



ACO Inc.

Stormwater Management Products

John Sinko – Southeast Area Sales Manager

ACO. we care for water





Global Brand

- Established 1946
- Companies in more than 50 countries
- 31 manufacturing plants on 4 continents
- 4,000 employees
- The world's largest polymer concrete producer

ACO USA

- Active in region since 1978
- Manufacturing plants in Ohio and Arizona
- Offices and/or stocking centers in Mentor, OH; Casa Grande, AZ; Fort Mill, SC
- Aquaduct Custom engineering office in Fort Mill, SC
- Distribution in every state



More Than Just Trench Drain



DRAIN



INFRASTRUCTURE



SPORT



AQUADUCT



STORMBRIX[®]



UTILITYDUCT



WILDLIFE



ENVIRONMENT



SELF



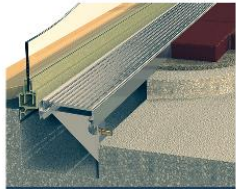
STAINLESS



FLOORDRAIN



BOXDRAIN



PROFILINE



PIPE

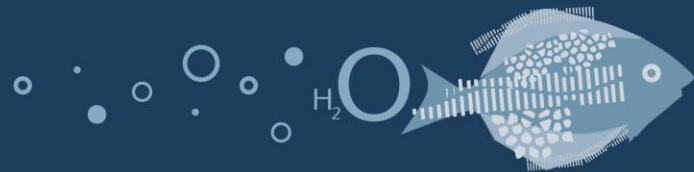


GOSLYN



SHOWERDRAIN

MonoBloc HD200

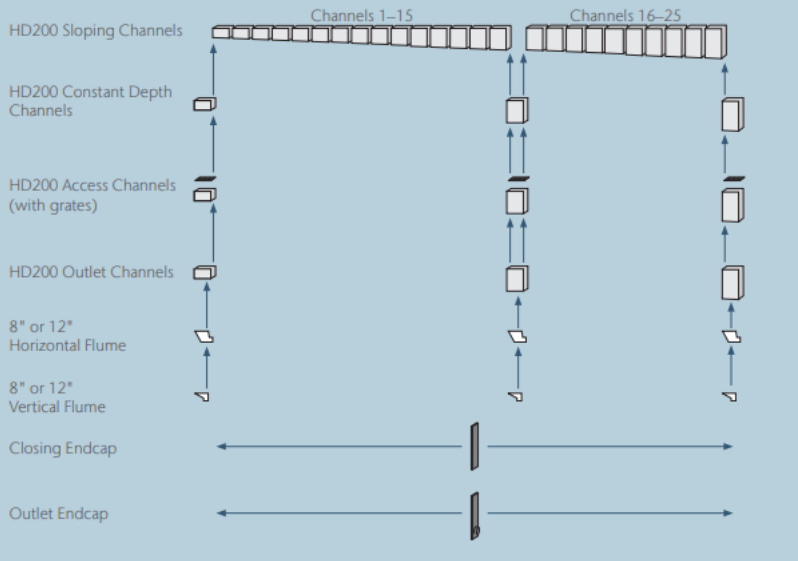




Monolithic Pour Design

- Provides grate and trench drain combined
- Mostly no removable or loose parts that could create a safety hazard to fast moving vehicles
- Simple installation requires no bracing (J-Hook Method)
- Large High Capacity inlet slots

25 Channel System Layout



- 30 meter (100') continuous slope in 4' lengths
- Sloped (0.6%) Channel Units available in 25 depths
- Neutral channel units available in 3 depths, used to extend the run length or create non-sloped runs
- Access channels are the only part of this system with an iron grate

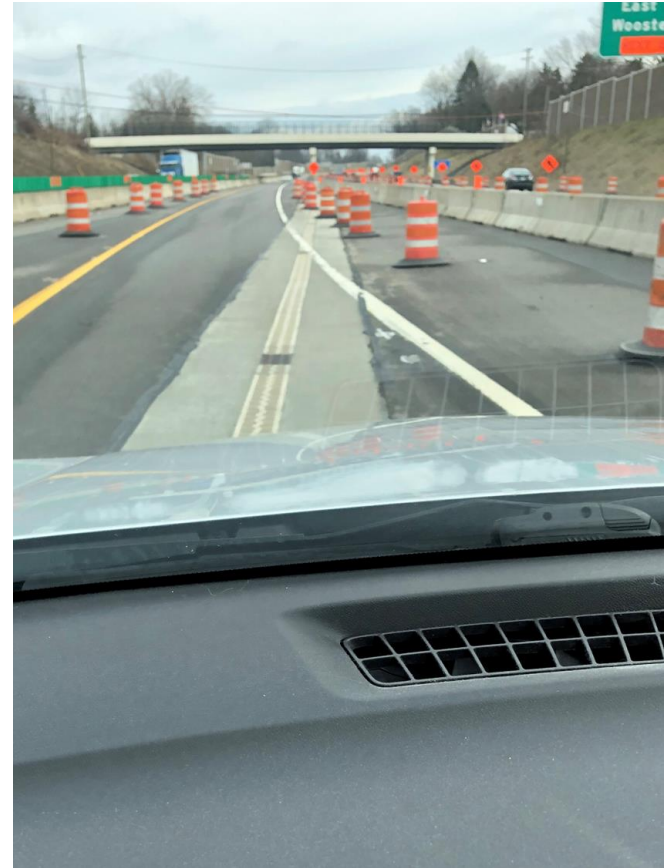
Product	Part No.	Length in (mm)	Invert Depth in (mm)	Invert Depth (Male) in (mm)	Weight lbs
HD01 Neutral Channel	95250	48.00 (1,220)	12.52 (318)	12.52 (318)	241.0
HD01 Access Channel	95317	48.00 (1,220)	12.52 (318)	12.52 (318)	243.0
HD01 Outlet Channel	95326	48.00 (1,220)	12.52 (318)	12.52 (318)	233.0
HD1 Sloping Channel	95253	48.00 (1,220)	12.52 (318)	12.83 (326)	241.0
HD2 Sloping Channel	95255	48.00 (1,220)	12.83 (326)	13.11 (333)	242.7
HD3 Sloping Channel	95259	48.00 (1,220)	13.11 (333)	13.43 (341)	244.3
HD4 Sloping Channel	95254	48.00 (1,220)	13.43 (341)	13.70 (348)	246.0
HD5 Sloping Channel	95258	48.00 (1,220)	13.70 (348)	13.98 (355)	247.6
HD6 Sloping Channel	95257	48.00 (1,220)	13.98 (355)	14.29 (363)	249.3
HD7 Sloping Channel	95252	48.00 (1,220)	14.29 (363)	14.57 (370)	250.9
HD8 Sloping Channel	95251	48.00 (1,220)	14.57 (370)	14.88 (378)	252.6
HD9 Sloping Channel	95256	48.00 (1,220)	14.88 (378)	15.16 (385)	254.2
HD10 Sloping Channel	95263	48.00 (1,220)	15.16 (385)	15.47 (393)	255.9
HD11 Sloping Channel	95265	48.00 (1,220)	15.47 (393)	15.75 (400)	257.5
HD12 Sloping Channel	95267	48.00 (1,220)	15.75 (400)	16.06 (408)	259.2
HD13 Sloping Channel	95262	48.00 (1,220)	16.06 (408)	16.34 (415)	260.8
HD14 Sloping Channel	95269	48.00 (1,220)	16.34 (415)	16.61 (422)	262.5
HD15 Sloping Channel	95266	48.00 (1,220)	16.61 (422)	16.93 (430)	264.1
HD015 Neutral Channel	95261	48.00 (1,220)	16.93 (430)	16.93 (430)	264.1
HD015 Access Channel	95328	48.00 (1,220)	16.93 (430)	16.93 (430)	266.1
HD015 Outlet Channel	95327	48.00 (1,220)	16.93 (430)	16.93 (430)	256.1
HD16 Sloping Channel	95264	48.00 (1,220)	16.93 (430)	17.20 (437)	265.8
HD17 Sloping Channel	95260	48.00 (1,220)	17.20 (437)	17.52 (445)	267.4
HD18 Sloping Channel	95268	48.00 (1,220)	17.52 (445)	17.80 (452)	269.1
HD19 Sloping Channel	95275	48.00 (1,220)	17.80 (452)	18.11 (460)	270.7
HD20 Sloping Channel	95272	48.00 (1,220)	18.11 (460)	18.39 (467)	272.4
HD21 Sloping Channel	95274	48.00 (1,220)	18.39 (467)	18.70 (475)	274.0
HD22 Sloping Channel	95270	48.00 (1,220)	18.70 (475)	18.98 (482)	275.7
HD23 Sloping Channel	95277	48.00 (1,220)	18.98 (482)	19.29 (490)	277.3
HD24 Sloping Channel	95273	48.00 (1,220)	19.29 (490)	19.57 (497)	279.0
HD25 Sloping Channel	95276	48.00 (1,220)	19.57 (497)	19.88 (505)	280.6
HD025 Neutral Channel	95271	48.00 (1,220)	19.88 (505)	19.88 (505)	280.6
HD025 Access Channel	95329	48.00 (1,220)	19.88 (505)	19.88 (505)	282.6
HD025 Outlet Channel	95322	48.00 (1,220)	19.88 (505)	19.88 (505)	272.6
Accessories					
Flume Outlet PP - 8" Vertical	95279	-	-	-	2.4
Flume Outlet PP - 8" Horizontal	95290	-	-	-	7.5
Flume Outlet PP - 12" Vertical	95285	-	-	-	4.5
Flume Outlet PP - 12" Horizontal	95287	-	-	-	9.6
Closing Cap PP	95292	-	-	-	1.8
Outlet Cap Kit PP - 8" SCH 40	95293	-	-	-	3.5
HD200 Installation Device	95284	-	-	-	3.3

Note:

- Add nominal 1" (25 mm) to invert depth for overall trench unit depth
- Closing & outlet caps can be cut down for use with smaller trench units
- Horizontal flumes are two piece unit
- Outlet caps are two piece unit



- Designed for high-speed trafficked applications
- Ideal for any commercial site where an ADA grate is not required. (For now)
 - Drive entrances
 - Loading Docks
- Extremely high value
- FAA approved 200,000 proof load certification



ALABAMA DEPARTMENT OF TRANSPORTATION

LIST II-29

TRENCH DRAINS

PRODUCT NAME	VENDOR CODE	DATE APPROVED	BABA COMPLIANT**
ACO POLYMER DRAIN S300 POWERDRAIN	4	09/08/2008	Y2
ACO POLYMER DRAIN S100 POWERDRAIN	4	09/08/2008	Y2
ACO POLYMER DRAIN HIGHWAY DRAIN	4	09/08/2008	Y2
ACO POLYMER DRAIN TRAFFIC DRAIN	4	09/08/2008	Y2

















The Future of Monobloc



**GOAL
25**

Monoblock Project

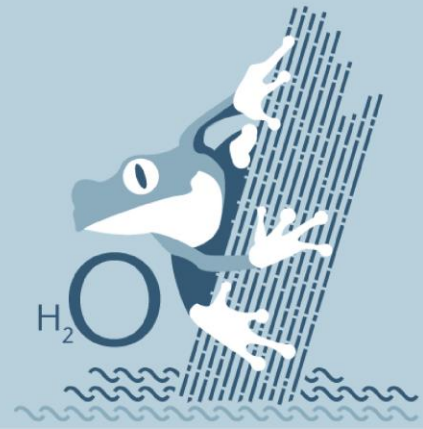


- Manufacture on the production line
- 3 widths, two different slot patterns
- Class D ADA, Class E slot
- Reinforced body
- Sloped 1 -30
- Full set of accessories

Q3 Launch



Questions?



Other ACO Systems



Qmax

Manufactured to 78.75" lengths (2m)

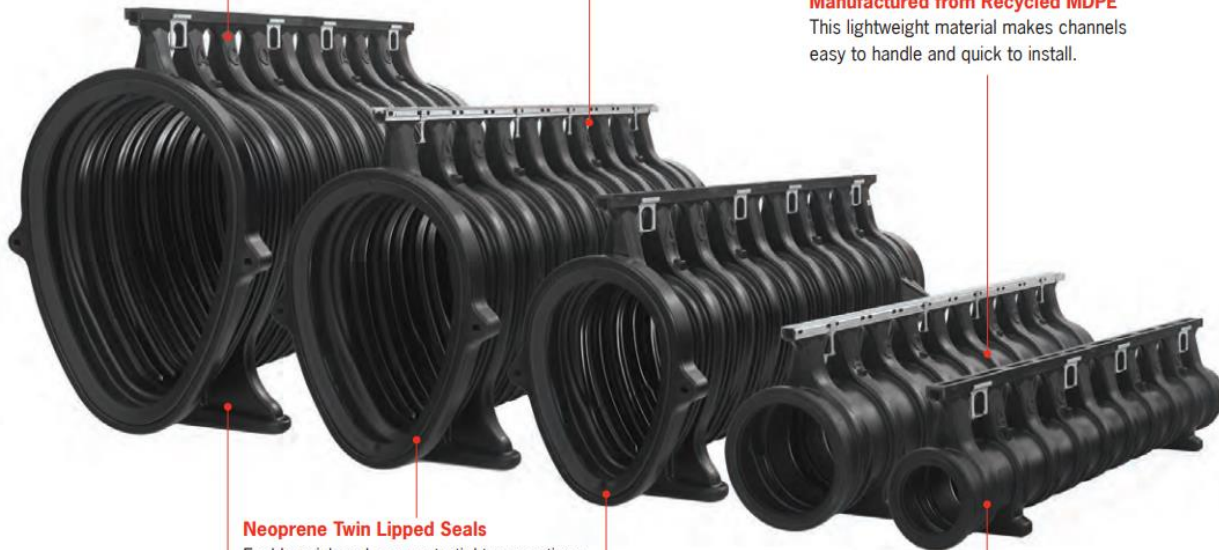
All five models can be used independently or together with other sizes to provide an economic and effective drainage solution for virtually any catchment area.

Patented Pavement Beam Feature

Openings enable continuous concrete over the channel, strengthening the installation and minimizing the need for reinforcement.

Manufactured from Recycled MDPE

This lightweight material makes channels easy to handle and quick to install.



Neoprene Twin Lipped Seals

Enable quick and easy watertight connections.

Male/Female Interlock

Simple push fit channel connection with 1.5" overlap detail for easy edge rail alignment. Qmax[®] 365, 465 and 600 also have wing nut connection to ensure stability during installation.

Molded Cut Lines

Guides every 8" allow channels to be cut down to accommodate any design specification.

Installation Feet

Keep channels stable during installation.



Four Edge Rail Options

Four top rails are available for each size within the ACO Qmax® system to suit the application requirement: Q-Flow for maximum intake capacity and Q-Guard for ADA-compliant installations.



ACO Q-Flow ductile iron coated edge rail provides maximum intake capacity for applications in concrete pavements.

- 1" wide intake slots
- Coated for corrosion protection



Q-Guard ductile iron edge rail with ADA-compliant top is designed for pedestrian applications in concrete pavements.

- 0.31" wide twin longitudinal slots
- Coated for corrosion protection



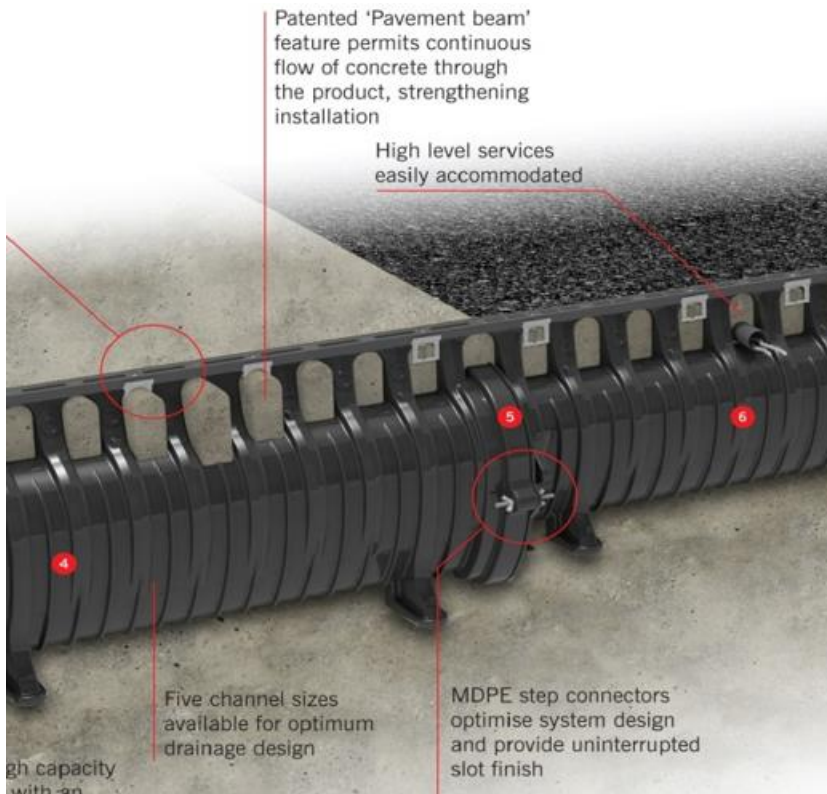
Q-Flow galvanized steel edge rail provides maximum intake capacity for applications in concrete pavements.

- 1" wide intake slots
- Galvanized steel



Q-Guard galvanized steel edge rail is designed for pedestrian applications in concrete and asphalt pavements.

- 0.39" wide slots
- Galvanized steel



Patented 'Pavement beam' feature permits continuous flow of concrete through the product, strengthening installation

High level services easily accommodated

Five channel sizes available for optimum drainage design

MDPE step connectors optimise system design and provide uninterrupted slot finish

- Lightweight
- Robust
- Simple/fast installation
- High capacity
- Size range Qmax 225, 350, 365, 465 and 600
- Integrated secure installation
- Flexible system for all load classes







PowerDrain

Heavy Duty Trench Drain



Ductile Iron Grates

Heavy duty ductile iron grates with ADA compliant longitudinal (Load Class E*) or slotted (Load Class F) designs available.



PowerLok®

A patented, boltless locking system that allows for quick fitting and removal of grates, helping reduce installation/maintenance time and cost.



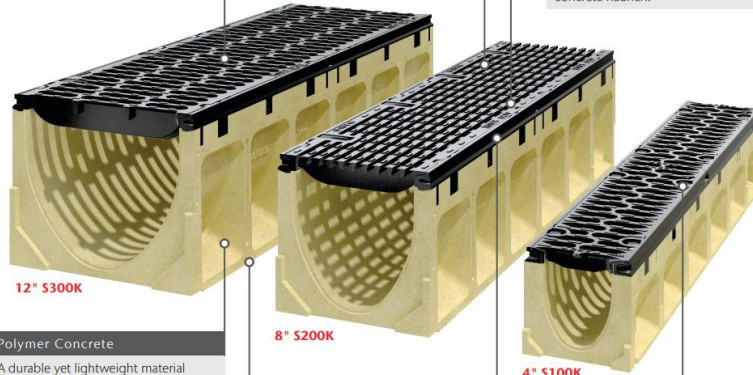
Anti-Shunt Lugs

Protrusions in edge rail fit into recesses on the grate to prevent longitudinal movement.



Concrete Anchor Boss

A drill-through hole in the ductile iron edge rail enables a concrete anchor (4 per meter) to be attached for extra embedment into concrete haunch.



12" S300K

8" S200K

4" S100K

Polymer Concrete

A durable yet lightweight material made from polyester—a resin binder reinforced by mineral aggregates and fillers. It provides up to four times the compressive strength of cement concrete.

Sloped (0.5%) Channel Units

Meter-long units provide 131'-3" continuous slope, which equates to 0.06" fall per linear foot. Multiple constant depth units can be used to extend sloped run lengths.

Ductile Iron Edge Rail

Integrally cast-in rail provides maximum strength and protection for channel body. Shock absorbing widgets with M10x30 stainless steel threads are fitted into the rail to assist grate fit and aid hanging installation.



4-Bolt Slotted Grate

4-Bolt (M10x30) grate option is available on all widths to provide maximum security and stability for super heavy duty applications.



Stormbrixx

Subsurface Detention/Infiltration



300



Heavy duty system that meets AASHTO HS-25 loading standards and has half-module dimensions of 48" (1200 mm) x 24" (600 mm) x 7.5" (191 mm)

HD



Heavy duty system that meets AASHTO HS-25 loading standards and has half-module dimensions of 47.44" (1205 mm) x 23.70" (602 mm) x 12" (305 mm)

SD



Standard duty system that meets AASHTO HS-20 loading standards and has half-module dimensions of 48" (1200 mm) x 24" (600 mm) x 18" (457 mm)

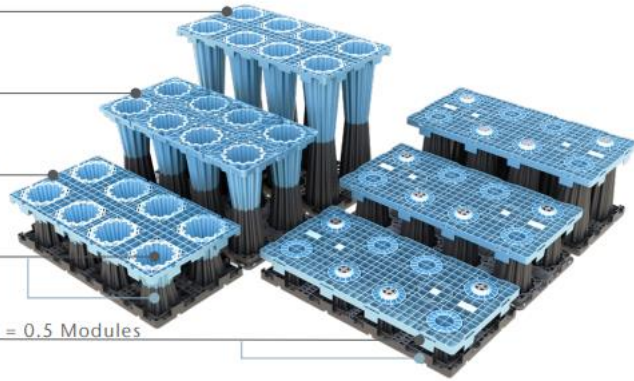
StormBrixx 900 SD Half-Module
97% Void Ratio

StormBrixx 600 HD Half-Module
95% Void Ratio

StormBrixx 300 HD/SD Half-Module
94% Void Ratio

2 Half-Modules = 1 Module

Half-Layer Top Cover + Half-Module = 0.5 Modules

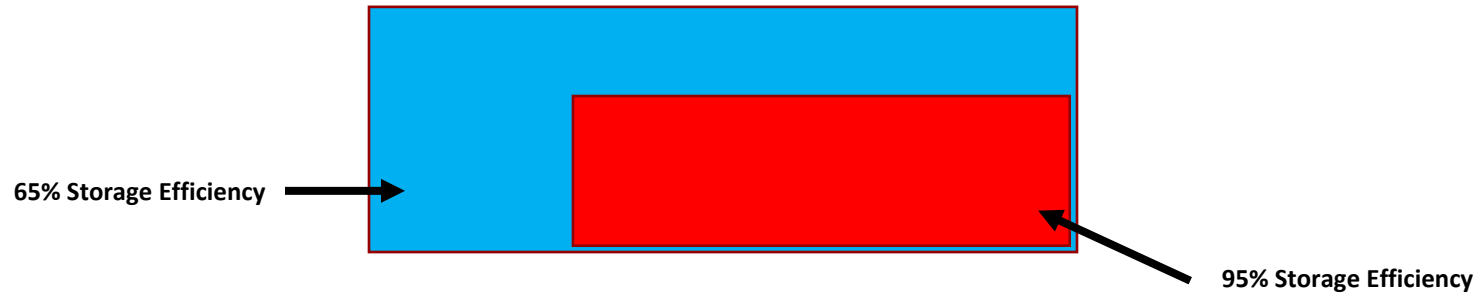


- Strongest available geocellular underground storage system
- Only fully accessible system for inspection and maintenance
- Minimum 50 year life cycle
- Available in standard & heavy duty models
- Up to 97% void space for water storage
- Used for either detention or infiltration or reuse

Void Ratio

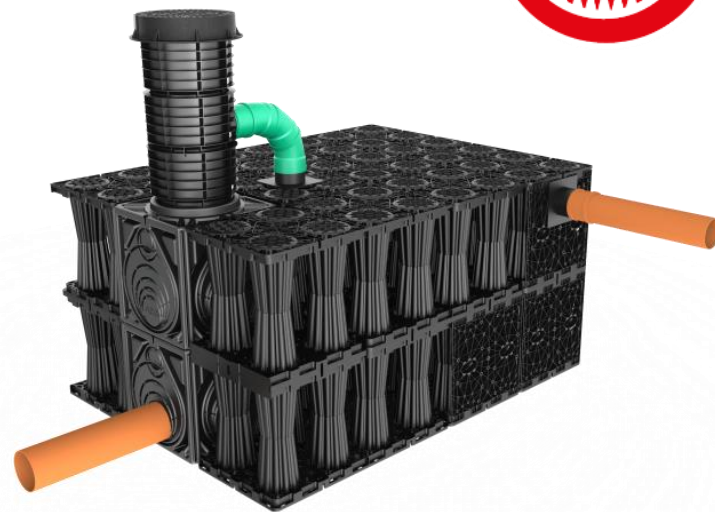
Results in 25 – 35% smaller footprint on site
Saving also on installation

- Time
- Excavation dimensions
- Costly equipment
- Labor





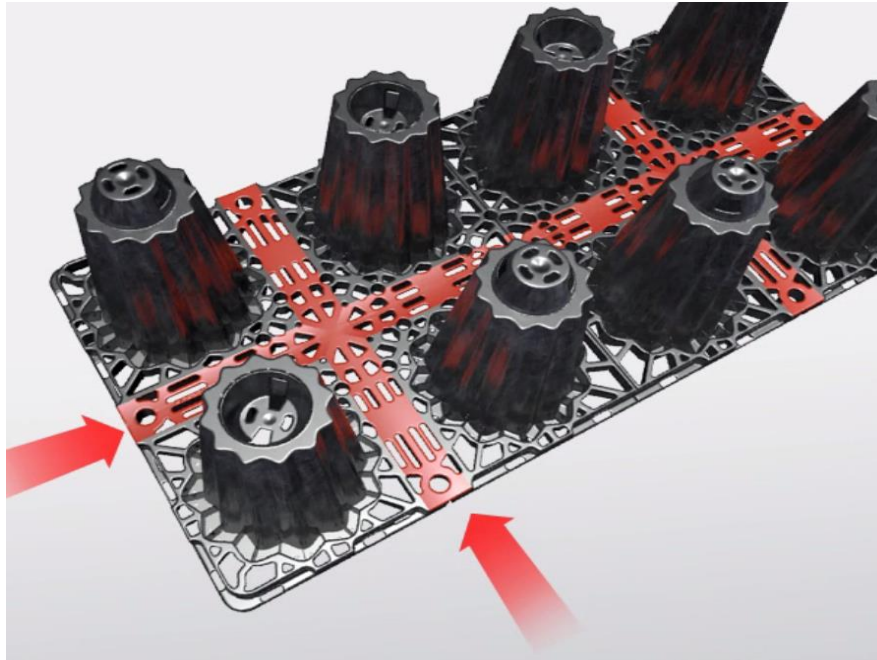
Complete system



Inspection and Maintenance



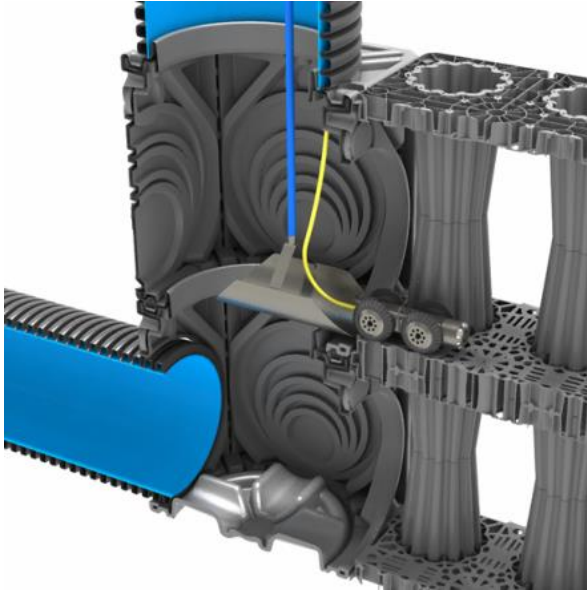
Easy camera access



Full tank access in two directions



Easy water jetting access

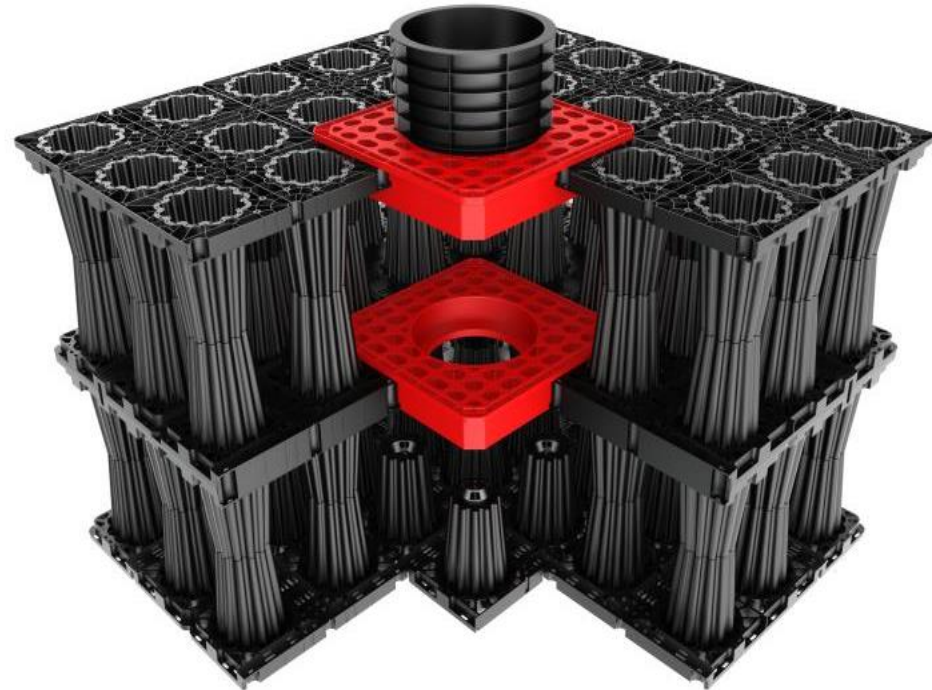
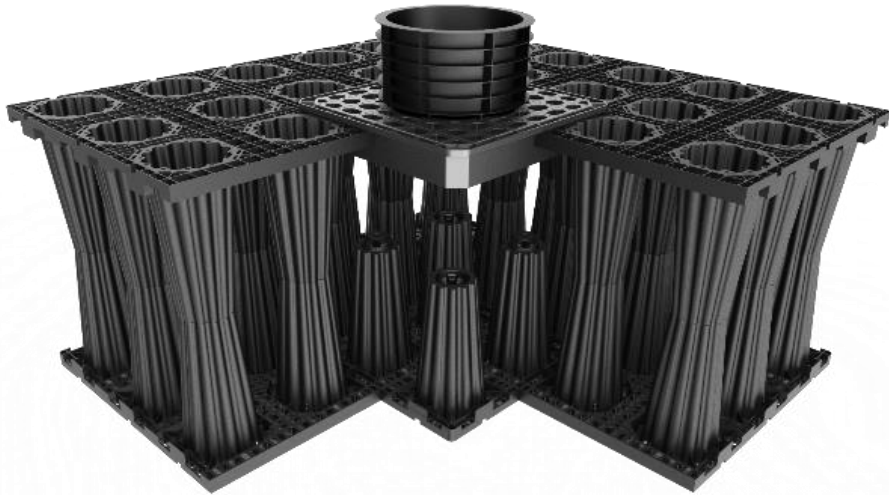


Horizontal camera access from inspection unit



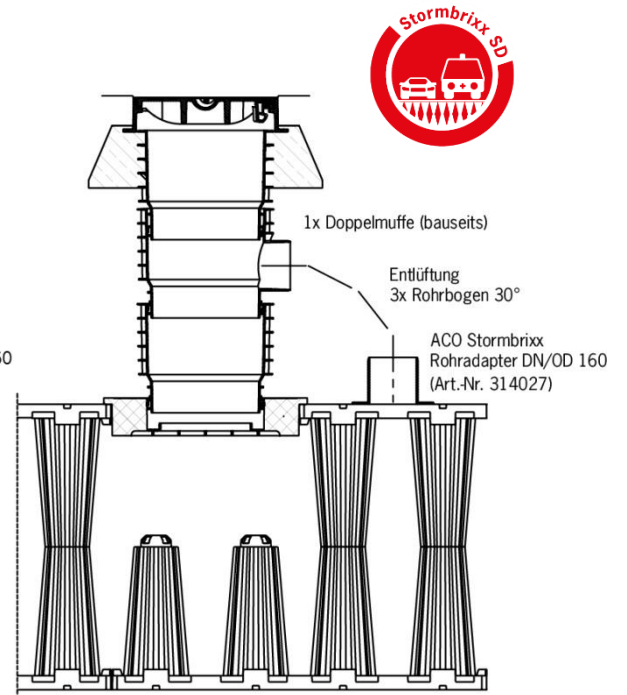
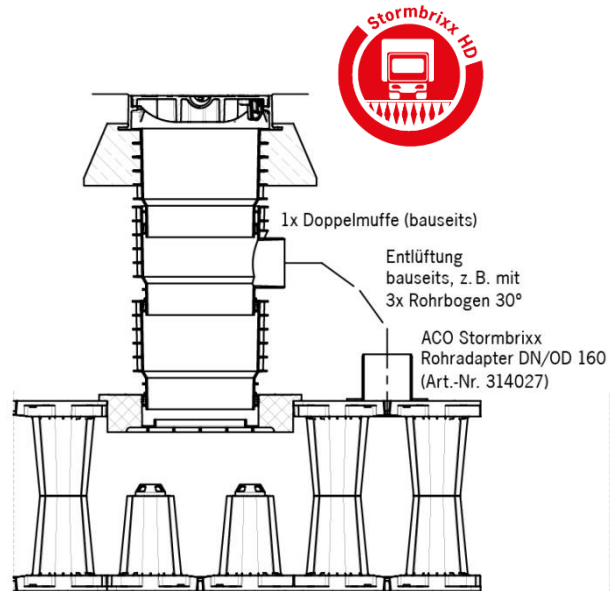
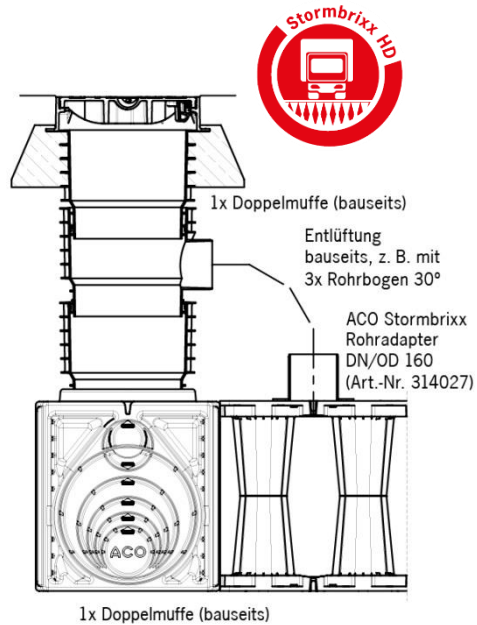
Camera access down access shaft

ACO Stormbrixx SD and HD



- Access plate for inspection and cleaning

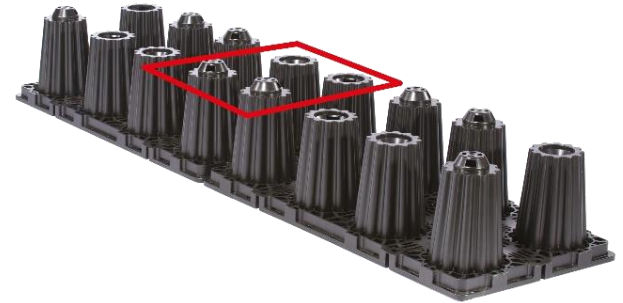
Inspection and Maintenance

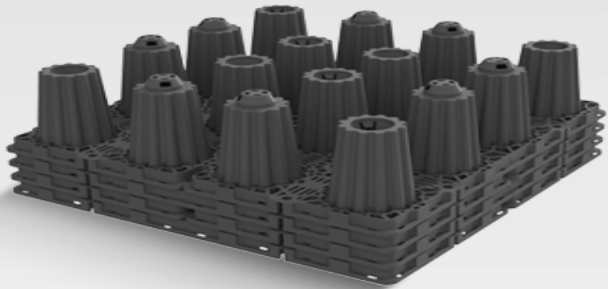


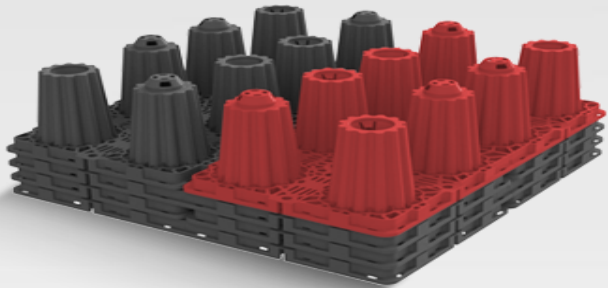
Brick Bonding

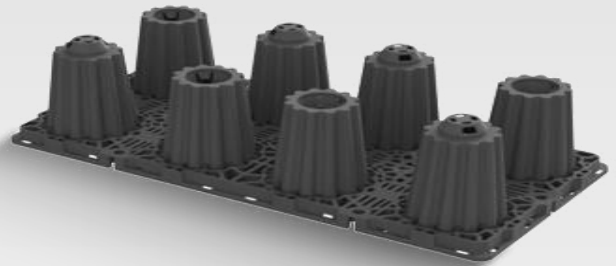
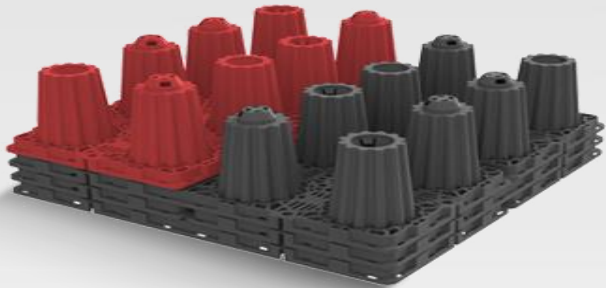
Advantages of Brick bonding

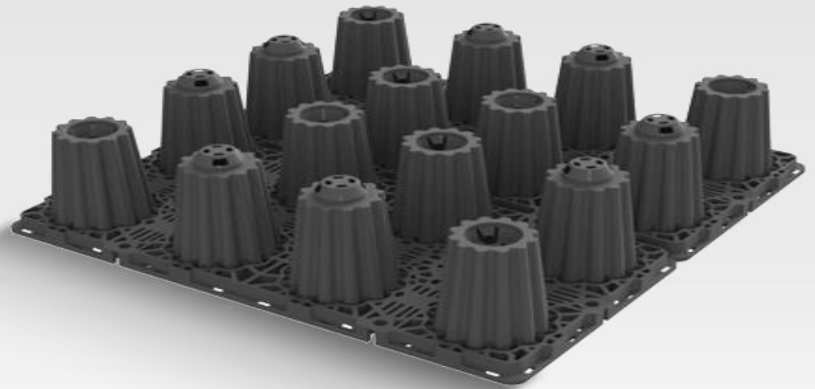
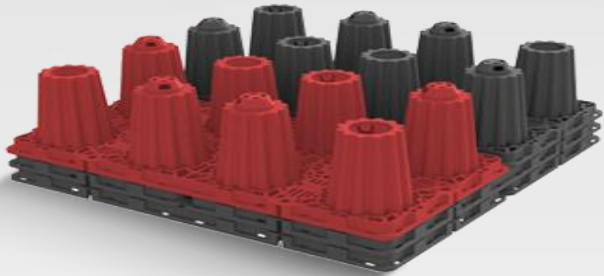
- High structural strength due to female-male connections
- Minimal connectors needed within 1 layer
- No shifting between the base elements
- Even load distribution on pillars
- Faster and easier installation
- Time and cost saving

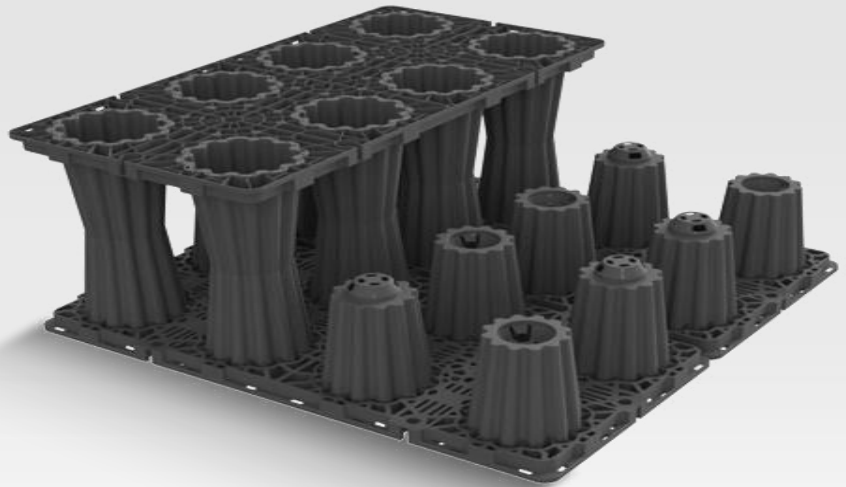
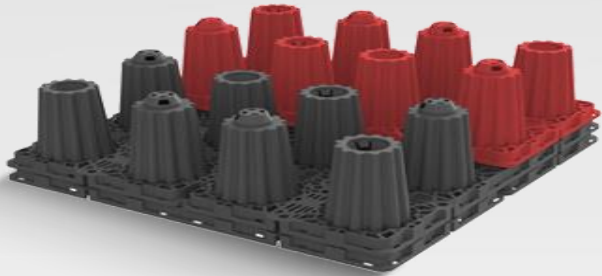


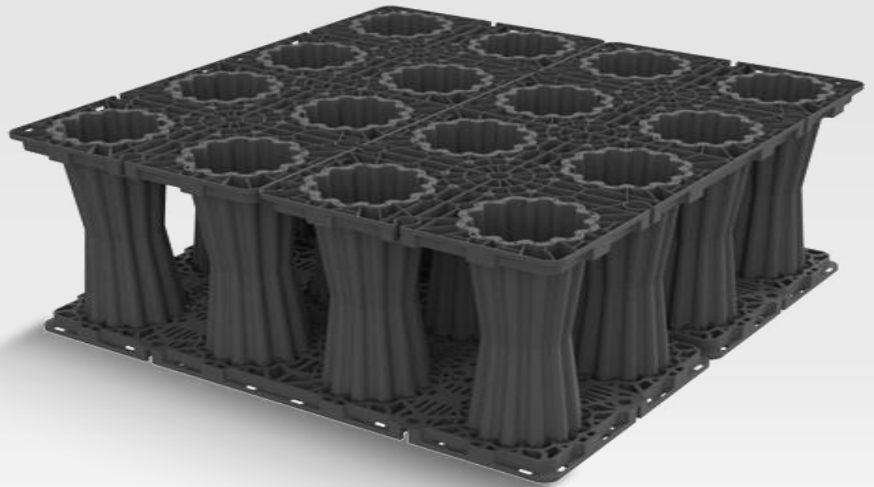
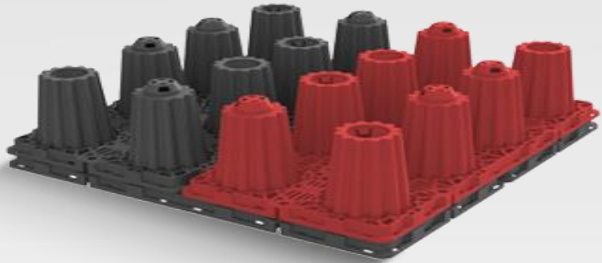


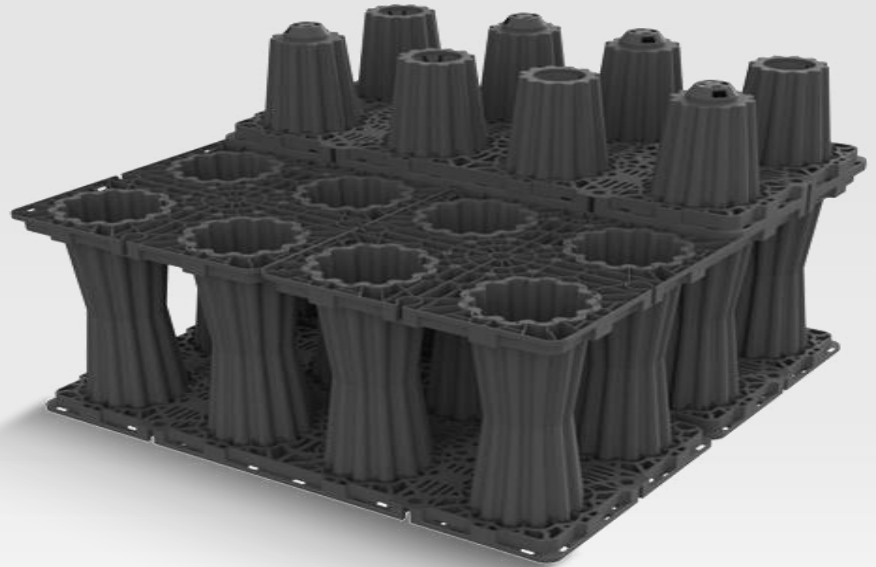
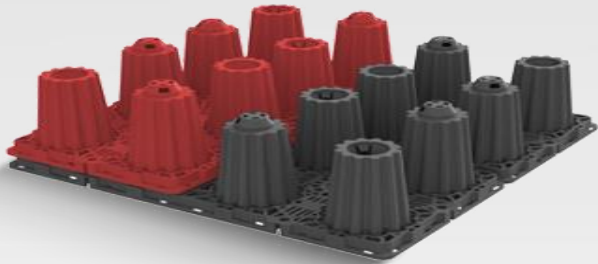


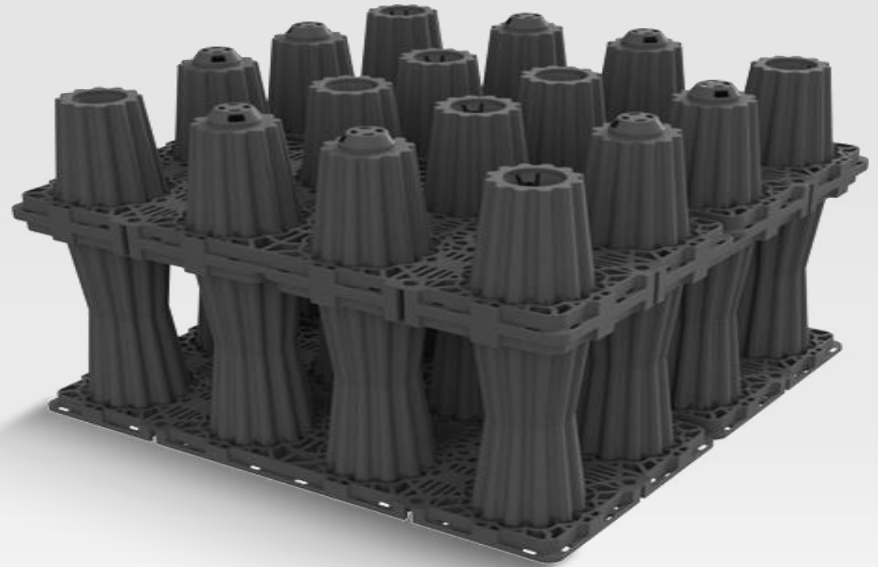
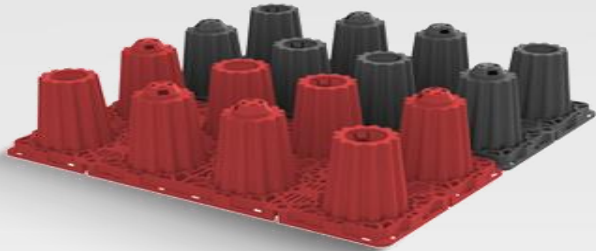


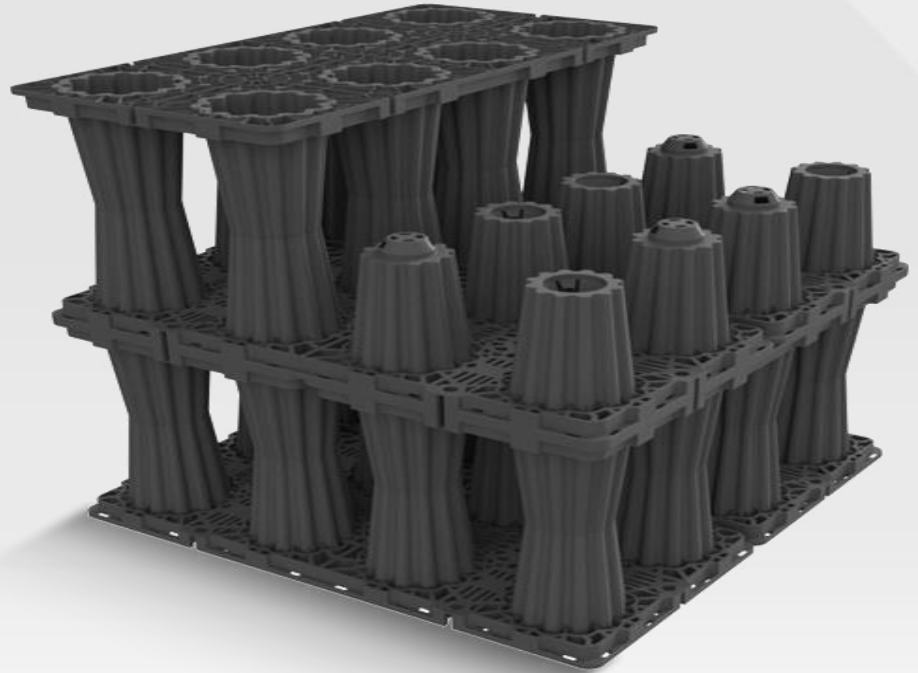
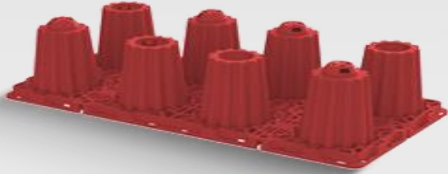


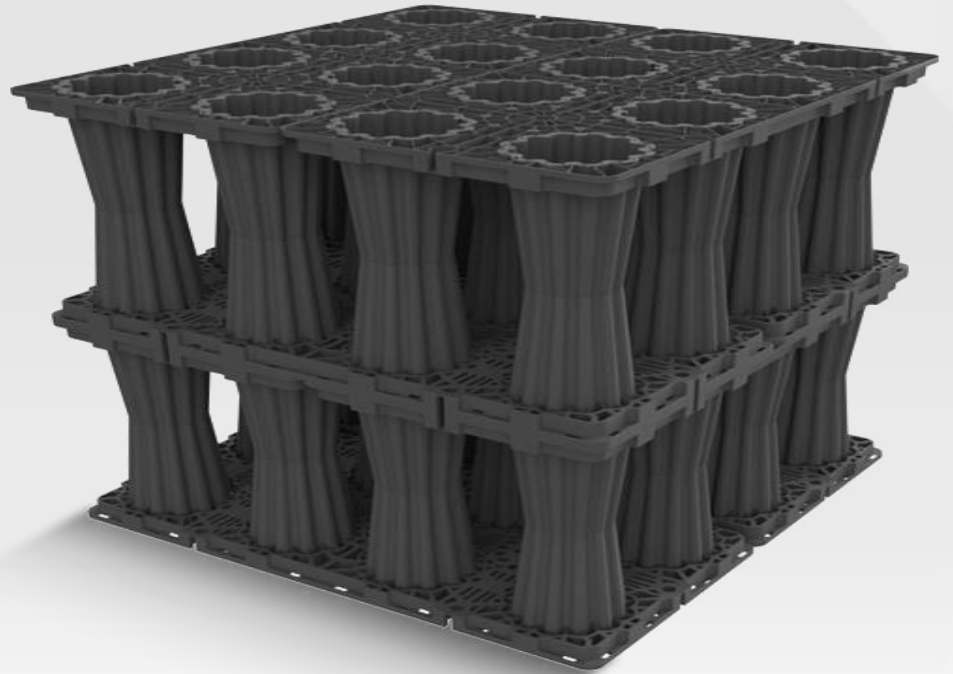


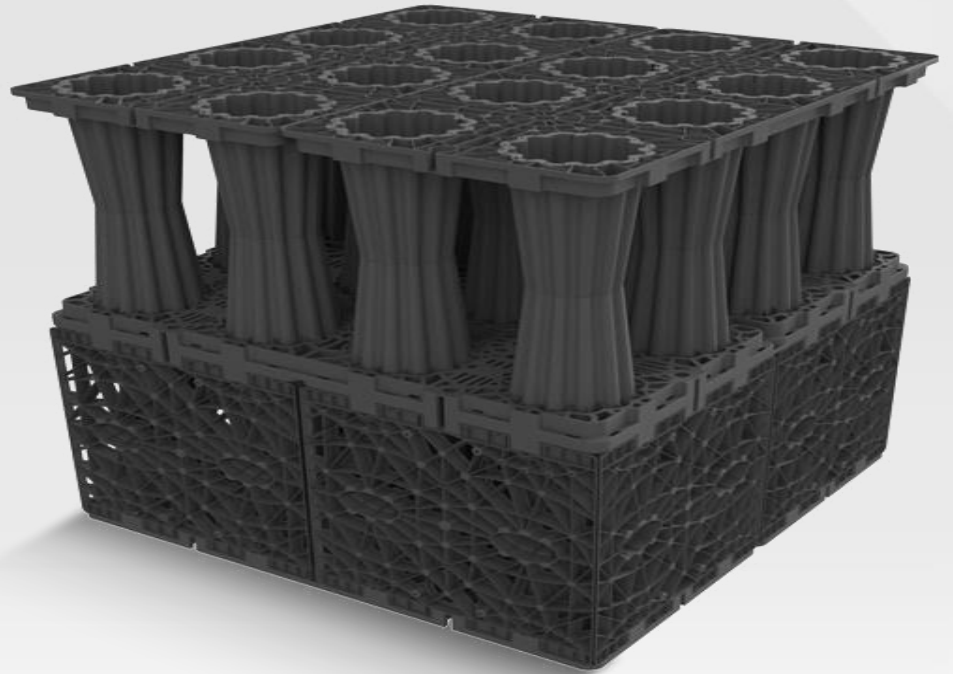


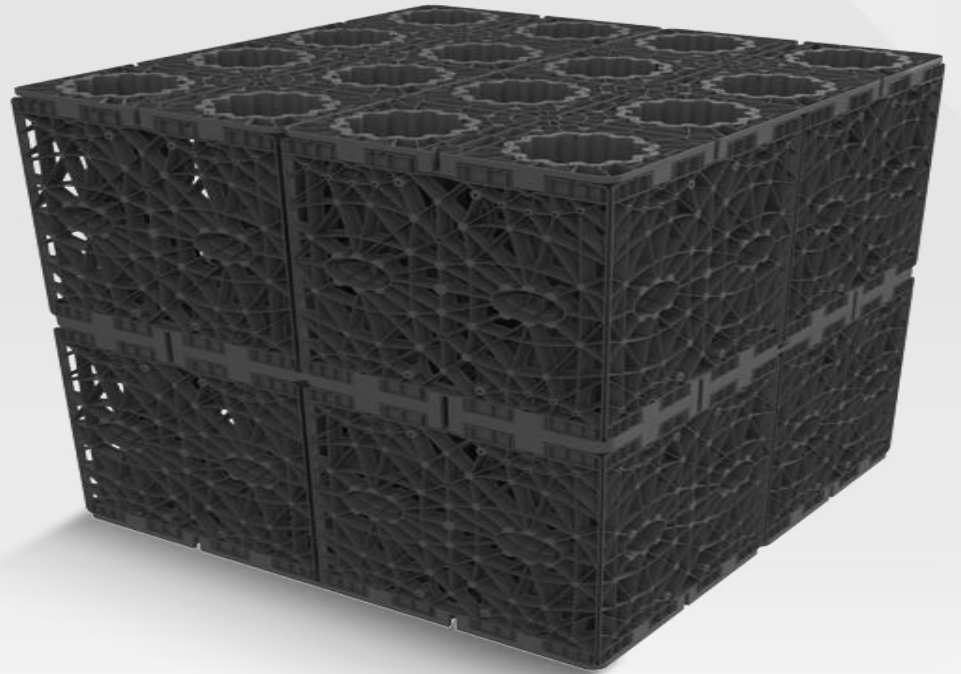










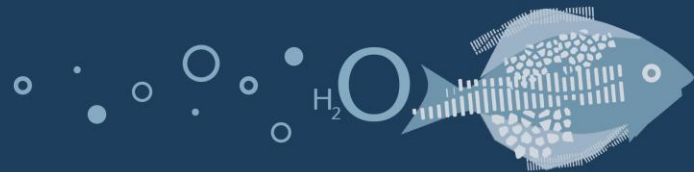


Assembly Comparison

68,000 Cubic Foot Project Comparison	
R-Tank Quad + Mini	Stormbrixx SD
18.42 cuft per module	22.53 cuft per module
3,692 modules needed	3,018 modules needed
Parts per module = 40	Parts per module = 2.59
$3,692 * 40 = 147,680$ total pieces	$3,018 * 2.59 = 7823$ total pieces
$3,692 * 5$ minute assembly	$3,018 * 57$ second assembly
308 hours of assembly for 1 person	46.5 hours of assembly for 1 person
Geogrid needed = 6 rolls	Geogrid needed = 0
15 truckloads assembled	4.5 truckloads unassembled



ACO Services





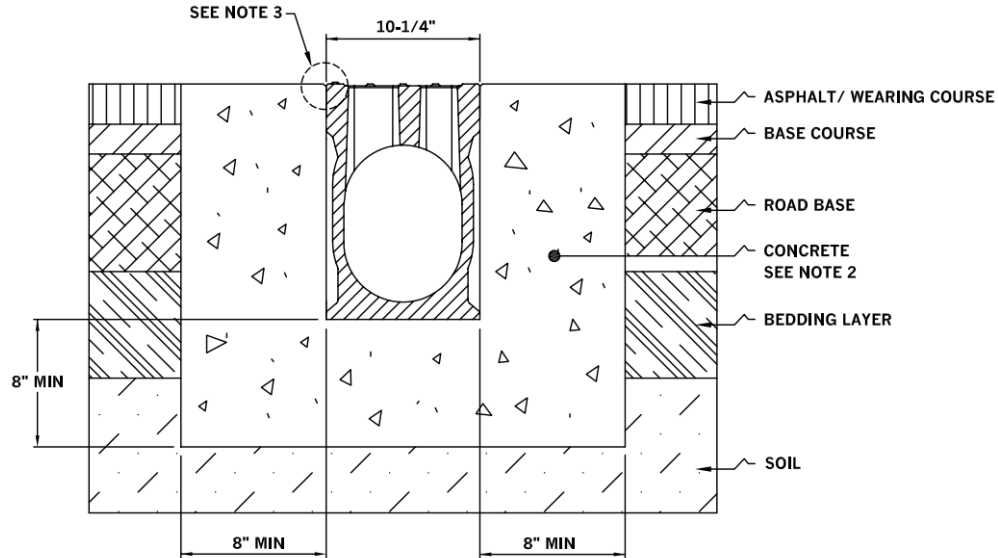
INSTALLATION DRAWING

ACO Polymer Products Inc.
P.O. Box 245
Chardon, OH 44024
PH: 440-285-7000
FX: 440-285-8517
e-mail: sales@acousa.com

DRWG# 1814 Date: 6.14.07

WWW.ACOUSA.COM

HighwayDrain: Load Class E : Concrete



- NOTES:
1. It is necessary to ensure the minimum dimensions shown are suitable for the existing ground conditions. *Engineering advice may be required.*
 2. A minimum concrete strength of 3000 PSI is recommended. The concrete should be vibrated to eliminate air pockets.
 3. The finished level of the concrete must be approx. 1/8" above the top of the HighwayDrain channel.
 4. Refer to ACO'S latest installation instructions for complete details.

Application

Installation Details

- Advice on application load class
- Load test certificates
- Installation Section Details

Material Data

- Samples for testing on Site
- Material Test Reports

Supporting Documentation

- Industry Standards/requirements and 3rd party test data



Trench Hydraulic Calculation for ACO Drainage Systems

ACO Technical Services



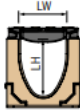
Project Details

Project Name : Resort Facility
 Project Number : 116-214
 Street Address, City : County Line Road
 State zip code : Madison

Date: 4/7/2016
 Page: 2 of 3

Input

Channel type : Walkway
 Trench drain system : ACO DRAIN S100K
 Sloping, Neutral or Combination layout :
 Roughness Coefficient (Strickler) inverse Mannings : 95
 Invert Type : Combination
 Type of Outlet : sump unit-DN/OD110
 Run Length [R] : 57.41
 Catchment Area [R²] : 1150
 Runoff Coefficient [C_n] : 0.95



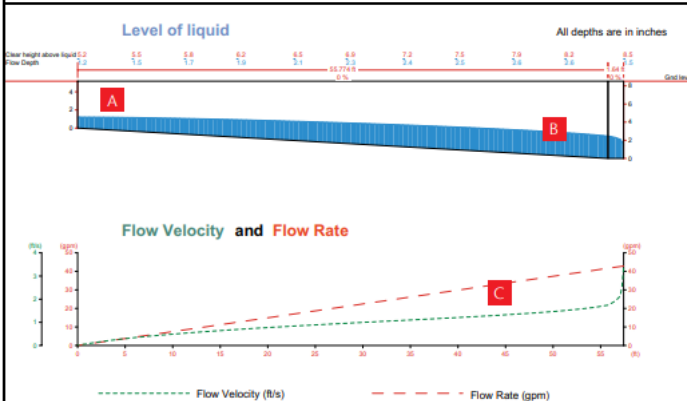
Hydraulic run length [R] : 57.41

All run segments combine to give the total run length.

Section		1	2	3	4	5	6	7	8	9	10
Internal Width	[Inch]	3.94	3.94								
Upstream Invert	[Inch]	5.17	8.51								
Downstream Invert	[Inch]	8.51	8.51								
Run Length	[R]	55.77	1.64								
Groundslope	[%]	0.000	0.000								

Results

Discharge [gpm] : 42.90 **D**
 Flow Velocity [ft/s] : 3.34
 Minimum Freeboard [Inch] : 3.96 **E** 0.00 ft (Freeboard Depth)
 Drain Capacity Utilized [%] : 27.27 **E**



Hydraulics

- **Trench Hydraulics- Hydro**
 - Sizing and outlet spacing recommendations
 - Liquid depth profiles at design conditions
- **Trench Hydraulics- Ponding**
 - Hydraulic recommendations showing the effect of ponding
- **Grate Hydraulics- GIC**
 - Grate performance data dependent on location with crossfalls



Scheduler – Run Design & Layout
Free Public Access Software

Project Details

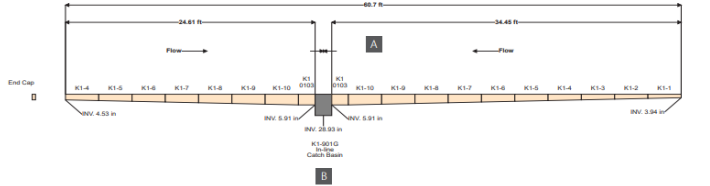
Name: 506AC Surface Parking Lot
Address: 28th Street
City: Uniontown
Country: USA

State/Region: OH

Drawn By

Name: Jason Jonke
Company: ACO, Inc.
Phone: 440-639-7230
Email: jason.jonke@aco.com

Run Name: TD 1 Total Length: 60.7 ft



Legend
→ Flow Direction
INV Invert Depth of Channel

ELEVATION
NOT TO SCALE

PLAN
--- -- ---



ACO, Inc.
9470 Pinecone Dr.
Mentor, OH 44060
Tel: (800) 543-4764
Email: info@acousa.com

General Notes

1. It is the customer's responsibility to ensure that each product is fit for its intended purpose and that the actual conditions are suitable.
2. This run design and layout is only intended to be used as a guide. Refer to engineer's construction drawings for further information. If in doubt, seek engineering advice.
3. The run layout does not show the concrete surround (encasement) refer to site installation Manual.

ACO Product (Click Type Info for more information)
System: K100K Drain K100 (Spec info)
Grate: Type 47AD (Spec info)
Drawn By: Jason Jonke
Date: 2021-08-05 12:16
Page: 2 of 2 Run: 4 of 4

Trench Layout

■ **Trench Layout Documents**

- Plan layouts of trench runs (CAD)
- Section layouts of trench runs showing modular sequence of channel units
- Bill of Material (BOM) Fully itemizing parts and pieces

ALL DRAWINGS ARE AS ACCURATE AS THE INFORMATION SUPPLIED. ALL REASONABLE CARE HAS BEEN TAKEN IN COMPLYING THE INFORMATION WITHIN. PLEASE REVIEW THIS INFORMATION FOR ACCURACY.

APPROVED
 APPROVED AS NOTED
 REVISE AND RESUBMIT
 REJECTED

SIGNED: _____
DATE: _____
COMMENTS: _____

REQUIRED FABRICATIONS
Ⓞ MITERS

TRENCH NOTES

1. ALL FABRICATIONS TO BE COMPLETED BY INSTALLING CONTRACTOR.
2. DIMENSIONS ARE FROM CENTERLINE.
3. INSTALLING CONTRACTOR TO VERIFY ENTIRE SCOPE OF TRENCH DRAIN HAS BEEN PROVIDED FOR THIS PROJECT BY ACO, INC.
4. LAYOUT IS BASED ON SHEET C-18 PROVIDED TO ACO, INC. TECHNICAL SERVICES DEPARTMENT.
5. ACO, INC. WILL NOT MITER S100K POWERDRAIN CHANNELS, AND DOES NOT RECOMMEND DOING SO.

SHEET INDEX

SHEET NO.	DESCRIPTION
1	TRENCH DRAIN LAYOUT 1
2	TRENCH DRAIN LAYOUT 2
3	TRENCH DRAIN LAYOUT 3

LEGEND

- CHANEL
- CENTERLINE
- INSTALLATION DIRECTION
- OF CHANNEL
- VGA = VERTICAL OUTLET ADAPTER
- BAU = BONDING ACCESSORY
- CC = COVER/CAP
- CO = OUTLET CAP
- IN = INVERT
- OP = HIGH POINT
- LP = LOW POINT
- BO = BOTTOM OUTLET

DRINK MARKETPLACE MALL
ROCHESTER, NY

TRENCH DRAIN LAYOUT

DATE	BY	DATE	BY
14/02/20	DESIGNED BY		
	CHECKED BY		
	DESIGN SERV. NO.		
	REVISION		

ACO, INC.

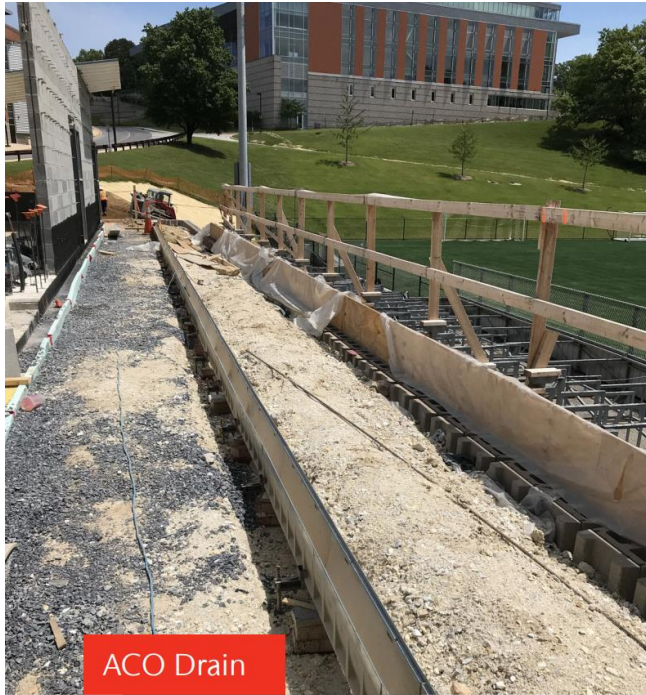
WEST SALES OFFICE: 281 S. 2000 W. UTAH CITY, UT 84112
TEL: (801) 422-5151 FAX: (801) 422-5152
E: SALES@ACO.COM WWW.ACO.COM

MAINTENANCE SERVICE: 1000 W. 1200 N. WASHINGTON, MO 64792
TEL: (417) 255-1100 FAX: (417) 255-1101
E: SERVICE@ACO.COM WWW.ACO.COM

INDUSTRIAL SALES OFFICE: 2011 S. 1000 E. WALKER, MO 64603
TEL: (417) 255-1100 FAX: (417) 255-1101
E: SALES@ACO.COM WWW.ACO.COM

www.acousa.com





ACO Drain

Polymer Concrete Trench Drain Systems

Site Installation Manual

Installation Support

- **Installation Guidance**
 - Installation section details by product type, pavement type, and loading type
 - Consultation on specific installation concerns





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The world's most popular modular trench drain system. ACO Drain consists of cast polymer concrete bodies with either galvanized steel, stainless steel or cast iron wearing edges.

ACO Drain is available in 2", 4", 8" and 12" internal widths, and are available with up to 130 ft (40m) of built-in continuous slope. Our drainage systems offer light to heavy duty solutions for traffic ranging from pedestrians to jumbo jets.

There are a variety of grates manufactured from different materials, hole patterns and load ratings. For more information on ACO Drain grates, [click here](#).

To help users choose the correct products, ACO offers the following online tools:

[Grate & Pavement Visualizer](#)

[Run Layout & Parts List Design Tool](#)

[Grate Intake Efficiency Calculator](#)

[Trench Hydraulic "HYDROLite" Software](#)



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ACO StormBrixx®

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[900 SD](#)

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ACO StormBrixx® is a unique, patented, plastic geocellular stormwater management system. The system is designed for surface water detention, retention, infiltration and reuse. Its versatility allows it to be used in applications across all construction environments as a standalone solution or as part of a Sustainable Drainage System.

[ACO StormBrixx Configurator](#)

[ACO StormBrixx Structural Calculator](#)



ACOSWM.COM

- [Scheduler – Trench Layout](#)
- [Grate Intake Analysis](#)
- [HYDROLite – Trench Hydraulics](#)
- [Stormbrixx Configurator](#)
- [Stormbrixx Structural Calculator](#)



ACO. we care for water