORAGE**

Percentage Capacity: 50.62%  
Minimum Freeboard: 0.024m

**PROJECT OUTPUT**

The hydraulic engine has been robustly tested and is the tool used by ACOs internal Design Services Team in modelling surface water solutions for customers.

ACO QuAD Hydraulic Design software uses differential equations for spatially varied flow that online alternative solutions cannot accurately match. For example the Manning's equation for steady uniform flow does not work with level channels and is grossly inaccurate on shallow gradients.

Here are some of the features it includes:

- Powerful project-based software
- Create catchment models that are fully editable
- PDF summary document output
- Cloud based – all designs are stored securely on our server against your login
- Integrated rainfall data for the whole of the UK

## QuAD Features Overview

### Cloud based



The software means increased efficiency providing the design resources you need when you need it, allowing you to deploy the same design capability consistently, and with the same consistency in results every time.

### Flexible catchment design



QuAD supports designers in creating catchment areas. Supplementary catchment areas can be easily added to previously designed channel runs, providing flexibility when designing upstream and downstream features.

### Product + value optimiser



Optimising the specific channel runs can be done with the optimiser feature selecting the smallest product suitable. Excavation and concrete requirements are also provided.

### Attenuation assessments



Calculate the attenuation required for the project and compare it with the storage available in the channel design. Attenuation volume is presented along with suitable options for storage.

### Flexible download format



Output can be generated for all or parts of the project and can be generated in pdf or CSV formats.

### Application



Application selection ensure designers are able to get quick and accurate guidance in selection of the most suitable products based on the type of application the catchment is to cater for.

### Rainfall assist



Rainfall intensity by location matters in design. QuAD provides a site locator map enabling the most accurate intensity to be input.

### Resilience assessment



By inputting anticipated sedimentation rates and sedimentation density the QuAD software enables the designer to test their suggested maintenance schedules.

### Secure scheme filing



All designs created by registered users are stored on a secure server and are password protected. Past projects are easily retrieved from the personalised menu.

### Knowledge + support



Technical and design support is available through the askACO Knowledge Base (self-help), askACO live chat or through a Design submission form.

To use the QuAD Hydraulic Design software visit: [www.aco.co.uk/quad-hydraulic-design-2.0](http://www.aco.co.uk/quad-hydraulic-design-2.0)

# Chemical resistance chart

Further details of the chemical resistance can be obtained from the ACO Water Management Design Services team or, for particular chemicals, samples of the polymer concrete can be supplied to customers for their own testing. The chemical resistance will also depend on the temperature of the effluent. Clean water should not exceed 80°C. This chemical resistance chart refers to chemicals at ambient temperatures (20°C) and the results are for general guidance only.

Chemical medium	% conc	Resistance: Polyester concrete	Chemical medium	% conc	Resistance: Polyester concrete	Chemical medium	% conc	Resistance: Polyester concrete	Chemical medium	% conc	Resistance: Polyester concrete
Acetic acid, glacial	100	No	Castor oil	100	Yes	Hydrochloric acid	10	Yes	Sodium carbonate	35	Yes
Acetic acid	10	Yes	Chlorine gas, wet	100	No	Hydrofluoric acid	10	No	Sodium chlorate	100	Yes
Acetic anhydride	100	No	Chlorine water	Saturated	No	Hydrogen peroxide	30	Yes	Sodium chloride	100	Yes
Acetone	10	No	Chlorobenzene	100	Yes	Lactic acid	100	Yes	Sodium hydroxide (caustic soda)	50	No
Acetone	100	No	Chloroform (trichloro-methane)	100	No	Lead acetate	100	Yes	Sodium hypochlorite	18	No
Alum	100	Yes	Chromic acid	12	Yes	Magnesium chloride	100	Yes	Sodium nitrate	100	Yes
Aluminium sulphate	100	Yes	Citric acid	100	Yes	Magnesium sulphate	100	Yes	Sodium nitrite	100	Yes
Ammonium chloride	100	Yes	Copper chloride	100	Yes	Maleic acid	100	Yes	Sodium phosphite	10	Yes
Ammonium nitrate	100	Yes	Copper nitrate	100	Yes	Methyl ethyl ketone (MEK)	100	No	Sodium phosphate	10	Yes
Ammonium phosphate	65	Yes	Cyclohexane	100	Yes	Motor oil	100	Yes	Sodium sulphate	100	Yes
Ammonium sulphate	100	Yes	Diesel fuel (DERV)	100	Yes	Nickel chloride	100	Yes	Sodium sulphide	100	Yes
Aniline (aminobenzene)	100	No	Dimethyl formamide	100	No	Nickel sulphate	100	Yes	Sodium sulphite	100	Yes
Barium chloride	100	Yes	Dimethyl phthalate	100	Yes	Nitric acid	5	No	Sodium thiosulphate	100	Yes
Benzaldehyde	100	No	Diethyl phthalate	100	Yes	Nitrobenzine	100	No	Stearic acid	100	Yes
Benzene	100	No	Ethanol	95	No	Oleic acid	100	Yes	Styrene	100	No
Benzyl alcohol	100	Yes	Ethanolamine	100	Yes	Oxalic acid	100	Yes	Sulphuric acid	75	No
Benzyl chloride	100	No	Ethyl acetate	100	No	Perchloric acid	10	Yes	Sulphuric acid	50	Yes
Borax	100	Yes	Ethylene glycol	100	Yes	Perchloroethylene	100	Yes	Sulphuric acid at up to 40°C	10	Yes
Boric acid	100	Yes	Ferrous chloride	100	Yes	Phosphoric acid	20	Yes	Tetrahydroethylene	100	Yes
Bromine	100	No	Ferric chloride	100	Yes	Phosphorus trichloride	100	No	Thioglycolic acid	80	Yes
Bromine water	Saturated	No	Ferrous sulphate	100	Yes	Potassium carbonate	50	Yes	Thionyl chloride	100	No
Butyl acetate	100	No	Formaldehyde	30	Yes	Potassium chloride	100	Yes	Toluene	100	Yes
Butyric acid	100	Yes	Formic acid	10	Yes	Potassium dichromate	100	Yes	Toluene sulphonic acid (aqueous solution)	Saturated	Yes
Calcium carbonate	100	Yes	Formic acid	100	No	Potassium hydroxide	10	Yes	Trichloroacetic acid	50	Yes
Calcium chloride	100	Yes	Fuel oil	100	Yes	Potassium nitrate	100	Yes	Turpentine	100	Yes
Calcium chlorate	8	Yes	Gasoline	100	Yes	Potassium permanganate	10	No	Water	100	Yes
Calcium hydroxide	100	Yes	Glycerine	100	Yes	Potassium sulphate	100	Yes	Xylene	100	Yes
Calcium nitrate	100	Yes	Hydrazine	50	No	Pyridine	100	No	Zinc sulphate	100	Yes
Carbon disulphide	100	No	Hydrobromic acid	48	Yes	Sodium acetate	100	Yes			
Carbon tetrachloride	100	Yes				Sodium bromide	100	Yes			

# Specification clause

The surface drainage system shall be ACO RoadDrain® channel system as supplied by ACO Technologies plc; all materials and components within the scope of this channel system shall be obtained from this manufacturer.

The system shall be certificated Load Class D400 to F 900 as defined in BS EN 1433:2002 with Initial Type Test certification issued by a notified body independent of the manufacturer and shall comply with the Manual of Contract Documents for Highway Works: Specification for Highway Works, Clause 517. The linear drainage channel shall be certified by a third-party product certification system compliant with BS EN 45011:1998 carried out by an accredited body (UKAS or equivalent), e.g. Kitemark.

Declarations of Performance (DoP) shall be supplied to the Supervising Officer upon request.

The system shall be of units 1000mm and 500mm long and both 100mm nominal internal width at 5 different depths, and 200mm nominal width at 3 different depths. Manufactured as one piece in polymer concrete, with integral resin concrete grating featuring 15mm downward flared inlet slots to ACO registered pattern providing to minimum inlet area of 23260mm<sup>2</sup> per metre for ACO RoadDrain® 100 and 41446mm<sup>2</sup> per metre for ACO RoadDrain® 200. All units shall be manufactured from ACO's sustainable, high strength material.

The system shall be installed in accordance with the manufacturer's printed instructions, and the work carried out as specified in the drawing relevant to the size of channel being used, and in accordance with recognised good practice. Standards of workmanship shall generally be as specified in BS EN 752:2008 and BS 8000:Part 14:1989.

## General information

ACO products are subject to weight and dimensional tolerances. The weights and dimensions shown in this document are for guidance purposes only. ACO products are made from naturally occurring materials and may be subject to variations in colour, texture and marking. These aesthetic variations do not affect the performance or functionality of our Goods. The appearance of products shown in our company documentation are for illustration purposes only.

## Highways Specification – Appendix 5/6

The Appendix 5/6 will need to be completed for each project. A model Appendix 5/6 for ACO RoadDrain® is available from the ACO Water Management Design Services Team.



The ACO RoadDrain® system is UKCA and CE marked, and carries the BSI Kitemark in accordance with the construction products regulation.

Declarations of Performance certificates are available to download on our website: [www.aco.co.uk/construction-products-regulation-\(cpr\)](http://www.aco.co.uk/construction-products-regulation-(cpr))

Please contact ACO Water Management Design Services Team on 01462 816666 for further information.

## BS EN 1433:2002



# Material benefits

The correct material selection for products installed in permanent works is extremely important to assure optimum performance throughout its design life.

ACO RoadDrain® is manufactured from a polymeric material, which offers distinct advantages over other products and materials, addressing key specification and performance requirements for engineers and designers.

## Sustainable use of materials

Efficient use of material resources is a key contributor to sustainability in construction. ACO RoadDrain® has been carefully designed to maximise strength while minimising material use.

ACO's polymeric material:

- Combines the mechanical and performance benefits of synthetic resin concrete
- Fully conforms to and exceeds all performance requirements as specified by BS EN 1433:2002
- Is recyclable, i.e. it can be collected, processed and returned for re-use as a raw material

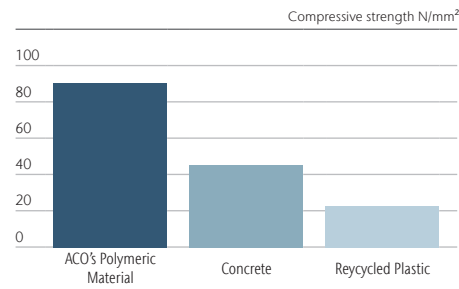
The ACO RoadDrain® range also includes components manufactured from ductile iron and steel which contain between 25% and 90% recycled material.

## Mechanical properties of ACO's polymeric material

The following data compares the advantages of ACO's polymeric material used to manufacture ACO RoadDrain® with Ordinary Portland Cement (OPC) concrete and recycled plastic composite materials.

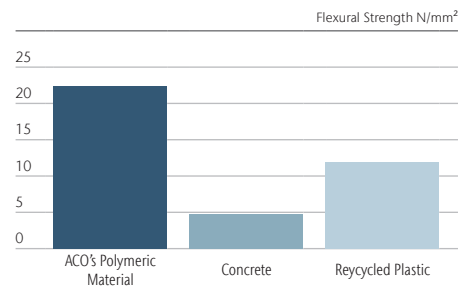
### Compressive strength

ACO's polymeric material has high compressive strength is therefore extremely resistant to service loads.



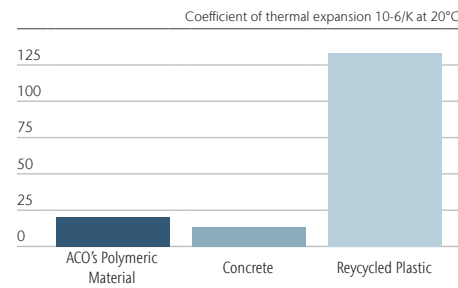
### Flexural strength

ACO's polymeric material has excellent flexural strength making the product resistant to side loads typically encountered during surfacing and installation.



## Coefficient of thermal expansion

ACO's polymeric material has a low coefficient of thermal expansion making it extremely stable, and unlike some materials it will not buckle or distort if subjected to high or low temperatures during service.



## Impact resistance

RoadDrain 100 optimised design combined with the nature of ACO's polymeric material, makes it highly resistance to damage typically caused during installation or from traffic impacts.\*.

\* Tested by Birmingham City Laboratories (BCL)

## Water absorption

ACO's polymeric material has low water absorption of only 0.01% by weight which means surface water or liquids are contained within the product until discharge without contaminating surrounding soil or groundwater.

## Coefficient of friction (Mannings)

ACO's polymeric material is extremely smooth having a Mannings coefficient of 0.011 giving enhanced hydraulic performance and resisting the build up of silt and debris.

## Chemical resistance

ACO's polymeric material has high resistance to dilute acids and alkalis and is unaffected by road salts, fuels and oils which are typically encountered during service. For a copy of our full chemical resistance chart please see page 24.

# Design support services

Surface water management system design can often be a complex task. Success in combining products and processes requires a thorough understanding of how these different elements work together.

The ACO Design Services Team is able to work closely with you through the entire design process to ensure accurate and cost-effective product selection is made.

Services we offer include (free and without obligation):

- Whole system design, from collection to the attenuation of surface water
- Hydraulic calculations and AutoCAD detailing
- Parts schedules
- Conduit files for MicroDrainage

ACO has embraced the concept of value engineering as an approach to on-site construction that saves both time and money.

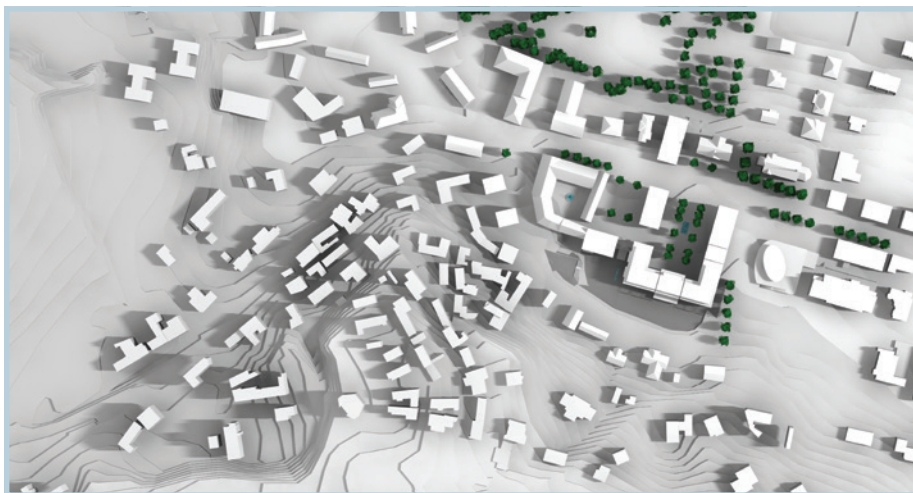
ACO will review any design to minimise the total scheme and life cost of a proposal. The team can suggest the most appropriate range depending on your requirements.

For detailed designs using the ACO Hydraulic Design Software, please contact the ACO Water Management Design Services Team.

If manual calculations are preferred to using our QUAD software, hydraulic tables and instructions for manual calculations can be provided.



For design enquiries go to [www.aco.co.uk/design--support-services](http://www.aco.co.uk/design--support-services)



## ACO BIM Models

BIM is the process of generating and managing data, and developing collaborative behaviours that will unlock new and more efficient ways of working at all stages of the project life-cycle.

These files will help contractors specify and optimise drainage systems in line with the overall benefits of BIM-enabled working, including faster project delivery, reduced costs, reduced waste and greater project predictability.

Civils3D, IFC or Revit files are available for download.

[www.aco.co.uk/aco-bim-models](http://www.aco.co.uk/aco-bim-models)

# ACO. we care for water

ACO is a Water-Tech company that protects water. Building on our global drainage expertise that protects people from water, we increasingly see our mission as also protecting water from people.



Managing Directors ACO Group  
Iver and Hans-Julius Ahlmann



**5,500**

employees in more than 47 countries  
(Europe, North and South America,  
Asia, Australia, Africa)

**1,14 Billion**

Euro Sales in 2021

**43**

production sites  
in 18 countries

With the ACO WaterCycle, ACO provides systems that collect and channel, clean, retain and ultimately reuse water. In this way, ACO contributes to the preservation of clean groundwater as a vital resource, and makes a contribution to tomorrow's world. In its Agenda 2030, the UN global community set the improvement of water quality as one of 17 sustainable development goals.

Intelligent drainage systems from ACO increasingly use smart technology to ensure that rainwater and wastewater are drained, or temporarily stored. With innovative separation and filter technology, we prevent water contamination by pollutants such as fat and grease, fuels, heavy metals and microplastics.

Today, ACO goes one step further: we accept the challenge of reusing water, and thus establishing a resource-saving cycle. For all products and systems, ACO attaches great importance to durability, reusability and a low carbon footprint. The pursuit of sustainability is an ongoing process that we strive to meet every day.

The ACO Group is a global family business that is one of the world market leaders in the Water-Tech segment. Founded in Schleswig-Holstein in 1946, it operates as a transnational network in over 50 countries. Worldwide, ACO is characterised by a high level of decentralised ownership, and explicit regional market proximity.



train | design | support | care



Every product from ACO Water Management supports the ACO WaterCycle



### ACO Water Management

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ACO. we care for water

